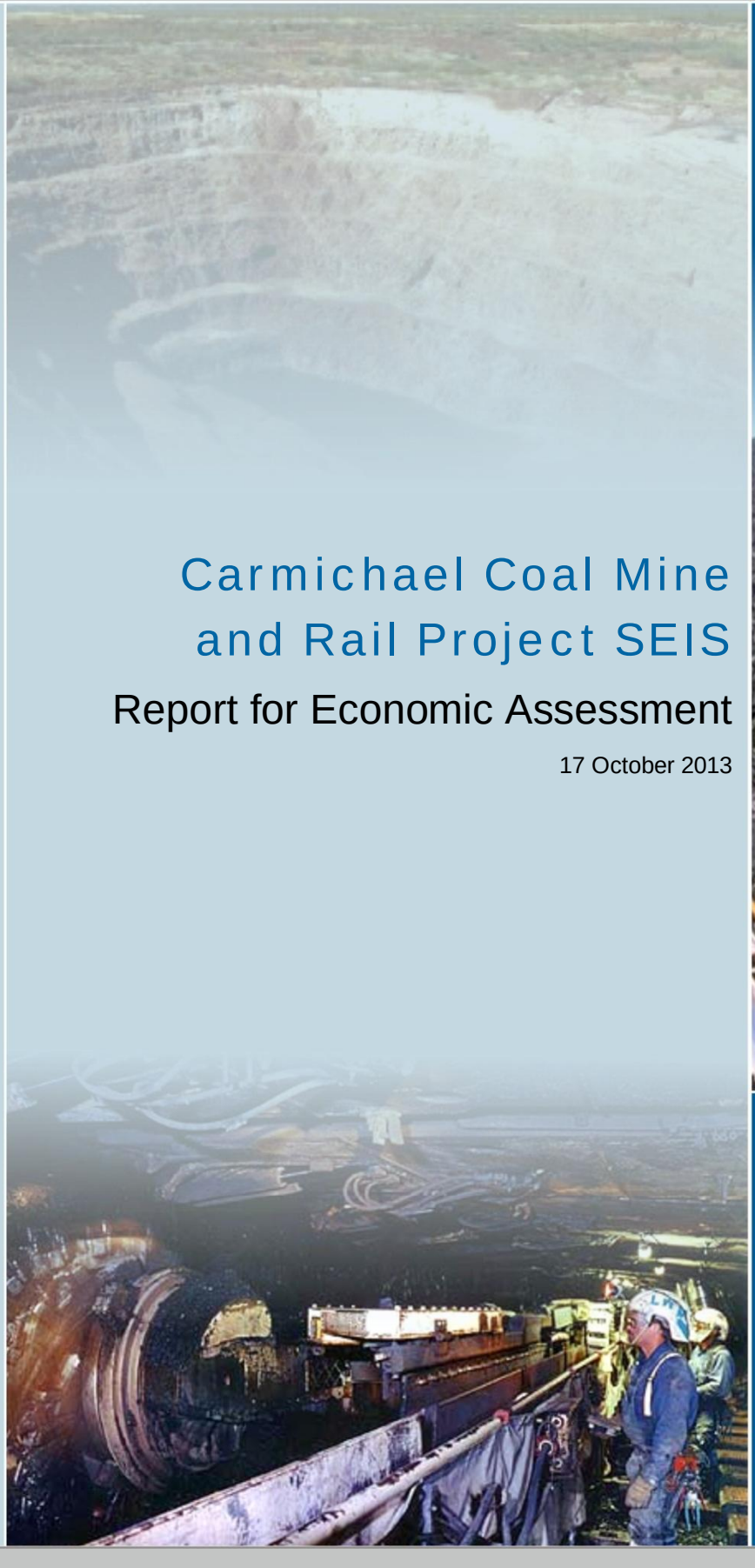
Adani Mining Pty Ltd

Carmichael Coal Mine and Rail Project SEIS

Report for Economic Assessment

17 October 2013



GHD

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Executive summary

Adani Mining Pty Ltd (Adani) is proposing to develop a 60 million tonne (product) per annum (Mtpa) thermal coal mine in the north Galilee Basin approximately 160 kilometres (km) north-west of the town of Clermont, Central Queensland. All coal will be railed via a privately owned rail line connecting to the existing Aurizon rail infrastructure at Moranbah, and shipped through to coal terminal facilities at the Port of Abbot Point and the Port of Hay Point (Dudgeon Point expansion). The Carmichael Coal Mine and Rail Project (the Project) will have an operating life of approximately 60 years.

The Carmichael Coal Mine and Rail Project (the Project) comprises two major components:

- The Project (Mine): a greenfield coal mine over EPC 1690 and the eastern portion of EPC 1080, which includes both open cut and underground mining, on mine infrastructure and associated mine processing facilities (the Mine) and the Mine (offsite) infrastructure including a workers accommodation village and associated facilities, a permanent airport site, an industrial area and water supply infrastructure
- The Project (Rail): a greenfield rail line connecting the mine to the existing Goonyella and Newlands rail systems to provide for the export of coal via the Port of Hay Point (Dudgeon Point expansion) and the Port of Abbot Point, respectively including:
  - Rail (west): a 120 km dual gauge portion running west from the Mine site east to Diamond Creek
  - Rail (east): a 69 km narrow gauge portion running east from Diamond Creek connecting to the Goonyella rail system south of Moranbah
  - Quarries: five local quarries to extract quarry materials for construction and operational purposes

The economic assessment has been developed based on input output analysis (I/O) which provides a numerical picture of the size and shape of the economy and an estimation of the relative contribution of a specific sector to the affected economy. The model for this specific economic assessment was then extended beyond the basic I/O model, to a demographic-economic model. This enables the additional analysis of how local population levels will respond to employment growth or decline. The addition of an unemployment sector allows a preliminary estimate to be generated for the consumption induced impact from the growth or decline in unemployment.

The baseline economic overview provides an indication of the current economic activities within the Mackay region. Data clearly indicates that mining activities already dominate industry within the region, with over 50 percent of the regions GRP generated by mining. The construction and manufacturing sectors are also important in terms of their contribution to GRP.

Employment within the region is also dominated by the mining industry with an increase of mining employees in the Mackay region by 190 percent between the 2001 and 2011 census. The proportion of employees engaged within the mining industry is vastly greater than the average for Queensland as a whole. Industries that provide support services to coal production such as construction and public administration and safety are seeing increases in employment.

The I/O results identify the distribution of the impacts of the Project on the local and regional economies. It outlines the impacts on the local, regional and State economies, which are mostly positive. The remaining positive impacts will be felt nationally throughout Australia but more often overseas. In order to ensure the local and State economies reap the maximum possible benefits from the development strategies, policies and strategies are in place to ensure these economies retain as many of the benefits as possible. Distributional effects may also be felt at the micro level within the community. The Indigenous or disabled community benefit from strategies such as the Queensland government's Indigenous Employment and Training Strategy.

Construction of the Project (Mine) is expected to generate on average over the construction years $31.3 million per annum in direct and indirect benefits on the Mackay region's GRP, a considerable proportion of which will be direct benefits such as purchase of local materials or services. For the State as a whole, positive impacts on average over the construction period are estimated to be $308 million per year. The construction phase also provides considerable benefits to employment. On average, construction will generate an additional 313 full time equivalent (fte) jobs per year within the Mackay region and 2,915 full time equivalent jobs for Queensland.

The operational phase of the Project (Mine) sees benefits that increase in line with production rates of coal. At the point of full production (60 Mtpa) total positive benefits on GRP, for that year, in the Mackay region reach an estimated total of $753 million and at a State level $2,701 million. Employment levels locally will see an increase in fte of 4,948 and State wide 6,548.

Construction of the Project (Rail) is expected to generate on average over the construction years $145 million per annum in direct and indirect impacts on the Mackay region's GRP. For the State as whole positive impacts on average over the construction period is estimated to be $229 million per year. The construction phase also provides considerable benefits to household income and employment. On average construction will generate an additional 1,451 full time equivalent jobs within the Mackay region and 2,481 full time equivalent jobs for Queensland. Benefits during the construction period will be felt most vigorously during years one and two.

The operational phase of the Project (Rail) sees impacts that increase in line with production rates of the Mine. At the point of full production (60 Mtpa) total impacts per year on GRP, for that year, in the Mackay region reach an estimated total of $176.6 million and at a State level $274.1 million. Benefits to household incomes within the region will total $107.2 million and State wide $157.9 million. Employment levels locally will see an increase in fte of 1,215 and State wide 2,025.

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Abbreviations and glossary

Project Specific Terminology	
Abbreviation	Term
the SEIS	Carmichael Coal Mine and Rail Project Supplementary Environmental Impact Statement
the Proponent	Adani Mining Pty Ltd
the Project (Mine)	Carmichael Coal Mine and Rail Project: Mine Component
the Project (Rail)	Carmichael Coal Mine and Rail Project: Rail Component

Generic Terminology	
Abbreviation	Term
ABS	Australian Bureau of Statistics
Capex	Capital expenditure
fte	Full time equivalent
GNP	Gross National Product
GRP	Gross Regional Product
GSP	Gross State Product
I/O	Input – output analysis
LGA	local government authorities
Mtpa	million tonne (product) per annum
Opex	Operating expenditure
SLA	statistical local areas

1. Introduction

1.1 Project overview

Adani Mining Pty Ltd (Adani, the Proponent), commenced an Environmental Impact Statement (EIS) process for the Carmichael Coal Mine and Rail Project (the Project) in 2010. On 26 November 2010, the Queensland (Qld) Office of the Coordinator General declared the Project a 'significant project' and the Project was referred to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (referral No. 2010/5736). The Project was assessed to be a controlled action on 6 January 2011 under section 75 and section 87 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The controlling provisions for the Project include:

- World Heritage properties (sections 12 & 15A)
- National Heritage places (sections 15B & 15C)
- Wetlands (Ramsar) (sections 16 & 17B)
- Listed threatened species and communities (sections 18 & 18A)
- Listed migratory species (sections 20 & 20A)
- The Great Barrier Reef Marine Park (GBRMP) (sections 24B & 24C)
- Protection of water resources (sections 24D & 24E)

The Qld Government's EIS process has been accredited for the assessment under Part 8 of the EPBC Act in accordance with the bilateral agreement between the Commonwealth of Australia and the State of Queensland.

The Proponent prepared an EIS in accordance with the Terms of Reference (ToR) issued by the Qld Coordinator-General in May 2011 (Qld Government, 2011). The EIS process is managed under section 26(1) (a) of the *State Development and Public Works Act 1971* (SDPWO Act), which is administered by the Qld Government's Department of State Development, Infrastructure and Planning (DSDIP).

The EIS, submitted in December 2012, assessed the environmental, social and economic impacts associated with developing a 60 million tonne (product) per annum (Mtpa) thermal coal mine in the northern Galilee Basin, approximately 160 kilometres (km) north-west of Clermont, Central Queensland, Australia. Coal from the Project will be transported by rail to the existing Goonyella and Newlands rail systems, operated by Aurizon Operations Limited (Aurizon). The coal will be exported via the Port of Hay Point and the Point of Abbot Point over the 60 year (90 years in the EIS) mine life.

Project components are as follows:

- The Project (Mine): a greenfield coal mine over EPC 1690 and the eastern portion of EPC 1080, which includes both open cut and underground mining, on mine infrastructure and associated mine processing facilities (the Mine) and the Mine (offsite) infrastructure including a workers accommodation village and associated facilities, a permanent airport site, an industrial area and water supply infrastructure

- The Project (Rail): a greenfield rail line connecting the mine to the existing Goonyella and Newlands rail systems to provide for the export of coal via the Port of Hay Point (Dudgeon Point expansion) and the Port of Abbot Point, respectively including:
  - Rail (west): a 120 km dual gauge portion running west from the Mine site east to Diamond Creek
  - Rail (east): a 69 km narrow gauge portion running east from Diamond Creek connecting to the Goonyella rail system south of Moranbah
  - Quarries: five local quarries to extract quarry materials for construction and operational purposes.

Figure 1 shows the Project location.

1.2 Study area

The study area for this report includes the regions directly and indirectly influenced by the Project. The study area for the baseline economic assessment and the economic modelling is the Mackay Isaac Whitsunday (MIW) region, which comprises the Mackay, Isaac and Whitsunday Local Government Areas. This was chosen as the study area as key project inputs including labour, equipment and materials will be sourced from throughout the MIW region. The baseline economic assessment and economic modelling presents data and estimates the effect of the Project on the MIW economy. Baseline data and modelling results are also presented for the State of Queensland; the other major economy that will be positively affected by the Project.

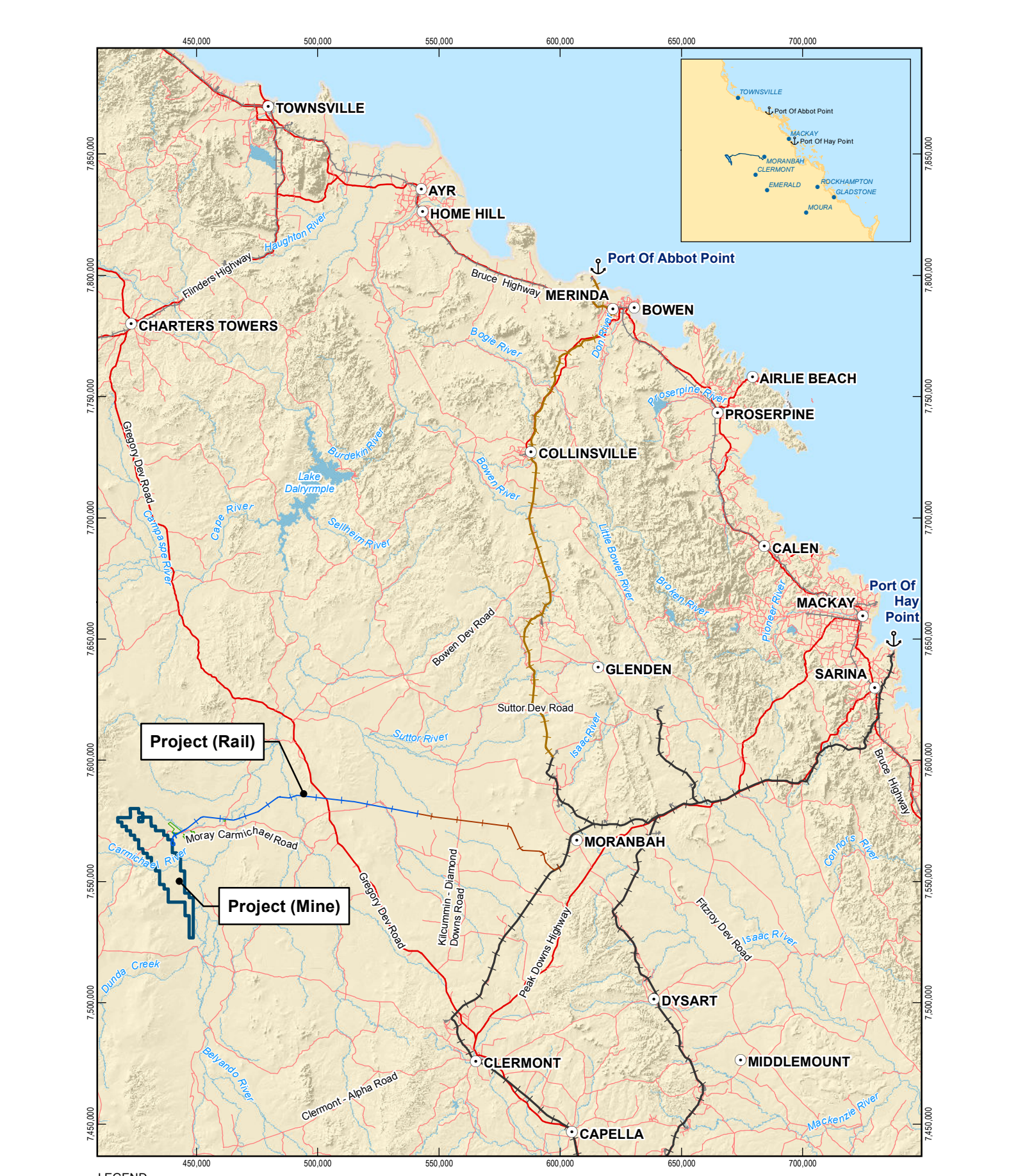
1.3 Report purpose

This report provides an update of the economic assessment of the Project, based on a revised mine plan. The principal differences influencing the revised economic assessment are the change in overall mining duration from 90 to 60 years and construction and operation capital investment. The updated report also responds to submissions received on the EIS.

1.4 Report scope

The economic assessment covers the Project (Mine) and Project (Rail). This report:

- Provides a snapshot of the demographic characteristics of the region
- Identifies trends in economic indicators, such a gross regional product, industry structure and sector drivers such as construction, mining and tourism
- Outlines other economic indicators such as building approvals and wages
- Outlines employment and unemployment trends in the region
- Outlines estimates of the scale of the Project's economic impact on the Queensland economy



LEGEND

- Major Port
- Other Rail Network
- Goonyella System
- Newlands System
- Local Road
- Watercourse
- Project (Rail)
- Rail (West)
- Rail (East)
- Mine (Offsite)
- Project (Mine)

1:2,000,000 (at A4)

0 10 20 30 40 50

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 55

N

Adani Mining Pty Ltd

Carmichael Coal Mine and Rail Project SEIS

Job Number 41-26422
Revision B
Date 14-10-2013

Project Location

Figure 1

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Level 9, 145 Ann St Brisbane QLD 4000 T +61 7 3316 3000 F +61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

Data Source: © Commonwealth of Australia (Geoscience Australia): Town, Railways, Watercourses (2007); DNRM: LGA, (2011), Hillshade (2009); DMR: State Roads (2008); DME: EPC1690 (2010), EPC1080 (2011); Adani: Mine Offsite, Alignment SP1 Opt11 Rev2, SP2 Opt 9 Rev 3 (2013). Created by: MS

1.5 Methodology

1.5.1 Model extent

The economic assessment is largely based on the input-output (I/O) method of impact determination. Table 1 identifies the relevant local government authorities (LGA) and statistical local areas (SLA) utilised for the modelling. Combined these regions make up the MIW region which is the focus for the economic modelling results.

Table 1 Local government areas and statistical local areas

LGA	SLA
Isaac	Isaac – Belyando Isaac – Broadsound Isaac – Nebo
Mackay	Mackay – Mackay – Pt A Mackay – Mackay – Pt B Mackay – Mirani Mackay – Sarina
Whitsunday	Whitsunday – Bowen Whitsunday – Whitsunday

1.5.2 Data sources

Data used for the baseline economic overview has predominantly been gathered from publicly available sources and includes:

- Queensland Government's Office of Economic and Statistical Research (OESR)
- Australian Bureau of Statistics (ABS), 2011 Census of Population and Housing
- Regional Economic Development Corporation (Mackay, Whitsunday and Isaac)
- Australian National Accounts, 2011/12 State Accounts
- Australian National Accounts, Input-Output Tables - Electronic Publication 2008/09
- 2011 Agricultural Census and AgStats data for 2010/11
- 2009/10 Household Expenditure Survey
- Regional Population Growth, Australia.

1.5.3 Input output analysis

The objective of the economic assessment required by the Project ToR is to identify the potential economic impacts of the project, including the direct and indirect impacts. The input-output methodology is one method of estimating such impacts as it focuses on economic activity impacts and enables direct and indirect contributions to output and employment to be estimated from inputs in the form of spending during both the construction and operational periods. This method, therefore, is consistent with the outputs sought from the ToR. The ToR did not stipulate that other types of economic analysis such as a Cost Benefit Analysis be undertaken.

The input output analysis (I/O) analysis is able to provide two types of information:

- A numerical picture of the size and shape of the economy: this describes the important features of the economy, the interrelationships between different sectors within the affected economy and their relative importance.
- An estimation of the relative contribution of a specific sector to the affected economy: this provides the multiplier numeric relative to the scale of the Project, which is utilised to develop the approximation of the potential economic impacts scaled from the initial estimation.

The economic assessment for the development of the Project has a range of economic impacts for both the local (MIW) region and the wider State economy (Queensland). The assessment required the use of data from a number of data sources such as:

- Australian Bureau of Statistics (ABS), 2011 Census of Population and Housing
- 2011 Agricultural Census and AgStats data for 2010/11
- 2009/10 Household Expenditure Survey
- 2011/12 Australian National Accounts, State Accounts
- Regional Population Growth, Australia and New Zealand
- Department of Education, Employment and Workplace Relations
- Australian Taxation Office

The model for this specific economic assessment was then extended beyond the basic I/O model, to a demographic-economic model. This enabled the additional analysis of how local population levels will respond to employment growth or decline. The addition of an unemployment sector allows a preliminary estimate to be generated for the consumption induced impact from the growth or decline in unemployment.

The economic impact assessment estimates the expected impact on the affected economies. The employment numbers provided in Section 1 outline the additional employment within those economies as a result of the Project. These numbers have been determined using an assumption that a certain percent of labour will be sourced from the local or State economy. In addition, as outlined in the report, these impacts will only occur if every effort is made to procure labour from within these economies – which will largely depend on the mitigation strategies, outlined in Section 3.4.3.

This specific model for the Project also provides a profile of sales of goods and services to visitors to the region, i.e. expenditure by tourists. Such data was sourced from Tourism Research Australia (2010) and the ABS. Once amalgamated, the model produced impacts for 66 different sectors within the affected economies. Using such an approach to estimate the expected impacts also requires a number of assumptions such as:

- Price changes between the model construction year and the base year of analysis, i.e. the model base year was 2008/09, due to available data, however the base year for the analysis in this assessment was 2013. Growth rates of one percent per annum were incorporated into the modelling to allow for increases in productivity in all sectors.
- In the creation of new jobs by the Project it is assumed that a certain proportion of jobs, unless otherwise stated, will be filled by individuals from the local or regional areas. This

assessment has used the assumption that 60 percent of employees will be sourced from the local and regional economies and 90 percent will be sourced from the State of Queensland as a whole.

- Industries incorporated into the model have a linear production function, which assumes that industries have fixed input proportions.
- Firms within industry sectors are homogeneous. They produce a fixed set of products that are not produced by any other firms and their input structures are all the same.
- The model does not account for permanent changes that may occur in the management of natural resources for example due to legislative requirements.

Table 2 identifies the household incomes, GRP and employment (full time equivalent - fte) for the MIW region in 2011/12.

Table 2 Household income, employment and GRP, MIW region, 2011/12

Sectors	Household Income		Gross Regional Product		Employment	
	$ million	%	$ million	%	fte	%
Agriculture, Forestry and Fishing	237	3.1	461	2.5	5,054	5.6
Mining	2,308	30.6	8,945	48.9	19,699	21.8
Manufacturing	538	7.1	821	4.5	6,987	7.7
Electricity, gas, water and waste services	75	1.0	199	1.1	975	1.1
Construction	801	10.6	1,183	6.5	9,428	10.4
Wholesale Trade	517	6.9	697	3.8	3,465	3.8
Retail Trade	374	5.0	513	2.8	6,225	6.9
Accommodation and food services	296	3.9	428	2.3	5,921	6.5
Transport, postal and warehousing	445	5.9	825	4.5	5,817	6.4
Information media and Telecommunications	39	0.5	96	0.5	429	0.5
Financial and insurance services	145	1.9	364	2.0	1,084	1.2
Ownership of Dwellings	0	0	854	4.7	0	0
Rental, hiring and real estate services	145	1.9	318	1.7	1,708	1.9
Professional, scientific and technical services	294	3.9	400	2.2	3,529	3.9
Administrative and support services	204	2.7	215	1.2	2,324	2.6
Public Administration and Safety	256	3.4	315	1.7	3,165	3.5
Education and training	280	3.7	318	1.7	4,007	4.4
Health care and social assistance	397	5.3	446	2.4	5,928	6.5
Arts and recreation Services	13	0.2	22	0.1	347	0.4
Other Services	183	2.4	220	1.2	4,425	4.9
Total	**7,544**	**100**	**18,299**	**100**	**48,692**	**100**

Source: GHD analysis

2. Baseline economic overview

2.1 Introduction

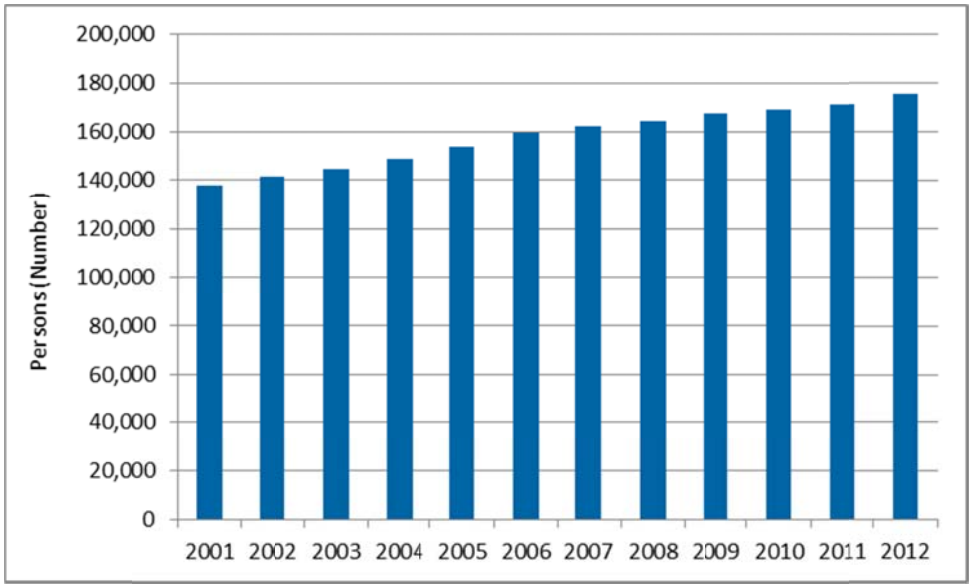
The baseline economic overview provides a description of the affected local and regional economies that will be either positively or negatively impacted by the construction and on-going operation of the Project. The economic overview provides data on the composition, growth and level of the existing economic activity within the region. It aims to provide a baseline against which impacts of the mine and associated infrastructure development is measured.

The Project (Mine) is located predominantly within the Local Government Authority (LGA) of Isaac. A small part of the north-western corner of the Project (Mine) is located in the Charters Towers LGA. Access to the Project is generally not directly available from the Charters Towers LGA, due to the road network configuration. The Project (Rail) is located wholly within the Isaac LGA. The access to and therefore influence of the Project will be to the east; as such, the baseline economic overview considers inputs, outputs and impacts within the MIW region. The MIW region is expected to provide a large proportion of the key project inputs including materials and labour.

2.2 Regional characteristics

The MIW region covers an area of 90,125 square kilometres (km^2), accounting for 5.2 percent of the State of Queensland. The MIW region had an estimated population of 175,702 in 2012, accounting for 4.0 percent of Queensland's total population. The region experienced an average annual population growth rate of 2.25 percent between 2001 and 2012. The population grew annually at a rate of 3.05 percent from 2001 to 2006 and 1.61 percent from 2007 to 2012 as depicted in Figure 2.

Figure 2 MIW region historical population growth 2001 – 2012

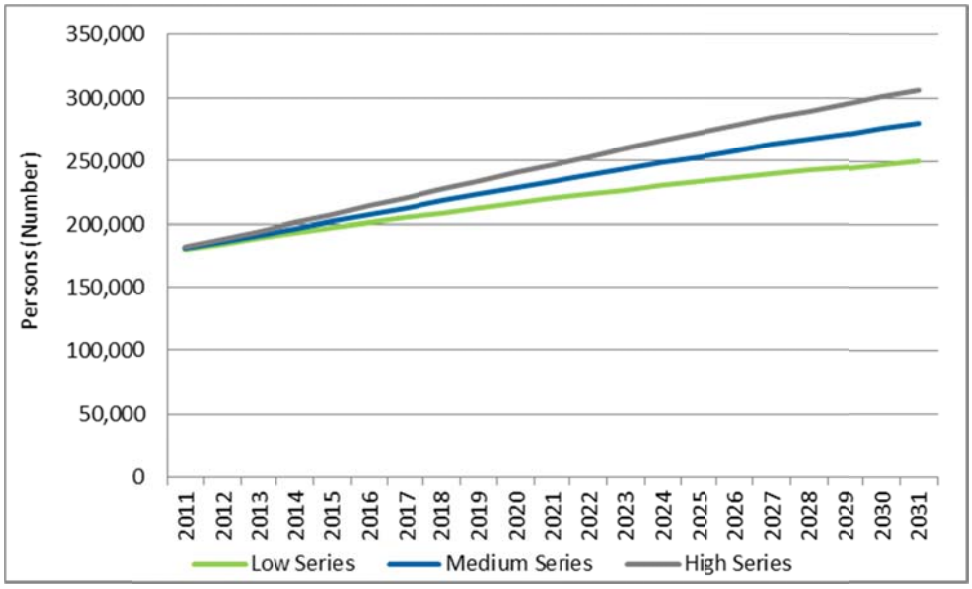


Source: OESR, 2013

The population of the MIW region increased by 4,405 persons (2.57 percent) between 2011 and 2012. This was higher than population growth in Queensland over the same period which increased by 1.92 percent. Population growth within the region is forecast to continue to increase under all (high, medium and low) growth scenarios proposed by the OESR. Average annual population growth between 2011 and 2031 as projected by the OESR is depicted in Figure 3.

- High OESR growth scenario – 2.64 percent per annum
- Medium OESR growth scenario – 2.22 percent per annum
- Low OESR growth scenario – 1.67 percent per annum

Figure 3 MIW region projected population growth



Source: OESR, 2013

2.3 Government policy

2.3.1 Mineral resources rent tax

The minerals resource rent tax (MRRT) commenced on 1 July 2012 and applies to all coal and iron ore projects in Australia. MRRT may be payable on group mining profits of more than $75 million in a year. It is expected that the project will be subject to the MRRT. The MRRT applies at a rate of 30 percent of the value of the extracted resources only and not the value added in the downstream activities such as processing. The base rate is reducible by 25 percent to allow for the cost of extraction, which results in an effective rate of 22.5 percent. The operating and capital expenses incurred to win the resource are deductible as are any pre-mining losses.

2.3.2 Carbon tax

A Carbon Pricing Mechanism under the *Clean Energy Act 2011* (Cth) took effect on 1 July 2012 and established a mechanism to set a price on carbon emissions, which is commonly referred to as the Carbon Tax. The Carbon Tax applies to entities with operational control over facilities that emit in excess of 25,000 tonnes of carbon dioxide equivalent (CO_2-e) per financial year. Liable entities are required to surrender an equivalent number of carbon units as their Scope 1

emissions. This carbon price was initially set at $23 during the 2012 – 13 financial year, is currently $24.15 during for the 2013-14 financial year, and is forecast to be $24.50 during 2014-15. From 1 July 2015 the carbon price will be determined by a market-based emissions trading scheme.

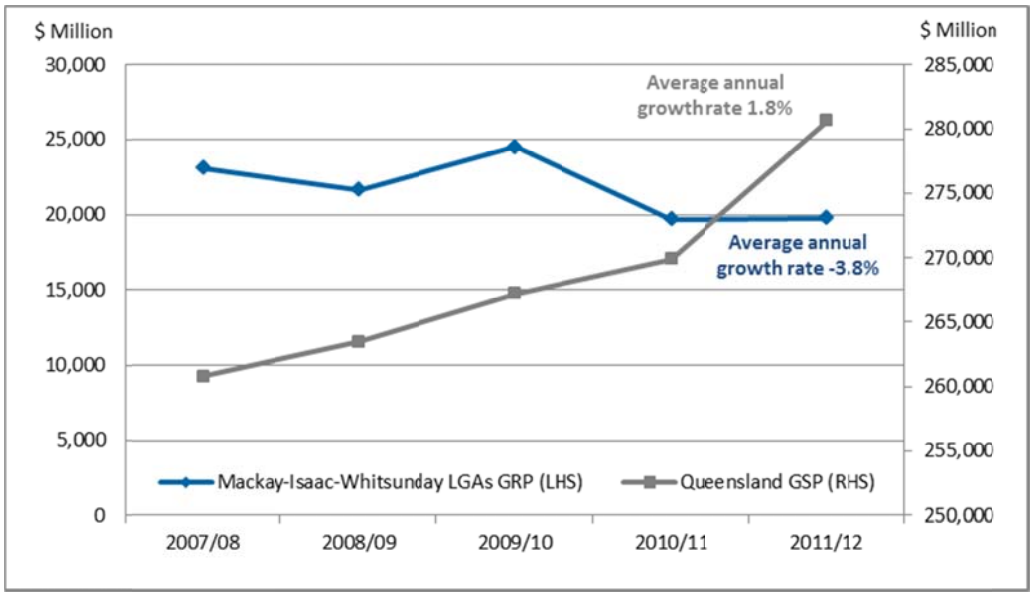
Adani's mine and rail operations are likely to trigger the relevant thresholds required for participating under the *Clean Energy Act 2011* (Cth).

2.4 Economic activity

2.4.1 Gross Regional Product

Gross Regional Product (GRP) is a key measure of regional economic performance. It is an established indicator that can provide insight into the health and size of the region's economic activity. GRP for the MIW region in 2011-12 was estimated at $20.6 billion, 7.1 percent of Queensland Gross State Product (GSP). GRP in the MIW region declined by 14.3 percent in real terms between 2007/08 and 2011/12 (Figure 4). This represents a decline of approximately 3.8 percent per annum since 2007/08 despite an 18.8 percent increase in the number of people employed in the region during this time. The decline in GRP growth seen in both 2008/09 and 2010/11 illustrate the effects of severe weather events hindering agricultural and mining production during these periods. Declining coal prices have also affected the contribution of the mining sector to the MIW region's GRP.

Figure 4 MIW Region GRP trend vs. Queensland GSP trend 2007/08 – 2011/12*



Note: * Chain volume measures[1] , denominated in 30 June 2011 dollars

Source: REDC correspondence

[1] Chain volume measures are used to estimate the value of economic growth over time by keeping the prices of goods produced and consumed constant—thereby removing the effect of inflation.

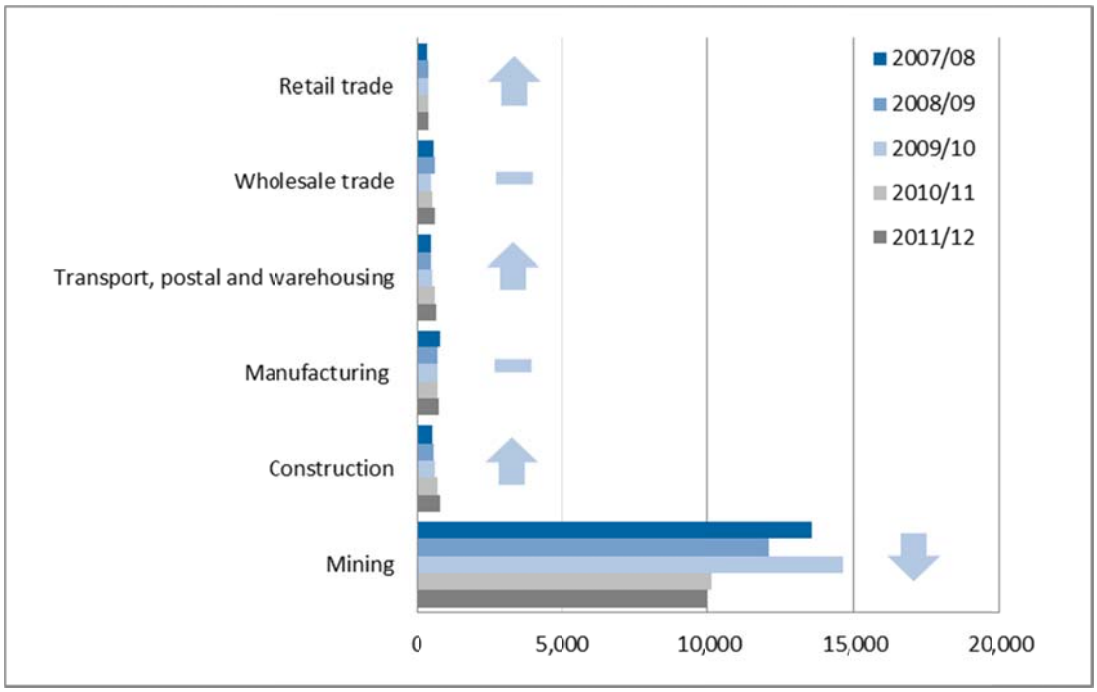
In contrast, over the same period, Queensland GSP grew at an average of 1.8 percent per annum, highlighting the extent of the downturn in the MIW regional economy during this period.

2.4.2 Key industry profile

Figure 5 indicates the six largest GRP contributors in the three LGAs in recent years. As identified, the mining sector is the most significant contributor to GRP in the MIW region, especially in the Whitsunday LGA.

In 2011/12, the mining sector accounted for 50.3 percent of the region's GRP. Construction (4.4 percent), manufacturing (4.1 percent), transport, postal and warehousing (3.6 percent), wholesale trade (3.4 percent) and retail trade (2.4 percent) are the other key contributing sectors to GRP (Figure 5).

Figure 5 Industry contribution to GRP in MIW region, 2007/08 – 2011/12*

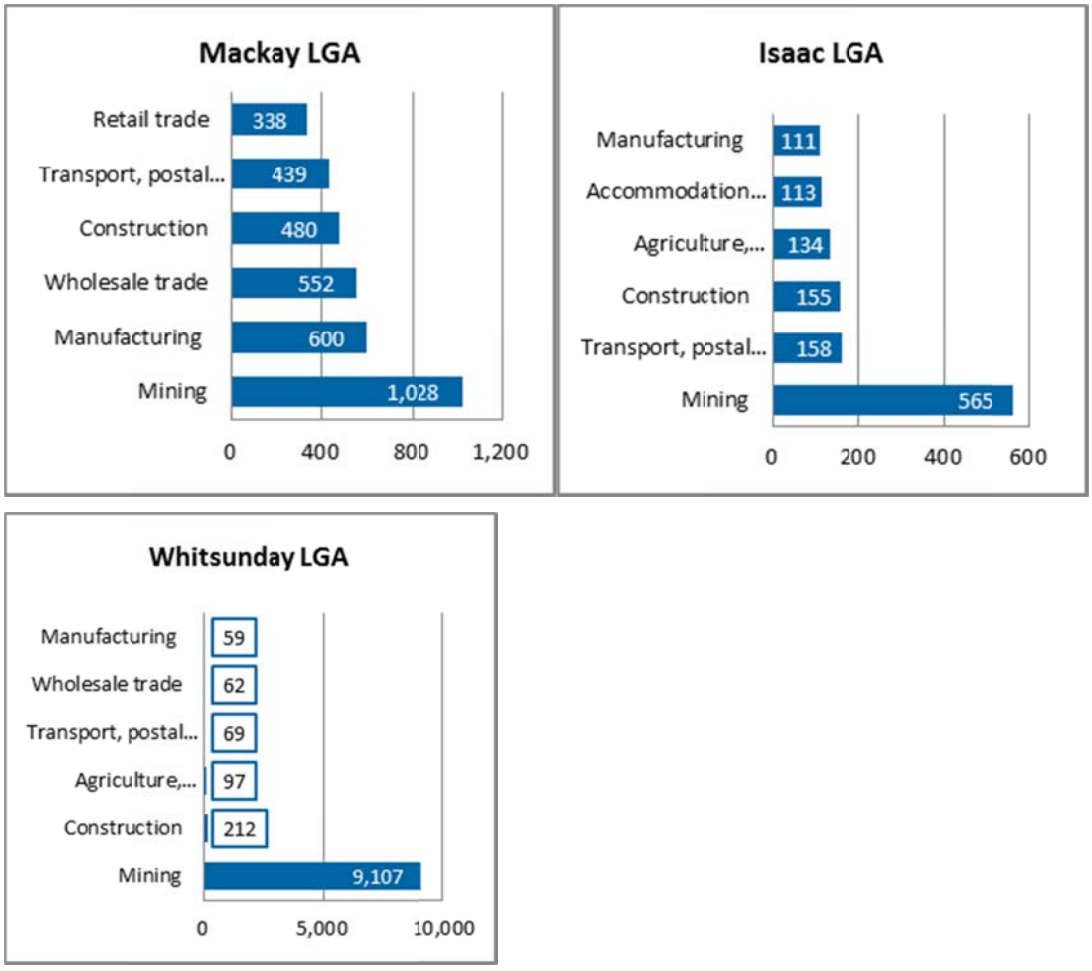


Note: * Chain volume measures, denominated in 30 June 2011 dollars
Source: MIWREDC correspondence

At the LGA level, agriculture is an important industry within the Isaac and Whitsunday LGAs as is accommodation and food services. With Mackay city being the region's main urban centre, retail trade is an important contributor to GRP in the Mackay LGA (see Figure 6).

The following section looks at these key industries that drive (in dollar output) GRP within the MIW region and provide the most employment opportunities.

Figure 6 Largest six GRP contributors, MIW region, 2011/12*



Note: * Current prices, denominated in 30 June 2012 dollars
Source: REDC (2012) Regional Report Card 2006-2011

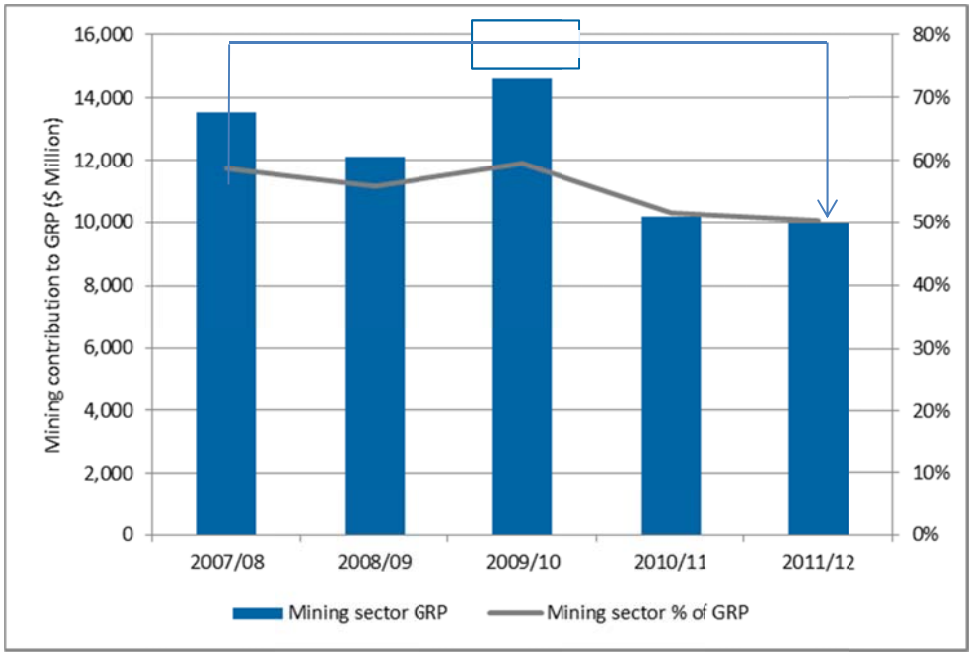
Mining

The mining sector is the main economic driver in the MIW region, with high quality coking and thermal coal production being the main mining output. Approximately half of Queensland's total coal production originates from this region and represents three quarters of its total value (Isaac Regional Council, 2013). Other mining operations in the region include coal seam gas operations in Moranbah (Isaac LGA), gold and silver mining operations north of Collinsville (Whitsunday LGA) and hard-rock quarries in Mackay (Mackay LGA) (MIWREDC, 2012)

Over the past five years between 2007/08 and 2011/12, the mining industry has accounted for between 50 to 60 percent of the region's GRP (Figure 7). The mining sector typically has a high exposure to global market fluctuations in commodity demand and prices and exchange rates.

The contraction in real terms in the mining sector in the region since 2007/08 coincides with macroeconomic factors such as declining coal prices and a relatively high Australian dollar.

Figure 7 Mining sector contribution to GRP in the MIW region*

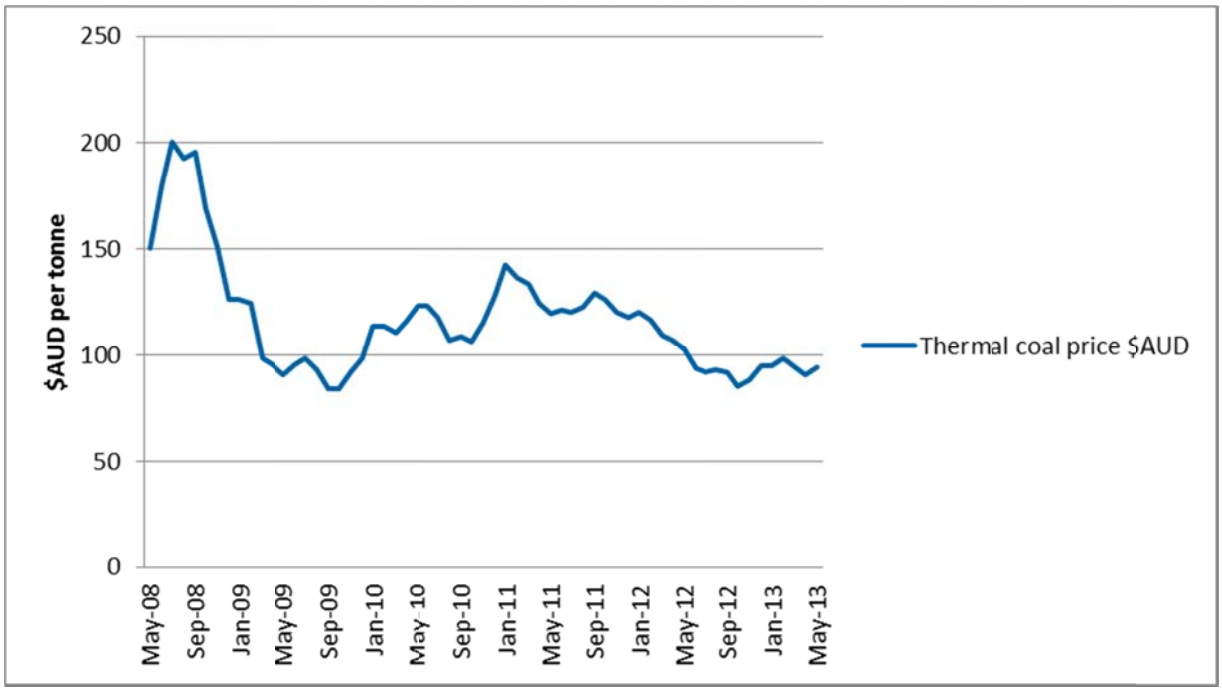


Note: * Chain volume measures, denominated in 30 June 2011 dollars
Source: MIWREDC correspondence

The decrease in the contribution of the mining sector to GRP in 2010/11 and 2011/12 is likely due to the combined effects of bad weather and declining coal prices. Figure 8 shows the decline in thermal coal prices between 2008 and 2013.

Low coal prices are beginning to impact on employment in coal mines located in the MIW region. For example, on 24 June 2013, Aquila Resources, who owns 50 percent of the Eagle Downs coking coal project which is currently under construction, announced that the current commodity price environment has led to a re-prioritisation of scheduled works and a reduction in the workforce "for the time being" (Aquila resources, 2013).

Figure 8 Thermal coal price - $AUD May 2008 – May 2013



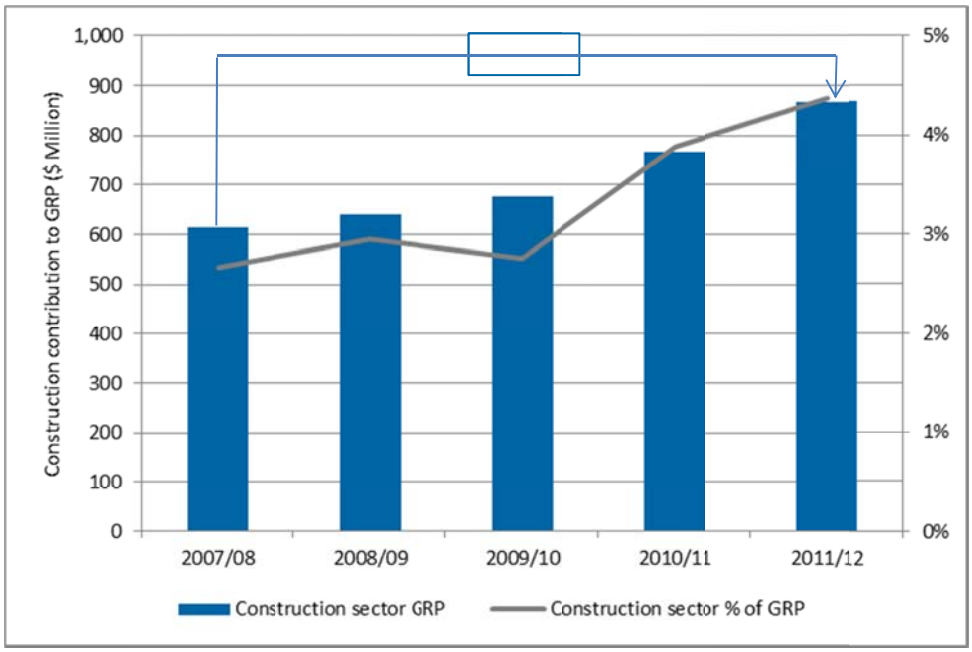
* Prices are Free On Board out of Newcastle/Port Kembla
Source: Indexmundi, 2013

Construction

Over the past five years, between 2007/08 and 2011/12, the contribution of the construction sector to GRP grew from 2.7 percent to 4.4 percent—an increase of 41 percent. Output from the construction sector was valued at $867 million in 2011/12 (see Figure 9).

Strong population growth in the region combined with growth in the mining sector has underpinned demand for residential and non-residential construction. Infrastructure investment at Dalrymple Bay, Abbot Point and Hay Point coal terminals has also supported growth in the construction sector (MIWREDC, 2012).

Figure 9 Construction sector contribution to GRP in the MIW region*

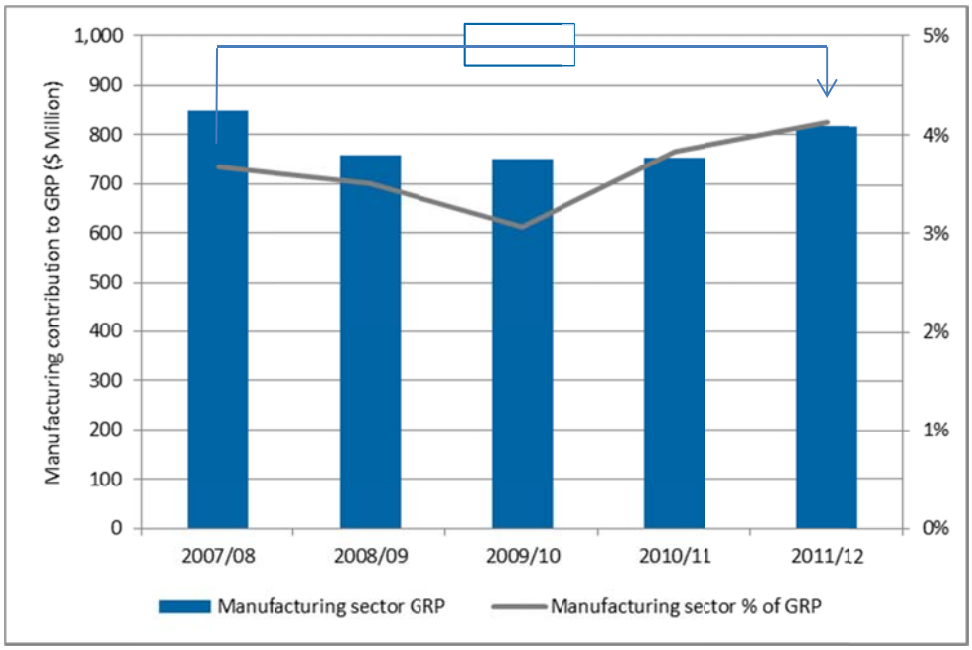


Note: * Chain volume measures, denominated in 30 June 2011 dollars
Source: MIWREDC correspondence

Manufacturing

The manufacturing sector in the MIW region experienced a slowdown during the five year period, with a 10 percent contraction between 2007/08 and 2008/09 before rebounding in 2010/11. Between 2007/08 and 2011/12, the contribution of the manufacturing sector to GRP in dollar terms fell by 4 percent to $817 million in 2011/12 (Figure 10). However, despite this fall, the proportion of the contribution of the manufacturing sector to GRP grew from 3.7 percent to 4.1 percent. This indicates that the manufacturing sector has become slightly more important to the economy of the region. Since 2009/10, the sector has been showing some signs of growth.

Figure 10 Manufacturing sector contribution to the MIW region*



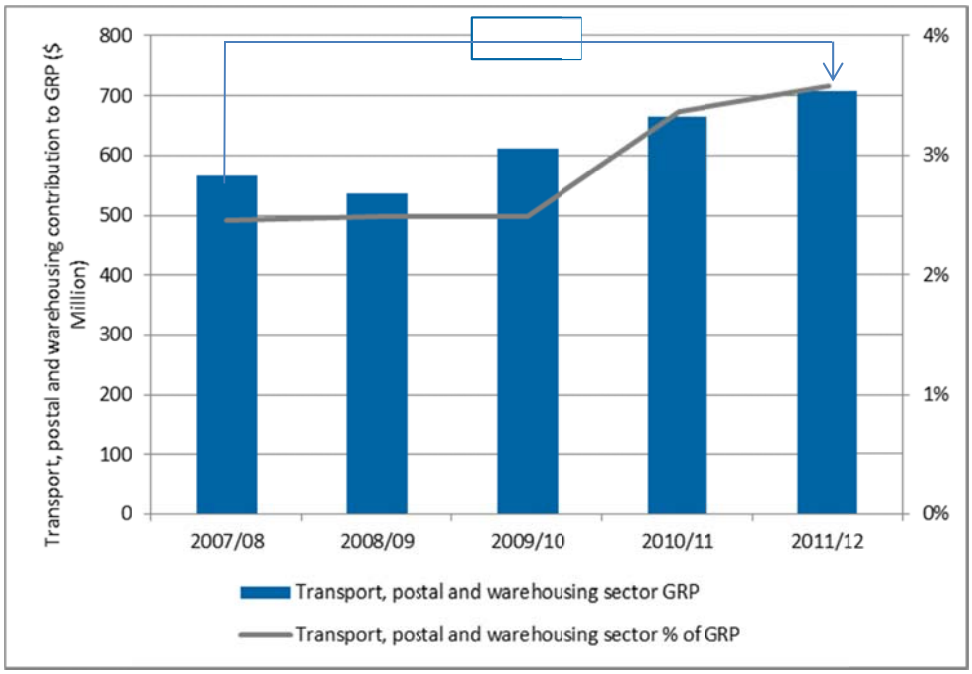
Note: * Chain volume measures, denominated in 30 June 2011 dollars
Source: MIWREDC correspondence

Transport, postal and warehousing

The transport, postal and warehousing industry grew considerably by 25 percent to reach a $709 million contribution to GRP in 2011/12 (Figure 11). The share of transport, postal and warehousing industry to GRP also grew significantly from 2.5 percent to 3.6 percent of the region's GRP, which is a 46 percent increase between 2007/08 and 2011/12.

Growth in the transport, postal and warehousing sector is supported by the mining industry. Road, rail and port operators who facilitate the transport of commodities to export markets benefit from mining activity in the region.

Figure 11 Transport, postal and warehousing sector contribution to GRP in the MIW region*



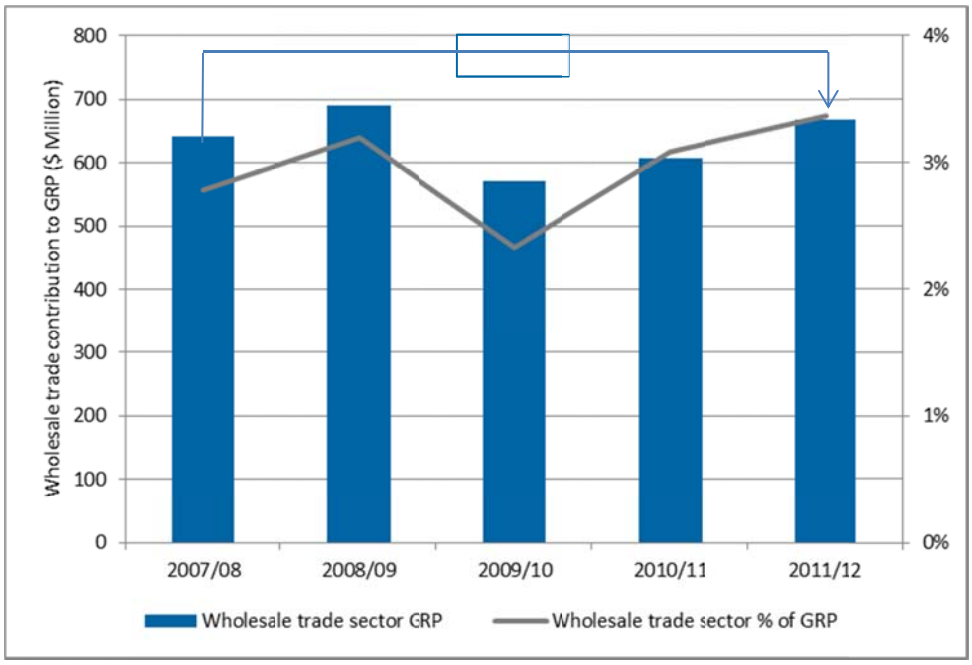
Note: * Chain volume measures, denominated in 30 June 2011 dollars

Source: MWREDC correspondence

Wholesale trade

Between 2007/08 and 2011/12, the contribution of the wholesale trade industry to GRP grew from $643 million to reach $667 million. This represents a 4 percent increase (Figure 12). The proportion of the contribution of the wholesale trade industry to total GRP increased from 2.7 percent in 2007/08 to 3.4 percent in 2011/12. Mackay currently relies heavily on local and regional business for consumption of its output. It has been identified that in order to grow the wholesale trade sector and increase its sustainability, new markets will need to be developed (MIWREDC, 2012).

Figure 12 Wholesale trade sector contribution to GRP in the MIW region

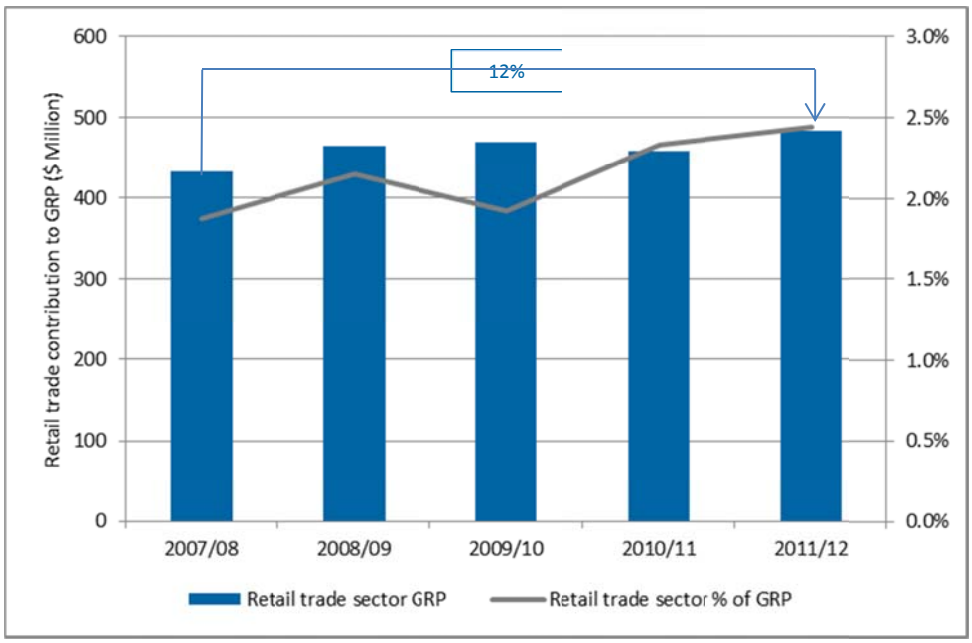


Note: * Chain volume measures, denominated in 30 June 2011 dollars
Source: MIWREDC correspondence

Retail trade

The retail trade industry experienced growth of 12 percent between 2007/08 and 2011/12 (Figure 13). The contribution of retail trade to GRP grew from 1.9 percent in 2007/08 to 2.4 percent by 2011/12. In 2011/12, the contribution of retail to GRP was valued at $485 million.

Figure 13 Retail trade sector contribution to GRP in the MIW region



Note: * Chain volume measures, denominated in 30 June 2011 dollars
Source: MIWREDC correspondence

2.4.3 Number of businesses

Table 3 provides business counts for the MIW region for 2011. Of the key industries, the data indicates the agriculture/forestry/fishing and mining sectors had the highest and lowest number of businesses, respectively. At the same time, the mining sector accounts for nearly 50 percent of total employment in the region. Taken together, these data suggests mining companies each employ considerably more employees than their counterparts in other sectors. This, in turn, implies the size and scale of mining companies is substantially greater than companies in other industry sectors. Therefore, mining is a considerable driver of total employment within the LGA.

Table 3 Number of businesses and employment by industry sector 2011

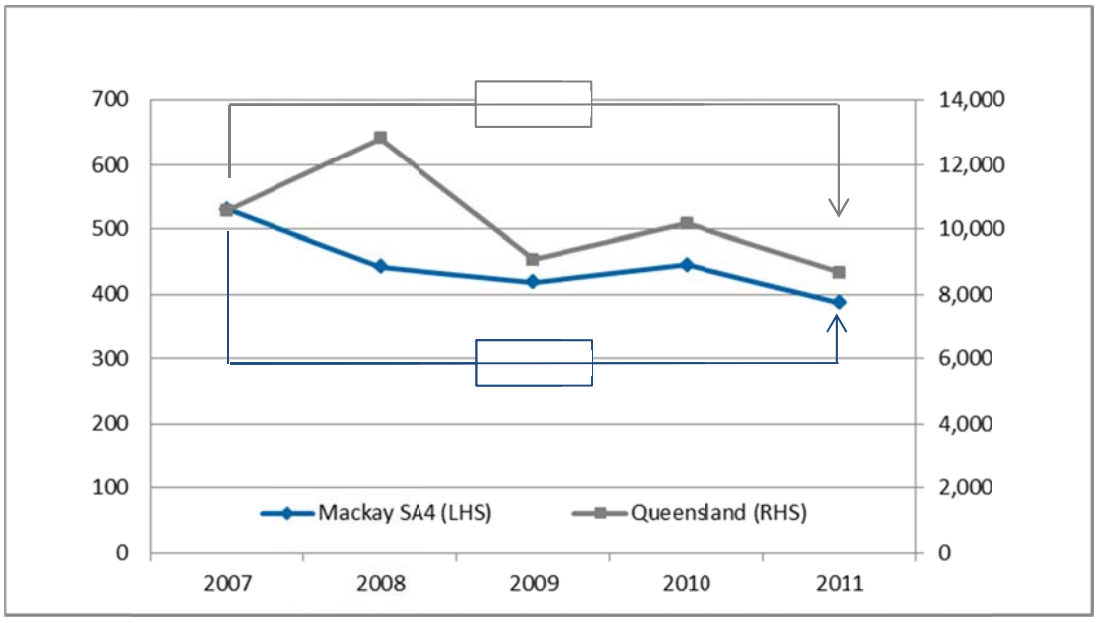
Industry Sector	Number of Businesses	Percentage of Employment
Mining	205	14.9
Manufacturing	512	7.7
Construction	2,854	10.7
Transport, Postal and Warehousing	1,007	6.5
Agriculture, forestry and fishing	3,232	4.8
Retail trade	860	9.1
Wholesale trade	282	3.6

Source: OESR (2013)

2.4.4 Residential property

The value of residential building approvals in the MIW region declined between 2006/07 and 2010/11. In total, the total value of residential building approvals declined by 27 percent in the MIW region compared to an overall decline of 18 percent across Queensland (see Figure 14).

Figure 14 Value of total residential building approvals – MIW region and Queensland – 2007 - 2011

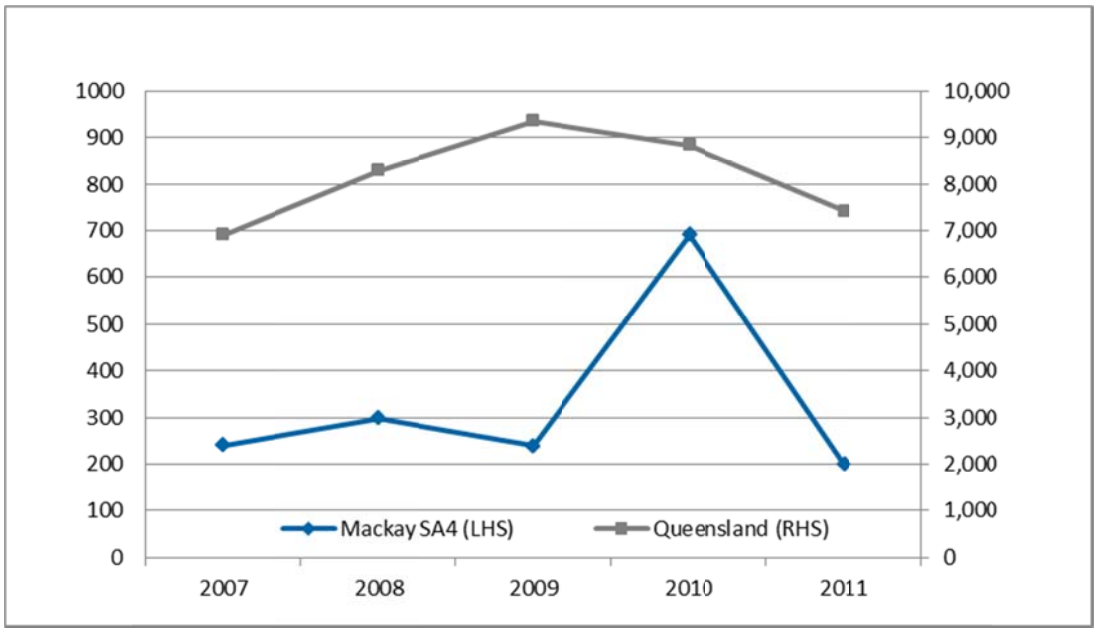


Source: ABS, 2013

2.4.5 Non-residential property

The value of non-residential building approvals in the MIW region declined by $40.9 million or 17 percent between 2007 and 2011 (ABS, 2013). Much of this weakness is due to a significant decline in non-residential building approvals in the coastal Whitsunday region (Proserpine, Cape Conway and Airlie - Whitsundays) since 2006/07. In the rest of the MIW region, growth in the value of total non-residential building approvals has been quite steady with the exception of the huge spike in 2009/10 as shown in Figure 15.

Figure 15 Value of total non-residential building approvals – MIW region – 2007 - 2011



Source: ABS, 2013

2.4.6 Land value

Under the *Land Valuation Act 2010*, the Queensland Valuer-General has a general duty to make an annual valuation of all land in a LGA. The Queensland Valuer-General's annual land valuation findings for the MIW region were released in March 2013. The report found that the property market in Central Queensland is stable with values showing only minor changes or remaining static. The resources sector continues to have a major influence on property values in the region. However, recent declines in thermal coal prices have resulted in weaker mining activity with some mine closures, industry rationalisation and reduced expansion. While there has not yet been evidence of sales softening in the vacant residential land market, major softening in the residential rental market has already occurred (Queensland Department of Natural Resources and Mines, 2013).

2.4.7 Employment profile

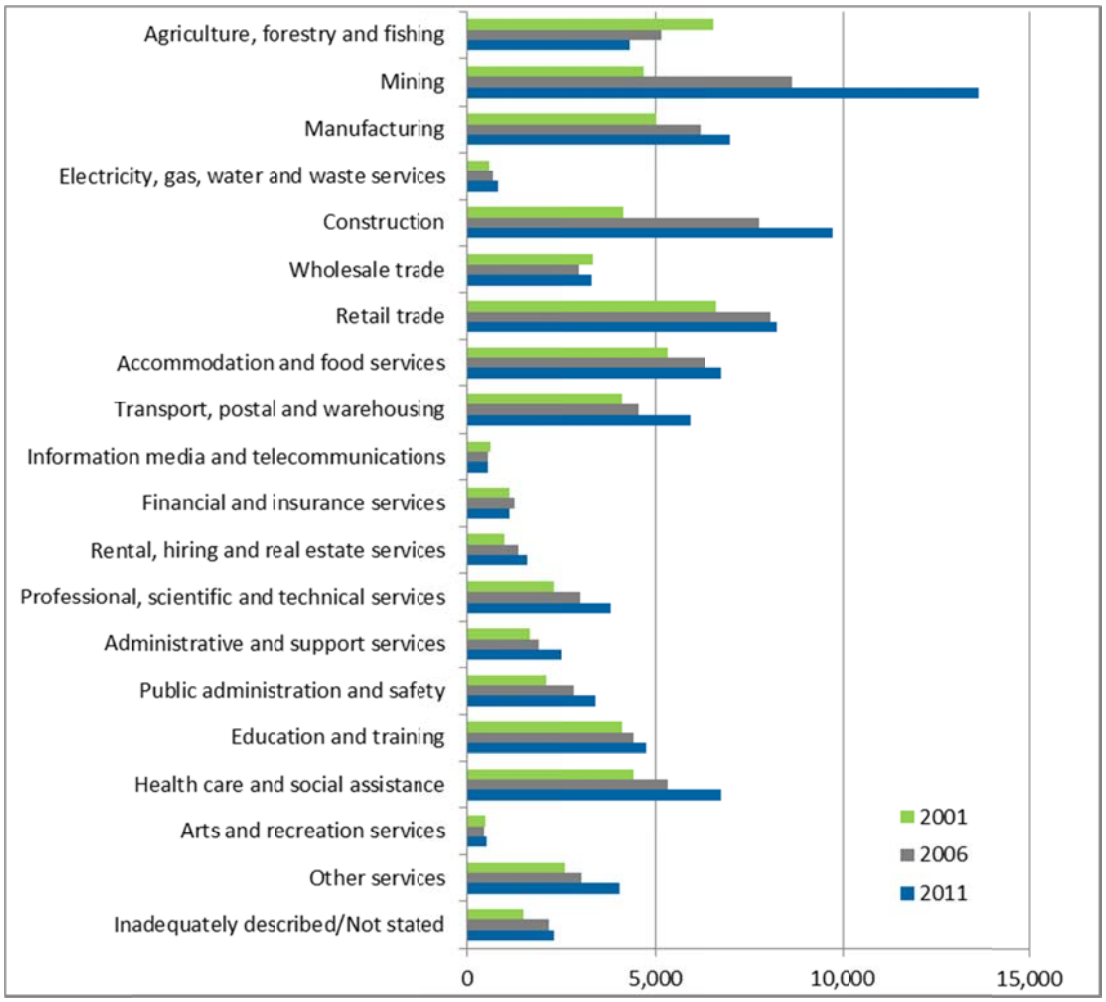
In 2011, there was an estimated 91,153 persons working in the MIW region. This is up from 76,758 in 2006. Between 2006 and 2011, employment within the region grew by 14,401 workers (ABS, 2012). These figures include workers who travel into the region for work.

The major employing industries in the MIW region in 2011 were mining (14.94 percent), construction (10.67 percent), retail trade (9.06 percent), manufacturing (7.69 percent), accommodation and food services (7.46 percent) and health care and social assistance (7.46 percent) (see Figure 16).

Employment has increased in most industries in the MIW region between 2006 and 2011. Only the agriculture, forestry and fishing and the financial and insurance services sectors have experienced a decline in the number of people employed in the MIW region (see Figure 16).

The proportion of the workforce employed in the mining sector increased by 57 percent in the period between 2006 and 2011 and increased by 190 percent during the ten years between 2001 and 2011. The proportion of the workforce employed in the agriculture, forestry and fishing industry decreased by 16 percent during this time (OESR, various years).

Figure 16 Employment by industry - MIW region – 2001, 2006 and 2011

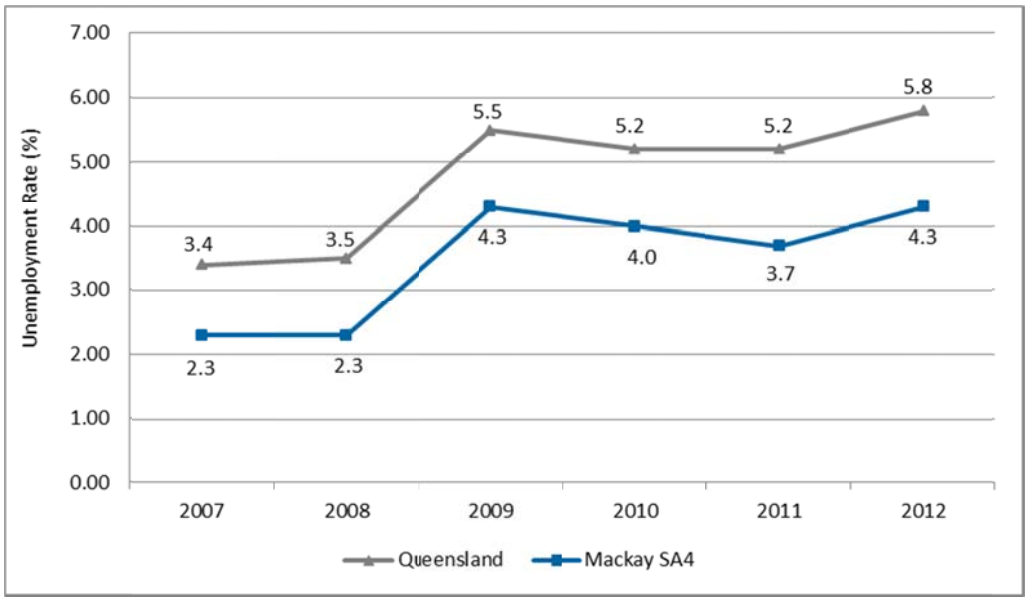


Source: OESR, 2013

2.4.8 Unemployment

The unemployment rate in the MIW region has historically followed the same trend as the overall Queensland unemployment rate. Figure 17 shows the unemployment rate in the MIW region is around 1.1 – 1.5 percent lower than unemployment rate in Queensland.

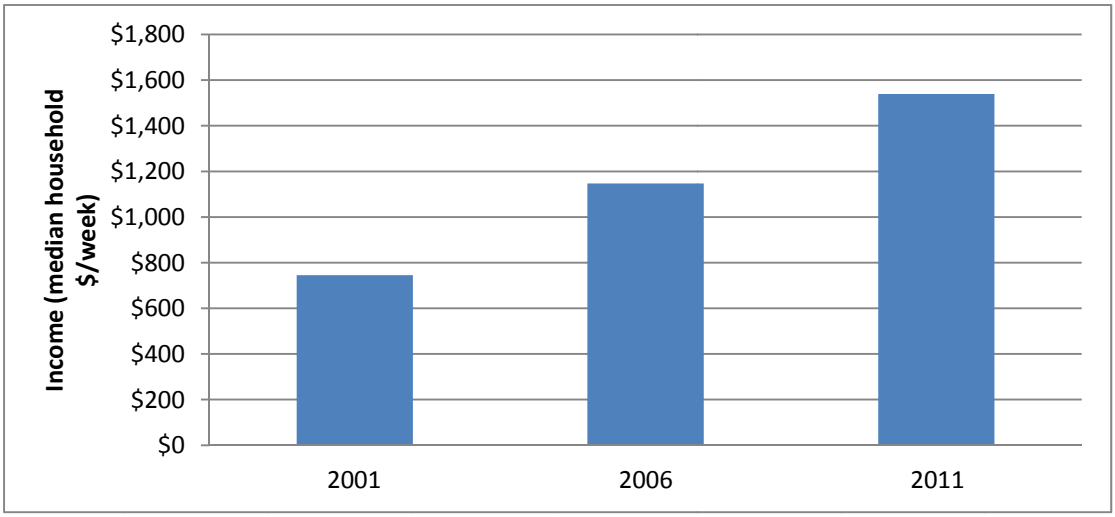
Figure 17 Unemployment rate MIW region and Queensland 2007 – 2012



2.4.9 Wages

Median weekly household income in the MIW region increased between 2001 and 2006 and again between 2006 and 2011 (see Figure 18). Overall, median household income in the MIW region has increased by 107 percent over this period. Wage increases of this magnitude are broadly consistent with a booming or lead sector such as the mining sector.

Figure 18 Median weekly household income 2001 – 2011 – MIW region



Source: ABS, 2013

2.5 Summary

The baseline economic overview provides an indication of the current economic activities within the MIW region. Data clearly indicates that mining activities already dominate industry within the region, with over 50 percent of the regions GRP generated by mining. Employment within the area is also dominated by the mining industry. The proportion of the workforce employed in the mining sector increased by 57 percent in the period between 2006 and 2011 and increased by

190 percent during the ten years to 2011. The proportion of employees engaged within the mining industry is vastly greater than the average for Queensland as a whole. Industries that provide support services to coal production such as construction and public administration and safety are seeing increases in employment.

Growth in the mining industry is the main contributor to the lower levels of unemployment seen in the region in comparison to the State average and the 107 percent growth in median household weekly income between 2001 and 2011. The region's competitive advantage emerges from the presence of natural resources and capabilities for value-adding to these natural resources. The MIW region has driven specialisation in the mining sector, which is evidenced by the growth in this sector.

The strong growth in employment within the mining sector demonstrates a competitive advantage for the region within the sector. Similarly, the sector represents higher levels of total employment per business than other sectors. The total employment and number of businesses within the mining sector taken together, suggests mining companies each employ considerably more employees than other sectors. This, in turn, implies the size and scale of mining companies is substantially greater than companies in other industry sectors. Therefore, mining is a considerable driver of total employment within the region.

3. Economic impact assessment

3.1 Introduction

The purpose of this stage of the analysis is to estimate the scale of the proposed development's economic impact on the Queensland economy. The assessment aims to estimate the scale of output and employment impacts resulting from the development. Impacts are measured through a range of economic indicators namely: GRP and employment. These indicators provide a strong measure of economic impact:

- GRP measures the value of outputs minus the cost of inputs. It is therefore able to measure the net contribution of the development to the relevant economies.
- Employment identifies the number of fte persons engaged in work within a region. This indicator is measured by place of remuneration rather than place of residence.

Indicators, which provide a picture of economic activity in a region resulting from a specific activity, can be considered in two tranches:

- Direct/initial impacts identify the change in final demand or level of economic activity generated by the development
- Indirect/flow-on impacts are the total of:
  - Production induced impacts: purchasing goods and services from other industries and employment
  - Consumption induced impacts: additional output and employment stemming from the consumption of additional goods and services by households that are the result of increased wages or employment in the development and associated activities.
  - Offset consumption effects: the lost consumption by the local unemployed before they take a new job and the lost consumption of those who have lost a job before they start receiving welfare payments.

Direct and indirect flows into economies likely to be affected by the Project have been combined in order to ascertain the total impact of the Project.

3.2 Project (Mine)

3.2.1 Overview

The Project (Mine) will at full production produce 60 Mtpa (product) and have an operating life of approximately 60 years. The scale of the Project (Mine) and technical aspects i.e. the different methods of mining used on the same site, poses a number of complications due to the uncertain nature of required investments further into the life of the Project (Mine). Therefore, high-level estimates have been generated based on a number of assumptions specific to the modelling technique, outlined in Section 1.1, and to the Project (Mine) itself.

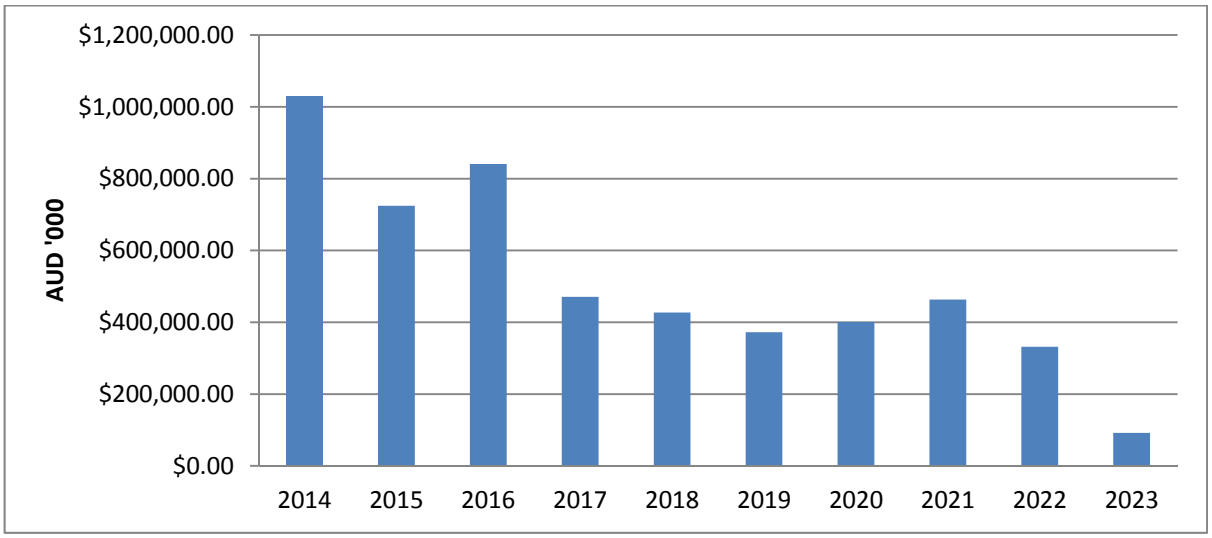
The analysis has been conducted for the two main stages of the mine; construction, the majority of which is expected to occur prior to 2015 and for the first 10 years, and operations post-2015, which takes the mine through ramp up to full production.

3.2.2 Construction

Capital investment

Capital investment for the life of the Project (Mine) is expected to total $16.5 billion. It is estimated that $5.1 billion will be spent in the years preceding 2022, with the remaining $11.4 billion being spent over the remaining years of operation. Figure 19 shows capital investment for the life of the Project (Mine).

Figure 19 High level estimate of capital investment – construction phase to full production of the Project (Mine)



Direct expenditure for the construction phase of the Project (Mine) between years 1 and 3 (nominally 2014 – 2016) and to full production in year 11 (nominally 2024) is estimated from this data. The location in which the expenditure would take place is also estimated. Table 4 outlines the values and expected location of expenditure.

Table 4 Direct expenditure associated with construction of the Project (Mine)

Year	1	2	3	
Fiscal year	2014 ($m)	2015 ($m)	2016 ($m)	Total ($m)
MIW region	89	29	40	158
Queensland	240	296	350	886
Outside Queensland	699	399	451	1,549
Total	**1,028**	**725**	**841**	**2,594**

Gross Regional Product (GRP)

The analysis provides an estimate of the direct and indirect impacts of the development on the affected economies GRP. Table 5 provides a synopsis of the results. The analysis suggests the net contribution of the Project (Mine) to the affected economies is positive. In the first year of construction of the Project (Mine), the region's GRP would be boosted by 0.7 percent - that is, $52 million (based on 2008 -- 09 GRP). This figure would drop to $18 million in 2015 before rising to $24 million in year three of construction.

At the State level Table 5 outlines the Project's contribution to GSP, which is expected to be $258 million in year one and $303 million and $363 million in subsequent years. In the context of the Queensland economy, which had a GSP of $243.9 billion in 2008-09, year three, the peak year of GSP impact, would provide an increase in GSP of 0.15 percent.

Table 5 Direct and indirect impacts on GRP and GSP during construction

Year	1	2	3
Fiscal year	2014 ($m)	2015 ($m)	2016 ($m)
MIW region			
Direct	34	12	15
Indirect	18	6	9
Total	52	18	24
Queensland			
Direct	125	133	160
Indirect	133	170	203
Total	**258**	**303**	**363**

Employment

Employment, which shows the welfare of households within the affected economies, is used to identify potential impacts of the Project (Mine) on the region. An initial workforce of 395 persons is anticipated for the pre-construction phase. Figure 20 shows the workforce numbers for the construction period with details of the number of personnel required for each different component of construction (onsite and offsite infrastructure).

Figure 20 Mine construction workforce by year

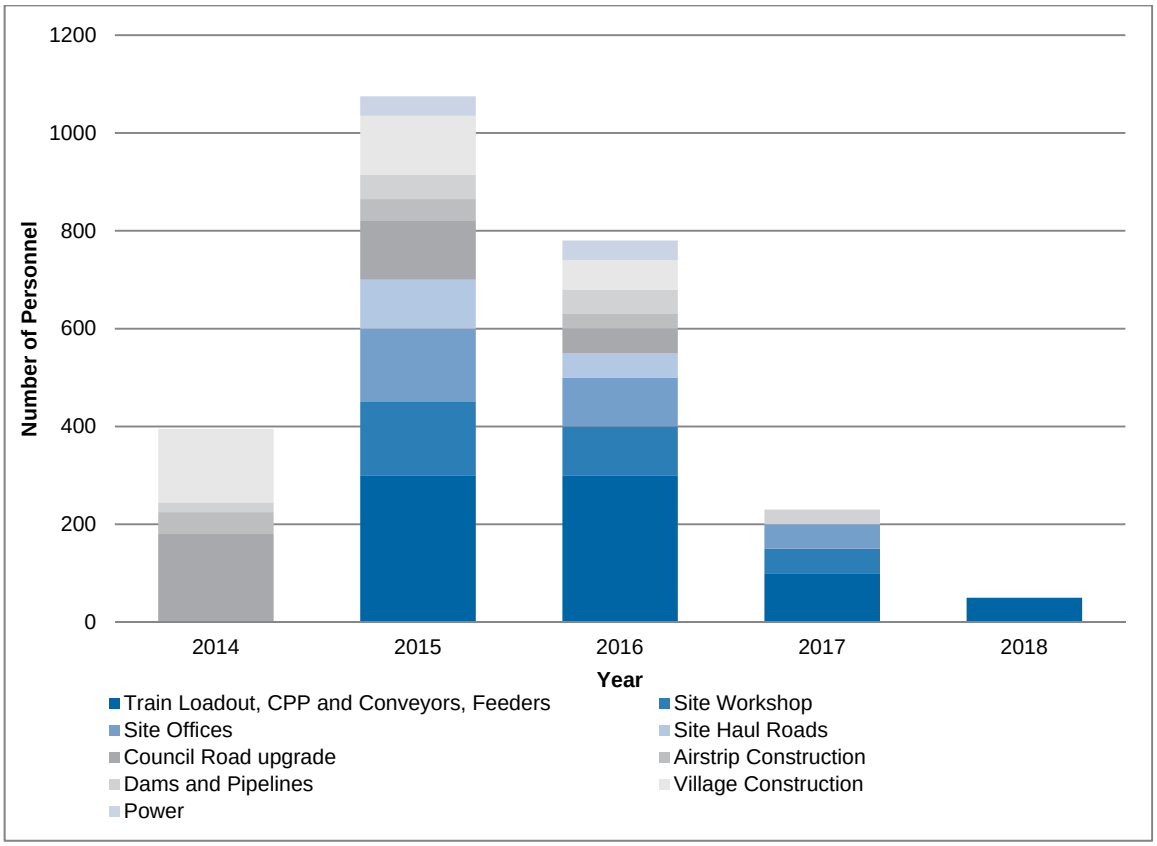


Table 6 identifies the estimates the impact that the Project (Mine) will have on employment within the region and within the State. Year one sees the greatest benefits both in the MIW region and for the State as a whole. In 2008 - 09 total employment within the MIW region was 52,322. Using these figures, the Project (Mine) will boost local employment by 1.1 percent and State employment by 0.1 percent.

Table 6 Direct and indirect impacts on employment during the construction phase

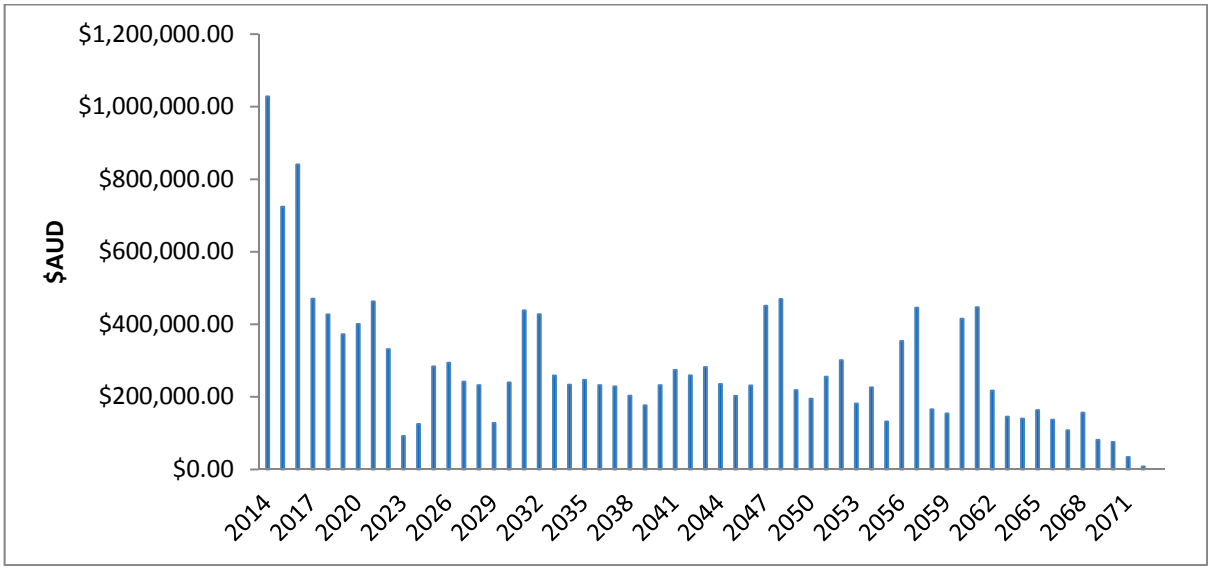
Year	1	2	3
Fiscal year	2014 (fte)	2015 (fte)	2016 (fte)
MIW region			
Direct	438	124	148
Indirect	127	45	58
Total	565	169	206
Queensland			
Direct	1,654	1,310	1,479
Indirect	1,158	1,452	1,692
Total	**2,813**	**2,761**	**3,171**

3.2.3 Operation

Operational cost

The operation of the Mine is expected to commence with an initial output of 4 Mtpa in 2016. Over subsequent years, output is expected to ramp up to reach a full production target of 60 Mtpa in 2024. The operational scale of the Project (Mine) is significant, with coal extracted via underground and open cut mining techniques. Therefore, the Project (Mine) will continue to see considerable investment in capital, as can be seen in Figure 21, as the Project (Mine) is expanded and as machinery reaches the end of its life and needs to be replaced.

Figure 21 High level estimate of capital investment for the Project (Mine)



The estimated production cost, over the life of the Mine (for the purpose of this assessment) is expected to be around $33 per tonne. Table 7 provides an expected operational expenditure taking into account both the production cost and the on-going capital expenditure. Table 7 was derived from the assumptions that 7 percent of operational expenditures would occur within the MIW region, 63 percent would occur within Queensland and of the rest, 30 percent will occur outside Queensland. Economic impacts, both direct and indirect have been determined until 2025, the first 10 years of the Project (Mine) life. This forecast period has been selected as it has the appropriate level of certainty. It has been assumed that once the Mine has reached full production (60 Mtpa), and stabilised at that output, the impacts would remain the same with perhaps some variation as new deposits are found and pits constructed.

Table 7 Coal production and operational capital expenditure of the Project (Mine)

Year	4	5	6	7	8	9	10	11	12	13
Fiscal year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Production (Mtpa)	4	14	22	43	50	50	50	50	60	60
Opex and Capex ($m)										
MIW region	46	63	83	123	163	170	182	202	217	228
Other Queensland	418	567	743	1,104	1,469	1,530	1,638	1,820	1,950	2,050
Outside Queensland	199	270	354	526	699	728	780	867	929	976
Total	**663**	**900**	**1,180**	**1,753**	**2,331**	**2,428**	**2,600**	**2,889**	**3,096**	**3,254**

Gross Regional Product

Impacts on GRP are expected to continue rising through the operational phase of the Project. Impacts in year four are estimated at $195 million (see Table 8). This is projected to rise to $751 million by 2031, representing 7 percent of GRP.

Table 8 Summary of impacts of the operational phase of the Project (Mine) – MIW region

Year	4	5	6	7	8	9	10…	18	19	20	21
Fiscal year	2016	2017	2018	2019	2020	2021	2022..	2030	2031	2032	2033
GRP ($m)											
Direct	133	166	243	309	355	383	418	450	434	445	437
Indirect	61	87	138	186	228	239	265	312	317	307	301
Total	195	253	381	495	583	622	683	762	751	753	738
Employment (fte)											
Direct	1,482	1,845	2,702	3,430	3,944	4,252	4,644	4,999	4,826	4,948	4,859
Indirect	312	433	652	852	1,017	1,077	1,185	1,279	1,265	1,216	1,171
Total	**1,794**	**2,278**	**3,354**	**4,282**	**4,961**	**5,329**	**5,829**	**6,278**	**6,091**	**6,164**	**6,030**

At the State level, as seen Table 9, impacts are estimated to be $319 million in 2016 and grow to $2,944 million by 2031.

Table 9 Summary of impacts of the operational phase of the Project (Mine) – total Queensland

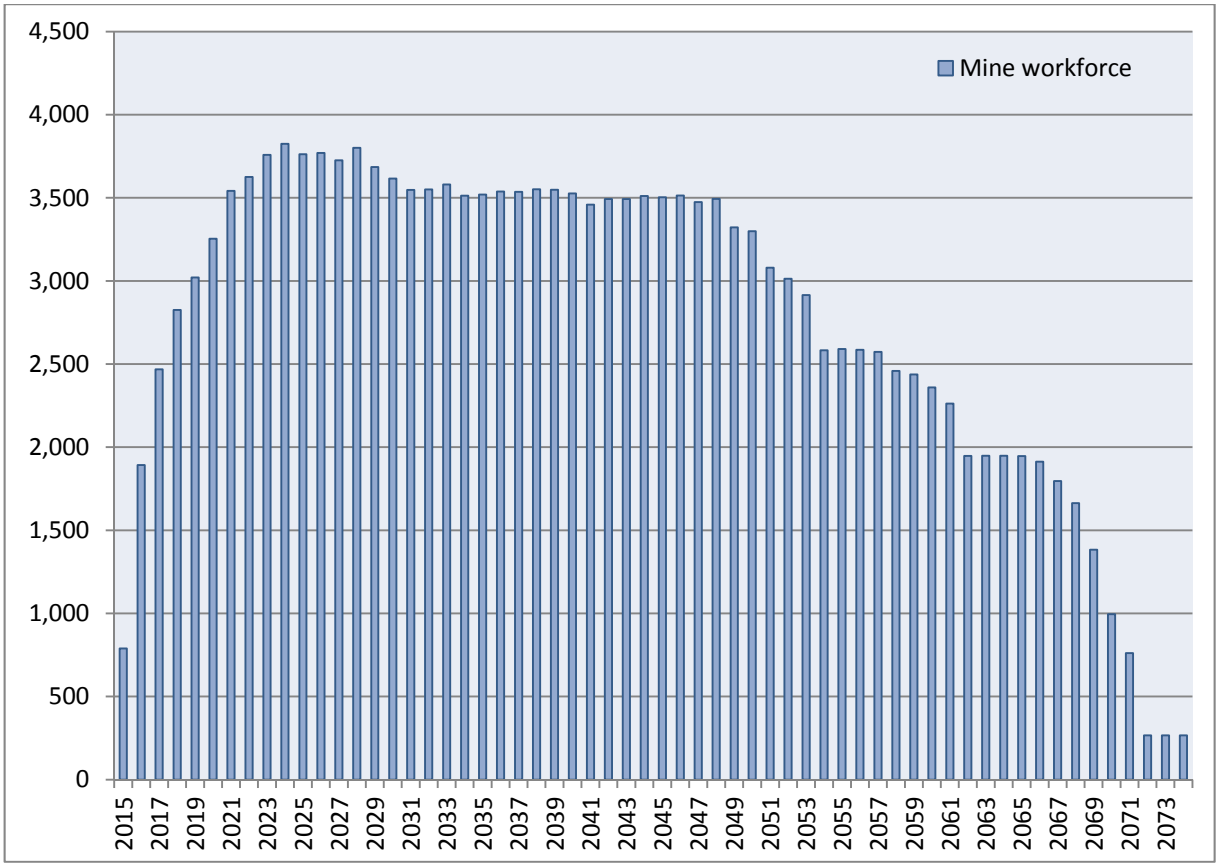
Year	4	5	6	7	8	9	10	18	19	21	22
Fiscal year	2016	2017	2018	2019	2020	2021	2022..	2030	2031	2032	2033
GSP ($ million)											
Direct	219	371	598	922	1,205	1,337	1,565	2,118	2,176	1,964	1,993
Indirect	100	173	289	398	513	532	594	734	768	737	713
Total	319	543	887	1,320	1,718	1,869	2,159	2,852	2,944	2,701	2,707
Employment (fte)											
Direct	1,650	2,220	3,351	4,329	5,141	5,478	6,007	6,602	6,522	6,548	6,355
Indirect	617	1,117	1,831	2,482	3,187	3,305	3,664	4,195	4,349	4,126	3,893
Total	**2,268**	**3,337**	**5,181**	**6,812**	**8,328**	**8,784**	**9,671**	**10,797**	**10,871**	**10,673**	**10,248**

Employment

First coal production from the Project (Mine) is expected in 2016. However, preliminary operational activities will commence in 2015. The operations workforce will ramp up from 789 in 2015 to a peak of approximately 3,800 by 2024. It is expected that the workforce will remain above 3,400 from 2021 til 2048 (see Figure 22).

The workforce will drop to over 2,400 when underground mining ceases production by 2059, and will gradually reduce from year 2062 as the production slows and the Project (Mine) ceases production. The MIW region is expected to see an increase of 11.6 percent, of 2008-09 levels, in employment due to direct and indirect impacts of the Mine development. Similar trends are expected State wide where employment levels will increase from 1,334 direct fte in 2015 to 6,548 direct fte in 2032. Therefore, by 2032, employment levels State wide will have been boosted 0.3 percent by the Project (Mine).

Figure 22 Project (Mine) total operational workforce

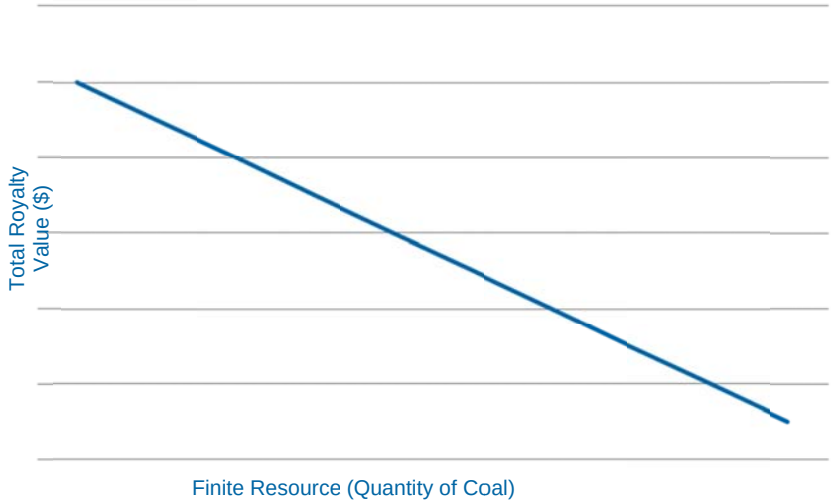


Extractive resource consequences

The estimated resource available to be mined is approximately 4.4 billion tonnes of coal, which underlies almost the total areas of EPC1690. The available resource has been optimised through the inclusion of part of EPC1080 which enables an optimisation of resource extraction through the placement of overburden and mine infrastructure on EPC1080 (east) rather than over EPC1690. It is also indicated that limited resource is located in the area of EPC1080 (east) which would be sterilised.

Economic consequences relevant to the State include royalties earned on mined resources. Coal, being a finite resource will diminish over time. Therefore, it is assumed that royalties earned from finite resources will diminish over time, unless further deposits are found. This is highlighted in Figure 23 where it is shown that over time as the volume of resource is depleted the potential revenue earned through royalties will also decline.

Figure 23 Conceptual diagram of diminishing returns



The Office of State Revenue publishes a summary of royalty rates annually. The current rates for coal sold after 1 October 2012, is that the first $100,000 of profit earned from minerals sold in a year is royalty tax-free. After this the rate stands are as follows, based on average price per tonne for the period:

- Up to and including $100—7%
- Over $100 and up to and including $150
  - First $100—7%
  - Balance—12.5%
- More than $150
  - First $100—7%
  - Next $50—12.5%
  - Balance—15%

Queensland Treasury and Trade currently set mining royalty rates and the methods through which they are derived. These are outlined in detail in Determination of Coal Royalty: Min 140 (2008). It must also be noted that royalty rates vary depending on whether the commodity is sold (or consumed) domestically or internationally.

The Project (Mine) layout has been developed to maximise resource extraction and minimise potential waste. Details regarding resource sterilisation are provided in EIS Volume 4 Appendix M Land Use Report.

Agricultural impacts

The dominant land use in the MIW region is grazing with just over 85 percent of land in the MIW region used for grazing. The region accounts for 8.3 million ha of land of which only 330,868 ha is used for cropping. Cattle production is an important agricultural industry in the MIW region contributing over 37 percent of the total gross value of agricultural production in the region. In 2011, the herd size was estimated at 1,286,772 head. Vegetables and sugarcane are also important agricultural industries although these enterprises are more prevalent closer to the

coast. Cattle grazing is the dominant agricultural enterprise in the area surrounding the mine site and rail corridor.

The Project (Mine) covers an area of approximately 44,730 ha. The mine directly impacts parts of six cattle stations, Moray Downs, Carmichael, Mellaluka, Albinia, Doongmabulla and Lignum. Adani has purchased the leasehold for the Moray Downs property and a package of compensation will be provided for impacts to the Lignum and Mellaluka properties.

There is a wide range in the market value of grazing land in this region which currently sells for between $500 and $2,000 per hectare, depending on quality of the land (e.g. creek flat land versus more rugged and poorer soils land) as well as the level and quality of 'improvements' such as water facilities (dams, bores etc.), accommodation, yards, fencing, existing stock and so forth. Other factors influencing property value will include access to a water licence and terrain.

The area lost to agriculture (grazing) as a result of the Mine assuming the whole site is made unavailable for grazing is approximately 44,730 ha. Assuming an average land value of $600 per ha, this represents a cost of around $27 million, or expressed as an annuity over 10 years at 10 percent, a cost of $4.8 million per year. If land values are reflective of its productive values, then this loss of production is small relative to the regional gross agricultural value of $888 million (2011) (ABS, 2012).

There will be marginal adverse economic impacts such as direct impacts of reduced agricultural production due to the development of the Project (Mine). Construction and operation of the Mine will have a minor impact on the access of stock to grazing land. This impact can be minimised by the project design, which can include rehabilitation of land post-mining activities and implementation of appropriately designed crossing points on the railway for stock and vehicle access.

Other impacts relate to the possible reduced security of stock and ability for stock to escape or damage themselves from interaction with the construction site or activity and the introduction and/or transfer of weeds and disease to regional properties. Mitigation measures are available to minimise the likelihood of this. There is no strategic cropping land within the mine footprint.

Land severance

Physical impacts on the local communities may induce economic impacts. As noted above, the Project (Mine) covers an area of approximately 44,730 ha. The mine will be developed in a staged process. The land identified for the mine is used to graze cattle and also contains a number of access tracks and watering bores. Of the two properties significantly impacted in terms of land area and operations, the following mitigation measures have been implemented.

Adani has purchased in full the leasehold for Moray Downs property. As such, no direct impact associated with severance will be realised. In regard to Lignum and Mellaluka, Adani is negotiating a package of compensatory measures to minimise operational impacts associated with severance of land and infrastructure. In addition, measures implemented during operations such as the Near Neighbour Policy proposed in the Social Impact Management Plan will provide greater certainty in regard to staged development and how these may impact property operations.

3.3 Project (Rail)

3.3.1 Overview

Construction of the Project (Rail) has an expected delivery time of two to three years. Construction is expected to commence in 2014, in line with construction timing for the Project (Mine) and be completed nominally in 2016. Therefore, data has been collected and impacts determined for the three-year period. The following analysis to determine the economic impacts of the Project (Rail) on affected economies has been broken down into two sections: construction and operation.

3.3.2 Construction

Capital investment

The Project (Rail) is expected to require capital expenditure totalling $1.2 billion. Table 10 has been developed from estimates for the distribution of expenditure over the three years and the location in which the expenditure is assumed to take place. As part of the construction of the I/O model it is necessary to have some insight into where materials and labour will be sourced to estimate the impact at varying levels e.g. on the local / regional economy, on other parts of Queensland and on economies outside of Queensland. Table 10 presents the results of these assessment based on previous similar projects and details in construction reports. Table 10 clearly shows that the main economic impact in terms of direct expenditure associated with the Project (Rail) will accrue in the MIW region.

Table 10 Direct expenditure associated with the construction of the Project (Rail)

Year	1	2	3	
Fiscal year	2014 ($)	2015 ($)	2016 ($)	Total ($)
MIW region	246.1	491.9	76.6	814.6
Other Queensland	1.1	35.9	61.1	98.1
Outside Queensland	8.1	101.2	134.3	243.6
Total	**255.3**	**629.0**	**272.0**	**1,156.3**

Gross Regional Product

Direct and indirect impacts of the Project (Rail) are expected to increase in year one and year two of the construction period, recording increases in GRP of $131.5 million and $265.3 million respectively. This represents 0.7 percent and 1.3 percent, respectively, of the MIW region's GRP in 2011-12. Year three sees a smaller, 0.2 percent, impact on GRP which equates to $39.2 million (Table 11).

State wide impacts are also significant. These impacts follow a similar trend to the regional impacts with the peak in impacts, in year two. Impacts jump from $184.5 million in year one, to $402.6 million in year two. This represents a 0.14 percent share of the Queensland Economy total of $280.6 billion in 2011-12 (Table 11).

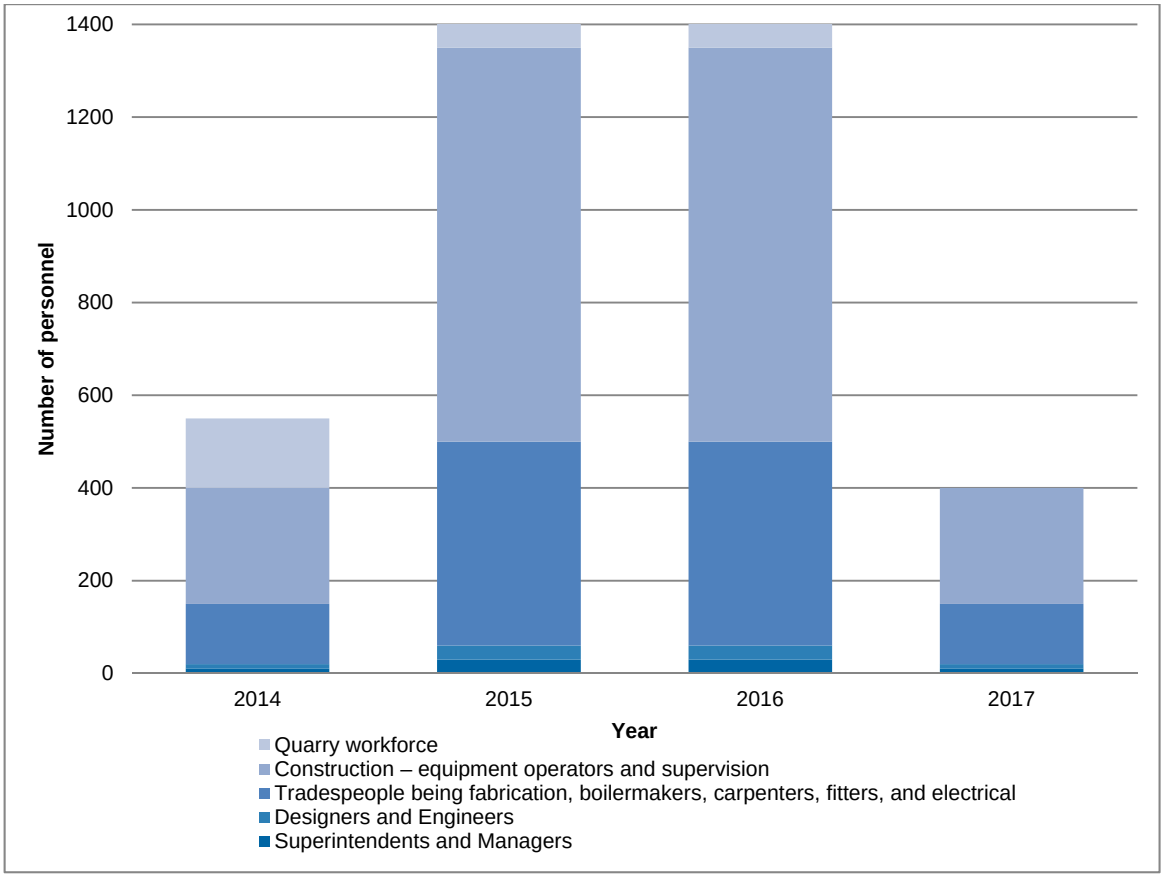
Table 11 Direct and indirect impacts on GRP and GSP during the construction phase of the Project (Rail)

Year	1	2	3
Fiscal year	2014 ($ million)	2015 ($ million)	2016 ($ million)
MIW region			
Direct	79.7	158.9	22.8
Indirect	51.8	106.4	16.4
Total	131.5	265.3	39.2
Queensland			
Direct	80.1	171.4	40.5
Indirect	104.3	231.2	61.1
Total	**184.4**	**402.6**	**101.6**

Employment

During construction a variety of skills will be required to complete the Project. This includes labourers, tradespeople, machinery operators, engineers, surveyors and site supervisors. The overall number of construction workers and range of skills required for the construction of the Project (Rail) are shown in Figure 24.

Figure 24 Project (Rail) construction skill requirements



Employment during the construction phase of the Project (Rail) is expected to see similar trends to those identified in other indicators for the Project (Rail). It sees a peak in impacts in year two with a tailing off in year three. At its peak, the direct and indirect impacts boost employment by 4.9 percent (of 2008 – 09 levels) within the MIW region and 0.19 percent (of 2008-09 levels) throughout the State (see Table 12).

Table 12 Direct and indirect impacts on employment during the construction phase of the Project (Rail)

Year	1	2	3
Fiscal year	2014(fte)	2015 (fte)	2016 (fte)
MIW region			
Direct	958	1,890	261
Indirect	361	759	123
Total	1,319	2,649	384
Queensland			
Direct	1,118	2,383	515
Indirect	896	1,994	537
Total	**2,014**	**4,377**	**1,052**

3.3.3 Operation

Operational cost

The Project (Rail) line is expected to be operational in 2016/2017, in line with the start of coal production at the Mine. It is expected that on average the cost of coal transportation will be $7.70 per tonne. The rail line will have capacity for 100 Mtpa and there may be additional impacts associated with third party use of the additional capacity. However, we are unable to quantify these impacts at this point. Table 13 outlines the anticipated operational expenditure for the different phases of the rail operation.

Using the assumptions outlined in Table 13 impacts across GRP, household income and employment can be derived. Analysis shows that in all cases impacts continue to rise through the first 10 years of operation as mine production grows.

Table 13 Direct operational expenditure associated with the Project (Rail)

Year	3	4	5	6	7	8	9	10	11	12	13
Fiscal year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production (mtpa)	4	14	22	43	50	50	50	50	60	60	60
Rail OPEX per tonne ($)	11.9	7.4	7.4	7.5	7.2	7	7.3	7.2	7.3	7.3	7.0
OPEX ($ million)											
MIW region	17	37	73	127	147	167	220	239	257	257	296
Queensland Elsewhere	2	4	9	15	18	20	26	29	31	31	36
Outside Queensland	5	11	22	38	44	50	66	71	77	77	89
Total ($million)	**24**	**52**	**104**	**181**	**209**	**237**	**312**	**339**	**364**	**364**	**420**

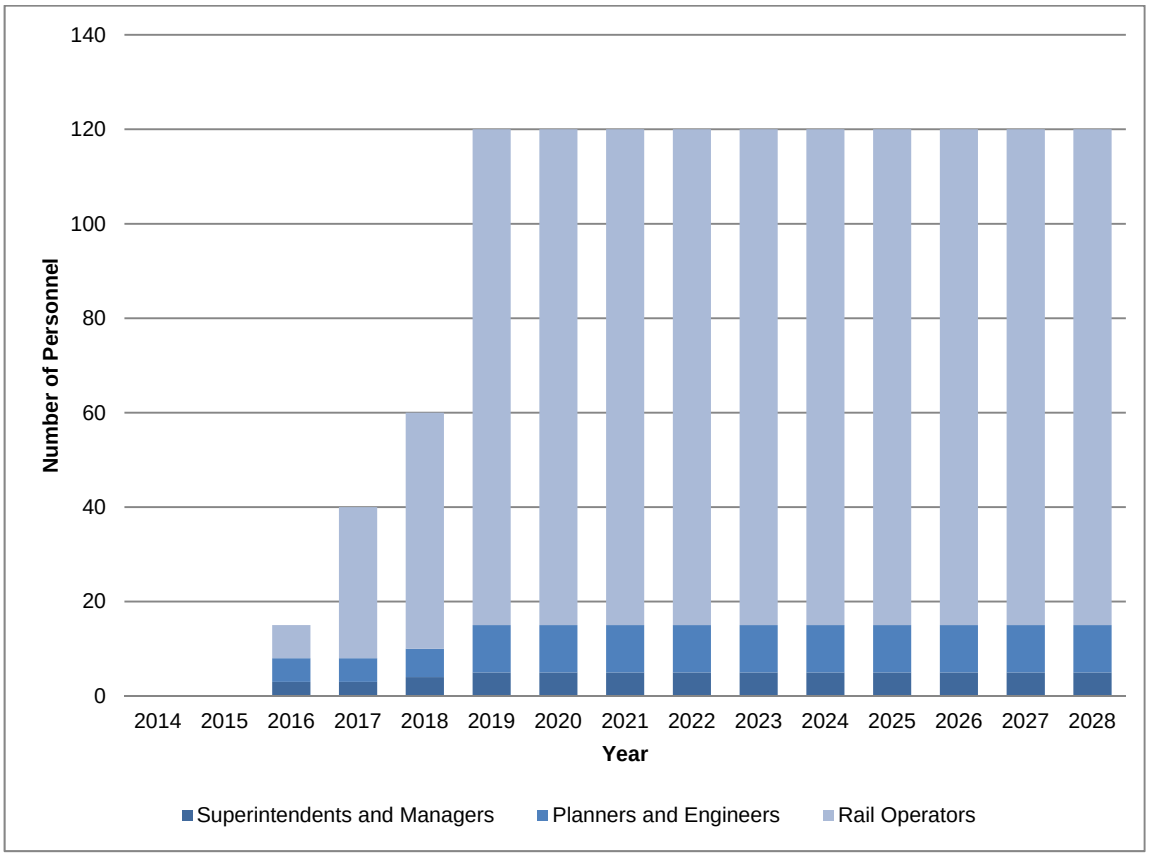
Gross Regional Product

GRP is expected to see significant impacts at both a regional and State level. The MIW region will see an increase in GRP, due to the development of the project of $166 million over the first 10 years of operation. Total economic impacts in 2025 will account for 1.6 percent of the region's GRP as estimated in 2008 - 09. At a State level, it will contribute an additional $258.5 million over the same period. In the peak year, it will contribute 0.11 percent to the State's 2009 - 10 GSP.

Employment

The estimates of the operational workforce and skills for the Project (Rail) are shown in Figure 25. From a full operation the employment will remain unchanged until completion of the Project in 2071.

Figure 25 Project (Rail) Operational Workforce



Total impacts generated by the Project (Rail), that is both direct and indirect, in the MIW region will result in an increase from 76 additional full time equivalent jobs in 2016 to 1,215 additional full time equivalent jobs in 2026 (Table 14). This scale of increase is experienced at the State level as well (Table 15).

Table 14 Summary of operational phase impacts of the Project (Rail) – MIW region

Year	3	4	5	6	7	8	9	10	11	12	13
Fiscal year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
GRP ($ million)											
Direct	7.1	15.3	30.7	53.5	61.8	70	92.4	100.3	107.8	107.8	124.3
Indirect	3	6.5	12.9	22.5	26	29.5	39	42.3	45.4	45.4	52.4
Total	10	21.8	43.6	76	87.8	99.6	131.4	142.6	153.2	153.2	176.6
Household Income ($million)											
Direct	4.8	10.4	20.7	36.2	41.8	47.4	62.5	67.9	72.9	72.9	84.1
Indirect	1.3	2.9	5.7	10	11.5	13	17.2	18.7	20.1	20.1	23.1
Total	6.1	13.2	26.5	46.1	53.3	60.4	79.7	86.5	93	93	107.2
Employment (fte)											
Direct	59	127	252	435	498	559	730	785	835	826	943
Indirect	17	37	73	126	144	161	211	227	241	239	272
Total	**76**	**164**	**325**	**561**	**642**	**720**	**941**	**1,011**	**1,076**	**1,065**	**1,215**

Table 15 Summary of operational phase impacts of the Project (Rail) – total Queensland

Year	3	4	5	6	7	8	9	10	11	12	13
Fiscal year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
GRP ($ million)											
Direct	8	17.4	34.8	60.6	70	79.3	104.7	113.6	122.1	122.1	140.8
Indirect	7.6	16.5	32.9	57.4	66.2	75.1	99.1	107.6	115.6	115.6	133.3
Total	15.6	33.8	67.7	117.9	136.2	154.5	203.9	221.2	237.7	237.7	274.1
Household Income ($million)											
Direct	5.2	11.4	22.7	39.6	45.7	51.9	68.5	74.3	79.8	79.8	92.0
Indirect	3.7	8.1	16.3	28.4	32.8	37.2	49	53.2	57.2	57.2	65.9
Total	9	19.5	39	68	78.5	89	117.5	127.5	137	137	157.9
Employment (fte)											
Direct	73	157	311	536	613	688	899	966	1,028	1,017	1,161
Indirect	54	117	231	399	456	512	669	718	764	756	863
Total	**127**	**274**	**542**	**935**	**1,069**	**1,200**	**1,568**	**1,684**	**1,792**	**1,774**	**2,025**

Extractive resource consequence

The location and extent of mining tenements have been considered when determining the location of the Project (Rail) alignment to reduce the potential of resource sterilisation. A management hierarchy has been implemented to undertake consultation with key tenure holders to gain their feedback on the alignment of the Project (Rail). Where it is not feasible to realign the Project (Rail), negotiations will be undertaken with key tenure holders to reach mutually satisfactory outcomes.

Agricultural impacts

Many of the properties affected by the Project are large landholdings, with the smaller landholdings tending to be within 50 km of Moranbah. The Project (Rail) alignment tends to follow property boundaries wherever possible along these smaller landholdings significantly reducing the potential for adverse impacts, including land fragmentation. Pastoral farming is undertaken across the Local Study Area with small areas of cropping to provide cattle fodder. Many properties comprise a mix of productive grazing land used for 'finishing' cattle prior to market sale, and less productive land used for general grazing. Many of the directly affected properties are vast with cattle grazing spread across expansive areas.

Pastoral farming practices within Australia are generally similar between most areas, however within this area it is important to acknowledge there will be some specific practices which will be impacted and discussed further with each landholder on an individual basis. As negotiations with individual landholders progress, property management practices will be better understood. Most properties are managed as single production units, some as part of a larger property network elsewhere in Queensland. There are however some properties that are managed as a single production unit for efficiency. These are generally contiguous properties owned by members of the same family.

Properties affected by the Project are predominantly classified as rural leasehold land used for the purposes of agricultural, grazing or pastoral activities. Occupied homesteads are present on many of the properties - very few are unoccupied. Those that are unoccupied tend to be the smaller units. In this situation, it is common for a farm manager or landholder to visit the property on a regular basis.

The rail line traverses a length of approximately 189 km within a 95 m wide corridor. The eastern portion of the rail line is within the strategic cropping land management area and flanks large portions of strategic cropping land (management). Areas good quality agricultural land impacted by the corridor are as follows:

- 157.7 ha of Class A
- 454.2 ha of Class B
- 721.7 ha of Class C1

The rail corridor's effect on good quality cropping land is identified in greater detail in the SEIS Volume 4 Appendix T1 Rail Soils Assessment. The line travels through grazing farmland and traverses a number of stock routes, impacts of which will need to mitigated, ensuring stock movement and rotation is still possible via over passes or rail crossings.

There will be marginal adverse economic impacts such as direct impacts of reduced agricultural production due to the development of the rail project. Construction and operation of the railway

will have a minor impact on the access of stock to grazing land and movement of stock within and between properties. This impact has been minimised by the project design, and will be further reduced through implementation of appropriately designed crossing points on the railway for stock and vehicle access. Other impacts relate to the possible reduced security of stock and ability for stock to escape or damage themselves from interaction with the construction site or activity and the introduction and/or transfer of weeds and disease to regional properties.

Land severance

Mitigation measures that could be considered are set out below. To address the uncertainty on land use effects on land values, the voluntary purchase of properties significantly affected could be undertaken. Where there is direct loss of agricultural production, purchasing the property(ies) in part or whole will be considered where impact is likely to be significant. Where potential for reduced access to property arises, Adani will work with landowners to minimise impact including implementing measures such as agreeing the location of easements to reduce impacts e.g. outside property boundaries and/or along fence lines, rather than through middle of property where practicable. The provision of appropriate access and ability to cross easements has been considered and negotiated with individual landholders. Infrastructure and facilities impacts will be avoided as far as possible and, where impacted, replaced on a like for like basis. The crossing of pastoral property and farm access roads will be minimised and alternative access provided during unavoidable construction activities as appropriate.

To mitigate the introduction/transfer of weeds/disease (biosecurity), Adani will develop appropriate biosecurity protocols including, but not limited to; potentially restricted access and vehicle/plant wash down. Information will also be provided on road closures/detours and alternative routes provided in appropriate media and with signage during railway construction. Following construction, adequate reinstatement of agricultural properties as reasonably practical, along with appropriate rehabilitation to ensure post construction condition is suitable for the intended use will be undertaken.

3.4 Implications of existing policies

3.4.1 Regional policy

The size, scale and required expertise of such developments often impose considerable strains on the mining proponent, resulting in the use of large levels of resourcing from outside the local region. Such strategies are implemented due to corporate economies of scale or due to company policy.

As a State, Queensland currently has a considerable level of mining activity underway. A concerted effort is being made by the Queensland Government and residents to bolster policies and campaigns that encourage the use of local or state-wide resources. Such campaigns, strongly backed by the State Government, such as the ‘Buy Local’ campaign have renewed vigour after the Queensland floods. They are important in the encouragement of large mining firms to implement a procurement strategy that sees local goods and services used instead of their international equivalents. Such procurement will help the region and affected economies realise the benefits outlined in analysis such as, higher levels of employment, greater GRP and higher average household incomes. The strategy is ensuring that significant investment is seen both in the local and State economies.

The Queensland Department of State Development, Infrastructure and Planning's Coal Plan 2030 recognises the potential challenges that will be faced by mining communities, in light of the growth of the mining industry over the following years. Regional planning and skills development have been highlighted by the plan as critical areas for development to ensure a sustainable, integrated mining community in Queensland.

Queensland Resources Council Queensland Resources and Energy Sector Code of Practice for Local Content 2013 – In association with the Queensland Government, the Queensland Resources Council has developed a Code of Practice designed to ensure local suppliers are well positioned to continue to service the resources sector (Queensland Resources Council, 2013).

The Sustainable Resource Communities Policy looks to ensure that regional planning in mining communities is sufficient to manage the rapid development occurring in such districts. It outlines a number of initiatives that:

- Strengthen the coordination role of the Government
- Improve linkages between social impact assessment and regional planning
- Foster partnerships with local government, industry and community
- Ensure an enhanced regulatory environment for social impact assessment

The Growing Liveable Regions policy aims to ensure that mining communities remain attractive to prospective workers and their families, such as the provision of affordable housing.

Skills development is also critical to ensure that the mining industry is continuing to attract more workers and that their skills are appropriately developed. Therefore, the Queensland Department of Education, Training and Employment is investing in training infrastructure that is focused on providing the right skills required by the mining industry.

3.4.2 Local procurement

Strong Government and public backing will increase pressure on potential new developments to increase the percentage of resources procured from local economies. The Federal Government's Buy Australian at Home and Abroad package (announced in the 2011-12 Budget) is aimed at increasing Australian industry participation in the resources sector. The package includes the appointment of supplier advocates to develop enterprise capabilities with up to 180 small to medium enterprises. Amongst other things, these advocates would be responsible for pooling the capabilities of domestic suppliers to obtain the sorts of economies of scale (and therefore cost economies) required when tendering for large resource projects. In the local context, this would require bringing together suppliers from the Isaac and surrounding regions, Queensland Resources Council, Regional Economic Development Corporation and mining companies.

Impacts will be felt across an array of businesses, either due to direct consumption by the mine or indirect consumption i.e. additional goods and services purchased by the workers. Table 16 provides an indication as to the local businesses that may either directly or indirectly service the mining industry.

Table 16 Local businesses opportunities

Business	Opportunities
Food Shops / Catering	Some work may be required directly by the mine and offsite infrastructure
Construction	Residential and commercial
Bulk Fuel	Directly for the mine and for transportation importing the additional goods
Electrical	Some work may be required directly by the mine and offsite infrastructure
Industrial Equipment Hire	For construction work and mine
Mechanical Workshops	Some work may be required directly by the mine and offsite infrastructure
Plumbing	Some work may be required directly by the mine and offsite infrastructure
Road Construction	To provide for the additional population of the town and heavy maintenance required due to the mine trucks
Service Stations	Both in and out of town
Steel Fabrication	Construction and mining support
Transport	To provide for transportation of mining related goods and workers
Tyres	To support mining industry
Waste collection/recycling	Service provision to the offsite infrastructure, workers accommodation village and mine

3.4.3 Mineral resources rent tax and carbon tax

It is expected that the project will be subject to the Mineral Resources Rent Tax, however at this stage it is not possible to provide an accurate estimate of the total commitment that would be applicable to the Project.

The assessment of greenhouse gas emissions concludes that during operations the average annual Scope 1 and Scope 2 greenhouse gas emissions as 1,440 kilotonnes of CO_2-e per annum for the mine operations and 637 kilotonnes of CO_2-e per annum for the rail operations.

Since the relevant threshold would be exceeded in both instances, The Project will likely be subject to the carbon pricing mechanism. However, it is not possible to estimate the total commitment that would be applicable to the Project until such time as operations commence.

3.5 Impact mitigation

3.5.1 Distributional effects

The input output analysis results; identified in Sections 3.2 and 3.3 of the report has identified the distribution of the impacts on the local and regional economies. It outlines the, mostly positive, impacts on the local, regional and State economies. The remaining positive impacts will be felt throughout Australia. In order to ensure the local and State economies reap the maximum possible impacts from the development strategies, policies and legislative measures are put in place to ensure these economies retain as many of the benefits as possible. Examples of such are outlined in the table in Section 3.5.2.

Distributional effects may also be felt at the micro level within the community. The indigenous or disabled community benefit from strategies such as the Queensland Government's Indigenous Employment and Training Strategy. Table 17 outlines these strategies. Such initiatives require the mining proponent to procure a certain precent of resources from specific resource pools therefore minimising any adverse distributional effects that may be felt as a result of the development.

3.5.2 Strategies for employment and local participation

There are a number of Queensland Government policies that aim to increase and encourage local participation in major projects. These strategies aim to mitigate any possible adverse impacts in the region. Table 17 outlines these strategies.

In addition, Adani has identified the need for a Local Industry Participation Plan as part of the Social Impact Assessment. The Local Industry Participation Plan (LIPP) will be prepared in accordance with the Queensland Resources Council Queensland Resources and Energy Sector Code of Practice for Local Content 2013 . Adani will work with both Councils, Clermont Preferred Futures Group, and local businesses in conjunction with government agencies (Office of Advanced Manufacturing) and the Industry Capability Network (ICN) in developing the plan to provide robust, integrated and sustainable local business participation opportunities.

Table 17 Existing government strategies

Strategy	Objective
Indigenous Employment and Training Strategy 2008-2011 Queensland Department of Education, Training and Employment	The strategy focuses on achieving improved employment and training outcomes for Indigenous people by placing a particular emphasis on those individuals and communities that are locked into intergenerational unemployment due to multi-faceted social and life issues.
Mackay, Isaac and Whitsunday Regional Plan 2011 - 2031 Department of State Development, Infrastructure and Planning	The strategy aims to manage regional growth and change while protecting and enhancing the quality of life in the region. The plan incorporates a comprehensive policy framework to guide decision-making for managing the region's growth until 2031.
Local Industry Policy Department of State Development, Infrastructure and Planning	The strategy aims to adhere to the 'Queensland first' philosophy and creating jobs for Queenslanders, jobs that are sustainable and which will assist in achieving a more highly skilled workforce in key industries and deliver on the Government's economic priorities. Objectives include; Promoting local industry's involvement in value-adding activities in Queensland; and Maximising employment and business growth in Queensland by expanding market opportunities for local industry.

3.5.3 Land values

Fundamentally, land values in the region will be determined by changes in the rate of growth of demand for land relative to changes in the rate of growth in the supply of land. Higher demand for land reflects increases in economic activity. The estimated increases in regional output, household consumption, incomes and employment outlined in the above sections suggest the

construction and operation of the Project will increase economic activity in the MIW region. Whether the consequent increase in demand for land (in response to higher economic activity) will translate into higher land values will depend on the amount and timing of new land made available (supplied) to the market. However, one particular aspect of the proposed project that is likely to have a mitigating impact on residential land values is distance of the Mine from Moranbah and Clermont, which necessitates the development of the Mine village.

All mine workers will be accommodated in the workers accommodation village which will relieve pressure on residential land demand and values. However, it is difficult to know the extent to which the Mine village will relieve this pressure. Having noted this, the overall impact of the Project on land values is likely to be neutral – that is, it should not influence increases over the short term. In the medium to longer term (i.e. in five to ten years' time), the operation of the Project would not be expected to have any discernible impact on residential and industrial property values. This reflects the likelihood of land supply eventually catching up to demand for land.

In terms of how the Project may impact commercial land values, the impacts are likely to be negligible. This reflects the absence of any discernible relationship linking mining sector activity to commercial property sector activity in regional areas.

4. Conclusion and summary

In summary, the economic baseline and assessment of impacts of the Project have identified the potential impacts to GRP/GSP, household income and employment levels. Construction of the Project (Mine) is expected to generate on average over the construction years $31.3 million per annum in direct and indirect impacts on the MIW regions GRP, a considerable proportion of which will be direct benefits such as purchase of local materials or services. For the State as a whole, impacts on average over the construction period are estimated to be $308 million per year. The construction phase also provides considerable employment benefits. On average, construction will generate an additional 313 full fte jobs per year within the MIW region and 2,915 full time equivalent jobs for Queensland.

The operational phase of the Project (Mine) sees benefits that increase in line with production rates of coal. At the point of full production (60 Mtpa) total impacts on GRP, for that year, in the MIW region reach an estimated total of $753 million and at a State level $2,701 million. Employment levels locally will see an increase of 4,948 fte and State wide 6,548 fte.

Construction of the rail infrastructure is expected to generate on average over the construction years $145 million per annum in direct and indirect impacts on the MIW regions GRP. For the State as whole, this is estimated to be $229 million per year. The construction phase also generates considerable employment benefits. On average construction will generate an additional 1,451 fte jobs within the MIW region and 2,481 fte jobs for Queensland over the construction period. Benefits during the construction period will be felt most vigorously during years one and two.

The operational phase of the Project (Rail) sees impacts that increase in line with production rates of the Mine. At the point of full production (60 Mtpa) total impacts per year on GRP, for that year, in the MIW region reach an estimated total of $176.6 million and at a State level $274.1 million. Benefits to household incomes within the region will total $107.2 million and State wide $157.9 million. Employment levels locally will see an increase in fte of 1,215 and State wide 2,025.

GRP is expected to see significant positive impacts at both a regional and State level. The MIW region will see an increase in GRP, due to the development of the project of $166 million over the first 10 years of operation. Total economic impacts in 2025 will account for 1.6 percent of the region's GRP as estimated in 2008-09. At a state level, it will contribute an additional $258.5 million over the same period. In the peak year, it will contribute 0.11 percent to the State's 2009-10 GSP.

In conclusion, the potential of the Project to produce significant positive impacts on the local and State economies is substantial. In order to ensure the range and extent of positive impacts can be achieved, a number of measures to mitigate possible negative impacts will be put in place. Strategies such as an increase in local participation of regional and Queensland based industry as well as encouraging the participation and up-skilling of disadvantaged groups such as Indigenous communities. Such strategies will require assessment frameworks to be developed that should include a mix of project specific indicators as well as quantitative statistics well proven in tracking the success of strategies and policies.

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