

24 October 2016

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Eagleton Rock Syndicate Pty Ltd  
PO Box 898  
Newcastle 2300

**Attention: Murray Towndrow**

Dear Murray

## **Groundwater Assessment Peer Review**

SLR Consulting Australia Pty Ltd (SLR) were commissioned by Eagleton Rock Syndicate Pty Ltd (Eagleton) in January 2016 to conduct an independent peer review of the Eagleton Quarry Hydrogeological Investigation Report prepared by URS (11 February 2014, URS). The independent peer review was required to meet the Secretary's Environmental Assessment Requirements (SEARs) of the NSW Department of Primary Industries (DPI). DPI Water requested that the SEARs, dated 30/10/2015, include "*Full technical details and data of all surface and groundwater modelling, and an independent peer review.*" SLR provided a peer review report (SLR, 9 February 2016) in which recommendations for further work were highlighted to meet the SEARs.

Eagleton engaged Umwelt to revise the groundwater impact assessment and associated modelling to meet the SEARs, specifically addressing the comments provided by SLR (9 February 2016). SLR has worked in consultation with Eagleton, and by extension Umwelt, on the revised impact assessment. Eagleton provided SLR with a final Water Assessment Report prepared by Umwelt (Umwelt, October 2016) (report) on the 13<sup>th</sup> of October 2016, which includes a groundwater impact assessment and the associated modelling report as an appendix.

This letter report herein is a documentation of the peer review of the Umwelt 2016 report, as it pertains to the groundwater impact assessment and the assessment's fit for purpose to meet the SEARs.

The primary objective of the peer review is to evaluate the assessment's fit for purpose to meet the SEARs. A summary of the key SEARs, as they pertain to a groundwater assessment, is provided in **Table 1**, along with comments based upon the peer review regarding the adequacy of the assessment to meet the requirements.

**Table 1 Summary of SEARs for groundwater impact assessment**

| SEAR                                                                                                                                                                                                                                                                                                        | Peer Review Comments                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Annual volumes of groundwater proposed to be taken by the activity from each groundwater source.                                                                                                                                                                                                            | The report provides an estimate of between 3.0 and 7.7 ML/year of water would be pumped from the quarry.                                                                                                                                                                                                                 |
| Assessment of any volumetric water licensing requirements (including those for ongoing water take following completion of the project).                                                                                                                                                                     | Section 4.3 (Umwelt, 2016) provides a discussion and assessment of water licensing and requirements under the Water Sharing Plan for the Sydney Basin – North Coast Fractured and Porous Rock Groundwater Sources. The discussion is adequate and provides a recommendation for the acquisition of appropriate licenses. |
| A detailed assessment against the NSW Aquifer Interference Policy (2012) (NSW AIP) using DPI Water's assessment framework.                                                                                                                                                                                  | Section 4.4 (Umwelt, 2016) provides a summary of the groundwater impact assessment as it pertains to the NSW AIP. The summary is well presented and specifically addressed each point. The reader is referred to other sections for further details on how the conclusions are reached.                                  |
| Assessment of impacts on surface and ground water sources (both water quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian land, and groundwater dependent ecosystems, and measures proposed to reduce and mitigate these impacts. | The Umwelt 2016 report addresses all relevant matters listed in its impact assessment. Some comments are provided after <b>Table 1</b> regarding some reporting comments found during the peer review.                                                                                                                   |
| Full technical details and data of all surface and groundwater modelling, and an independent peer review.                                                                                                                                                                                                   | Umwelt 2016 Appendix 1a provides a summary of the groundwater modelling. Please refer to comments after <b>Table 1</b> for peer review comments.                                                                                                                                                                         |
| Proposed surface and groundwater monitoring activities and methodologies.                                                                                                                                                                                                                                   | Section 7.3 (Umwelt, 2016) provides an overview of the proposed groundwater monitoring. Overall it is adequate. However the report could benefit from a description on how the proposed monitoring network addresses\monitors for the impacts predicted.                                                                 |
| Details of the final landform of the site, including final void management (where relevant) and rehabilitation measures.                                                                                                                                                                                    | Section 3.3.5 and Section 6.9 (Umwelt, 2016) address final landform including final void management and rehabilitation measures adequately.                                                                                                                                                                              |
| Assessment of any potential cumulative impacts on water resources, and any proposed options to manage the cumulative impacts.                                                                                                                                                                               | Section 6.11 and Appendix 1a address cumulative impacts adequately.                                                                                                                                                                                                                                                      |

Overall, the report addresses the SEARs for groundwater impact assessment. The information is presented in a reasonable manner for the reader to follow the assessment criteria and conclusions drawn from the assessment. However, a review of the report has resulted in the following comments:

- Table 4.1 – the response column that directs the reader to the sections where the issues are addressed should be updated.
- Section 4.2, pg 58, second paragraph, first sentence – The first sentence refers the reader to Figure 3 of Appendix 1a. I believe this should be Figure 4 of Appendix 1a.

- Section 4.2 and Section 6.1 – with each section it stated that modelling predicts zero drawdown outside of the Site boundary. This is not consistent with the modelling results presented in Appendix 1a, which specifically states there is drawdown outside the Project area. If there is a difference between the Site boundary and Project area this distinction should be made more clear to the reader.
- Section 4.2, last sentence – there appears to be a font size issue in text.
- Section 6.1.1 - The first sentence refers the reader to Figure 3 of Appendix 1a. I believe this should be Figure 4 of Appendix 1a.
- Section 6.1.2, pg 79 - The first sentence refers the reader to Figure 5 of Appendix 1a. I believe this should be Figure 7 of Appendix 1a.
- Section 6.1.2, pg 79, second paragraph - The first sentence refers the reader to Figure 16 of Appendix 1a. I believe this should be Figure 22 of Appendix 1a.
- Section 6.1 – this section would benefit from a summary of the impact assessment according to the NSW AIP previously assessed in section 4.4.
- Appendix 1a, Figures 15 and 16 – The figures and supporting text refer to groundwater head. Head is a measurement with reference to specific datum, typically a measurement of head pressure above a datum. It is assumed that the values presented are actually water levels in m AHD but this is not clear.

Appendix 1a provides sufficient detail on the conceptualisation, model setup, calibration, sensitivity analyses and predictive simulations for the reader to have a sufficient understanding the methodology used and the modelling results. The methods used are appropriate for the level of risk associated with the project as well as the hydrogeologic conceptualisation of the site and surrounding area.

While the peer review has provided some comments herein which would assist with the reporting of the groundwater impact assessment (above), the overall conclusion of the peer review is that the groundwater modelling, and associated impact assessment, is fit for purpose to address the requirements of the SEARs and NSW AIP.

Yours sincerely



BRIAN RASK  
Principal Hydrogeologist

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| Checked/<br>Authorised by: DL |
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## References

SLR. Groundwater Peer Review, prepared for Eagleton Rock Syndicate Pty Ltd. 9 February 2016

URS. Eagleton Quarry Hydrogeological Investigation. Prepared for Castle Quarry Products. 11 February 2014.

Umwelt. Eagleton Hard Rock Quarry: Water Assessment, prepared for Eagleton Rock Syndicate Pty Ltd. October 2016.