

APPENDIX H
SOCIO-ECONOMIC ASSESSMENT

Cowal Gold Mine E42 Modification Modified Request Socio-Economic Assessment

Final Report

Prepared for

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EXECUTIVE SUMMARY

The Cowal Gold Mine (CGM) is located 38 km north-east of West Wyalong, New South Wales (NSW), within the Lachlan Statistical Sub-division (SSD). Barrick (Cowan) Limited (Barrick) is proposing to change a number of components of the E42 Modification which was lodged under Section 75W of the *Environmental Planning and Assessment Act, 1979*. The changes to the E42 Modification constitute the Modified Request. The project resulting from the Modified Request is referred to as the Modified Request Project. It is the incremental difference (between the currently approved CGM and the Modified Request Project) only that was the subject of this socio-economic assessment.

The main decision criterion for assessing the economic desirability of a project to society is its net benefit. Net benefit is the sum of the discounted benefits to society less the sum of the discounted costs. A positive net benefit indicates that it would be desirable from an economic perspective for society to allocate resources to a proposal, because the community as a whole would be better off.

In a simple framework, the benefits to society of mining relate to the net production benefits, while the economic costs to society relate to any environmental impacts.

The Modified Request is estimated to have net production benefits to Australia in the order of \$314 million (M). This is above the net production benefits of the currently approved CGM (i.e. it is a net production benefit specific to the Modified Request). Because the potential incremental environmental impacts of the Modified Request have not been valued, the net production benefit of \$314M represents a threshold value.

This threshold value is the opportunity cost to society of not proceeding with the Modified Request. Interpreted another way, any environmental impacts of the Modified Request, after mitigation by Barrick, would need to be valued at greater than \$314M to make the Modified Request questionable from an economic efficiency perspective.

To put this into a regional context, this is equivalent to each household in the Lachlan SSD having a willingness to pay of over \$15,000 to avoid any residual environmental impacts of the Modified Request after mitigation by Barrick.

The net production benefits of the Modified Request are distributed between a range of stakeholders including Barrick and its shareholders in the form of net profits, the NSW government in the form of royalties and the Commonwealth Government in the form of company tax. The State Government also receives additional income by way of payroll tax while the Commonwealth Government would receive additional revenues in the form of income tax.

The Modified Request would extend the period over which the mine would provide a stimulus to the Lachlan SSD (or regional) economy. This extended stimulus would arise from purchases made in the regional economy by Barrick and those made by employees. The regional economic impacts associated with the years of extended operation (i.e. Year 14 and Year 15 or 2018 and 2019) as a result of the Modified Request are estimated at up to:

- \$228M in annual direct and indirect regional output or business turnover;
- \$112M in annual direct and indirect regional value added;
- \$54M in annual direct and indirect household income; and
- 794 direct and indirect jobs.

In addition, there would be incremental regional impacts from Year 6 (2010) to Year 13 (2017) associated with increased production levels and associated increased levels of expenditures. This would be reflected in incremental increases in direct and indirect output and value-added. While there would be no direct incremental employment or income effects the increased production expenditure would result in some minor increases in production induced flow-on employment and income effects.

Given the recent population decline in the region any small additional population for the region as a result of increased flow-on employment from the Modified Request, is unlikely to place any strain on existing community infrastructure. In contrast, extending the mine life may help slow the decline of the regional population and hence slow any decline in the provision of community infrastructure and services to the region. At the same time, continued mining ensures a more diversified economy that is more resilient to individual shocks such as droughts and changes in agricultural commodity prices. Conversely, cessation of mining would result in a contraction in regional economic activity. The significance of these cessation impacts would depend on:

- The degree to which any displaced workers and their families remain within the region, even if they remain unemployed. This is because continued expenditure by these people in the regional economy (even at reduced levels) contributes to final demand.
- The economic structure and trends in the regional economy at the time. For example, if cessation of the Modified Request Project takes place in a declining economy the impacts might be felt more greatly than if it takes place in a growing, diversified economy.
- Whether other mining developments or other opportunities in the region arise that allow employment of displaced workers.

H1 INTRODUCTION

The Cowal Gold Mine (CGM) is located 38 km north-east of West Wyalong, New South Wales (NSW), within the Lachlan Statistical Sub-division (SSD). Barrick (Cowal) Limited (Barrick) is proposing to change a number of components of the E42 Modification which was lodged under Section 75W of the *Environmental Planning and Assessment Act, 1979*. The changes to the E42 Modification constitute the Modified Request. The project resulting from the Modified Request is referred to as the Modified Request Project. Works associated with the Modified Request Project are anticipated to commence in approximately Year 6 of the CGM (i.e. 2010).

The Modified Request would involve deepening and widening the approved CGM open pit to enable mining of an additional 23 million tonnes (Mt) of ore. This ore production increase would increase gold production from approximately 2.7 million ounces (Moz) of gold to approximately 3.1Moz of gold for the Modified Request Project. Approval is also being sought for an increase in the maximum ore processing rate from 6.9 million tonnes per annum (Mtpa) to 7.5Mtpa. The Modified Request would extend the life of the approved CGM by approximately 2 years and result in continued employment opportunities for the current 320 personnel.

This socio-economic assessment has been prepared as part of the broader Modified Request report.

H2 BACKGROUND

From a socio-economic perspective there are three important aspects of the proposed modification:

- the economic efficiency of the Modified Request (i.e. consideration of economic costs and benefits);
- the regional economic impacts of the Modified Request (i.e. the economic stimulus that the project would provide to the regional economy); and
- the distribution of impacts between stakeholder groups (i.e. the equity or social impact considerations).

The draft *Guideline for Economic Effects and Evaluation in EIA* (Planning NSW, 2002) identified economic efficiency as the key consideration of economic analysis. Benefit cost analysis (BCA) is the method used to consider the economic efficiency of proposals. The draft guideline identified BCA as essential to undertaking a proper economic evaluation of proposed developments that are likely to have significant environmental impacts (Planning NSW, 2002).

The draft guideline considered that regional economic impact assessment may provide additional information as an adjunct to the economic efficiency analysis. Economic stimulus to the local economy can be estimated using input-output modelling of the regional economy (regional economic impact assessment).

The draft guideline also identified the need to consider the distribution of benefits and costs in terms of:

- intra-generational equity effects – the incidence of benefits and costs within the present generation; and
- inter-generational equity effects – the distribution of benefits and cost between present and future generations.

These social impacts are often considered in terms of the impacts on employment, population and community infrastructure. Each of these aspects is considered in this assessment.

In summary, this assessment report provides:

- an evaluation of the economic efficiency of the Modified Request (Section H3);
- identification the distribution of impacts between stakeholder groups (Section H4);
- a regional economic impact assessment of the Modified Request (Section H5);
- an employment, population and community infrastructure assessment (Section H6);
- consideration of the impacts of mine cessation (Section H7); and
- a conclusion summarising the above (Section H8).

H3 ECONOMIC EFFICIENCY

The main decision criterion for assessing the economic desirability of a project to society is its net benefit. Net benefit is the sum of the discounted benefits to society less the sum of the discounted costs. A positive net benefit indicates that it would be desirable from an economic perspective for society to allocate resources to a proposal, because the community as a whole would be better off.

In a simple framework, the benefits to society of mining relate to the net production benefits, while the economic costs to society relate to any environmental impacts.

Net production benefits of the Modified Request are a function of expected incremental gold production, sale price and costs of production over time associated “with” the Modified Request compared to “without” the Modified Request.

H3.1 Capital Costs

Incremental capital costs for the Modified Request are associated with the purchase of additional mining fleet, progressive raising of the northern and southern tailings storage facilities, modification of the perimeter waste emplacement and other miscellaneous facilities. These incremental capital costs are estimated at in the order of \$58M over the life of the Modified Request Project (i.e. from Year 6 to Year 15).

H3.2 Operating Costs

Incremental operating costs are associated with increased mining and ore processing from Year 6 to Year 13 (i.e. 2010 to 2017) and ore processing only from Year 14 to Year 15 (i.e. 2018 to 2019). These incremental operating costs, average approximately \$55M per annum (on average) over the operating life of the Modified Request Project (i.e. from Year 6 to Year 15).

H3.3 Revenues

Incremental revenues associated with the expected production profile are estimated at approximately \$109M per annum (on average) over the operating life of the Modified Request Project (i.e. from Year 6 to Year 15).

H3.4 Decommissioning Costs and Residual Value of Land and Capital

The Modified Request extends the life of the existing CGM and hence the approximately \$14M of decommissioning costs that would have been incurred in Year 14 (i.e. 2018) following cessation of the CGM are deferred until Year 16 (i.e. 2020). This is an economic benefit of the Modified Request. However, \$6M of residual land and capital value that would have been realised in Year 14 (i.e. 2018) would also be deferred until Year 16 (i.e. 2020), representing an additional cost of the Modified Request.

H3.5 Threshold Value Analysis

At the NSW Treasury recommended central discount rate of 7%, the Modified Request is estimated to have net production benefits to Australia of \$314M. However, because the potential incremental environmental impacts of the modification have not been valued, the net production benefit of \$314M represents a threshold value.

This threshold value is the opportunity cost to society of not proceeding with the Modified Request. Interpreted another way, any environmental impacts from the Modified Request, after mitigation by Barrick, would need to be valued at greater than \$314M to make the Modified Request questionable from an economic efficiency perspective.

To put this into a regional context, this is equivalent to each household in the Lachlan SSD having a willingness to pay of over \$15,000 to avoid any of the residual environmental impacts of Modified Request, after mitigation by Barrick. The equivalent figure for NSW households is \$125. In the context of the economic valuation literature, these are very large threshold values.

H4 DISTRIBUTION OF IMPACTS

While Barrick would initially bear the production costs and receive the production benefits (revenue) of the Modified Request, the net production benefits would be distributed between a number of stakeholders including Barrick and its shareholders in the form of net profits, the NSW government in the form of royalties and the Commonwealth Government in the form of company tax.

The State Government also receives additional income by way of payroll tax while the Commonwealth Government would receive additional revenues in the form of income tax.

H5 REGIONAL ECONOMIC IMPACTS

Regional economic impact assessment is concerned with the effect of an impacting agent on an economy in terms of a number of specific indicators, such as gross regional output, value-added, income and employment.

These indicators are defined as follows:

- **Gross regional output** - is the gross value of business turnover;
- **Value-added** – is the difference between the gross value of business turnover and the costs of the inputs of raw materials, components and services bought in to produce the gross regional output;
- **Income** – is the wages paid to employees including imputed wages for self employed and business owners; and
- **Employment** – is the number of people employed (including full-time and part-time).

The impacting agent for the Modified Request is the additional expenditure in the regional economy as a result of an increase in production levels and an extension in the life of the mine by 2 years. The economy on which the impact is estimated in this report is the Lachlan SSD.

For this assessment, Gillespie Economics have applied Type 11A output, value-added, income and employment ratio multipliers reported for the Cadia Gold Mine on the Central West Statistical Division (Gillespie Economics, 2005) to the estimated direct output, value-added, income and employment impacts of the Modified Request in the years of extended operation (i.e. Year 14 and Year 15 or 2018 and 2019 (Table H-1).

There are well documented limitations with “borrowing” multipliers from other studies. However, in the absence of a primary study these multipliers could be considered to be upper bounds of likely regional effects. They are upper bounds as the Central West economy is larger than that of Lachlan SSD and hence multipliers are likely to also be larger.

Table H-1
Estimated Regional Economic Impacts of the Modified Request
(average of Year 14 and Year 15)

	Direct Effect	Production Induced	Consumption Induced	Total Flow-on	TOTAL EFFECT
OUTPUT (\$M)	144	43	40	84	228
<i>Type 11A Ratio</i>	1.00	0.30	0.28	0.58	1.58
VALUE ADDED (\$M)	102	3	7	10	112
<i>Type 11A Ratio</i>	1.00	0.03	0.07	0.10	1.10
INCOME (\$M)	32	8	14	22	54
<i>Type 11A Ratio</i>	1.00	0.26	0.43	0.69	1.69
EMPLOYMENT (No.)	320	157	317	474	794
<i>Type 11A Ratio</i>	1.00	0.49	0.99	1.48	2.48

Based on this approach, the annual regional economic impact associated with the additional years of production as a result of the Modified Request is estimated at up to:

- \$228M in annual direct and indirect regional output or business turnover;
- \$112M in annual direct and indirect regional value added;
- \$54M in annual direct and indirect household income; and
- 794 direct and indirect jobs.

In addition, there would be incremental regional impacts from Year 6 (2010) to Year 13 (2017) associated with increased production levels and associated increased levels of expenditures. This would be reflected in incremental increases in direct and indirect output and value-added. While there would be no direct incremental employment or income effects the increased production expenditure would result in some minor increases in production induced flow-on employment and income effects.

H6 COMMUNITY INFRASTRUCTURE ASSESSMENT

Changes in the workforce and population of a region may well have implications in relation to access to community infrastructure and human services, which includes for example housing, health and education facilities. This may include the number of services that are available to be used and the accessibility of the population to these services.

Employment that is directly generated by the construction and operation phase of a mine may be sourced from:

- the local region either from:
 - the unemployment pool; or
 - workers from other industries; and/or
- in-migration or commuters.

Sourcing labour from the local region has minimal direct impact on local community infrastructure and services since it results in no changes to the regional population and hence demand for services. It may, however, have an indirect impact on some local community infrastructure and services where changes in employment status or income result in changes in demand for some particular services (e.g. health services).

Whether local labour is sourced from the unemployment pool or from other industries, it can reduce unemployment levels - directly in the case of employing unemployed people and indirectly via the filter effect¹ where labour is sourced from other industries.

The impact of commuter workers will depend on the extent to which they integrate into the regional communities, however, is likely to be modest.

In-migration, resulting in population change is likely to have the greatest potential impact on demand for community services and infrastructure with this impact dependent on the new residential location of the migrating workforce and their families and the capacity of the local region to provide the services required.

As well as direct employment and population changes, mining projects may also generate indirect labour demand through expenditure by employees in the local region and expenditure by mines in the local region on other inputs to production. This induced demand for labour may also have consequences for population change and demand for community infrastructure and services.

While the Modified Request Project would continue to provide employment for the existing 320 personnel that work at the mine (370 in peak periods), no additional direct employment is proposed. Nevertheless, there may be some additional flow-on employment in the region as a result of the increased operational expenditure of the CGM in the region.

¹ The filter effect refers to the situation where labour is sourced from other industries in the region making jobs available in those industries which are subsequently filled by people either from the unemployment pool or other industries with the latter making jobs available in that industry etc.

If this flow-on employment is filled by existing residents of the region then there would be little impact on community infrastructure. Community infrastructure impacts are only likely to arise from migration into the region. However, any population change should be considered within the context of recent population changes to the Lachlan (SSD) region and in particular the West Wyalong region (i.e. the Bland Statistical Local Area [SLA]).

Table H-2
Lachlan SSD and Bland SLA Population Change

Region		1996	2001	2006
Lachlan SSD	Population	55,284	53,907	52,399
	<i>Population change</i>		-1,377	-1,508
Bland SLA	Population	6,681	6,439	6,273
	<i>Population change</i>		-242	-166

Source: ABS (1996; 2001 and 2006)

Both the Bland SLA and Lachlan SSD have experienced recent population decline which is likely to have resulted in spare capacity in community infrastructure and services. Consequently, any additional population to the region as a result of the increased flow-on employment from the Modified Request is unlikely to place any strain on existing community infrastructure.

In contrast, extending the life of the approved CGM may slow the decline of the regional population and hence slow any overall decline in the provision of community infrastructure and services to the region. At the same time continued mining ensures a more diversified economy that is more resilient to individual shocks such as droughts, changes in agricultural commodity prices etc.

H7 MINE CESSATION

Cessation of the Modified Request Project in 2019 would lead to a reduction in economic activity in the Lachlan region. The significance of these cessation impacts would depend on:

- The degree to which any displaced workers and their families remain within the region, even if they remain unemployed. This is because continued expenditure by these people in the regional economy (even at reduced levels) contributes to final demand.
- The economic structure and trends in the regional economy at the time. For example, if cessation of the Modified Request Project takes place in a declining economy the impacts might be felt more greatly than if it takes place in a growing, diversified economy.
- Whether other mining developments or other opportunities in the region arise that allow employment of displaced workers.

Given these uncertainties it is not possible to foresee the likely circumstances within which cessation of the Modified Request Project would occur. It is therefore important for regional authorities and leaders to take every opportunity provided by the regional economic stimulus of the CGM, to strengthen and broaden the region's economic base.

H8 CONCLUSION

The Modified Request is estimated to have net production benefits to Australia in the order of \$314M. However, because the potential incremental environmental impacts of the Modified Request have not been valued, the net production benefit of \$314M represents a threshold value.

This threshold value is the opportunity cost to society of not proceeding with the Modified Request. Interpreted another way, any environmental impacts of the Modified Request, after mitigation by Barrick, would need to be valued at greater than \$314M to make the Modified Request questionable from an economic efficiency perspective.

To put this into a regional context, this is equivalent to each household in the Lachlan SSD having a willingness to pay of over \$15,000 to avoid any residual environmental impacts of the Modified Request, after mitigation by Barrick.

The net production benefits of the Modified Request are distributed between a range of stakeholders including Barrick and its shareholders in the form of net profits, the NSW government in the form of royalties and the Commonwealth Government in the form of company tax. The State Government also receives additional income by way of payroll tax while the Commonwealth Government would receive additional revenues in the form of income tax.

The Modified Request would extend the period over which the mine would provide a stimulus to the Lachlan economy. This extended stimulus would arise from purchases made in the regional economy by Barrick and those made by employees. The regional economic impacts associated with the additional years of operation of the CGM are estimated at up to:

- \$228M in annual direct and indirect regional output or business turnover;
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In addition, there would be incremental regional impacts from Year 6 (2010) to Year 13 (2017) associated with increased production levels and associated increased levels of expenditure. This would be reflected in incremental increases in direct and indirect output and value-added. While there would be no direct incremental employment or income effects the increased production expenditure would result in some minor increases in production induced flow-on employment and income effects.

Given the recent population decline in the region any small additional population for the region as a result of the increased flow-on employment from the Modified Request is unlikely to place any strain on existing community infrastructure. In contrast, extending the mine life may help slow the decline of the regional population and hence slow any decline in the provision of community infrastructure and services to the region. At the same time, continued mining ensures a more diversified economy that is more resilient to individual shocks such as droughts and changes in agricultural commodity prices.

H9 REFERENCES

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