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16th November 2015

Attn: Andrew Radojkovic
 Hazelwood Mine Fire Inquiry

Delivery of final report– Review of Future Rehabilitation Options for Loy Yang, Hazelwood and Yallourn Coal Mines in the Latrobe Valley

Dear Andrew

Please find enclosed Jacobs Group (Australia) final report entitled “Review of Future Rehabilitation Options for Loy Yang, Hazelwood and Yallourn Coal Mines in the Latrobe Valley”.

On behalf of Jacobs’ we hope the report aids the Inquiry in its deliberations regarding how the Latrobe Valley will make the transition to a post-mining future.

The report completes the agreed scope of work. The table below summarises how the report addresses the agreed scope of work. .

Overview of deliverables

Scope of work	Report Deliverable
Attend community consultation and take into account the views expressed by stakeholders through public submissions	Darren Murphy attended the community consultation on 4 th – 6 th August 2015. All public submissions were reviewed by Jacobs and have been used to identify potential future land uses and therefore potential preliminary mine rehabilitation options (refer to sections 4 and 5).
Review the findings of international best practice review and take into account	The information provided by the Inquiry was considered and used to inform preliminary mine rehabilitation options (refer to section 5 for case studies).
Consider (against the criteria set out in the Terms of Reference Nine) the lake option contained in the Work Plan of each mine operator.	The Lake Option as referred to in the scope of work (as indicated by the mine operators) translates to the “Partial Backfill Below the Water Landform” option identified and assessed by Jacobs for each mine. Please refer: <ul style="list-style-type: none"> • Yallourn – section 8.4.2 • Hazelwood – section 8.5.2 • Loy Yang – section 8.6.2
In assessing the options use the technical data from each mine operator and the Department of Economic Development,	Jacobs have been informed by the data and information provided. The public submissions and the work plans (and associated reports) have been heavily relied on by the technical working group. The report also relied on a number of other documents provided by the Inquiry. A small sample of these documents is provided below:



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Scope of work	Report Deliverable
Jobs, Transport and Resources	<ul style="list-style-type: none"> • Independent Expert Scientific Committee and Department of the Environment (2014). Background Review - Subsidence from coal mining activities. Commonwealth of Australia, Canberra. • GHD (2005), Yallourn Energy Pty. Ltd Yallourn Mine Rehabilitation Concept Review Report. • Harasymiw, B (2001) Prediction of Water Quality in Flooded Open Cut Brown Coal Mines in Victoria. Prepared for SECV Office of the Administrator. • Tru Energy (2012). Review of Yallourn Rehabilitation Master Plan - Min 5003 Condition 7. Tru Energy Yallourn Pty Ltd, Yallourn. • Yallourn Energy (2001). Mine Rehabilitation Master Plan Yallourn Energy Pty Ltd. • GHD (2015). AGL Loy Yang Loy Yang Mine Rehabilitation Master Plan. GHD Pty Ltd, Melbourne. • GHD (2015). AGL Loy Yang Groundwater Modelling Long Term Mine Plan. GHD Pty Ltd, Melbourne • GHD (2006). Department of Primary Industries LV2100 Coal Project Recommendations Preliminary Action Plans & Implementation Strategy. GHD Pty Ltd, Melbourne. • Indigenous Design Land Management (2009). Report for True Energy Yallourn Offset Plan - Yallourn Coal Field Development Maryvale Field Eastern Extension. Indigenous Design Land Management Pty, Ltd, Research. • GHD (2013). Department of State Development and Business Innovation (2013) Ground Water Impacts and Management for Lignite Mining In the Latrobe Valley DRAFT. GHD Pty Ltd, Melbourne.
For options considered sustainable, practicable and effective prepare a high level work program (including indicative timeframes and costs)	<p>In accordance with our agreed proposal, Jacobs' identified and assessed 18 preliminary mine rehabilitation options (refer section 7).</p> <p>Each preliminary option has been assessed in terms of fire risk, landform stability risk, environmental degradation risk (groundwater, surface water, biodiversity), extent of variation from existing work plan, impact on future beneficial land use and timing (whether option represented a short, medium or long term option).</p> <p>In accordance with our agreed proposal, Jacobs' identified two potential viable mine rehabilitation options for each mine. They were:</p> <ul style="list-style-type: none"> • Partial Backfill Below the Water Table Mine Rehabilitation Option; and • Pit Lake Mine Rehabilitation Option. <p>Each potential viable option has been further assessed in terms of a high-level work program. In accordance with the agreed scope this included a:</p> <ul style="list-style-type: none"> • risk assessment using a failure, mode and effects analysis

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Scope of work	Report Deliverable
	<p>technique;</p> <ul style="list-style-type: none"> • assessment of the extent of difference between the potential viable option and the mine operator’s current work plan; • cost estimate consistent with an order of magnitude/concept class 5 cost estimate; and • high-level timeframe identifying short, medium and long term actions and the start and completion of the implementation of risk controls. <p>This information has been used to directly answer the following Terms of Reference questions:</p> <ul style="list-style-type: none"> • <i>Potential for the option decrease the risk of fire and the associated costs;</i> <ul style="list-style-type: none"> ○ Yallourn refer to 8.4.1.1 (Pit Lake) and 8.4.2.1 (Partial Backfill Below the Water Table), ○ Hazelwood refer to 8.5.1.1 (Pit Lake) and 8.5.2.1 (Partial Backfill Below the Water Table), ○ Loy Yang refer to 8.6.1.1 (Pit Lake) and 8.6.2.1 (Partial Backfill Below the Water Table), • <i>Whether and to what extent would the option affect the stability of the mine;</i> <ul style="list-style-type: none"> ○ Yallourn refer to 8.4.1.1 (Pit Lake) and 8.4.2.1 (Partial Backfill Below the Water Table), ○ Hazelwood refer to 8.5.1.1 (Pit Lake) and 8.5.2.1 (Partial Backfill Below the Water Table), ○ Loy Yang refer to 8.6.1.1 (Pit Lake) and 8.6.2.1 (Partial Backfill Below the Water Table), • <i>Whether and to what extent would the option would create a stable landform and minimise environmental degradation (groundwater, surface water and biodiversity);</i> <ul style="list-style-type: none"> ○ Yallourn refer to 8.4.1.1 (Pit Lake) and 8.4.2.1 (Partial Backfill Below the Water Table), ○ Hazelwood refer to 8.5.1.1 (Pit Lake) and 8.5.2.1 (Partial Backfill Below the Water Table), ○ Loy Yang refer to 8.6.1.1 (Pit Lake) and 8.6.2.1 (Partial Backfill Below the Water Table), ○ Loy Yang, Yallourn and Hazelwood (biodiversity) refer section 8.3, • <i>Whether and to what extent would the option ensure progressive rehabilitation under the MRSDA;</i> <ul style="list-style-type: none"> ○ Yallourn refer to section 8.4.1.2 (Pit Lake landform) and

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Scope of work	Report Deliverable
	<p>section 8.4.2.2 (Partial Backfill Below the Water Table),</p> <ul style="list-style-type: none"> ○ Hazelwood refer to section 8.5.1.2 (Pit Lake landform) and section 8.5.2.2 (Partial Backfill Below the Water Table), ○ Loy Yang refer to section 8.6.1.2 (Pit Lake landform) and section 8.6.2.2 (Partial Backfill Below the Water Table), • <i>Estimated timeframe for implementing the option;</i> <ul style="list-style-type: none"> ○ For each potential viable option Jacobs have estimated that the option would be implemented during progressive rehabilitation (now until closure), take 15 years to rehabilitated the mine void and achieve final landform “several decades” after closure (into the long term). For each timeframe and analysis for each mine refer to 8.3.2 • <i>The options viability and limitations and its estimated costs;</i> <ul style="list-style-type: none"> ○ Estimated costs for each potential viable option for each mine has been provided. Cost estimates are only for the purpose of comparing the potential viable options. Costs estimated are not final closure costs for each mine, <ul style="list-style-type: none"> ▪ Yallourn – refer section 8.4.1.3 (Pit Lake) and section 8.4.2.3 (Partial Backfill Below the Water Table), ▪ Hazelwood – refer section 8.5.1.3 (Pit Lake) and section 8.5.2.3 (Partial Backfill Below the Water Table), ▪ Loy Yang – refer section 8.6.1.3 (Pit Lake) and section 8.6.2.3 (Partial Backfill Below the Water table), ○ A summary of the viability of each option is provided in regards to risks, costs and schedule, <ul style="list-style-type: none"> ▪ Yallourn – refer to 8.4.3 ▪ Hazelwood – refer to 8.5.3 ▪ Loy Yang – refer to 8.6.3 • <i>The options impact on the current rehabilitation plan;</i> <ul style="list-style-type: none"> ○ Each option has been assessed in terms of risk controls identified by the study for the option that Jacobs’ believe are presently not contained in the mine operator’s approved rehabilitation plan, <ul style="list-style-type: none"> ▪ Yallourn – refer section 8.4.1.4 (Pit Lake) and 8.4.2.4 (Partial Backfill Below the Water Table) ▪ Hazelwood – refer section 8.5.1.5 (Pit Lake) and 8.5.2.5 (Partial Backfill Below the Water Table)



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Scope of work	Report Deliverable
	<ul style="list-style-type: none"> ▪ Loy Yang – refer section 8.6.1.5 (Pit Lake) and 8.6.2.5 (Partial Backfill Below the Water Table) • <i>Whether and to what extent would the impact future beneficial land of the area;</i> <ul style="list-style-type: none"> ○ Refer to section 8.3.3. which provides a discussion of the type of land uses that could be supported by potential viable options, ○ Refer to section 7.5 which provides a discussion of the type of land uses that could be supported by preliminary options currently unviable.
Produce a starting regional long term mine rehabilitation vision and set of desired outcomes	This has been completed. Please refer to section 4.
Participate in a deliberative forum involving technical specialists	<p>Greg Hoxley, Darren Murphy and Phil Burn attended 1.5 day (Andrew Tingay attended 0.5 day) deliberative forum on 27th and 28th October 2015. This workshop was attended by technical specialists from all three mine operators and the Technical Review Group. The renowned mine closure expert, Dr Friedrich von Bismarck also attended.</p> <p>In preparing for this we considered a number of documents received via the Inquiry from the mine operators.</p>
Produce a public report	<p>The report has been reviewed. It is longer than anticipated due to the amount of information needing to be provided about the different preliminary and potential viable mine rehabilitation options (the body is 15 pages longer than originally anticipated).</p> <p>To counter this, the Executive Summary is longer than normal (13 pages) and each section of the report contains an overview of the section's key findings.</p> <p>The public report includes a section summarising the important issues and challenges confronting the long term mine rehabilitation. This was out of scope but we believe it is important that three or four pages be dedicated to the substantial issues in one section so that all stakeholders can get an appreciation of the challenges and opportunities.</p>

Public Inquiry

We understand that Jacobs' team members (notably Darren Murphy) are likely to be called as an expert witness for the public inquiry in early December. At your earliest convenience we would seek the Inquiry's guidance regarding whether Jacobs' will need to appear and the time that would be required.

Jacobs' will need to negotiate a fee variation with the Inquiry for this.

Issuing of Public Report



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We understand that the report will be made publicly available during or after the public inquiry. The report has been prepared in a manner that has tried to minimise reference to confidential mine operator data and information. For a technical report Jacobs has also sought to ensure that its key findings can be easily understood by the public. Some confidential data and information has been captured in the appendices and most notably in the cost plans.

This has been a deliberate strategy as we believe the report can published in full and there may be need to withhold some of the appendices (most notably the cost estimation appendices).

Destruction/handing back of confidential data and information to the Inquiry

Could you please advise when Jacobs' will be required to hand back to the Inquiry the confidential data and information received. Jacobs' preference would be to destroy all data provided and to provide a letter of assurance to the Inquiry that this has been undertaken. As per of our agreed proposal we have maintained a register of data and information received and are therefore able to check that all data and information has been deleted from the restricted file storage.

Please don't hesitate to contact myself or Project Manager Darren Murphy (0428 648 819) if you have any queries regarding the final report.

Yours sincerely

A handwritten signature in black ink, appearing to read "Andrew Tingay".

Andrew Tingay

Study Director

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