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2 March 2018

Attn: Bill McCredie

Jacfin
c/o Allens
Deutsche Bank Place
Corner of Hunter & Phillip Streets
Sydney NSW 2000 Australia

Email: Bill.McCredie@allens.com.au

Re: Peer Review of Response to Submissions - Air Quality, Odour and Health Aspects of the Next Generation Energy from Waste Facility, Eastern Creek

Dear Mr McCredie,

Katestone conducted a peer review of the air quality and health aspects of the Amended Environmental Impact Statement (AEIS) that was prepared for the Next Generation Energy from Waste Facility (EfW), Eastern Creek. In a letter to Allens (dated 10 March 2017), Katestone detailed the findings of the review to inform a submission by Jacfin Pty Limited to the Department of Planning & Environment, regarding the AEIS.

In January 2018, a Response to Submissions on the Amended EIS – Eastern Creek Energy from Waste Proposal was provided by the proponent to the Department of Planning & Environment.

Katestone has conducted a review of the air quality, odour and health aspects of the Response to Submissions (RtS) that was prepared for the Next Generation Energy from Waste Facility (EfW), Eastern Creek. The following documents have been considered:

- Response to Submissions Report SSD6236: Energy From Waste, Eastern Creek
- Appendix N: Air Quality Impact and Greenhouse Gas Assessment
- Appendix Q: Odour Assessment
- Appendix R: Ozone Impact Assessment
- Appendix O: Human Health Risk Assessment.

Key changes to the proposed development and impact assessments, as detailed in the RtS compared to that presented in the AEIS, are as follows:

- Approval is being sought for Stage 1 - 552,500 tonnes of waste per year, not Stage 2
- Five operational scenarios have been assessed, including the addition of a worst-case scenario
- Meteorological file has been amended to address comments raised by the EPA.

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Table 1 provides the issues raised in Katestone's letter to Allens dated 10 March 2017 and commentary on the adequacy of the RtS in addressing those issues. The key outstanding issues that have not been adequately resolved by the RtS are as follows:

- The RtS shows that emissions of the following air pollutants from the EfW Facility would exceed the regulatory limits contained in the *Protection of the Environment Operations (Clean Air) Regulation 2010* during upset conditions:
 - Oxides of nitrogen
 - Carbon monoxide
 - Particulate matter
 - Cadmium
 - Mercury
 - Dioxins and furans (PCDD/F)
 - Total volatile organic compounds (TVOC)
 - Type 1 and 2 substances (aggregate of the following elements or compounds containing one or more of the elements: antimony, arsenic, cadmium, lead, mercury, beryllium, chromium, cobalt manganese, nickel, selenium, tin or vanadium).
- It is an offence under the *Protection of the Environment Operations Act 1997* to exceed the limits specified in the Clean Air Regulation. The Clean Air Regulation does not provide any exemption for upset conditions. Consequently, the RtS indicates that the EfW Facility is likely to be in breach of the Clean Air Regulation for eight regulated pollutants for up to 60 hours per year.
- The processes that the EfW Facility relies upon to ensure homogeneity of the fuel stream and avoid ineligible wastes are unlikely to be completely effective.
- The RtS has not adequately addressed the potential for upset conditions where the boilers cease operation and, as a consequence, air extraction from the Tipping Hall ceases. Under the RtS the Tipping Hall has not changed in size, but the boiler capacity and boiler air flow requirements have halved. It is therefore likely that the Stage 1 boiler air requirements will not be sufficient to keep the Tipping Hall under negative pressure, and, as a consequence, odour emissions from the Tipping Hall may not be adequately controlled. This change in the proposal as detailed in the RtS is significant as it reduces the capacity of the EfW Facility to control odour emissions from the Tipping Hall.
- The RtS states that the EfW Facility will rely upon sealing of the Tipping Hall building to control odour emissions during conditions when negative air pressure is lost. It is Katestone's experience that industrial buildings are not constructed in such a way that would allow them to be sealed to the extent that fugitive odour emissions could be effectively avoided.
- The RtS odour assessment (Appendix Q) has not addressed the issued that the AERMOD dispersion model is not suitable for the high frequency of light wind conditions that were shown in the EIS and AEIS to be a feature of the subject site.
- The RtS and its Appendices N and Q have not provided tabulated predictions of air pollutants and odour at discrete locations on the Jacfin Land. Rather contour plots have been provided to infer predicted concentrations.
- Appendix R of the RtS indicates that the emission rate of oxides of nitrogen was likely to have been underestimated by the AEIS. The emission rate of oxides of nitrogen contained in Appendix R of the RtS

is inconsistent and significantly lower than indicated by Appendix N of the RtS. The latter appears to be the correct estimate. On that basis, Appendix R of the RtS has underestimated the potential impact of normal operations of the EfW Facility on ozone levels in the Sydney airshed.

- As with the AEIS, Appendix R of the RtS has not considered the potential impact of upset emissions of oxides of nitrogen on ozone levels in the Sydney airshed.

Please contact me if you would like to discuss.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'S. Welchman', with a long horizontal flourish extending to the right.

Simon Welchman

Table 1 Suitability of RtS regarding issues raised in relation to air quality and health aspects

| # | Issue raised in review of AEIS | Review of the RtS |
|---|--|---|
| 1 | <p>The proposed EfW will have the potential to generate many toxic and odorous compounds including: heavy metals, volatile organic compounds, dioxins and furans and polycyclic aromatic hydrocarbons (PAHs). Many of these compounds are known human carcinogens. Appendices K, L, M and N have not demonstrated with sufficient certainty that the EfW Facility can be operated without causing adverse impacts on human health and amenity. It is critical that any such facility is subjected to rigorous management of waste fuel quality and emissions control to ensure that the pollutants that are generated are captured and, where possible, to avoid generation of air pollutants.</p> | <p>See comments below.</p> |
| 2 | <p>There is a significant degree of uncertainty associated with the potential impacts of the EfW Facility. The AEIS states that there will be up to 60 hours of upset conditions per year with a maximum duration of 4 hours per upset. These upset conditions have not been appropriately accounted for in the air quality and human health risk assessment (HHRA). As a consequence, the air quality assessment and HHRA are likely to have underestimated the potential health risk associated with the EfW Facility.</p> | <p>Addressed by the RtS</p> <p>The HHRA contained in the RtS has accounted for the likelihood of up to 60 hours per year of upset conditions in its calculation of the chronic health risk (Appendix O, Section 8.8). Weighted average concentrations and deposition rates are presented in Appendix O, Table 35. For all exposure pathways, the HHRA found the health risks to be low and acceptable.</p> |
| 3 | <p>In relation to the Clean Air Regulation, emissions from the EfW Facility would exceed the standards of concentration for solid particles, oxides of nitrogen (NO_x) and carbon monoxide (CO) during upset conditions. In the case of NO_x, emissions exceed the standard of concentration by more than a factor of three. It is an offence under the <i>Protection of the Environment Operations Act 1997</i> to exceed the limits specified in the Clean Air Regulation.</p> | <p>Not addressed by the RtS</p> <p>Section 6.12.3 of the RtS states that: "... <i>The flue gas treatment is designed to meet the in-stack concentration limits for waste incineration set by the EU IED, which are generally more stringent than those prescribed within the POEO (Clean Air) Regulations. As such, the air toxins produced by the facility are within acceptable levels under the IED, NSW Energy from Waste Policy, and the POEO (Clean Air) Regulations.</i>"</p> |

| # | Issue raised in review of AEIS | Review of the RtS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | <p>However, this statement is inconsistent with Table 6-6 of Appendix N of the RtS. Table 6-6 is partially reproduced below with air pollutant concentrations converted to 7%¹ oxygen for direct comparison with the limits specified in the Clean Air Regulation. Appendix N of the RtS uses 11% oxygen, which does not allow for direct comparison with the Clean Air Regulation. The table shows that, during upset conditions, concentrations of a number of air pollutants are expected to exceed the Clean Air Regulation limits. It is an offence under the <i>Protection of the Environment Operations Act 1997</i> to exceed the limits specified in the Clean Air Regulation.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th rowspan="2">Pollutant</th> <th colspan="2">RtS Upset concentration Appendix N, Table 6-6 (mg/Nm³)</th> <th>Clean Air Regulation limit (mg/Nm³)</th> <th rowspan="2">Complies (Y/N)</th> </tr> <tr> <th>@11% O₂</th> <th>Converted to 7% O₂</th> <th>@7% O₂</th> </tr> </thead> <tbody> <tr> <td>NO_x as NO₂</td> <td>400</td> <td>560</td> <td>500</td> <td>N</td> </tr> <tr> <td>SO₂</td> <td>500</td> <td>700</td> <td>-</td> <td>-</td> </tr> <tr> <td>CO</td> <td>500</td> <td>700</td> <td>125</td> <td>N</td> </tr> <tr> <td>PM₁₀</td> <td>100</td> <td>140</td> <td>50^(b)</td> <td>N</td> </tr> <tr> <td>PM_{2.5}</td> <td>100</td> <td>140</td> <td>50^(b)</td> <td>N</td> </tr> <tr> <td>HCl</td> <td>100</td> <td>140</td> <td>-</td> <td>-</td> </tr> <tr> <td>HF</td> <td>5</td> <td>7</td> <td>50</td> <td>Y</td> </tr> <tr> <td>Cd^(a)</td> <td>0.45</td> <td>0.63</td> <td>0.2</td> <td>N</td> </tr> <tr> <td>Hg^(a)</td> <td>0.5</td> <td>0.7</td> <td>0.2</td> <td>N</td> </tr> <tr> <td>PCDD/F (ng/m³)</td> <td>1</td> <td>1.4</td> <td>0.1</td> <td>N</td> </tr> <tr> <td>Benzene</td> <td>0.15</td> <td>0.21</td> <td>-</td> <td>-</td> </tr> <tr> <td>Toluene</td> <td>0.3</td> <td>0.42</td> <td>-</td> <td>-</td> </tr> </tbody> </table> | | | | Pollutant | RtS Upset concentration Appendix N, Table 6-6 (mg/Nm ³) | | Clean Air Regulation limit (mg/Nm ³) | Complies (Y/N) | @11% O ₂ | Converted to 7% O ₂ | @7% O ₂ | NO _x as NO ₂ | 400 | 560 | 500 | N | SO ₂ | 500 | 700 | - | - | CO | 500 | 700 | 125 | N | PM ₁₀ | 100 | 140 | 50 ^(b) | N | PM _{2.5} | 100 | 140 | 50 ^(b) | N | HCl | 100 | 140 | - | - | HF | 5 | 7 | 50 | Y | Cd ^(a) | 0.45 | 0.63 | 0.2 | N | Hg ^(a) | 0.5 | 0.7 | 0.2 | N | PCDD/F (ng/m ³) | 1 | 1.4 | 0.1 | N | Benzene | 0.15 | 0.21 | - | - | Toluene | 0.3 | 0.42 | - | - |
| Pollutant | RtS Upset concentration Appendix N, Table 6-6 (mg/Nm ³) | | Clean Air Regulation limit (mg/Nm ³) | Complies (Y/N) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | @11% O ₂ | Converted to 7% O ₂ | @7% O ₂ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NO _x as NO ₂ | 400 | 560 | 500 | N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SO ₂ | 500 | 700 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CO | 500 | 700 | 125 | N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PM ₁₀ | 100 | 140 | 50 ^(b) | N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PM _{2.5} | 100 | 140 | 50 ^(b) | N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HCl | 100 | 140 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HF | 5 | 7 | 50 | Y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cd ^(a) | 0.45 | 0.63 | 0.2 | N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hg ^(a) | 0.5 | 0.7 | 0.2 | N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PCDD/F (ng/m ³) | 1 | 1.4 | 0.1 | N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | 0.15 | 0.21 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Toluene | 0.3 | 0.42 | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

¹ Section 39 of the *Protection of the Environment Operations (Clean Air) Regulation 2010* details the process for determining whether the regulatory limits have been exceeded. Section 39 requires the concentration emitted by the plant or activity to be expressed by reference to the relevant reference conditions that are contained in Schedule 5, Part 3. The relevant reference conditions for “Any fuel burning equipment using solid fuel” is “Dry, 273 K, 101.3 kPa, 7% O₂”.

| # | Issue raised in review of AEIS | Review of the RtS | | | | |
|---|--------------------------------|---|---------|--------|----|---|
| | | Xylene | 0.1 | 0.14 | - | - |
| | | NH ₃ | 20 | 28 | - | - |
| | | H ₂ S | 10 | 14 | - | - |
| | | PAHs | 0.005 | 0.007 | - | - |
| | | Dichloro-methane | 0.2 | 0.28 | - | - |
| | | Acetone | 0.2 | 0.28 | - | - |
| | | Trichloro-ethylene | 0.05 | 0.07 | - | - |
| | | Be ¹ | 0.0005 | 0.0007 | - | - |
| | | Ag | 0.0255 | 0.036 | - | - |
| | | Sb ¹ | 0.119 | 0.17 | - | - |
| | | Cr(III) ¹ | 0.15 | 0.21 | - | - |
| | | Cr(VI) ¹ | 2.2E-04 | 0.0003 | - | - |
| | | Pb ¹ | 0.29 | 0.41 | - | - |
| | | Ni ¹ | 0.37 | 0.52 | - | - |
| | | Cu | 0.595 | 0.83 | - | - |
| | | Mn ¹ | 1.348 | 1.89 | - | - |
| | | Phenol | 0.05 | 0.07 | - | - |
| | | Hexane | 0.05 | 0.07 | - | - |
| | | TVOC | 100 | 140 | 40 | N |
| | | Type 1 and 2 ¹ | 3.2 | 4.5 | 1 | N |
| | | Note: (a) The Clean Air Regulation includes limits for mercury (Hg) and cadmium (Cd) individually and for Type 1 and 2 substances in aggregate. Type 1 and 2 substances are: antimony, arsenic, cadmium, lead, mercury, beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements. (b) The Clean Air Regulation includes limits for solid particles rather than PM ₁₀ and PM _{2.5} . The concentration of solid particles will be greater than the concentration of PM ₁₀ . Hence, emissions of solid particles will exceed the Clean Air Regulation limit by a greater margin than is suggested by this table. | | | | |

| # | Issue raised in review of AEIS | Review of the RtS |
|---|---|--|
| | | <p>Whilst the EU IED allows waste incineration plant or waste co-incineration plant to exceed the emission limits for less than 4 hours uninterrupted and for up to a cumulative duration of 60 hours per year, the <i>Protection of the Environment Operations Act 1997</i> and Clean Air Regulation do not allow the limits to be exceeded.</p> <p>The Clean Air Regulation provides exemptions during start-up and shutdown periods, which are defined as:</p> <ul style="list-style-type: none"> • a start-up period—that is, while the plant is being brought up to normal operation following a period of inactivity • a shutdown period—that is, while the plant is being taken out of service from normal operation to inactivity. <p>It is clear from the Sections 2.4 and 2.5 of Appendix N of the RtS that the anticipated upset conditions are distinct from start-up and shutdown conditions.</p> <p>The RtS has not addressed or resolved the issue of non-compliance with the Clean Air Regulation.</p> |
| 4 | <p>Appendix L has not addressed the likely variability in odour emissions from the waste fuel. It has relied upon data from the Genesis Facility, whereas, the EfW Facility will receive a concentrated organic waste stream from the Genesis Facility and wastes from other facilities. Additionally, the odour assessment has assumed that air will be extracted from the Tipping Hall Building at all times and the extracted air passed to the boilers. No evaluation has been made of upset conditions where the boilers cease operation and, therefore, air extraction from the Tipping Hall Building ceases also. In these circumstances, the odour emission rate may increase by a factor of two or more depending on the nature of the wastes in the building.</p> | <p>Not addressed by the RtS</p> <p>Potential variability of odour emissions and odour associated with concentrated organic waste streams have not been directly addressed in the RtS.</p> <p>The odour emission rates presented in the Appendix Q of the RtS are unchanged compared with Appendix L of the AEIS and predicted ground-level concentrations of odour at sensitive receptors are essentially unchanged. This is because Appendix Q of the RtS has adopted the same assumptions to estimate odour emissions from the proposed facility and the Genesis Facility. Those assumptions are:</p> <ul style="list-style-type: none"> • Tipping Hall is kept under negative pressure with the extracted air used as excess air in the boiler. |

| # | Issue raised in review of AEIS | Review of the RtS |
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| | | <ul style="list-style-type: none"> • The air extraction rate will range between 77,560 Nm³/hour and 129,180 Nm³/hour. • Odours will be oxidised in the boilers. • There is potential for relatively small volumes of odorous air to escape during the opening and closing of the roller doors even though it will be under negative pressure. <p>It is notable that the Tipping Hall in the AEIS and in the Stage 1 proposal are the same size, whereas, the Stage 1 proposal has boiler capacity and boiler air flow requirements that are half that of the AEIS. It is therefore likely that the Stage 1 boiler air requirements will not be sufficient to keep the Tipping Hall under negative pressure and, as a consequence, odour emissions may not be adequately controlled.</p> |
| 5 | <p>The tabulated predictions have been presented in Appendices K and M for a small number of sparsely distributed sensitive receptors on the Jacfin Land. The discrete receptor predictions on the Jacfin Land do not necessarily represent the maximum impact of the proposed EfW Facility. Appendix L (the Odour Assessment) has not provided predictions at discrete locations on the Jacfin Land.</p> | <p>Not addressed by the RtS</p> <p>The RtS has not addressed this issue.</p> |
| 6 | <p>There is no clear characterisation of the proposed waste fuels as eligible under the requirements of the NSW Energy from Waste Policy Statement. Some of the wastes that are proposed to be used are ineligible under the NSW Energy from Waste Policy Statement.</p> | <p>Partially addressed by the RtS</p> <p>The RtS states that the EfW Facility will use wastes that are eligible under the NSW EfW Policy. Whilst none of the proposed wastes, on face value, appear to be ineligible, Katestone does not have sufficient expertise in waste characterisation to comment on whether the proposed fuels would be eligible fuels under the NSW EfW Policy due to the proponent's recharacterisation of waste fuels in the RtS.</p> <p>From an operational perspective, the proposed EfW Facility appears to rely upon the following to ensure homogeneity of the fuel stream and avoid ineligible wastes:</p> <ul style="list-style-type: none"> • The quality assurance processes of the suppliers of the waste fuel |

| # | Issue raised in review of AEIS | Review of the RtS |
|---|--------------------------------|--|
| | | <ul style="list-style-type: none"> • An assumption that resource recovery processes necessarily produce homogenous waste streams • Visual inspection of wastes (including with CCTV) • If necessary, wastes will be sampled (although the circumstances when sampling will be conducted are not defined) • Wastes being handled 2-3 times on-site before combustion. <p>These processes are unlikely to be completely effective in ensuring homogeneity and that ineligible wastes are not used as fuel in the EfW Facility.</p> <p>It is relevant to note that sampling and analysis of waste streams was conducted for the RtS. This information has been used in the RtS assuming that the future presence of the EfW Facility does not change the nature and quality of availability of wastes. However, as noted in Appendix J of the RtS (MRA Feedstock Review), whilst "...there will be sufficient amounts of eligible construction and demolition (C&D) and commercial and industrial (C&I) waste to fuel Phase 1 of the proposed facility", "...access to this material will depend on multiple commercial factors and, as such, the Proponent is planning to secure its feedstock via a combination of existing eligible tonnes and additional processing facilities." The MRA Feedstock Review goes on to state "...Additional eligible feedstock is potentially available in the market via the establishment of processing facilities for recycling that will divert waste currently being directly disposed of in landfill. MRA's modelling estimates that these actions have the potential to generate an additional 1,625,000 tonnes of waste in the market that are eligible for energy recovery. Again, the availability of these tonnes is subject to commercial factors." Consequently, supply of sufficient fuel is, in fact, reliant on new feedstocks and processing facilities becoming available. The composition of potential fuel from these sources is not known and it is unclear whether the sampling and analysis of waste streams that has been presented in the RtS is likely to be representative of these new waste streams.</p> |

| # | Issue raised in review of AEIS | Review of the RtS |
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| 7 | <p>The EfW Facility is proposed to operate at 850 degrees as the average chlorine content is intended to be less than 1%. Appendix K states that the chlorine content of less than 1% will be achieved through mixing of the waste using a crane before feeding it to the combustion process. This approach to the quality assurance of waste fuel is insufficient. In particular, it provides no quantitative record of waste fuel quality. As a consequence, there will be no way of detecting a failure to manage chlorine levels to below 1%. Continuous monitoring for dioxins and metals is not feasible, therefore it will generally not be possible to know if a spike in emissions has occurred.</p> | <p>Partially addressed by the RtS</p> <p>The RtS provides compositional data for the waste streams that are proposed to be used as fuel in the EfW Facility. That compositional data indicates a chlorine content of 0.06% to 0.37% averaging 0.23%, which is below the 1% threshold. If this information is reliable, this lessens the need to mix waste streams to achieve the threshold chlorine content.</p> <p>However, this relies on the operator having absolute control and visibility of the content of all waste delivered to the facility. As described at point 6 above, the processes that are proposed to control waste quality are unlikely to be completely effective in ensuring homogeneity and that ineligible wastes are not used as fuel in the EfW Facility. Additionally, as described at point 6 above, the supply of sufficient fuel for the EfW Facility, is in fact, reliant on new feedstocks and processing facilities becoming available. The composition of potential fuel from these sources is not known and it is unclear whether the sampling and analysis of waste streams that has been presented in the RtS is likely to be representative of these new waste streams.</p> |
| 8 | <p>Annual average concentrations of air pollutants have not included the potential effect of upset conditions. Upset conditions may occur for up to 60 hours per year. Appendix K suggests that solid particle emissions may be up to 150 times normal operational emissions during upset conditions. At this rate, annual emissions of solid particles would be more than double as a result of upset conditions. This could result in a doubling of predicted ground-level concentrations of air pollutants.</p> | <p>Partially addressed by the RtS</p> <p>It is noted that there have been refinements to the upset concentrations in the RtS and Appendix N air quality assessment; however, the methodology for assessing annual average concentrations does not include the potential effect of upset conditions. However, potential acute and chronic effects of upset conditions have been addressed in the HHRA (See point 2 above).</p> |
| 9 | <p>Appendix K assumes that other air pollutants would increase by a factor of ten because of upset conditions. This difference in assumption for solid particles vs other pollutants that may be in the particulate phase or bound to particulate matter is illogical. The assumptions and emissions used for upset conditions</p> | <p>Addressed by the RtS</p> <p>Refinements in the upset concentrations in the RtS and Appendix N air quality assessment are as follows:</p> |

| # | Issue raised in review of AEIS | Review of the RtS |
|----|---|--|
| | in the air quality study are inconsistent with the supporting information provided at page B-6 of Appendix K. | <ul style="list-style-type: none"> • For pollutants with a limit specified in the Industrial Emissions Directive (IED) a factor of 10 increase relative to IED limits was assumed • Ratioing of each metal constituent based on data published by the UK Environment Agency • For NOx a concentration of 400mg/Nm³ was considered more appropriate given that this is reflective of post-combustion concentrations under failure of the SNCR emission controls. |
| 10 | Appendix L used AERMOD to make predictions of odour concentrations. This model is not suitable for the light wind conditions that have been shown to occur at the subject site. | <p>Not addressed by the RtS</p> <p>AERMOD has been used in Appendix N and Appendix Q, the revised air quality and odour assessments that accompanied the RtS. The model has been modified in response to the NSW EPA's feedback on the AEIS. Specifically, the meteorological data used in AERMOD were modified such that all calm winds (wind speeds less than a threshold of 0.5 m/s) were replaced with a wind speed of 0.5 m/s. This is consistent with US EPA recommendations.</p> <p>However, given the significant prevalence of light wind conditions that have been shown to occur at the subject site, AERMOD is not a suitable dispersion model for modelling odour emissions.</p> |
| 11 | Upset emissions of NOx and cadmium are predicted to exceed the criteria specified in the Approved Methods on the Jacfin Land. | <p>Addressed by the RtS</p> <p>The RtS includes a revised air quality assessment (Appendix N) to account for the proposal being for Stage 1 - 552,500 tonnes of waste per year. The AEIS assumed a factor of 10 increase in emissions over normal operations for the upset scenario for all pollutants with the exception of particulate matter to which a factor of 15 was applied.</p> <p>Specifically, refinements in the upset concentrations in the RtS and Appendix N air quality assessment are as follows:</p> |

| # | Issue raised in review of AEIS | Review of the RtS |
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| | | <ul style="list-style-type: none"> • For pollutants with a limit specified in the Industrial Emissions Directive (IED) a factor of 10 increase relative to IED limits was assumed • Ratioing of each metal constituent based on data published by the UK Environment Agency • For NO_x a concentration of 400mg/Nm³ was considered more appropriate given that this is reflective of post-combustion concentrations under failure of the SNCR emission controls. <p>The outcome of the RtS was that:</p> <ul style="list-style-type: none"> • Concentrations of NO₂ are predicted to comply with the criteria specified in the Approved Methods on Jacfin Land. • Concentrations of cadmium are predicted to exceed the criteria specified in the Approved Methods on Jacfin Land. However, the air quality assessment and HHRA concluded that there is a very low probability that the predicted exceedance would occur in reality. The probability was calculated as a function of allowable hours of upset emissions per year multiplied by the predicted frequency of the exceedance per annum. • The revised HHRA (Appendix O of the RtS) including consideration of cadmium concluded that the risk of adverse outcomes associated with the EfW Facility would be low and acceptable. |
| 12 | If it is assumed that the emission concentration of cadmium from the EfW is equal to the standard of concentration specified in the Clean Air Regulation, the ground-level concentrations of cadmium are predicted to exceed the ambient air quality criterion specified in the Approved Methods on the Jacfin Land. | <p>Partially addressed in the RtS</p> <p>See point 11 above.</p> |
| 13 | With the adoption of NO _x control technology (selective non-catalytic reduction – SNCR), the EfW would be the seventh greatest emitter of NO _x in Sydney. Even with SNCR, the EfW represents an additional 5% of NO _x emissions into | <p>Not addressed in the RtS</p> <p>The ozone assessment, Appendix R of the RtS, was revised as follows:</p> |

| # | Issue raised in review of AEIS | Review of the RtS |
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| | <p>the Sydney airshed based on 2008 Inventory data. Upset emissions would represent a considerably greater emission rate. However, the ozone assessment has not considered upset emissions.</p> | <ul style="list-style-type: none"> • Adoption of Level 1 Screening Level Assessment Methodology (not published at the time of the AEIS) • Update of facility emissions to reflect Stage 1 proposal. <p>Katestone's review found that:</p> <ul style="list-style-type: none"> • It is unclear what emission rate of NO_x was used in the assessment: <ul style="list-style-type: none"> - The Executive Summary of Appendix R indicates the assessment of NO_x concentration at 200mg/Nm³ reflecting IED daily maximum, thereby assessing a "worst-case" scenario. This is half of the emission concentration provided in Appendix N of 400mg/Nm³ for upset emissions. - The Executive Summary of Appendix R indicates that the facility will be operated at a NO_x concentration of 120mg/Nm³. - Section 3.3 of Appendix R quantifies annual NO_x emissions to be 294 tonnes per year based on in-stack NO_x concentration of 120mg/Nm³ and the facility operating 8000 hours per year. This is inconsistent with Appendix N, which provides the NO_x emission rate as 15.2 g/s which equates to an annual emission of 437.8 tonnes per year. • The ozone assessment provided as part of the AEIS appeared to incorrectly represent the total emissions from the EfW Facility. It is possible that the AEIS considered emissions from two lines instead of four that was proposed under the AEIS. Therefore, the statement in Section 5 of Appendix R of the RtS "<i>this approach is considered valid since any impacts of a single stack proposal will, by their nature be less than those previously assessed, which were found to be acceptable</i>" is not valid as the ozone assessment in the AEIS is flawed. • Appendix R of the RtS does not consider upset emissions. |
| 14 | <p>Annual average concentrations of air pollutants during normal operations are likely to have been underestimated because they have not accounted for upset emissions that could occur for up to 60 hours per year. As detailed</p> | <p>Addressed in the RtS</p> <p>See point 2 above.</p> |

| # | Issue raised in review of AEIS | Review of the RtS |
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| | above, 60 hours per year of upset emissions could result in significantly greater emission rates of air pollutants and, therefore, ground-level concentrations and deposition rates of air pollutants. This underestimation of ground-level concentrations and deposition rates of air pollutants indicates that the chronic carcinogenic and non-carcinogenic risks are likely to also have been underestimated by the HHRA. | |
| 15 | It is possible that odour levels have been significantly underestimated as a result of Appendix L's failure to address waste fuel variability and upset conditions, for example, in the event that air extraction from the Tipping Hall Building ceases. This degree of underestimation in odour emission rates would lead to a doubling of predicted concentrations and likely exceedance of EPA's odour criterion of 2 ou in parts of the Jacfin Land. | <p>Not addressed in the RtS</p> <p>This remains unchanged. See point 4 above.</p> <p>The RtS states <i>"During maintenance, only one line is shut down at a time ensuring air is continuously extracted. In the event of an emergency shutdown, air extraction continues in order to cool down the furnace ensuring negative pressure and to prevent dust to escape from the furnace and air control system"</i> and <i>"The facility has the ability to be sealed using operable doors and louvres, and it is anticipated that under any condition where negative pressure is not present in the receivable hall, and odorous material is being stored, the operational air quality management plan for the facility would dictate that the area be sealed until such conditions change."</i></p> <p>It is Katestone's experience that industrial buildings are unlikely to be effectively sealed and will necessarily have leaks. Consequently, if the ventilation system fails, odours are unlikely to be effectively contained.</p> |
| 16 | Several of the contour plots shown in Appendix K are inconsistent with the tabulated data shown in Appendix K. | <p>Partially addressed in the RtS</p> <p>In the revised air quality assessment (Appendix N) of the RtS, there is consistency between tabulated data and the contour plots for the expected scenario for all pollutants with the exception of toluene.</p> |

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| 17 | There are several inconsistencies between Appendix N and Appendix K that cannot be explained. | <p>Addressed in the RtS</p> <p>The revised air quality assessment (Appendix N) of the RtS has been compared with the revised HHRA (Appendix O). There appears now to be general consistency between the air quality assessment and HHRA.</p> |
| 18 | The AEIS did not consider alternative sites as a means of minimising the potential health and amenity risks associated with the EfW Facility. A key feature of the proposed site of the EfW is its relatively close proximity to future commercial activities on adjoining land to the east, south and west. | <p>Addressed in the RtS</p> <p>This issue has been addressed in the RtS.</p> |
| 19 | The AEIS has failed to demonstrate that the proposed EfW Facility can be operated and maintained so as not to cause adverse impacts on human health and amenity in the surrounding areas. | <p>Not addressed in the RtS</p> <p>See responses above.</p> |