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Re: Drayton South Coal Mine – Review of the Economic Assessment in the Consequential Environmental Impact Assessment for Retracted Mine Plan

As requested, the following are our review comments in relation to the most recent economic assessment of the new Drayton South open-cut coal mine in the Consequential Environmental Impact Assessment for Retracted Mine Plan.

In summary, our analysis finds that the economic assessment of the new Drayton South Open-Cut Coal Mine remains fundamentally deficient and misleading because the:

- economic assessment does not conform with Recommendation 3 of the Planning Assessment Commission review report;
- economic assessment does not comply with NSW Government guidelines;
- coal price assumptions remain unspecified, unjustified and unrealistically high;
- economic assessment continues to over-estimate the benefits and under-estimate the costs; and
- economic assessment ignores the impact of the project on Coolmore Australia and Darley Australia and their critical contribution to the regional and NSW economies.

1. The economic assessment does not conform with Recommendation 3 of the Planning Assessment Commission review report

Recommendation 3 in the Planning Assessment Commission Drayton South Coal Project: Review Report states: *"Any open cut mining contemplated on the site should be required to demonstrate that its impacts will not affect the viability of the Coolmore and Woodlands horse studs"* (December 2013, page iii).

The economic assessment in Anglo American's Consequential Environmental Impact Assessment for Retracted Mine Plan report makes no mention of the neighbouring Coolmore Australia and Darley Australia horse studs and thus assumes – without any evidentiary discussion – that the mine will not affect their economic viability.

Image, client perception, visual presentation and reputation are all critical components in a premium equine stud's business model. This is consistent with international best practice and can be witnessed at leading studs worldwide.

Coolmore Australia and Darley Australia provides services to and compete in a highly competitive environment for investment catering to a broad spectrum of clients, including syndicates of everyday investors, high net worth clients and racing enthusiasts who are highly mobile in their market choices. These clients choose to have their mares serviced by the stallions that stand at Coolmore Australia and Darley Australia because they hope to breed a successful race horse.

To attract and retain their clients, Coolmore Australia and Darley Australia have invested millions of dollars into their bloodstock and properties to ensure they present as world class facilities to both existing and new clients.

Coolmore Australia and Darley Australia believe that the construction of an open-cut mine across the road from their properties will immediately and permanently impact on their business model and may force them to relocate to Victoria or overseas.

This is confirmed by the NSW Government Mining and Petroleum Gateway Panel: *"the Panel's view is that open-cut coal mining as proposed at Drayton South, and thoroughbred horse breeding studs of the nature, scale and importance of Coolmore and Woodlands (Darley), are incompatible land uses that cannot coexist in close proximity"* (December 2013, page 3).

We also note that if Coolmore Australia and Darley Australia are forced to move from NSW to Victoria they will not leave a void in the market that can be filled by other *"critical actors"*, as was argued by Dr Kannegeiter in Anglo American's Justification report. They will take their clients and bloodstock with them and *"this would significantly impact on the equine industry in the Hunter Valley and its supporting industries"* (NSW Trade and Investment 2014).

2. The economic assessment does not comply with NSW Government guidelines

The current report further demonstrates Anglo American's unwillingness to provide essential detail. This detail (transparency) is critical to enable an informed assessment of the economic viability of the mine by stakeholders and government. The current assessment does not meet either the Director General's requirement for a *"detailed assessment"* or the NSW Treasury requirement that all data and assumptions are explicitly reported.

The authoritative source for economic assessment in NSW is the NSW Government Guidelines for Economic Appraisal (TPP07-5) which are issued by NSW Treasury. These guidelines state that:

- *"All relevant cost items which can be identified, quantified or estimated must be included"*; and
- *"Assumptions underlying all estimates should be made explicit in the evaluation."* (page 17)

The Treasury guidelines stipulate that this detail is necessary to ensure that there is no project bias in the analysis: *"Treasury considers how the data are produced and reviews the assumptions incorporated in the analysis. This is to ensure there is no "project bias" in the analysis, for example, in terms of overoptimistic benefits and/or underestimated costs"* (page 4).

Three examples that illustrate the fact that Anglo American has again refused to provide critical evidence and detail:

- **Capital costs**: the report provides no breakdown of the capital costs. The report simplistically states that *"The opportunity cost of land and capital equipment … have been assumed to be the same as identified in the Economic Assessment of the Project"* (page 3).

  The Economic Assessment also provides no breakdown: *"Capital costs of the Project are associated with a range of plant and infrastructure development. These incremental capital costs over the life of the mine (including contingencies) are estimated at $485M. These capital costs include an allowance for acquisition of land for the Edderton Road relocation, properties adversely affected by noise/dust/vibration and ecological offsets"* (page 12).

- **Value of coal**: the report does not specify either the quality of thermal coal being produced (critical to the determining the assumed value of coal) or the price path that is used in the economic assessment. The report simply states that *"The coal price in Australian Dollars (AUD) has been varied to reflect current projections of Anglo American for its product coal from the mine, ie approximately AUD $115, reflecting a United States Dollar (USD) value of $105/tonne and AUD/USD exchange rate of 0.91"* (page 3).

- **Results**: the amount of coal being extracted falls and yet inexplicably the present value return for NSW increases.

We discuss these issues further below.

3. The coal price assumptions remain unspecified, unjustified and unrealistically high

The assumed coal revenue is the key source of benefits in the economic assessment, comprising over 99% of legitimate benefits from the project.

Thermal coal is a heterogeneous commodity that can have different quality specifications and these quality specifications affect its market value. As the economic assessment of the proposed Drayton South coal mine is highly sensitive to the assumed price path for thermal coal, it is critical that Anglo American transparently detail and justify the assumed coal price.

The assumed coal price, *"approximately AUD $115 per metric ton (mt)"*, is a very small reduction on the $118 per mt that was used in the original economic assessment. However, it remains considerably higher than forecasts by respected sources (such as the World Bank and the Bureau of Resource Economics), recent prices received by Anglo American and recent economic assessments undertaken by Gillespie Economics. All of these sources point to forward looking prices of AUD$90 per mt or less. For more information on coal prices please refer to the Attachment.

4. The economic assessment continues to over-estimate the benefits and under-estimate the costs

Our modelling shows that the Gillespie Economics assessment undertaken for Anglo-American's proposed Drayton South open cut coal mine over-estimates the benefit and under-estimates the cost impacts of the proposed Drayton South coal mine.

The economic assessment claims that $485 million is the *"minimum opportunity cost to society of not proceeding with the Retracted Mine Plan"* (page 4). We consider that this statement is misleading and lacking critical justification, particularly when the analysis and report:

- claims that the economic benefits to NSW increase, despite a significant reduction in coal extraction;

- is based on unjustified price premiums being paid for the thermal coal from Drayton South open-cut coal mine;
- again ignores the impacts on the neighbouring thoroughbred studs; and
- continues to include benefits that have no empirical justification, namely non-market employment benefits.

The results of the economic assessment are counter-intuitive

The new mine plan for the Drayton South open-cut coal mine (as specified in the Retracted Mine Plan) removes the Houston mining area, and part of the Whynot and Redbank mining areas. These changes reduce the coal reserves by 22 million tonnes (Mt) and mine life by 7 years (from 27 to 20 years). The proposed open-cut coal mine will now extract 97 Mt of thermal coal, down from 119 Mt or an 18.5% reduction in ROM (run-of-mine) coal.

Despite this significant reduction in coal extraction, the present value outcome for: NSW increases from $320 million to $333 million (present value of revenue from royalties); and Australia falls by only 1%, from $490 million to $485 million. These results are counter-intuitive and point to either analytical error or bias. Marsden Jacob arrives at this conclusion because – based on the information provided in Anglo American's Retracted Mine Plan report – the:

- capital and annual operating costs do not change, they *"have been assumed to be the same as identified in the Economic Assessment of the Project"* (page 3); whereas
- economic benefits from the project should fall as the volume of coal has reduced by 18.5%, the assumed value of coal has dropped and the rate of coal extraction has not changed. WRM water+environment identify that *"coal production rates do not change"* (Appendix E, page 4).

This means that the present value of the benefits should fall by more than the present value of the costs, particularly as the capital costs remain unchanged.

Furthermore, the revenue from coal royalties is a percentage of the value of coal production (see Box 1). This means that if the value of coal being extracted falls (the volume and assumed value both fall) and the coal production rate does not change the present value of revenue from royalties must necessarily fall.

Box 1: Ad Valorem royalty

Royalty for coal is charged as a percentage of the value of production (total revenue less allowable deductions)[1].

Section 44 of the *Mining Regulation 2003* (NSW) states that *"the base rate of royalty for coal is as follows:*

(a) 8.2% of the value of coal recovered by open cut mining,

(b) 7.2% of the value of coal recovered by underground mining,

(c) 6.2% of the value of coal recovered by deep underground mining."

Source: 1. NSW Trade and Investment, www.resourcesandenergy.nsw.gov.au/miners-and-explorers/compliance-and-reporting/royalties

The economic assessment never reaches economic break-even when a realistic coal price is used

In the absence of information that supports a price premium for thermal coal from the Drayton South coal mine, Marsden Jacob (in 2013) remodelled the cost-benefit analysis component of the economic assessment using benchmark values for thermal coal. Consistent with the Gillespie Economics approach we modelled these values in AUD. The benchmark values were based on the Newcastle Thermal Coal price, because *"Newcastle thermal coal spot price is the benchmark price for most Australian thermal coal on short term contact"* (Reserve Bank of Australia, Statement on Monetary Policy (February 2013)).

Our economic modelling revealed that the proposed mine never reaches an economic break-even point when a realistic coal price of $90 per mt is used. This result demonstrates that the mine is not economically beneficial, even before the impacts on Coolmore Australia and Darley Australia are considered.

Our modelling also revealed that if the Drayton South coal mine project were developed it would result in a net economic loss to the NSW economy of between $153 m and $457 m (in net present value terms) if Coolmore Australia and Darley Australia relocated overseas or interstate.

Non-market unemployment benefits should be excluded from the cost-benefit analysis.

The Gillespie Economics report continues to include non-market employment benefits.

Economic theory and empirical evidence states that non-market employment benefits should only be included in cost-benefit analysis if labour resources used in the project would otherwise be unemployed. There is no evidence in the economic assessment report of an unemployment problem in the vicinity of the mine, which justifies the inclusion of non-market employment benefits in the economic assessment for this project.

To the contrary, unemployment rates in the region are extremely low and reflect a full employment economy. Furthermore, the Bureau of Resource and Energy Economics' publication Resources and Energy Major Projects identifies that there are over a dozen expansion or new mines proposed to be developed in the Hunter Valley. These proposed developments are going to put increasing pressure on an economy which already has extremely low rates of unemployment.

5. The economic assessment ignores the critical contribution Coolmore Australia and Darley Australia make to the regional and NSW economy

Coolmore Australia and Darley Australia are the largest international scale thoroughbred studs in Australia (in both physical scale and market share), see Table 1. These two studs alone constitute the epicentre of Australia's and NSW's thoroughbred breeding industry and any impacts on their business operations will impact all other related and support services. A fact that is confirmed by NSW Department of Trading and Investment in 2014: *"the Coolmore and Woodlands (Darley) thoroughbred stud enterprises are pivotal (core businesses) to the sustainability of the Upper Hunter Equine Critical Industry Cluster and should be protected."*

As Michael Ford, Keeper Australian Stud Book, recently stated:

> *"The stand-out fact is that Coolmore and Darley produce 40% of the estimated income earned in Australia, while the Hunter Valley produces 74% leaving only 2% for the rest of New South Wales, and 24% for all the other states" (27 March 2013).*

Table 1: Australian Stud Book data on Coolmore Australia and Darley Australia, 2011

	Coolmore & Darley	% of Hunter Valley	% of NSW
Stallions covering mares	30	28.8%	12.6%
Mares covered	3,419	40.1%	32.7%
Live foals	2,249	40.4%	33.7%
Average service fee	$40,828	-	-
Estimated income from service fees	$99.6M	53.8%	52.5%

Source: Australian Stud Book 2011

There is a very real risk that if the Hunter Valley were to lose the top of the thoroughbred breeding industry – Coolmore Australia and Darley Australia – there would be material and irreversible repercussions that would be felt throughout the NSW thoroughbred industry.

Hunter Valley thoroughbred breeding industry is important and interconnected

The Hunter Valley is Australia's largest producer and exporter of premium quality thoroughbreds. The multi-billion dollar industry is one of three Centres of Thoroughbred Breeding Excellence in the world. It has the largest concentration of studs in the world outside of Kentucky in the USA. It is supported by a sophisticated network of equine support industries that would not be in the Hunter Valley but for the thoroughbred breeding studs, including the Scone Equine Hospital the largest equine hospital in the southern hemisphere.

The interconnected nature of the industry is founded on the strength and reputation of their stallion farms and supported by over 100 broodmare farms and a sophisticated network of support and supply industries that have established in the Hunter Valley and are reliant on Coolmore Australia and/or Darley Australia.

Support Industries depend on Thoroughbred Breeders

Stakeholder interviews conducted by Marsden Jacob confirmed the importance of the thoroughbred industry to their economic viability. Support industries including veterinary, electrical, timber, transport, capital equipment, hospitality and construction all confirmed:

- they do not provide services to the minerals industry;
- they are increasingly dependent on the thoroughbred breeding industry, because other agricultural sectors are contracting;
- Hunter Valley thoroughbred breeders are either their first or second most important client; and
- if Coolmore Australia or Darley Australia were to move the impacts on the Hunter Valley economy would be enormous. A number of those interviewed noted that the economic impact of the Equine Influenza outbreak would be small compared to Coolmore Australia and Darley Australia leaving the Hunter Valley.

The Drayton South mine will place 640 jobs at risk, strip $120m per annum from the local economy and fragment the Hunter Valley's equine critical cluster

Our economic assessment reveals that if the mine proceeds and Coolmore Australia and Darley Australia leave the Hunter Valley this will:

- put 640 sustainable jobs at risk in the Hunter Valley;

- strip over $120 million per annum in gross regional production from the local economy;
- fragment the Hunter Valley's equine critical cluster;
- destabilise the concentration of interconnected broodmare farms and equine support industries; and
- negatively impact NSW's world famous breeding and racing reputation.

6. The Drayton South development poses a significant risk to the local and NSW economy

Anglo American's most recent economic assessment for the Drayton South coal mine claims that the project will deliver net economic benefits of $485 million to the Australian economy and $333 million specifically to the NSW economy.

Marsden Jacob's review of the analysis and assumptions that underpin these values has identified a number of significant issue that mean the outcome for the NSW economy could actually be a net loss, because the:

- Anglo American's analysis does not adequately detail the assumptions that underpin the analysis;
- volume of coal being extracted falls significantly, but the economic benefit to NSW inexplicably increases;
- reported thermal coal price (approximately $115 per mt) is meaningless because the price path is not specified, and considerably higher than international and domestic forecasts by leading authorities; and
- analysis fails to recognise that if Coolmore Australia and Darley Australia were to relocate to Victoria the net economic cost to the NSW economy would be between $229 million (base analysis) and $368 million (sensitivity analysis), in net present value terms. At the upper end, the benefits to the NSW economy from the Drayton South open-cut coal mine are more than offset by the cost of Coolmore Australia and Darley Australia relocating to Victoria and taking their market with them.

If you wish to discuss any of this further please do not hesitate to contact us.

Yours sincerely

Rod Carr
Principal
Marsden Jacob Associates

Attachment – Coal Prices

Attachment: Thermal coal prices are falling not increasing

Thermal coal is a heterogeneous commodity sold in an international market that can have different quality specifications and these quality specifications can affect its market value. We note that Gillespie Economics in their analysis has relied on thermal coal price information provided by Anglo American.

Anglo American's assumed thermal coal price path is yet to be transparently reported or justified:

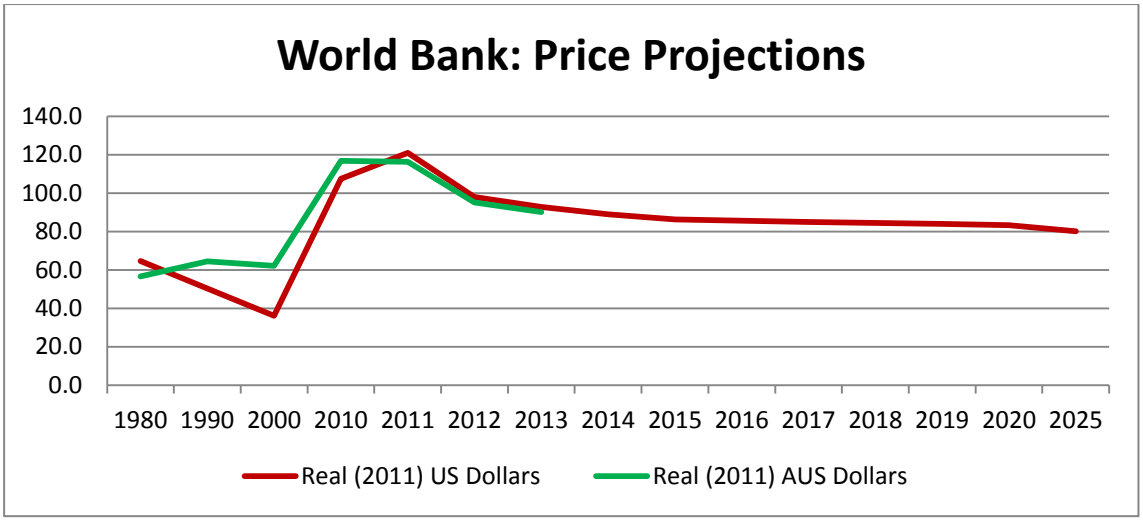
- Gillespie Economics report (2012) states that the assumed thermal coal price is an *"average $118 per metric tonne"*.
- Supplementary Submission (2013) by Anglo American: *"The price of thermal coal from the Project is assumed to ramp up from Australia Dollars (AUD) $107/t in 2015 to AUD$120 in 2022 and then remain constant over time."*
- The Retracted Mine Plan report states: *"The coal price in Australian Dollars (AUD) has been varied to reflect current projections of Anglo American for its product coal from the mine, ie approximately AUD $115, reflecting a United States Dollar (USD) value of $105/tonne and AUD/USD exchange rate of 0.91".*

The economic assessment of the proposed Drayton South coal mine is highly sensitive to Anglo American's assumed thermal coal price path. It is critical that Anglo American transparently justify why an elevated and escalating price for thermal coal is realistic. This is particularly important because Anglo American's assumed thermal coal price is far higher than all of the international forecasts (discussed below) and is well above recent market prices reported by IndexMundi and Anglo American.

World Bank: $US 79 per mt in 2025

The World Bank (authoritative source for commodity prices) forecast in January 2014 that the price of Australian thermal coal will be US$90 per mt in 2015 and then continue to fall to around US$79 per mt by 2025 (in real 2011 dollars), see Figure 1.[1]

Figure 1: World Bank price projections



Source: World Bank 2014, Marsden Jacob analysis

[1] World Bank, Commodity Prices and Price Forecast siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1304428586133/Price_Forecast_Jan14.pdf

Bureau of Energy and Resource Economics: USD$90 per mt

The Bureau of Energy and Resource Economics recently commented that thermal coal supply has grown strongly over the past decade, but its growth may begin to slow by the end of the outlook period as a result of fuel switching and increased electricity generation from renewables. In 2018, the bureau forecasts a coal price of USD$ 90 per mt. *"In the medium term, thermal coal prices … are projected to increase slightly in the short term, before decreasing later in the outlook period when large additions to supply are projected to come online. Consumption demand in key markets is projected to grow substantially over the next five years, but strong competition among coal producers is expected to moderate any price growth."*[2]

In December 2013, the Bureau or Energy and Resource Economics stated that the *"world thermal coal market has become oversupplied as new mine capacity developed over the past few years has been commissioned at a time when demand growth has moderated in key consuming regions such as the US."*[3]

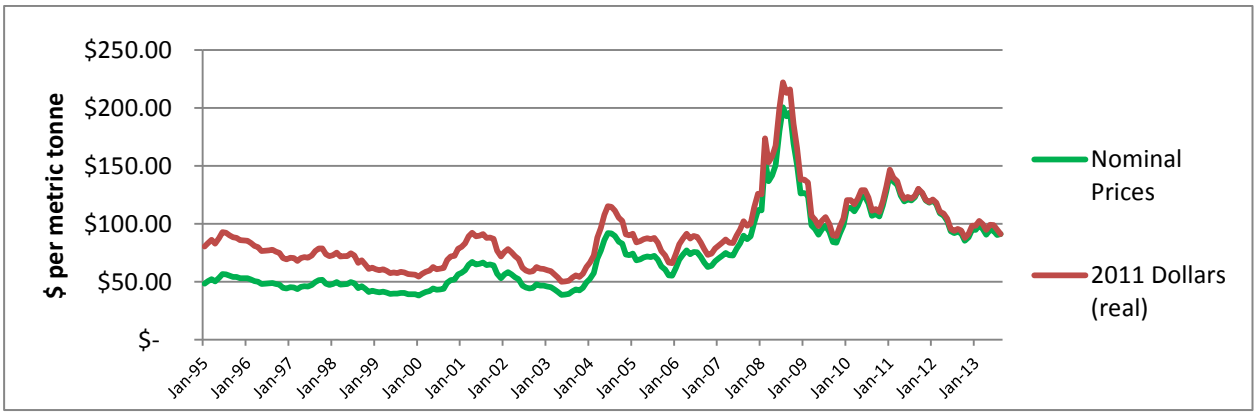
Anglo American

Anglo American's Preliminary Results for 2013[4] identify that the year end spot price for thermal coal (FOB Australia) was US$85/tonne (2013) and US$91/tonne (2012), (page 84). These values are well below the prices assumed in the economic assessment.

Indexmundi

Marsden Jacob analysis (based on Indexmundi monthly prices) identifies that the average price of thermal coal was AUD$90 per mt (real, 2011 dollars), over the period January 1995 to March 2014. If you remove the effect of the price spike in 2008-09 the price drops to approximately AUD$85 per mt (real 2011 dollars), see Figure 2.

Figure 2: Indexmundi Thermal Coal Prices



Source: Indexmundi, Description: Coal, Australian thermal coal, 12000- btu/pound, less than 1% sulfur, 14% ash, FOB Newcastle/Port Kembla, Australian Dollar per Metric Ton

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2 Resources and Energy Quarterly (March 2013) www.bree.gov.au/documents/publications/req/REQ_MAR2013.pdf

3 Resource and Energy Quarterly (December 2013) bree.slicedlabs.com.au/sites/default/files/files/publications/req/REQ-2013-12.pdf

4 www.angloamerican.com.au/~/media/Files/A/Anglo-American-Australia-V2/pdf/pr2014-02-14.pdf, accessed 10 March 2014

Furthermore, the price of thermal coal has fallen consistently over the last three years. Indexmundi reports that in March 2014 the price of Australian thermal coal was $78.58 (USD) or $86.62 (AUD).

NSW Trade and Investment

NSW Trade and Investment (2014) identifies that the current average price for thermal coal is *"$100/tonne (rather than the $118/tonne mentioned in the 2012 EA)"*. Furthermore, they note that Drayton South needs to blend coal from its proposed pits to meet export specifications. This is necessary because *"the coal seams proposed to be mined at the Drayton South Project are highly variable (ranging from very high-quality to relatively low-quality coal)"* (page 4).

Gillespie Economics

Gillespie Economics (2014) confirms that thermal coal prices are expected to fall, not escalate, in the future:

> *"Coal will remain the cheapest source of fuel for electricity generation for many years. However, investment in alternative forms of energy will eventually bring down the comparative price of these alternative forms of energy and the energy market will gradually shift away from coal fired electricity"* (page 2).

Recent cost benefit analyses undertaken by Gillespie Economics have been based on thermal coal prices of around $89 per mt.

Table 2: Thermal Coal Prices (Gillespie Economics)

Project Name	Proponent	Assumed Thermal Coal Price	
Chain Valley Colliery	Lake Coal Pty Ltd	**$89 per tonne**	Gillespie Economics, March 2013
Mangoola Coal Modification 6	Xstrata Mangoola Pty Limited	**$89 per tonne**	Gillespie Economics, May 2013
Moolarben Coal Project Stage 1 Optimisation Modification	Moolarben Coal Operations Pty Limited	**$85 per tonne (US$) $84-95 per tonne (AUS$)**	Gillespie Economics, May 2013

Source: NSW Planning and Infrastructure, Major Project Assessments, http://majorprojects.planning.nsw.gov.au/