



Rix's Creek Extension Project – Economic Assessment

Prepared for Big Ben Holdings Pty. Limited

14 March 2018

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Glossary

Term	Definition
ABS	Australian Bureau of Statistics
BSAL	Biophysical Strategic Agricultural Land
CBA	Cost benefit analysis
CHPP	Coal Handling and Preparation Plant
DGRs	Director-General's environmental assessment requirements
DPE	(NSW) Department of Planning and Environment
DPE Guidelines	Department of Planning and Environment, Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act
GHG	Greenhouse gas
IMF	International Monetary Fund
LGA	Local Government Area
ML	Mining Lease
Mtpa	Million tonnes per annum
NSW	New South Wales
PM2.5	Particulate matter 2.5 micrometers or less
ROM	Run-of-mine
SPCC	State Pollution Control Commission
SSD	State Significant Development
SUA	Significant Urban Areas
TSP	Total suspended particles
WB	World Bank

1 Introduction

1.1 Background

Operated by the Bloomfield Group¹, Rix's Creek is an open cut mine which produced its first coal in 1990. The mine site is located five kilometres northwest of Singleton in Hunter Valley, New South Wales (NSW). The Rix's Creek mine (the mine) currently produces approximately 1.5 million tonnes of coal per annum (Mtpa) from its existing operations². The mine has operated on the site for over 20 years and employs approximately 130 mining, administrative and maintenance personnel.

Rix's Creek Pty Limited is currently seeking approval for continuation of mining at Rix's Creek South (the Project). This approval does not relate to the activities of the adjacent Rix's Creek North Mine (prior to December 2015 part of the Integra Complex)³. The proposed continuation at Rix's Creek South pertains to existing mining operations at Pit 3 and its related activities, supporting infrastructure and facilities. If approved, the Project will also expand operations beyond the current approved mine area for Rix's Creek South. This expansion will extend operations in a north-westerly direction, requiring a modification to the Mining Lease (ML) 1432 for an out of pit dump. Specifically, the proposed extension of existing operations at Rix's Creek South includes the following elements:

- extending open cut mining operations northwards of Pit 3 to recover an additional 24 million tonnes of saleable coal over a period of 24 years;
- increasing the extraction rate of run-of-mine (ROM) coal from 2.5 million tonnes per annum (Mtpa) to 3.6 Mtpa;
- extending the western boundary of the existing mining lease to accommodate the proposed out of pit overburden dump;
- increasing the hours of operation of the Coal Handling and Preparation Plant (CHPP) from 4.5 days per week to seven days per week;
- transporting up to 2.2 Mtpa of saleable coal via rail;
- continued use of existing tailings emplacements;
- an additional cut and cover tunnel under the New England Highway; and
- progressive rehabilitation of the site.

The Project will continue to use the existing CHPP, existing mine access and rail facilities.

In 2015, as part of the initial approval process, KPMG undertook an economic assessment for the Project and prepared a report outlining analysis findings (the 2015 report). The economic assessment was one of the key inputs to the Environmental Impact Statement (EIS) for the proposed extension at Rix's Creek. Since the public exhibition of the EIS in 2016, a number of matters have arisen with regard to the Project:

¹ The Bloomfield Group is a privately owned group of companies, of which Big Ben Holdings Pty. Limited. is the head company for tax consolidation purposes. It is not a legal entity in its own right.

² AECOM 2013, *Preliminary Environmental Impact Assessment – Rix's Creek Continuation of Mining Project*.

³ In December 2015, the underground mine portion of the Integra Complex was acquired by HV Coking Pty. Limited. and the open cut portion was acquired by Bloomfield Collieries Pty. Limited. Post the sale, the Integra Complex consent was split into an open cut and underground consent. The open cut consent (08-0102) now refers to continuation of Rix's Creek North Open Cut Project.

- NSW Government agencies and the Department of Planning and Environment (DPE) have requested further clarifications on the EIS, including further detailed modelling of air quality impacts;
- Bloomfield Collieries Pty Limited and DPE agreed to consent orders in the Land and Environment Court of NSW in regard to a compliance matter, which has required additional assessment to complement the EIS; and
- the Project specifications have been updated to make necessary amendments as a result of the acquisition of Rix's Creek North and to remove the diversion of Stonequarry Gully.

As a result of the above matters, DPE requested an update to the cost benefit analysis (CBA) previously prepared in 2015⁴. DPE did not request that the approach to the economic assessment be updated to reflect its revised *Guidelines for Economic Evaluation of Mining and Coal Seam Gas Proposals*⁵. Therefore, this report should be read, and its approach understood, in conjunction with the 2015 report.

1.2 Scope and limitations

Big Ben Holdings Pty Limited (ultimate holding company of Rix's Creek Pty Limited), engaged KPMG to prepare an updated economic impact assessment of the Rix's Creek Extension Project. Specifically, the scope of services includes:

- engagement with the Department of Planning and Environment (DPE) and Big Ben Holdings to understand requirements for updates to the CBA prepared by KPMG in 2015;
- preparation of data request and collection of information required to update the CBA;
- updates to the 2015 KPMG-prepared CBA report (this Document) as required by DPE and Big Ben Holdings; and
- engagement with DPE to respond to questions regarding the updated CBA to ensure it is fit for purpose.

It is important to note a number of limitations associated with the scope of the analysis undertaken by KPMG. Specifically, the analysis excludes the following areas, where the work of others has been relied on:

- changes and updates to the analysis methodology to ensure full concordance with the Department of Planning and Environment Guidelines⁶, including the preparation of a local effects analysis (LEA)⁷;
- analysis of the primary impact of the proposed development including relating to environmental and agricultural impacts;
- preparation of revenue and cost forecasts for the development; and
- quantification of indirect (flow-on) economic impacts of the development.

⁴ KPMG 2015, *Rix's Creek Continuation Project – Economic Assessment*. July.

⁵ Department of Planning and Environment 2015, *Guidelines for Economic Evaluation of Mining and Coal Seam Gas Proposals*, December.

⁶ *ibid.*

⁷ As agreed with DPE, the updated CBA follows a consistent methodology to that adopted in the 2015 report which was developed prior to the release of the updated guidelines.

1.3 Document purpose and structure

The purpose of this document is to outline the findings of the updated CBA. The updated CBA reflects changes in the specifications of the project, additional benefit streams and further analysis of environmental externalities. The remainder of the report is structured as follows:

- Section 2 describes the approach to undertaking the CBA;
- Section 3 discusses the findings of the CBA; and
- Appendix 1 provides further detail on the coal price and production forecasts.

2 Approach

The following section outlines the method of analysis used in undertaking the economic analysis of the proposed Rix's Creek extension. The approach and parameters specified in the economic impact assessment are consistent with relevant guidelines, as follows:

- the State Significant Development (SSD) provisions of the *Environment Planning and Assessment Act, (1979)*; and
- NSW Treasury, *NSW Government Guide to Cost-Benefit Analysis*⁸.

Further detail on these guidelines is included in the 2015 report. As noted in the previous section, since the publication of the 2015 report, the NSW Government released further guidance. Based on advice from DPE, the approach to undertaking the analysis has not been updated to reflect these guidelines.

2.1 Cost benefit analysis steps

The CBA was prepared in accordance with the NSW Treasury guidelines and best practice for Cost Benefit Analysis and involved a number of key steps. These are summarised in Figure 2-1 below.

Figure 2-1: Steps in undertaking CBA



Source: NSW Treasury 2017, *NSW Government Guide to Cost-Benefit Analysis, Policy and Guidelines Paper*, March.

In line with NSW Treasury Guidelines⁹, the performance measures described above are defined as follows:

⁸ NSW Treasury 2017, *NSW Government Guide to Cost-Benefit Analysis*, March.

⁹ NSW Treasury 2017, *NSW Government Guide to Cost-Benefit Analysis*, March.

- *NPV* – the difference between the present value of the total benefits and the present value of the total costs; and
- *BCR* – ratio of the present value of total benefits to the present value of total costs.

Projects that yield a positive NPV indicate that the benefits of the project exceed the costs over the evaluation period.

A BCR greater than one indicates that project benefits exceed project costs over the evaluation period. A higher BCR suggests greater net benefits and ensures contingency against unforeseen increases in capital costs, project delays or scope expansion.

2.2 Options

The CBA was conducted for one Project Option. Specifically, the Project Option involved:

- continuation of operations beyond the current mine plan in the current approval in a north-westerly direction;
- use of existing mine access, CHPP, coal stockpiling and rail facilities;
- extraction of up to 3.6 Mtpa of ROM coal; and
- progressive replacement of equipment fleet to enable improving mining efficiencies.

At the end of the proposed Project timeframe, the land would be returned primarily to grazing land.

Consistent with NSW Treasury guidelines, the Option was compared with a ‘do nothing’ Base Case. Specification of the Base Case for the proposed Rix’s Creek Extension Project was required to enable identification and measurement of the incremental costs and benefits. For the purpose of the analysis, the Base Case was:

- continuation of existing operations at Rix’s Creek South until 2019 when current approval expires;
- cessation of activity at Rix’s Creek South in 2019 and rehabilitation of land;
- land being returned to its next best use (i.e. agricultural production); and
- continuation of remaining approved areas at Rix’s Creek North until 2035.

2.3 Inputs and parameters

The key inputs to the CBA included:

- capital and operating cost estimates associated with the Project and the Base Case provided by Rix’s Creek Pty Limited;
- air quality and greenhouse gas (GHG) emission estimates associated with the Project developed by Todoroski Air Sciences;
- an assessment of the value of agricultural production that could potentially be derived from the Project site under the Base Case developed by Neil Nelson Agvice Pty Limited;
- estimates of production levels associated with the Project and the Base Case provided by Rix’s Creek Pty Limited;
- estimated levels of employment associated with the Project provided by Rix’s Creek Pty Limited; and
- estimates of the value of the land encompassing the Project site provided by Rix’s Creek Pty Limited.

Further, key parameters used in the CBA are summarised in Table 2-1 below.

Table 2-1: CBA key parameters

Item	Assumption	Source
Scope of analysis	The analysis was undertaken and limited to the costs and benefits relevant to NSW	Base assumption
Base date for NPV	1 July 2018	Base assumption
Discount rate (real)	7 per cent per annum	NSW Treasury
Price year	All costs and benefits in the evaluation were presented in 2018 Australian prices.	Base assumption
Evaluation period	The full evaluation period was over 25 years from 2018-19 to 2042-43.	Base assumption
Economic evaluation	<p>The economic evaluation considered the Project from a community perspective along with the costs and benefits that were both internal and external to the Project, including government organisations, private sector enterprises, individuals and the environment.</p> <p>Some of these impacts were not directly quantified in market-based monetary terms, including certain externalities and changes in employment.</p>	Base assumption
Consumer Price Index	2.5 per cent per annum	Median of the RBA target range for inflation
Coal prices	Forecast coal prices (soft-coking and thermal) were used to calculate the forecast revenue in Australian dollars. Additional sensitivity testing was conducted on these values.	Macquarie Bank
Foreign exchange	Long run AUD/USD foreign exchange rate of 0.7500 was used to calculate the forecast revenue in Australian dollars. Additional sensitivity testing was conducted on this value.	Macquarie Bank

3 Findings

The following section outlines the findings of the updated CBA. Specifically, this section includes the following:

- identification of the costs and benefits associated with the Project;
- quantification of the costs and benefits associated with the Project;
- results of the analysis; and
- sensitivity analysis of the results.

3.1 Identification of costs and benefits

Following the specification of Options and the Base Case, the second step in undertaking a CBA involves identification of costs and benefits associated with the defined Option(s). Consistent with NSW Treasury guidelines, the costs and benefits of the Project Option are incremental to the Base Case. The costs and benefits of the Project are outlined in Table 3-1 below.

The costs and benefit streams included in the analysis were generally consistent with those included in the 2015 report with the following exceptions:

- royalty revenues were not included in the 2015 report but were included in the updated analysis based on advice from DPE;
- company income taxes associated with mining income were not included in the 2015 report but were included in the updated analysis based on advice from DPE; and
- due to availability of information, limited environmental externalities were included in the 2015 report and were expanded in the updated analysis to include consideration of air quality impacts based on advice from DPE.

Individual costs and benefits and quantification approaches are considered in the following section.

Table 3-1: Costs and benefits of the Rix's Creek Extension Project

Cost / Benefit	Bearer / Beneficiary	Description	Quantified
Costs			
Capital expenditure	Rix's Creek Pty Limited	Capital expenditure associated with operation and fleet replacement over the life of the Project.	Yes
Operating, maintenance and overhead costs	Rix's Creek Pty Limited	Expenditure associated with operations including labour, administration, transportation, remediation activities and maintenance.	Yes
Environmental externalities	Rix's Creek Pty Limited / Environment / Community	Key environmental assessment issues associated with the project include air quality, noise and vibration.	Partially (GHG and Air Quality)
Opportunity cost of land use	Community	Value of revenue that could potentially be generated if land was used for next best use (agricultural production).	Yes
Rehabilitation expenditure	Rix's Creek Pty Limited	Costs associated with the rehabilitation of land at the end of the Project life.	Yes
Benefits			
Revenue	Rix's Creek Pty Limited	Revenue generated from operational activities over the life of the project.	Yes
Royalties	NSW Government	Royalties generated from a percentage of revenue over the life of the project.	Yes
Company income tax attributable to NSW	NSW Government	Income tax paid to government.	Yes
Economic benefit to workers	Employees and Community	Wage premium paid to workers relative to wages they would earn elsewhere.	Yes
Residual value of capital	Rix's Creek Pty Limited	Value of fleet at the end of the Project.	Yes
Residual value of land	Rix's Creek Pty Limited	Value of the land at the end of the Project.	Yes
Contribution to the local community	Community	Social and community contribution through partnerships and sponsorships.	No

3.2 Quantification of costs and benefits

The following section outlines the approach and assumptions adopted in the quantification of the costs and benefits identified in Table 3-1.

3.2.1 Capital expenditure

The Project involves extension of existing operations using infrastructure already established. Over the life of the Project, capital investment in fleet replacement will be required, including excavators, trucks, dozers and loaders.

In addition to fleet replacement, the Project requires construction of a new cut and cover tunnel under the New England Highway and installation of CHPP noise attenuation. The estimated cost of constructing these two items is estimated to be \$9.9 million¹⁰.

Over the life of the Project, the incremental cost associated with capital investment in fleet replacement, construction of the cut and cover tunnel and CHPP noise attenuation is estimated to be \$57.5 million (in present value terms). Investment in fleet replacement is expected to cease 13 years prior to the last year of production. The corresponding incremental benefit of residual value of capital from fleet replacement is estimated to be \$0.2 million (in present value terms).

There is not expected to be any fleet replacement nor requirement for construction of the cut and cover tunnel under the Base Case with the remaining life of mining operations to use existing assets.

3.2.2 Operating, maintenance and overhead costs

The analysis considered the ongoing costs associated with the Project and the Base Case. Two cost types were included in the analysis, namely:

- operating and maintenance expenditure; and
- overheads (fixed costs).

Operating and maintenance costs associated with current mining operations at Rix's Creek include:

- direct mining expenses;
- ROM coal expenditure;
- overburden expenditure;
- washing plant expenditure;
- selling and distribution expenditure (excluding royalties); and
- rehabilitation costs.

Based on advice from Rix's Creek Pty Limited, these costs were assumed to vary in line with the forecast mine production schedule (detailed in Chart 3-3).

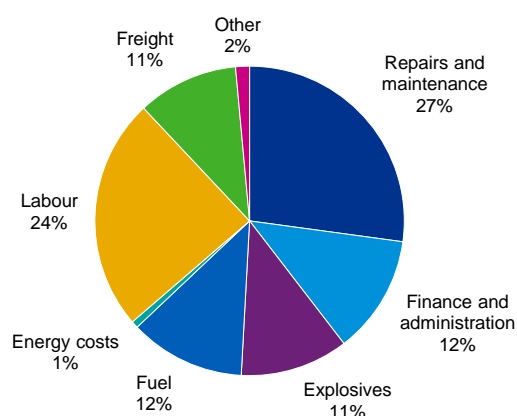
Fixed costs include those associated with finance and administration which are necessary expenditure across the entire operation of Rix's Creek, including Rix's Creek South (the Project site) and Rix's Creek North.

Under the Base Case, mining operations at Rix's Creek South would cease following the current approval period, however, it is assumed that the fixed costs associated with the continued operations of Rix's Creek North would still be incurred. This is consistent with historical observations of the magnitude of fixed costs which have remained relatively stable despite changes in production levels over time.

¹⁰ Based on information provided by Rix's Creek Pty Limited.

Over the life of the Project, the incremental operating costs are expected to be \$882.3 million (in present value terms). The distribution of these costs¹¹, by cost type, is illustrated in Chart 3-1 below.

Chart 3-1: Operating costs by type



Source: Rix's Creek Pty Limited

3.2.3 Environmental externalities

The environmental externalities associated with the Project include:

- air quality;
- ecology;
- noise and vibration;
- soils and geology;
- surface water;
- groundwater;
- heritage;
- traffic and transport;
- visual amenity and landscape;
- hazard and risk;
- greenhouse gases;
- land use;
- waste; and
- rehabilitation.

Consistent with the 2015 report and subsequent discussions with DPE, the CBA considered the quantitative cost associated with air quality and GHG emissions. The remainder of the environmental externalities were considered qualitatively and outlined in the 2015 report and in the broader EIS.

The scope of the analysis of environmental externalities for the purpose of the CBA is summarised in Box 3-1 below.

¹¹ Distribution as at December 2017.

Box 3-1: Scope of the analysis of environmental externalities

The scope of the analysis of environmental externalities for the purpose of the CBA was limited to the activities associated with the extraction and processing of coal at Rix's Creek. The analysis excluded any consideration of the environmental externalities associated with end-use of the coal outputs such as electricity generation from coal-fired power stations. Some economic analyses include the marginal cost of environmental emissions from coal-fired power stations relative to the next likely energy source (e.g. Gas). However, as the coal from Rix's Creek is exported outside Australia and the energy generation mix in destination country is unlikely to be impacted by any changes in Rix's Creek production, these impacts were excluded from the analysis.

Greenhouse gas (GHG) emissions

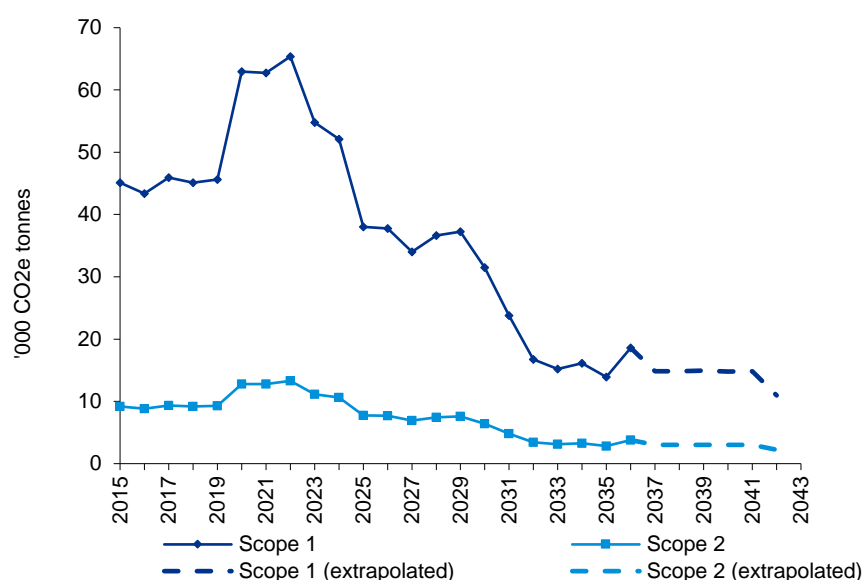
The GHG Protocol defines direct and indirect emissions into three broad scopes:

- **Scope 1:** all direct GHG emissions (sources that are owned or controlled by the reporting entity).
- **Scope 2:** indirect GHG emissions from consumption of purchased electricity, heat or steam.
- **Scope 3:** other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities not covered in Scope 2, outsourced activities, waste disposal, etc.

Importantly, Scope 3 emissions are typically not considered in the economic analysis of mining projects as it is not methodologically clear how the costs of other emissions categories should be treated within a CBA framework.¹²

Estimates of Scope 1, 2 and 3 carbon emissions for the Project were developed by Todoroski Air Services based on planned production levels as at 2015 to 2035. These estimates were extended for the remaining years of the Project based on the linear relationship between Scope 1 emissions and production volumes and Scope 2 emissions as a function of Scope 1 emissions. The overall Scope 1 and 2 carbon emissions associated with the Project are highlighted in Chart 3-2 below.

Chart 3-2: Scope 1 and 2 carbon emissions associated with the Project



Source: KPMG analysis based on information provided by Todoroski Air Sciences

¹² Deloitte Access Economics 2015, *Cost Benefit Analysis and Economic Impact Analysis of the Mount Owen Continuation Operations*.

The quantification of the economic cost of carbon emissions is typically a function of quantity and price, specifically:

$$\text{Cost of carbon emissions} = \text{units of carbon emissions} \times \text{economic cost per unit of carbon emissions}$$

In accordance with the NSW Government's preferred approach, the forecast European Union Emissions Allowance Unit cost of A\$9.6 per tonne (in 2018 dollars) was applied to carbon emissions units.

The economic cost of the incremental Scope 1 and Scope 2 emissions over the Project horizon was estimated to be \$4.7 million as shown below in Table 3-2 below.

Table 3-2: GHG emissions and costs associated with the Project (PV in 2018 real terms)

	Scope 1	Scope 2	Total
GHG emissions ('000 Cot-e)	703	143	846
Impact (\$m)	3.9	0.8	4.7

Source: Department of Planning and Environment, Greenhouse Gas Emissions Valuation Workbook, available at http://planspolicies.planning.nsw.gov.au/index.pl?action=view_job&job_id=7312; Todoroski Air Sciences and KPMG analysis.

Air quality impacts

Estimates of particulate matter 2.5 micrometers or less in diameter (PM2.5 emissions) were also provided by Todoroski Air Sciences to measure the air quality of the Project. These estimates were converted from total suspended particles (TSP) measurements from a study conducted by the State Pollution Control Commission (SPCC).

Approximately 4.7 per cent of the incremental annual mass of total suspended particles (TSP) are comprised of PM2.5. Based on this finding, selected year estimates for TSP and PM2.5 emissions are provided in Table 3-3.

Table 3-3: Projected PM2.5 emissions over the project horizon

	2017	2020	2023	2026
Incremental TSP emissions (kg)	321 344	121 483	981 868	210 555
Incremental PM2.5 emissions (kg)	15 103	5 710	46 148	9 896
Incremental PM2.5 emissions (t)	15.1	5.7	46.1	9.9

Sources: Todoroski Air Sciences, Air Quality and Greenhouse Gas Assessment Rix's Creek Continuation of Mining Report, 2015 Todoroski Air Sciences, RE: Response to Agency Submissions for Rix's Creek Continuation of Mining Project, 2015, State Pollution Control Commission (now EPA), Air Pollution from Coal Mining and Related Developments, 1983 and KPMG analysis

The estimated incremental PM2.5 emissions were then linearly interpolated with reference to the production schedule (as later highlighted in Chart 3-3) to establish the incremental PM2.5 emissions over the other years of the Project life.

The approach used to quantify the economic costs of PM2.5 emissions was consistent with the Air Quality Valuation Workbook¹³ that supports the NSW Government *Guidelines for the economic assessment of mining and coal seam gas proposals*, specifically:

¹³ Department of Planning and Environment, *Air Quality Valuation Workbook*, available at: http://planspolicies.planning.nsw.gov.au/index.pl?action=view_job&job_id=7312

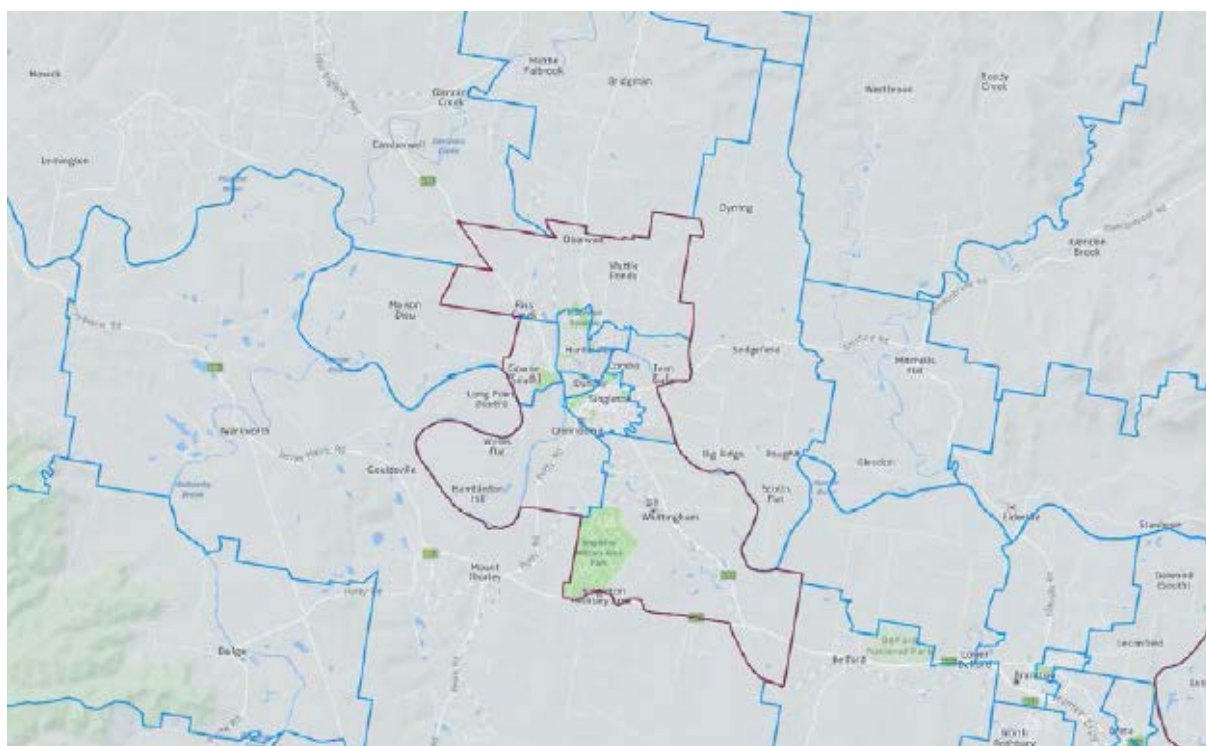
Cost of PM2.5 emissions

$$\begin{aligned} &= \text{economic cost per unit of PM2.5 emissions in geography 1} \\ &\times \text{units of PM2.5 emissions in geography 1} \\ &+ \text{economic cost per unit of PM2.5 emissions in geography 2} \\ &\times \text{units of PM2.5 emissions in geography 2 ...} \end{aligned}$$

where the economic cost per unit of emissions is a function of population density

Quantifying air quality impacts is often complicated by the fact that PM2.5 emissions can traverse geographical boundaries that have different levels of development and population density. To overcome this, the analysis considered the proportion of air quality impacts that occur within neighbouring geographic catchments known as Significant Urban Areas (SUA). In this case, the Project is located within the Singleton SUA, which is bordered by pastoral and farmland that is defined by the ABS as “Not in any Significant Urban Area” in Figure 3-1 below.

Figure 3-1: Singleton Significant Urban Area (SUA)



Notes: The border of the Singleton SUA is highlighted in purple. NSW suburb borders are highlighted in blue.

Source: ABS, Australian Statistical Geography Standard (ASGS): Volume 3 – Non ABS Structures, July 2016.

The proportion of air quality impacts that occur within a given geographic catchment is a function of both the concentration of emissions and the physical area or volume of the impact zone. Analysis of detailed maps of the impact zones and concentration of PM2.5 emissions from the Project produced by Todoroski Air Sciences indicated that on average, over the Project’s life, close to 20 per cent of the incremental air quality impacts are likely to occur within the Singleton SUA.¹⁴ The remaining 80 per cent was deemed to occur outside of any SUA and therefore the economic impacts were considered marginal.

Air quality impacts are expected to peak by 2023 (see Figure 3-3) and be located south east of the Project site in suburbs such as Singleton Heights (see Figure 3-2).

¹⁴ Please note that Maison Dieu or the area to the north-west of Wattle Ponds is not located in the Singleton SUA as defined by the ABS.

Figure 3-2: Impact zone and concentration of PM 2.5 emissions from the Project, 2017

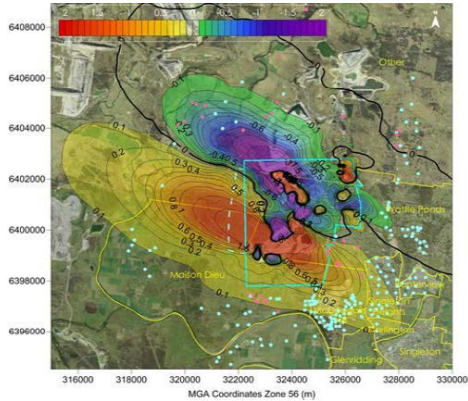
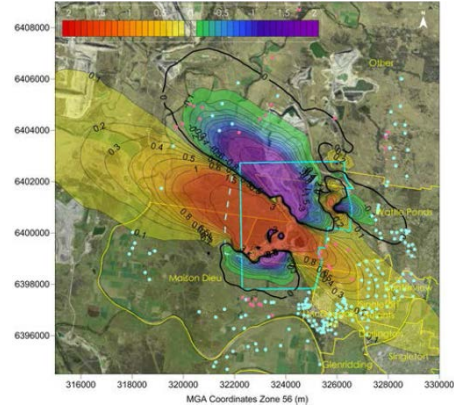


Figure 3-3: Impact zone and concentration of PM 2.5 emissions from the Project, 2023



Notes: The vertical and horizontal axis display spatial coordinates. The light blue line designates the Project site. The scale indicates the concentration of PM2.5 emissions.

Source: Information provided by Todoroski Air Sciences

The analysis assumed a cost per tonne of PM2.5 emissions of \$41,000 (inflated from \$39,000 in 2015 using historical CPI), consistent with default values provided by the Department of Planning and Environment Air Quality Valuation Workbook. This is summarised in Table 3-4 below.

Table 3-4: Proportional impact of projected PM2.5 emissions by SUA

	Impact distribution (%)	Cost per tonne (\$)
Singleton	20	41 000
Not in any Significant Urban Area	80	0

Sources: Department of Planning and the Environment, Air Quality Valuation Workbook, KPMG

Using the year-to-year interpolated incremental PM2.5 emissions, cost per tonne and impact distribution proportion, the total economic cost of air quality impacts in present value terms was estimated to be \$1.2 million.

Other environmental externalities

As outlined above, there were a number of other environmental externalities (costs) associated with the Project that have been identified through the broader EIS. These were considered qualitatively in the CBA and are summarised in Table 3-5. It is important to note that these externalities are expected to occur under both the Base Case and Project Option, however the magnitude of the externalities are likely to be higher under the Project Option.

Table 3-5: Environmental externalities

Externality type	Description
Ecology impacts	<p>Ecological assessment of the area found that the Project will likely have negligible impacts. The assessment identified two threatened communities: one threatened fauna species and one threatened plant species. The impacts on the threatened entities were determined to be manageable and acceptable¹⁵.</p> <p>Due to uncertainty as to whether the Upper Hunter Strategic Assessment will ever take effect, biodiversity impacts associated with the removal of vegetation are offset in</p>

¹⁵ Bell, S.A.J. 2014, *Ecology Report for the Continuation of Rix's Creek Mine, Singleton LGA (unpublished draft report v3)*, August 2014.

Externality type	Description
	accordance with the Framework for Biodiversity Assessment. The number of credits associated with the 213 ha Project is 5,808 ¹⁶ .
Noise impacts	Analysis of the noise impact of the Project found that noise levels are expected to be similar to current operations. However, over the Project life, the noise impact is expected to diminish over time as a result of noise attenuation measures built into the CHPP, along with existing equipment being replaced with attenuated equipment ¹⁷ .
Soils and geology	A Biophysical Strategic Agricultural Land (BSAL) Verification Assessment was undertaken and found that there is no qualifying BSAL within the Rix's Creek area ¹⁸ .
Surface water	<p>A water management system has been developed for the Project to manage any potential surface water issues. The system includes:</p> <ul style="list-style-type: none"> • a mine water management system to collect and use water that may have high salt content; • a tailings water management system reducing the volume of tailings required to go to a permanent tailings disposal facility; • a sediment and erosion management system to manage runoff; • a clean water management system; and • a contaminated water management system. <p>Analysis of the effectiveness of these systems found that the Project will not impact off site water quality associated with spillages from the mine dams¹⁹.</p>
Groundwater	<p>A groundwater impact assessment was undertaken to determine the cumulative impacts of the Project with other existing and proposed mining operations, as well as the incremental impacts that are directly attributable to the Project. The findings of the assessment are as follows:</p> <ul style="list-style-type: none"> • there are no identified Groundwater Dependent Ecosystems in the vicinity of the Project; • there is no cumulative drawdown impact within the regolith/alluvium predicted outside the coal lease boundary; • there is a drawdown impact in the Permian hard rock to the north of the Project; and • water quality impacts are considered negligible²⁰.
Visual amenity and landscape	Analysis of the proposed Project found that it will likely have an acceptable landscape character and visual impact on the surrounding locality and region ²¹ .

3.2.4 Opportunity cost of land (foregone agricultural production)

The Project involves the use of potential agricultural land for mining purposes. Accordingly, the land is no longer available for agricultural purposes and the associated farming income is foregone. Analysis of the potential agricultural value of the land was undertaken based on the value of livestock

¹⁶ Based on discussions with Rix's Creek Pty. Limited.

¹⁷ Global Acoustics 2015, *Rix's Creek Coal Mine – Continuation of Mining Project Environmental Noise Assessment*, March.

¹⁸ SLR Global Environmental Solutions 2014, *Rix's Creek Biophysical Strategic Agricultural Land Verification Assessment*, July.

¹⁹ JP Environmental 2014, *Surface Water Study for Rix's Creek Continuation of Mining*, November.

²⁰ RPS Aquaterra Pty Limited 2014, *Rix's Creek Continuation of Mining Project Groundwater Impact Assessment*, July.

²¹ RPS Australia East Pty Limited 2014, *Landscape Character and Visual Impact Assessment for Rix's Creek Continuation of Mining Project*, August.

production (weaner production) from the area impacted by the Project. Historical assessment of the value of the land, in terms of agricultural production is outlined in Table 3-6.

Table 3-6: Assessment of value of agricultural production

Year	Enterprise	Stock sold (no.)	Value of production
2014	Weaner production	46 – 65	\$22,598 - \$31,475
2015	Weaner production	46 – 65	\$32,767 - \$45,639
2017	Weaner production	46 – 65	\$55,987

Source: Neil Nelson Agvice Pty Limited

The range in stock sold reflects the potential range in stocking rates on the land. Over the last 12 months there has been an upward trend in cattle prices. The 2017 value of production provided by Neil Nelson Agvice was more consistent with long run average prices. Accordingly, the analysis assumed the value of foregone production is consistent with the upper estimate for 2017 (\$55,987 per annum).

A conservative approach was taken in estimating the opportunity cost of land, with the total cost likely to be lower when accounting for agricultural production costs (for example fencing, vet fees, food and transport).

Over the Project life, the cost associated with foregone agricultural production is expected to be \$0.6 million (in present value terms).

3.2.5 Rehabilitation expenditure

At the completion of mining activities, the Project requires the decommissioning of operations and infrastructure and rehabilitation to return the land to its former use. The expenditure associated with rehabilitation includes, among other things, the decommissioning of:

- CHPP;
- roads;
- rail lines;
- buildings;
- working areas;
- walls and ramps;
- plants;
- waste dumps; and
- dams.

The NSW Department of Industry (Resources and Energy) estimated rehabilitation costs for the site to total \$19.8 million. It is important to note the difference in treatment of this cost under both the Base Case and Project Option. Under the Base Case, the rehabilitation cost was incurred fully in the last year of production (including third party management estimates). However, under the Project Option:

- costs associated with overburden and waste dumps were considered 'progressive rehabilitation' costs and already covered under operating expenditure;
- third-party project management costs were not required;
- costs associated with infrastructure areas and tailings and rejects emplacements were incurred one year after the final year of production; and

- the remaining balance of rehabilitation costs were distributed evenly across the last five years of production.

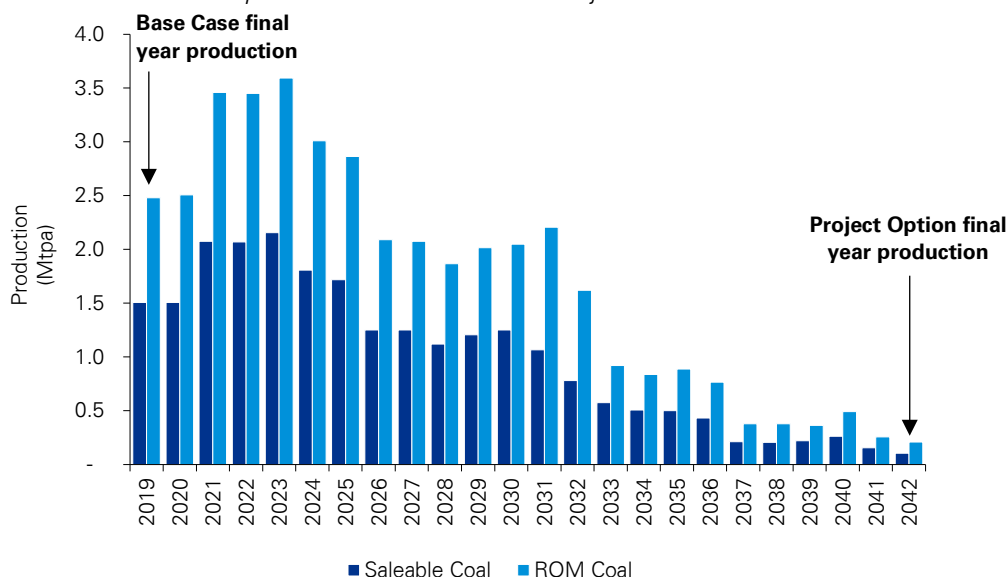
Due to the fact that rehabilitation costs under the Base Case are incurred significantly earlier than the Project Option, and certain components are excluded from the Project Option, the present value of the Project's rehabilitation costs are \$16.0 million less than the Base Case. This resulted in a net benefit to the Project.

3.2.6 Revenue

The Project involves continuation of current mining activities through the use of similar mining methods to extract coal from remaining seams. Approval is sought for extraction of up to 3.6 Mtpa of run-of-mine (ROM) coal. Production will capitalise on the remaining coal resource at the mine, estimated to contain around 24 million tonnes of saleable coal. Bloomfield currently has long-standing thermal and semi-soft coking supply contracts with Asian customers, with production at Rix's Creek South contributing to meeting these contracts. If approved, the extension of the Rix's Creek South Project would enable continued supply under these contracts.

The indicative production rates associated with the Project are illustrated in Chart 3-3 below.

Chart 3-3: Indicative production rates over the Project life



Source: Rix's Creek Pty Limited

Under the Base Case, the final year of production is 2019 and production at Rix's Creek South site is assumed to be zero in subsequent years. Under the Project Option, production continues, peaking in 2021 to 2025, and follows a declining trend in subsequent years.

Revenue associated with this production was estimated based on Macquarie Bank's forecasted nominal coal prices²² and long-term foreign exchange rates, which were then converted to real 2018 terms using RBA's median inflation target range of 2.5 per cent. The detailed forecast assumptions are further outlined in Appendix Table 1.

Based on forecast coal prices, the incremental benefit associated with revenue was estimated to be \$1,271.8 million (in present value terms).

3.2.7 Royalties

The Project involves royalties associated with the generation of revenue from saleable coal. According to DPE guidelines, an ad valorem (i.e. proportion) royalty rate of 8.2 per cent for open-cut coal was

²² Note that Macquarie Bank forecasts were selected because they provided prices for both semi-soft and thermal coal types which are produced at Rix's Creek.

applied to gross revenue generated per annum. Over the life of the project, the incremental benefit from royalties is estimated to be \$104.3 million (in present value terms).

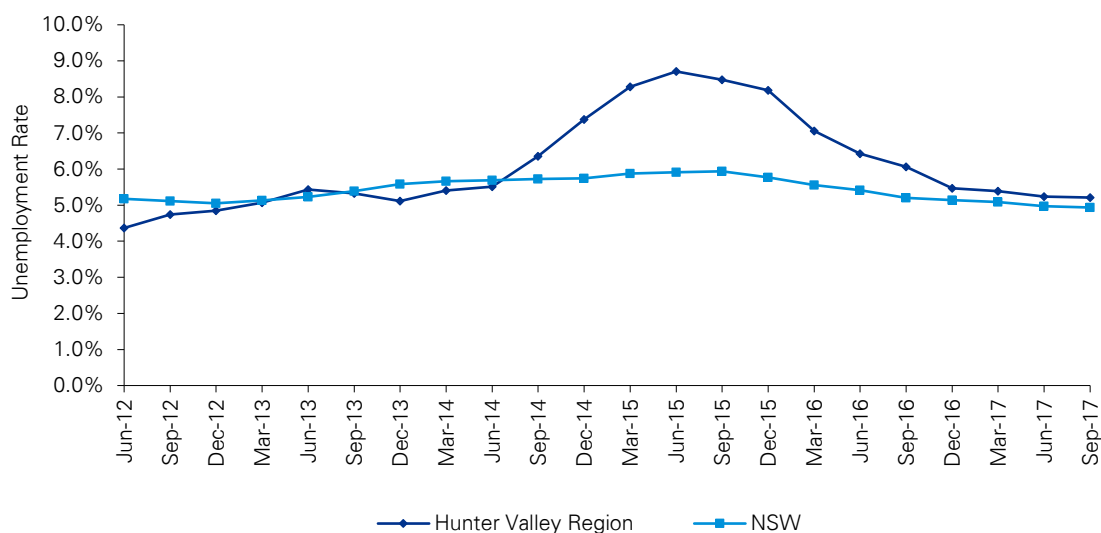
3.2.8 Company income tax attributable to NSW

The Project involves company income tax payable from the net income of mining activities. To estimate this contribution a company taxable income rate of 30 per cent was applied to net income per annum, with company tax capped at zero in years where expenditure was greater than revenue. To quarantine the proportion of tax paid to the Commonwealth that is attributable to NSW, a rate of 32 per cent²³ was further applied to overall company income tax per annum to reflect the share of Australian population represented by NSW. Over the life of the Project, the incremental benefit from company income tax attributable to NSW was estimated to be \$50.9 million (in present value terms).

3.2.9 Economic benefit to workers (mine workers wage premium)

The Project currently employs approximately 160 employees. At its height, between 2021-2025, it will provide employment for up to 217 employees. This is significant given the unemployment rate in Hunter Valley has seen significant fluctuations over the past five years, as highlighted in Chart 3-4.

Chart 3-4: Unemployment rates in Hunter Valley and NSW over the period June 2012 to September 2017



Source: Department of Employment 2017, Small Area Labour Markets (as at September quarter 2017).

The average weekly earnings of workers across industries are outlined in Table 3-7. Average weekly earnings in the mining industry were \$2,595 in 2017, more than double the average for all industries (\$1,179 per week). Over a twelve month period, this wage premium equates to over \$73,000 (in current terms) per worker. This is also significant given the Statistical Area Level 4 (SA4)²⁴ encompassing the project has a median weekly personal income of \$599 which is below that of the State as a whole (\$664)²⁵.

²³ Australian Bureau of Statistics 2017, Australian Demographic Statistics.

²⁴ SA4s have large populations of between 100,000 – 150,000 people in order to enable accurate labour force survey data. For this reason, in rural areas SA4s generally represent aggregations of multiple small labour markets with socio-economic connections or similar industry characteristics.

²⁵ Australian Bureau of Statistics 2017, 2016 Census of Population and Housing, General Community Profile for Hunter Valley excluding Newcastle (SA4) and New South Wales (STATE), Cat. No. 2001.0. Canberra.

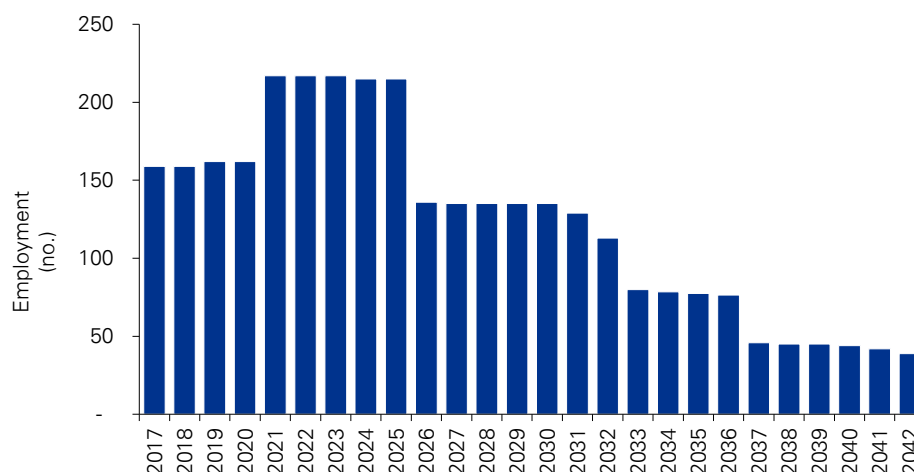
Table 3-7: Average weekly earnings in NSW, 2017

Sector	Average weekly earnings (\$)
Mining	2,595
Manufacturing	1,254
Electricity, Gas, Water and Waste Services	1,825
Construction	1,462
Wholesale Trad	1,373
Retail Trade	684
Accommodation and Food Services	556
Transport, Postal and Warehousing	1,435
Information Media and Telecommunications	1,640
Financial and Insurance Services	1,584
Rental, Hiring and Real Estate Services	1,182
Professional, Scientific and Technical Services	1,545
Administrative and Support Services	1,021
Public Administration and Safety	1,427
Education and Training	1,184
Health Care and Social Assistance	1,068
Arts and Recreation Services	815
Other Services	971
All Industries	1,179

Source: Australian Bureau of Statistics 2017, Average Weekly Earnings, Australia, May 2017, Cat. No. 6302.0, February.

The total worker wage premium was quantified based on the average wage premium per week and the total direct employment associated with the Project. Total direct employment generated by the Project is illustrated in Chart 3-5 below.

Chart 3-5: Indicative employment over the Project life



Source: Rix's Creek Pty Limited

Based on the higher average weekly earnings in the mining sector and the total employment associated with the Project, the total incremental wage premium over the life of the project is estimated to be \$116.9 million (in present value terms)²⁶.

3.2.10 Residual value of land

Following the completion of the Project, the Project area will be returned to grazing. To capture this, the residual value of the land at the end of the project life was included in the analysis. The residual value was estimated based on the total Project area (185 hectares) and the average value of grazing land in the area (approximately \$10,000 per hectare)²⁷, which equated to an estimated incremental benefit of \$0.4 million (in present value terms).

3.2.11 Contribution to the local community

Rix's Creek Pty Limited makes a number of contributions to the Hunter Valley community through sponsorships and partnerships. The broader Bloomfield Group has established *The Bloomfield Group Foundation* to provide financial support to local organisations. The foundation also encourages employees to contribute through participation in charitable and community events. Between 2006 and 2015, the foundation donated over \$2.5 million through sponsorship programs²⁸, with over \$228,000 donated in 2016-17. Any change in these benefits based on approval outcomes is unknown and therefore not included in the CBA.

3.3 Assessment of net benefits

The Project was compared against the Base Case using discounted cash flow technique on the basis of a real discount rate 7 per cent in accordance with relevant guidelines. The results of the economic evaluation are summarised in Table 3-8 below.

The total incremental cost of the Project was estimated to be \$930.3 million (in present value terms) over the life of the project. The largest incremental cost was associated with operational and

²⁶ Note that as all workers are assumed to be from NSW, no NSW population share has been applied.

²⁷ Based on information provided by Rix's Creek Pty Limited.

²⁸ Umwelt (Australia) Pty Limited 2014, *Rix's Creek Extension Social Impact and Opportunity Assessment (draft report)*, August.

maintenance expenditure. Rehabilitation costs resulted in an incremental net benefit compared to the Base Case for reasons detailed in Section 3.2.5.

The total incremental benefit associated with the Project was estimated to be \$1,544.5 million (in present value terms) over the life of the project. The largest benefit was associated with the revenue from sale of the coal outputs from the Project.

Overall, the Project was expected to result in a NPV of \$614.2 million over the life of the project, with a corresponding benefit-cost ratio (BCR) of 1.7. The BCR result also suggests there is sufficient contingency against unforeseen increases in capital costs, project delays or other costs.

Table 3-8: Economic evaluation results (PV 2018 @ 7 per cent)

Evaluation results (PV at 7 per cent)

Incremental Costs (\$ million)	
Capital expenditure	57.5
Operating and maintenance expenditure	882.3
Environmental externalities	5.9
Opportunity cost of land use	0.6
Rehabilitation expenditure	(16.0)
Total Incremental Costs	930.3
Incremental Benefits (\$ million)	
Revenue	1,271.8
Royalties	104.3
Company income tax	50.9
Wage premium	116.9
Residual value of capital	0.2
Residual value of land	0.4
Total Incremental Benefits	1,544.5
Summary Results (\$ million)	
NPV	614.2
BCR	1.7

Note: Totals may not sum due to rounding.

Source: KPMG analysis based on sources outlined above.

3.4 Sensitivity analysis

As per NSW Treasury Guidelines, sensitivity analysis was undertaken to determine the sensitivity of results to changes in assumptions. The results of the analysis were tested to highlight the impact of changes in the assumed discount rate and to test the implications of proportional changes in the total value of costs and benefits. Additionally, in accordance with DPE Guidelines, sensitivity analysis was also undertaken for additional elements in the CBA with differing parameters. The results of the sensitivity analysis are summarised in Table 3-9 below.

Table 3-9: Sensitivity analysis results

	NPV (\$ million)	BCR
Discount rate		
4 per cent	744.4	1.6
7 per cent	614.2	1.7
10 per cent	516.4	1.7
Costs		
15 per cent lower	753.7	2.0
15 per cent higher	474.6	1.4
Benefits		
15 per cent lower	382.5	1.4
15 per cent higher	845.9	1.9
Gross mining revenue		
25 per cent lower	270.2	1.3
25 per cent higher	845.9	1.9
Use of IMF coal price forecasts^(a)	360.3	1.4
Use of WB coal price forecasts^(a)	115.4	1.1
Company income tax attributable to NSW		
50 per cent lower	588.7	1.6
50 per cent higher	639.7	1.7
AUD/USD exchange rate		
0.1000 basis points lower	844.7	1.9
0.1000 basis points higher	437.9	1.5
Wage premium		
25 per cent lower	585.0	1.6
25 per cent higher	643.4	1.7

Note (a): Coal prices provided from International Monetary Fund and World Bank do not differentiate between coal type (i.e. semi-soft and thermal).

Sources: KPMG analysis on provided data from Macquarie Bank, International Monetary Fund medium-term coal prices forecast (as at 13 July 2017), World Bank coal prices forecast (as at October 2017) and Australian Bureau of Statistics Cat. No. 6302.0 (as at May 2017).

The results of the sensitivity analysis highlight that the economic evaluation results for the project remain positive even when costs are increased or benefits are reduced by the parameters shown above.

Appendix 1 – Detailed Results

Appendix Table 1: Forecast coal prices and foreign exchange rate assumptions associated with revenue

	Semi-soft coal		Thermal coal		Exchange rate
	Nominal US dollars	Real US dollars (2018)	Nominal US dollars	Real US dollars (2018)	AUD/USD
2019	95.6	93.3	105.8	103.2	0.7500
2020	88.5	84.2	83.3	79.2	0.7500
2021	87.0	80.8	71.4	66.3	0.7500
2022	87.0	78.8	69.5	63.0	0.7500
2023	90.1	79.7	67.8	59.9	0.7500
2024	95.1	82.0	63.2	54.5	0.7500
2025	97.6	82.1	64.9	54.6	0.7500
2026	100.2	82.2	66.6	54.6	0.7500
2027	102.8	82.3	68.3	54.7	0.7500
2028	105.5	82.4	70.1	54.8	0.7500
2029	108.3	82.5	71.9	54.8	0.7500
2030	111.1	82.6	73.8	54.9	0.7500
2031	111.1	80.6	73.8	53.6	0.7500
2032	111.1	78.6	73.8	52.2	0.7500
2033	111.1	76.7	73.8	51.0	0.7500
2034	111.1	74.9	73.8	49.7	0.7500
2035	111.1	73.0	73.8	48.5	0.7500
2036	111.1	71.3	73.8	47.3	0.7500
2037	111.1	69.5	73.8	46.2	0.7500

	Semi-soft coal		Thermal coal		Exchange rate
	Nominal US dollars	Real US dollars (2018)	Nominal US dollars	Real US dollars (2018)	AUD/USD
2038	111.1	67.8	73.8	45.1	0.7500
2039	111.1	66.2	73.8	44.0	0.7500
2040	111.1	64.6	73.8	42.9	0.7500
2041	111.1	63.0	73.8	41.8	0.7500
2042	111.1	61.4	73.8	40.8	0.7500
2043	No production. Remaining rehabilitation costs incurred.				

Source: Macquarie Bank

Appendix Table 2: Forecast production volumes and costs

	Production (saleable tonnage)			Costs (real \$m)	
	Semi-soft coal (60%)	Thermal coal (40%)	Total	Variable	Fixed (overheads)
2019	903,545	602,363	1,505,908	93.2	7.3
2020	904,405	602,937	1,507,342	93.4	7.3
2021	1,245,688	830,459	2,076,147	131.1	10.2
2022	1,242,136	828,091	2,070,227	130.6	10.2
2023	1,293,891	862,594	2,156,484	131.6	10.3
2024	1,083,755	722,503	1,806,259	130.2	10.1
2025	1,031,659	687,773	1,719,431	131.1	10.2
2026	750,677	500,451	1,251,128	82.7	6.5
2027	750,582	500,388	1,250,970	82.7	6.5
2028	672,093	448,062	1,120,155	84.4	6.6
2029	724,731	483,154	1,207,885	82.0	6.4
2030	751,507	501,005	1,252,512	82.7	6.5
2031	639,219	426,146	1,065,364	78.7	6.1
2032	469,318	312,879	782,197	57.5	4.5
2033	345,781	230,521	576,302	36.2	2.8
2034	304,077	202,718	506,795	28.9	2.3
2035	299,936	199,957	499,893	32.9	2.6

	Production (saleable tonnage)			Costs (real \$m)	
	Semi-soft coal (60%)	Thermal coal (40%)	Total	Variable	Fixed (overheads)
2036	259,391	172,927	432,319	28.9	2.3
2037	127,265	84,843	212,108	18.0	1.4
2038	124,313	82,875	207,188	18.0	1.4
2039	131,951	87,967	219,918	18.4	1.4
2040	157,045	104,697	261,742	17.8	1.4
2041	92,983	61,989	154,972	18.0	1.4
2042	63,377	42,251	105,629	6.9	0.5
2043	No production. Remaining rehabilitation costs incurred.				

Note: Totals may not sum due to rounding.

Source: Rix's Creek Pty Limited

Appendix Table 3: Forecast full-time employees associated with the continuation of the Project

Full-time Employees	
2019	162
2020	162
2021	217
2022	217
2023	217
2024	215
2025	215
2026	136
2027	135
2028	135
2029	135
2030	135
2031	129
2032	113
2033	80
2034	78

Full-time Employees

2035	77
2036	76
2037	46
2038	45
2039	45
2040	44
2041	42
2042	39
2043	No production. Remaining rehabilitation costs incurred.

Source: Rix's Creek Pty Limited

Appendix Table 4: Historical unemployment rates in Hunter Valley and New South Wales

Unemployment rate

	Hunter Valley	New South Wales
Jun-12	4.4%	5.2%
Sep-12	4.7%	5.1%
Dec-12	4.8%	5.1%
Mar-13	5.1%	5.1%
Jun-13	5.4%	5.2%
Sep-13	5.3%	5.4%
Dec-13	5.1%	5.6%
Mar-14	5.4%	5.7%
Jun-14	5.5%	5.7%
Sep-14	6.4%	5.7%
Dec-14	7.4%	5.7%
Mar-15	8.3%	5.9%
Jun-15	8.7%	5.9%
Sep-15	8.5%	5.9%
Dec-15	8.2%	5.8%
Mar-16	7.1%	5.6%

Unemployment rate

	Hunter Valley	New South Wales
Jun-16	6.4%	5.4%
Sep-16	6.1%	5.2%
Dec-16	5.5%	5.1%
Mar-17	5.4%	5.1%
Jun-17	5.2%	5.0%
Sep-17	5.2%	4.9%

Source: Department of Employment 2017, Small Area Labour Markets (as at September quarter 2017).

Appendix Table 5: Detailed incremental real costs (\$m) at each respective year including total PV (\$2018)

	Capital expenditure			Operating and maintenance expenditure	Environmental externalities			Opportunity cost of land	Rehabilitation expenditure
	Fleet	Cut and cover tunnel	CHPP noise attenuation	Operating and maintenance	Scope 1	Scope 2	PM2.5 emissions	Foregone agricultural production	Rehabilitation
PV \$2018 (7%)	49.4	7.5	0.6	882.3	3.9	0.8	1.2	0.6	-16.0
PV \$2018 (4%)	57.7	8.2	0.6	1,095.3	4.8	1.0	1.5	0.8	-14.4
PV \$2018 (10%)	42.8	6.9	0.6	726.3	3.2	0.6	1.0	0.5	-16.7
2019	-	-	-	-	-	-	-	-	-19.8
2020	8.8	-	0.7	93.4	0.6	0.1	0.0	0.1	-
2021	9.0	9.2	-	131.1	0.6	0.1	0.2	0.1	-
2022	17.4	-	-	130.6	0.6	0.1	0.3	0.1	-
2023	11.0	-	-	131.6	0.5	0.1	0.4	0.1	-
2024	-	-	-	130.2	0.5	0.1	0.3	0.1	-
2025	-	-	-	131.1	0.4	0.1	0.2	0.1	-
2026	-	-	-	82.7	0.4	0.1	0.1	0.1	-
2027	11.8	-	-	82.7	0.3	0.1	0.1	0.1	-
2028	-	-	-	84.4	0.4	0.1	0.1	0.1	-
2029	14.3	-	-	82.0	0.4	0.1	0.1	0.1	-

	Capital expenditure			Operating and maintenance expenditure	Environmental externalities			Opportunity cost of land	Rehabilitation expenditure
	Fleet	Cut and cover tunnel	CHPP noise attenuation	Operating and maintenance	Scope 1	Scope 2	PM2.5 emissions	Foregone agricultural production	Rehabilitation
2030	-	-	-	82.7	0.3	0.1	0.1	0.1	-
2031	-	-	-	78.7	0.2	0.0	0.1	0.1	-
2032	-	-	-	57.5	0.2	0.0	0.1	0.1	-
2033	-	-	-	36.2	0.1	0.0	0.0	0.1	-
2034	-	-	-	28.9	0.2	0.0	0.0	0.1	-
2035	-	-	-	32.9	0.1	0.0	0.0	0.1	-
2036	-	-	-	28.9	0.2	0.0	0.0	0.1	-
2037	-	-	-	18.0	0.1	0.0	0.0	0.1	-
2038	-	-	-	18.0	0.1	0.0	0.0	0.1	1.5
2039	-	-	-	18.4	0.1	0.0	0.0	0.1	1.5
2040	-	-	-	17.8	0.1	0.0	0.0	0.1	1.5
2041	-	-	-	18.0	0.1	0.0	0.0	0.1	1.5
2042	-	-	-	6.9	0.1	0.0	0.0	0.1	1.5
2043	-	-	-	-	-	-	-	-	3.9

Source: KPMG analysis based on data provided by Rix's Creek Pty Limited, Todoroski Air Sciences and Neil Nelson Agvice Pty Limited.

Appendix Table 6: Detailed incremental real benefits (\$m) at each respective year including total PV (\$2018)

	Revenue	Royalties	Company income tax attributable to NSW	Economic benefit to workers (wage premium)	Residual value of capital	Residual value of land
PV \$2018 (7%)	1,271.8	104.3	50.9	116.9	0.2	0.4
PV \$2018 (4%)	1,558.7	127.8	62.6	149.7	0.4	0.7
PV \$2018 (10%)	1,058.6	86.8	42.3	93.7	0.1	0.2
2019	-	-	-	-	-	-
2020	165.3	13.6	7.3	11.7	-	-
2021	207.6	17.0	8.2	11.9	-	-
2022	200.1	16.4	7.8	11.9	-	-
2023	206.4	16.9	8.6	16.0	-	-
2024	171.0	14.0	5.6	16.0	-	-
2025	163.0	13.4	5.1	16.0	-	-
2026	118.8	9.7	4.9	15.8	-	-
2027	118.9	9.7	5.1	15.8	-	-
2028	106.6	8.7	3.9	10.0	-	-
2029	115.1	9.4	5.0	9.9	-	-
2030	119.5	9.8	5.6	9.9	-	-
2031	99.1	8.1	4.0	9.9	-	-

	Revenue	Royalties	Company income tax attributable to NSW	Economic benefit to workers (wage premium)	Residual value of capital	Residual value of land
2032	71.0	5.8	2.9	9.9	-	-
2033	51.0	4.2	2.5	9.5	-	-
2034	43.8	3.6	2.3	8.3	-	-
2035	42.1	3.5	2.0	5.9	-	-
2036	35.6	2.9	1.6	5.8	-	-
2037	17.0	1.4	0.6	5.7	-	-
2038	16.2	1.3	0.5	5.6	-	-
2039	16.8	1.4	0.6	3.4	-	-
2040	19.5	1.6	0.9	3.3	-	-
2041	11.3	0.9	0.1	3.3	-	-
2042	7.5	0.6	0.4	3.2	1.1	1.9
2043	-	-	-	-	-	-

Source: KPMG analysis based on data provided by Rix's Creek Pty Limited, Australian Bureau of Statistics and Macquarie Bank.