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Ashleigh Zarlenga
Hanson Construction Materials Pty Limited

13 August 2021

ERM Reference: 0457517
Your Reference: Eastern Creek Resource Recovery Facility (RRF) Air Quality Assessment

Dear Ashleigh

**Subject: Eastern Creek Resource Recovery Facility (RRF) Air Quality Assessment**

## 1. INTRODUCTION

ERM Australia Pacific Pty Ltd (ERM) were engaged by Hanson Construction Materials Pty Ltd (Hanson) to prepare an Air Quality and Greenhouse Gas Assessment for the proposed construction and operation of a Resource Recovery Facility (RRF) located at Eastern Creek, NSW. This air quality assessment was finalised and provided to Hanson in January 2021.

Since the submission of the report, Hanson have received comments on the Air Quality and Greenhouse Gas Assessment. This letter addresses issues and concerns raised in the submissions process. Each section below sets out a summary of the issue and the response.

## 2. RESPONSES TO COMMENTS

### 2.1 Dust suppression within the shed

*Issue:*

The applicant proposes that all waste storage and processing will occur within a shed. The environment within the shed will likely get very dusty given the large amount of macro- and milli/micro crushing being undertaken, and mitigation measures will need to be put in place to minimise dust exposure to workers and local business environs. Section 5.12.2 states *"An average (across the year) of approximately 16.6 kL/day of water will be required during operation of the resource recovery facility. This total amount is dominated by crushers and stockpiles dust suppression (16 kL/day) …"*

The EPA requires more information on how dust suppression within the shed will occur. Additionally, the EPA requests that the applicant confirm operational controls to minimise and prevent dust emissions from the shed (i.e. whether the shed will be closed at all times – with the exception of egress and ingress of trucks).

*Response:*

Hanson are committed to applying the following mitigation measures within the enclosed facility:

- Air pressure control operating at negative pressure;
- Sampling points for dust; and
- Receivables handling/off-loading and truck traffic management procedures.



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The facility will not have fast roller doors but doors will remain closed when trucks are not entering or exiting the facility.

## 2.2 Jacfin Pty Ltd - Silica dust risk

### *Issue:*

The activity for which approval is sought presents a potential risk to human health through the release of crystalline silica dust into the atmosphere. The Application does not address the risks presented by the dispersal of silica dust associated with the Proposal on human health within the Site and on adjoining land.

Jacfin submits that the impacts of the Proposal cannot be properly assessed until a human health risk assessment has been prepared and submitted. In the absence of such assessment, the Department cannot be satisfied of the impacts of the Proposal as required by s4.15(b) of the *Environmental Planning and Assessment Act 1979* (Act).

### *Response:*

Silica ($SiO_2$) is a naturally occurring mineral composed of silicon and oxygen. It exists in crystalline and amorphous forms depending on the structural arrangement of the oxygen and silicon atoms. Only the crystalline forms are known to be fibrogenic (causes the formation of fibres) and only the respirable particles (those which are capable of reaching the gas exchange region of the lungs) are considered in determining health effects of crystalline silica. The three most common types of crystalline silica are quartz, tridymite and cristobalite.

Human exposure to crystalline silica occurs most often during occupational activities that involve the working of materials containing crystalline silica products (e.g. masonry, concrete, sandstone) or use or manufacture of crystalline silica-containing products. Activities that involve cutting, grinding or breaking of these materials can result in the liberation of particles in multiple size ranges. Crystalline silica dust is found everywhere in the environment (i.e. not only in an occupational context) due to natural, industrial and agricultural activities as it comprise 12% of the earth's crust (EPG Resources 2014).

Whilst the long term inhalation of silica dust may lead to the formation of scar tissue in the lungs, which can result in silicosis, this is generally regarded as a work place exposure issue that is associated with long-term exposure to high levels of respirable crystalline silica (RCS).

The World Health Organization's Concise International Chemical Assessment Document on Crystalline Silica, Quartz (CICAD, 2000) states that *"there are no known adverse health effects associated with the non-occupational exposure to quartz"*. In addition, an Australian Government Senate Committee (2005) report identified that there are no reports in the international literature of individuals developing silicosis as a result of exposure to non-occupational levels (i.e. levels outside the work place) of silica dust, and an expert appearing before the committee confirmed the potential for such an occurrence as being very remote. A literature review on the potential impacts to health from exposure to crustal material in Port Hedland, WA, states "exposure to airborne quartz carries the risk of silicosis, but only with prolonged exposure to concentrations greater than 200 µg/m$^3$" (Department of Health, 2007).

In Australia, the occupational exposure standards for respirable crystalline silica are defined by the Safe Work Australia. The national exposure standard for respirable crystalline silica is 100 µg/m$^3$ (Time Weighted Average (TWA)). Although the occupational standard is not applicable to the assessment of the ambient air quality, the risk of silicosis among people living

in areas surrounding activities such as quarrying would therefore be considered minimal provided the concentration of respirable particles at the source was acceptable in terms of occupational safety.

NSW Environment Protection Authority (EPA) has not set any impact assessment criteria for crystalline silica. The Victorian EPA has adopted an ambient assessment criterion for mining and extractive industries of 3 µg/m$^3$ (annual average as $PM_{2.5}$) (EPAV, 2007). This has been derived from the Reference Exposure Level (REL) set by the California EPA Office of Environmental Health Hazard Assessment of 3 µg/m$^3$ (annual average as $PM_4$) (OEHHA, 2005), at or below which "no adverse effects are expected for indefinite exposure".

As presented in the air quality assessment, the maximum annual average $PM_{10}$ concentration due to the Project at the most affected residence is predicted to be 0.1 µg/m$^3$. Given respirable dust ($PM_4$) is only a fraction of $PM_{10}$ and that crystalline silica content would be fraction of $PM_4$ concentrations, any respirable crystalline silica levels would be unlikely to be detectable and significantly below levels that may be of concern.

## 2.3 Environmental health issues - Mitigation measures

### *Issue:*

The Air Quality and Greenhouse Gas Assessment states that *"even with a rigorous Dust Management Plan in place, it is not possible to guarantee that the dust mitigation measures will be effective all the time. There is the risk that receptors in the immediate vicinity of the construction zone might experience some occasional dust soiling impacts".* It should be noted that this may contravene the POEO Act. More information is required as to how the applicant is going to control any dust on-site throughout construction and operational phases to ensure no impact on adjoining uses or result in complaints that council will have to deal with later.

### *Response:*

The air quality assessment has included a construction dust assessment and an operational dust assessment. For the construction dust assessment, there is a comprehensive list of mitigation measures that are 'recommended' and 'desirable'. These will be included as part of the Construction Air Quality Management Plan and/or Dust Management Plan. Applying these mitigation measures would result in a residual effect that would be 'not significant'. It should be noted that construction dust is unlikely to represent a serious ongoing problem. Any effects would be temporary and relatively short-lived, and would only arise during dry weather with high winds blowing towards a receptor, at a time when dust is being generated and mitigation measures are not being fully effective. The likely scale of this would not normally be considered sufficient to change the conclusion that with mitigation the effects will be 'not significant'.

For the operational assessment, the facility is in an enclosed building which represents a significant control factors in terms of operational air quality management. No further mitigation measures have been included within the dispersion modelling, and are not considered necessary for control of environmental impacts.

Yours sincerely,

Jane Barnett
Partner

Russ Francis
Senior Consultant

## 3. REFERENCES

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