BIS OXFORD ECONOMICS

REVIEW OF ECONOMIC ASSESSEMENT

MCPHILLAMYS GOLD PROJECT

NOVEMBER 2019

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November 2019

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An Environmental Impact Statement for the project was prepared in August 2019 and went on public exhibition from September12 to October 24, 2019. As a part of this, an Economic Assessment ("the EA") has been prepared by Gillespie Economics. The EA was finalised in July 2019. It contains a Cost Benefit Analysis (CBA) of the project using a NSW Statewide level of analysis as well as a Local Effects Analysis (LEA) using a defined area within the Central West as the basis of the analysis.

The NSW Department of Planning, Industry and Environment ("the Department") has requested that BIS Oxford Economics undertake an independent assessment of the EA and its component parts (the CBA and LEA).

This review finds that the CBA is well-researched and generally well presented. The work is obviously the product of considerable effort and much of the approach is reasonable. Close attention has been paid to the stipulations laid down in the NSW Government (2015) *Guidelines for the economic assessment of mining and coal seam gas proposals* ("the Guidelines") in most instances.

That said, there remain some areas of concern with the CBA. These include the following:

- *Gold price and production volumes* - These are of critical importance to project viability. However, it is not clear how much independent scrutiny the price assumptions in particular were subject to. That said, there are some initial indications that the price assumptions may be conservative.

- *Employee benefits* - The approach used to assess benefits to employed labour, unemployed labour and the non-market value of labour may not be consistent with the stipulations of the Guidelines .

- *Environmental externalities* - The basis for these is not always transparent and it is not clear if the costings have taken into account past community concerns.

- *Project costs* – Further details could have been supplied on these including a separate total for externalities and a discounted cash flow (DCF) table.

As a result of this review, it is recommended that:

- Attention should be paid to the basis of the gold price and volume estimates underlying the project given their critical importance to project viability. There may be a case for independent technical verification of these.

- Employee benefits should either be removed from the CBA or a better justification should be made for the existence (and claimed size) of such benefits. At the very least non-use benefits should be removed.

- The basis for (and total amount of) the environmental externality costings should be made more transparent, along with an indication that community concerns, and their attendant cost implications, have been addressed within these costings.

- Project costs should be more transparently indicated, through use of a full DCF table along with an indication that project contingencies have been allowed for.

It is noted that if employment benefits are excluded, the project still records a positive net benefit to NSW of $141 million in discounted terms, over the project lifetime. However a re-examination of other factors such as gold price assumptions and/or externalities may further alter this result.

The LEA is likewise well-presented and researched, with considerable attention being paid to detail in areas such as non-labour market effects, flow on effects, and agriculture.

However, some elements of the LEA also appear open to question, namely:

- *Local employment benefits* – The estimations about the proportion of local labour inputs during both the construction and operational phases of the project would appear to need more justification.

- *Effects on other local industries* – Displacement effects, while estimated to be small, are not reported in Table 5.5 summarising Local Effects.

- *Spatial scope* – While the Guidelines do not have a formal stipulation about spatial scope, it may be useful to further explain the reasoning behind the current spatial approach combining four local government areas (LGAs) in preference to the use of the relevant Statistical Area (the Orange SA3). A sensitivity test could also be run using the Orange SA3 definition of the local area.

It is recommended that these issues be reviewed with an aim of adjusting the LEA findings, if feasible.

1. INTRODUCTION

LFB Resources NL, a 100% owned subsidiary of Regis Resources Limited has lodged a development application for the McPhillamys Gold Project ("the MGP").This project is planned to be undertaken in the NSW Central West.

An Environmental Impact Statement for the project was prepared in August 2019 and went on public exhibition from September12 to October 24, 2019. As a part of this, an Economic Assessment ("the EA") has been prepared by Gillespie Economics. The EA was finalised in July 2019. It contains a Cost Benefit Analysis (CBA) of the project using a NSW Statewide level of analysis as well as a Local Effects Analysis (LEA) using the Central West as the basis of the analysis.

The NSW Department of Planning, Industry and Environment ("the Department") has requested that BIS Oxford Economics undertake an independent assessment of the EA and its component parts (the CBA and LEA).

The Scope of Work issued by Department indicates that issues to be considered include:

- whether assumptions presented are reasonable, appropriate and suitably justified;
- whether the Cost Benefit Analysis aligns with current best practice;
- the adequacy of the methodology, analysis and assessment presented in evaluating the economic costs and benefits of the proposed development (for the Applicant, local area, region and State);
- the identification of any areas of deficiency (including inconsistencies, overlaps or "double counting") and recommendations to improve or resolve these issues in the assessment;
- consistency of the assessment with any relevant Government guidelines.

Close attention has been paid in this review to NSW Government (2015), *Guidelines for the economic assessment of mining and coal seam gas proposals* ("the Guidelines") and to NSW Treasury (2017), *NSW Government Guide to Cost-Benefit Analysis*, Policy and Guidelines Paper TPP 17-03 ("the Treasury Guidelines").

The results of the review are detailed in the following chapters. Chapter 2 considers the CBA while Chapter 3 reviews the LEA.

2. REVIEW OF COST BENEFIT ANALYSIS

2.1 BACKGROUND

This Chapter is concerned with a review of the project's approach to CBA, as specified at the State-wide (NSW) level and contained within the Gillespie Economics report (the Economic Assessment or "EA").

Relevant points on the issues identified in the Statement of Requirements are presented below.

On the whole, the EA is well-researched and presented and attempts to adhere to the Guidelines. There remain some areas for concern, however, and these have been detailed below.

2.2 ADHERENCE TO GUIDELINES

The EA (p. 13) refers to the various guidelines of relevance to cost-benefit analyses (CBAs) of this nature, including:

- The NSW Government's (2015*) Guidelines for the economic assessment of mining and coal seam gas proposals ("the Guidelines");*
- The NSW Government's (2018) *Technical Notes supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals; and*
- The NSW Treasury's (2017) *NSW Government Guide to Cost-Benefit Analysis, TPP 17-03 ("the Treasury Guidelines")*

The first two of these relate to mining specific CBAs, LEAs and related issues. The third one relates to the approach to be taken to CBA by public sector agencies (the "Treasury Guidelines"). While the Treasury Guidelines refer to government initiatives and indicate that these initiatives are not intended to replace agency-specific advice, they also note that they are intended to encourage a common analytical approach to CBA across NSW Government (p. 6). In this context, the Treasury Guidelines (p. 6) also refer to the NSW Government (2015), *Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals* as publically available sector specific guidelines.

The Statement of Requirements for this review also refers to the need to ensure "consistency of the assessment with any relevant Government guidelines" and to ensure that the "Cost Benefit Analysis aligns with current best practice".

These stipulations should be noted when analysing the EA.

2.3 THE SALE VALUE OF GOLD

The sale value of the gold produced by the MGP accounts for the vast majority of project benefits (some 99% of gross Global and National benefits excluding labour benefits according to Table 4.4).

It is therefore important to understand the basis for the sale value of gold described in the EA. The sale value of the gold produced by the MGP will essentially be determined by two factors:

- the price of gold over the operational lifetime of the project; and
- the ability of the MGP to produce the volumes specified over the lifetime of the project.

2.3.1 The price of gold

Assumptions about the price of gold – and subsequent assessment of royalties and company tax – are central to the benefits assessed for the project. Given this, it is important to understand the basis for the assumptions made about this price during the lifetime of the project.

The EA (p.11; p.22) states that the price of gold is assumed to be $US 1,320 per ounce over the lifetime of the project, with an exchange rate of 0.75. No variation to these figures (in real terms) is assumed over the project's operational lifetime (10 years). However some sensitivity analysis is undertaken to examine variations in the price of gold by +/- 20% along with other key project inputs (EA, p.38).

As it stands, it is worth noting that the project (excluding employment benefits) records a modestly positive benefit in NPV terms ($345 million on a National basis according to Table 4.4 (EA p. 33)). This equates to a benefit-cost ratio of 1.24.

The net benefits to NSW equate to $141 million in NPV terms, excluding employment benefits. (Table 4.5, p. 35). It is noted that a decrease in the value of gold by 20% reduces this value to $24 million (Table 4.7, EA p. 38), bringing the project close to breakeven point in terms of net benefits.

These facts bring home the centrality of the value of gold to the economic justification for the project. In considering whether this assumption is justified, it might therefore be helpful to examine other estimates of the price of gold.

BIS Oxford Economics provides its own commodities forecasts to 2039. BIS Oxford Economics estimates of the price of gold for this period are listed below.

Fig. 1. Forecast world gold prices

	2019	2020	2021	2022	2023	2024	2025
World gold price, constant exchange rate, $US per troy ounce	1,395.5	1,522.5	1,496.7	1,397.3	1,377.7	1,385.9	1,394.2
	2026	2027	2028	2029	2030	2031	2032
World gold price, constant exchange rate, $US per troy ounce	1,402.6	1,411.0	1,419.5	1,428.0	1,436.6	1,445.2	1,453.9
	2033	2034	2035	2036	2037	2038	2039
World gold price, constant exchange rate, $US per troy ounce	1,462.6	1,471.4	1,480.2	1,489.1	1,498.1	1,507.1	1,516.1

Source: BIS Oxford Economics

These figures suggest that the EA's assumption for the price of gold over the project's operational lifetime is reasonable – and indeed if anything is conservative.

However given that BIS Oxford Economics is also the author of the present review, it might be useful to consider the price of gold suggested by other, independent, commodities forecasters. Such forecasters could include:

- Standard & Poors; and
- CRU

Given its centrality to the viability of the project, the EA offers relatively little commentary on the process and assumptions behind the estimation of the price of gold. There is some discussion in the EA (p.38) indicating that the gold price used is actually conservative and noting the recent fall in the Australian dollar. This also references a forecasting service: The Economy Forecast Agency (EFA) which may be the source of the EA's estimates of the price of gold https://longforecast.com/gold-price-today-forecast-2017-2018-2019-2020-2021-ounce-gram .

It would be helpful if the EA could discuss the origins of the assumed price of gold and why it is has been assumed to be constant during the lifetime of the project.

It would also seem important to test the assumption about the price of gold using forecasts derived from independent forecasters such as those noted above. The Department may wish to undertake this exercise separate to this report as a check on the reliability of the EA's price of gold assumptions.

Note that exchange rate assumptions constitute another level of project risk. We do not offer additional commentary on this beyond noting that this might also be considered in assessing the economic viability of the project.

It is acknowledged that all forecasts are naturally subject to uncertainty. Nonetheless, a more extensive discussion – and justification - of the assumed price of gold would help to provide a more solid basis for the EA.

2.3.2 Production volumes

Separate to the price obtained for the output of the MGP is the question of the mine's production volumes which, in turn, is ultimately linked to project viability. In terms of yield, it is assumed that the project will produce 250,000 ounces of gold per annum with mining extraction of 8.5Mt of ore per annum. (EA p. 11). In addition, the EA (pp.23-24) refers to the operating costs of the MGP. These could be expected to be tied to the nature of the mining operations, production volumes and by extension the viability of the project as a whole.

We do not possess detailed data on the nature of the mining operations in question in order to independently test the reasonableness of these assumptions or the related issue of project costings. It is noted that the sensitivity tests (EA p.38) include an increase in operating costs of 20%. This would produce a NSW project NPV of $79 million – i.e. nearly halving net benefits. If there are concerns about project operating cost blowouts this may be an issue worth investigating in more detail.

More broadly, given our previous experience with discussions over the viability of production volumes and associated operating costs for mining operations, we suggest the production assumptions and the associated operating cost assumptions be tested independently.

2.4 EMPLOYMENT BENEFITS

The assessed benefits in the EA refer to the inclusion of employment benefits as a project benefit.

There are several grounds for concern with the approach taken towards such claimed benefits in the CBA. These are indicated below. Before addressing these however, it is worth noting that, on first principles grounds, a standard CBA considers labour to be an (opportunity) cost, not a benefit. The Treasury Guidelines (Appendix 7, p. 56) make this clear. The reason for this is that it is assumed that labour is fully employed and must be drawn away from elsewhere in order to develop and run projects such as the MGP. This constitutes an opportunity cost. Indeed the EA itself (p.29) also briefly notes this point.

There may be some instances where this is relaxed – such as cases where there is a high rate of industry or general unemployment. However, in such cases (as discussed below) strong evidence is generally required about why it is assumed some workers are likely to be drawn from the ranks of the unemployed and to support assertions about the potential magnitude of this effect.

This is particularly so, since employers are likely to prefer skilled and experienced labour in a given project, particularly technically complex ones such as the MGP.

The EA (p.29) notes the discussion about the potential case for a wage premium in the Guidelines. However, it is worth reiterating that the Guidelines (pp. 13-14 and Chart 3.8, p. 14) are very clear that the staring assumption is that wage premium is zero - whether workers are drawn from the mining sector or from other sectors. It is therefore worth citing the text on p.13 of the Guidelines at some length on this:

The economic benefit to workers is the difference between the wage paid in the mining project and the minimum (reservation) wage that the workers would accept for working elsewhere in the mining sector (Chart 3.8). The minimum wage reflects the employment opportunity costs, skill level required and the relative disutility of an employment position.

In practice, minimum (reservation) wages are not readily observable. An appropriate starting assumption should be that workers do not receive a wage premium, even if they will earn more working in the mining sector.

An appropriate starting assumption should be that workers do not receive a wage premium, even if they will earn more working in the mining sector.

- *If workers are already working in the mining sector, it is not generally the case that one mine will pay significantly more than other mines for workers doing a similar job in similar conditions.*

- *If a mine will employ workers that are currently working locally, but not in the mining sector, a mine may need to offer higher wages to compensate for more physically demanding work, tougher conditions etc. In this case, the benefit to the worker from higher pay will be offset by the costs associated with greater hardship etc.*

- *If a mine needs to attract workers from other parts of NSW, it may need to pay them more than they are earning in their existing or previous jobs so that they will relocate. For example, a mine that employs truck drivers in a remote area may need to offer a higher wage than is paid to drivers of similar trucks in the city or large towns. If so, the difference between the minimum wage necessary to get a truck driver to relocate and the standard wage in the city or town is not a valid wage premium.*

Although a zero wage premium is a useful starting assumption, the appropriateness of this assumption must be assessed on a case by case basis. This is because benefits to workers can be one of the major economic benefits from a project. If a proponent considers that a project will generate positive benefits for workers, the economic assessment should clearly explain the reasons for this conclusion and present evidence in support of the valuation that has been adopted.

A broad range of factors may be relevant to the question of whether a project will generate net benefits for workers. In general, the net benefit to workers is more likely to exist if workers will be drawn from a population with persistently high unemployment or experiencing other forms of social and economic disadvantage. Workers are also more likely to realise net economic benefits if they will develop new skills by working on a project, such that they become more employable in the long term, especially if the skills are relevant to jobs in other industries or locations. Workers may also receive a net economic benefit if a proponent intends to pay its workers more than necessary to attract the necessary skills or number of workers. If this is the case, they should clearly explain why this intention is credible and how compliance with this intention might be verified and enforced.

(Guidelines pp. 13-14)

More broadly, the EA allows for:

- Wage premium benefits to existing workers (estimated as worth $27.1 million in NPV terms at a 7% discount rate);
- Benefits to unemployed labour (estimated as worth $4.9 million in NPV terms at a 7% discount rate); and
- Non-market value of employment (valued at $60 million).

These are discussed in turn below.

2.4.1 Benefits to existing workers

As indicated the EA allows for wage premium benefits to existing workers. In essence, it:

1. assumes 10% of the MGP workforce will be drawn from the ranks of the unemployed (i.e. 90% are drawn from the existing workforce);

2. assumes an average mining wage of $120,000;
3. assumes that the average wage in NSW ($64,500) acts as a reservation wage;
4. allows for a 10% uplift in that wage to reflect the disutility of working in the mining sector; and
5. Applies these calculations over a three year period to derive a $27 million wage premium benefit

However, it is not clear to what extent these calculations and assumptions are consistent with the requirements for considering a wage premium effect as defined by the Guidelines.

In particular, as per the citation above, it is worth noting that the Guidelines clearly define the reservation wage as the difference between the wage in the mining project in question and that received working elsewhere in the mining sector – rather than the average wage in NSW as apparently assumed in the EA.

This affects the other assumptions in the EA. Consider the first dot point mentioned by the Guidelines – the fact that one mine will not pay significantly more than those in other mines. It is unclear from the EA how many of the workers in the MGP would be drawn from the existing mining industry, as opposed to other (i.e. non-mining) industries. However, it would be expected that the project workers would chiefly be drawn from the mining sector rather than from a workforce unfamiliar with this sector. As any jobseeker can attest, employers tend to prefer skilled and experienced staff members to fill roles.

This would be no less true of the MGP, which will require large inputs of labour with skills and experience in the mining sector. However, if the project's workforce is indeed drawn from the mining sector – or would work in this sector if the project did not occur - then dot point one (Guidelines p.13), cited above, applies and there is likewise no wage premium for such employees.

If dot point 2 applies – i.e. if non-mining labour is drawn into the project – then as indicated the higher wage is assumed to be an offset for the nature of the work, tougher conditions etc. In other words, it does not seem correct to simply assume that the wage premium is the difference between mining wages ($120,000) and average wages (i.e. $64,500 plus a 10% uplift to account for disutility). The Guidelines suggest that the entirety of the difference between mining and non-mining wages would reflect the disutility of mining work. This is clearly indicated in Chart 3.8 (Guidelines p.14).

In other words, if it is assumed that the project's labour is drawn from non-mining sectors then the default assumption is that any higher wages would be offset by the extra costs of the more demanding work. So the net wage premium is zero.

Likewise, as indicated in dot point three, if labour is travelling from other areas of the State then the higher wages are offset by relocation costs and there is no wage premium.

The evidence required for a wage premium is again clearly illustrated in Chart 3.8 on p. 14 of the Guidelines, where economic benefit to workers is identified as net of simple wage differentials. Thus there appears to be no strong basis

for claiming employment benefits due to the simple wage differentials associated with the project.

It is noted that there are also references to job chain effects in the EA. The EA (p.29) states that these mean what is important is not the reservation wage of those immediately hired by the project but those at the end of the job chain (assumed to be $64,500). However, this is not what is stated in the Guidelines (pp.13-14). The discussion in the EA (pp.29-30) also appears to contain the implicit assumption that much project labour will come from the non-mining sector. However, as indicated much of the labour may come from the mining sector given employers prefer experienced hires. It is also unclear how the figure of $27.1m (NPV at a 7% discount rate) is arrived at. It would appear to add a disutility to the average NSW wage of 10% to compensate for labour which now works in the mining sector. However if the calculated effects reflect upgrades from non-mining jobs to other non-mining jobs as a result of job chain effects, it is not clear how this disutility is relevant (or indeed what calculation has been applied to derive the benefit estimate). And if it reflects a move from non-mining to mining jobs, then as already indicated a 10% uplift is not consistent with the specifications of the Guidelines.

Another issue with job chain effects is the extent to which the economy is at or near full employment – as discussed below.

Moreover it is not clear that job chain effects are an accepted approach to wage premium estimation in the Guidelines or Treasury Guidelines. Further, in times of low unemployment it may be the case that wage pressures build up rather than jobs being allocated to the next worker "down the chain".

That said, and as referenced in the EA, there may still be a case for economic benefits to workers arising from the project. The Guidelines (p.13) indicate that:

> *If a proponent considers that a project will generate positive benefits for workers, the economic assessment should clearly explain the reasons for this conclusion and present evidence in support of the valuation that has been adopted.*

The Guidelines (p.14) suggest that benefits to workers may exist if workers develop new skills on the project or if there is a need to pay more than necessary to attract necessary skills and workers – but also calls for credible evidence to this effect. Put another way, labour that learns new skills, boosting employability and/or which attracts a premium wage would be reflective of a gain to the productive efficiency of the economy. To the incremental extent that this is true (relative to base case skills /wages) it could be considered within a CBA. However it is not clear that this case has been made in the EA. In order to make such a case, it would need to be demonstrated that the project is paying workers for their additional skills or is paying them more than necessary to attract them to the project.

The Guidelines (p.14) also suggest that net benefits may exist in the case of populations with "persistently high unemployment" or social and economic disadvantage. This issue is discussed below.

2.4.2 Unemployed labour

Consistent with the Guidelines, reductions in unemployment can be considered to relax the assumption that labour is necessarily an opportunity cost. The EA (p.30) assumes that 10% of the labour used for the project will come from unemployed labour.

In order to justify this, the EA (p.29) states that the economy is rarely at full employment and even where it is there is a stream of new entrants to the labour market.

Nonetheless, it is not clear why the unemployed labour component of the project workforce is set at 10% (as opposed to say 5% or 15%). Setting up this figure has obvious impacts on the calculation of worker benefits.

It is worth noting that the NSW economy is indeed close to full employment by most measures. Seasonally adjusted ABS data for September 2019 indicate an unemployment rate of 4.5%[1]. Moreover, unemployment in the Central West is reported as 3.7% in August 2019.[2]

A different set of figures is reported by the Australasian Institute of Mining and Metallurgy. This organisation's recent survey of mining professionals (the *2018 AusIMM Professional Workforce Survey*) suggests an unemployment rate for professionals working in the resources sector of 0% in NSW and the ACT.[3]

In this context it should be noted that Guidelines (p. 14), require that evidence of "persistently high unemployment" before unemployment-related issues are taken into account in assessing worker-related benefits.

An unemployment rate of 4.5% is consistent with current Reserve Bank of Australia (RBA) definitions of full employment. From a State-wide perspective – which is the relevant basis for the State-level CBA - therefore there appears to be little case for an argument that the project would recruit substantial amounts of unemployed labour -i.e. in the order of 10% of its workforce.

In addition, as noted above even in times of high unemployment, employers prefer skilled and experienced labour. Indeed the bargaining power of employers is further enhanced at such times meaning that unemployed labour may be *even less likely* to obtain work than during periods of higher employment.

It is therefore unclear how the estimated value of unemployed labour benefits ($4.9 million) can be supported.

2.4.3 Non-market value of labour

The EA (pp.30-31; Appendix 7) refers to the non-market value of labour and in particular community willingness to pay for the employment of others. These

[1] ABS, *Labour Force, Australia*, Sep 2019, Cat. No., 6202.0

[2] ABS Labour Force Region SA4 Data at http://lmip.gov.au/default.aspx?LMIP/Downloads/ABSLabourForceRegion accessed 29 October 2019

[3] AusIMM Professional Workforce Survey 2018 https://www.ausimmbulletin.com/feature/ausimm-professional-workforce-survey-2018/ accessed 8 November 2018

effects are estimated as being quite substantial, accounting for $60 million in value over the nine years of the project. This is nearly twice the value of the direct employment effects described above.

As indicated in the EA, the non-market value of employment relies on the willingness to pay (WTP) of the community to ensure that others have jobs. Benefit transfer is used to apply the WTP valuations estimated for mine employment at Bulli Seam Operations to the MGP (Appendix 7). The EA (p.30) suggests that the basis of the WTP estimates this may be due to concerns about the unemployed (particularly if family or friends), increased crime due to unemployment and community dislocation. However Appendix 7 (p.80) suggests that the basis for the WTP valuations is unclear, as re-employment prospects did not appear to alter responses.

As indicated in that Appendix, respondent concerns may in fact be focussed on forced changes to other people's employment. However it is unclear how much of an issue this would be in the case of the MGP. The figures presented above suggest low regional unemployment in the Central West, low State unemployment and very little to no unemployment amongst resource professionals in NSW.

Appendix 7 acknowledges these uncertainties to some extent by referring to the issue of non-market employment benefits as "contentious". We suggest that (at the very least) the non-use values for employment be omitted from the analysis given the uncertainties involved.

However, it is also noted that if the rest of the analysis presented in Tables 4.5 of the EA is correct then the project will still produce a positive net economic benefit (of $141 million to NSW in NPV terms), irrespective of the exclusion (or reduction) of employment benefits (including both non-use benefits and wage benefits of employment). This is acknowledged in Table 4.5 itself, which presents results both with and without employment benefits.

2.5 OTHER ENVIRONMENTAL AND SOCIAL EXTERNALITIES

The EIA (pp. 24-29) refers to a variety of other environmental and social externalities. These include:

- Agricultural production
- Surface water
- Groundwater
- Air Quality
- Noise and Vibration
- Ecology and Biodiversity
- Aboriginal Heritage
- Traffic and Transport
- Visual Amenity
- Greenhouse Gas Generation

We note that Aboriginal Heritage externalities are not monetised as this would be problematic. The EA (p.27) indicated that impacts on Aboriginal heritage will be considered as a part of the Aboriginal Heritage Impact Assessments.

In general, considerable attention appears to have been devoted to estimate the extent of other externalities. Nonetheless, in some cases, further clarification and/or justification of the estimation process may be deemed warranted or useful. These include:

- *Surface water* – The EA (pp.24) indicates that no surface water access licenses are required, but that an allowance of $200,000 has been included in capital costs. However community concerns have been raised about the effects of a tailings dam on local rivers and springs and the potential for toxins used in the mining process, to contaminate these supplies.[4] While resolution of these issues is a technical issue, any additional remediation measures could add to potential costs.

- *Groundwater* – The EA (pp.24-25) indicates that there would be insignificant impacts on existing water quantity or quality for third party users. It allows for $588,000 in water entitlements to be embedded in project capital costs.

  Nonetheless, we are aware that groundwater usage has been the source of dispute and controversy in other mining projects in the recent past. As indicated, some community concerns have been raised over the use of local surface water sources, and these extend into groundwater usage.[5] The current drought and long term concerns about the impact of climate change may also raise additional issues about the adequacy of allowances for the project. The EA indicates that 400 groundwater shares have already been acquired and that an additional 505ML will be acquired. However, a concern raised with other projects is that future acquisition prices may rise if groundwater becomes scare and indeed if the operation of the project itself could force up groundwater prices. If this is so, then, this could add to project costs. More detailed calculations and assumptions may be required in order to fully assess the validity of these assumptions. In particular, more clarity on the assumed cost per ML of water, particularly as regards the future purchases of groundwater licenses would be useful.

  While these are technical issues they may have an impact on the costings developed for the project. Independent analysis may be required to confirm the costings arrived at for this aspect of the report.

- *Noise and vibration* – The EA (p.26) refers to noise and vibration issues and allows for a noise and vibration allowance of $20,000 per impacted property or $240,000 in total. This is based on mitigation measures. However it is not clear how the unit cost 0f $20,000 per property was arrived at or why it is (implicitly) deemed that only 12

[4] Blayney Chronicle "Springs that feed Belubula River to be 'plugged'? Gold miner's contentious proposition", January 16, 2019 https://www.blayneychronicle.com.au/story/5848669/when-mining-and-farming-clash-its-hard-to-define-precious/ ; Central Western Daily "Clash over h over mine jobs, environmental impact as Regis holds community session", May 24 2019 https://www.centralwesterndaily.com.au/story/6180922/clash-over-mine-jobs-environmental-impact-as-regis-holds-community-session/

[5] *Ibid*

properties are affected. Further clarity on these points would be useful. It is also noted that if residual noise impacts occur after mitigation measures these would, by definition, not be mitigated and are uncosted.

- *Ecology and biodiversity* – The EA (p.26) acknowledges that there will be disturbance to native flora and fauna and reference is made to the fact that this flora and fauna could have non-use values.. An allowance of $20.5 million is made for the purchase of land and purchase of offsets for flora and fauna. This is included in the capital costs of the project. However, as above, there is little clarity on the precise derivation of this figure. It would be useful to have more information on its estimation.

- *Visual amenity* – It is noted that there will be adverse impacts on visual amenity for 69 houses. The EA (p.28) allows for mitigation effects with a total cost of $850,000. However the basis for this costing is unclear. The EA also notes that residual visual amenity costs may occur after mitigation. This may have an impact on total costs.

In making these points it is also noted that the sensitivity tests (p. 38) allow for residual externality costs, although the allowance (+/- $1m) appears to be small.

Given the assessed net benefit to NSW (excluding employment benefits) of $141 million, it is noted that externality costs would need to rise very considerably for the project to be deemed to be non-economic – a point suggested in the sensitivity tests. Nonetheless, if higher externality costs were to be experienced in combination with other factors such as (higher operating costs and/or lower prices or production volumes) this could impact on project viability.

An additional note relates to clarity. It would be useful if the figures for externalities were separated out from items such as capital costs, so that a more transparent understanding of their magnitude could be obtained.

2.5.1 TREATMENT OF COSTS

The Guidelines (Table 3.5, p. 11) refer to the calculation of a Net Producer Surplus through inclusion of items. On the benefits side the Guidelines state these include:

- Gross mining revenue
- Residual value of land at the end of the evaluation period
- Residual value of capital at end of the evaluation period

On the costs side, the Guidelines state these include:

- Operating costs
- Capital costs
- Decommissioning costs
- Environmental mitigation costs
- Transport management costs
- Purchase costs for land

- Local contributions
- All taxes (Federal, State and local)

Pp. 23-24 and p. 33 (Table 4.4) of the EA sets out project benefits and costs. In terms of the costs, these are indicated in short sections on pp.23-24. This delineation is useful. However, it is not possible to offer much additional commentary on these costs (or indeed items such as residual value) in the absence of detailed spreadsheet data.

In addition, "optimism bias" (i.e. underestimating costs in particular) may be a generic issue with major projects. It is noted that the EA applies sensitivity tests to operating costs and development costs. However, the Treasury Guidelines (p.49) indicate that a contingency allowance should be built into the project budget. (Sensitivity tests are then generally applied to this cost base inclusive of contingencies.) While this may have been the case, it is not clear from the EA that this has been done.

Standard approach to CBAs in related areas, such as transport projects is to present a worksheet detailing the discounted cashflow (DCF) analysis. A good example of a transparent DCF used for project evaluation purposes can be found in Transport for NSW (2016), *Principles and Guidelines for Economic Appraisal of Transport Initiatives,* pp. 237-238. Likewise, Transport for NSW's recent update to its evaluation guidelines also calls for "supporting tables" and "charts demonstrating discounted cash flows and NPV values".[6]

Such an approach would add additional transparency to the summary table provided on p. 33 of the EA (Table 4.4).

In addition, more detailed independent analysis may be required in order to verify some of the key cost assumptions in the EA.

2.6 CONCLUSION

Notwithstanding the points made above, on the whole, the CBA is well researched and presented. Care has been taken to adhere to the Guidelines in many instances (other than those raised above).In the main, the approach and many assumptions therefore appear reasonable.

That said, there remain technical questions around the size of the assessed benefits – in particular employment benefits– as well as the transparency and independent verification of some project estimations, particularly as regards to the assumptions around the price of gold and presentation of costs. However, assuming assessed gold prices, volumes and project costs are reasonable, the EA (Table 4.5) indicates that the project NPV remains positive at $141 million even if all of the claimed employment benefits are excluded. Nonetheless, this result may be further affected if some additional environmental externalities are relevant.

The fact that the project records a positive NPV even after excluding claimed employment benefits is notable. Further, it may well be that a positive case for

[6] Transport for NSW "Cost benefit Analysis Guide https://www.transport.nsw.gov.au/projects/project-delivery-requirements/evaluation-and-assurance/transport-for-nsw-cost-benefit/key accessed 5 November 2017

employment benefits could be made along the skills/productivity/labour demand lines suggested above.

As indicated, if more transparency could be provided around the inclusion of project costs (e.g. through a DCF table) and some discussion of contingency allowances, this would further improve confidence in the results.

In summary, it is recommended that:

- Attention should be paid to the basis of the gold price and volume estimates underlying the project given their critical importance to project viability. There may be a case for independent technical verification of these;

- Employee benefits either be removed from the CBA or a better justification should be made for the existence (and claimed size) of such benefits. At the very least, non-use values should be removed;

- The basis for (and total amount of) the environmental externality costings be made more transparent, along with an indication that community concerns, and their attendant cost implications, have been addressed within these costings;

- Project costs should be more transparently indicated, through use of a full DCF table along with an indication that project contingencies have been allowed for.

3. REVIEW OF LOCAL EFFECTS ANALYSIS

3.1 BACKGROUND

The Guidelines note that there are three major effects relevant to the calculation of LEA:

- Effects relating to local employment
- Effects related to non-labour project expenditure; and
- Environmental and social impacts on the local community

As is the case with the CBA, much of the LEA is well researched and much appears to conform to the Guidelines. As is the case with the CBA, however, there are some issues which require further clarification, chiefly concerning the calculation of employment benefits. These are detailed below.

3.2 CALCULATION OF DIRECT LOCAL EMPLOYMENT BENEFITS

The Guidelines (pp.21-22) requires that the net increase in local workers incomes is measured as well as the flow on effects that such earnings generate.

In order to estimate incremental income benefits the LEA makes estimates indicating how many workers would be drawn from the local area and how many would migrate to the region for both the construction and operational phases.

In terms of the construction and operational phases, a number of calculations are presented by the LEA and it is estimated that:

- 57% of construction workforce are assumed to come from the local area; and
- 75% of the operational workforce are assumed to come from the local area.

These figures are used to derive the direct local employment (i.e. labour) effects of the project. Technically speaking, the mathematics behind the derivation of these benefits (EA p. 39) would appear to be consistent with the approach set out in the Guidelines (pp.21-22).

However, the basis for the assumptions about the proportions of local workers involved in the project are unclear. This is relevant as the larger the proportion of workers assumed to be local, the larger the direct local employment benefits. Accordingly, the EA should provide a better justification as to why these proportions have been adopted.

3.3 NON-LABOUR PROJECT EXPENDITURE

The LEA includes allowance for non-labour project expenditures. The approach adopted would appear to be a reasonable treatment of this issue.

3.4 LOCAL FLOW ON EFFECTS

The discussion in this section is also detailed and well researched, with a good description being offered for the approach. The results here seem reasonable.

3.5 EFFECTS ON OTHER LOCAL INDUSTRIES

The LEA contains a discussion of the effects on the local community focussing on displaced agriculture, wages and housing. This section seems reasonably well researched (though note the discussion of spatial scope below). However, in terms of agriculture, it is noted that although displacement effects (including flow on effects) are calculated in Table 5.3 (EA p.40) these are not reported in Table 5.5 summarising Local Effects (EA p. 42). While these are estimated to be relatively small they should at least be reported for completeness in Table 5.3. Moreover, while the text refers to a total direct and indirect output reduction of $0.4 million, Table 5.3 appears to refer to a total output reduction of $0.7 million.

3.6 A NOTE ON SPATIAL SCOPE

The LEA (p.39) defines the "local area" as the local government areas (LGAs) of Blayney, Bathurst and Orange and Cabonne. The mine itself will be located 8 kilometres from Blayney (EA p.4). The Guidelines do not formally define a "local" area but suggest that it be based around the relevant Statistical Area Level 3 (SA3) as defined by the Australian Bureau of Statistics (ABS) (Guidelines p.20-21). If an SA3 approach were to be adopted to defining the local area (i.e. using the Orange SA3) then ABS Australian Statistical Geography boundary definitions would appear to suggest that the Bathurst LGA should be excluded from the analysis.[7]

In this context, it should be noted that there have been (somewhat opposing) local concerns about both:

- the extent to which the mine's labour will be sourced from other regional centres (including both Bathurst and Orange) as opposed to Blayney with resulting town housing effects; and
- about the displacement of labour from Blayney if indeed workers from other industries in the town itself *are* attracted to the mine with attendant town employment and wage impacts.[8]

These issues are also bound up in the discussions, noted above, about the proportion of existing employees (as opposed to unemployed labour) used for the project, whether this labour will be sourced from inside or outside the "local"

[7] See ABS "Data by Region" https://itt.abs.gov.au/itt/r.jsp?databyregion#/ accessed 7 November 2019
[8] Central West Daily "Regis 'very conscious' of boosting employment in Blayney, not Bathurst or Orange", October 11, 2019 https://www.centralwesterndaily.com.au/story/6431783/regis-very-conscious-of-boosting-employment-in-blayney-not-larger-neighbours/ accessed 7 November 2019 ; Central West Daily Blayney 'not mine's winner': Opposition group claim Bathurst, Orange to benefit from project", October 6, 2019, https://www.centralwesterndaily.com.au/story/6423744/blayney-not-mines-winner-opposition-group-claim-bathurst-orange-to-benefit-from-project/?cs=103 accessed 7 November 2019

area and the extent to which the mine would employ people from non-mining industries.

Given its smaller scale, focussing on Blayney LGA (alone) may therefore lead to different conclusions about impacts on wages and housing. However, it is noted that the Guidelines do not formally suggest that analysis be carried out at the LGA level. While there may be additional questions about impacts on Blayney itself, the EA would therefore appear to be broadly consistent with the (higher) level of geographical disaggregation suggested in the Guidelines.

Nonetheless, a further question arises as to the choice of the four combined LGAs as opposed to analysis on the basis at the Orange SA3 level. As indicated, analysis at the SA3 level would appear to exclude Bathurst from the analysis. The exclusion of a large rural centre from the analysis may have the effect of increasing the relative magnitude of the effects on wages and accommodation in the (redefined) LEA. Conversely it might be argued that it is important to retain Bathurst LGA as this could be an important source of labour and non-labour inputs – and this indeed is what appears to be suggested in the EA (p. 39).

Although it is acknowledged that the Guidelines consist of a suggestion rather than a formal stipulation on this matter, it may therefore be of interest to re-estimate the LEA using the Orange SA3. This would at least test the sensitivity of results to local area definition.

3.7 CONCLUSION

Much of the LEA is well researched and documented and appears conform to the Guidelines. However, some elements of the LEA would appear to need further explanation and/or justification, namely:

- *Local employment benefits* – The estimations about the proportion of local labour inputs during both the construction and operational phases of the project would appear to need more justification.

- *Effects on other local industries* – While the displacement effects are estimated to be small, it is not clear why these are not reported in Table 5.5 summarising Local Effects.

- *Spatial scope* – While the Guidelines do not have a formal stipulation about spatial scope, it may be useful to re-estimate the LEA using the Orange SA3 as a sensitivity test, or at least further explain the reasoning behind the current spatial approach.

It is recommended that these issues be reviewed with an aim of adjusting the LEA findings, if feasible.

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28 February 2020

Nicole Armit
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Dear Nicole

Re: Response to BIS Oxford Economics' Peer Review of the McPhillamys Gold Project - Economic Assessment

As requested, Gillespie Economics has examined the peer review of the McPhillamys Gold Project Economic Assessment prepared by BIS Oxford Economics (BOE).

The BOE review is generally supportive of the Economic Assessment stating that it is *"well-researched and presented and attempts to adhere to the Guidelines"*. Notwithstanding, the review raises a number of issues with the Economic Assessment, that warrant a response. Gillespie Economics' detailed response to the issues raised is provided in Attachment 1.

Importantly, the issues raised by BOE do not fundamentally impact the conclusions of the Economic Assessment.

Regards

Dr Rob Gillespie

ATTACHMENT 1: RESPONSE TO BIS OXFORD ECONOMICS ISSUES

A. COST BENEFIT ANALYSIS

Gold Price and Production Volumes

Issue: Gold price and production volumes are of critical importance to project viability. It is not clear how much independent scrutiny the price assumptions, in particular, were subject to. That said, there are initial indications that the price assumptions may be conservative. Given our recent experience with discussions over the viability of production volumes and associated operating costs for mining operations, we suggest the production and associated operating costs assumptions be tested independently.

Response:

General

The assumptions in the Economic Assessment regarding production levels, gold prices, exchange rates, capital costs and operating costs, were sourced from Regis' internal Feasibility Study[1] that was prepared to inform the financial feasibility of the Project as well as the design elements for the Environmental Impact Statement.

The Feasibility Study was compiled and developed from a variety of sources including:

- first principal estimates from on a ground up build approach based on key physical drivers, volumes, and consumption rates;
- metallurgical testwork;
- supplier requests for pricing and budget quotations;
- unit rates experienced at Regis's Duketon Operations[2] and similar operations;

and draws from and expands upon the primary design and operational assumptions as outlined in Regis' McPhillamys Maiden Ore Reserve announcement of September 2017, including Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy (JORC Code 2012) operating criteria.

In a highly competitive global market, the incentives facing Regis are to put as much care as possible into estimation of key parameters of the Feasibility Study so as not to invest time, effort and money in an unviable project.

Production Volumes

Resource estimates and potential production volumes are based on an extensive drilling program. Between 2006 and 2009, exploration targeting gold mineralisation at McPhillamys on EL5760 was undertaken by LFB Resources NL, through an exploration joint venture between Newmont Exploration Pty Ltd and Alkane Resources Ltd, referred to as the Newmont Alkane JV.

Having identified the McPhillamys deposit, a program of diamond core drilling was undertaken in 2010 by the Newmont Alkane JV to further define the known mineralisation and metallurgical characterisation

[1] *The Regis Feasibility Study is a 'Commercial in Confidence' document prepared internally for the Regis Board in order to provide a financial evaluation of the McPhillamys Gold Project.*

[2] *Duketon Operations consist of Moolart Well, Garden Well and Rosemont mining and processing operations that produce approximately 360,000 ounces of fine gold annually and whose results are publicly reported on a quarterly basis to the ASX.*

of the deposit. At the completion of this exploration program, a potentially economic resource was confirmed subject to further feasibility assessment.

In November 2012, Regis Resources Limited (Regis) through the acquisition of LFB Resources NL acquired the McPhillamys Gold Project from the Newmont Alkane JV. Regis then completed an infill resource drilling program in the first half of 2013 to confirm the earlier exploration results and to increase the confidence level of the resource model with an updated resource estimate announced in July 2014. In mid-2016, Regis commenced a further round of drilling to refine the resource estimate and to obtain additional information required to complete a Feasibility Study on which the Regis Board could ultimately base its investment decision. That study culminated in an updated Mineral Resource Estimate and maiden Ore Reserve Estimate released in September 2017.

A Resource Block Model was prepared for the McPhillamys Gold deposit and a number of pit optimisations were carried out using Whittle pit optimization software, culminating in the proposed production schedule.

Operating Costs

Operating costs included in the Economic Assessment were sourced from the Feasibility Study. How operating costs elements from the Feasibility Study were principally derived is summarised in Table 1.

Table 1 – Summary of the Source for Each Component of Operating Costs

Cost Area	How Derived (Principally)
Mining	▪ Request for pricing quotations from mining contractors based on optimised pit design and mine schedule ▪ Labour cost based on proposed organisation structure and current rates and oncosts ▪ Other mining activity costs - derived from first principles and comparisons to existing Regis Duketon Operations
Processing	▪ Reagent consumptions based on metallurgical test work ▪ Reagent prices from supplier quotations on CIF site basis ▪ Labour cost based on proposed organisation structure and current rates and oncosts ▪ Power consumption from electrical load list; power supply cost from supplier's quote (Origin Energy & Alinta Energy) ▪ Maintenance costs derived from first principles and comparisons to existing Regis Duketon Operations
Laboratory	▪ Derived from existing operations estimate
Administration	▪ Labour cost based on proposed organisation structure and current rates and oncosts ▪ Other administration & OH&S, activity costs - derived from first principles and comparisons to existing Regis Duketon Operations ▪ Environmental, community and other costs estimated from EIS and Environmental Approvals expectations
Non-Production Costs	▪ Estimate based on mineral lease tenement maintenance costs and mining contractor demobilisation at end of mining activities ▪ Does not include Corporate Allocations
Royalty	▪ Based on NSW Mining Regulations 2016 formula (being 4% of total ex-mine value of minerals recovered less allowable deductions – equating to approx 2.7% of revenue base)
Sustaining Capital	▪ Percentage of installed direct process plant capital ▪ Itemised and identified specific sustaining capital projects ▪ Capital insurance spares (not included within capital cost estimate)
Tailing Dam Wall Lifts	▪ Based on design allowing for rate of rise and deposition
Rehabilitation	▪ Based on actual disturbance areas and required activities at NSW rehabilitation cost estimation tool rates, applicable standards and legislation

Operating costs of mines are highly heterogenous depending significantly on geological characteristics of deposits. While the sensitivity analysis indicates that a significant i.e. 20%, and sustained, increase in estimated operating costs would have a large impact on the estimated net benefit to NSW, the net benefits would still be substantial i.e. $79M present value. However, such a sustained increase in estimated operating costs is highly unlikely.

Gold Price and Exchange Rate

The Economic Assessment (Section 4.8) clearly acknowledges the sensitivity of the cost benefit analysis (CBA) to revenue estimates (reflecting production levels, the value of gold in USD and the AUD/USD exchange rate).

The assumed gold price in USD and exchange rate are based on the assumptions in the Regis Feasibility Study that was developed to ascertain the financial feasibility of the Project and inform the Regis Resources board on the desirability of investing the multi-million dollar Project.

The gold price and foreign exchange assumptions were based on a range of bank forecasts from January 2019 for the interval calendar 2019 to calendar 2023 and averaged to form a consensus view for the Life of Mine (LOM) assumption, as highlighted in Table 2.

Table 2 Gold Price Assumptions

Date	Bank	US$ Gold/Oz Assumptions					FX Assumptions					A$ Gold (Calc) Assumptions				
		FY19	FY20	FY21	FY22	FY23	FY19	FY20	FY21	FY22	FY23	FY19	FY20	FY21	FY22	FY23
Jan-19	*Macquarie Bank*	1,241	1,406	1,400	1,350		0.71	0.72	0.74	0.77		1,748	1,953	1,892	1,753	
Jan-19	*Credit Suisse*	1,252	1,300	1,300	1,300		0.73	0.75	0.75	0.75		1,715	1,733	1,733	1,733	
Feb-19	*Deutsche Bank*	1,243	1,236	1,305	1,330	1,315	0.71	0.71	0.70	0.70	0.75	1,751	1,741	1,864	1,900	1,753
Feb-19	*Goldman Sachs*	1,273	1,413	1,525	1,541	1,542	0.71	0.71	0.71	0.71	0.71	1,793	1,990	2,148	2,170	2,172
Feb-19	*UBS*	1,242	1,331	1,336			0.73	0.73	0.74			1,701	1,823	1,805		
Jan-19	*ANZ*	1,271	1,367	1,425	1,463		0.70	0.75				1,815	1,823			
Jan-19	*Comm Bank*						0.75	0.79	0.72	0.76	0.80					
Jan-19	*Westpac*	1,183	1,089	1,270	1,169	1,016	0.69	0.74	0.80	0.78	0.76	1,715	1,472	1,587	1,499	1,337
Jan-19	*National Bank*						0.75	0.79	0.78							
Jan-19	*2-3 Tier Internationals*						0.74	0.76	0.78	0.77						
	Low - Annually	1,183	1,089	1,270	1,169	1,016	0.69	0.71	0.70	0.70	0.71	1,701	1,472	1,587	1,499	1,337
	Low - Interval			1,016					0.69					1,337		
	Mean - Annually	1,244	1,306	1,366	1,359	1,791	0.72	0.75	0.75	0.75	0.76	1,748	1,791	1,838	1,811	1,754
	Mean - Interval			1,313					0.74					1,789		
	High - Annually	1,273	1,413	1,525	1,541	1,542	0.75	0.79	0.80	0.78	0.80	1,815	1,990	2,148	2,170	2,172
	High - Interval			1,542					0.80					2,172		
FS Assumption (LOM)				1,320					0.75					1,760		

The bank forecasts were sourced from a range of tier one and tier two/three international banks and four Australian major banks. Whilst each of the banks underlying technical assumptions for their gold and exchange rate price forecasts are not made public, each of the banks identify a range of sources for their price assumptions. For example, Macquarie Bank outlines sources for their assumptions as *"including LME, Comex, Nymex, Platts, CRU, Metal Bulletin, Internal Research"*.

Given the wide variation range of gold price forecasts between banks (range USD1,016 to USD1,542), Regis Management used a flat, real gold price of USD1,320/ounce over the LOM for their Financial Feasibility Study.

In order to arrive at an Australian Dollar (AUD) gold price per ounce, Regis Management used a flat real exchange rate of AUD:USD of 0.75:1.00, which broadly corresponded to the mid-point of the consensus bank range (0.69c to 0.80c) and corresponded to the average of the past 6 months spot rates. Whilst the forward curve could have been used to predict future exchange rates, Regis Management indicated that expectations built into forward rates are themselves derived from expected differences in inflation rates and interest rates and that an average of spot rates was just as useful for the purposes of internal financial analyses.

Notwithstanding the above, as outlined on page 38 of the Economic Assessment, the assumed gold price over the life of the Project is less than the USD gold price at the time the Economic Assessment report was prepared and less than some market forecasts (e.g. https://longforecast.com/gold-price-today-forecast-2017-2018-2019-2020-2021-ounce-gram). The assumed exchange rate is also higher than the current rate with forecasts suggesting continuation of a lower rate (https://longforecast.com/australian-dollar-aud-to-usd-forecast-2017-2018-2019-2020-2021). **To the extent these forecasts prevail the net production benefits may be considerably greater than estimated.**

As identified by BOE, (p. 6), its own gold price projections *"suggest that the EA's assumption for the price of gold over the project's operational lifetime is reasonable – and indeed if anything conservative."*

BOE offers no commentary on the assumed exchange rate. However, this can also have a major influence on the benefits of the Project. The assumed exchange rate of 0.75 may be considered conservatively high.

To the extent that BOE's forecast gold price (and/or a lower exchange rate) prevail, the net production benefits of the Project would be considerably greater than estimated.

By using the forecast world gold prices as outline in BOE's figure 1 and an AUD:USD exchange rate of 0.70 (reflecting the average AUD:USD spot exchange rate since 1 January 2019, but well in excess of the current exchange rate) the Project would have net production benefits to Australia of $586M, present value (at 7% discount rate) - an increase of $239M (69%).

The net production benefits of the Project to NSW would be $224M present value (at 7% discount rate) comprising:

Royalties	$53M
Company Tax	$55M
Net Producer Surplus	$11 M

This represents an increase of $81M, present value (36%).

Employment Benefits of the Project

Issue: The approach used to assess benefits to employed labour, unemployed labour and non-market value of labour may not be consistent with the Guidelines. Employee benefits should either be removed from the CBA or a better justification should be made for the existence (and claimed size) of such benefits. At the very least non-use benefits should be removed.

Response:

General

BOE spends a considerable component (six pages) of its review dismissing the potential employment benefits of the Project and suggesting removal from the analysis. However, the Economic Assessment already recognises that there may be differing opinions around the inclusion and estimation employment benefits in CBA and hence is careful to report the results "with" and "without" employment benefits. Decision-makers can include employment benefits in their judgments to the extent that they are persuaded by the arguments.

Notwithstanding, Gillespie Economics considers that there are strong arguments for the inclusions of employment benefits. These are already documented in the Economic Analysis but are synthesised and added to below, having regard to comments made by BOE.

Wage Benefits

- BOE, p. 7 states that *"on first principles grounds, a standard CBA considers labour to be an (opportunity) cost, not a benefit. The Treasury Guidelines (Appendix 7, p. 56) make this clear."* This is not in dispute. However, the NSW Treasury (2017) *NSW Government Guide to Cost-Benefit Analysis*, does not say that the opportunity cost of labour is the going wage rate in alternative employment in the same sector (as referred to by BOE referencing the NSW Government (2015) *Guidelines for the economic assessment of mining and coal seam gas proposals)*. NSW Treasury (2017, Appendix

7, p. 56) states that *"The cost of labour in a CBA is its opportunity cost, which is the reservation wage – i.e. the lowest wage rate that a worker would be willing to accept for doing a particular job."*

- Modern textbooks on CBA such as Boardman et al. (2001) *Cost Benefit Analysis: Theory and Practice*, acknowledge the potential for wage and other benefits to workers.
- Both the NSW Treasury (2017) and NSW Government (2015) Guidelines acknowledge the potential existence of wage benefits to workers.
- The NSW Government (2015) Guideline is ambiguous on the wage benefits to workers. It raises it as a key element of a CBA in Table 3.1, and in Table 3.7 the Guideline shows how to attribute economic benefits to workers to NSW residents. In Section 6.2 it states that *"An appropriate starting assumption should be that workers do not receive a wage premium"* and then states that *"Although a zero wage premium is a useful starting assumption, the appropriateness of this assumption must be assessed on a case by case basis. This is because benefits to workers can be one of the major economic benefits from a project."*
- One reason for ignoring employment benefits in CBA is that to include them has been too difficult conceptually, analytically and empirically (Bartik, 2012). Inclusion of values for environmental externalities of projects and policies was also previously seen as too difficult and hence these impacts were often ignored or treated qualitatively. However, there has been considerable theoretical and empirical development of nonmarket valuation techniques to the extent that environmental effects are now routinely included in contemporary CBA, with guidelines recognising the methods that can be used to value them (e.g. NSW Treasury, 2007; 2017). Similarly, there has be considerable theoretical and empirical development in relation to the estimation of employment benefits and hence there is a strong case for their inclusion in CBA.
- From the NSW Government (2015) Guideline, the starting point of no benefit to workers rest on highly unlikely assumptions of:
    - **the economy is at full employment over the life of the project** – BOE suggests that the NSW economy is currently at full employment. However, even with the low current unemployment rate in NSW, most economists do not consider the economy to be at full employment, with the definition of employment used in official statistics masking high levels of underemployment. Also, what is relevant is the unemployment rates over the Project life, not the unemployment rate at a single point in time before the Project commences. The economy has rarely, if ever, been at full employment over the last 40 years. The default assumption of full employment, essentially means that no new investment in the economy is ever required as everyone who wants to will always be employed, "with" or "without" additional investment. The simplifying approach of assuming full employment, biases decision-making against projects that have positive employment impacts and is at odds with the community and political concern for employment.
    - **all labour is sourced from the existing mining industry with no premium paid in one mine compared to another** – this is another way of saying that there is full employment. However, it is simply not true that all labour is likely to be sourced directly from the existing mining industry. Skills of relevance to mining come from a range of sectors including construction sectors, transport sectors, agricultural sectors, business services etc. More technically, those employed in a new mine can come from anywhere along the labour supply curve (see Boardman et al., 2001, p. 93). Even if all employment came from an alternative mine, there is occupational upgrading – people don't move jobs just to earn the same wages – and job chain effects where occupation upgrading of one person leads to a sequence of occupation upgrading that can reach all the way down to new participants in the labour force

or the unemployment. While job chain effects are not acknowledged in the Guidelines, they are well recognised in the economics literature - see Bartik (2012) and Persky et al., (2004).[3]

- **If a mine employs workers that are currently working locally, but not in the mining sector, higher wages may be required to compensate for more physically demanding work, tougher conditions etc** – people working locally (or elsewhere), but not in the mining sector are likely to be located lower down on the labour supply curve. It is true that they may require a higher wage to compensate for negative externalities of the mining industry, to the extent that they exist. However, it should be noted that much of the mining workforce is not at the mine face but involved in administration, provision of trade services, driving trucks, environmental management etc. It is unclear that there is any disutility for these workers. It is similarly not clear that there is any disutility to those at the mine face, particularly in open cut mines. Modern mining is highly regulated and safe compared to other sectors from which labour may be drawn. For instance, in 2017 Safe Work indicates a higher rate of fatalities per 100,000 workers in agriculture, forestry and fishing, transport, postal and warehousing, arts and recreation services, construction, wholesale trade, electricity gas, water and waste services. In 2018, Safe Work indicated a higher rate of fatalities per 100,000 workers in agriculture, forestry and fishing and transport, postal and warehousing. Notwithstanding the inclusion of disutility in the labour supply curve, it would still be upward sloping, indicating wage surplus to all labour apart from those at the margin.
- **If some labour is sourced from other parts of NSW, it may be necessary to pay them more than they were earning in their existing or previous jobs so that they will relocate** – the Central West of NSW, particularly around Orange, is hardly a remote, harsh environment, but a highly desirable area to live with extensive health, education and personal services. Any such relocation premium is likely to be modest.

- BOE makes reference to the NSW Government (2015) Guideline when it says that *"benefits to workers may exist if workers develop new skills on the project"* that increase its productivity but the case for this has not been made. However, it is not just a change in skill level that may increase the productivity of labour. Demand for labour is a derived demand arising from demand for the commodities it helps to produce. Wages paid to labour reflect its marginal value product in producing those commodities. Wage premiums to the same labour in different occupations e.g. agriculture and mining, reflects the different productivities of labour due to the application of capital equipment and the difference in the value of the end products, not just labour skill i.e. both labour demand and supply side attributes are relevant. For instance, an electrician working at a mine for one day to ensure production does not cease due to electrical failure has a higher marginal product than that same electrician working for one day to keep electricity flowing to a book store, because of the higher value of output. Failure in the first case may cost the mine hundreds of thousands of dollars while failure in the second case may only cost thousands of dollars.

- **BOE identifies that the Economic Assessment adopts a different definition of reservation wage to that identified in the Guideline. The Guidelines clearly define the reservation wage as the difference between the wage in the mining project in question and that received working elsewhere in the mining sector, rather than the average wage in NSW as apparently assumed in the EA** - the estimation of reservation wages in the Economic Assessment follows an approach indicated in one of the pre-eminent text books on CBA (Boardman et al., 2001). This identifies that since people may be employed in a project from anywhere along the upward sloping labour supply curve, one approach is to assume people are evenly spread along the labour supply curve, where the labour supply curve is linear and passes from the minimum wage to the market wage. This implies an average reservation wage equal to the average wage. For those who are

[3] Bartik, T. (2012) Including Jobs in Benefit-Cost Analysis, Annual Review of Resource Economics. 2012.4:55-73; Persky, J., Felzenshtain, D. and Carlson, V. 2004. "What are Jobs Worth?" Employment Research 11(3): 1–3.

unemployed a lower reservation wage is applicable given the disutility associated with unemployment. For a percentage (10%) of the population assumed to be otherwise unemployed the approach used was to estimate a reservation wage in the manner adopted by the Resource Assessment Commission (1991) *Economic Analysis of the Forests of South Eastern Australia*.

The approach outlined in the Guideline is to assume that new employees are located at the margin of the labour supply curve, already earning the same as they would receive in the new job (adjusted for disutility of relocation and mining). However, this approach to estimating the reservation wage is misplaced and unsupported by the academic literature. It is essentially a reflection of the simplifying assumptions of full-employment, which as identified above, does not hold in reality.

- **BOE:**
  - **states that it is unclear why the analysis set the unemployed labour component of the project workforce at 10% as opposed to say 5% or 15%;**
  - **states that this figure has obvious impacts on the calculation of worker benefits;**
  - **identifies employment statistics to indicate that the NSW economy is at full employment;**
  - **states that even in times of high unemployment, because employers prefer skilled and experience labour the unemployed may be even less likely to obtain work.**

  Refer to earlier in this report for a response to the issue of full employment.

  As stated in the Economic Assessment, the assumed 10% of workers coming from unemployment (with sensitivity at 5% and 15%) is illustrative of the potential magnitude of benefits that may arise under different assumptions. However, as indicated by Table 4.3, the choice of assumption does not have significant impacts on total wage benefits i.e. a difference between $31.1M and $33.0M.

  In contrast to the statement from BOE, that at times of high unemployment labour is less likely to be sourced from the unemployed, the seminal work of Haveman and Krutilla (1967) *Unemployment, Excess Capacity, And Benefit-Cost Investment Criteria*, clearly indicates that the probability of a project drawing from the unemployment pool increases as the unemployment rate increases. Direct application of their findings from USA to Australia would suggest that at a 5% unemployment rate the percentage of jobs sourced from the unemployed due to a demand shock would be 9.5%, using a linear function. This is similar to the level that is assumed in the Economic Assessment.

Nonmarket values for employment

Issue: BOE suggests that non-use values for employment be omitted from the analysis given the uncertainties involved. The uncertainties cited relate to the reported uncertainty in the source study about the reasons for people's concerns about other people's mining employment. BOE quotes Appendix 7 of the Economic Assessment, when stating that respondent concerns may be focussed on forced changes to other people's employment, which may not be an issue for the McPhillamys Gold Project.

Response: Appendix 7 provides a comprehensive discussion of nonmarket values for employment, including a sample of studies in the academic literature that have found that people may hold a non-use value for the employment of others. It is evident from academic research that people's utility (WTP) is not limited to nonmarket environmental values but extends to nonmarket social and cultural values.

BOE in its dismissal of the nonmarket value for employment, focusses on the fact that the study from which the value used in the Economic Assessment is drawn, acknowledges that the actual reasons why people may hold a WTP for other people's employment is unknown, and likely to vary between people. BOE focuses on to one of the potential hypothesised reasons i.e. forced changes to other people's

employment, and questions whether this is relevant to the McPhillamys Gold Project. However, the important point is that it is not known what motivates people to hold these values and split sample analysis from the source study found that the values held were not sensitive to changes in the contextual information around reemployment prospects. The source study was from a survey of NSW households in relation to a mining project and hence is considered a reasonable study to be used for benefit transfer.

BOE's concerns around the magnitude of the values (that they are nearly twice the value of the direct employment benefits), is misplaced since the former are public good values (the sum of values held by all households), and the latter are private good values.

Surface Water

Issue: BOE identifies community concerns from newspaper articles about the effects of a tailings dam on local rivers and springs and the potential for toxins used in the mining process, to contaminate these supplies. It states that while resolution of these issues is a technical issue, any additional remediation measures could add to potential costs.

Response: The Economic Assessment relies on specialist technical assessments to identify and estimate the physical magnitude of the biophysical impacts of the Project. The economic effects of these are then interpreted and included in the Economic Assessment. The Groundwater Assessment explicitly examined the issue of potential groundwater contamination arising from the Tailings Storage Facility (TSF), stockpiles and water storages. The Groundwater Assessment identified that:

- the TSF is designed to avoid adverse impacts to the surrounding environment. It is large enough to contain all water from sustained rainfall events with minimal spill risk;

- even without all proposed seepage management measures in place (e.g. a seepage interception trench), any seepage that may migrate through the Hydrostratigraphic Units and discharge to the Belubula River will have concentrations below the observed baseline surface water quality concentrations, ANZECC (2000) livestock drinking water and ANZECC (2000) 80% protection level for freshwater aquatic ecosystem guideline values (for analytes with elevated concentrations in the tailings liquid fraction results);

- by applying the proposed management and monitoring measures, the risk of leachate from the waste rock emplacement and water storages seeping to the water table or migrating off site is unlikely.

The Project design and costing includes the TSF design and leachate management, as they are part of normal mine planning. Sensitivity testing on changes to the total (rather than a small fraction of) capital and operating costs of the Project was undertaken in the Economic Assessment.

Groundwater

Issue: The Economic Assessment includes an allowance of $588,000 for the acquisition of groundwater licences. However, it raises the issue of potential increases in future acquisition prices if groundwater becomes scarce and indeed the operation of the project may force up groundwater prices. If this is so, then this could add to Project costs. BOE states that more detailed calculations and assumptions may be required in order to fully assess the validity of these assumptions. In particular, more clarity on the assumed cost per ML of water, particularly as regards the future purchases of ground water licences would be useful. It also suggests that independent analysis may be required to confirm the costings arrived at for this aspect of the report.

Response:

Regis has already secured 400 shares in the Lachlan Fold Belt Murray Darling Basin Groundwater Source and is required to source an additional 505ML. The opportunity cost of already held entitlements and the expected cost of those yet to be purchased (i.e. total cost of $588,000) are included in the capital costs of the Project. This was based on recent sale prices of $650/ML.

Only 505ML is yet to be purchased by Regis and this may be an overestimate, as it is expected that revised modelling predictions (post-approval) will reduce the predicted peak licencing requirement. Even large increases in the assumed acquisition cost for the remaining shares would have very little impact on the economic analysis. However, large increases in the price of groundwater shares over time are unlikely, as there is little demand for water in the Lachlan Fold Belt Murray Darling Basin Groundwater Source due to its poor quality and access difficulty.

Independent analysis suggested by BOE is considered unwarranted. If the remaining groundwater shares were assumed to be purchased at double the market price it would add $328,250 to the costs of the Project. This clearly has no material effect on the outcome of the economic analysis which estimates the social benefits to NSW at $141M to $232M, present value at 7% discount rate.

Noise and Vibration

Issue: It is unclear how a unit mitigation cost of $20,000 per property impacted by noise and vibration was arrive at or why it is (implicitly) deemed that only 12 properties are affected. Further clarity on these points would be useful. It is also noted that if residual nose impacts occur after mitigation measures these would, by definition, not be mitigated and are uncosted.

Response: Section 4.4.2 of the Economics Assessment summarises the results of the Noise and Vibration Assessment and identifies the 12 receptors that are predicted to experience Marginal (2-5dB above Project Noise Trigger Level) impacts during the operation i.e. nine receivers (R17, R25-R31, R33) in the Kings Plains catchment and three receivers (R19, R23, R24) in the Walkom Road catchment of the Project.

As identified in Section 4.4.2, where properties are predicted to be moderately impacted by noise impacts i.e. a 3 to 5 dB exceedance of noise criteria, a condition of contemporary development consents is for at-receiver noise mitigation on request by the landholder. For noise impacts, this can include planting of trees, double glazing of windows and installation of air conditioning units.

The mitigation measures will vary from property to property and are unknown at the time of preparation of the Economic Assessment. For the purpose of the analysis, an average allowance of $20,000 per impacted property was included in the capital costs of the Project i.e. a total of $240,000. The cost per property was an estimate from Regis based on its experience on previous mining projects and consideration of the types of mitigation measures that may be undertaken. However, what this assumed cost per property illustrates is that the implication of this assumption for the overall costs of the Project are not material and even large changes in this assumption will not impact the results of the Economic Assessment.

The Economic Assessment already specifically recognises that the *"to the extent that any residual noise impacts occur, after mitigation, these externality costs of a project would not all be mitigated."* The Economic Assessment uses the threshold value approach to discuss the magnitude that any residual costs would need to be to make the project undesirable from an economic efficiency perspective.

Ecology and Biodiversity

Issue: An allowance of $20.5M is made for the purchase of land and the purchase of offsets for flora and fauna. This is included in the capital costs of the Project. However, there is little clarity on the precise derivation of this figure. It would be useful to have more information on its estimation.

Response: Based on the Biodiversity Impact Assessment prepared by EMM, an assessment was made by EMM ecologists of the credits required to offset the identified potential biodiversity impacts. The costs per credit were estimated under three scenarios, paying into the Biodiversity Credit Fund, purchasing credits in the market and obtaining credits from management of the Project site. Based on a combination of these, the estimated cost was $20.5M. Refer to Table 3. This was the value that was included in the Economic Assessment.

Visual Amenity

Issue: There will be adverse impacts on visual amenity for 69 houses. The Economic Assessment allows for mitigation effects with a total cost of $850,000. However, the basis for this costing is unclear. The Economic Assessment also notes that residual visual amenity costs may occur after mitigation. This may have an impact on total costs.

Response: The visual mitigation measures will vary from property to property and were unknown at the time of preparation of the Economic Assessment. For the purpose of the analysis, a total cost of $850,000 was included in the capital costs of the Project for visual mitigation. The cost was an estimate from Regis based on previous mining projects and a consideration of the types of mitigation measures that may be used. However, what this assumed value illustrates is that the implication of this assumption for the overall costs of the Project are not material and even large changes in this assumption will not impact the results of the Economic Assessment.

The Economic Assessment already specifically recognises that *"to the extent that any residual visual impacts occur, after mitigation, these externality costs of the Project would not all be mitigated."* The Economic Assessment uses the threshold value approach to discuss the magnitude that any residual costs would need to be to make the project undesirable from an economic efficiency perspective.

Transparency of Externality Costs

Issue: It would be useful if the figures for externalities were separated out from items such as capital costs, so that a more transparent understanding of their magnitude could be obtained.

Response: Section 4.4.2 of the Economic Assessment specifically itemises each of the main externality and mitigation cost included in the Economic Assessment, apart from mitigation and management costs e.g. design and construction of the TSF etc, that are embedded into market capital and operating costs developed for the Project.

Table 3 Estimation of Biodiversity Offset Costs

Plant community type (PCT) name/Common name	Credits required	Cost per credit BCF	Cost per credit on the credit market	Cost per credit own site	Offset option	Cost of offsets
Mine site						
PCT 727 - Broad-leaved Peppermint - Brittle Gum - Red Stringybark dry open forest on the South Eastern Highlands Bioregion (LA124)	2495	$ 6,009.29	$ 3,500.00	$ 2,500.00	Market	$ 8,732,500.00
PCT 785 - Carex sedgeland of the slopes and tablelands (LA130)	56	$ 6,009.29	$ 3,500.00	$ 2,500.00	Market	$ 196,000.00
PCT 951 - Mountain Gum - Manna Gum open forest of the South Eastern Highlands Bioregion (LA164)	1178	$ 6,009.29	$ 3,500.00	$ 2,500.00	Market	$ 4,123,000.00
PCT 1330 - Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion (LA276)	2198	$ 6,257.53	$ 7,000.00	$ 2,500.00	Own site	$ 5,495,000.00
Koala	1970	$ 541.32	$ 350.00	$ 1.00	Market	$ 689,500.00
Squirrel Glider	2845	$ 541.32	$ 84.00	$ 1.00	Market	$ 238,980.00
Subtotal - Mine						*$ 19,474,980.00*
Pipeline						
PCT 85 - River Oak forest and woodland wetland of the NSW South Western Slopes and South Eastern Highlands Bioregion	1	$ 6,009.29	-	-	BCF	$ 6,009.29
PCT 287 - Long-leaved Box - Red Box - Red Stringybark mixed open forest on hills and hillslopes in the NSW South Western Slopes Bioregion	10	$ 3,380.01	-	-	BCF	$ 33,800.10
PCT 654 - Apple Box - Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion	10	$ 6,009.29	-	-	BCF	$ 60,092.90
PCT 679 - Black Sallee - Snow Gum low woodland of montane valleys, South Eastern Highlands Bioregion and Australian Alps Bioregion	4	$ 6,009.29	-	-	BCF	$ 24,037.16
PCT 727 - Broad-leaved Peppermint - Brittle Gum - Red Stringybark dry open forest on the South Eastern Highlands Bioregion	1	$ 6,009.29	-	-	BCF	$ 6,009.29
PCT 731 - Broad-leaved Peppermint - Red Stringybark grassy open forest on undulating hills, South Eastern Highlands Bioregion	49	$ 6,009.29	-	-	BCF	$ 294,455.21
PCT 732 - Broad-leaved Peppermint - Ribbon Gum grassy open forest in the north east of the South Eastern Highlands Bioregion	18	$ 6,009.29	-	-	BCF	$ 108,167.22
PCT 765 - Carex - Juncus sedgeland/wet grassland of the South Eastern Highlands Bioregion	1	$ 6,009.29	-	-	BCF	$ 6,009.29
PCT 1093 - Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	47	$ 6,009.29	-	-	BCF	$ 282,436.63
PCT 1191 - Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion	1	$ 1,651.98	-	-	BCF	$ 1,651.98
PCT 1197 - Snow Gum - Mountain Gum tussock grass-herb forest of the South Eastern Highlands Bioregion	7	$ 4,591.80	-	-	BCF	$ 32,142.60
PCT 1330 - Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion	7	$ 6,257.53	-	$ 2,500.00	Own site	$ 17,500.00
Eastern Pygmy-possum	128	$ 541.32	-	-	BCF	$ 69,288.96
Southern Myotis	1	$ 889.93	-	-	BCF	$ 889.93
Bathurst Purple Copper Butterfly	5	$ 627.94	-	-	BCF	$ 3,139.70
Squirrel Glider	87	$ 541.32	-	-	BCF	$ 47,094.84
Silky Swainson-pea	2	$ 210.35	-	-	BCF	$ 420.70
Austral Toadflax	4	$ 40.76	-	-	BCF	$ 163.04
Subtotal - Pipeline						*$ 993,308.84*
TOTAL						**$ 20,468,288.84**

Optimism Bias

Issue: *"Optimism Bias" (underestimating costs in particular) may be a generic issue with major projects. It is noted that the Economic Assessment applies sensitivity testings to operating and development costs. However, the Treasury Guidelines (p.49) indicate that a contingency allowance should be built into the project budget. (Sensitivity tests are then generally applied to this cost base inclusive of contingencies.) While this may have been the case, it is not clear from the EA that this has been done"* (BOE, p. 15).

Response: The Economic Assessment is based on the Regis Feasibility Study that was developed to ascertain the financial feasibility of the Project and ultimately inform the Regis Resources Board on the desirability of investing in the multimillion-dollar Project. Given the level of investment at stake, it is questionable whether optimism bias is an issue for the estimated market costs and revenues of the Project.

The NSW Treasury (2017) Guideline is specifically relevant to public sector projects and programs, not private sector projects. BOE misquotes the guidelines with respect to contingency allowances. The Guidelines (p. 49) do not state that *"a contingency allowance should be built into the project budget"*. Instead, the Guideline states that *"a strategy often employed by agencies to cover for risks in a project or program is to build a contingency funding provision into the program budget."*

The Feasibility Study capital cost estimate for the Project did not include a contingency allowance. It is a Regis internal policy not to allow for capital cost contingencies as Regis generally puts significant effort into scope definition to quantify predicted capital costs. Further, Regis has constructed three gold plants recently (within last 8 years) in the North Eastern Goldfields of Western Australia under an Owner Construct model and therefore has a very good understanding of scope definition and project delivery.

Supplier quotes were sourced for 91% of the total plant equipment and 6% from the consulting Engineers database for similar sized projects, with only 3.8% of the total equipment being estimated.

The estimated capital costs of the Project that were included in the Economic Assessment were subject to sensitivity testing of +/- 20%.

Transparency of Financial Information

Issue: Standard approach to CBAs in related areas, such as transport projects is to present a worksheet detailing the discounted cashflow analysis. A good example of a transparent discounted cashflow analysis used for project evaluations purposes can be found in Transport for NSW (2016) Principles and Guidelines for Economic Appraisal of Transport Initiatives. Likewise, Transport for NSW's recent update to its evaluation guidelines also calls for "supporting tables" and "charts demonstrating discount cash flows and NPV values". Such an approach would add additional transparency to the summary table provided on p. 33 of the Economic Assessment.

In addition, more detailed independent analysis may be required in order to verify some of the key cost assumptions in the Economic Assessment.

Response: Transport projects are generally public projects and the guidelines referred to by BOE relate to publicly funded projects. The Project is a private investment proposal and the Feasibility Study that forms the basis of the Economic Assessment is commercial-in-confidence. It is therefore not reasonable to expect detailed commercial-in-confidence spreadsheets to be included in the Economic Assessment.

Major cost assumptions that drive the Economic Assessment are based on the internal Feasibility Study. There is little incentive for Regis to understate costs and so invest in a project that will not be financially and economically viable.

B. LOCAL EFFECTS ANALYSIS

Labour Force Assumptions

Issue: The estimations about the proportion of local labour inputs during both the construction and operations phases of the project would appear to need more justification.

Response: The Local Effects Analysis (LEA) assumed that:

- 57% of construction workforce are assumed to come from the local area; and
- 75% of the operations workforce area assumed to come from the local area.

These assumptions were sourced from the Social Impact Assessment which undertook a detailed labour market assessment based on a range of data sources including:

- Australian Bureau of Statistics (ABS) 2016 Census of Population and Housing, Tablebuilder;
- Department of Jobs and Small Business (DJSB) - Small Area Labour Market (SALM) Data; and
- DJSB Labour Market Information Portal (LMIP).

Housing availability and access to services was also looked at in terms of where workers are likely to reside.

Agricultural Impacts

Issue: In terms of agriculture, it is noted that although displacement effects (including flow-on effects) are calculated in Table 5.3 (EA. P. 40) these are not reported in Table 5.5 summarising Local Effects (EA p. 42). While these are estimated to be relatively small, they should at least be reported for completeness in Table 5.3 (sic). Moreover, while the text refers to a total direct and indirect output reduction of $0.4M, Table 5.3 appears to refer to a total output reduction of $0.7million.

Response: It is agreed that the regional economic impacts of displaced Agriculture could have been included in Table 5.5.

The text in the LEA does not refer to a total direct and indirect output reduction of $0.4M. It identifies the direct agricultural output effect of $406,202 per annum based on the area impacted and carrying capacity and identifies that this level of reduction per annum is estimated to have the direct and indirect impacts of the order of magnitude indicated in Table 5.3 i.e. $0.7M in direct and indirect output effects.

Spatial Scope

Issue: While the Guidelines do not have a formal stipulation about the spatial scope, it may be useful to further explain the reasoning behind the current spatial approach combining four local government areas (LGAs) in preference to the use of the relevant Statistical Area (the Orange SA3). A sensitivity test could also be undertaken using the Orange SA3 definition of the local area.

Response: As already identified by BOE, the Guidelines do not formally define a "local" area but suggest that it be based around the relevant Statistical Area level 3 (SA3). However, all boundaries used for statistical purpose are somewhat artificial. It is appropriate in preparing an LEA to select a region that best represents the local area.

As identified in the LEA (p. 39) the Local Area for the purpose of the analysis was defined as the LGAs of Orange, Blayney, Cabonne and Bathurst, within which the Project is located and is the region considered likely to be the main source of labour and non-labour inputs for the Project.

While the Project is located in the Orange SA3, the closest major town (Bathurst) is not located in the Orange SA3. Because Bathurst (along with the towns in the Orange SA3) is likely to be an important source of labour and non-labour inputs to production, the Bathurst LGA was essentially added to the Orange SA3 (which comprises the LGAs of Orange, Blayney and Cabonne) to better represent the local economy benefiting from the Project.

There are many potentially different ways to define the "local" area. However, to repeat the analysis using a different region is an expensive and time-consuming exercise, and is not considered warranted.

Andrew Tessler
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13 March 2020

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Comments on Gillespie Economics Response

Dear Mandana

Gillespie Economics (GE) has provided a *Response to BIS Oxford Economics Peer Review of the McPhillamys Gold Project Economic Assessment* ("the Response") dated 28 February 2020. The Response is in relation to BIS Oxford Economics *Review of Economic Impact Assessment: McPhillamys Gold Project* ("the Review"). The Review was prepared for the Department of Planning, Environment and Industry ("the Department").

We have made some commentary on the Response in point form under key issues headings below. This was to allow for consideration of the issues involved in a succinct manner. We would be happy to elaborate on the points made in our response if you have further questions.

Gold Price

- The Review noted that the gold price assumptions used by Regis may, if anything, be conservative, based on data sourced from BIS Oxford Economics' own forecasts. That said, the Review called for further details on the derivation of the gold price given its centrality to the economics of the project and consideration of an independent review of the gold price assumptions.

- The Response provides further details on the basis for the project's gold price assumptions and refers to Regis' Internal Feasibility Study and the sources from which it was derived. This is welcomed. As indicated in the Response, it is acknowledged that it is in Regis' own interest to ensure that the project is financially viable.

- We also note that the Review uses BIS Oxford Economics forecasts (and a lower AUD/US exchange rate of 0.70) to produce an increase in project NPV of $81 million. However, as indicated in the

Review we would suggest the use of independent forecasts to determine the likely future price of gold.

- Likewise, as suggested in the Review, the Department may wish to undertake its own testing of the gold price assumptions used in the analysis using independent forecasters. This is especially so given the critical nature of the gold price in assessing the financial viability of the project.

Production volumes and associated costs

- As is the case for the price of gold, the Response (pp.2-3) provides further details on the assumptions behind the production volumes for the mine. Likewise, further details are provided on the derivation of operating costs. This is again to be welcomed (though see the discussion of the treatment of costs below).

- Nonetheless, the Response acknowledges the point made in the Review that the operating costs are sensitive to the assumptions behind them, with a 20% increase in operating costs nearly halving net benefits to produce a project NPV of $79 million.

- The Response acknowledges this but suggests that this increase in operating costs is considered to be highly unlikely. This may be so, but as indicated in the Review, we would suggest that the production assumptions and associated operating costs be subject to an independent review to confirm their viability. This is especially so given that it is noted that no contingency has been allowed for in the assessment of capital costs. We do note however that there may be sensitivities around further disclosure of costs (see discussion of the treatment of costs below).

Employment benefits

The Response (pp. 6-10) refers to BISOE's review of employment benefits and suggests that it is too dismissive of the employment benefits of the project. We offer some commentary on this below, but in essence we stand by our original review of this issue. The Response covers a number of issues, but in essence it appears to be taking a stance about what the Guidelines should say in the view of GE rather than what they do say. We make the following brief points.

- The Response notes both references to reservation wages as an opportunity cost and the potential for wage benefits from a given project.

- However the key point of difference here is that the wage premium is zero unless proven otherwise The Response (p.7) also notes the stipulations in the Guidelines that refer to the need for strong evidence of a wage premium on a case by case basis. We note many of the arguments in the Response are generic (and include critiques of the Guidelines themselves) but do not offer strong evidence of a wage premium in this case.

- In this context, we would reiterate that a key issue here, and the basis of our Review, is what the Guidelines actually say about employment benefits and wage premiums (as opposed to what an GE or others might *wish them* to say).

1. The Response (pp. 7-9) notes the stipulations of the Guidelines in respect of a zero wage premium and then advances reasons as to why these do not apply. These include a critique of the concept of

full employment along with questioning the reasons why the Guidelines (pp.13-14) advance for assuming a zero wage premium. In brief, the contentions are that the economy is never at full employment, that employment drawn from the mining industry will create job chain effects, that higher wages paid to employees drawn from other sectors are not a compensation for harsher working conditions (as many are not in mining *per se*) and that higher wages paid to employees drawn from other areas are not compensation for relocation costs. These are interesting theoretical issues, and in effect offer a critique of the approach taken in the Guidelines.[1] However, as indicated, the Guidelines allow for relaxation of the zero wage premium assumption so long as the economic assessment presents strong evidence to this effect. No clear empirical evidence in the case of the mine in question is brought to bear on these issues. Accordingly, the arguments simply rely on overturning the approach taken in the Guidelines on theoretical grounds.

- The response also suggests that it is not only changes in skill levels that drive wages and compares the marginal product of an electrician working in a mine with that working in a book store. However it is doubtful that an electrician working in a book store would require the same skill set as one responsible for an entire mining operation. A common sense yardstick of this might be to consider an electrician whose only previous experience was working on maintaining bookstore electricals applying for a position at a large mining entity. A potential employer might well question whether the skills required for a complex mining project are the same as those required for a bookstore, when considering his/her suitability for the new role.

- More broadly, it may well be the case that short term demand fluctuations change labour wage rates. However, it would appear that the intent behind the references to the wage premium in the Guidelines are to measure the long term effects of increased productivity. This would be consistent with the general principles of Cost Benefit Analysis (CBA) in general which seeks to measure the improvement in economic efficiency over a defined a base case. For example, it is possible to speculate that there has been a boost to the going wage for personnel involved in toilet paper manufacturing across Australia at present, but it is unlikely that this is reflective of long term skill set changes or an improvement in economic efficiency. It is more likely that it reflects a short run demand fluctuation.

- In referencing the approach outlined by the Guidelines, the Response refers to the labour supply curve and states that the approach outlined in the Guidelines is "misplaced" (p.9). Whether or not the Guidelines should adopt a different approach is an interesting issue. However, as is the case for the other issues above, this appears to be an argument against the Guidelines as they are and a suggestion that they should be changed. Our review must, of necessity, match the GE's arguments against the stipulations of the Guidelines as they are, not as they might wish them to be.

- Accordingly we see no compelling reason for the inclusion of employment benefits in the CBA.

[1] It is of course also possible to offer a counterpoint to all of these arguments. For example, Bureau of Transport Economics (2001) *Facts and Furphies in Cost-Benefit Analysis: Transport* provides a strong and practical defence of the reasons for a full employment assumption. However, the key point is that no empirical evidence is advanced to challenge a zero wage premium assumption.

Nonmarket benefits for employment

- The issues here are similar to those raised above in terms of the evidence base for these effects.

- The Response again suggests that a benefit transfer approach, based on a non market WTP valuation for the Bulli Seam Operation may be used to assess the non-market benefits of the McPhillamys Gold Project. However, as indicated in the original Review, it is not clear that the context in which the Bulli work was undertaken was the same as that for the McPhillamys Gold Project, particularly in view of the low regional unemployment in the Central West. The Review seeks to dismiss this by stating that it is not known why people might hold these values and that context is not relevant.

- However this does not truly justify the inclusion of such values for the project. If indeed it is not known why people do hold these values, this only reinforces the case that the logical next step is to test whether they do so in relation to the project in question. This should also provide further evidence that context is not relevant. Such empirical evidence is absent from the CBA.

- The Response seeks to differentiate between the private valuation of employment and the public good nature of the assessed benefits in justifying the magnitude of the non market benefits. However this is a nuance and not truly the issue. The real issue is the inclusion of a large quantum of non market benefits with no supporting empirical evidence specific to the project in question.

- Accordingly, we stand by our original Review. There is no strong basis for the assessment of nonmarket benefits for employment presented in the case of McPhillamys Gold Project. No empirical evidence is presented to support the case made for the potential inclusion of such benefits. We again suggest that they be excluded from the analysis.

Other environmental and social externalities

- The Review examined issues relating to a variety of environmental and social externalities and called for more detail in areas such as surface water, groundwater, noise and vibration, ecology and biodiversity and visual amenity.

- The Response has provided additional details on these issues.

- Issues relating to surface water and groundwater are likely to be the most contentious. The Response indicates that issues such as surface water contamination have been addressed through the Groundwater Assessment. It also refers to the purchase of 400 shares in the Lachlan Fold Belt Murray Darling Basin Groundwater Source and the requirement to source an additional 505ML. It is indicated that large increases in price are considered unlikely and even a doubling of groundwater prices would have little impact on the economic analysis. Accordingly, it suggests that independent analysis of the issue is unwarranted.

- The issues here are only partially economic and lie partly in the geotechnical and hydrological expertise spheres. However our Review raised this issue precisely because, as is the case with surface water and groundwater issues have been a community concern surrounding mining projects, particularly given the effects of drought and ongoing climate change. Ultimately whether further independent analysis is required is a matter for Departmental judgment.

- It is also noted that additional details were provided in the Response on noise and vibration, ecology and biodiversity and visual amenity. This is appreciated.

- In terms of noise and vibration, the Response indicates that the allowance of $20,000 per property was derived from an estimate by Regis itself based on its past experience with mining projects – i.e. the figure is not independent. However the Response's point about materiality is also noted – it would take a large change in the figure to have a material impact.

- The Response also indicates that the ecology and biodiversity assessment was made by EMM as a part of the Biodiversity Impact Assessment. This clarification is appreciated.

- Additional data are also provided for the Visual Amenity assessment. As is the case for the noise and vibration assessment, the total cost estimate of $850,000 was based on Regis's past experience with mining projects. We again note that the figure is not therefore independent. However the point made in the Response about materiality is again noted – a large change in the figure would be required to have a material impact.

- The Response (pp.12-13) also provided additional clarity on external costs as requested in the Review. This is noted and appreciated.

- In summary, it is pleasing to see additional clarification of externality costs. However, the Department may wish to consider the extent to which it wishes to further explore the basis for the valuations made, particularly to the extent that there may be remaining community concerns and technical issues surrounding the proposed mine.

The treatment of costs and optimism bias

- The Review (pp.14-15) made comments about the lack of detailed project costings and the potential for optimism bias. The Response (p.14) indicates that the project is a private investment proposal and is commercial in confidence. It is therefore not seen as reasonable to require the same level of financial detail as might be required for a public project.

- In terms of the transparency of project financials it is acknowledged that the project is a private entity. Nonetheless, there is an obvious public interest in establishing the project's financial viability. That is the reason for undertaking a review of the economic impact assessment in the first instance. The challenge of reconciling private concerns with the public interest is one which is common in projects of this nature. It may be an issue which the Department wishes to explore further with Regis.

- The Response also indicates that the Feasibility Study did not include a contingency for capital costs. It argues that this is justified by the effort Regis puts into scope definition to quantify predicted capital cost and Regis' own experience with gold plant construction. It also suggests that Treasury Guidelines recommend rather than require that contingencies be built into project However, it is also worth noting that the Treasury Guidelines (p.49) indicate that the inclusion of contingencies as a percentage of capital costs (which would then be incorporated into total costs) is acceptable where there is a reliable history of past projects with similar attributes. This would seem to suggest that even where there is experience with past projects (as is the case for Regis) a contingency would be good practice. However, as indicated in the Response (p.14), no capital costs contingency has been

included (and sensitivity tests referred to relate to costs exclusive of contingencies). This seems at odds with good practice. It is acknowledged that it is also in Regis own interest to ensure costings are accurate and that blowouts do not occur. Nonetheless, as is the case with project financials referred to above, project costs also impact on the expected project net benefits and thereby on returns to NSW citizens. Accordingly, this is also an issue which the Department may wish to investigate further.

Local effects analysis (LEA)

- Many of the issues discussed in the Review relating to the LEA were relatively straightforward and the response has provided additional clarity on these.

- The Review requested additional information on the calculation of employment effects and other local industries (particularly agriculture). The Response has provided additional information which is appreciated.

- We noted in the Review that further justification could be supplied for the choice of spatial scope in the analysis. This has been supplied and is appreciated.

As indicated this letter contains an overview of the key issues contained in the Response and a reply to them. I would be pleased to answer any further questions in regard to our comments on the Response work we our Review work.

Yours sincerely,

Andrew Tessler

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15 May 2020

Nicole Armit
EMM
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Dear Nicole

Re: BIS Oxford Economics' Latest Comments on the McPhillamys Gold Project Economic Assessment

As requested, Gillespie Economics has examined BIS Oxford Economics' (BOE) latest comments on the McPhillamys Gold Project Economic Assessment, particularly in relation to the three issues that the NSW Department of Planning, Industry and Environment (DPIE) has sought a response to:

- matters related to the future gold price;
- assumptions and associated operating costs; and
- implications of not including employment benefits.

Gillespie Economics' detailed response to these issues raised by BOE is provided in Attachment 1.

I would be happy to discuss any aspect of the issues raised, or the response, with BOE and/or the NSW DPIE.

Regards

Dr Rob Gillespie

ATTACHMENT 1: RESPONSE TO BIS OXFORD ECONOMICS ISSUES

Gold Price

Issue: BOE notes that gold price assumption used by Regis may, if anything be conservative and welcome the information provided on the basis for the project's gold price assumptions. However, BOE suggests the use of independent forecasts to determine the likely future price of gold. The Department may wish to undertake its own testing of the gold price assumptions used in the analysis using independent forecasters. This is especially so given the critical nature of the gold price in assessing the financial viability of the project.

Response:

The Regis internal feasibility study and the Economic Assessment of the project already use independent forecasts for the gold price and exchange rate. As clearly indicated in the Response to BOE's Peer Review (and reproduced below) the gold price and foreign exchange assumptions were sourced from a range of tier one and tier two/three international banks and four Australian major banks.

Table 1 Gold Price Assumptions

Date	Bank	US$ Gold/Oz Assumptions					FX Assumptions					A$ Gold (Calc) Assumptions				
		FY19	FY20	FY21	FY22	FY23	FY19	FY20	FY21	FY22	FY23	FY19	FY20	FY21	FY22	FY23
Jan-19	*Macquarie Bank*	1,241	1,406	1,400	1,350		0.71	0.72	0.74	0.77		1,748	1,953	1,892	1,753	
Jan-19	*Credit Suisse*	1,252	1,300	1,300	1,300		0.73	0.75	0.75	0.75		1,715	1,733	1,733	1,733	
Feb-19	*Deutche Bank*	1,243	1,236	1,305	1,330	1,315	0.71	0.71	0.70	0.70	0.75	1,751	1,741	1,864	1,900	1,753
Feb-19	*Goldman Sachs*	1,273	1,413	1,525	1,541	1,542	0.71	0.71	0.71	0.71	0.71	1,793	1,990	2,148	2,170	2,172
Feb-19	*UBS*	1,242	1,331	1,336			0.73	0.73	0.74			1,701	1,823	1,805		
Jan-19	*ANZ*	1,271	1,367	1,425	1,463		0.70	0.75				1,815	1,823			
Jan-19	*Comm Bank*						0.75	0.79	0.72	0.76	0.80					
Jan-19	*Westpac*	1,183	1,089	1,270	1,169	1,016	0.69	0.74	0.80	0.78	0.76	1,715	1,472	1,587	1,499	1,337
Jan-19	*National Bank*						0.75	0.79	0.78							
Jan-19	*2-3 Tier Internationals*						0.74	0.76	0.78	0.77						
	Low - Annually	**1,183**	**1,089**	**1,270**	**1,169**	**1,016**	**0.69**	**0.71**	**0.70**	**0.70**	**0.71**	**1,701**	**1,472**	**1,587**	**1,499**	**1,337**
	Low - Interval			**1,016**					**0.69**					**1,337**		
	Mean - Annually	**1,244**	**1,306**	**1,366**	**1,359**	**1,291**	**0.72**	**0.75**	**0.75**	**0.75**	**0.76**	**1,748**	**1,791**	**1,838**	**1,811**	**1,754**
	Mean - Interval			**1,313**					**0.74**					**1,789**		
	High - Annually	**1,273**	**1,413**	**1,525**	**1,541**	**1,542**	**0.75**	**0.79**	**0.80**	**0.78**	**0.80**	**1,815**	**1,990**	**2,148**	**2,170**	**2,172**
	High - Interval			**1,542**					**0.80**					**2,172**		
FS Assumption (LOM)				**1,320**					**0.75**					**1,760**		

Notwithstanding, Regis engaged Golder Associated Pty Ltd (Golder) to review the gold price and exchange rate assumptions used in internal feasibility study and Economic Assessment.

Golder used the S&P Global Market Intelligence Development Studies Database to review the gold price adopted by companies undertaking economic analysis of gold projects from 1 January 2019 to 31 March 2020, included in a statutory reports to stock markets in Australia, Canada, UK and South Africa. In most cases, the companies adopted a single price for the life of mine (LOM) of the project. The data set comprised 133 examples of projects which specify the gold price used in their financial analysis by date. Golder concluded that the gold price adopted by Regis of USD1,320/ounce lies in the centre of both the bank projections and the price adopted throughout the industry during the period, and is fully supported by the data available at the time.

Golder reviewed the AUD:USD exchange rate of 0.75 adopted for the project and noted that the method to forecast the foreign exchange rate adopted industry leading practice. Golder assessed the four major Australian Bank forecasts over the June 2019 to March 2020 period and noted that each of the four

banks had reduced its estimate of the AUD:USD exchange rate as time progressed from the first quarter of 2019.

The achieved AUD:USD exchange rate of 0.69 in 2019 was lower than the mean forecast rate used in Regis' financial analysis of 0.75 by about 8%. The variance has increased in the first quarter 2020 to about 12% lower than forecast.

Golder considers that the adoption of an AUD:USD of 0.75 for the McPhillamys Gold Project was fully supported by the data available at the time, however as time has progressed, the achieved forecast rate has deviated from projections. Golder considers that this is the result of global events unforeseeable or unforeseen in the first quarter of 2019. As a result, the exchange rate adopted by Regis could be seen to be conservative.

As outlined in the Economic Assessment, the estimated revenue from the project could be considerably greater than estimated based on the assumed gold price of USD1,320 /ounce and the exchange rate of 0.75. When measured against spot prices as at today's date of USD1,726 /ounce and AUD:USD 0.6454, this gives an Australian dollar gold price of AUD2,674 /ounce. This is 52% higher than the price forecast in the Economic Assessment and above the 20% sensitivity range outlined in the sensitivity testing.

If the current gold price and exchange rate is assumed over the life of the project, then the net production benefits of the project to NSW increase from $143M (present value at 7% discount rate) to $445M (present value at 7% discount rate). The following table provides a breakdown of net production benefits of the project under the current conditions compared to those assumed in the Economic Assessment.

Table 2 Comparison of Net Production Benefits to NSW ($M present value at 7% discount rate)

Net Production Benefits	Original Price and Exchange Rate Assumptions	Current Price and Exchange Rate
Royalties	$47	$71
Company tax	$31	$120
Net producer surplus**	$65	$254
Total Net Production Benefits	**$143**	**$445**

With respect to BOE's reference to the importance of the gold price in assessing the **financial viability of the project** it is noted that the DPIE has previously identified that the financial viability of projects is a risk assumed by the project owners.

Production Volumes and Associated Costs

Issue: BOE welcomes the further details provided regarding the assumptions behind product volumes for the mine and the derivation of operating costs but notes the sensitivity of the net benefits to a 20% increase in operating costs i.e. nearly halving net benefits to $70M NPV. While the Response to the BOE Peer Review suggests this increase in operating costs is highly unlikely, BOE suggests that the production assumptions and associated operating costs be subject to an independent review to confirm their viability. This is especially so given that it is noted that no contingency has been allowed for in the assessment of capital costs.

Response: As identified in the Response to BOE's Peer Review, the assumptions regarding production levels, operating costs and capital costs were compiled from a variety of sources including:

- first principal estimates from on a ground up build approach based on key physical drivers, volumes, and consumption rates;
- metallurgical testwork;

- supplier requests for pricing and budget quotations;
- unit rates experienced at Regis's Duketon Operations[1] and similar operations;

and draws from and expands upon the primary design and operational assumptions as outlined in Regis' McPhillamys Maiden Ore Reserve announcement of September 2017, including Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy (JORC Code 2012) operating criteria.

Notwithstanding, Regis engaged Golder to provide an independent review of production assumptions and associated operating costs. Golder concludes that the approach used by Regis for the development of mining, processing other costs has adopted industry leading practice. Golder further concludes that the total mining costs are considered reasonable and appropriate.

As identified in the Response to BOE's Peer Review, the capital cost estimate did not include a contingency as Regis put significant efforts into accurately estimating the capital costs of the project, including obtaining supplier quotes for 91% of the total plant equipment, obtaining 6% from the consulting Engineers database for similar sized projects, with only 3.8% of the total equipment being estimated. The estimated capital cost was also verified by an independent quantity surveyor for the purpose of determining the Capital Investment Value (CIV) and hence whether the project is of state or regional significance. The independent calculation of the CIV was submitted to the DPIE with the development application for the project, as required by the SEARs.

The estimated capital and operating costs of the project that were included in the Economic Assessment were also subject to sensitivity testing of +/- 20%.

In a highly competitive global market, no one has greater incentive to accurately estimate production levels and costs of the project than Regis, the company whose $500M investment is at stake.

Capital Cost Contingency

Issue: BOE reiterates the information provided to it, that the Feasibility Study did not include a contingency in the capital cost estimate. It refers to the NSW Treasury (2017) Guidelines to suggest that this seems at odds with best practice.

Response: As identified above, capital cost estimates for the project were primarily sourced from actual supplier quotes and are considered to accurately reflect the project costs. The estimated capital cost was also verified by an independent quantity surveyor for the purpose of determining the Capital Investment Value of the Project.

The NSW Treasury (2017) Guideline referred to by BOE is specifically relevant to public sector projects and programs, not private sector projects. Public sector cost benefit analyses are particularly susceptible to optimism bias and have a long history of underestimation of costs, partly because of their political nature and because ongoing viability of government agencies proposing such projects is not impacted by understating costs. This is not the case with private sector projects.

The guidelines that are pertinent to the project are the NSW Government (2015) Guidelines for Economic Assessment of Mining and Coal Seam Gas Proposals, not the NSW Treasury (2017) Guidelines. The NSW Government (2015) Guideline makes no mention of a requirement to include contingencies in cost estimates.

[1] *Duketon Operations consist of Moolart Well, Garden Well and Rosemont mining and processing operations that produce approximately 360,000 ounces of fine gold annually and whose results are publicly reported on a quarterly basis to the ASX.*

Employment

Issue: BOE points out that the NSW Government (2015) Guidelines start from an assumption of zero wage premium unless proven otherwise and consider that the arguments in the Response to the BOE Peer Review in favour of a wage premium are generic (and include critiques of the Guidelines themselves) but do not offer strong evidence of a wage premium in this case. Accordingly, BOE sees no compelling reason for the inclusion of employment benefits in the CBA.

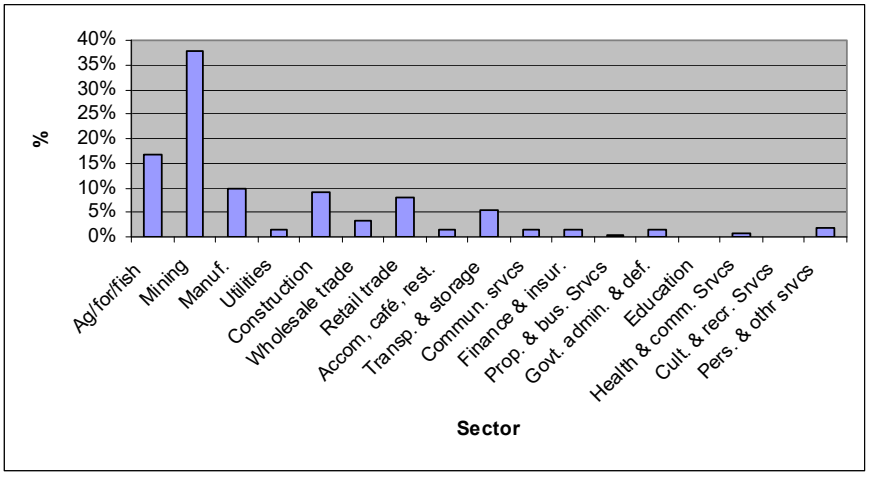
Response: The generic arguments raised are also specific to the project and provide STRONG evidence for inclusion of wage benefits in the CBA of the project.

The Guidelines starting assumption of no wage premium is dependent on an assumption of full employment. However, the NSW economy is NOT at full employment and is unlikely to be at full employment during the life of project. This is even more obvious given the impending recession due to the Covid-19 pandemic.

The labour supply curve for the project (and generally) is upward sloping – generally assumed to be inelastic e.g. 0.15 in computable general equilibrium models of the Australian economy. Consequently, there will be wage premium to all the workforce apart from those at the margin (who would be the only ones employed in the project if there was full employment – which there is not). Given workers will be sourced from other industry sectors not just existing mines, and be located along the labour supply curve, there is a strong argument for wage premiums to apply. Obviously, the exact industry sectors that the project employees will be drawn from is not known at this stage. However, some guidance can be taken from a survey of workers at Cadia Mines who were asked what industry sector they were employed in before working at the Cadia Mines. Only 38% came from mining with the remainder mainly from agriculture/forestry and fishing, manufacturing, construction, retail trade and transport/storage. A similar result is expected for the McPhillamys Gold Project.

ES Q24. Industry Sector Employed in Before Working At Cadia Mines n=308

Sector	Percent
Ag/for/fish	16.6%
Mining	38.0%
Manuf.	9.7%
Utilities	1.3%
Construction	9.1%
Wholesale trade	3.2%
Retail trade	8.1%
Accom, café, rest.	1.3%
Transp. & storage	5.5%
Commun. srvcs	1.6%
Finance & insur.	1.3%
Prop. & bus. Srvcs	0.3%
Govt. admin. & def.	1.3%
Education	0.0%
Health & comm. Srvcs	0.6%
Cult. & recr. Srvcs	0.0%
Pers. & othr srvcs	1.9%
Total	**100.0%**



Source: Gillespie Economics (2006) *Cadia Mines Community Impact Review*

Market wages are determined by BOTH supply and demand – not just supply. Higher wages are paid to workers in mines (including the McPhillamys Gold Project) than they may obtain from the same skills but in other sectors because of the greater amount of capital available to the labour, and hence increased productivity of labour in mining than elsewhere, and the higher value of the good being produced. This is not a short-term spike in demand as illustrated by BOEs "toilet paper" example and is not related to supply side effects such as danger money and relocation costs. Gillespie Economics provided direct evidence that the danger (in terms of mortality rates) is lower for mining than other sectors from which labour will be drawn. There is no reason to believe this general finding for the mining sector will not also apply to the project. Also, the Central West of NSW is a highly desirable place to live and hence wage premiums for relocation are likely to be minimal.

Gillespie Economics considers that the above are compelling reasons for inclusions of wage premium benefits in the CBA of the project. However, as identified in the Response to BOE's Peer Review, Gillespie Economics recognises that there may be differing opinions around the inclusion and estimation employment benefits in CBA and hence is careful in the Economic Assessment to report the results "with" and "without" employment benefits. From Table 4.1 of the Economic Assessment, the project is estimated to have net social benefits to NSW of $141M to $232M, the former value excluding employment benefits. The exclusion of employment benefits does not change the fact that the project is estimated to have net social benefits to NSW, it simply reduces the magnitude of this net social benefit.

Decision-makers can include employment benefits in their judgments to the extent that they are persuaded by the arguments.

Nonmarket benefits for employment

Issue: The Response to BOE's Peer Review again suggests that a benefit transfer approach, based on a non-market willingness to pay valuation for the Bulli Seam Operation, may be used to assess the non-market benefits of the McPhillamys Gold Project. However, as indicated in the original Review, it is not clear that the context in which the Bulli work was undertaken was the same as that for the McPhillamys Gold Project, particularly in view of the low regional unemployment in the Central West. The Review seeks to dismiss this by stating that it is not known why people might hold these values and that context is not relevant. The real issue is the inclusion of a large quantum of non-market benefits with no supporting empirical evidence specific to the project in question.

Response: The benchmark that BOE is setting for the use of benefit transfer essentially prohibits any use of benefit transfer. The source study for the benefit transfer is a survey of NSW households in relation to a mine located in NSW and eliciting, among other things, the respondent's willingness to pay for the employment of others in the mine. This is as close a match as is possible without undertaking a specific nonmarket valuation study for the project.

Gillespie Economics' response does not say that context is not relevant but that the source study from which the values were transferred undertook a split sample analysis and found that the values held were not sensitive to changes in the contextual information provided to respondents around reemployment prospects. This is as strong as empirical evidence gets for nonmarket values, without undertaking a specific nonmarket valuation for the project.

Again, Gillespie Economics believes there is a strong case for inclusion of these benefits in CBA. Decision-makers can include employment benefits in their judgments to the extent that they are persuaded by the arguments.

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30 June 2020

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Comments on Gillespie Economics Response of 15th May 2020

Dear Mandana

Gillespie Economics (GE) undertook an Economic Assessment (EA) of the proposed McPhillamys Gold Project ("the MGP" or "the project") in July 2019. The project is to be undertaken by Regis Resources Ltd ("Regis" or "the proponent"). BIS Oxford Economics (BISOE) undertook a *Review of Economic Impact Assessment: McPhillamys Gold Project* ("the Review") of this work in November 2019. The Review was prepared for the Department of Planning, Industry and Environment ("the Department").

Subsequent to this, GE provided a *Response to BIS Oxford Economics Peer Review of the McPhillamys Gold Project Economic Assessment* ("the First Response") dated 28 February 2020. BIS Oxford Economics issued its own comments on the First Response ("the First Comments") in March 2020. GE has now issued a further response letter ("the Second Response") in the wake of these comments. The Department has requested BISOE to again comment on the GE work. Accordingly, this letter constitutes a second set of comments ("the Second Comments") on the GE work.

As was the case in our First Comments, we have made some commentary on the Second Response in point form under key issues headings below. This was to allow for consideration of the issues involved in a succinct manner. We would be happy to elaborate on the points made in our response if you have further questions.

Gold Price

- As noted in our Review, the gold price assumptions used by Regis may, if anything, be conservative, based on data sourced from BIS Oxford Economics' own forecasts. That said, the Review called for further details on the derivation of the gold price, given its centrality to the economics of the project and consideration of an independent review of the gold price assumptions.

- The First and Second Responses provide further details on the basis for the project's gold price and exchange rate assumptions and refer to Regis' internal feasibility study and the sources from which it was derived. These include international banks and four major Australian banks.

- This helps provide background to the estimates provided in the EA. The additional detail is welcomed. As previously indicated, it is acknowledged that it is in Regis' own interest to ensure that the project is financially viable. However, the First Comments reiterated the point made in the Review that independent forecasts be used to determine the likely future price of gold.

- We also note that the First Response uses BIS Oxford Economics forecasts (and a lower AUD/US exchange rate of 0.70) to produce an increase in project NPV of $81 million.

- The Second Response includes a third party review of Regis' estimates for gold price, exchange rates and mining and prices assumptions Golder (2020) *McPhillamys Gold Project Review* ("the Golder Review')

- We note, however, that the gold price assumptions cited in the First and Second responses refer to the years 2019-2023 (i.e. a five year period) though we note that the project's operational duration is expected to be 10 years (EA p. 9). The Golder Review indicates that it cannot provide a better forward projection then that offered by these banks (p.5).

- The Golder Review undertakes analysis examining gold prices adopted by the gold mining industry from 2019 Q1 to 2020 Q2. It states that the average gold price adopted by studies in the 2019 Calendar Year was USD 1,300/ounce, which is close to the EA's assumption of USD 1,320/ounce (p.5), though it noted that various uncertainties, including the COVID-19 pandemic, drove the price up in 2020.

- As was the case for the Review, we have again examined BIS Oxford Economics own forecasts of gold prices to from 2020-2040. The updated forecasts are reproduced below.

Fig. 1. Forecast world gold prices

	2020	2021	2022	2023	2024	2025	2026
World gold price, constant exchange rate, $US per troy ounce	1,633	1,475	1,414	1,384	1,391	1,400	1,408
	2027	2028	2029	2030	2031	2032	2033
World gold price, constant exchange rate, $US per troy ounce	1,416	1,425	1,434	1,442	1,451	1,460	1,468
	2034	2035	2036	2037	2038	2039	2040
World gold price, constant exchange rate, $US per troy ounce	1,477	1,486	1,495	1,504	1,513	1,522	1,531

Source: BIS Oxford Economics

- The above projections suggest an undiscounted average price of USD 1,463/ounce over the period 2020-2040 (or USD 1,438/ounce over the period 2020-2030). This suggests that the EAs price of USD 1,320/ounce over a 10 year project lifetime is reasonable (and indeed lower than these average figures).

- We have also held discussions with our international commodities team about the contents of the Golder Review and the Second Response. They agree that the project's assumption of USD 1,320/ounce over the project lifetime is reasonable.

- The Second Response (p.3) also presents an analysis of the projects' viability based on the (then) current gold prices and AUD/USD exchange rates, cited as USD 1,726/ounce and 0.6454 respectively. This gives net production benefits in NPV terms of $445 million (as against the $143 million cited in the EA).

- While we believe that the overall gold price estimated in the EA is reasonable, the suggestion that the current gold price and exchange rates will hold over the life of the project is less so. Discussions with our international team indicate that gold prices tend to be mean reverting. While the heightened price of gold may reflect the current state of international anxiety and speculation over issues such as COVID-19 and other international tensions, assuming these will last in the longer term does not seem to be a good basis for assessment of a 10 year project. Advice from our international team also suggests that the current gold price is likely to be near the top of the cycle. Accordingly, we do not consider a net production benefits NPV of $445 million to be a plausible central assessment.

- In the Review, BISOE (p.6) noted that the Department may wish to commission independent advice on the gold price and exchange rate. While the commissioning of the Golder Review would have taken considerable time and effort (and the additional detail it brings is appreciated) it represents consultancy advice commissioned (and presumably paid for) by the proponent.

- It is therefore up to the Department to determine whether this constitutes a sufficient degree of independence, though as noted our own examination suggests that a gold price of USD 1,320/ounce, as indicated in the EA, appears reasonable (and indeed conservative) over the project lifetime. The analysis above, supporting the EA's estimated gold price of USD 1,320/ounce is important in that it supports GE's Cost-Benefit Analysis (CBA) and the revenue assumptions behind it. As noted previously the gold price is a central issue in supporting project viability and the CBA undertaken by GE.

- However, a broader point concerns the issue of financial viability (p.4). It is indeed the case that the proponent has an incentive to ensure that the project is financially viable and that in a commercial sense this is a risk assumed by the project owners. Nonetheless, it is also a matter of public interest (and indeed part of the motivation for the provision of a CBA in the first instance). For example, a project which is not viable and needs to come to a close early will not deliver expected royalty payments to the State while its development may impose environmental costs on society.

Exchange rate

- Many of the comments on exchange rates are related to the issues surrounding the gold price.

- Once again the additional detail on exchange rate assumptions is welcomed. We note the comments on exchange rates in the Second Response and in the Golder Review.

- In essence, the Second Response and the Golder Review pointed to the volatility surrounding the exchange rate and the difficulties of forecasts. The Golder Review supported the use of a project life AUD/USD exchange rate of 0.75 (p.7).

- Given the volatilities and uncertainties associated with exchange rates, considerable caution should be made about claims made during times of economic shock. Accordingly, as noted above, use of the exchange rate of 0.6454 cited to support a net production benefits NPV of $445 million in the Second Response is dubious. We note that at the time of writing (26 June 2020) the AUD/USD exchange rate had already moved back to 0.69.

- We also note the statement in the Golder Review (p.7) that while the Australian dollar is, in part, a commodity driven currency (e.g. low commodity prices offset a high dollar and vice versa) this is not as clear with gold, with market uncertainty playing an important role in the gold price.

- BISOE has produced its own projection of the AUD/USD exchange rate over the period 2020-2030 below. This indicates an average AUD/USD exchange rate of 0.79 from 2020-2040 and of 0.77 from 2020-2030. These rates are similar to the AUD/USD rate of 0.75 assumed by the EA over the lifetime of the project.

- Accordingly we concur that the AUD/USD exchange rates assumed by GE are reasonable. However we note that uncertainty will continue to play a role and that this should be acknowledge in the analysis**.**

Production volumes and associated costs

- The Review (p.5) made the point that few details were provided about the MGPs operating cost and production volumes and that an increase in operating costs by 20% would nearly halve the project net benefits producing a project NPV of $79 million. It called for additional details on production volumes and the related issues of costs and for independent analysis of these.

- We note the additional details provided on production volumes and values in the Second Response. In addition the Golder Review also addresses this issue. This additional detail is appreciated.

- The Golder review broadly finds that the MGP's assessment of production costs and volumes are reasonable.

- While gold mine production costs lie outside our field of expertise, we note the grade reported in the Golder Review, p.12 (1.05g/t with the MGP producing an average of 200,000 oz of gold per year at an 85% recovery rate). Recent work by PCF Capital Group suggests an average (reported) mill head/feed grade of 1.71 g/t for Australian and New Zealand open pit gold mines. The MGP grade is lower than this average. Recent work by Arum Analytics also suggests that a grade of 1.05g/t would be at the lower end of the grade curve for Australian and New Zealand open pit mines. [1]

[1] Finfeed "Australia's gold mines by production, grades and costs... Part 1" May 22 2019, https://finfeed.com/investor-101/australias-gold-mines-by-production-grades-and-costs-part-1/ ; Arum Analytics, *Australia and New Zealand Gold Operations: March Quarter 2020 Final Report*

- Our international commodities team has pointed out that lower yield operations can increase costs, implying a greater amount of drilling, crushing and grinding. This, in turn, can drive up costs (and/or the risk of cost overruns).

- We also note that the Golder Review indicates a strip ratio of 3.6:1 (p.9) while indicating that most gold mines can have ranges from 4 to 13. While we do not have a comprehensive comparison of strip ratios we note that the Gruyere Gold Mine in Western Australia cites a strip ratio of 2.7:1 but also that producers such as Blackburn Resources report strip ratios in the 7-9 range.[2] As strip ratios influence costs (the lower the better), the Department may wish to pursue this issue further.

- We note that the Golder Review presents a cost comparison of the MGP against other projects (Table 10, p.17) indicating that the project is at the mid to lower end of total cash costs in terms of AUD per tonne milled. This comparison is appreciated, however the World Gold Council has moved towards comparing projects on an all in sustaining costs (AISC) basis[3]. Likewise specialists such as Aurum Analytics compare Australian and New Zealand projects on this basis. It would have been helpful to use a AISC basis to allow for independent benchmarking of the project against costs reported in other publications.

- We also note the statement p.13 of the Golder Review dealing with operating costs that extensive use will be made of "experienced third party earthmoving contractors" for the mining work. The Golder Review (p.13) expresses confidence in the costings made.

- As indicted below, we would nonetheless expect that some level of contingency would have been built into such costings. The financial success of the operations is of public as well as a private interest. (We also note that the reference to "experienced" third party providers could be seen as calling into question the use of currently unemployed labour in the project, as discussed below).

- While we are not in a position to offer definitive judgements on the accuracy of operating costs and production volumes suggested by the proponent and endorsed by Golder, the above points should be noted. We suggest that the Department may wish to pursue some of these issues with its own (or external) mine specialists. This is an approach which has been adopted for past mining assessments as an additional check on cost assumptions. The sensitivity of the project to operating cost increases (referred to in the review and above) means that confidence in operating cost assumptions is an issue which is of considerable importance.

The treatment of costs and optimism bias: Capital Cost contingency

- The Review (pp.14-15) made comments about the lack of detailed project costings and the potential for optimism bias. The First Response (p.14) indicates that the project is a private investment proposal and is commercial in confidence. It is therefore not seen as reasonable to require the same level of financial detail as might be required for a public project. The Second Response (p.4)

[2] Gold Road Resources, "Building Australia Next Major Gold Mine", Investor Roadshow June 2019, Proactive Investors 21 August 2019, "Blackham Resources expects to reduce strip ratio as it stockpiles gold", https://www.proactiveinvestors.com.au/companies/news/901197/blackham-resources-expects-to-reduce-strip-ratio-as-it-stockpiles-gold-901197.html

[3] See World Gold Council "All in sustaining costs and all in costs" https://www.gold.org/about-gold/gold-supply/responsible-gold/all-in-costs ; Aurum Analytics op. cit.

reiterates these arguments indicating that NSW Treasury (2017) *NSW Government Guide to Cost Benefit Analysis* ("the Treasury Guidelines") are relevant to public sector projects and not private sector ones and that public sector projects are particularly susceptible to optimism bias and cost underestimation, which is not the case for private sector one. Further they appear to state that the Treasury Guidelines are not pertinent to the project (p.4).

- The distinction drawn in the Second Response is somewhat dubious and indeed surprising. Not only are private sector contractors often engaged by the public sector (and so their costings are relevant to public sector projects) but the inference appears to be that the private sector is not susceptible to cost blowouts.

- More broadly it needs to be recalled that project costings and viability are also a matter of public interest because they form a part of the CBA. Meeting the public interest criterion is part of the purpose of the Department requiring proponents to submit a CBA of the proposed project (or other projects) in the first instance. The role of the public interest criterion and the role of CBA supporting this, consistent with section 79C of the *Environmental Planning and Assessment Act 1979,* is made clear in the NSW Government (2015) *Guidelines for the economic assessment of mining and coal seam gas proposals* ("the Guidelines (pp.1-2)). The Act is also referred to in the EA (p.13).

- The Treasury Guidelines are also relevant because, while they acknowledge the existence of the other sector specific guidelines and are not intended to replace them, they are intended to provide a common analytical approach across CBA in NSW. The EA itself refers to that the fact that NSW CBA's are guided by NSW Treasury Guidelines (p.13).

- The original Statement of Requirements for BISOE's assessment of the McPhillamys Gold Mine also refers to the need to ensure "consistency of the assessment with any relevant Government guidelines" and to ensure that the "Cost Benefit Analysis aligns with current best practice". Simply ignoring NSW Treasury Guidelines would not be consistent with this stipulation.

- We reiterate that the Department may wish to investigate the issue of capital cost contingencies and project optimism bias further.

Employment benefits

- The Second Response points to a number of issues in respect of employment benefits, some of which were also referred to in the First Response or original EA. These include arguments about:

    - The shape of the labour supply curve
    - Full employment assumptions and the presence of unemployment
    - The sectors from which labour working on the project is drawn
    - Demand and supply determinants of market wages
    - The safety of the mining sector and the relative locational benefits of the Central West

- However many of these arguments are generic in and/or would seem to be distractions from the main issues as well as the requirements which proponents must meet in order to make a case for employment benefits.

Labour supply curves

- For example discussions about the shape and elasticity of the labour supply curve do not appear to be directly relevant to many of the issues at hand. The references appear to derive from the work of authors such as Boardman et al. and Bartik[4]. However the focus of the relevant sections in Boardman et al 2018 (pp.149-152) and Bartik's paper is on unemployment. As noted in the First Comments, these are interesting arguments. However, it's not clear how an inference is then made about wage benefits to *already employed* labour (which constitutes the great bulk of the assessed benefits ($27 million out of $32 million) as indicated in the EA (p.30). Moreover as noted in the Review the mathematical basis for this calculation is not made transparent. Likewise, as previously indicated in the Review, it's not clear why an assumption that 10% of the mine's workforce would otherwise be unemployed was used in the EA (and the First Response did not really clarify this). While GE has stated this makes little material difference to the results, no actual evidence (or commitment) that Regis' intends to draw 10% of its workforce from the ranks of the unemployed is presented. (see below). Estimates used by proponents should be grounded in data relevant to the case in question wherever possible.

Full employment

- Likewise, the First and Second responses refer to (and critique) concepts of full employment across the economy. However, the Guidelines do not contain a specific reference to full employment assumptions. Indeed they allow for the presence of employment benefits when the workforce is drawn from a population with "persistently high unemployment" and the potential for the project in question to alleviate it[5]. So a next step could be for proponents to show that the project in question would indeed be committed to alleviating unemployment (see below).

Sources of employment

- The Second Response also provides evidence about the different sources of employment for mining projects by referring to the Cadia Mines data. This evidence is welcome, however the evidence in question relates to another mine and is some 14 years old. Even aside from this, using this evidence indicates that the largest single source of employment by far (38%) is from the mining sector itself. If anything this indicates that much employment in mining projects may indeed be drawn from the mining sector, in which case, as indicated in the Guidelines (p.13), the starting assumption is for a zero wage premium.

- Moreover, if indeed such a large portion (38%) of such a mine's workforce is drawn from the mining sector itself then it is not clear how this is consistent with the EA calculation of a wage premium

[4] Boardman et. al. (2018) *Cost Benefit Analysis, Concepts and Practice* ; Bartik, T. (2012), Including Jobs in Benefit-Cost Analysis *Annual Review of Resource Economics* 2012 4, 55-73

[5] The Review noted an unemployment rate of 4.5% for NSW in September 2019 which had it close to full employment by most measures in any event. Data for May 2020 records a NSW unemployment rate of 6.4% while that for the Central West was 4.1% (ABS *Labour Force, Australia May Detailed - Electronic Delivery, May 2020 C*at. No. 6291.0.55.001) As previously noted in the Review, the *AusIMM Professional Workforce Survey 2018* https://www.ausimmbulletin.com/feature/ausimm-professional-workforce-survey-2018/ which remains the most recent data source indicates that unemployment for mining professionals in NSW and the ACT was 0%. Given the sudden surge in unemployment due to the COVID-19 pandemic, there will likely be much higher unemployment for a period then was the case when the EA was written. However, the unusual "forced" nature of this recession (an enforced lockdown of economic activity followed by a loosening of restrictions which is now gathering pace) makes it difficult to predict how long this will last. The key point however is that the Guidelines indicate that a case may be made for employment benefits when the workforce is drawn from a population with persistently high unemployment. No such evidence is presented in respect of the project in question.

which appears be estimated by taking the difference of *average wages* across NSW ($64,500) with the average mining wage ($120,000) and applying this differential to *all* MGP workers. Since this large differential is unlikely to apply to workers already employed in the mining industry it suggests the wage premium estimate is at best, exaggerated. It is also noteworthy that no reference is made in this data to the Cadia mine drawing in labour which was previously unemployed.

- GE argues in the First Response that those in the existing mining industry would not simply move to another mine to earn the same wages. Its worth noting the Guidelines (p.14) text that :

    - *Workers may also receive a net economic benefit if a proponent intends to pay its workers more than necessary to attract the necessary skills or number of workers. If this is the case, they should clearly explain why this intention is credible[15] and how compliance with this intention might be verified and enforced*

  Also noting in an accompanying footnote:

    - *time-inconsistency problem can arise in such circumstances, such that even if a proponent intends, in good faith, to pay above market wages to its workers, the incentives will be for it to stop doing so once construction starts or once the project is operational.*

- However no evidence of the MGP consistently paying higher wages then in other mines (and allowing for this in its wage costs) is presented in the EA. For example a relevant question might be: Is there evidence for example that Regis has allowed for above market wage payments to attract existing mining sector or other workers due to the need to get the right type of skills or for other reasons ? Do its estimated wage bill calculations take this into account ?

- More broadly, in BISOE's experience, proponents invariably refer to employment benefits as a project benefit. It is worth considering the logic of this in terms of employees drawn from the mining sector itself. Given the stipulations of the Guidelines in the case of employees drawn the mining sector itself this would imply that every mine is somehow "special" in that the skills of workers employed for that particular mine are superior to those in their previous mining sector employment and this is reflected in higher pay. This cannot be true for every mine. So driven to its logical conclusion, this is not a tenable argument unless compelling evidence can be shown that pay for a given mine is higher than for that for other mines and that this reflects unique skills.

- We also note that the First Response refers to *occupational* breakdowns within the mining sector, suggesting that those in the mining sector may be well away from the mine face instead, in areas such as administration or transport and so their higher wages do not relate to more physically demanding work or harsher working conditions. However, this argument is double edged, since if indeed such personnel are well away from the mine face, it is an open question as to whether (and why) their wages would be much different than in their previous jobs. A relevant question might be: Is there evidence that Regis intends to pay such workers more than is the case than in their previous employment (whether inside or outside the mining sector) and what are the reasons for this ?

- Of course even outside the actual mine face, some may feel that mining is a less desirable industry to work in than others and require compensation for this, which could be reflected in higher wages. However this is essentially the point made by the Guidelines themselves in respect of wage premiums. Evidence would need to be supplied by the proponent that, if wage differentials for such workers exist, they are due to factors such as the particular skills required by the MGP.

Supply and demand side

- As indicated, another GE argument relates to a distinction between supply and demand side determinants of wages. However as indicated this appears to be a distraction from the main issue. Labour may have innate skills and/or gain new skills through the use of capital. A good example of this is the transformation of the ports industry through changes to labour and capital which now involves smaller numbers of more highly paid skilled labourers handling complex equipment. Regardless of whether workers may be more highly skilled to begin with, or whether they may develop skills and enhance productivity though the use of advanced capital equipment, the key issue is that these skills should be reflected in wages over the longer term.[6] However this does not mean that such skills are the only determinant of wages for a given project or industry such as mining - which is the point made in the Guidelines. As indicated in the Guidelines, it needs to be shown that the labour force is indeed being paid more than elsewhere because they have (or will acquire) these higher skill levels.

Safety

- The First and Second Responses also refer to the relative safety of the mining industry by referring to fatalities. However the Guidelines themselves do not refer directly to safety but instead to physically demanding work and tougher working conditions. In any event, while improvements in the safety of the mining industry are to be welcomed. SafeWork Australia data over 2014-18 show that mining continues to rank 5th out of 19 industries in terms of its fatality rate per 100,000. In the latest year with the most complete figures (2018) mining had risen to third place .[7] This suggests that mining remains a relatively dangerous industry in which to work compared to many others. However as indicated, regardless of fatality rates, the Guidelines refer to the more physically demanding work and tougher conditions in making arguments about wage premiums.

Location

- Both the First and Second Responses contain references to the Central West being a desirable location for workers (presumably regardless of whether they worked within or outside the mining sector previously). Accordingly it is asserted that higher wages (if paid) do not reflect compensation for relocation. However, the desirability of the Central West is simply an assertion and locational desirability is very much a personal issue and point of view. Some may enjoy the area, others dislike it and still others be indifferent. If only a modest proportion of the workforce demanded higher wages for relocation, this could raise the overall average. So this would not appear to be a compelling argument.

Suggested approach

- We suggest that a better approach then making generic arguments or disputing the approach laid down by the Guidelines, would be for the proponent to adhere to the references in the Guidelines (p.13) to assess wage premiums on a "case by case" basis, backed up by evidence, namely:

> *Although a zero wage premium is a useful starting assumption, the appropriateness of this assumption must be assessed on a case by case basis. This is because benefits to workers can be one of the major economic benefits from a project. If a proponent considers that a project*

[6] The Guidelines (p.14) recognize this by indicating that workers "may develop new skills by working on a project".
[7] See SafeWork Australia, "Fatality Stats by Industry" https://www.safeworkaustralia.gov.au/statistics-and-research/statistics/fatalities/fatality-statistics-industry#figure-1-worker-fatalities-proportion accessed 21 June 20120.

will generate positive benefits for workers, the economic assessment should clearly explain the reasons for this conclusion and present evidence in support of the valuation that has been adopted.

- We note that labour force costs would obviously, be a part of the costings for the project. Other project costings are referred to in the discussion of project operations and producer surplus considerations above. Some evidence worth bringing forward to justify a wage premium. For example, evidence might include the following:

    - Is there any evidence that Regis intends to hire unemployed labour for this project ? Does such evidence exist in terms of written commitments for example ? What are the numbers of unemployed labour that Regis is committed to hiring ?
    - What kinds of workers is Regis seeking to hire for the project ? What experience levels are required/preferred ? Is there any indication of a preference from which sectors or occupations these will be drawn ?
    - What kinds of salary levels are committed to for the various roles in the mine ? How do these compare to the (independently verified) average market rates for such occupations elsewhere in the mining or other sectors from which employees are to be drawn? How do these add up to the total wages bill calculated for the operation ?
    - Can evidence be supplied that any potential difference in wages is due to the types of skills required for this particular project (as opposed to projects or occupations elsewhere in the mining or other sectors) ? To what extent are any wage differentials due to the conditions and nature of the work (e.g. harsher conditions) and/or location of the work ?

- In the absence of strong arguments backed up by such data, consistent with the requirements of the Guidelines, we see no compelling reason for the inclusion of employment benefits in the CBA.

Nonmarket benefits for employment

- The issues here are once again similar to those raised above in terms of the evidence base for these effects.

- We refer again to our arguments in the original Review and First Comments. There is no current allowance in the Guidelines for non-market benefits. However even if there were, the evidence presented is not especially strong particularly given the uncertainties around the valuations presented. The basis for the assessment of non-market benefits relates to an assessment of Bulli Coal Seam operations, published in 2012. There remain considerable uncertainties about the meaning and interpretation of the responses for such work. These were highlighted in the Review and First Comments. Some were also acknowledged in the Appendix 7 of the EA (p.80) where there was a call for "further investigation" of the motivations for people's responses to past WTP survey work and an acceptance that results could be contentious.

- The argument in the Second Response that BISOE's response prohibits benefit transfer is not correct. No statement is made in the original Review or First Comments that benefit transfer is an invalid technique. It can obviously be used in certain contexts. However, as indicated there is no current allowance within the Guidelines for it. The EA notes this and indicates the uncertainties around the results. The Review and First Comments have simply questioned the application of the results from other mines in the context of the McPhillamys Gold Mine, particularly given these uncertainties.

- GE's response suggests that the survey is about as close as one could get to the assessment of non-market values without undertaking specific non-market valuation work for the project. Given the magnitude of the claimed benefits ($60 million) and of the project itself (a sale value of gold of $1,759 and an assessed net production value of $355 million in NPV terms over the project's lifetime) (EA p.33) we suggest that such empirical work should indeed be undertaken if a case is to be made for such benefits.

- This point was also made in our First Comments where we suggested that empirical work on non-use valuation could be undertaken for McPhillamy's Gold Mine particularly given the uncertainties highlighted. We again point to the Guidelines indication that proponents are required to support arguments for a given case with evidence. However, given that the Guidelines are silent on this issue (and noting the up-front costs involved) Regis and GE may wish to consult with the Department before undertaking such an exercise, in order to determine whether the Department would consider the inclusion of such benefits on an *in principle* basis.

- In the interim we again stand by the findings in our original Review. There is no strong basis for the assessment of nonmarket benefits for employment presented in the case of the MGP. We again suggest that they be excluded from the analysis.

As indicated this letter contains an overview of the key issues contained in the Second Response and a reply to them. I would be pleased to answer any further questions in regard to our comments

Yours sincerely,

Andrew Tessler