Central Queensland Coal Project

Chapter 19A – Economic

Central Queensland Coal

CQC SEIS, Version 3

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Terms and Abbreviations

$m	In millions of dollars
ABS	Australian Bureau of Statistics
AUD	Australian Dollars
EIS	Environmental Impact Statement
FOB	Free on Board
FTE	Full Time Equivalent
GRP	Gross Regional Product
HCC	Hard Coking Coal
HGTC	High Grade Thermal Coal
kcal/kg	kilocalorie/kilogram (1000 calories per kilogram)
LGA	Local Government Area
LSC	Livingstone Shire Council
NAR	Net As Received
PCI	Pulverised Coal Injection
SA	Statistical Area
SEIS	Supplementary Environmental Impact Statement
SPP	State Planning Policy
SSCC	Semi Soft Coking Coal
t	tonnes
ToR	Terms of Reference
US	United States

19A Economic

19A.1 Introduction

This chapter describes the existing economic environment relevant to the Central Queensland Coal Project. The chapter includes methods of assessment, relevant regulatory framework, existing economic environment including an economic baseline assessment, potential beneficial and adverse impacts, and proposed mitigation measures to minimise social and economic impacts to the region and more broadly.

This chapter has been updated since the original Environmental Impact Statement (EIS) to incorporate all of the work with reference to economic impact assessment into one consolidated chapter and associated appendix (Appendix 14A). That is, the original technical Economic Assessment report that was previously provided as Appendix 10A to the EIS has now been updated and incorporated within this chapter, along with other work that has been undertaken as part of the SEIS process. The updated data tables that support this chapter are included at Appendix 14A to this SEIS (v3), and the original Economic Assessment Technical Report can still be found at Appendix 10A of the EIS.

Chapter 3 provides responses to agency comments on the economic assessment in relation to SEIS v2.

The Central Queensland Coal Project will provide significant positive contributions to the Queensland economy, with the projected total value of exports expected to be in the order of $7.8 billion (AUD) to $8.2 billion (AUD) and the resulting Queensland Government royalties generated being between $703.3 million (AUD) and $766.0 million (AUD).

The Project is anticipated to produce an estimated 51.0 million tonnes of semi-soft coking and high-grade thermal coal over the life of the Project. The vast majority of coal produced is anticipated to be semi-soft coking coal, with high grade thermal coal to be produced only during 2033 and 2035 of the Project.

The exchange rate outlook for the Australian dollar is anticipated to remain, at least in the medium term, at approximately ~US$0.76 (Economy Forecast Agency 2020). The price of semi-soft coking coal is anticipated to decrease marginally from US$130 per tonne to approximately US$125 per tonne (or AUD$171 per tonne to approximately AUD$164 per tonne) in the short to medium term. The price of high grade thermal coal is anticipated to remain at approximately US$95 per tonne (or AUD$125 per tonne) in the medium term.

Based on the assumed coal prices and exchange rate, the total export value of the coal produced is estimated to be AUD$8.2 billion over the life of the project. Assuming Queensland coal mining royalty rates remain unchanged throughout the life of the Project, this will yield royalties of approximately AUD$766.0 million over the life of the Project.

19A.1.1 Environmental Objectives Outcomes

Objectives and outcomes for social and economic matters that are specific to the Project are given in Table 1 of the Project ToR. The overarching objective for social matters is to operate the Project in a way that avoids or mitigates adverse social impacts and capitalises on opportunities for local industries and communities. This objective is aligned with the *Strong and Sustainable Resource*

Communities Act, section 3(1) which states that the object of the Act is to ensure that "residents of communities in the vicinity of large resource projects benefit from the construction and operation of the projects".

Specifically, the environmental objectives and outcomes relevant to Social and Economic Matters are as follows:

- The construction and operation of the project should aim to:
  - Avoid or mitigate adverse social and economic impacts arising from the project and
  - Capitalise on opportunities potentially available for local industries and communities.

19A.1.2 Terms of Reference Addressed in this Chapter

Table 19A-1 summarises the requirements from the ToR for the Project, and where in this chapter they are addressed.

Table 19A-1: ToR cross-reference

Terms of Reference	Section of the EIS
8.15 Social and Economic	
Assess the potential adverse and beneficial economic impacts of the project.	Section 19A.4
Separately address the major stages of the project (e.g. construction, operation, decommissioning).	Section 19A.4.2; Section 19A.4.3
Quantify economic impacts where suitable data and methodology can be applied; otherwise, qualitatively assess the impacts.	Section 19A.4
The EIS should at least address: • labour demand, including the ability for labour to be drawn from the existing local workforce; and the potential effects this may have on local businesses and • relevant prices, which might include wages, input costs and/or household goods and services.	Refer to Chapter 19B – Social Section

19A.1.3 Relevant Legislation and Policy Instruments

Whilst there are no specific Commonwealth and State legislative requirements relating to the economic environment, the following documents are relevant when considering the economic impacts to the region because of the Project:

- *Planning Act 2016*
- *Regional Planning Interests Act 2014*
- Queensland State Planning Policy (SPP)
- *Environmental Protection Act 1994*
- Queensland Resources and Energy Sector Code of Practice for Local Content 2013 and
- Central Queensland Regional Plan

The following Local Government plans and schemes refine the strategic intentions of the Central Queensland Regional Plan and set out desired economic outcomes that may be relevant to the project:

- Livingstone Planning Scheme 2018
- Livingstone Shire Council Corporate Plan 2014 – 2019

- Rockhampton Region Planning Scheme 2015
- Rockhampton Regional Council Corporate Plan 2017 – 2022
- Isaac Regional Council - Broadsound Shire Council Planning Scheme 2005
- Isaac Regional Council Community Strategic Plan 2015-2035
- Isaac Regional Council Corporate Plan 2015-2020 and
- Mackay Isaac Whitsunday Regional Plan

These are described in Chapter 2 – Project Approvals.

19A.1.4 Terminology

19A.1.4.1 Study Area

Three study areas have been defined for the Economic Impact Assessment, described in Table 19A-2 below. The local study area is shown in Figure 19A-1 and the regional study area is shown in Figure 19A-2.

Table 19A-2: Economic impact assessment study areas

Study area	Geography	Rationale
Local Study Area	The state suburbs of Clairview, St Lawrence, Ogmore, Marlborough, Canoona and Kunwarara.	Communities within approximately one hour drive of the project, most likely to experience direct impacts.
Regional Study Area	The Central Queensland Statistical Area (SA)4 and Broadsound – Nebo SA2.	The broader region, most likely to experience indirect socio-economic impacts and opportunities.
State	The State of Queensland.	State data provided as comparison.

19A.2 Assessment Methodology

19A.2.1 Terms of Reference Requirements

The Queensland Government has formulated an assessment framework for the exploitation of energy and mineral resources developed over many years and by successive government administrations in consultation with the community. This framework allows for the extraction of energy and mineral resources subject to acceptable mitigation of impacts and the payment of Queensland Government mining royalties. The assessment framework is, in effect, a large multi-criteria assessment of proposed projects, included in which is economic assessment. As such, the EIS is the basis for decision making in relation to an approval.

The economic assessment approach adopted for the Central Queensland Coal Project EIS was directed by the specific requirements of the EIS ToR. The ToR for the EIS were prepared in draft and finalised subject to community feedback.

19A.2.1.1 Applied Method Vs Cost Benefit Analysis

The EIS ToR requires an assessment of Project impacts on both the regional and state economies and supplier markets. As such, a cost benefit analysis would not address the requirements of the ToR. The approach adopted by the economic assessment is an approach commonly adopted to assess a range of resource focused proposals. In considering the matter of Project financial viability, the ToR does not require an assessment of the Project's viability or the quantum of return on investment received by the Project proponent. The EIS seeks to assess the spectrum of

impacts of the Project based on the maximum footprint of development on the environment in which the Project is undertaken.

19A.2.2 Economic Impact Assessment

19A.2.2.1 Existing Economic Environment

The economic assessment (also referred to as the baseline assessment) provides a baseline to assess the significance of potential impacts. The baseline assessment used data from the following sources:

- various Australian Bureau of Statistics (ABS) catalogues, including the Census of Population and Housing, Labour Force Survey, Regional Population Growth, Australian Business Register and Agricultural Commodities publications
- office of Economic and Statistical Research
- various local and Queensland Government agencies and
- proprietary models owned by CDM Smith.

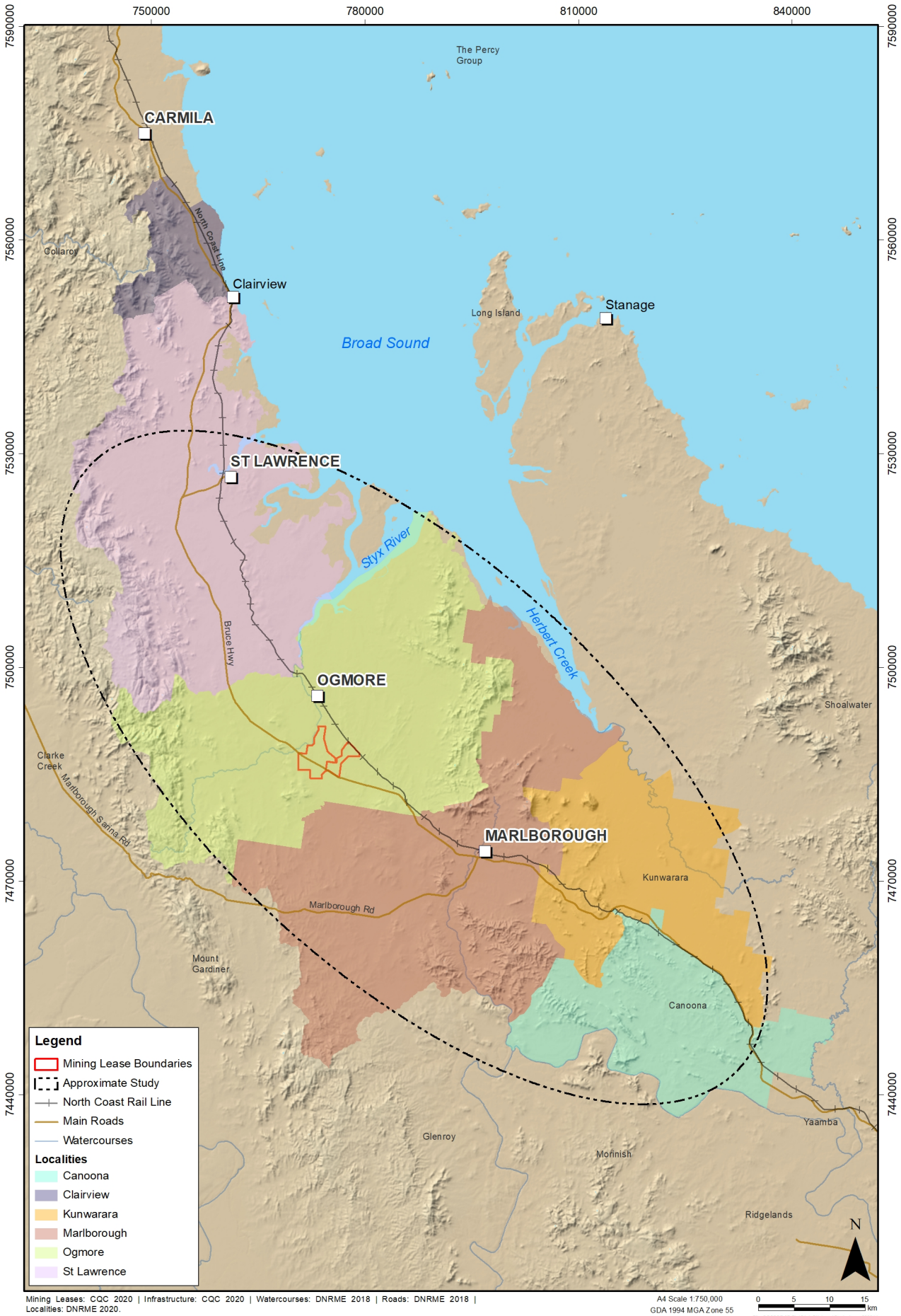


Figure 19A-1: Economic impact assessment local study area

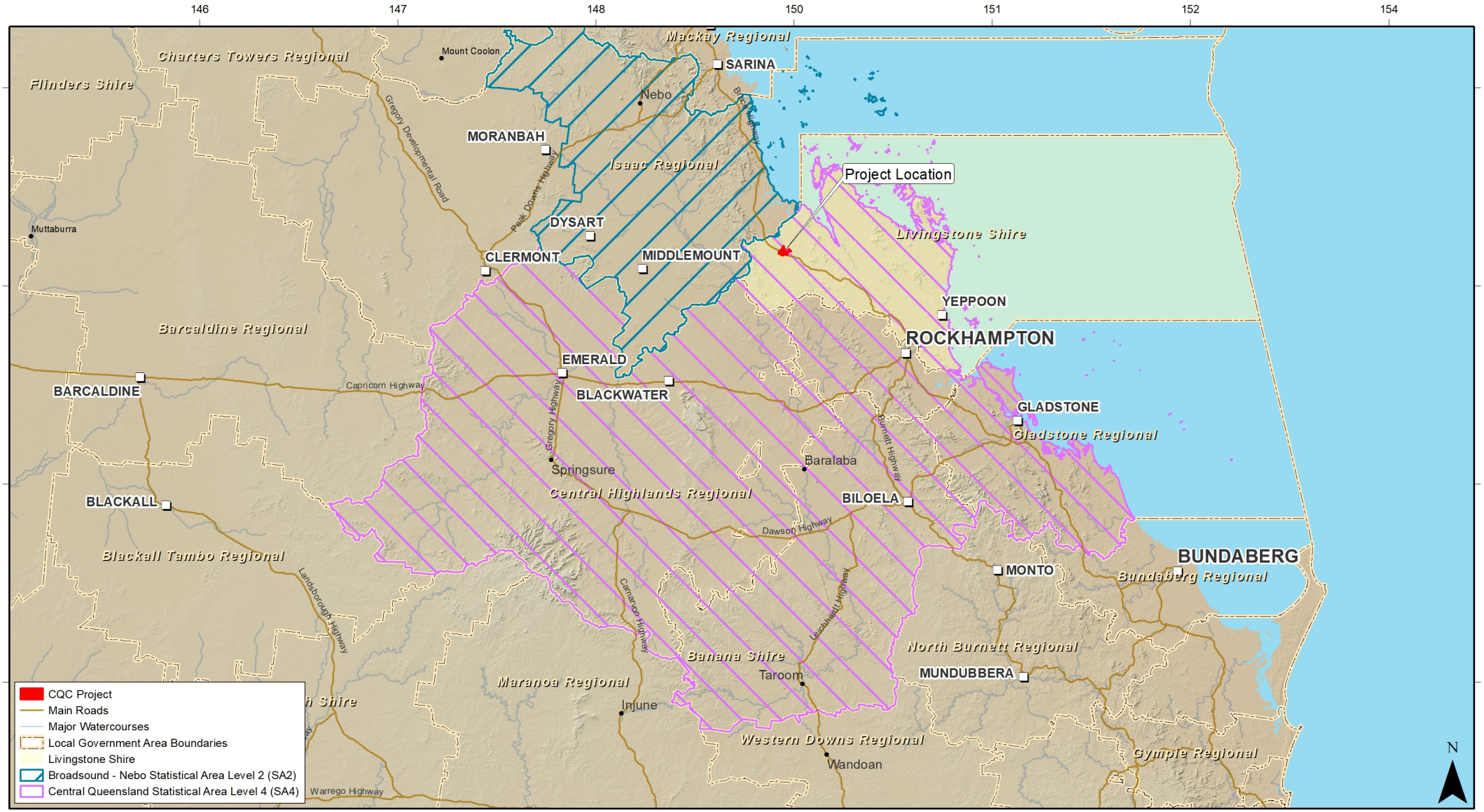


Figure 19A-2: Economic impact assessment regional study area

19A.2.2.2 Measures of Economic Impact

The economic contribution and impact assessment utilised a regional input-output approach. This approach provides indicative results relating to the total demand generated by the Project during both the construction and operational phases in terms of:

- output
- household incomes
- employment and
- value added.

These four different measures of economic impact are discussed in Table 19A-3.

Table 19A-3: Measures of economic impact

Impact Measure	Description
Output	The output impact measures the increase in gross sales throughout the entire economy by aggregating all individual transactions (direct and indirect) resulting from the economic stimulus. The output impact provides an indication of the degree of structural dependence between sectors of the economy. However, output impacts are regarded as overstating the impact on the economy as they count all goods and services used in one stage of production as an input to later stages of production, hence counting their contribution more than once.
Household Incomes	The household income impact measures the additional wages, salaries and supplements paid to households associated with the industry under consideration and with other industries benefiting from the stimulus to the economy.
Employment	The employment impact measures the number of full-time equivalent (FTE) positions for one year created directly and indirectly by the stimulus [1]. However, the short-term response to increased demand may be that existing employees work overtime. Consequently, actual levels of employment generated (in terms of persons employed) will tend to be lower than those estimated by the input-output analysis. This short-term employment response (of working additional overtime) will be more prevalent where the demand stimulus is likely to be temporary and short lived, or where there is limited spare capacity in the economy (that is, when the economy is at or near full employment).
Value Added	The value added or Gross Regional Product (GRP) impact measures only the net activity at each stage of production resulting from a stimulus. GRP is defined as the addition of consumption, investment and government expenditure, plus net exports (exports minus imports) from a region. The value added (or GRP) impact is the preferred measure for the assessment of contribution to the economy from a stimulus or impact, and as such should be used to describe the net impact of the event. Value added is the measure of economic impact resulting from a stimulus that is preferred by economists.

Source: Jensen, R. and West, G. (2002) Community Economic Analysis, Department of Primary Industries: Brisbane, Qld

[1]Therefore, if impacts are to be spread over a number of years, the FTE estimate (which relates to the annual equivalent) should be divided by the number of years over which the impact will be spread (in the absence of a clearly defined staging program) to provide an indicative ongoing employment estimate over the life of the impact.

The total economic impact of a stimulus or activity comprises the following effects:

- direct or initial effect, being the stimulus for the economic impact. This is typically described as the change in sales or contribution to final demand by the stimulus or activity and
- flow on effects, comprising production induced effects and consumption induced effects, these being:
  - first round production effects: purchases of inputs required from other industry sectors in the economy to produce the additional output generated by the stimulus or activity
  - industrial support production effects: second, third and subsequent round industrial flow on effects stimulated by the purchases made in the first round
  - consumption induced effects: purchases made by households upon receiving additional income from labour payments stemming from the production of additional output generated by the stimulus or activity under assessment.

The extent of these impacts can be represented by multipliers calculated in aggregate for various regional, state or national economies. There are commonly four multipliers used to measure impact, being output, household income, employment and value added.

Two sets of multipliers can be generated, namely:

- Type 1 Multipliers, which estimate the direct and production induced impacts of a stimulus or activity.
- Type 2 Multipliers, which estimate the direct, production induced, and consumption induced impacts of a stimulus or activity.

Type 1 Multipliers are used in the analysis of this Project. Queensland Treasury's preference is for use of only Type 1 Multipliers, given that Type 2 Multipliers typically overstate the extent of consumption-induced impacts of any given stimulus or activity.

The regional input-output approach has a number of limitations, which may result in overestimation of impacts, including:

- The absence of capacity constraints such that the supply of each good is perfectly elastic, implying that each industry can supply whatever quantity is demanded of it and there are no budget constraints.
- The assumed linearity and homogeneity of the input function, which implies constant returns to scale and no substitution between inputs. This occurs because the approach assumes inputs purchased by each industry are a function only of the level of output of that industry.
- Each commodity, or type of commodity, is supplied by a single industry sector, implying there is only one method used to produce each commodity and each sector has only a single primary output.
- The assumption that the economy is in equilibrium at given prices and that the economy is not subject to other external influences.
- The additivity assumption suggests the total effect of carrying on several types of production is the sum of the separate effects, which is not a true reflection of economic systems.

The limitations are typically most relevant when introducing a wholly new economic driver to a State or regional economy that may result in significant structural change. However, it is considered that the introduction of a new coal mine (such as the Central Queensland Coal Project) to the mature coal and coal logistics sector in Queensland does not fit this criterion.

19A.2.2.3 Potential Overstatement of Economic Impacts

The approach adopted to assess the economic impacts of the Project mitigates much of the risks. The assessment presented in the EIS focussed on the stimulus generated by direct supply chain and the consequent flow-on effects as opposed to assuming an increase in coal production.

As outlined in Section 19A.2.2.2, the potential overstatement of economic impacts when utilising the input output modelling approach is highest when introducing a wholly new economic driver to the regional or State economy. However, the introduction of the Central Queensland Coal Project is not considered as being representative of a new economic driver given the established coal mining and coal logistics sector in Queensland.

19A.2.2.4 Marginal Vs General Change and Relevance of Assessment Approach

All economic modelling and analytical approaches have limitations. While it is correct to say that regional impact (or input-output) models implicitly assume there is no constraint on the supply of inputs, it is also pertinent to consider the context of what the model is being used to assess. Regional impact models are useful to understand changes in demand for input resulting from a project, where that project represents a marginal change. Within economics, changes can be characterised as marginal (unlikely to have a material impact on the structure of the economy) or general (change that is almost certain to have a major structural impact).

The Queensland economy is characterised by a significant and mature resource industry, with a major part of that being the coal industry. Put another way, Queensland has a mature coal industry. The Central Queensland Coal Project represents an incremental addition to an already established coal industry and is unlikely to represent a major structural change to the Queensland economy. Hence, the change to regional and local economies resulting from the Central Queensland Coal Project would be characterised as a marginal change. Given the scale of the Central Queensland Coal Project and the size of the regional and state economies it is reasonable to assume that supply markets could be augmented to meet incremental changes in demand resulting from the Project.

The issue of the appropriateness or otherwise of regional impact models was dealt with in Hancock Galilee Pty Ltd v Currie and Ors [2017] QLC 35, in which His Honour Cochrane WL (at paragraph 333 and 334 of his decision) determined that notwithstanding the limitations of the modelling approach adopted in that resource application that:

> *"I am satisfied that the analysis done by Mr Brown demonstrates economic benefits accruing to the Queensland economy including, but not limited to, the potential generation of substantial revenue in the form of royalties.*
> *Accordingly, so far as the matter of economics is concerned, I am of the view that on balance the evidence justified recommending granting of the lease and I am further satisfied that no proper basis has been demonstrated for refusing to grant the lease premised upon a demonstrable lack of economic benefit."*

In summary, the approach adopted in the economic assessment for the Project is considered appropriate for the assessment of the proposed resource development and provides sufficient information to determine the Project generates significant positive economic impacts.

19A.2.2.5 Potential Impact on Other Industries

The issue of the potential for the Project to have negative impacts on other industries was also addressed within Hancock Galilee Pty Ltd v Currie and Ors [2017] decision. The Project will not

have any material impact on the structure of regional and state economies and represents a marginal or incremental increase in resource activity within the region. The most significant potential negative impact on other industries is the withdrawal of the land area associated with the mining lease from grazing, which has been assessed in the economic assessment.

Even when considering the potential structural impacts of the resources boom between 2004 and 2012, the extent of purported adverse impacts on other sectors was typically overstated, because issues such as trade and tariff reforms, drought, global monetary policies and the general transitioning of the Australian economy towards a knowledge intense services economy were ignored.

19A.2.2.6 Assessment Methodology and if the Project Proceeds

It is noted that some submissions to the EIS raised concerns regarding the veracity of the economic assessment approach adopted because the approach cannot predict if the Project will ultimately proceed or when the Project might proceed. This is true of all analytical approaches, as the timeframe for the Project proceeding, or if the Project proceeds, depends on factors outside the scope of any economic assessment. For example, the Australia Institute submission states that the economic assessment approach adopted for the Kevin's Corner Coal project anticipated the project would commence in 2014; however, because the project is yet to commence the Australia Institute consider this a failure of the economic assessment methodology, without pointing out that delays in project commencement were largely attributable to a number of appeals relating to the granting of approvals for the project. The Australia Institute similarly cite other examples where projects have not proceeded and claimed that this in some way reflects negatively on the analytical approach adopted. However, delays do not invalidate the economic assessment as no economic analytical approach would be able to predict the appeal of approvals or other similar external influences.

This Project has experienced delays and the commencement date, thought at the time of the economic assessment to be 2019 (with a finish date of 2037) is now anticipated to be 2021, and the finish date 2039. However, it was not considered necessary to update the economic model, as the changes in dates are not considered to be material to the overall conclusions drawn with reference to the economic impacts.

19A.3 Description of Existing Economic Environment

This section describes the existing local, regional, state and national economies that may be affected by the Project. The following aspects are considered:

- size and structure of the existing economy
- industry analysis
- development pipeline
- agricultural production and
- socio-economic index for areas.

19A.3.1 Size and Structure of the Existing Economy

19A.3.1.1 Population Size and Projected Growth

The population of the LSC LGA is projected to increase from 37,954 persons in 2016, to 57,042 persons in 2036, or by 2.1% per annum. The population of Broadsound-Nebo Statistical Area is projected to increase from 10,522 in 2016 to 12,629 in 2036, or by 0.9% per annum. The rate of population growth within the LSC LGA over this period is anticipated to be higher than in Broadsound-Nebo Statistical Area, Central Queensland Statistical Area and in Queensland.

The working age population (i.e. those persons aged between 15 years and 64 years) within the LSC LGA is projected to increase from 24,116 persons in 2016 to 32,238 persons in 2036, or by 1.5% per annum. The lower rates of growth for the working age population within all regions relative to the rate of growth for the total population indicates that the proportion of persons within the working age cohort is anticipated to decline between 2016 and 2036.

The population projections for LSC, Broadsound-Nebo Statistical Area, Central Queensland Statistical Area and Queensland between 2016 and 2036 is presented in Table 19A-4.

Table 19A-4: Population projections 2016-2036

	2016	2021	2026	2031	2036	Avg Annual Growth, 2016-2036
Total Population						
LSC LGA	37,954	41,427	45,994	51,142	57,042	2.1%
Broadsound – Nebo SA2	10,522	10,950	11,475	12,046	12,629	0.9%
Central Queensland SA4	241,858	260,561	281,178	302,583	324,246	1.5%
Queensland	4,853,048	5,250,292	5,730,062	6,240,546	6,763,153	1.7%
Working Age Population (15-64 yrs)						
LSC LGA	24,116	25,277	27,231	29,475	32,238	1.5%
Broadsound – Nebo SA2	7,404	7,600	7,911	8,294	8,687	0.8%
Central Queensland SA4	158,755	167,398	177,399	188,044	198,898	1.1%
Queensland	3,180,503	3,371,867	3,619,087	3,887,600	4,159,168	1.4%

Note: Population projection data in this table was the latest available at the time of report preparation
Source: QGSO 2017a, 2016

19A.3.1.2 Gross Regional Product

Gross Regional Product (GRP) represents the market value of all final goods and services produced within the regional economy during a given period, while Gross State Product is the market value of that produced within the State economy. Between 2000-01 and 2010-11, the nominal GRP at current prices within Central Queensland Statistical Area increased from $7,842 million in 2001 to $20,974 million in 2011, or by 10.3% per annum. Central Queensland Statistical Area recorded significantly higher rates of GRP growth than Queensland (which achieved 8.8% per annum growth over the same period). The nominal GRP for Central Queensland Statistical Area is provided in Table 19A-5.

Notable drivers of Central Queensland Statistical Area GRP growth were construction, mining, manufacturing and transport, postal and warehousing.

Table 19A-5: Nominal gross regional product by industry for Central Queensland and Queensland

Industry	Central Queensland SA4			Queensland		
	2001*	2011*	Ave Annual Growth, 2001-2011	2001*	2011*	Ave Annual Growth, 2001-2011
Agriculture, forestry and fishing	$570	$534	-0.7%	$5,079	$6,795	3.0%
Mining	$1,943	$6,840	13.4%	$7,813	$26,990	13.2%
Manufacturing	$789	$1,556	7.0%	$11,665	$20,577	5.8%
Electricity, gas, water and waste services	$341	$778	8.6%	$2,178	$6,636	11.8%
Construction	$441	$3,408	22.7%	$7,293	$23,436	12.4%
Wholesale trade	$363	$622	5.5%	$6,239	$13,524	8.0%
Retail trade	$297	$585	7.0%	$6,697	$13,732	7.4%
Accommodation and food services	$167	$285	5.5%	$3,749	$6,555	5.7%
Transport, postal and warehousing	$514	$1,123	8.1%	$7,267	$15,821	8.1%
Information media and telecommunications	$134	$153	1.3%	$3,756	$5,284	3.5%
Financial and insurance services	$178	$384	8.0%	$6,280	$16,831	10.4%
Rental, hiring and real estate services	$81	$279	13.2%	$2,482	$6,273	9.7%
Professional, scientific and technical services	$154	$558	13.7%	$4,918	$15,421	12.1%
Administrative and support services	$87	$218	9.6%	$2,109	$5,365	9.8%
Public administration and safety	$223	$532	9.1%	$5,931	$14,079	9.0%
Education and training	$289	$500	5.6%	$5,131	$10,406	7.3%
Health care and social assistance	$288	$630	8.1%	$6,441	$16,092	9.6%
Arts and recreation services	$29	$28	-0.4%	$1,039	$1,495	3.7%
Other services	$127	$268	7.8%	$2,552	$4,633	6.1%
Ownership of dwellings	$337	$811	9.2%	$8,774	$23,255	10.2%
Gross Value Added	$7,354	$20,094	10.6%	$107,393	$253,201	9.0%
Gross Regional Product	$7,842	$20,974	10.3%	$116,561	$269,866	8.8%

* (current prices - $m)
Source: Queensland Treasury and Trade (2013)

19A.3.2 Industry Analysis

The industry analysis provides an overview of the labour market characteristics within the LSC LGA, Broadsound-Nebo Statistical Area, Central Queensland Statistical Area and Queensland, based on several data sources, including the Australian Government's Department of Employment (Small Area Labour Market statistics) and the 2016 census (employment by industry and occupation and post-school qualifications).

19A.3.2.1 Workforce Size

The size of the labour force in the LSC LGA increased from 14,135 persons in 2006-07 to 18,262 persons in 2015-16, representing an average annual growth rate of 2.6%. The size of the labour force in Broadsound-Nebo Statistical Area increased from 5,442 persons in 2006-07 to 5,709 persons in 2016-17, or by an average growth rate 0.5% per annum. By comparison, the size of the labour force in Central Queensland Statistical Area has grown at an average annual rate of 1.6%, whereas the size of the labour force in Queensland has grown at an average annual rate of 1.4%. However, between 2014-15 and 2015-16, the size of the labour force in the Broadsound-Nebo Statistical Area decreased marginally.

A summary of the labour force size in the LSC LGA, Broadsound-Nebo Statistical Area, Central Queensland Statistical Area and Queensland between 2006-07 and 2015-16 is presented in Table 19A-6.

Table 19A-6: Labour force size

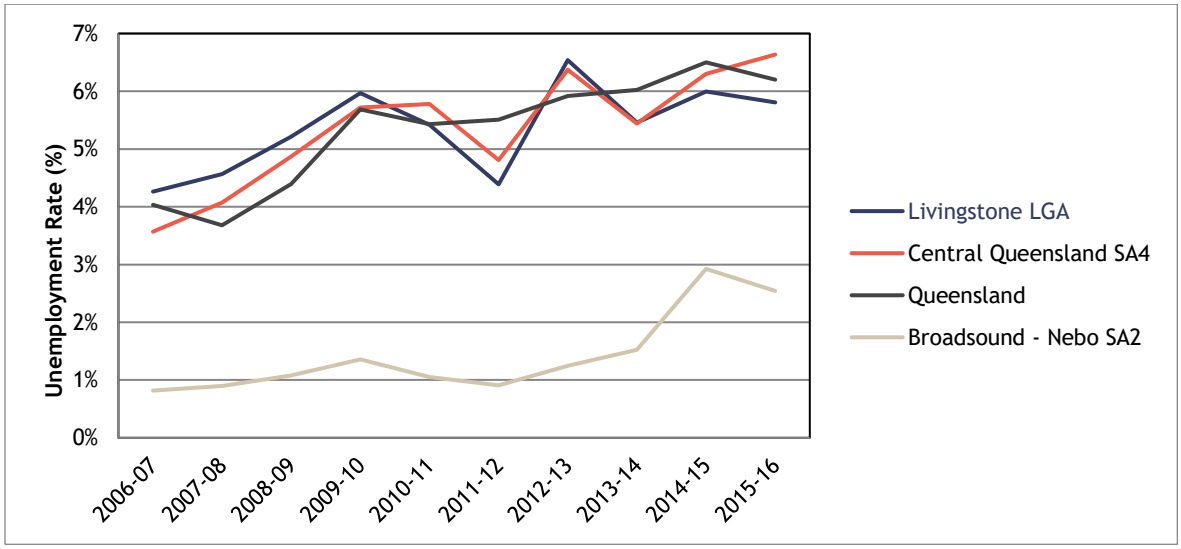
Period	LSC LGA	Broadsound – Nebo SA2	Central Queensland SA4	Queensland
2006-07	14,135	5,442	105,831	2,189,074
2007-08	14,691	5,657	109,997	2,240,974
2008-09	15,602	5,835	113,907	2,321,500
2009-10	15,929	5,894	113,587	2,389,025
2010-11	17,002	6,071	119,799	2,403,615
2011-12	17,067	6,210	118,268	2,417,381
2012-13	16,810	6,593	116,409	2,430,818
2013-14	17,712	6,572	122,253	2,466,888
2014-15	18,048	6,166	123,691	2,486,032
2015-16	18,262	5,709	124,329	2,517,488
Ave. Ann. Change, 2006-07 to 2015-16	2.6%	0.5%	1.6%	1.4%
Ave. Ann. Change, 2011-12 to 2015-16	1.4%	-1.7%	1.0%	0.8%
Ave. Ann. Change, 2014-15 to 2015-16	0.6%	-3.8%	0.3%	0.6%

Source: Department of Employment (various years)

19A.3.2.2 Unemployment Rate

The unemployment rate in the LSC LGA has increased from 4.3% in 2006-07 to 5.8% in 2015-16. This has similar to that of Central Queensland SA4, until 2014-15 when the unemployment rate in the LSC LGA began diverging below that of Central Queensland Statistical Area. Notably, the unemployment rate in Broadsound-Nebo Statistical Area has been low over this period, trending at around 1% until 2014-15, when the unemployment rate increased to 2.9%.

Figure 19A-2 and Table 19A-7 summarise the unemployment rate trends in the LSC LGA, Broadsound-Nebo Statistical Area, Central Queensland Statistical Area and Queensland between 2006-07 and 2015-16.



Source: Department of Employment (various years)

Figure 19A-3: Unemployment rate in Livingstone Shire, Central Queensland SA4 and Queensland

Table 19A-7: Unemployment rate

Period	LSC LGA	Broadsound – Nebo SA2	Central Queensland SA4	Queensland
2006-07	4.3%	0.8%	3.6%	4.0%
2007-08	4.6%	0.9%	4.1%	3.7%
2008-09	5.2%	1.1%	4.9%	4.4%
2009-10	6.0%	1.4%	5.7%	5.7%
2010-11	5.4%	1.1%	5.8%	5.4%
2011-12	4.4%	0.9%	4.8%	5.5%
2012-13	6.5%	1.2%	6.4%	5.9%
2013-14	5.5%	1.5%	5.4%	6.0%
2014-15	6.0%	2.9%	6.3%	6.5%
2015-16	5.8%	2.5%	6.6%	6.2%
Ave. Ann. Change, 2006-07 to 2015-16	0.2%	0.2%	0.3%	0.2%
Ave. Ann. Change, 2011-12 to 2015-16	0.3%	0.3%	0.4%	0.1%
Ave. Ann. Change, 2014-15 to 2015-16	-0.2%	-0.4%	0.3%	-0.3%

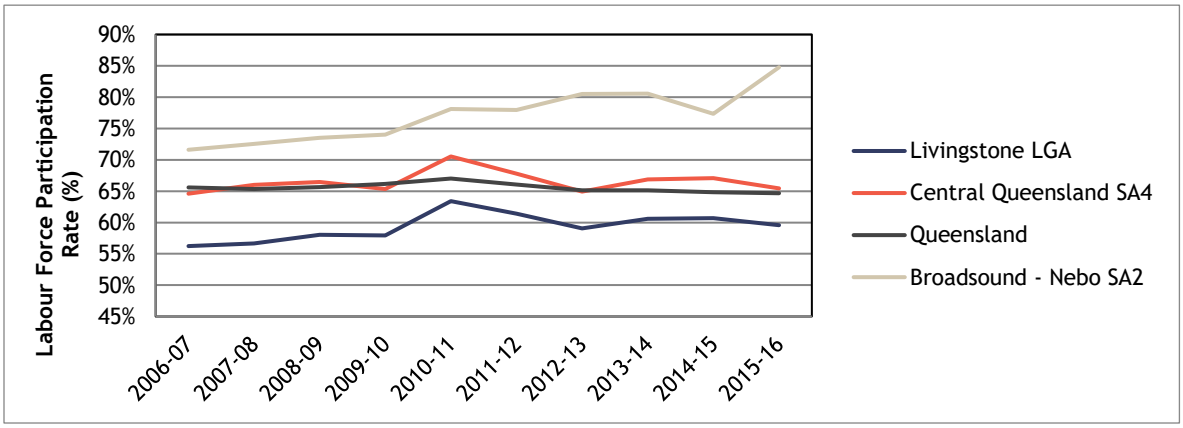
Note: The average annual change figures in this table represent the average annual percentage point change in the unemployment rate.
Source: Department of Employment (various years)

19A.3.2.3 Labour Force Participation Rate

Between 2006-07 and 2015-16, the labour force participation rate in the LSC LGA has consistently been below that of Broadsound-Nebo Statistical Area, Central Queensland Statistical Area and Queensland by several percentage points. The labour force participation rate in Broadsound-Nebo Statistical Area has been consistently higher than that of other benchmarks and has been trending upwards between 2006-07 and 2015-16. The labour force participation rate in Central Queensland

Statistical Area has been loosely on par with Queensland, though was significantly higher in 2010-11 and between 2013-14 and 2014-15.

Figure 19A-3 summarises the labour force participation rate trends in the LSC LGA, Broadsound – Nebo Statistical Area, Central Queensland Statistical Area and Queensland between 2006-07 and 2015-16.



Source: Department of Employment (various years), ABS 2015, QGSO (2016)

Figure 19A-4: Labour force participation rate

The average labour force participation rate in the LSC LGA was 59.4% in the 2006-07 to 2015-16 period, significantly lower than in Broadsound-Nebo Statistical Area (77.1%), Central Queensland Statistical Area (66.5%) and Queensland (65.6%).

Table 19A-8 summarises the labour force participation rates in the LSC LGA, Broadsound – Nebo Statistical Area, Central Queensland Statistical Area and Queensland between 2006-07 and 2015-16.

Table 19A-8: Labour force participation rate

Period	LSC LGA	Broadsound – Nebo SA2	Central Queensland SA4	Queensland
2006-07	56.2%	71.6%	64.6%	65.6%
2007-08	56.7%	72.6%	66.0%	65.3%
2008-09	58.0%	73.5%	66.5%	65.6%
2009-10	57.9%	74.0%	65.4%	66.1%
2010-11	63.4%	78.1%	70.5%	67.0%
2011-12	61.4%	78.0%	67.8%	66.1%
2012-13	59.0%	80.5%	64.9%	65.1%
2013-14	60.6%	80.6%	66.9%	65.1%
2014-15	60.7%	77.4%	67.1%	64.8%
2015-16	59.6%	84.8%	65.5%	64.7%
Average, 2006-07 to 2015-16	59.4%	77.1%	66.5%	65.6%
Average, 2011-12 to 2015-16	60.3%	80.2%	66.4%	65.2%
Average, 2014-15 to 2015-16	60.1%	81.1%	66.3%	64.7%

Source: Department of Employment (various years), ABS 2015, QGSO (2016)

19A.3.2.4 Employment by Industry

In the LSC LGA, 11.4% and 10.9% of persons were employed in the health care and social assistance and education and training sectors respectively, as of the 2016 census. In Broadsound – Nebo Statistical Area, 40.3% and 13.8% of persons were employed in the mining and agriculture, forestry and fishing sectors respectively. The LSC LGA and Broadsound-Nebo Statistical Area both recorded a lower incidence of employment in manufacturing and transport, postal and warehousing relative to the Central Queensland Statistical Area and Queensland.

The proportion of employment by industry sector in the LSC LGA, Broadsound – Nebo Statistical Area, Central Queensland Statistical Area and Queensland in 2016 is summarised in Table 19A-9.

Table 19A-9: Employment by industry

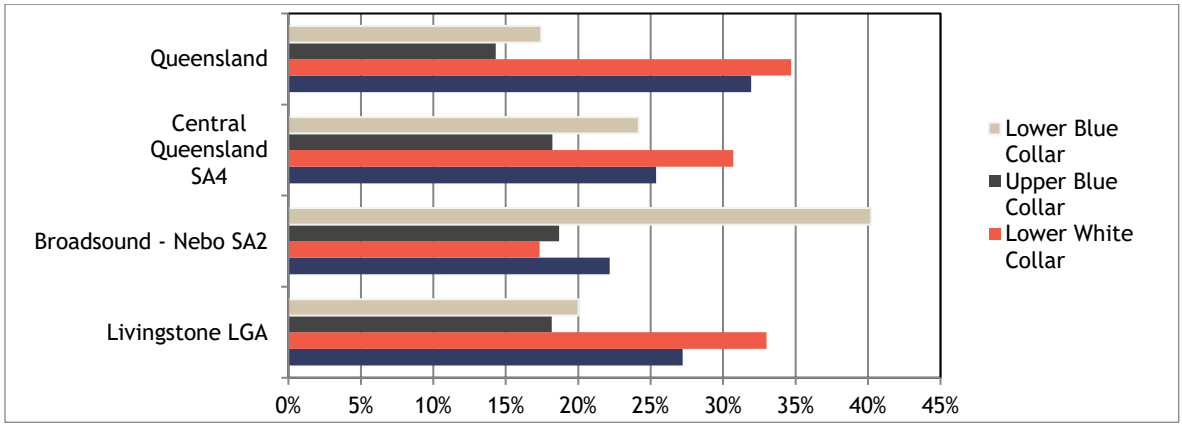
Industry	LSC LGA	Broadsound – Nebo SA2	Central Queensland SA4	Queensland
Construction	9.718%	3.1%	8.2%	9.0%
Wholesale trade	2.3%	0.9%	2.4%	2.6%
Retail trade	9.724%	5.0%	9.6%	9.9%
Accommodation and food services	7.3%	6.0%	6.7%	7.3%
Transport, postal and warehousing	4.0%	4.4%	5.9%	5.1%
Information media and telecommunications	0.6%	0.2%	0.5%	1.2%
Financial and insurance services	1.3%	0.2%	1.1%	2.5%
Rental, hiring and real estate services	1.6%	0.4%	1.5%	2.0%
Professional, scientific and technical services	3.6%	1.2%	3.9%	6.3%
Administrative and support services	3.1%	4.0%	2.9%	3.5%
Public administration and safety	6.4%	3.5%	5.5%	6.6%
Education and training	10.9%	6.1%	9.0%	9.0%
Health care and social assistance	11.4%	3.0%	10.5%	13.0%
Arts and recreation services	1.1%	0.4%	0.8%	1.6%
Other services	4.2%	3.0%	4.1%	3.9%
Total	15,425	3,898	97,655	2,136,455

Source: QGSO 2017a, b, QGSO 2016

19A.3.2.5 Occupation Type

The LSC LGA recorded a marginally higher proportion of upper white collar workers than Central Queensland Statistical Area though lower than the state average. The LSC LGA, Broadsound-Nebo Statistical Area and Central Queensland Statistical Area recorded significantly higher proportions of blue collar workers relative to Queensland as of the 2016 census.

The proportion of employment by occupation in the LSC LGA, Broadsound – Nebo Statistical Area, Central Queensland Statistical Area and Queensland as of the 2016 census is summarised in Figure 19A-4.



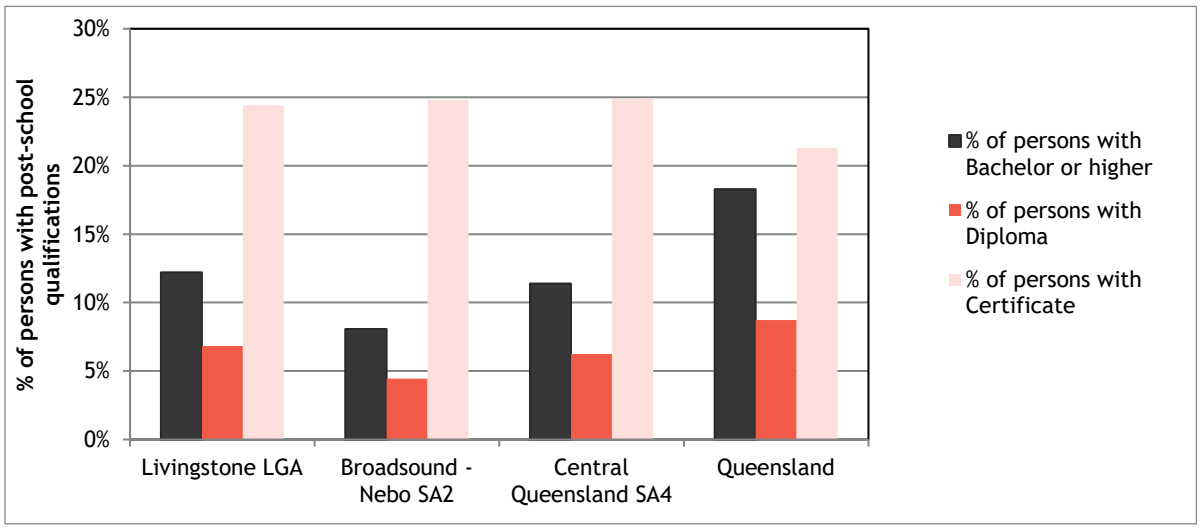
Source: QGSO 2017a, b, QGSO 2016

Figure 19A-5: Employment by occupation type

19A.3.2.6 Qualifications

This section has been updated to include the Broadsound-Nebo Statistical Area and the updated Central Queensland Statistical Area. The LSC LGA data has been kept to facilitate reading. The incidence of persons with a post school qualification in the LSC LGA was higher than in Broadsound-Nebo Statistical Area and Central Queensland SA4, though lower than the state average. The incidence of persons with a certificate is higher in the LSC LGA, Broadsound-Nebo Statistical Area and Central Queensland Statistical Area than Queensland.

The proportion of the population aged 15 years and over with postgraduate, bachelor, diploma and certificate qualifications in the LSC LGA, Broadsound – Nebo Statistical Area, Central Queensland Statistical Area and Queensland as of the 2016 census is summarised in Figure 19A-5.



Source: QGSO 2017a, b, QGSO 2016

Figure 19A-6: Proportion of persons with a post school qualification

19A.3.2.7 Enterprise Activity

The latest edition of the ABS Counts of Australian Businesses publication presents business count estimates by industry at the Statistical Area Level 2 level. This section reports the number of businesses by industry registered within the LSC LGA, Broadsound-Nebo Statistical Area and Central Queensland SA4. Significant business activity in the region(s) is undertaken by enterprises

registered outside the region(s). This business register data provides an indication of the number and capability of locally based businesses.

19A.3.2.7.1 Livingstone Shire

As of February 2017, there was an estimated 3,235 registered businesses in the LSC, with an estimated 63.6% classified as sole operators. Just under a quarter of all registered businesses were classified within the agriculture, forestry and fishing Sector (761 businesses) and just over a fifth were classified within the construction sector (731 businesses). There were 44 businesses within the LSC LGA that recorded employment of 20-199 workers, comprising six in accommodation and food services, five in administrative and support services and six in health care and social assistance. There were no businesses identified within LSC LGA that employed 200 or more workers.

The count of registered businesses within the LSC LGA by employment size as of February 2017 is presented in Table 19A-10.

Table 19A-10: Counts of Australian businesses LSC and LGA February 2017

Industry	Employing Businesses				Total Non-Employing	Total Businesses
	1-19	20-199	200+	Total Employing		
Agriculture, Forestry and Fishing	21.5%	0.3%	0.0%	21.7%	78.3%	1,100
Mining	52.3%	6.8%	0.0%	59.1%	40.9%	44
Manufacturing	28.0%	3.0%	0.0%	31.0%	69.0%	100
Electricity, Gas, Water and Waste Services	50.0%	0.0%	0.0%	50.0%	50.0%	10
Construction	48.0%	0.4%	0.0%	48.4%	51.6%	788
Wholesale Trade	25.9%	0.0%	0.0%	25.9%	74.1%	58
Retail Trade	55.6%	4.2%	0.0%	59.7%	40.3%	144
Accommodation and Food Services	66.4%	6.9%	0.0%	73.3%	26.7%	131
Transport, Postal and Warehousing	33.9%	1.6%	0.0%	35.4%	64.6%	192
Information Media and Telecommunications	30.0%	0.0%	0.0%	30.0%	70.0%	10
Financial and Insurance Services	19.8%	1.6%	0.0%	21.4%	78.6%	192
Rental, Hiring and Real Estate Services	14.4%	1.0%	0.0%	15.4%	84.6%	312
Professional, Scientific and Technical Services	36.8%	0.0%	0.0%	36.8%	63.2%	212
Administrative and Support Services	42.6%	3.9%	0.0%	46.5%	53.5%	129
Public Administration and Safety	100.0%	0.0%	0.0%	100.0%	0.0%	6
Education and Training	40.0%	6.0%	0.0%	46.0%	54.0%	50
Health Care and Social Assistance	48.4%	6.3%	0.0%	54.7%	45.3%	95
Arts and Recreation Services	40.0%	0.0%	0.0%	40.0%	60.0%	45
Other Services	54.4%	0.0%	0.0%	54.4%	45.6%	215
Not Classified	0.0%	0.0%	0.0%	0.0%	100.0%	32
Total	34.7%	1.3%	0.0%	36.0%	64.0%	3,865

Source: Australian Bureau of Statistics (2017d)

19A.3.2.7.2 Broadsound-Nebo Statistical Area

As of February 2017, there was an estimated 642 registered businesses in Broadsound-Nebo Statistical Area with an estimated 62% classified as sole operators. Approximately 53% of all registered businesses were classified within the agriculture, forestry and fishing Sector (339 businesses) and approximately 9% were classified within the construction sector (57 businesses). There were 6 businesses within the Broadsound-Nebo Statistical Area that recorded employment of 20-199 workers, comprising three in retail trade and three in accommodation and food services. There were no businesses identified within Broadsound-Nebo Statistical Area that employed 200 or more workers.

The count of registered businesses within Broadsound-Nebo Statistical Area by employment size as of February 2017 is presented in Table 19A-11.

Table 19A-11: Counts of Australian businesses, Broadsound – Nebo SA2, February 2017

Industry	Employing Businesses				Total Non-Employing	Total Businesses
	1-19	20-199	200+	Total Employing		
Agriculture, Forestry and Fishing	31.9%	0.0%	0.0%	31.9%	68.1%	339
Mining	0.0%	0.0%	0.0%	0.0%	100.0%	9
Manufacturing	30.0%	0.0%	0.0%	30.0%	70.0%	10
Electricity, Gas, Water and Waste Services	-	-	-	-	-	-
Construction	28.1%	0.0%	0.0%	28.1%	71.9%	57
Wholesale Trade	27.3%	0.0%	0.0%	27.3%	72.7%	11
Retail Trade	68.2%	13.6%	0.0%	81.8%	18.2%	22
Accommodation and Food Services	68.4%	15.8%	0.0%	84.2%	15.8%	19
Transport, Postal and Warehousing	32.3%	0.0%	0.0%	32.3%	67.7%	31
Information Media and Telecommunications	-	-	-	-	-	-
Financial and Insurance Services	15.8%	0.0%	0.0%	15.8%	84.2%	19
Rental, Hiring and Real Estate Services	18.8%	0.0%	0.0%	18.8%	81.3%	32
Professional, Scientific and Technical Services	23.5%	0.0%	0.0%	23.5%	76.5%	17
Administrative and Support Services	50.0%	0.0%	0.0%	50.0%	50.0%	20
Public Administration and Safety	-	-	-	-	-	-
Education and Training	33.3%	0.0%	0.0%	33.3%	66.7%	9
Health Care and Social Assistance	0.0%	0.0%	0.0%	0.0%	100.0%	6
Arts and Recreation Services	0.0%	0.0%	0.0%	0.0%	100.0%	5
Other Services	56.7%	0.0%	0.0%	56.7%	43.3%	30
Not Classified	0.0%	0.0%	0.0%	0.0%	100.0%	6
Total	32.9%	0.9%	0.0%	33.8%	66.2%	642

Source: Australian Bureau of Statistics (2017d)

19A.3.2.7.3 Central Queensland SA4

Within Central Queensland SA4, there were an estimated 17,795 registered businesses as of February 2017, with an estimated 63% of all businesses classified as sole operators. The most common business types (in terms of number of businesses) in Central Queensland Statistical Area were agriculture, forestry and fishing (4,763 businesses), construction (2,924 businesses) and rental, hiring and real estate services (1,610 businesses). As of February 2017, there were no registered businesses in Central Queensland Statistical Area that employed 200 or more persons.

The count of registered businesses within Central Queensland Statistical Area by employment size as of February 2017 is presented in Table 19A-12.

Table 19A-12: Counts of Australian businesses, Central Queensland SA4, February 2017

Industry	Employing Businesses				Total Non-Employing	Total Businesses
	1-19	20-199	200+	Total Employing		
Agriculture, Forestry and Fishing	18.0%	0.3%	0.0%	18.2%	81.8%	4,763
Mining	51.3%	1.9%	0.0%	53.2%	46.8%	154
Manufacturing	45.9%	5.6%	0.0%	51.4%	48.6%	519
Electricity, Gas, Water and Waste Services	61.5%	0.0%	0.0%	61.5%	38.5%	52
Construction	45.5%	1.3%	0.0%	46.8%	53.2%	2,924
Wholesale Trade	46.4%	2.1%	0.0%	48.4%	51.6%	289
Retail Trade	60.1%	5.3%	0.0%	65.5%	34.5%	883
Accommodation and Food Services	61.1%	12.4%	0.0%	73.5%	26.5%	671
Transport, Postal and Warehousing	33.0%	1.6%	0.0%	34.5%	65.5%	1,071
Information Media and Telecommunications	21.4%	7.1%	0.0%	28.6%	71.4%	42
Financial and Insurance Services	17.0%	0.9%	0.0%	17.9%	82.1%	955
Rental, Hiring and Real Estate Services	16.7%	1.2%	0.0%	17.9%	82.1%	1,610
Professional, Scientific and Technical Services	46.6%	2.1%	0.0%	48.6%	51.4%	1,061
Administrative and Support Services	45.3%	4.6%	0.0%	49.9%	50.1%	523
Public Administration and Safety	54.5%	0.0%	0.0%	54.5%	45.5%	44
Education and Training	60.8%	3.1%	0.0%	63.9%	36.1%	194
Health Care and Social Assistance	49.0%	3.6%	0.0%	52.6%	47.4%	661
Arts and Recreation Services	40.2%	3.7%	0.0%	43.9%	56.1%	164
Other Services	55.1%	1.5%	0.0%	56.6%	43.4%	1,044
Not Classified	15.8%	0.0%	0.0%	15.8%	84.2%	171
Total	35.2%	2.0%	0.0%	37.3%	62.7%	17,795

Source: Australian Bureau of Statistics (2017d)

19A.3.2.7.4 Regional Comparison

In the LSC LGA, 22.6% of registered businesses were within the construction sector, as compared to 8.9% in Broadsound – Nebo Statistical Area, 16.4% of registered businesses in Central

Queensland Statistical Area and 17.1% of registered businesses in Queensland, as of February 2017.

The LSC LGA, Broadsound-Nebo Statistical Area and Central Queensland Statistical Area had a significantly higher proportion of registered businesses within the agriculture, forestry and fishing sector compared to Queensland at 23.5%, 52.8%, 26.8% and 9.7% respectively. The LSC LGA and Broadsound-Nebo Statistical Area had significantly lower proportions of registered businesses within the retail trade and health care and social assistance sectors relative to Central Queensland Statistical Area and Queensland.

The distribution of total businesses by industry section within the LSC LGA, Central Queensland SA4 and Queensland as of February 2017 is presented in Table 19A-13.

Table 19A-13: Total businesses by industry section, regional comparison, 2017

Industry	LSC LGA	Broadsound – Nebo SA2	Central Queensland SA4	Queensland
Agriculture, Forestry and Fishing	23.5%	52.8%	26.8%	9.7%
Mining	1.1%	1.4%	0.9%	0.4%
Manufacturing	2.8%	1.6%	2.9%	3.8%
Electricity, Gas, Water and Waste Services	0.3%	0.0%	0.3%	0.3%
Construction	22.6%	8.9%	16.4%	17.1%
Wholesale Trade	1.5%	1.7%	1.6%	3.1%
Retail Trade	3.8%	3.4%	5.0%	5.9%
Accommodation and Food Services	3.6%	3.0%	3.8%	4.0%
Transport, Postal and Warehousing	5.0%	4.8%	6.0%	5.9%
Information Media and Telecommunications	0.3%	0.0%	0.2%	0.7%
Financial and Insurance Services	5.3%	3.0%	5.4%	9.7%
Rental, Hiring and Real Estate Services	8.7%	5.0%	9.0%	10.0%
Professional, Scientific and Technical Services	6.0%	2.6%	6.0%	11.0%
Administrative and Support Services	3.4%	3.1%	2.9%	3.9%
Public Administration and Safety	0.2%	0.0%	0.2%	0.3%
Education and Training	1.3%	1.4%	1.1%	1.3%
Health Care and Social Assistance	2.8%	0.9%	3.7%	5.6%
Arts and Recreation Services	1.2%	0.8%	0.9%	1.1%
Other Services	5.7%	4.7%	5.9%	4.7%
Not Classified	1.0%	0.9%	1.0%	1.3%
Total	3,235	642	17,795	425,576

Source: Australian Bureau of Statistics (2017d)

19A.3.3 Other Project relevant to the Economic Assessment

Cumulative impacts are defined as “successive, incremental and combined impacts of one or more projects (existing, current and foreseeable future projects) on society, the economy or the environment” (Vanclay et al. 2015, p. 79). A summary of projects that may interact with the CQC project to cause cumulative social and/or economic impacts is provided in Table 19A-14 below.

Table 19A-14: Projects with the potential to contribute to cumulative economic impacts

Projects most likely to give rise to cumulative economic effects	Potential impacts
Clarke Creek Wind and Solar Farm • Southern extent located near Marlborough. Construction anticipated to commence 2020. ***Australia Singapore Military Training Initiative*** • Shoalwater Bay and Greenvale near Townsville. Construction currently ongoing. ***Shoalwater Bay Military Training Area Remediation Project*** • Shoalwater Bay. Construction currently ongoing. ***Capricornia Correctional Centre Redevelopment*** • North of Rockhampton. Construction currently ongoing. ***Rookwood Weir Project*** • 66km south west of Rockhampton, early works planned to commence 2020. ***Connors Arc Exploration Project*** • Vicinity of St Lawrence and Marlborough. Early gold exploration project.	• Housing and accommodation impacts within the regional study area • Demand for health and social services, particularly in the regional study area • Competition for labour and potential skills shortages

19A.3.4 Agricultural Production

Agricultural production data (in terms of volume and value of production) has been collated from the ABS as of the 2010-11 financial year for the LSC LGA, Broadsound – Nebo Statistical Area, Central Queensland Statistical Area and Queensland. This is the most recent comprehensive dataset available at the small area level.

The assessment of agricultural production has focussed on the key commodities produced within Central Queensland Statistical Area and has included all commodities produced within the LSC LGA and Broadsound – Nebo Statistical Area.

19A.3.4.1 Volume of Production

19A.3.4.1.1 Cropping

In the LSC LGA, the cropping commodities produced in 2010-11 were:

- sugar cane: 27,980 tonnes or 0.1% of Queensland production
- wheat: 916 tonnes or 0.1% of Queensland production and
- sorghum: 227 tonnes (less than 0.1% of Queensland production).

In Broadsound – Nebo Statistical Area, the cropping commodities produced in 2010-11 were:

- sugar cane: 282,737 tonnes or 1.2% of Queensland production
- sorghum: 33,211 tonnes or 2.8% of Queensland production
- wheat: 6,835 tonnes or 0.4% of Queensland production and
- chick peas: 4,626 tonnes or 3.3% of Queensland production.

In Central Queensland SA4, the key cropping commodities produced in 2010-11 were:

- mung beans: 19,863 tonnes or 44.2% of Queensland production
- rice: 944 tonnes or 41.1% of Queensland production
- sunflower: 2,776 tonnes or 29.0% of Queensland production and
- chickpeas: 37,674 tonnes or 27.1% of Queensland production.

19A.3.4.1.2 Fruit and Vegetables for Human Consumption

In 2010-11 the key fruit and vegetable crops for human consumption, grown in the LSC LGA were:

- pineapples: 10,466 tonnes or 12.6% of Queensland production
- pumpkins: 852 tonnes or 2.1% of Queensland production and
- melons: 659 tonnes or 0.9% of Queensland production.

In 2010-11 the key fruit and vegetable crops for human consumption, grown in Broadsound-Nebo Statistical Area were:

- tomatoes: 24 tonnes (less than 0.1% of Queensland production)
- pumpkins: 8 tonnes (less than 0.1% of Queensland production) and
- melons: 8 tonnes (less than 0.1% of Queensland production).

In Central Queensland SA4, the key fruit and vegetables crops for human consumption in 2010-11 were:

- grapes: 5,486 tonnes or 46.6% of Queensland production
- pineapples: 10,466 tonnes or 12.6% of Queensland production (all of which produced in the LSC LGA) and
- pumpkins: 2,697 tonnes or 6.5% of Queensland production.

19A.3.4.1.3 Livestock

Within the LSC LGA and Broadsound – Nebo Statistical Area, the majority of livestock identified were meat cattle, with an estimated 163,189 and 457,342 head in 2010-11, accounting for 1.3% and 3.7% of Queensland production respectively. In Central Queensland SA4, the dominant livestock in 2010-11 were:

- meat cattle: 1,882,737 head, accounting for 15.1% of Queensland production and
- pigs: 19,934 head, accounting for 3.1% of Queensland production.

19A.3.4.2 Value of Production

19A.3.4.2.1 Cropping

Within Central Queensland SA4, cotton accounted for the majority of the value of production at $64.8 million but only 8.3% of the total value of cotton production in Queensland. Wheat and sorghum were also substantial contributors to the total value of production at $50.9 million and $33.2 million or 13.5% and 13.2% of total value, respectively.

19A.3.4.2.2 Fruit and Vegetable for Human Consumption

In the LSC LGA, pineapples accounted for the majority of the value of production at $6.3 million, or 12.5% of the total Queensland value. Within Central Queensland SA4, grapes were the most

valuable crop, with an estimated value of $14.9 million in 2010-11 (or 46.1% of total Queensland value).

19A.3.4.2.3 Livestock

Within the LSC LGA, Broadsound-Nebo Statistical Area and Central Queensland SA4, cattle and calves slaughtered accounted for the majority of livestock value in 2010-11 (accounting for 1.4% of Queensland value, 3.1% of Queensland value and 14.1% of Queensland value, respectively).

19A.3.5 Socio-Economic Index for Areas

The Socio-Economic Index for Areas is an ABS summary measure of social and economic census data and includes four indexes. The Index of Relative Socio-economic Disadvantage summarises the economic and social conditions of people and households within an area, with a lower score indicating greater disadvantage and a higher score indicating least disadvantage (ABS 2013c).

The Index of Relative Socio-economic Disadvantage for each of the chosen geographical areas is broken down into quintiles according to their level of disadvantage (Table 19A-15). The Rockhampton population is heavily skewed towards the most disadvantaged quintiles whilst the LSC population favours the middle quintiles.

Table 19A-15: Population by index of relative socio-economic disadvantage as at 2016 census

Area	Q1 (most disadvantaged)	Q2	Q3	Q4	Q5 (least disadvantaged)
Livingstone (S)	16.5	24.6	24.6	26.2	8.0
Rockhampton (R)	39.1	29.8	13.4	7.3	10.4
Broadsound-Nebo	6.1	40.5	25.1	23.8	4.5
Queensland	20.0	20.0	20.0	20.0	20.0
Australia	n/a	n/a	n/a	n/a	n/a

Source: QGSO 2017a, b, QGSO 2016

19A.4 Potential Impacts

The purpose of this section of the report is to estimate the economic impacts of the construction and operational phases of the Project in a regional, state and national context.

Central Queensland Coal has provided indicative capital and operating expenditures for the Project which have been used as inputs to the estimation of the regional, state and national stimulus generated by the Project.

19A.4.1 Project Expenditures

19A.4.1.1.1 Construction Costs

The construction costs associated with the Project are estimated at $262.3 million, comprising:

- $114.1 million of expenditure incurred within Central Queensland
- $54.9 million of expenditure incurred within the rest of Queensland
- $46.1 million of expenditure incurred interstate and

- $47.3 million of expenditure incurred overseas.

Project expenditures incurred overseas represent direct imports and as such do not make an economic contribution at a state, regional or national level and hence are excluded from the economic impact analysis.

Construction costs are anticipated to be incurred over a nineteen year period, with costs highest in Year 1, - 2021 ($50.0 million), Year 2 - 2022 ($61.0 million) and Year 4 2024 ($42.0 million).

The anticipated construction costs by origin of purchase for the Project are presented in Table 19A-16.

Table 19A-16: Anticipated total construction costs ($m) by origin of purchase

Expenditure	Origin of Purchase ($m)				Total ($m)
	CQ Region	Rest of Qld	National	International	
Open Cut					
Mining Engineering	$14.2	$9.4	$5.4	$0.0	$29.0
Civil Engineering	$6.7	$4.1	$3.4	$0.0	$14.2
Other Costs	$4.9	$4.5	$2.9	$0.0	$12.3
Contingency	$3.7	$4.7	$3.7	$0.0	$12.1
Subtotal	$29.5	$22.7	$15.4	$0.0	$67.6
Coal Handling Preparation Plant					
Civil Engineering	$2.3	$2.9	$0.0	$1.0	$6.2
Equipment	$3.3	$3.3	$5.3	$37.3	$49.2
Installation	$2.1	$3.8	$2.7	$1.0	$9.6
Other Costs	$2.1	$2.7	$2.5	$1.5	$8.8
Contingency	$2.5	$3.0	$3.7	$3.3	$12.5
Subtotal	$12.3	$15.7	$14.2	$44.1	$86.3
Infrastructure					
Civil Engineering	$35.5	$7.3	$7.4	$1.0	$51.2
Other Costs	$31.0	$5.3	$6.1	$1.1	$43.5
Contingency	$5.8	$3.9	$3.0	$1.1	$13.7
Subtotal	$72.3	$16.5	$16.5	$3.2	$108.4
Total	**$114.1**	**$54.9**	**$46.1**	**$47.3**	**$262.3**

Source: Central Queensland Coal

19A.4.1.1.2 Operational Costs

Central Queensland Coal have also provided operational costs for the Project over a twenty year period. Total operational costs of the Project are estimated at $5,643.4 million, comprising:

- $3,386.1 million of operational expenditure incurred within Central Queensland
- $846.5 million of operational expenditure incurred within the rest of Queensland
- $846.5 million of operational expenditure incurred interstate and

- $564.3 million of operational expenditure incurred internationally [2].

The annual operating costs for the Project by expenditure category and origin of purchase are presented in Table 19A-17.

Table 19A-17: Anticipated operational costs ($m) by origin of purchase, Central Queensland

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Mining and CHPP Operations	$10.3	$20.6	$20.9	$20.5	$41.0	$40.8	$40.9	$40.5	$41.2	$42.0
Vehicle Fleets and Fuel	$15.4	$30.8	$31.4	$30.7	$61.5	$61.1	$61.4	$60.7	$61.9	$63.0
Camp Costs	$1.8	$3.6	$3.7	$3.6	$7.2	$7.1	$7.2	$7.1	$7.2	$7.3
Consumables	$7.7	$15.4	$15.7	$15.3	$30.7	$30.6	$30.7	$30.3	$30.9	$31.5
Water Management	$1.5	$3.1	$3.1	$3.1	$6.1	$6.1	$6.1	$6.1	$6.2	$6.3
Professional Services	$0.8	$1.5	$1.6	$1.5	$3.1	$3.1	$3.1	$3.0	$3.1	$3.1
Repairs and Maintenance	$5.1	$10.3	$10.5	$10.2	$20.5	$20.4	$20.5	$20.2	$20.6	$21.0
Plant and Equipment	$2.6	$5.1	$5.2	$5.1	$10.2	$10.2	$10.2	$10.1	$10.3	$10.5
Transport Costs	$6.2	$12.3	$12.6	$12.3	$24.6	$24.5	$24.6	$24.3	$24.7	$25.2
Total	$51.3	$102.8	$104.7	$102.3	$204.9	$203.8	$204.7	$202.3	$206.2	$209.9
	2029	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**
Mining and CHPP Operations	$75.6	$113.3	$41.9	$41.5	$20.3	$20.4	$20.5	$20.8	$3.2	$1.2
Vehicle Fleets and Fuel	$113.4	$169.9	$62.9	$62.3	$30.5	$30.5	$30.8	$31.2	$4.8	$1.8
Camp Costs	$13.2	$19.8	$7.3	$7.3	$3.6	$3.6	$3.6	$3.6	$0.6	$0.2
Consumables	$56.7	$85.0	$31.5	$31.1	$15.2	$15.3	$15.4	$15.6	$2.4	$0.9
Water Management	$11.3	$17.0	$6.3	$6.2	$3.0	$3.1	$3.1	$3.1	$0.5	$0.2
Professional Services	$5.7	$8.5	$3.1	$3.1	$1.5	$1.5	$1.5	$1.6	$0.2	$0.1
Repairs and Maintenance	$37.8	$56.6	$21.0	$20.8	$10.2	$10.2	$10.3	$10.4	$1.6	$0.6
Plant and Equipment	$18.9	$28.3	$10.5	$10.4	$5.1	$5.1	$5.1	$5.2	$0.8	$0.3
Transport Costs	$45.3	$68.0	$25.2	$24.9	$12.2	$12.2	$12.3	$12.5	$1.9	$0.7
Total	**$377.8**	**$566.5**	**$209.7**	**$207.6**	**$101.5**	**$101.8**	**$102.5**	**$103.8**	**$15.9**	**$6.0**

Source: Central Queensland Coal

19A.4.2 Construction Impacts

The Project's contribution to output, household income, employment and value added during the construction phase for the Central Queensland, rest of Queensland and the National economy is discussed in the following sections. Capital expenditures are anticipated to occur between 2021 and 2039.

At the time of the economic assessment being undertaken, the anticipated start date for the Project was 2019 and the finish date 2037. Since then, there have been delays to the commencement of the Project such that the start date is now anticipated to be 2021, and the

[2] Approximately 60% of operating expenditures are anticipated to be made locally, with approximately 15% to be made within the rest of Queensland and 15% to be made interstate. Approximately 10% of operating expenditures will be made overseas.

finish date 2039. It was not considered necessary to update the economic model, as the changes in dates are not considered to be material to the overall conclusions drawn with reference to the economic impacts. However, the reader should be aware that the dates in the following sections (Output, Household Income, Employment, Value Added) are now two years later than those reported in the earlier economic assessments. Where dates have been changed (i.e. moved up) by two years, they are denoted with an asterisk (*).

19A.4.2.1 Output

The construction phase of the Project, output or consumption effects are anticipated to be highest during 2022*, with the Central Queensland region likely to record the most significant stimulus. In 2022*, output or consumption effects for the Central Queensland, State and National economy are estimated at:

- Central Queensland: Total output contribution of $60.7 million, comprising $26.8 million in direct impacts and $33.8 million in indirect impacts.
- Rest of Queensland: Total output contribution of $23.3 million, comprising $12.5 million in direct impacts and $10.8 million in indirect impacts.
- National: Total output impacts of $22.0 million, comprising $11.0 million in direct impacts and $11.0 million in indirect impacts.

Output impacts are anticipated to be concentrated within the construction and manufacturing sectors at the Regional, State and National level. The mining sector is also anticipated to record significant output impacts, particularly within the Central Queensland economy.

A detailed breakdown of the Project's contribution to output during the construction phase for each industry at the Regional, State and National scales is provided in Appendix 14A.

19A.4.2.2 Household Income

Household income effects are anticipated to be highest during 2022*, with the Central Queensland region likely to record the most significant stimulus. In 2022*, household income effects for the Central Queensland, State and National economy are estimated at:

- Central Queensland: Total household income contribution of $11.7 million, comprising $5.6 million in direct impacts and $6.1 million in indirect impacts.
- Rest of Queensland: Total household income contribution of $5.1 million, comprising $2.5 million in direct impacts and $2.6 million in indirect impacts.
- National: Total household income contribution of $5.0 million, comprising $2.3 million in direct impacts and $2.7 million in indirect impacts.

Within all regions reviewed, household income effects are anticipated to be highest within the construction sector.

A detailed breakdown of the Project's contribution to household income during the construction phase for each industry at the Regional, State and National scales is provided in Appendix 14A.

19A.4.2.3 Employment

Employment impacts during the construction phase of the Project are anticipated to peak in 2022*. Employment effects in 2022* are estimated to be as follows:

- Central Queensland: Total employment contribution of 117 FTEs, comprising 46 direct FTEs and 71 indirect FTEs.

- Rest of Queensland: Total employment contribution of 52 FTEs, comprising 18 direct FTEs and 34 indirect FTEs.
- National: Total employment contribution of 53 direct FTEs, comprising 18 direct FTEs and 35 direct FTEs.

Employment impacts are anticipated to be significant for the construction and manufacturing sectors in all areas analysed. In Central Queensland, significant employment impacts are also anticipated within the mining sector.

A detailed breakdown of the Project's contribution to employment during the construction phase for each industry at Regional, State and National levels is provided in Appendix 14A.

19A.4.2.4 Value Added

During the construction phase of the Project, value added impacts are anticipated to peak in 2022*, with Central Queensland likely to experience the most significant stimulus. In 2022*, value added effects for the Central Queensland, State and National economy are estimated at:

- Central Queensland: Total value added contribution of $22.1 million, comprising $9.7 million in direct impacts and $12.3 million in indirect impacts.
- Rest of Queensland: Total value added contribution of $8.9 million, comprising $4.5 million in direct impacts and $4.4 million in indirect impacts.
- National: Total value added contribution of $8.6 million, comprising $4.0 million in direct impacts and $4.6 million in indirect impacts.

Value added impacts are anticipated to be significant within the construction and manufacturing sectors in all areas analysed. The mining sector is also anticipated to record significant value added impacts within Central Queensland.

A detailed breakdown of the Project's contribution to the added value during the construction phase for each industry at Regional, State and National levels is provided in Appendix 14A.

19A.4.3 Operation Impacts

The Project's contribution to output, household income, employment and value added during the operational phase for the Central Queensland, rest of Queensland and the National economy is discussed in the following sections. The results are summarised below. The regional (Central Qld) contributions are graphically depicted in Figure 19A-6 to Figure 19A-9.

At the time of the economic assessment being undertaken, the anticipated start date for the Project was 2019 and the finish date 2037. Since then, there have been delays to the commencement of the Project such that the start date is now anticipated to be 2021, and the finish date 2039. It was not considered necessary to update the economic model, as the changes in dates are not considered to be material to the overall conclusions drawn with reference to the economic impacts. However, the reader should be aware that the dates in the following sections (Output, Household Income, Employment, Value Added) are now two years later than those reported in the earlier economic assessments. Where dates have been changed (i.e. moved up) by two years, they are denoted with an asterisk (*).

Saleable coal production is anticipated to occur from 2021, with Project impacts highest during 2032.

19A.4.3.1.1 Output

Output contributions are anticipated to be highest in 2032* of the Project and are estimated to be:

- Central Queensland: Total output contribution of $1,148.7 million, comprising $566.5 million of direct output contribution and $582.2 million of indirect output contribution.
- Rest of Queensland: Total output contribution of $240.9 million, comprising $141.6 million in direct output contribution and $99.2 million in indirect output contribution.
- National: Direct output contribution of $258.0 million, comprising $141.6 million in direct output contribution and $116.4 million in indirect output contribution.

Output contributions are anticipated to be highest within the wholesale trade and mining sectors across all regions analysed.

The Project's direct and indirect contribution to output within the Central Queensland economy is illustrated in Figure 19A-6.

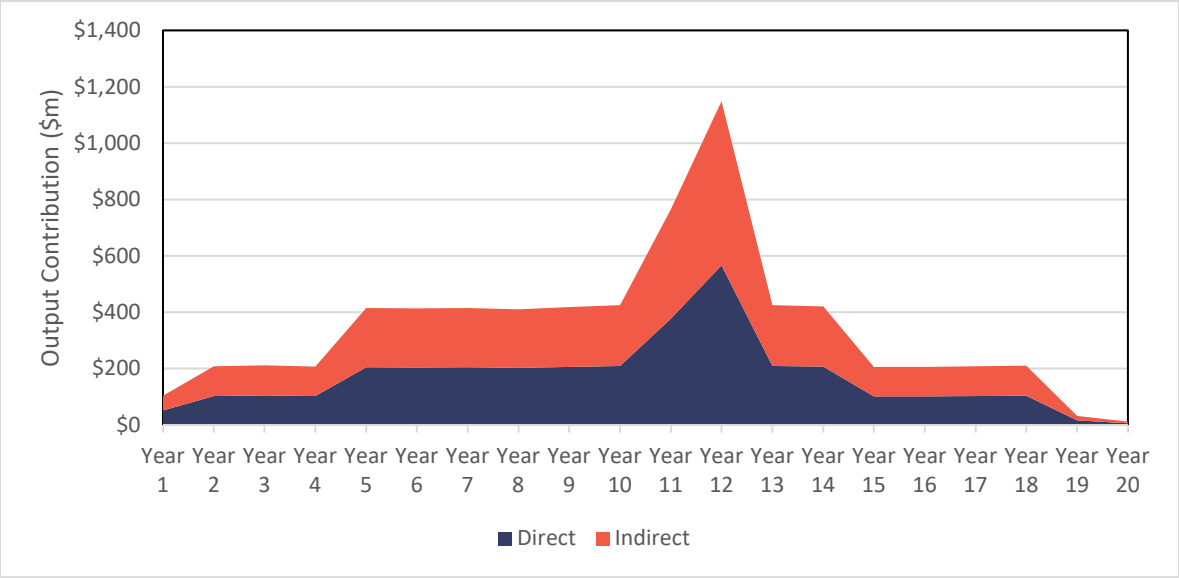


Figure 19A-7: Direct and indirect contribution to output ($m), project operational phase

A detailed breakdown of the Project's contribution to output during the operations phase for each industry at the Regional, State and National scales is provided in Appendix 14A.

19A.4.3.1.2 Household Income

In 2032*, household income effects are anticipated to be highest across all regions analysed and are estimated to be:

- Central Queensland: Total household income contribution of $253.8 million, comprising $149.4 million in direct household income contribution and $104.4 million in indirect household income contribution.
- Rest of Queensland: Total household income contribution of $61.2 million, comprising $37.3 million in direct household income contribution and $23.9 million in indirect household income contribution.
- National: Total household income contribution of $66.2 million, comprising $37.3 million in direct household income contribution and $28.8 million in indirect household income contribution.

Household income impacts are anticipated to be highest within the wholesale trade sector across all regions analysed.

The Project's direct and indirect contribution to household income within the Central Queensland economy is illustrated in Figure 19A-7.

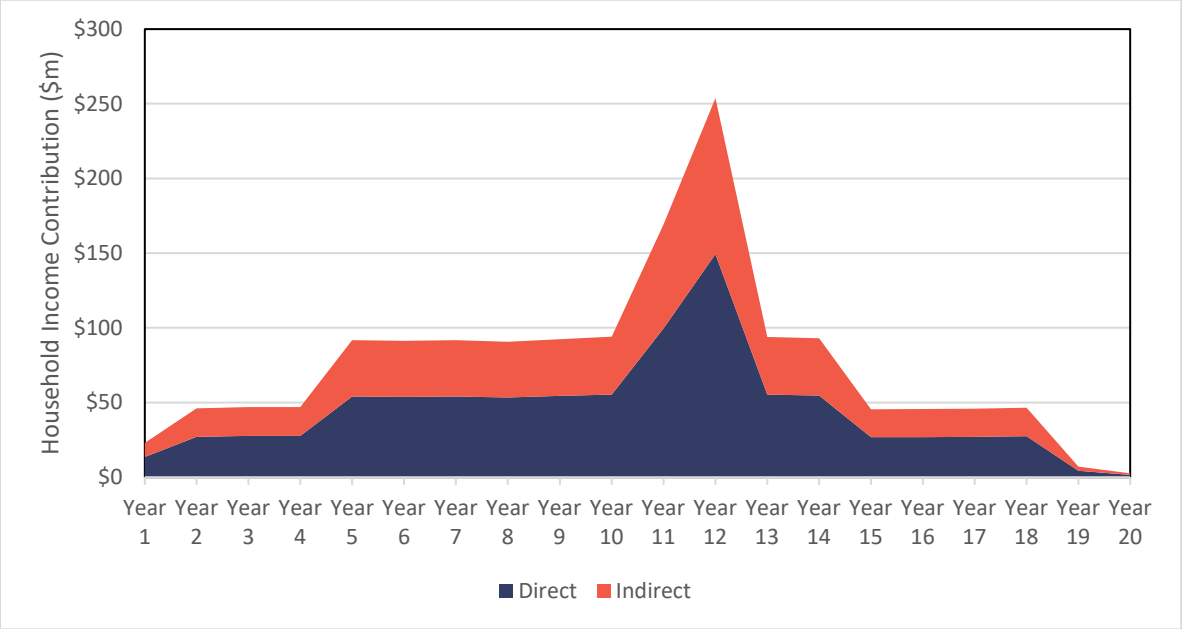


Figure 19A-8: Direct and indirect contribution to household income ($m), project operational phase

A detailed breakdown of the Project's contribution to household income during the operations phase for each industry at the Regional, State and National scales is provided in Appendix 14A.

19A.4.3.1.3 Employment

Employment impacts are anticipated to be highest in 2032* and are estimated to be:

- Central Queensland: Total employment impacts of 2,887 FTEs, comprising 1,698 direct FTEs and 1,189 indirect FTEs.
- Rest of Queensland: Total employment impacts of 731 FTEs, comprising 424 direct FTEs and 307 indirect FTEs.
- National: Total employment impacts of 790 FTEs, comprising 424 direct FTEs and 366 indirect FTEs.

Employment impacts are anticipated to be highest within the wholesale trade sector across all areas analysed.

The Project's direct and indirect contribution of employment to the Central Queensland economy is illustrated in Figure 19A-8.

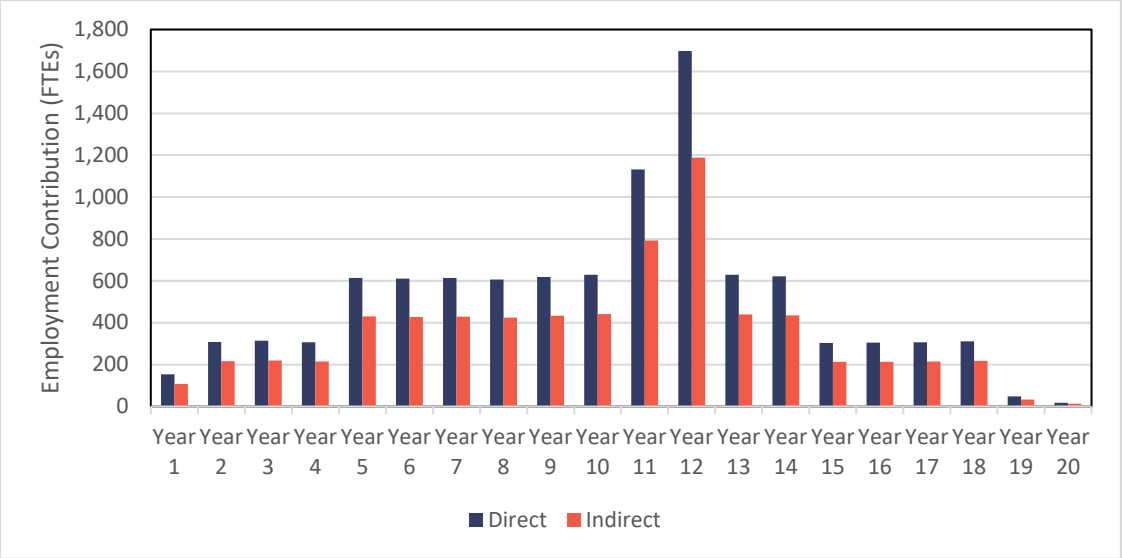


Figure 19A-9: Direct and indirect contribution to employment (ftes), project operational phase

A detailed breakdown of the Project's contribution to employment during the operations phase for each industry at the Regional, State and National scale is provided in Appendix 14A.

19A.4.3.1.4 Value Added

Value added impacts during the operational phase of the Project are anticipated to be highest in 2032*, comprising:

- Central Queensland: Value added contribution of $476.7 million, comprising $254.5 million in direct value added impacts and $222.2 million in indirect value added impacts.
- Rest of Queensland: Value added contribution of $107.3 million, comprising $63.6 million in direct value added and $43.7 million in indirect value added impacts.
- National: Value added contribution of $115.9 million, comprising $63.6 million in direct value added impacts and $52.3 million in indirect value added impacts.

Value added impacts are anticipated to be highest within the wholesale trade sector across all areas analysed.

The direct and indirect value added impacts within the Central Queensland economy during the operational phase are illustrated in Figure 19A-9.

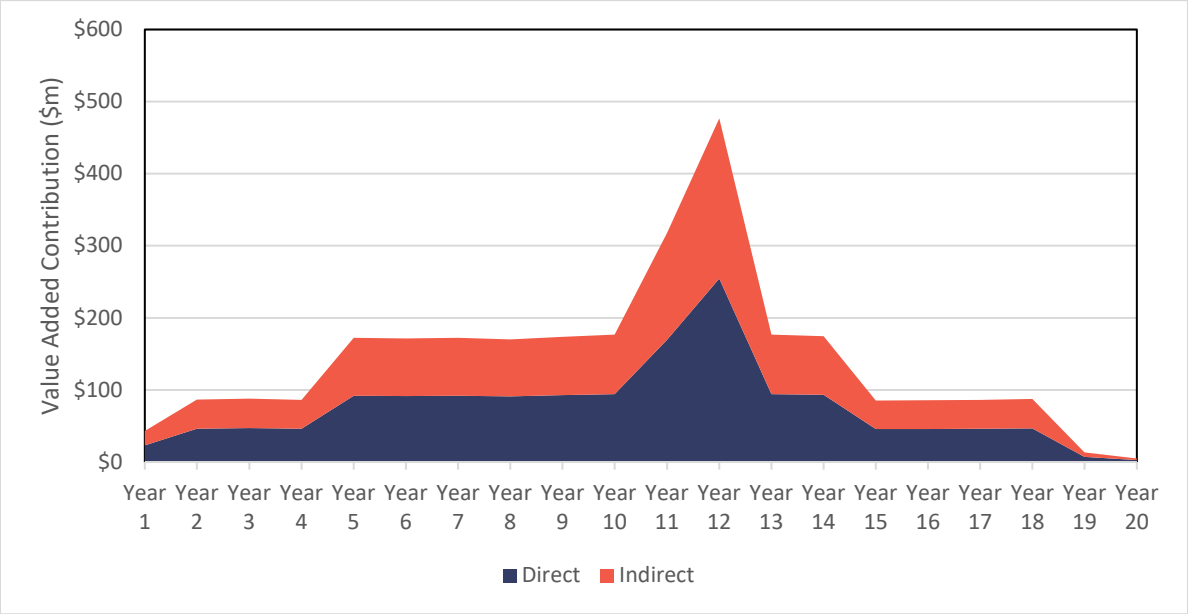


Figure 19A-10: Direct and indirect contribution to value added ($m), project operational phase

A detailed breakdown of the Projects contribution to employment during the operations phase for each industry at the Regional, State and National scales is provided in Appendix 14A.

19A.4.4 Value of Coal Exported

19A.4.4.1 Discrepancies in Original EIS

In the original EIS, there were discrepancies identified in Table 3.19 of Appendix 10A – Economic Assessment to the Styx Coal Mine Project EIS. Firstly, in the second column, the production of High Grade Thermal Coal (HGTC) had been reported to occur in years nine and ten of the Styx Coal Project production schedule, rather than in years eleven and twelve and has since been amended.

Secondly, the export prices for both HGTC and Semi-Soft Coking Coal (SSCC) (columns four and five) were stated to have been in Australian Dollars per tonne but the values reported were in US Dollars per tonne. This has since been amended to reflect correct pricing in Australian Dollars.

These errors necessarily had implications for the 'Export Value' columns (columns six, seven and eight) which were calculated based on the production schedule and the 'Export Price' columns. These columns were stated to have been in Australian Dollars per tonne but the values reported were in US Dollars per tonne and have since been amended. The original export value derived from the production of HGTC which was incorrectly reported to occur in years nine and ten has also been amended to reflect the proper timing of this production.

The calculation of Royalties (column nine) was conducted separately from the 'Export Value' columns and was reported correctly in Australian Dollars. However, an addition to the column header has been made to clarify that the royalties are in fact reported in Australian Dollars.

There have been updates to the coal production schedule, with total production volumes over the life of the Project increasing from 36.9 million tonnes to 51.0 million tonnes. Hence for conciseness, only the calculations for the updated production schedule have been provided in subsequent sections of the report, ensuring that the discrepancies in the original EIS were not carried through to the updated production schedule.

19A.4.4.2 Calculations based on Data Provided by Central Queensland Coal

The Project is anticipated to produce an estimated 51.0 million tonnes of SSCC and HGTC over the life of the Project. The majority of coal produced is anticipated to be SSCC, with HGTC to be produced only during 2031 and 2032 of the Project.

The exchange rate outlook for Australia is anticipated to remain, at least in the medium term, at approximately ~US$0.76 (Economy Forecast Agency 2020). The price of SSCC is anticipated to decrease marginally from US$130 per tonne to approximately US$125 per tonne (or AUD$171 per tonne to approximately AUD$164 per tonne) in the short to medium term. The price of HGTC is anticipated to remain at approximately US$95 per tonne (or AUD$125 per tonne) in the medium term.

Based on the assumed coal prices and exchange rate, the total export value of the coal produced is estimated to be AUD$8.2 billion over the life of the Project. Assuming Queensland coal mining royalty rates remain unchanged throughout the life of the Project, this will yield royalties of approximately AUD$766.0 million (see Table 19A-18) over the life of the Project.

It is pertinent to note that both coal prices and exchange rates are subject to fluctuations and shocks, so these estimates are intended to be indicative only, based on the current trade environment.

The anticipated production, export value and royalties generated over the life of the Project, based on export price forecast data provided by Central Queensland Coal is presented in Table 19A-18.

19A.4.4.3 Alternative Scenario

An additional independent forecast of coal export prices has been provided to inform an alternative scenario, and thus a likely range of values, for the Central Queensland Coal Project export valuation and subsequent Queensland Government royalties estimate.

The alternative SSCC export price scenario is based on a historic average ratio to hard coking coal prices. Since the introduction of quarterly price contracts in April 2010, the price of SSCC has maintained an average of 72.8% of the price of hard coking coal and a 2020 review of the recent historical prices suggest that this relationship is expected to hold in the future. The thermal coal price forecast is based on understanding of market supply and demand fundamentals up to 2022, after which point it has been indexed with inflation.

19A.4.4.3.1 Coal Price Forecast – Semi-soft Coking Coal and High Quality Thermal Coal

SSCC is used with hard coking coal to make coke, which in turn is used to produce steel. While hard coking coal is a necessary input into the production of coke due to its coking properties, semi-soft coal is not necessary for technical reasons, but provides a more economic blend of coke, and therefore is widely used across the coke and steel sectors.

As a result, the prices of hard coking coal and SSCC are closely linked, generally moving in similar directions, with semi-soft coal priced at a discount to hard coking coal. While in the short term this discount fluctuates, over a longer period it has consistently averaged 72.8%.

Table 19A-18: Anticipated production, export value and Queensland Government coal mining royalties

Year	Production of Saleable Coal (Tonnes)		Export Price (AUD/t)		Export Value ($m AUD)			Royalties ($m)
	HGTC	SSCC	HGTC	SSCC	HGTC	SSCC	Total	Total
2021	-	776,547	$125	$171	-	$132.8	$132.8	$12.7
2022	-	1,557,629	$125	$171	-	$266.4	$266.4	$25.6
2023	-	1,585,876	$125	$171	-	$271.3	$271.3	$26.0
2024	-	1,550,328	$125	$171	-	$265.2	$265.2	$25.4
2025	-	3,103,832	$125	$164	-	$510.5	$510.5	$47.9
2026	-	3,088,214	$125	$164	-	$507.9	$507.9	$47.6
2027	-	3,101,055	$125	$164	-	$510.0	$510.0	$47.8
2028	-	3,064,975	$125	$164	-	$504.1	$504.1	$47.3
2029	-	3,124,445	$125	$164	-	$513.9	$513.9	$48.2
2030	-	3,180,912	$125	$164	-	$523.2	$523.2	$49.1
2031	950,000	4,715,467	$125	$164	$118.8	$775.6	$894.3	$82.3
2032	3,800,000	4,582,679	$125	$164	$475.0	$753.7	$1,228.7	$109.1
2033		3,177,845	$125	$164	-	$522.7	$522.7	$49.0
2034	-	3,144,760	$125	$164	-	$517.2	$517.2	$48.5
2035	-	1,538,000	$125	$164	-	$253.0	$253.0	$23.7
2036	-	1,542,739	$125	$164	-	$253.7	$253.7	$23.8
2037	-	1,553,762	$125	$164	-	$255.6	$255.6	$24.0
2038	-	1,573,366	$125	$164	-	$258.8	$258.8	$24.3
2039	-	241,226	$125	$164	-	$39.7	$39.7	$3.7
2040	-	-	-	-	-	-	-	-
Total	4,750,000	46,203,657	-	-	$593.8	$7,635.3	$8,229.0	$766.0

Note: HGTC – High Grade Thermal Coal, SSCC – Semi Soft Coking Coal

To forecast prices for SSCC, hard coking coal prices have been forecast, and then applied the historical ratio of SSCC prices to hard coking coal prices to forecast the SSCC price across the period 2018-43. The results are discussed in the following sections. A summary of the SSCC price forecast is presented at Table 19A-19.

Table 19A-19: Semi-soft coking coal price forecast

US$/t	2018	2023	2028	2033	2038	2043
Semi-soft Coking Coal	146	104	118	132	149	168

Thermal coal is used to produce electricity. It is priced independently of coking coal. Since 2009, the average monthly prices of Newcastle benchmark thermal coal (6000 kcal/kg NAR basis) has been $US83.49. The average price in 2017 was US$88.20 and in January 2018, prices were consistently above $US100/t.

The forecast prices for HGTC across the period 2018-43, are discussed in the following sections. A is presented at Table 19A-20.

Table 19A-20: High quality thermal coal price forecast

US$/t	2018	2023	2028	2033	2038	2043
High Quality Thermal Coal	87	78	88	99	111	125

19A.4.4.3.2 Coking Coal - Historic Pricing Dynamics

In April 2010 (the start of the Japanese Financial Year), coking coal price contracts moved from an annual basis to a quarterly basis across the industry. Since then, most metallurgical coal – including hard coking coal, semi-soft coal and pulverised coal injection (PCI) coal - has been sold on a quarterly price basis. This has predominantly been driven by the rise of China and India as the largest markets for coking coal imports over the last decade, which has had broader implications than simply changing trade flows and patterns.

China and India both have domestic metallurgical coal production (in China's case a significant volume) which competes against imports. Therefore, some Chinese consumers only buy imported coal when it is opportune to do so, generally through spot contracts. As a result, there is much more spot buying of coking coal compared to a decade ago. This has been facilitated or encouraged by the move to spot price mechanisms from suppliers, led by BHP Billiton, the largest exporter of coking coal. This resulted in the development of a spot price index in early 2011.

For the purposes of this forecast, historical quarterly prices have been considered for analysis, as they are the most transparent and are still widely applied. Over nearly eight years of quarterly contract pricing, contract prices for hard coking coal averaged US$177/t, with a minimum of US$81/t and a maximum of US$330/t, as shown at Figure 19A-10.

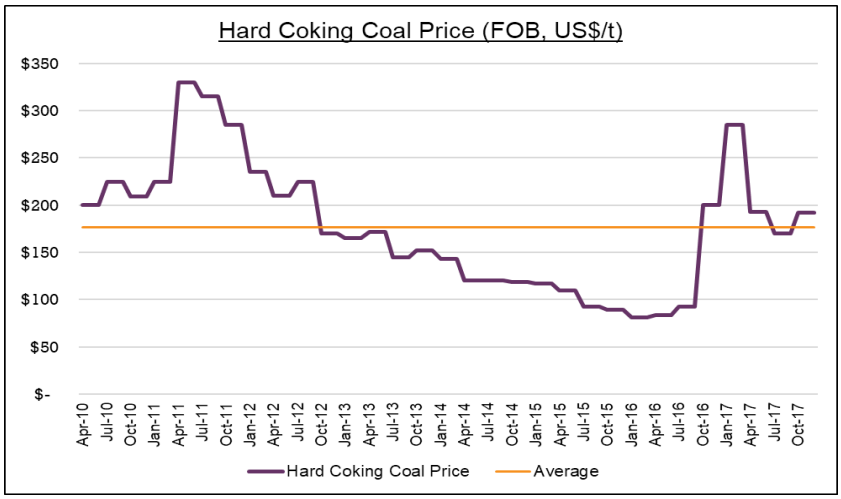


Figure 19A-11: Hard coking coal prices free on board (FOB), US$/t

It should be noted that even if annual pricing structures are included, and a 10-year sample is taken from 2008-17, the average hard coking coal price remained high at US$182/t. These high average prices over a sustained period illustrate the relative scarcity of hard coking coal.

In terms of historical SSCC pricing, over the same period (starting in April 2010 when quarterly price contracts commenced), prices averaged US$127/t, with a minimum of US$66/t and a maximum of US$264/t, as shown at Figure 19A-11.

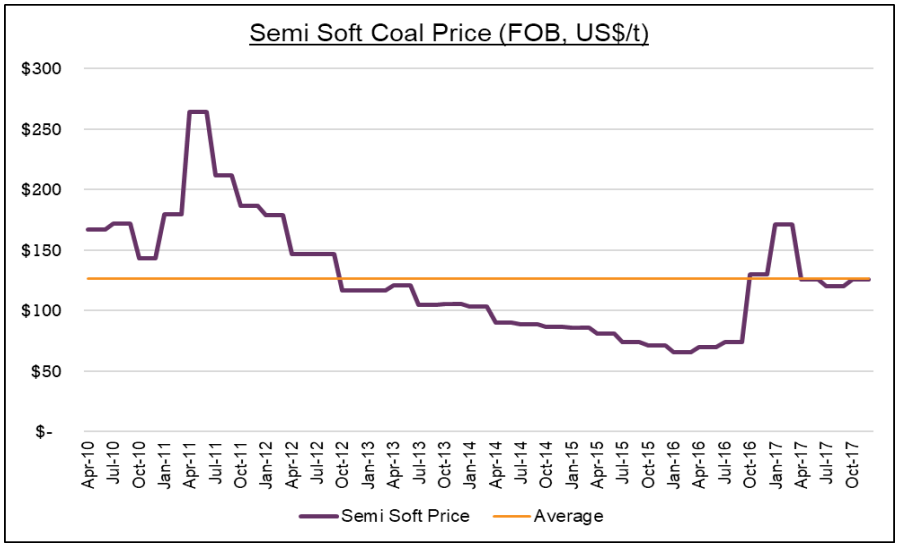


Figure 19A-12: Semi soft coking coal prices FOB, US$/t

As with hard coking coal, the average price over a 10-year period from January 2008 to December 2017 (including some annual contract periods) is slightly higher than the average since April 2010, at US$131.80/t.

As both hard coking coal and semi-soft coal are used in the coke making process and are to a point substitutes for each other, movements in their prices tend to mirror each other (see Figure 19A-12).

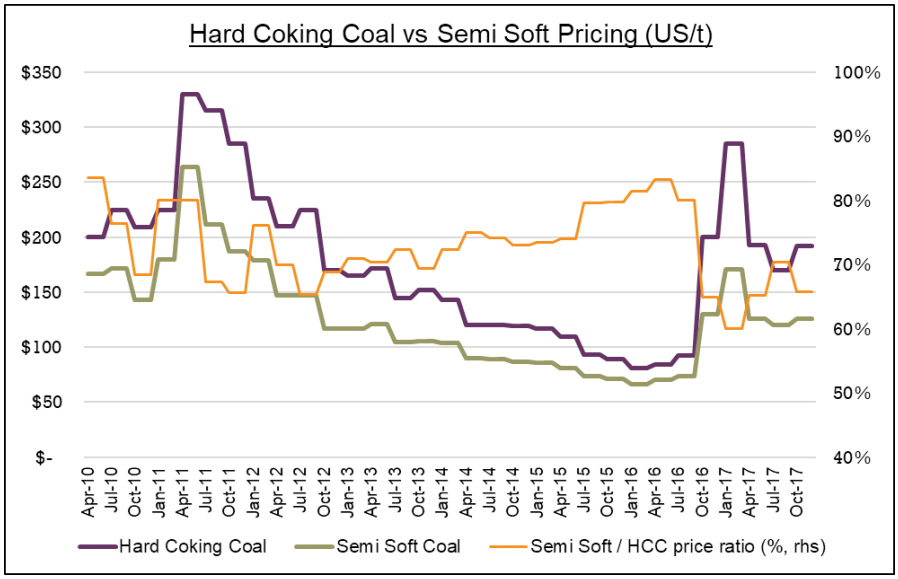


Figure 19A-13: Hard coking coal versus semi-soft coking coal prices, US$/t

The ratio of semi-soft to hard coking coal prices has averaged 72.8% since the introduction of quarterly price contracts in April 2010. This ratio has ranged from 60% to 84% across the period and is generally lower in periods of very high hard coking coal pricing such as October 2016 to March 2017. As hard coking coal prices weaken, the ratio of semi-soft prices to hard coking coal prices increases – this is clearly illustrated in the period from 2013-2016. This acts as a self-regulating floor for both supply and prices of semi-soft coal.

19A.4.4.3.3 Semi-Soft Coal Price Forecast

The price forecast for semi-soft (and hard coking coal [HCC]) for 2018-43 is presented at Table 19A-21. To forecast semi-soft prices, the historic average ratio of semi-soft to hard coking coal prices (72.8%) has been applied to the hard coking coal price forecast. It is quite possible that SSCC prices will range around this average ratio (72.8%) over the 25-year forecast period, possibly as widely as the range identified between 2010 and 2017 above (60.0% to 83.5%), based on the prevailing market conditions at the time. However, whilst this relationship between the price of hard coking coal and SCCC is volatile at times, the relationship range of 20-30% remains valid and CQC maintains its adopted conservative position of 72.8%.

The annual price forecast for semi-soft coal for 2018-43 is shown at Table 19A-21 (and hard coking coal as a reference point). All prices are in nominal dollars and are rounded to the nearest dollar.

Table 19A-21: Semi-soft coking coal price forecast, 2018-43

Year	HCC Price Forecast (US$/t)	Semi-soft Price Forecast (US$/t)
2018	200	146
2019	175	127
2020	150	109
2021	140	102
2022	140	102
2023	143	104
2024	147	107
2025	150	109
2026	154	112
2027	158	115
2028	161	118
2029	165	120
2030	169	123
2031	173	126
2032	177	129
2033	182	132
2034	186	135
2035	191	139
2036	195	142
2037	200	145
2038	205	149
2039	210	153
2040	215	156
2041	220	160
2042	225	164
2043	230	168

The forecast is based on the collation of broker and bank forecasts of hard coking coal prices. The range of these price forecasts (as at January 2018) is presented at Figure 19A-13.

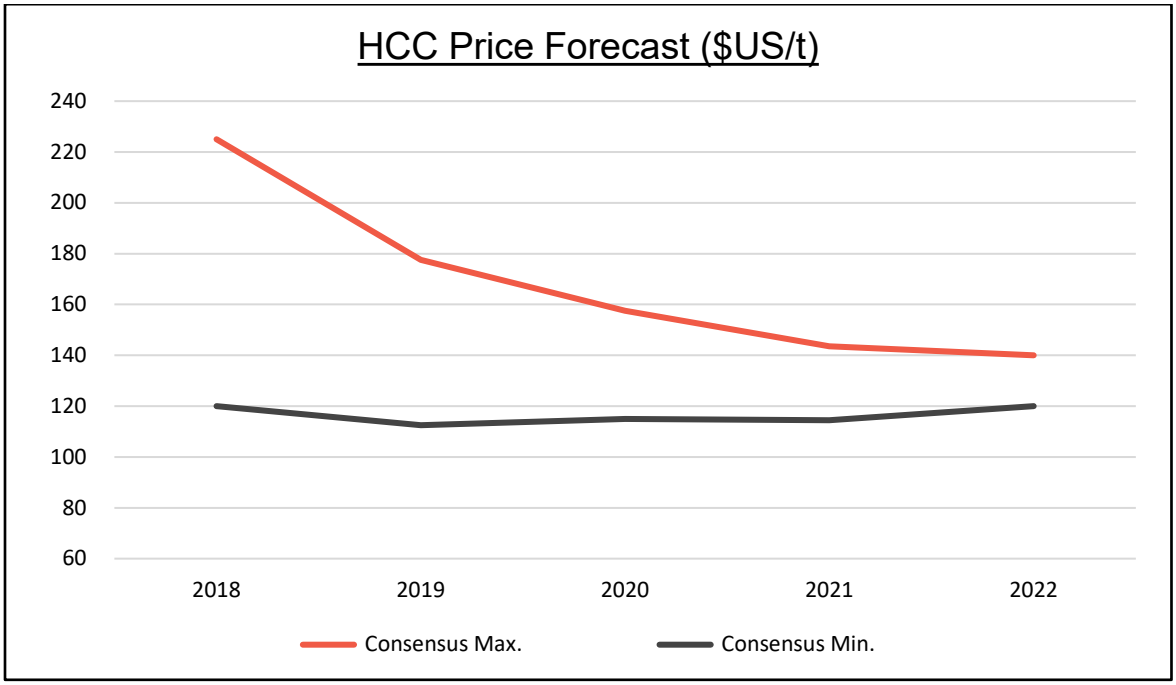


Figure 19A-14: Hard coking coal price forecast, US$/t

A consensus view of SSCC forecasts is not available.

It should also be noted that the consensus view changes regularly as banks and brokers update their forecasts. Often, the forecasts follow market movements and therefore there is a lag effect.

A chart of the range of consensus views along with the SEIS hard coking price forecast is presented at Figure 19A-14. Note that beyond 2022, the SEIS forecast is increased by inflation each year (assumed to be 2.4%).

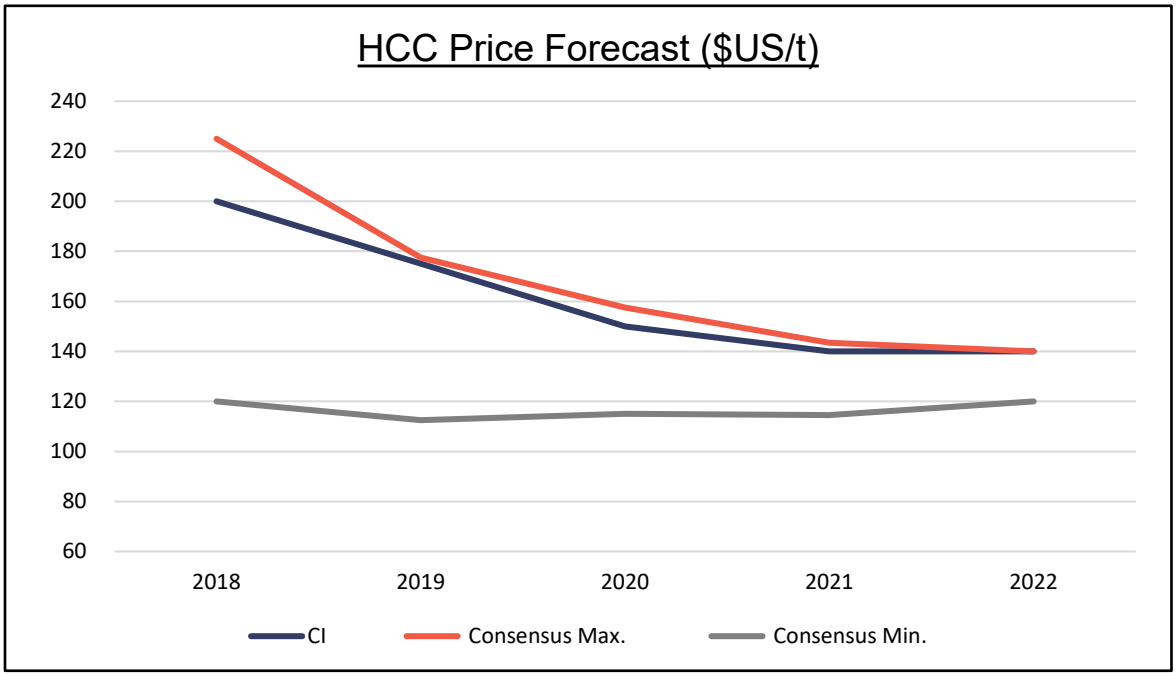


Figure 19A-15: Hard coking coal price forecast, US$/t (including SEIS forecast)

19A.4.4.3.4 Central Queensland Coal Semi-Soft Coal

To accurately assess the potential price for the Project's SSCC, it is necessary to understand the relative coal quality of the Project's coal compared to established benchmarks. Based on a range of coal quality parameters shown at Table 19A-22, it was assessed that the Project's SSCC could be classified as a Newcastle-type SSCC and therefore be priced as Newcastle SSCC. As can be seen from Table 19A-22, the Project's coal quality is consistently within the range of traded Newcastle SSCC.

Table 19A-22: Relative coal quality semi soft coking coal

Coal	Total Moisture %	Ash (%)	Volatile Matter (%)	Phosphorus (%)	Sulphur (%)
NSW SS: min.	9.0	5.0	33.5	0.00	0.45
NSW SS: max.	12.0	10.5	39.0	0.07	1.10
Central QLD SS	10.0	6.0	32.0	0.03	0.55

While there is no benchmark specification for SSCC, the Project's coal properties generally fall within the range of traded SSCC through Newcastle. The Project's SSCC has, however, a lower than average volatile matter (%) and a lower ash content, both of which will be viewed favourably by customers. Overall, Central Queensland Coal is of the view that the Project's SSCC will be priced in line with Newcastle SSCC.

19A.4.4.3.5 Thermal Coal – Historic Pricing Dynamics

Like hard coking coal, seaborne thermal coal was historically priced on an annual contract basis, agreed to between Japanese power utilities and Australian coal producers for each Japanese financial year (April – March). However, the larger size of the seaborne thermal coal market (approximately three times the hard coking coal seaborne market) and the rapid rise of China and India as major importers has resulted in a significant volume of thermal coal being traded on a spot or index basis.

In 2009, the combined market share of China and India jumped sharply to around 20%, up from 10% in 2008, and it has stayed well above 20% ever since. As well as the volume impact, this had a significant impact on how thermal coal was traded, with the traditional Japanese annual contract structure becoming less important, while India and China purchased large volumes of imports that were priced on an index or spot basis.

Average monthly prices of Newcastle benchmark thermal coal (6,000 kcal/kg NAR basis) since 2009 are presented at Figure 19A-15.

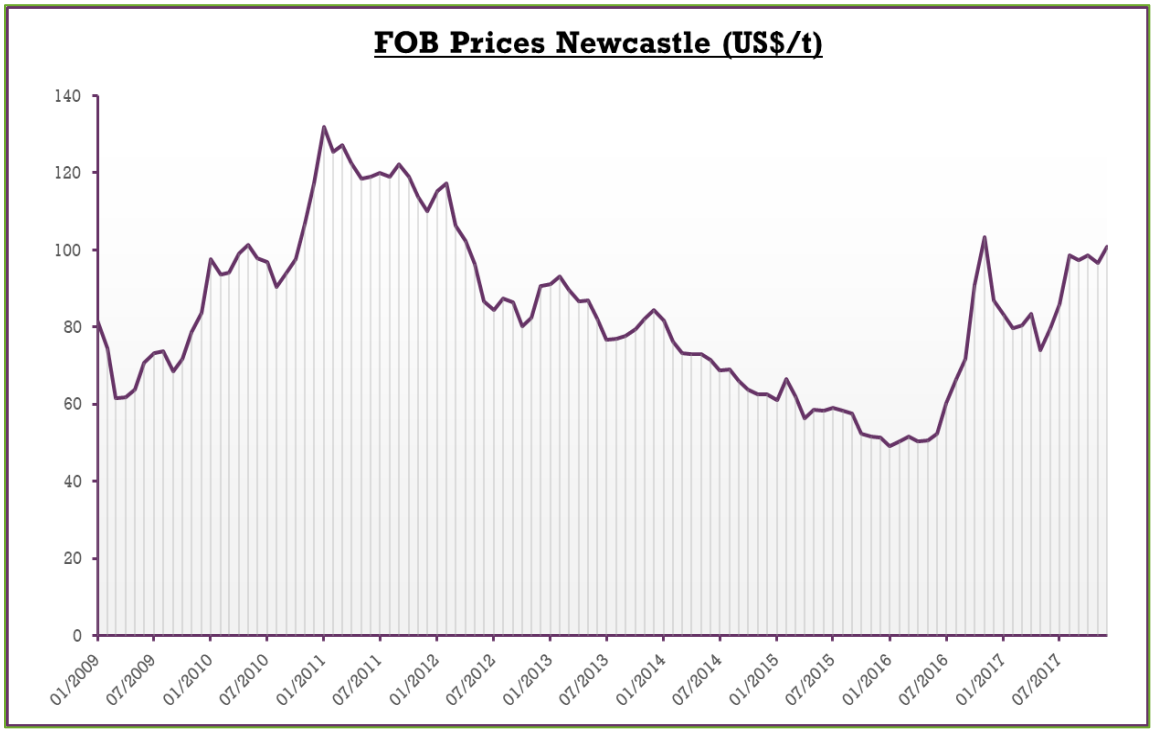


Figure 19A-16: Average monthly prices of Newcastle benchmark thermal coal, US$/t

For the purposes of the SEIS forecast, historical monthly average prices have been used for analysis, as they are highly transparent and cover the analysis period.

The average price over this nine-year period was US$83.49/t. For reference, the average price over an eight-year period to December 2017 was $US84.80, and the average price over a 10-year period to December 2017 was US$87.98.

19A.4.4.3.6 Thermal Coal Price Forecast

The price forecast for Newcastle benchmark thermal coal (6,000 kcal/kg NAR basis) for 2018-43 is shown at Table 19A-23. Our forecast is based on our understanding of market supply and demand fundamentals out to 2022, after which the price is indexed for inflation.

The actual average Newcastle benchmark thermal coal price for 2017 was US$88.20/t. Reported prices in January 2018 were all above US$100/t although the monthly average was not available at time of this report.

Table 19A-23: Price forecast for Newcastle benchmark thermal coal, US$/t

Year	Thermal Coal Price Forecast (US$/t)
2018	87
2019	87
2020	84
2021	80
2022	76
2023	78
2024	80
2025	82
2026	84

Year	Thermal Coal Price Forecast (US$/t)
2027	86
2028	88
2029	90
2030	92
2031	94
2032	96
2033	99
2034	101
2035	103
2036	106
2037	108
2038	111
2039	114
2040	116
2041	119
2042	122
2043	125

The forecast is based on the collation of broker and bank forecasts of thermal coal prices. The range of these price forecasts (as at January 2018) is presented at Figure 19A-16.

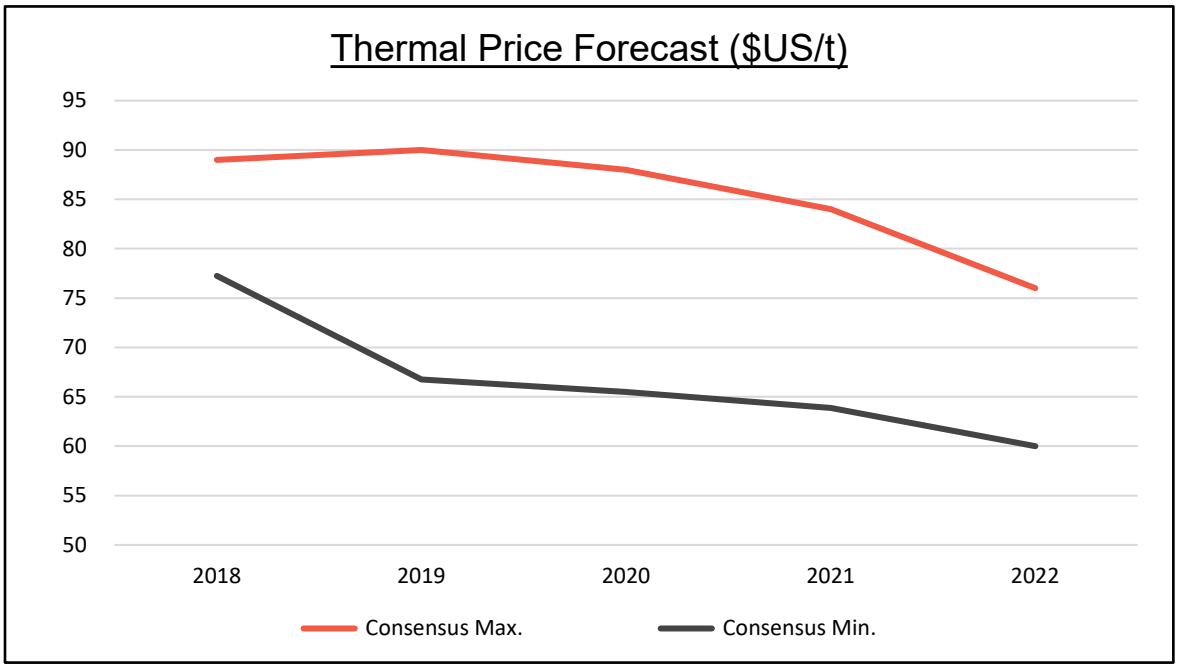


Figure 19A-17: Average monthly prices of Newcastle benchmark thermal coal, US$/t

The consensus view changes regularly as banks and brokers update their forecasts. Often, the forecasts follow market movements and therefore there is a lag effect. For example, thermal coal prices rose strongly in the back half of 2016 and have stayed elevated since and the consensus average price for 2019 has risen US$13/t from January 2017 to January 2018 (US$65/t to US$78/t), and the consensus average price for 2020 has risen US$8/t over the same period (US$66/t to US$74/t).

A chart of the range of consensus views along with the SEIS thermal coal price forecast is presented at Figure 19A-17. Note that beyond 2022, the forecast is increased by inflation each year (assumed to be 2.4%).

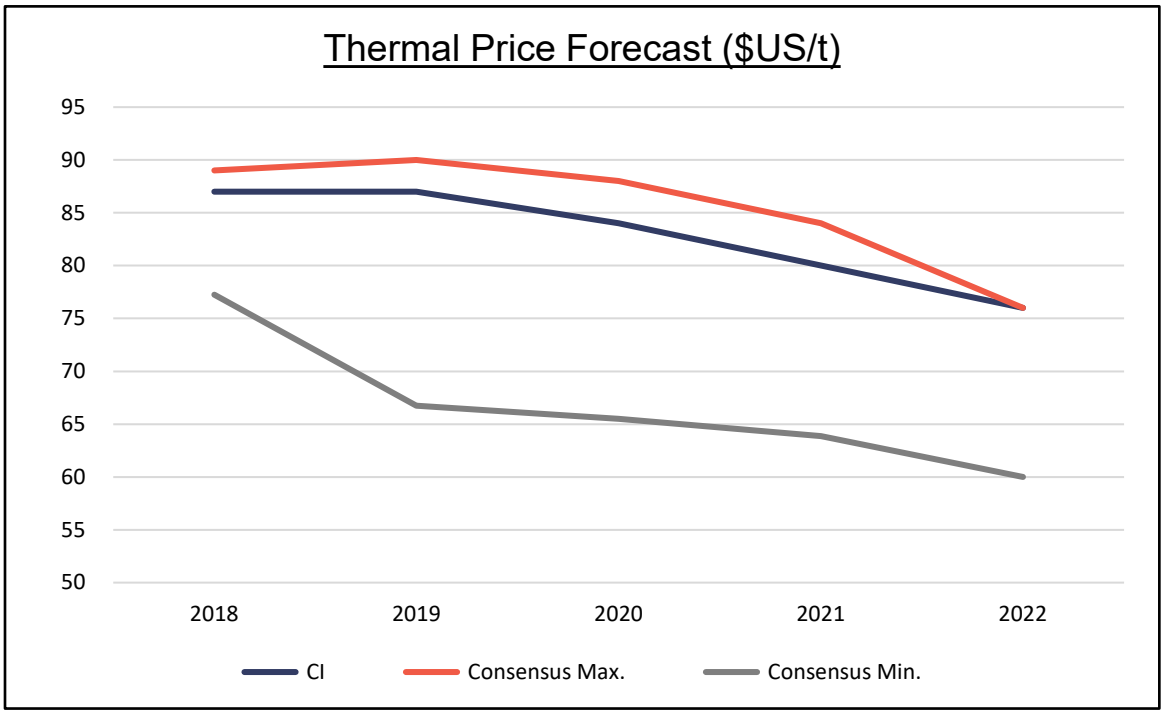


Figure 19A-18: Thermal coal price forecast, US$/t (including SEIS forecast)

19A.4.4.3.7 Central Queensland Thermal Coal

To accurately assess the potential price for the Project's thermal coal, it is necessary to understand the relative coal quality of the Project compared to established benchmarks. Based on a range of coal quality parameters shown at Table 19A-24 (based on a December 2011 coal quality report by Salva Resources), it is considered that the Project's thermal coal could be classified as a Newcastle-type thermal coal and therefore its pricing could be linked to Newcastle thermal coal. As can be seen from the coal quality data shown at Table 19A-24, the Project's thermal coal quality is consistently within the range of traded Newcastle thermal coals.

Table 19A-24: Relative coal quality thermal coal

Coal	Calorific Value (Net as Received)	Ash (%)	Volatile Matter (%)	Total Moisture (%)	Sulphur (%)
Newcastle thermal: min.	5,850	n/a	27.0	n/a	n/a
Newcastle thermal: max.	n/a	14.0	35.0	15.0	0.75%
Central Queensland Thermal	6,473 (Gross as Received)	9.3	28.6	10.0	0.51%

The Project's thermal coal has low ash levels and high energy content, the latter around 5% above the standard Newcastle specification. Both characteristics will be viewed favourably by customers. The Project's thermal coal also has a moderate sulphur content, while its moisture content and volatile matter are well within acceptable ranges for Newcastle-specification thermal coal.

Based on the coal quality data, it is expected that the Project's thermal coal would be priced in line with Newcastle thermal coal. It is possible; however, that the Project's thermal coal may receive a

small premium to Newcastle benchmark pricing due to its favourable ash and energy levels. The Commodity Insights price forecast for thermal coal and SSCC which has been used to inform the alternative export value and Queensland Government royalties' scenario are presented in Table 19A-25.

Table 19A-25: Thermal coal and semi-soft coking coal price forecast, 2018-2037

Year	USD/t		AUD/t	
	TC	SSCC	TC	SSCC
2018	$87	$146	$114	$192
2019	$87	$127	$114	$167
2020	$84	$109	$111	$143
2021	$80	$102	$105	$134
2022	$76	$102	$100	$134
2023	$78	$104	$103	$137
2024	$80	$107	$105	$141
2025	$82	$109	$108	$143
2026	$84	$112	$111	$147
2027	$86	$115	$113	$151
2028	$88	$118	$116	$155
2029	$90	$120	$118	$158
2030	$92	$123	$121	$162
2031	$94	$126	$124	$166
2032	$96	$129	$126	$170
2033	$99	$132	$130	$174
2034	$101	$135	$133	$178
2035	$103	$139	$136	$183
2036	$106	$142	$139	$187
2037	$108	$145	$142	$191

Source: Commodity Insights (2018a) and (2018b)
Note: TC – Thermal Coal, SSCC – Semi-soft coking coal

The annual coal price forecast for thermal coal and SSCC was used to inform calculations of the export value of the Project's operations and the subsequent Queensland Government royalties expected to be generated. The results of analysis are reported in Table 19A-26. Using the coal price forecasts, the anticipated export prices are significantly lower between 2018 and 2030, though become higher between 2031 and 2037, relative to the Central Queensland Coal forecasts.

This necessarily results in a total export value over the life of the Project that is approximately $447.6 million (AUD) lower than under the original assumptions. Similarly, the expected Queensland Government royalties that will be generated under the Commodity Insights coal price forecast are significantly lower than in the original case, amounting to approximately $62.7 million (AUD).

The alternative coal forecast can be used to provide a range of estimates of the total export value of the Central Queensland Coal Project production and the expected Queensland Government royalties to be generated from these exports.

The two price outlook scenarios suggest that the total value of Central Queensland Coal Project exports will be in the order of $7,781.4 million (AUD) to $8,229.0 million (AUD) and the resulting Queensland Government royalties generated will be between $703.3 million (AUD) and $766.0 million (AUD) over the life of the Project.

Table 19A-26: Production, export value and Queensland Government coal mining royalties, commodity insights coal price forecast

Year	Production of Saleable Coal (t)		Export Price (AUD/t)		Export Value ($m AUD)			Royalties ($m)
	HGTC	SSCC	HGTC	SSCC	HGTC	SSCC	Total	Total
2021	-	776,547	$114	$167	$0.0	$129.8	$129.8	$12.3
2022	-	1,557,629	$111	$143	$0.0	$223.4	$223.4	$19.4
2023	-	1,585,876	$105	$134	$0.0	$212.8	$212.8	$17.9
2024	-	1,550,328	$100	$134	$0.0	$208.1	$208.1	$17.5
2025	-	3,103,832	$103	$137	$0.0	$424.7	$424.7	$36.0
2026	-	3,088,214	$105	$141	$0.0	$434.8	$434.8	$37.4
2027	-	3,101,055	$108	$143	$0.0	$444.8	$444.8	$38.5
2028	-	3,064,975	$111	$147	$0.0	$451.7	$451.7	$39.6
2029	-	3,124,445	$113	$151	$0.0	$472.8	$472.8	$42.0
2030	-	3,180,912	$116	$155	$0.0	$493.9	$493.9	$44.7
2031	950,000	4,715,467	$118	$158	$112.5	$744.5	$857.0	$76.9
2032	3,800,000	4,582,679	$121	$162	$460.0	$741.7	$1,201.7	$105.5
2033		3,177,845	$124	$166	$0.0	$526.9	$526.9	$49.6
2034	-	3,144,760	$126	$170	$0.0	$533.8	$533.8	$51.0
2035	-	1,538,000	$130	$174	$0.0	$267.1	$267.1	$25.8
2036	-	1,542,739	$133	$178	$0.0	$274.0	$274.0	$26.8
2037	-	1,553,762	$136	$183	$0.0	$284.2	$284.2	$28.3
2038	-	1,573,366	$139	$187	$0.0	$294.0	$294.0	$29.5
2039	-	241,226	$142	$191	$0.0	$46.0	$46.0	$4.7
2040	-	-	-	-	-	-	-	-
Total	4,750,000	46,203,657	-	-	$572.5	$7,208.9	$7,781.4	$703.3

Source: Central Queensland Coal

19A.4.5 Opportunity Cost of the Project

The opportunity cost of any given Project is generally defined as the next best alternative use of the resources that will be foregone because of the Project. Thus, in the Central Queensland region, the most common economic use of the land is for cattle grazing.

The production parameters for cattle grazing in the Central Queensland region are typically:

- average production cycle: ~3 years
- slaughter value: ~$1,500 per head
- stocking rate: ~2 head per hectare and
- gross margin: ~15%.

The Project is estimated to have a total mine lease area of approximately 1,915.0 hectares. Hence, the opportunity cost of the Project is the value of the lost production of cattle grazing from the impacted area. Therefore, the opportunity cost of the Project in terms of annual output foregone and annual gross margin foregone were the land utilised for cattle grazing is estimated to be approximately $1.92 million and $0.29 million respectively. This analysis conservatively assumes that cattle could have been grazed over the entire mine lease area.

19A.5 Mitigation Measures

The Project is anticipated to result in a range of positive economic impacts in the form of increased stimulus and opportunities for suppliers and employees, as well as royalties from export revenues. However, there is also the potential for negative impacts to be experienced during the life of the Project. Management of these risks is required to mitigate any potential negative economic consequences. These consequences could potentially entail:

- the opportunity cost of the Project in terms of lost cattle grazing opportunities (although these will largely be offset by the improvement of the economic conditions and opportunities)
- tightening of the local and regional labour market resulting in increased labour costs unless other skilled labour is promoted in the area through traineeships etc.
- potential short-term worsening of skills shortages in the construction sector during the construction phase (although not directly linked to the Project, the issue could generally be apparent across the region)
- potential localised inflation in residential, commercial and industrial property markets and
- increased burden on local and regional infrastructure, particularly during the construction phase.

The mitigation measures for the potential adverse impacts are discussed in the following sections.

19A.5.1 Potential Localised Inflation

The Project has some potential to result in increased housing costs within its host region, particularly during the construction phase. A range of measures to address this issue will be developed through the Project's social impact management strategies.

The Project will utilise a local workforce to the extent possible. Accommodation for the non-local commute workforce will be at new facilities being developed at the Marlborough Caravan Park. The development of the overflow accommodation as an expansion of the existing facilities will mitigate to some degree the potential for inflationary pressures in the housing market.

19A.5.2 Increased Labour Costs

The Project has the potential to increase labour costs within the region, particularly during the construction phase. To mitigate this potential impact the following actions will be considered:

- Work with Queensland government agencies, Queensland Resource Council, local government and other proponents to develop programs that assist local businesses retain workers and back fill any vacancies that may be created because of the Project. Principally, these programs would seek to encourage locals to re-enter the workforce, upskill the unemployed or underemployed and assist local businesses to retain staff.

- Engagement with Construction Skills Queensland to identify potential measures to increase the capacity of local job seekers to develop relevant skills for construction and mining.
- Identification of potential funding opportunities and training programs that local training providers can access to increase the available pool of skilled labour in the region.

19A.5.3 Local and Regional Infrastructure

The Project will be providing water treatment (potable and contaminated sources), stormwater infrastructure, most of its own electricity, and immediate site access road. The Project will likely contribute to minor increases in traffic volumes on the road network, as well as increased utilisation of the North Coast Railway Line for the haulage of coal to Dalrymple Bay Coal Terminal.

19A.6 Dispute Resolution

Resolving feedback and complaints is an important part of any community engagement program. A complaints and feedback process has been developed for the project and is contained in the Social Impact Assessment included at Appendix 14 of this SEIS.

The process aims to provide a process for aggrieved community stakeholders to achieve remedy, provide a tool for Central Queensland Coal to continually improve its performance, and comply with relevant environmental and social conditions of approval.

The core commitments in the complaints system are to:

- providing community stakeholders with various options to lodge complaints and feedback
- listening to stakeholders to ensure their perspective is heard
- resolving complaints fairly and swiftly
- engaging face to face as much as possible when resolving complaints and
- reporting publicly on the number and nature of complaints received.

19A.7 Cumulative Impact Assessment

This section examines the potential implications and impacts of a number of projects being developed within the study area at the same or similar time as the Project which added to current projects may increase the strain in the region (refer to Table 19A-14). These Projects are discussed in Chapter 19B Social. Given the limited information available regarding many of the proposed projects and uncertainty regarding which projects may ultimately be developed, this section does not attempt to quantify the specific economic impact of these. Instead, the cumulative impact assessment presented below provides a qualitative discussion of the types of beneficial and adverse impacts that would be expected if several large projects were to be developed simultaneously.

19A.7.1 Beneficial Cumulative Impacts

Simultaneous projects in the study area can lead to beneficial cumulative impacts to the region. These can include:

- A significant overall lift in economic activity in the study area through construction and operation of major projects, including significant growth in labour demand (jobs growth) as

well as a lift in Gross Regional Product. This increase would be above that generated by the Project in isolation.

- Flow-on impacts from construction and operation of many large projects would also be higher than for the Project in isolation.
- Construction activities of the Project would leave a legacy of skills, competences and an economic and social framework that other projects can leverage from to potentially lower the 'barrier to entry' for those projects.
- Business, consumer and investor confidence is influenced by economic conditions including economic growth, investment and spending patterns. Development of several major projects would represent significant investment and expenditure within the local economy, and would provide a lift in confidence for business, consumers and investors alike, supporting flow-on stimulus for further investment and consumption expenditure and, subsequently, economic growth.
- Development of additional projects would result in additional government revenues through a range of taxes. Many of the projects would also deliver considerable increases to government revenue through royalty payments for extraction of resources.
- Some of the projects from this cumulative impact assessment, if developed, may provide major infrastructure upgrades to the region to facilitate long-term economic growth.
- Many of the projects from this cumulative impact assessment are primarily export oriented developments. Development of these projects would contribute to a considerable increase in Australian exports, and thereby support the Australian dollar.
- Sustained population supporting existing services and facilities.
- Increased employment opportunities for people in the mining industry.
- Sustained and increased economic activity, employment and incomes.
- Direct benefits for support industries (such as maintenance) and flow on industries (such as retail and accommodation).

19A.7.2 Adverse Cumulative Impacts

Simultaneous projects in the study area can also lead to adverse cumulative impacts for the local, state and national economy. These can include:

- Development of several projects concurrently will increase demand for a range of skilled labour. Key outcomes may include:
  - Increased upward pressure on wage rates, particularly in the construction and resources sectors. Other industries would also experience upward pressure as wage differentials result in the movement of staff between industries
  - Exacerbating the "draw-down" effect on business because of labour movement and difficulties in back-filling vacated positions. Rising labour costs would increase difficulties in sourcing local labour and attracting and retaining skilled labour. Lower income paying industries, and industries and businesses with lower profit margins would be most affected as these businesses and industries have a lower capacity to increase expenditure on staff incomes to attract and retain labour

  - Higher start-up and operating costs would likely result in "crowding out" of some businesses due to reduced business profitability. Those businesses and industries operating at or near the margin would likely be the worst affected

- Development of several export orientated projects could affect exchange rates. Whilst this can benefit importers, a high exchange rate makes Australia's goods and services more expensive for foreign buyers. This can adversely impact demand for goods and services produced by trade exposed businesses and industries because of reduced overseas demand for these products and a transfer of domestic expenditure towards imports and foreign investments.
- Development of many projects would increase labour demand, this may require sourcing a considerable proportion of labour from outside the study area. The subsequent influx of workers has the capacity to significantly increase demand for housing and accommodation in the region.
- Industrial and commercial property values may also rise because of concurrent development of many projects. Flow-on impacts in terms of supply chain development and other support services will increase demand for this type of property, and if demand were to outpace development of new supply, this would likely raise sales and rental prices for this type of property in the short term.
- Development of the projects from the cumulative impact assessment could generate some infrastructure capacity constraints because of increased demand for transport, utilities and other types of enabling infrastructure.
- Population growth placing demand on social infrastructure such as child care, education, emergency services and health.
- Impacts on agricultural production from land disruption.

19A.8 Qualitative Risk Assessment

A qualitative risk assessment process has been undertaken for the economic impacts of the Project. The assessment of impacts utilises a risk-based assessment framework based on the anticipated interaction of probability and consequence of impacts occurring. The descriptors of the likelihood of a particular event occurring and the descriptors of the consequence of the impact occurring are at Table 19A-27 and Table 19A-28.

Table 19A-27: Qualitative measure of likelihood

Descriptor	Description
Almost certain	It is expected to occur in most circumstances
Likely	It will probably occur in most circumstances
Possible	Might occur at some time
Unlikely	Could occur but not expected
Rare	May only occur in very exceptional circumstances
Remote	Has not previously manifested but is not inconceivable

Table 19A-28: Qualitative measures of consequence

Descriptor	Description of Beneficial Impacts	Description of Adverse Impacts
Negligible	Very insignificant impacts, which would be unlikely to be measurable against benchmarks.	Very insignificant impacts, which would be unlikely to be measurable against benchmarks.
Minor	Impacts may be detectable but result in only minimal changes to the established environment with the magnitude of impact being small relative to the broader context of the population / area being impacted. Benefits maintained over the short term without extended management and/or works.	Impacts may be detectable but result in only minimal changes to the established environment with the magnitude of impact being small relative to the broader context of the population / area being impacted. Return to pre-impact levels achievable and expected to occur over the short term once management initiatives are implemented.
Moderate	Detectable impacts, resulting in significant changes to the environment. The benefit is maintained over the medium term with minimal management and/or works.	Detectable impacts, resulting in significant changes to the environment. Management initiatives can result in recovery in the medium term.
Major	Broader and longer term impacts likely to result in a highly changed environment. The benefit is maintained over the longer term with minimal management and/or works.	Broader and longer term impacts likely to result in a highly changed environment. Long term and sustained effort required to affect a recovery.
Extraordinary	Broader and longer term impacts likely to result in a highly changed environment. The benefit is maintained over the longer term without management and/or works.	Broader and longer term impacts likely to result in a highly changed environment. Recovery to pre-impact levels unlikely to occur despite mitigation and intervention.

The interaction of likelihood and consequence determine the extent of impact. Table 19A-29 outlines the matrix of interactions between different likelihoods and levels of consequence, which determine the level of impact (i.e. very low, low, medium, high, very high).

Table 19A-29: Qualitative impact assessment matrix

Likelihood	Consequence				
	Negligible	Minor	Moderate	Major	Extraordinary
Remote	Very Low	Very Low	Very Low	Low	Medium
Rare	Very Low	Very Low	Low	Medium	Medium
Unlikely	Very Low	Low	Low	Medium	High
Possible	Very Low	Low	Medium	High	High
Likely	Low	Medium	Medium	High	**Very High**
Almost certain	Low	Medium	High	**Very High**	**Very High**

19A.8.1.1 Beneficial Impacts

The Project is anticipated to result in a range of beneficial impacts including:

- Economic stimulus to the regional, state and national economies during the construction and operational phases of the Project.
- Export revenues from coal produced across the life of the mine is estimated to be in the order of $7.78 billion to $8.23 billion, which assuming royalty rates remain unchanged would yield royalties of approximately $703.3 million to $766.0 million over the life of the mine.
- Increased employment opportunities within Central Queensland which would help to reverse the trend of increasing unemployment within the region.
- Opportunities for suppliers in the Central Queensland region to support the construction and operation of the Project.

An assessment of the anticipated positive economic impacts resulting from the Project is at Table 19A-30.

Table 19A-30: Assessment of positive economic impacts

Description of Impact	Likelihood	Consequence	Impact
Economic stimulus to the regional economy during construction and operation Regionally based Project expenditures during the construction phase are estimated to make contributions to GRP at an average of $6.2 million per year over 2019 to 2033, including $2.7 million of direct value added (see Appendix 14A); and Regionally based Project expenditures during the operation phase are estimated to make contributions to GRP at an average of $142.5 million per year over the life of the Project, including $76.1 million of direct value added (see Appendix 14A).	Almost Certain	Moderate	**High (+ve)**
Economic stimulus to the state economy during construction and operation State based Project expenditures during the construction phase are estimated to make contributions to GRP at an average of $2.5 million per year over 2019 to 2033, including $1.3 million of direct value added (see Appendix 14A); and State based Project expenditures during the operation phase are estimated to make contributions to GRP at an average of $32.1 million per year over the life of the Project, including $19.0 million of direct value added (see Appendix 14A).	Almost Certain	Minor	**Low (+ve)**
Economic stimulus to the national economy during construction and operation Project expenditures incurred interstate during the construction phase are estimated to make contributions to GDP at an average of $2.4 million per year over 2019 to 2033, including $1.1 million of direct value added (see Appendix 14A); and Project expenditures incurred interstate during the operation phase are estimated to make contributions to GDP of $34.6 million over the life of the Project, including $19.0 million of direct value added (see Appendix 14A).	Almost Certain	Minor	**Low (+ve)**

Description of Impact	Likelihood	Consequence	Impact
Increased regional supply chain and employment opportunities throughout construction and operation The Project is anticipated to generate additional regional supply chain activity. The volume of this activity is represented by the output measure. During the operational phase of the mine, total output impacts, pertaining to the Central Queensland region, are estimated at an average of $343.3 million per annum, including $169.3 million in direct impacts (see Appendix 14A). The employment support generated by the local supply chain activity is estimated at an average of 863 FTEs per annum, including 507 direct FTEs per annum (see Appendix 14A). Operational employment on-site is estimated by Central Queensland Coal to be between 100 (2019) to 500 workers at full production (2030).	Almost Certain	Moderate	**High (+ve)**

19A.8.1.2 Adverse Impacts

Theoretically, the Project could result in a range of adverse impacts including:

- Opportunity cost of the Project in terms of foregone output from cattle grazing in the order of $1.92 million per annum which represents $0.29 million in gross annual margin foregone.
- Tightening of the local and regional labour market potentially resulting in increased labour costs.
- Potential for skills shortages.
- Potential for inflationary pressure in the Central Queensland housing market.
- Potential for inflationary pressure in the Central Queensland commercial and industrial property markets.
- Increased burden on Central Queensland infrastructure.

An assessment of the anticipated positive economic impacts resulting from the Project is at Table 19A-31.

Table 19A-31: Qualitative risk assessment of negative economic impacts

Issue and associated Project phase	Potential impacts	Likelihood	Consequence	Impact	Mitigation measures	Residual risk
Adverse Impacts						
Opportunity cost of the Project	The opportunity cost of the Project in terms of alternative economic uses (i.e. beef cattle) estimated in terms of forgone output is estimated to be approximately $1.92 million, which represents an average annual gross margin of approximately $0.29 million respectively.	Almost Certain	Minor	Medium	This potential impact is likely to be substituted by the economic benefits of the Project.	Low
Increased inflationary pressure in regional labour markets	The project is anticipated to generate a significant amount of employment demand throughout its construction and operational phases. If the regional economy was facing an employment constraint this additional employment would have the potential to create inflationary pressure in the labour market. However, labour market conditions have been deteriorating at both the regional and state levels. As such, the potential for the Project to materially add to wage inflation at a regional or state level is considered low.	Unlikely	Minor	Low	A range of measures to address this issue will be addressed in the Project's social impact management strategies; and The Project will include accommodation facilities if required, thus the potential for inflationary pressures in the housing market will be mitigated to some degree.	Low
Potential for inflationary pressure in local housing, commercial and industrial property markets	Projects that generate significant employment and supply chain demand can have impacts on local and regional property markets in the form of inflationary pressure. It is considered that the potential impact of the Project to cause significant inflationary pressure in the local property market is low.	Rare	Minor	Very Low	To mitigate this potential impact, the Project will implement a Housing and Accommodation Strategy and Local Business and Industry Content Strategy.	Very Low

19A.9 Conclusion

The Project has the potential to generate significant economic benefits for the region, state and nation. Key benefits of the Project identified in the economic assessment include:

- economic stimulus to the regional, state and national economy during construction and operation
- export revenue associated with the sale of coal, which in turn will result in the payment of royalties of approximately $703.3 million to $766.0 million over the life of the Project and
- increased regional supply chain and employment opportunities throughout construction and operation.

Whilst the Project will provide economic benefits, the Project will also likely result in adverse impacts, including:

- opportunity cost of the Project in terms of alternative economic uses such as beef cattle grazing
- increased inflationary pressure in regional labour markets and
- potential for inflationary pressure in local housing, commercial and industrial property markets.

The adverse impacts will be mitigated by sourcing goods and services locally, where possible.

19A.10 Commitments

In relation to economic impacts, Central Queensland Coal's commitments are shown in Table 19A-32.

Table 19A-32: Commitments - Economic

Commitments
Prepare and implement local business and industry content strategies, inclusive of: • how Central Queensland Coal will engage with industry and promote procurement opportunities and capability in the LSC and RRC areas • identify capable industries within the LSC and RRC areas to support the Project; and • engage with contractors based on the most competitive tender proposal that shall include consideration of direct and indirect cost factors, past performance, reliability, maintainability, innovation, whole of life costs, value, safety, compliance, environmental sustainability performance, financial capability and supply chain reliability.
Support businesses in the LSC and RRC areas to encourage the ongoing development of these regions.
Promote and implement fair and equitable access to businesses in the LSC and RRC areas to supply chain opportunities associated with the Project.