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ENVIRONMENT
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Peer Review of Kalgoorlie Rare Earth Processing Facility – Air Quality Impact Assessment prepared by Environmental Technologies and Analytics dated July 2020

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Introduction

I am the Air Quality Lead for Australia and New Zealand at Ramboll Australia Pty Ltd (Ramboll). I have over 15 years of experience in air quality assessments, dispersion modelling, emissions estimation and meteorology. I have extensive experience in the assessment of industrial facilities, and it is in this context that I have carried out my review of the air quality assessment (AQA) for Lynas Corporation Ltd (Lynas) proposed Kalgoorlie Rare Earth Processing Facility. The assessment was completed by Environmental Technologies and Analytics Pty Ltd (ETA) and submitted in July 2020 for peer review. I can confirm that I am independent of the assessment process and have not been involved in any dispersion modelling, data analysis or reporting except in a peer review capacity.

This peer review provides comments on the soundness, veracity, and representativeness of the assessment performed and conclusions reached based on the information presented in the assessment report noted above. The review focuses on investigating whether there are matters of potentially material significance, rather than seeking to explore potential minor improvements.

Specifically, this includes discussion of the following:

- The air quality impact assessment criteria;
- Assumed background levels for the project;
- Meteorological data and methodology, including the selection of a representative year;
- Appropriateness of the determination of sensitive receptors;
- Emissions estimation calculations; and
- Modelling results and conclusions.

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Limitations

This peer review has been prepared for KASA Consulting (KASA) in accordance with the scope of work as outlined in our proposal to KASA dated 16 July 2020 and in accordance with our understanding and interpretation of current regulatory standards.

These review works have been based solely on the subject documents provided to Ramboll Australia Pty Ltd (Ramboll). The conclusions presented in this report represent Ramboll's professional judgement based on information made available during the course of this assignment and are true and correct to the best of our knowledge as at the date of the assessment.

It should be noted that this review has been undertaken based on an assessment of impacts to ambient air quality only and has not included an assessment of radiological impacts. The radiological impacts have been assessed by Lynas in the "WA RE Processing Western Australia – Radiological Impact Assessment" (2020) which has not been reviewed as part of this peer review process.

This report has been prepared based on a desktop review of the subject documents and does not represent a complete basis of preparation for expert witness testimony. This report does not purport to give legal advice. This advice can only be given by qualified legal advisors.

Except where expressly stated, Ramboll did not attempt to verify the accuracy, validity or comprehensiveness of any information supplied to Ramboll for its report. While Ramboll has no reason to doubt the accuracy of the information provided to it, the report is complete and accurate only to the extent that the information provided to Ramboll was itself complete and accurate. Ramboll acts in a professional manner and exercises all reasonable skill and care in the provision of its professional services. We are under no obligation in any circumstance to update this report, in either oral or written form, for events occurring after the report has been issued in final form.

The reports are commissioned by and prepared for the exclusive use of KASA. They are subject to and issued in accordance with the agreement between KASA and Ramboll, who are not responsible for any liability and accept no responsibility whatsoever arising from the misapplication or misinterpretation by third parties of the contents of its reports. This report may not be relied upon by any other person or entity without Ramboll's express written permission.

The findings in this report have been formed on the above basis.

Project Summary

Lynas proposes to construct a Rare Earth Processing Facility in Kalgoorlie, Western Australia. The facility will recover rare earths sourced from the concentrate from the existing Mt Weld mining and concentrating facility in Western Australia. The Rare Earth Processing Facility will produce a solid Rare Earth carbonate via a cracking and leaching process (CIL). The Rare Earths carbonate will be packaged and transported to the port at Fremantle for export to the Lynas Malaysia plant where the material will be further processed.

The proposed project comprises both point and fugitive sources of emissions to the atmosphere which were assessed as to their potential to impact the receiving environment, and nearby sensitive receptors. Air dispersion modelling of the significant sources for a number of scenarios was undertaken to assess the potential impact to ambient air quality associated with these sources both in isolation and cumulatively with existing sources of emissions in the region.

Air Quality Impact Assessment Criteria
Relevant and conservative criteria have been selected for the likely pollutants and have been applied appropriately. The impact assessment criteria specified in the AQA are based on the protection of human health and amenity impacts, consistent with the guidelines for air quality published by the Department of Water and Environmental Regulation (DWER) 2019 Draft Air Emissions Guideline.

Existing Environment and Background Values
The characterisation of the existing environment was appropriate and thorough. Background concentrations were derived from ambient air quality monitoring undertaken in 2018 from the DWER monitoring network in the Kalgoorlie region. The use of the monitored maximum and 6th highest concentrations as representative of background concentrations for shorter term averages is considered conservative and would likely result in an over-estimation of predicted cumulative concentrations.

Fourteen years of meteorological monitoring data were analysed from 2004 to 2018 in order to characterise the meteorology of the region. The analysis of the data to determine a representative year for inclusion in the air dispersion modelling and the selection of 2018 as reasonably representative of the range of conditions experienced in the Kalgoorlie region was appropriate.

Emissions Estimation
The emission rates used in the point source modelling were provided by Lynas. Data was collected from several sources including stack testing results from the Malaysia operation and design specification for the emission control equipment. Ramboll did not attempt to verify the accuracy, validity or comprehensiveness of the data provided by Lynas, however Ramboll has no reason to doubt the accuracy of the information provided.

Meteorological and Dispersion Modelling
The CALMET/CALPUFF modelling suite is an appropriate model for this assessment. The meteorological model settings were summarised and are confirmed as appropriate for the chosen model. Predictions were made across the modelling grid using the CALPUFF dispersion model. Results were presented as contour plots and also specific values for discrete sensitive receptors. The modelling configurations and methodologies outlined in the report and provided to Ramboll for review were considered appropriate and acceptable.

Assessment Results
In terms of predicted air quality impacts, the model results do not predict exceedances of the current applicable assessment criteria under normal operating conditions. The modelling predicted offsite exceedances of the proposed variations to the criteria for 1-hour average SO_2 and NO_2 when considered cumulatively with background concentrations for the emergency-case scenario, however this assumes that the worst case predicted concentrations will occur at the same time as worst case monitored concentrations.

Generally, the predictions presented in this report incorporate a level of conservatism due to worst case assumptions and the inherent conservative nature of the dispersion modelling approach adopted.

Review Conclusions
It is my professional opinion that the air quality assessment carried out by ETA is consistent with the necessary requirements for a project of this nature. The methodology is sound and includes an acceptable level of conservatism. The assessment conclusions are consistent with what would be expected for a project such as this.

Yours Sincerely

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