

Department of Planning and Environment
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Attention: Kate Masters

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FORMER HYDRO ALUMINIUM KURRI KURRI SMELTER REMEDIATION REVIEW OF HUMAN HEALTH RISK ASSESSMENT DUE TO PROJECT CHANGES

The purpose of this letter is to review the findings of Human Health Risk Assessment: *Former Hydro Aluminium Kurri Kurri Smelter Demolition and Remediation* (Ramboll Environ, 2016) (the HHRA) against the proposed Project changes as detailed in Section 8 of the *Response to Submissions Report: Former Hydro Aluminium Kurri Kurri Smelter Remediation* (Ramboll, 2018) (the RtS).

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PROJECT CHANGES

Section 8 of the RtS provides details on the following proposed changes to the Project as described in the EIS:

- Removal of Stage 2 Demolition from the Project which is the subject of the State Significant Development (SSD) Application SSD 6666.
- Treatment of material to be removed from the Capped Waste Stockpile with gypsum prior to placement within the Containment Cell.
- Omission of the removal of potentially recyclable material from the Capped Waste Stockpile prior to its placement in the Containment Cell.
- Inclusion of activities associated with transportation of leachate collected at the Capped Waste Stockpile and the Containment Cell for treatment at an offsite licensed facility.

SUMMARY OF HHRA FINDINGS

The HHRA was prepared to address the Department of Planning and Environment (NSW DPE) Secretary's Environmental Assessment Requirements (SEARs), as well as the requirements of the Hunter New England Local Health District and SafeWork NSW. The HHRA was undertaken in accordance with Australian recommended guidance for performing human health risk assessments.

On the basis of the available data, the assumptions and the quantitative risk estimates presented in the HHRA, the implementation of human health management measures (and with consideration of the identified uncertainties), it was considered that the potential health risks of the Project were low and acceptable for offsite residential receptors and onsite Works personnel conducting Project activities (excluding Works in the Capped Waste Stockpile area). Potential health risks estimated for Works personnel exposed to groundwater beneath the Capped Waste Stockpile exceeded the acceptable limits indicating potential health risks associated with this activity. Management measures and personal protective equipment were recommended for Works personnel conducting activities associated with the Capped Waste Stockpile.

ASSESSMENT OF HHRA CONCLUSIONS DUE TO PROJECT CHANGES

Conclusions provided in the 2016 HHRA were based on an understanding of the Project activities that were current at the time the HHRA was prepared. A conceptual site model (CSM) describing the human receptors (onsite Works personnel and offsite residents), sources of chemical exposure and exposure pathways was prepared based on this understanding; and the HHRA conclusions were relevant for activities detailed in the CSM.

Changes to activities associated with the Project, have the potential to result in changes to the CSM and consequently the conclusions regarding human health risk. Therefore, Ramboll assessed whether conclusions provided in the 2016 HHRA still apply due to the proposed changes to the Project. This assessment is provided in **Table 1**.

Table 1: Assessment of HHRA Conclusions Due to Project Changes

Proposed Project Changes	Assessment of HHRA Conclusions
<p>Removal of Stage 2 Demolition from the Project which is the subject of the State Significant Development (SSD) Application SSD 6666.</p>	<p>Stage 2 Demolition was the subject of a separate Development Application which was approved by Cessnock City Council on 8 May 2018. While it no longer forms part of the Project (remaining as part of SSD 6666), it is likely to occur concurrently with the Project and therefore it remains part of the activities considered HHRA conceptual site model.</p> <p>Therefore, conclusions presented in the HHRA still apply with the proposed Project change. No change in human health risks from the HHRA.</p>
<p>Treatment of material removed from the Capped Waste Stockpile with gypsum prior to placement within the Containment Cell.</p>	<p>The gypsum to be used for the Project is a recycled product. Gypsum is considered to have low toxicity and is non-genotoxic; however, it does have the potential to cause irritation through inhalation, ingestion, and eye and skin contact. Works personnel involved in handling of the gypsum would be required to wear the applicable personal protective equipment to prevent exposure via inhalation, ingestion and skin contact. <u>Therefore, there is no complete source-pathway-receptor</u></p>

Proposed Project Changes	Assessment of HHRA Conclusions
<p>Omission of the removal of potentially recyclable material from the Capped Waste Stockpile prior to its placement in the Containment Cell</p>	<p>linkage for this activity and the HHRA conclusions do not change for Works personnel due to this proposed Project change.</p> <p>The additional task of adding gypsum to the Capped Waste Stockpile material would result in additional truck movements to deliver gypsum to the site (and across the site) over an estimated five-month period. The Air Quality Impact Assessment review undertaken as part of the RtS (the AQIA review) considered the additional contribution to air emissions and dust generation due to these additional truck movements, and concluded that there is "<i>no change</i>" or "<i>negligible change</i>" to the air quality impacts. Therefore, the HHRA conclusions regarding low and acceptable health risks to offsite receptors due to inhalation of dust/air emissions still apply with the proposed Project change. No change in human health risks from the HHRA.</p> <p>Reduced handling of the Capped Waste Stockpile material would reduce the potential for dust generation from the Capped Waste Stockpile, and direct Worker exposure to the material. Therefore, the potential health risks associated with activities in the Capped Waste Stockpile would reduce.</p> <p>The HHRA conclusions of 'potential health risk' still apply for Works personnel involved in activities associated with the Capped Waste Stockpile due to the elevated fluoride and cyanide chemical concentrations in groundwater. These potential health risks would be managed via a number of mitigation measures to be developed and implemented as part of a Work Health and Safety Management Plan. No change in human health risks from the HHRA.</p>
<p>The transportation of leachate collected at the Capped Waste Stockpile and the Containment Cell for treatment at an offsite licensed facility.</p>	<p>Offsite treatment of the leachate would remove the need for operation of an onsite leachate treatment plant, thus eliminating any emissions and onsite Worker exposure to leachate in an onsite treatment plant. Personnel at the offsite treatment facility would be expected to comply with established worker health and safety protocols to eliminate exposure to liquid waste. Ramboll contacted a waste disposal contractor (ToxFree) to get an understanding of the health & safety protocols likely to be implemented to prevent direct contact with the leachate. It is our understanding that waste contractors would comply with any onsite established protocols that will also be implemented at the offsite treatment facility. Furthermore, the leachate disposal truck would likely be equipped with an emergency stop valve should the collection hose become unattached for any reason.</p> <p>In the event that an onsite leachate treatment plant is constructed, its design and operational procedures would incorporate the worker safety controls that are outlined in Section 10 (Mitigation Measures) of the HHRA to prevent direct contact and incidental ingestion of the leachate.</p> <p>Therefore, the HHRA conclusions for Worker exposure to leachate generated by the Capped Waste Stockpile still apply with the proposed Project change. No change in human health risks from the HHRA.</p>

Proposed Project Changes	Assessment of HHRA Conclusions
	<p>The transportation of leachate to an offsite treatment facility (understood to be located in NSW) would result in additional truck movements over the duration of the Project (estimated to be eight truck movements per week for 18 months). The AQIA review considered the additional contribution to air emissions and dust generation due to these additional truck movements, and concluded that there is "<i>negligible change</i>" to the air quality impacts. Therefore, the HHRA conclusions regarding low and acceptable health risks to offsite receptors due to inhalation of dust/air emissions still apply with the proposed Project change. No change in human health risks from the HHRA.</p>

ADDITIONAL HUMAN HEALTH RISK MANAGEMENT MEASURES

Implementation of the management measures described in the HHRA and presented in Section 11.4 of the EIS, as well as the measures and procedures described in **Section 8** and **Table 9-1** of the RtS for the Project changes, would mitigate the potential human health risks associated with the Project changes.

Effective communication strategies would be implemented so that the offsite licensed leachate treatment facility is aware of:

- The potential health risks associated with exposure to the fluoride and cyanide in the liquid waste
- The potential concentrations in the leachate
- The personal protective equipment recommended to prevent direct contact and incidental ingestion of the leachate

CONCLUSION

The HHRA concluded that the potential health risks of the Project were low and acceptable for onsite workers and offsite residents. None of the Project changes described in **Section 8** of the RtS would result in an increased human health risk.

Yours sincerely



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