



## Gillespie Economics

Environmental and Resource Economics: Environmental Planning and Assessment

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### **Re: Economic Assessment of the Wongawilli Colliery Modification of Consent North West Mains Development**

An Economic Assessment of MOD2 was prepared by Gillespie Economics based on incremental run-of-mine (ROM) coking coal production of 385,000 tonnes over the MOD2 life. Since that time the estimated production from MOD2 has been revised to 486,000 tonnes of ROM over the MOD2 life.

Attachment 1 provides an updated Economic Assessment of MOD2 at the revised production levels.

The consequence of the revised 486,000 tonnes ROM coal production is to:

- increase the net production benefits of MOD2;
- slightly increase the greenhouse gas costs of MOD2;
- increase the net social benefits of MOD2 to NSW; and
- increase the average annual direct and total regional economic output and value-added levels of MOD2.

Regards

17/08/21

Dr Rob Gillespie  
Principal  
Gillespie Economics

# **ATTACHMENT 1 – REVISED ECONOMIC ASSESSMENT OF WONGAWILLI COLLIERY MODIFICATION OF CONSENT (MOD2) NORTH WEST MAINS DEVELOPMENT**

## **1.0 INTRODUCTION**

Wongawilli Colliery (the Colliery) is an underground coal mine located approximately 15 kilometres (km) south-west of Wollongong within the Wollongong and Wingecarribee local government areas (LGAs). The site is owned and operated by Wollongong Coal Pty Limited (Wollongong Coal). Wollongong Coal is majority owned by Jindal Steel and Power Limited (JSPL), whom largely purchase coal produced at the Colliery for steel production purposes.

A modification (MOD2) to the existing Project Approval is being sought under section 4.55(2) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). MOD2 seeks to extend the life of the Colliery by 5 years to enable Wollongong Coal to continue development of the approved North West Mains Development (NWMD). Furthermore, MOD2 seeks approval to extend the length of the approved NWMD alignment to access the existing Wongawilli Ventilation Shaft 1 and minor surface activities.

An Economic Assessment of MOD2 was prepared by Gillespie Economics based on incremental run-of-mine (ROM) coking coal production of 385,000 tonnes over the MOD2 life. Since that time the estimated production from MOD2 has been revised to 486,000 tonnes of ROM coal over the MOD2 life.

This report has been prepared to document how the key Economic Assessment outcomes change as a result of the revised production levels. It uses the same primary methods referred to in the Economic Assessment - Cost Benefit Analysis (CBA) and Local Effects Analysis (LEA). The previous Economic Assessment should be referred to for technical information on the methods, as well as the assumptions underpinning the analysis. All assumptions have remained constant apart from changing the production level.

## 2.0 COST BENEFIT ANALYSIS

### 2.1 Introduction

The CBA of MOD2 was based on an assumed incremental ROM coking coal production of 385,000 tonnes over the MOD2 life. The revised estimate of incremental ROM coking coal production is 486,000 tonnes over the MOD2 life.

### 2.2 Net Production Benefits

The increased ROM production has the following effects on the net production benefits of MOD2:

- a proportional increase in revenues;
- a proportional increase in royalties;
- a less than proportional increase in operating costs (as a most of the operating costs do not change with increased production e.g. labour costs, machinery hire and equipment costs and, environmental studies and approvals).

The consequence is that the overall net production benefits of MOD2 increase at the global, national and NSW level of analysis – refer to Table 2.1.

**Table 2.1 – Comparison of Net Production Benefits of MOD2 (Present Values at 7% Discount Rate)**

	Original Assessment \$M	Revised Assessment \$M
<b>Costs</b>		
Opportunity cost of land	\$6.2	\$6.2
Opportunity cost of capital	\$43.7	\$43.7
Capital costs	\$29.8	\$29.8
Operating cost (ex royalties)	\$56.2	\$57.0
<b>Sub-total</b>	<b>\$135.8</b>	<b>\$136.7</b>
<b>Benefits</b>		
Deferred rehabilitation and decommissioning	\$9.0	\$9.0
Revenue	\$42.3	\$53.5
Residual value of land	\$5.1	\$5.1
Residual value of capital	\$35.6	\$35.6
<b>Sub-total</b>	<b>\$92.0</b>	<b>\$103.2</b>
<b>Global Net Production Benefits</b>	<b>-\$43.8</b>	<b>-\$33.5</b>
Royalties to NSW Govt	\$2.9	\$3.7
Company Tax	-\$14.0	-\$11.1
Residual Net Production Benefits	-\$32.8	-\$26.1
<b>Global Net Production Benefits</b>	<b>-\$43.8</b>	<b>-\$33.5</b>
Royalties to NSW Govt	\$2.9	\$3.7
Company Tax	-\$14.0	-\$11.1
Residual Net Production Benefits	\$0.0	\$0.0
<b>Australian Net Production Benefits</b>	<b>-\$11.1 to \$2.9</b>	<b>-\$7.4 to \$3.7</b>
Royalties to NSW Govt	\$2.9	\$3.7
Company Tax	-\$4.5	-\$3.5
Residual Net Production Benefits	\$0.0	\$0.0
<b>NSW Net Production Benefits</b>	<b>-\$1.6 to \$2.9</b>	<b>\$0.2 to \$3.7</b>

At the global level net production benefits of MOD2 remain negative but become less negative. At the Australian level net production benefits are estimated at -\$7.4M (present value at 7% discount rate), comprising royalties of \$3.7M (present value at 7% discount rate) and a company tax deduction of -\$11.1M, that can only be realised if there is positive taxable income from which it can be deducted. If it cannot be realised then the net production benefit to Australia is \$3.7M (present value at 7% discount rate).

The net production benefits of MOD2 that accrue to NSW are estimated at \$0.2M to \$3.7M (present value at 7% discount rate) comprising royalties of \$3.7M (present value at 7% discount rate) and an apportioned company tax deduction of -\$3.5M, that can only be realised if there is positive taxable income from which it can be deducted. If it cannot be realised then the net production benefit to NSW is \$3.7M (present value at 7% discount rate).

### 2.3 Externalities

Increased production is assumed to proportionally increase greenhouse gas (GHG) emissions, and hence GHG costs. All other externality categories are assumed to be insignificantly affected.

The present value of externality costs and benefits, using a 7% discount rate, is provided in Table 2.2.

Overall increased production would have only very small increase in GHG costs.

**Table 2.2 – Comparison of NSW Externality Impacts of MOD2 (Present Values at 7% Discount Rate)**

	Original Assessment \$M	Revised Assessment \$M
<b>Benefits</b>		
Wage benefits to employment	Not quantified	Not quantified
Economic benefits to existing landholders	\$0	\$0
Economic benefits to suppliers	\$0	\$0
<b>Sub-total</b>	<b>\$0</b>	<b>\$0</b>
<b>Costs</b>		
Greenhouse gas emissions (Scope 1 and 2)	\$0.02	\$0.03
Operational noise	No material impact*	No material impact*
Road transport	No material impact*	No material impact*
Air quality	No material impact*	No material impact*
Groundwater	\$0.06	\$0.06
Surface water	No material impact*	No material impact*
Subsidence	No material impact*	No material impact*
Biodiversity	\$0.02	\$0.02
Aboriginal heritage	No material impact*	No material impact*
Historic heritage	No material impact*	No material impact*
Net public infrastructure costs	No material impact*	No material impact*

\*"No material impacts" does not mean that there will be no impacts but that the scale of any impact is so small that it would not be expected to change the results of the analysis in a significant way.

## 2.4 Net Social Benefits to NSW

The NSW results from Table 2.1 and Table 2.2 are combined in Table 2.3 to estimate the net social benefits of MOD 2 to NSW. This indicates that with increased production MOD2 will have net social benefits to NSW of between \$0.0M and \$3.7M (present value at 7% discount rate), depending on whether Wollongong Coal can realise the tax deduction that arises from MOD2. This is an increase in net social benefits to NSW relative to original Economic Assessment.

**Table 2.3– Comparison of NSW Net Social Benefits of MOD2 (present value @ 7% discount rate) to NSW**

Benefits	Original Assessment \$M	Revised Assessment \$M
<b>Net Production Benefits</b>		
Royalties to Government	\$2.9	\$3.7
Company Tax	-\$4.5	-\$3.5
Residual Net Production Benefits	\$0.0	\$0.0
<b>Sub-total</b>	<b>-\$1.6 to \$2.9</b>	<b>\$0.2 to \$3.7</b>
<b>Other Benefits</b>		
Wage benefits to employment	Not quantified	Not quantified
Economic benefits to existing landholders	\$0	\$0
Economic benefits to suppliers	\$0	\$0
Sub-total	\$0	\$0
<b>Costs</b>		
Greenhouse gas emissions (Scope 1 and 2)	\$0.02	\$0.03
Operational noise	No material impact*	No material impact*
Road transport	No material impact*	No material impact*
Air quality	No material impact*	No material impact*
Groundwater	\$0.06	\$0.06
Surface water	No material impact*	No material impact*
Subsidence	No material impact*	No material impact*
Biodiversity	\$0.02	\$0.02
Aboriginal heritage	No material impact*	No material impact*
Historic heritage	No material impact*	No material impact*
Net public infrastructure costs	No material impact*	No material impact*
<b>Sub-total</b>	<b>\$0.1</b>	<b>\$0.1</b>
<b>Net Social Benefits</b>	<b>-\$1.7 to \$2.8</b>	<b>\$0.0 to \$3.6<sup>1</sup></b>

\*"No material impacts" does not mean that there will be no impacts but that the scale of any impact is so small that it would not be expected to change the results of the analysis in a significant way.

<sup>1</sup>Totals may differ due to rounding

The potential expected value of royalty benefits from future mining in the North West Domain remain unchanged at between \$57M and \$191M (present value at 7% discount rate), depending on the assumed probability of obtaining project approval. This is a minimum benefit of the larger project as it

does not include potential company tax benefits and wage benefits. Any residual environmental, social and cultural impacts of this larger project after mitigation, compensation and offset, would need to be compared against the estimated production benefits. This will be the subject of a future economic assessment.

## 2.5 Incidence of Costs and Benefits to NSW

The distribution of NSW costs and benefits with the revised ROM production is provided in Table 2.4.

**Table 2.4 - Incidence of NSW Costs and Benefits**

<b>BENEFITS AND COSTS</b>	<b>INCIDENCE OF COSTS AND BENEFITS</b>	<b>(\$M)</b>
<b>Share of Net Production Benefits</b>		
Royalties	NSW Government and NSW households	\$3.7
Company tax	NSW Government and NSW households	-\$3.5
<b>Additional benefits</b>		
Wage benefits to employment	Some of the local and NSW labour force	Not quantified
Economic benefits to existing landholders	Local landholders who sell land required for MOD2 including buffer land	\$0
Economic benefits to suppliers	Regional and State suppliers of inputs to production	\$0
<b>Environmental, social and cultural costs*</b>		
Greenhouse gas emissions (Scope 1 and 2)	Local and NSW households	\$0.03
Operational noise	Adjoining landholders	No material impact*
Road transport	Local residents	No material impact*
Air quality	Adjoining landholders	No material impact*
Groundwater	Wollongong Coal via holding WAL purchases	\$0.06
Surface water	Wollongong Coal via WAL purchases	No material impact*
Subsidence	People who use or enjoy facilities, infrastructure or natural areas above underground mining	No material impact*
Biodiversity	Wollongong Coal via payment to Biodiversity Conservation Trust Fund	\$0.02
Aboriginal heritage	Aboriginal people and other local and NSW households	No material impact*
Historic heritage	Local and NSW households	No material impact*
Net public infrastructure costs	NSW Government and NSW households	No material impact*

\* NSW regulations require many impacts to be borne by the proponent via mitigation, offset and compensation. Where these measures perfectly mitigate, offset or compensate then no residual impacts occur and all impacts are borne by the proponent. "No material impacts" does not mean that there will be no impacts but that the scale of any impact is so small that it would not be expected to change the results of the analysis in a significant way.

## 2.6 Sensitivity Analysis

The revised CBA results for NSW, were tested for changes to the following variables at a 4%, 7% and 10% discount rate:

- opportunity cost of land;

- opportunity cost of capital;
- operating costs;
- capital costs;
- deferred rehabilitation and decommissioning costs;
- revenue;
- residual value of land;
- residual value of capital;
- greenhouse gas costs;
- groundwater costs; and
- offset costs.

Results of the sensitivity analysis and a comparison to the original Economic Assessment are reported in Table 2.5. What this analysis indicates is that revised CBA is most sensitive to changes in revenue (reflecting production levels, the value of coal in USD and the USD/ AUD exchange rate) and to a lesser extent operating costs and capital costs. This is because changes in revenue directly impact royalties which is the main component of net production benefits to NSW. Changes in revenue also impact company tax estimates, only a component of which accrues to NSW. Changes in operating costs and capital costs do not impact royalties but do impact the estimates of company tax production benefits.

The sensitivity analysis indicated that the CBA results are not sensitive to changes in greenhouse gas costs, groundwater costs or biodiversity offset costs.

Under all scenarios examined, the net social benefits to NSW range from slightly negative to slightly positive depending on whether tax losses can be realised. This reflects the nature of MOD2 as an initial investment in support of potential future mining project, which would be subject of individual assessment and necessary approvals.

All sensitivity results are more positive than under the original Economic Assessment.

**Table 2.5 - NSW CBA Sensitivity Testing (Present Value \$M)**

	Original Assessment						Revised Assessment					
	Lower Bound Estimate			Upper Bound Estimate			Lower Bound Estimate			Upper Bound Estimate		
	4%	7%	10%	4%	7%	10%						
<b>CENTRAL ANALYSIS</b>	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
<b>INCREASE – 20%</b>												
Opportunity cost of land	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
Opportunity cost of capital	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
Operating costs	-\$3.0	-\$2.7	-\$2.5	\$3.2	\$2.8	\$2.5	-\$1.1	-\$1.0	-\$1.0	\$4.1	\$3.6	\$3.2
Capital costs	-\$2.4	-\$2.2	-\$2.1	\$3.2	\$2.8	\$2.5	-\$0.5	-\$0.5	-\$0.6	\$4.1	\$3.6	\$3.2
Decommissioning and rehabilitation costs	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
Revenue	-\$0.2	-\$0.3	-\$0.4	\$3.8	\$3.4	\$3.0	\$0.6	\$0.4	\$0.3	\$4.2	\$3.8	\$3.4
Residual value of land	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
Residual value of capital	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
Greenhouse gas costs	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
Groundwater costs	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.1	\$4.0	\$3.6	\$3.2
Offset costs	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
<b>DECREASE – 20%</b>												
Opportunity cost of land	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
Opportunity cost of capital	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
Operating costs	-\$0.6	-\$0.6	-\$0.6	\$3.2	\$2.8	\$2.5	\$1.4	\$1.1	\$0.9	\$4.1	\$3.6	\$3.2
Capital costs	-\$1.1	-\$1.1	-\$1.0	\$3.2	\$2.8	\$2.5	\$0.8	\$0.6	\$0.5	\$4.1	\$3.6	\$3.2
Decommissioning and rehabilitation costs	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
Revenue	-\$3.3	-\$3.0	-\$2.8	\$2.5	\$2.2	\$2.0	-\$0.3	-\$0.3	-\$0.4	\$3.9	\$3.4	\$3.0
Residual value of land	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
Residual value of capital	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.0	-\$0.0	\$4.1	\$3.6	\$3.2
Greenhouse gas costs	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.1	-\$0.0	\$4.1	\$3.6	\$3.2
Groundwater costs	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.1	-\$0.0	\$4.1	\$3.6	\$3.2
Offset costs	-\$1.8	-\$1.7	-\$1.6	\$3.2	\$2.8	\$2.5	\$0.2	\$0.1	-\$0.0	\$4.1	\$3.6	\$3.2

### 3.0 LOCAL EFFECTS ANALYSIS

Table 3.1 reports the results of revised LEA compared to the results of the original LEA.

Increased ROM production results in a slight increase in average annual direct output and value added (although for direct value-added it doesn't appear in the numbers due to rounding) and hence an increase in total (direct and indirect) output and value-added. All other impacts for the local area remain the same.

**Table 3.1 – Comparison of Local Effects Analyses**

Original Local Effects Analysis				Revised Local Effects Analysis		
	Direct Total	Direct Already Resident in the Local Area	Net	Direct Total	Direct Already Resident in the Local Area	Net
<b>Local Effects</b>						
Average annual direct employment FTE	56	54	26	56	54	26
Net income (\$M)			2.5			2.5
Non-labour expenditure in the Local Area	7.5			7.5		
<b>Regional Impacts</b>				<b>Direct</b>	<b>Flow-on</b>	<b>Total</b>
Output (\$M)	23	20	43	24	20	44
Value-added (\$M)	9	11	19	9	11	20
Income (\$M)	6	5	11	6	5	11
Employment	56	62	118	56	62	118
<b>Other Local Economic Impacts</b>						
Contraction in other sectors	No material impact*			No material impact*		
Displaced activities	No material impact*			No material impact*		
Wage rise impacts	No material impact*			No material impact*		
Housing impacts	No material impact*			No material impact*		
<b>Local Environmental Impacts</b>						
Greenhouse gas emissions (Scope 1 and 2)	\$0.00			\$0.00		
Operational noise	No material impact*			No material impact*		
Road transport	No material impact*			No material impact*		
Air quality	No material impact*			No material impact*		
Groundwater	No material impact* - cost borne by Wollongong Coal			No material impact* - cost borne by Wollongong Coal		
Surface water	No material impact*			No material impact*		
Subsidence	No material impact*			No material impact*		
Biodiversity	No material impact* cost borne by Wollongong Coal			No material impact* cost borne by Wollongong Coal		
Aboriginal heritage	No material impact*			No material impact*		
Historic heritage	No material impact*			No material impact*		
Net public infrastructure costs	No material impact*			No material impact*		

\*"No material impacts" does not mean that there will be no impacts but that the scale of any impact is so small that it would not be expected to change the results of the analysis in a significant way.

### **3.0 CONCLUSION**

The economic consequence of the optimised 486,000 tonnes ROM coal production is to:

- increase the net production benefits of MOD2;
- slightly increase the greenhouse gas costs of MOD2;
- increase the net social benefits of MOD2 to NSW; and
- increase the average annual direct and total regional economic output and value-added levels of MOD2.