



Rix's Creek Extension Project – Economic Assessment

**Addendum to report prepared for Big Ben Holdings Pty.
Limited**

9 November 2018

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Inherent Limitations

This Addendum report has been prepared as outlined in the Background, Scope and Purpose Section. This Addendum Report provides further clarification regarding selected components of KPMG Final Report *Rix's Creek Extension Project –Economic Assessment* dated 14 March 2018 (**Final Report**). This Addendum Report does not contain KPMG's conclusive findings (which are only contained in the Final Report), and therefore this Addendum Report must be read in conjunction with the Final Report.

The services provided in connection with this engagement comprise an advisory engagement, which is not subject to assurance or other standards issued by the Australian Auditing and Assurance Standards Board and, consequently no opinions or conclusions intended to convey assurance have been expressed.

No warranty of completeness, accuracy or reliability is given in relation to the statements and representations made by, and the information and documentation provided during the consultation process.

KPMG have indicated within this Addendum Report the sources of the information provided. We have not sought to independently verify those sources unless otherwise noted within the Addendum Report and/or the Final Report.

KPMG is under no obligation in any circumstance to update this Addendum Report and/or the Final Report, in either oral or written form, for events occurring after the report has been issued in final form.

The findings in this Addendum Report have been formed on the above basis.

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1 Background, Scope and Purpose

1.1 Background and Scope

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 in 2 February 2018. Specifically, the scope of services included:

- 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 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.

The KPMG report Rix's Creek Extension Project – Economic Assessment ('the report' or 'the KPMG report' was issued on 14 March 2018. This document forms an addendum to that report.

1.2 Purpose

This addendum report provides further information on selected components included in the KPMG report. Specifically, this addendum seeks to provide a response to the recommendations of the Independent Planning Commission NSW ('IPC NSW') report relating to the economic analysis of the Rix's Creek Continuation Project (released 31 August 2018), and should, under all circumstances, be read in conjunction with both the KPMG and IPC NSW reports.

1.3 Limitations

This addendum does not seek to re-estimate the economic implications associated with the Rix's Creek Project or replace or update the KPMG report issued on 14 March 2018. The content of this addendum does not seek to provide a comprehensive representation of the economic implications of the Rix's Creek Project. For that reason, this addendum should be read in conjunction with and refers to the KPMG report issued on 14 March 2018.

2 Response to Recommendations

This section provides further information relating to the analysis of economic implications of the Rix's Creek Extension Project and responding to certain recommendations in the Final Rix Creek Review Report prepared by IPC NSW.

We note that while the report has 26 recommendations in total, three (3) recommendations related to the economic analysis of the project prepared by KPMG in the report issued in March 2018. As understood by IPC NSW, the KPMG report was the third provided by KPMG to the Bloomfield Group and built upon earlier economic assessments completed in July 2015 and March 2017.

Table 2-1 (overleaf) provides responses to each of the three (3) IPC NSW recommendations as noted below:

- **R20:** That the applicant provide further information in relation to how it has determined its "base case" financial parameters, including the assumptions relating to commodity price and exchange rate forecasts, and references to other available commodity price and exchange rate forecasts.
- **R21:** That the applicant provide a more detailed discussion of the likelihood and range of feasible alternatives to the "base case" referred to above, including, but not limited to its selection of the downside coal price scenario of 25% and the World Bank commodity price scenario.
- **R22:** That the applicant provide further information (including relevant risk minimisation strategies) in relation to how it has considered severe downside scenarios (including, but not limited to, the World Bank commodity price scenario), in accordance with the Guideline for the Use of Cost Benefit Analysis in Mining and Coal Seam Gas Proposals 2012 and accompanying Technical Notes.

The responses should be read in conjunction with the March 2018 KPMG report.

Table 2-1: Clarifications and further information relating to IPC NSW recommendations

No.	IPC NSW Recommendations	KPMG Response
R20	<p>That the applicant provide further information in relation to how it has determined its “base case” financial parameters, including the assumptions relating to commodity price and exchange rate forecasts, and references to other available commodity price and exchange rate forecasts.</p>	<p>Previous reviews of KPMG work for Rix’s Creek Extension Project</p> <p>An addendum report was issued by KPMG in February 2017 which addressed comments made by the Centre for International Economics (CIE) in its review of the initial KPMG-prepared report in July 2015 as part of the Environmental Impact Statement (EIS) process. This report addresses some similar queries to IPC NSW and may be helpful in reviewing certain aspects of the Base Case. However it should be noted that the report in March 2018 supersedes the 2015 initial report due to the inclusion of updated data and some changes in methodology.</p> <p>Overview and project terminology</p> <p>In the language of economic evaluations, the Base Case refers to what is assumed to occur in the absence of the Project. The Project Case analysis sets out the incremental change in net economic benefits achieved by the Project when compared to the Base Case.</p> <p>For the purposes of the report, the economic evaluation compares the net benefits achieved between a case where Rix’s Creek South mining activity proceeds (the Project Case) and one where Rix’s Creek South mining ceases in 2019 (the Base Case).</p> <p>For the avoidance of doubt, Rix’s Creek North activity is assumed to continue under both cases. Therefore, economic costs and benefits associated with Rix’s Creek North are not included in the analysis.</p> <p>Cessation of activities</p> <p>The Base Case activities comprise the cessation of mining activity at Rix’s Creek South from 2019 onwards and the immediate commencement of rehabilitation in 2019 directed towards the land being returned to its next best use of agricultural production. Beyond rehabilitation expenditure, the Base Case does not incur the capital expenditure and purchases (relating to the north-westerly extensions), variable costs, environmental externalities, revenue, royalties, income tax and wage premiums which are associated with the Project Case.</p> <p>Project Case and Base Case financial assumptions</p> <p>While Project and Base Case activities differ, economic evaluations require that key financial parameters, such as coal price and exchange rate forecasts, be identical to ensure a like-for-like comparison. These parameters are varied as part sensitivity testing to review the potential change in net benefits. The basis for price and exchange rate parameters is discussed in more detail below. Other key assumptions, include the discount rate (to calculate present values of costs and benefits) and the operational profile of the Rix’s Creek South project. The discount rate is consistent with NSW Government Guidelines for Cost-Benefit Analysis and costs and mined output associated with the site were informed by historical resource requirements and forecast annual production schedules provided by Bloomfield. As noted</p>

however, in the Base Case, cessation of operations means that no mining costs or revenue is assumed after the mine closure in 2019.

As outlined in the KPMG report, fixed (overhead) costs, including those associated with finance and administration, were treated as necessary expenditure across the entire operations of Rix's Creek (South and North). It was determined by Bloomfield that minimal reductions in these costs would be available if operations at Rix's Creek South ceased and they would, rather than being distributed across the two sites, be borne solely by the Rix's Creek North site. As a result, fixed costs were assumed to be invariant between the Base Case and Project Case and were therefore excluded from the analysis.

Key financial parameters

As noted by the IPC, some of the key financial parameters relevant to this economic evaluation are a) coal commodity prices and b) exchange rates.

KPMG notes that DPE guidelines do not state a clear preference for any forecast of coal prices and exchange rates and suggest that "the onus is on the proponent to clearly explain reasoning as to why the selected assumptions are representative of the project's costs and benefits." (NSW Department of Planning and Environment 2015, *Guidelines for the economic assessment of mining and coal seam gas proposals*)

a) Coal price forecast assumptions

Future changes in coal prices are driven by a multitude of economic factors such as demand for coal fired power and steel, and international trade conditions.

Rix's Creek South produces two types of coal: semi-soft coking coal (SSCC) and thermal coal.

Coke (derived from coking coal) is the essential fuel for the blast furnaces of integrated iron (and subsequently steel) plants.¹ Hard coking coal is a necessary input for strong coke, with semi-soft coking coal (as a lower quality coking coal) comprising the coke blend to help produce coke that more closely satisfies the blast furnace specification requirements. Further, this has the additional benefit of reducing the overall cost of coke used for the blast furnace.²

Thermal coal is used for heating, usually in electricity generating power stations³, and to a lesser extent, in cement manufacture and other specialised industries.⁴ Thermal coal generally does not have the particular properties required

¹ World Coal Association, 2018. *How is steel produced?* Available online at: <https://www.worldcoal.org/coal/uses-coal/how-steel-produced>

² Colonial Coal International Corporation, 2018. *About coal*. Available online at: <http://ccoal.ca/about-coal/>

³ World Coal Association, 2018. *Uses of coal*. Available online at: <https://www.worldcoal.org/coal/uses-coal>

⁴ World Coal Association, 2009. *The Coal Resource – A comprehensive overview of coal*.

for coke-making, whilst semi-soft coking coals as higher quality coals are priced more highly and considered too expensive for traditional thermal coal markets.⁵

Thus, the two coal types produced by Rix's Creek South have different respective uses, markets, customers and prices. Approximately 60 per cent of the historical and forecast production schedule at Rix's Creek is semi-soft coking coal.

The economic analysis uses forecast coal prices from Macquarie Bank due to their consistent derivation, the scope of available data (annual until 2030) and most notably the more granular split of coal type relevant to Rix's Creek operations (specifically thermal and semi-soft coking coal). The Macquarie Bank forecasts are also specific to Australian coal prices (typically higher than global averages associated with a higher quality for both metallurgical⁶ and thermal⁷ coal) and show a higher correlation with coal prices historically and currently received for Rix's Creek coal than the alternate sources considered below.

Estimates from the World Bank and IMF are available and were used to conduct sensitivity analysis (see R21). These sources were not selected to be central assumptions because they presented only thermal coal prices rather than a disaggregation by thermal and semi-soft and had fewer years of forecast data available (with World Bank having certain year gaps and IMF forecasts ending at 2022).

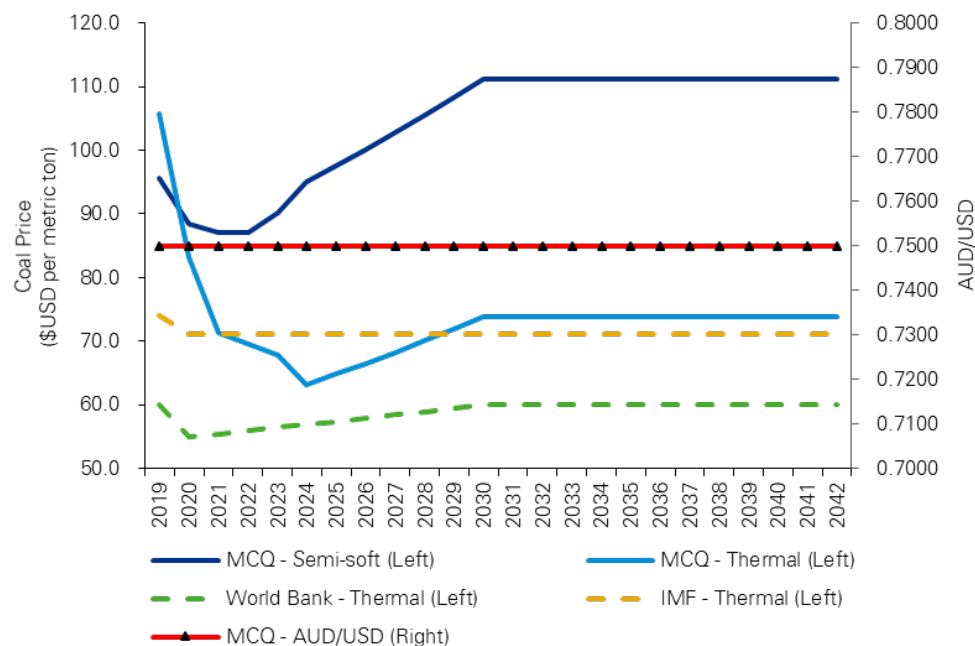
The chart below presents the various forecasted coal prices (\$USD per metric ton) and exchange rates over the period 2019 to 2042. It can be seen that over the majority of the analysis period, both Macquarie's semi-soft and thermal coal prices were higher than that of the World Bank and IMF's average coal prices, with Macquarie's semi-soft coal prices notably being significantly higher in the order of between 56 to 85 per cent higher than the alternate sources. Sensitivity analysis was undertaken by observing the economic results of changes in both the primary coal price parameters and coal price sources.

⁵ Underground Coal, 2018. *Fundamentals (different types of coal)*. Available online at: http://undergroundcoal.com.au/fundamentals/01_types.aspx

⁶ Minerals Council of Australia, 2018. *Coal: Building Australia's future*. Available online at: <https://www.minerals.org.au/minerals/coal>

⁷ Minerals Council of Australia, 2018. *Market Demand Study: Australian Export Thermal Coal – Final Report*.

Chart 2.1: Forecasted coal prices (various) in \$USD and exchange rates over the period 2019 to 2042



For more detail surrounding the yearly figures and interpolation techniques for missing/future years, please find forecast coal prices in the Appendices.

b) Exchange rate forecast assumptions

As coal prices are denominated in US Dollars (USD) and Australian mines incur and pay their costs in Australian Dollars (AUD), the future AUD/USD exchange rate is an important assumption to an economic model of costs and benefits of an Australian mining project.

The economic analysis uses forecast exchange rates sourced from Macquarie Bank. This forecast is from 2019 through to 2030 and the 2030 rate was assumed to carry forward through the balance of the analysis period. This was selected as the primary source, firstly, to keep the source and underlying methodology of the financial forecasts consistent with primary coal prices and, secondly, due to the lack of strong alternatives. No other publicly available data had forecast periods exceeding five years forward. Due to the low coverage of alternative public sources, a secondary source for exchange rates was not chosen.

For more detail surrounding the yearly figures, please find forecast exchange rates in the Appendices.

R21

That the applicant provide a more detailed discussion of the likelihood and range of feasible alternatives to the “base case” referred to above, including, but not limited to its selection of the downside coal price scenario of 25% and the World Bank commodity price scenario.

Considerations of severe downside scenarios (sensitivity analysis yielding a zero Project Net Present Value)

As per NSW Department of Planning and Environment 2015, *Guidelines for the economic assessment of mining and coal seam gas proposals*, guidance is provided on how to adequately conduct sensitivity analysis. For example, proportional changes in key financial parameters (+/- 25%, etc.) and alternative discount rates are designated by DPE and have been followed in the analysis. In addition, results should be tested by a) using alternate sources for key financial parameters and b) reviewing what decrease / increase in those parameters would yield a Project Net Present Value of zero.

The following table provides the sensitivity analysis results from the KPMG report dated 14 March 2018, with subsequent additional analysis to further consider a severe downside scenarios in line with the guidelines specified above.

Table 2-2: Sensitivity analysis results from KPMG report dated 14 March 2018 (Table 3-9)

	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

	NPV (\$ million)	BCR
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		
1000 basis points lower	844.7	1.9
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 sensitivity analysis was further extended to include a simultaneous testing in the change in multiple key parameters. The respective outputs are detailed in Table 2-3 overleaf.

Table 2-3: Summary results of additional sensitivity analysis undertaken for a simultaneous change in multiple key parameters

	NPV (\$ million)	BCR
Simultaneous parameter change		
Costs 15 per cent lower and Benefits 15 per cent higher	985.4	2.2
Costs 15 per cent higher and Benefits 15 per cent lower	243.0	1.2
Costs 15 per cent lower and Gross mining revenue 25 per cent higher	1,097.8	2.4
Costs 15 per cent higher and Gross mining revenue 25 per cent lower	130.6	1.1
Costs 15 per cent lower and AUD/USD exchange rate 1000 basis points lower	984.2	2.2
Costs 15 per cent higher and AUD/USD exchange rate 1000 basis points higher	298.4	1.3

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).

Consideration of a severe downside scenario was also analysed by observing the decrease in forecast coal prices and increase in forecast exchange rates for all years that would result in a Project Net Present Value of zero (and a Benefit Cost Ratio of one). These include a decrease of 41.1 per cent, 8.6 per cent and 29.1 per cent in Macquarie Bank, World Bank and IMF forecasted coal prices, respectively and an increase of 0.5200 percentage points in Macquarie Bank's forecasted exchange rates. Further information on these scenarios is provided in Appendix A.

In response to IPC NSW request for the 'likelihood' of downside price scenarios, likelihood values were not considered as part of the KPMG report, however historical coal and exchange rates are presented below to allow an assessment of the probability that these scenarios may occur.

a) Coal price forecast sensitivity

To solve for the estimated decrease in forecasted coal prices resulting in a Project Net Present Value of zero, an iterative calculation was applied for all sources of forecasted coal prices and the following table summarises the results of a severe downside scenario.

Table 2-4: Summary results of additional analysis undertaken for a decrease in forecasted coal prices in severe downside scenarios, by coal price source

	Decrease in forecasted prices (%)	NPV	BCR
Coal price source			
World Bank	8.6	0.0	1.0
International Monetary Fund	29.1	0.0	1.0
Macquarie Bank	41.1	0.0	1.0

Sources: KPMG analysis on provided data from Macquarie Bank, International Monetary Fund medium-term coal prices forecast (as at 13 July 2017) and World Bank coal prices forecast (as at October 2017).

Downside protection from customers and markets

Bloomfield has indicated that their relationships with customers (some in excess of thirty years) and diversification in its export markets are another potential protection from fluctuations in global commodity prices. The details of individual coal sales contracts for Rix's Creek coal remain commercial-in-confidence, however, Bloomfield note that their customers are located in "premium markets" with "sufficient geographical diversity to protect against geopolitical instability and natural disasters". They state that their existing contracts are "longer than the industry norm" and customer demand often "exceeds Rix's Creek's supply". Relative to other large global firms, Bloomfield is a comparatively small producer. Bloomfield management considers this to be a strength in their "degree of flexibility and service" which has allowed it to build strong commercial relationships.⁸

b) Exchange rate forecast sensitivity

To solve for the estimated increase in forecasted exchange rates resulting in a Project Net Present Value of zero, an iterative calculation was applied on forecasted exchange rates and it was determined that an increase of approximately 0.5200 percentage points (to 1.2700) would result in a total NPV of zero. This kind of fluctuation has not been observed in the last 35 years. The AUD/USD exceeded parity in 2011-13 but only reached a peak of 1.0766 in July 2011. As observed in Chart 2-1 below, a low of 0.5002 was experienced in 2001 however current exchange rates are near the midpoint of the last 35 years.

Historical analysis

Since the early 2000s, global coal prices have observed cyclical but rising prices, reaching a peak of USD \$195 per metric ton in 2008. A key driver of rising global coal prices is attributed to growth in demand from Asian markets over the past decade, with the Australian trade perspective outlined in Table 2-5 below.

Table 2-5: Top importers of Australian coal by country and respective compound annual growth rate over 2007-17

Top importers of Australian coal by country ⁹	Compound Annual Growth Rate (CAGR) for total value of Australian coal imports (2007-2017) ¹⁰
China	40.9 per cent
India	14.4 per cent
Japan	6.2 per cent
South Korea	15.4 per cent
Taiwan	10.0 per cent
All countries	10.7 per cent

Sources: *World Coal Association (2018) and Department of Foreign Affairs and Trade (2018).*

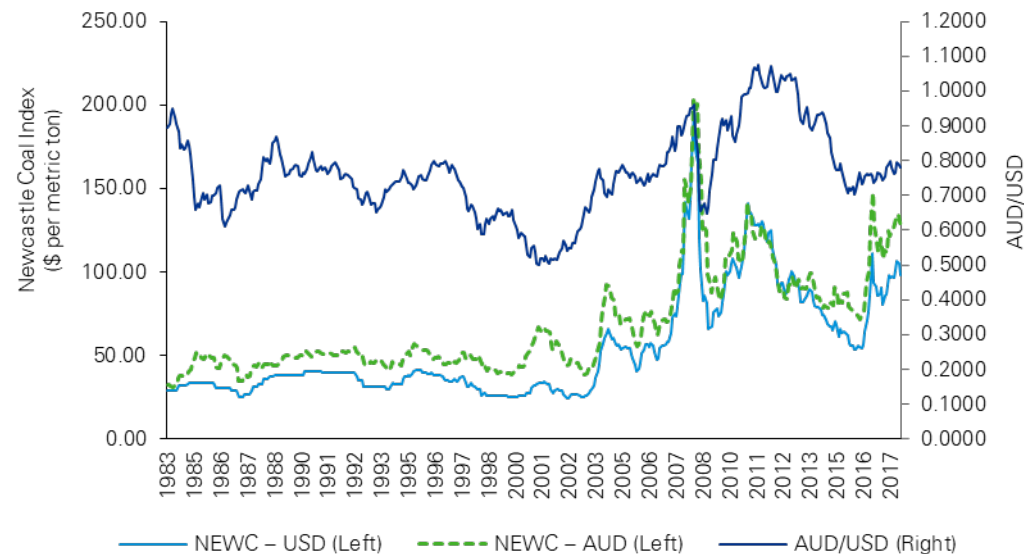
⁸ Information provided by Bloomfield.

⁹ Top five coal importers in 2016 listed in World Coal Association, 2018. *Coal market and pricing*. Available online at: <https://www.worldcoal.org/coal/coal-market-pricing>

¹⁰ Department of Foreign Affairs and Trade, 2018. *Country and commodity pivot table 2006 to 2017*. Available online at: <https://dfat.gov.au/about-us/publications/Pages/trade-statistical-pivot-tables.aspx>

As outlined in Chart 2-1 below, US and implied Australian dollar coal prices have largely risen albeit with higher volatility in the last ten years. The chart below displays the historical AUD/USD exchange rates and the Newcastle Coal Index from 1983 to 2017.

Chart 2-1: Historical AUD/USD exchange rate and the Newcastle Coal Price Index over the period 1983-2017



Sources: Reserve Bank of Australia historical exchange rates and International Monetary Fund historical commodity prices.

Historically, the AUD/USD exchange rate appears to have some responsiveness to fluctuations in global coal prices. Notwithstanding cyclical movements of the AUD/USD exchange rate, a correlation of 0.81 is observed between the coal price and exchange rate for the past twenty years though it has reduced to 0.55 in the past ten. This indicates a potential strong to moderate natural hedging phenomenon that may counteract the effects of a USD price fall.

R22

That the applicant provide further information (including relevant risk minimisation strategies) in relation to how it has considered severe downside scenarios (including, but not limited to, the World Bank

Risk minimisation strategies

Risk minimisation strategies were not considered in the KPMG report and are beyond the remit of a cost benefit analysis. Bloomfield considers risk minimisation strategies as part of its normal operations. Based on discussions with Bloomfield, it is understood that these include:

No.	IPC NSW Recommendations	KPMG Response
	<p>commodity price scenario), in accordance with the Guideline for the Use of Cost Benefit Analysis in Mining and Coal Seam Gas Proposals 2012 and accompanying Technical Notes.</p>	<ul style="list-style-type: none"> • setting aside prudent cash reserves in financially profitable or stable economic periods; • debt avoidance and conservative working capital management; • capital rationing (or freezing); • targeting lower than average strip ratio mining areas when AUD received coal prices fall below a sustainable (or average of the cycle level) and, conversely, mining higher ratio areas when prices rebound; and • taking advantage of the cyclical nature of the pressures in the mining sector (input costs may fall as coal prices soften) to renegotiate with the broader supply chain. <p>It should be noted that current analysis does not consider this potential for falls in both revenues and costs. While Table 2-2 and Table 2-4 above outlined analysis of project sensitivity to reductions in revenue, this was ‘ceteris paribus’ i.e. holding all other parameters constant. It did not consider the effect of operational or sector-wide responses to an adverse environment. Such responses may increase the project’s ability to whether a downturn in coal prices.</p> <p>Any further information required relating to risk minimisation strategies should be obtained from Bloomfield.</p>
	<p>Conclusion</p>	<p>This Addendum report has provided KPMG’s response to the three recommendations of the IPC NSW Final Rix Creek Review Report.</p> <ul style="list-style-type: none"> • It has provided additional clarification regarding the nature of the ‘base case’ and key financial parameters used in the analysis as well as justifications for use of key sources. • In accordance with the DPE Guidelines and Accompanying Technical Notes, further analysis of severe downside scenarios was provided through tests of the level of decrease and increase in coal prices and exchange rates, respectively, that would reduce net economic benefits to zero. As noted, these levels of change are generally outside the range of historical fluctuations. • A summary of Bloomfield’s anticipated operational risk minimisation measures in the event of a severe downturn is also provided.

Appendix A

This attachment outlines the respective Appendix Tables that accompany the various analyses in the original report and the table above.

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

Semi-soft coal		Thermal coal		Coal prices (sensitivity analysis)				Exchange rate	
Macquarie Bank				World Bank		International Monetary Fund		Macquarie Bank	
	Nominal US dollars	Real US dollars (2018)	Nominal US dollars	Real US dollars (2018)	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	60.0	58.5	74.0	72.2	0.7500
2020	88.5	84.2	83.3	79.2	55.0	52.3	71.2	67.8	0.7500
2021	87.0	80.8	71.4	66.3	55.5	51.5	71.1	66.1	0.7500
2022	87.0	78.8	69.5	63.0	56.0	50.7	71.1	64.4	0.7500
2023	90.1	79.7	67.8	59.9	56.5	49.9	71.1	62.8	0.7500
2024	95.1	82.0	63.2	54.5	56.9	49.1	71.1	61.3	0.7500
2025	97.6	82.1	64.9	54.6	57.4	48.3	71.1	59.8	0.7500
2026	100.2	82.2	66.6	54.6	57.9	47.5	71.1	58.4	0.7500

Semi-soft coal

Thermal coal

Coal prices (sensitivity analysis)

Exchange rate

Macquarie Bank					World Bank		International Monetary Fund		Macquarie Bank
	Nominal US dollars	Real US dollars (2018)	Nominal US dollars	Real US dollars (2018)	Nominal US dollars	Real US dollars (2018)	Nominal US dollars	Real US dollars (2018)	AUD/USD
2027	102.8	82.3	68.3	54.7	58.4	46.8	71.1	56.9	0.7500
2028	105.5	82.4	70.1	54.8	59.0	46.1	71.1	55.5	0.7500
2029	108.3	82.5	71.9	54.8	59.5	45.3	71.1	54.2	0.7500
2030	111.1	82.6	73.8	54.9	60.0	44.6	71.1	52.9	0.7500
2031	111.1	80.6	73.8	53.6	60.0	43.5	71.1	51.6	0.7500
2032	111.1	78.6	73.8	52.2	60.0	42.5	71.1	50.3	0.7500
2033	111.1	76.7	73.8	51.0	60.0	41.4	71.1	49.1	0.7500
2034	111.1	74.9	73.8	49.7	60.0	40.4	71.1	47.9	0.7500
2035	111.1	73.0	73.8	48.5	60.0	39.4	71.1	46.7	0.7500
2036	111.1	71.3	73.8	47.3	60.0	38.5	71.1	45.6	0.7500
2037	111.1	69.5	73.8	46.2	60.0	37.5	71.1	44.5	0.7500
2038	111.1	67.8	73.8	45.1	60.0	36.6	71.1	43.4	0.7500
2039	111.1	66.2	73.8	44.0	60.0	35.7	71.1	42.3	0.7500
2040	111.1	64.6	73.8	42.9	60.0	34.9	71.1	41.3	0.7500
2041	111.1	63.0	73.8	41.8	60.0	34.0	71.1	40.3	0.7500

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Document Classification: KPMG Public

Semi-soft coal		Thermal coal		Coal prices (sensitivity analysis)				Exchange rate	
Macquarie Bank				World Bank		International Monetary Fund		Macquarie Bank	
	Nominal US dollars	Real US dollars (2018)	Nominal US dollars	Real US dollars (2018)	Nominal US dollars	Real US dollars (2018)	Nominal US dollars	Real US dollars (2018)	AUD/USD
2042	111.1	61.4	73.8	40.8	60.0	33.2	71.1	39.3	0.7500

2043 No production. Remaining rehabilitation costs incurred.

Note: Due to data availability, World Bank values have been linearly interpolated for the years 2026-29 (using 2025 and 2030 figures) and fixed at 2030 values after 2030. Similarly, IMF values have been fixed at 2022 values after 2022.

Source: Macquarie Bank, World Bank and International Monetary Fund

Appendix Table 2: Severe downside scenario – Decrease of 41.1 per cent in Macquarie Bank's forecasted coal prices

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	748.8
Royalties	61.4
Company income tax	2.7
Wage premium	116.9
Residual value of capital	0.2
Residual value of land	0.4
Total Incremental Benefits	930.3
Summary Results (\$ million)	
NPV	0.0
BCR	1.0

Sources: KPMG analysis on provided data from Macquarie Bank.

Appendix Table 3: Severe downside scenario – Decrease of 8.6 per cent in World Bank's forecasted coal prices

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	747.8
Royalties	61.3
Company income tax	3.7
Wage premium	116.9
Residual value of capital	0.2
Residual value of land	0.4
Total Incremental Benefits	930.3
Summary Results (\$ million)	
NPV	0.0
BCR	1.0

Sources: KPMG analysis on provided data from Macquarie Bank and World Bank coal prices forecast (as at October 2017).

Appendix Table 4: Severe downside scenario – Decrease of 29.1 per cent in IMF's forecasted coal prices

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	748.5
Royalties	61.4
Company income tax	3.0
Wage premium	116.9
Residual value of capital	0.2
Residual value of land	0.4
Total Incremental Benefits	930.3
Summary Results (\$ million)	
NPV	0.0
BCR	1.0

Sources: KPMG analysis on provided data from Macquarie Bank and International Monetary Fund medium-term coal prices forecast (as at 13 July 2017).

Appendix Table 5: Severe downside scenario – Increase of 0.5200 percentage points in Macquarie Bank's forecasted exchange rates

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	748.8
Royalties	61.4
Company income tax	2.7
Wage premium	116.9
Residual value of capital	0.2
Residual value of land	0.4
Total Incremental Benefits	930.3
Summary Results (\$ million)	
NPV	0.0
BCR	1.0

Sources: KPMG analysis on provided data from Macquarie Bank.