

## Response to Interested/Third Party Submissions 001 – 033 and Referral Agencies

Submission No.	Question / Comment	Summary Reply	WAA Reference
001	<p>Part 1—1A Purpose of Act to 1L Principal of accountability the principal of turning waste into energy fails to recognise our duty to reduce emissions.</p> <p>The issues on hand for the environment is the compliance imperative. Universally we have to reduce our missions for guidance I have attached the ozone checklist which must be collectively addressed.</p>	<p>The REA proposal will result in significant GHG emissions reductions compared with the currently available alternative of continuing to send residual waste to landfill, will reduce emissions from truck movements, and will result in a reduction of waste going into landfill where it would require many decades of management to prevent the release of liquid and gaseous emissions to environment.</p> <p>Ozone depleting substances (ODS) include; chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), hydrobromofluorocarbons (HBFCs), halons, methyl bromide, carbon tetrachloride, methyl chloroform. These compounds are highly unlikely to be released by the proposed REA facility as the gasification and following syngas oxidation steps operate at 850°C and 1100°C – 1200°C respectively and at these temperatures any ODS are destroyed to carbon dioxide and acid gases. The REA process has incorporated an acid gas scrubbing system to remove the acid gases generated by the treatment of residual municipal waste.</p>	<p>Section 8</p> <p>Sections 6.3.3.1, 6.3.4</p>
002	<p>I do expect that proper traffic flow modelling will be undertaken to ensure that the changing heavy vehicle traffic routes will not place undue pressure on our streets.</p>	<p>REA do not anticipate an increase to existing heavy vehicle traffic. Vehicles carrying residual municipal waste are already moving through the western suburbs to Wyndham landfill so this proposal will have minimal impact on that. Further a traffic impact assessment has been completed and concluded that</p> <ul style="list-style-type: none"> <li>• The peak hour traffic volumes generated by the proposed development are relatively low in traffic engineering terms, and are expected to be easily accommodated by the existing road network; and</li> <li>• There are no traffic engineering reasons which would preclude a permit from being issued for this proposal.</li> </ul>	<p>Section 6.3.2.1 and Appendix 12</p>
003	<p>In my experience, incineration of waste is putting a bandaid on the festering wound of pollution..... speak on behalf of hundreds of people within my community, who ask you to invest this money in a zero waste strategy, not Waste to Energy.</p>	<p>REA supports the concepts of zero waste but recognises that this may take some years to implement and in the meantime millions of tonnes of residual waste will be consigned to landfill which is the least preferable option in the waste hierarchy. REA’s proposal of recovering the embodied energy in residual waste is complimentary to the principles of the circular economy and is a better outcome for the community, environment and public health than disposal to landfill.</p>	<p>Section 7.4.3.3</p>
004, 008, 009, 010, 013, 015, 023, 024	<p>Support for the Project</p>	<p>REA thank those who have written in support of the proposal.</p>	

005	<p>Considering this is to be the first gasification waste to energy plant, where is the independent environmental assessment, completed by the EPA or a chosen organisation not paid for by Recovered Energy Australia?</p> <p>The closest residents at 1.7km are in Hobsons Bay (besides the prisoners at the closest facility). What has been the exact engagement process with the residents directly impacted by this proposed plant? A transparent and communicative process would involve those directly impacted. The description in Section 4 - Community Engagement lists extensive consultation across Victoria and yet lacks any clear community engagement with residents of Hobsons Bay who will be directly impacted. I do not mean newspaper articles or Facebook posts as direct engagement with those affected.</p> <p>What is the impact on passing pedestrian traffic on the Federation Trail? This is 600m to the south of the site, a location in the path of prevailing winds from the north west.</p> <p>What are the pollutant levels from this plant compared to other local facilities? The data in the brochure stating it is below allowed or recommended does not show how it compares to other waste or petrochemical sites.</p>	<p>The <i>Environmental Effects Act 1978</i> provides for assessment of proposed projects that may have a significant effect on the environment. The Minister administering the Act can review and make a decision as to whether an EES should be prepared. The <i>Act</i> also provides a threshold in regards to greenhouse gas emissions which if they exceed 200,000 tonnes CO<sub>2</sub>e/annum requires an EES. The REA WtE proposal does not generate in excess of 200,000 tonnes CO<sub>2</sub>e/annum.</p> <p>The engagement process has been conducted according to EPA requirements and as outlined in <i>Approvals Proposal Pathway Guidelines (Publication # 1560.2)</i> and <i>Works Approval Application Guidelines (Publication #1658)</i>, including implementing EPA example tools as outlined in the EPA fact Sheet, <i>Engaging people actively: A Planning Process for Community Engagement (Publication # 1145.1)</i> IAP2 Public Participation Spectrum.</p> <p>REA has fulfilled the engagement requirements of EPA as outlined, which has included opportunities for residents of Hobsons Bay to be aware of the project and source information from REA.</p> <p>The air emissions assessment shows that compliance with the EU IED limits at the stack and compliance with the SEPP (AQM) limits outside the site boundary under normal operating conditions. The Health Impact Assessment has concluded that <i>“when the facility is operating under normal operating conditions there are no risks to the health of workers in adjacent industrial areas or residents in the surrounding community. Even where upset operating conditions are considered, there are no risks to the health of workers in adjacent industrial areas or residents in the surrounding community”</i>.</p> <p>REA are not privy to emissions levels of other facilities. However, any discharges to environment from these premises are regulated through an EPA licence. The basis for setting discharge limits are the relevant SEPPs or regulations..</p> <p>While we have not compared emissions against individual businesses in the area, we have assessed the background air quality of the area and no material issues have been identified in comparison or in conjunction with the existing ‘load’ (or predicted based on modelling).</p> <p>REA emissions will comply with those set in the relevant SEPP/regulation ensuring that</p>	<p>Section 8.1</p> <p>Section 4</p> <p>Sections 10, 11, Appendices 15, 22</p> <p>Sections 6.3.1.4, 10, 16</p>
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	<p>What landfill site will be used for the disposal of the toxic by-products from the facility? What is extensive impact of this waste product? Does it compare in toxicity levels to the waste currently in landfill? Is it much more dangerous? Is it not comparable? What happens to the toxic waste product if it does not make it to a certified landfill? Is storage, as is happening with contaminated recyclables, to be allowed in this process?</p> <p>Waste stream volume into the facility is based on current council waste levels. What happens when these reduce? Does this mean REA will seek waste from other 'local' sources? What will be considered 'local' considering they have consulted across the state?</p>	<p>REA's emissions profile will be less than or equal to other industrial sites.</p> <p>.</p> <p>The toxicity of any industrial product is determined by reference to the <i>Solid Industrial Waste Hazard Categorisation and Management</i> EPA Guideline. This Guideline requires the generators of any industrial waste to categorise the waste hazard by referring to the criteria listed in the Guideline. Tests done by REA in NATA registered Australian laboratories indicate that it is very likely that the gasifier slag will be categorised as lower than the industrial waste upper limits. As part of commissioning and through the operational life of the facility the actual slag generated will be subject to a testing regime to confirm, as expected, this is consistently the case so would allow reuse of this material into road base or other building materials. Should the testing of the slag show that reuse is not appropriate then it would be consigned to an appropriately licensed waste treatment facility. REA commissioned testing of the residues from the flue gas at an Australian NATA registered laboratory, indicate that this material will contain contaminants which will require stabilisation and disposal to an appropriate facility. This will represent less than 3% of the incoming volume of residual waste and disposal to a licensed industrial waste treatment facility or a prescribed landfill will be required. Sufficient enclosed storage is maintained for solid wastes on site to allow for retention of up to 7 days facilitating efficient consolidation and movement of waste. No waste will be stored for a longer period than 7 days. No long term waste storage is proposed.</p> <p>The REA WtE facility is of modular design with 3 gasifier trains each requiring a nominal 200 tonnes of residual waste per day. Any one or two of these gasifier trains could be shut down in the event of low levels of waste being generated. REA has intentionally selected a relatively small facility design to minimise the need to commit and/or draw large volumes of waste from a wide catchment. Despite increasing discussions on waste mitigation, all studies of waste generation in Victoria supported by State Government data show that residual waste is likely to grow in the short to medium term.. REA is satisfied that, even considering the efforts being undertaken to reduce waste entering the residual waste stream, that it will be more than 10 years before these efforts result in significant changes to volumes. REA can utilise waste that is already moving through the western suburbs on its way to landfill. We do not anticipate bringing waste from areas outside the central and western metropolitan area.</p>	<p>Section 14</p> <p>Sections 1.3.5, 6.2.1, 6.2.5, 6.3.2.1</p>
006	We express the interest of our community and members in participating in a proper consultation process and the	This request can only be fulfilled by EPA.	Section 4

	<p>Government’s decision processes but <b>we request an extension of time of one month.</b> Given the limited advertising and low attendance at both August Forums in Laverton we also request wider advertising and further consultation across the metropolitan area.</p> <p>We requested to receive the proposed absolute quantum amounts of the airborne and solid outputs that are expected to result per year particularly from the treatment of accidental/unintended substances that may find their way into household garbage such as the following (regardless of how small the quantities may be):</p> <ul style="list-style-type: none"> <li>• Radioactive isotopes/nucleides from expended smoke detectors, medical substances etc.</li> <li>• Asbestos and other toxic/carcinogenic building materials incl fire resistant materials</li> <li>• Heavy metals including cadmium, mercury, lead</li> <li>• Unwanted insecticides/weedicides/poisons/fertilisers/poisons</li> <li>• Organo-chlorides/organo-flourides</li> <li>• Dead/diseased pets, animals, plants, and birds</li> <li>• Batteries and electronic/electrical components of all types</li> <li>• Methacrylates, (iso) cyanates and plastics</li> <li>• Brominated, PFA and other fire-fighting/retardant chemicals</li> <li>• Dioxins, furans, or carcinogens</li> <li>• Chemical products of combustion with unknown health impacts</li> <li>• Positive ions (dust particles)</li> <li>• Carbon monoxide, dioxide, other carbon compounds and greenhouse gases.</li> <li>• All EPA ‘Schedule A (SEPP AQM)’ Substances.</li> </ul> <p>Does the proposed plant comply with world best practice</p>	<p>However, it should be noted that REA have been in communication with the Flemington Association since late 2017, and made an offer in early 2019 to provide a presentation on the proposed project. This offer was declined.</p> <p>Further, following a presentation on 20 August 2019 to an open Moonee Valley Council meeting, REA met with three members of the Flemington Association who were subsequently attending the Association’s August meeting. They accepted information provided by REA to present to their members.</p> <p>There is no limit imposed against Radionuclides substance under the EPA Victoria Air Quality Management legislation. Under “Design Criteria,” it is stated “ALARA,” which means as low as reasonably achievable. As part of this project, this has been assessed using a risk-based approach in terms of the likelihood and relative quantities of such materials being present in the collected residual waste for the facility. It is expected that such waste will be an insignificant proportion of the residual waste being accepted by the facility. This is also expected to be the case with asbestos, which was banned in Australia as of 31 December 2003 despite it being still present in buildings.</p> <p>Dead/diseased pets, animals, plants, and birds were also not modelled but they are expected (based on existing waste data research) to not be a significant part of the waste expected at the facility. Further, such animal wastes are organic material and will be destroyed in the gasifier and secondary oxidation chamber where temperatures reach 1200°C. Batteries and electronic/electrical components of all types are again expected to be a non-significant portion of the waste received at the facility. While they have not been modelled specifically, their break-down products have been modelled (e.g. lead and acid) and no issues with respect to air emissions have been identified. It is worth noting that in Victoria, no asbestos-containing materials or electronic wastes are permitted to be placed in general waste. The other parameters mentioned in this list have been modelled and no issues have been identified in terms of the air emissions discharges from the facility (and certainly not from an EU IED perspective. The project will employ a continuous emission monitoring system to monitor the discharge emissions resulting from the operation and so will be across any non-compliances with relevant compliance obligations.</p>	
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	<p>such as that found in Scandinavia and does it meet European Standards?</p> <p>Will the EPA insist on independent ongoing monitoring/inspection of both random samples of input waste, output gases emitted into the chimney stacks, and output slag or fly ash ? Particularly when plant operating temperatures may vary from the optimal temperatures at times of plant closure for maintenance, breakdowns, power outages, etc?</p> <p>How and where will residue/slag/fly ash be transported to and disposed of?</p> <p>Can the EPA guarantee that none of the problems/impacts that have occurred in other W2E or other types of waste recycling plants or waste storage centres will occur here?</p>	<p>The WAA discusses BAT in relation to the European Guidelines and shows compliance with best practice. The WAA also shows compliance with the EU Industrial Emissions Directive.</p> <p>Question directed to the EPA. However REA make the following comment. Should the proposal be accepted the EPA will set license conditions which are designed to protect the environment and the health of the population. The monitoring and inspection regime will be detailed in license conditions. Modelling of emissions during steady state operations and under upset conditions has shown compliance with the SEPP limits. Unlike single train large WtE facilities the modular nature of the proposed facility allows shutdown and isolation of individual gasifiers or gasifier trains, maintenance of flue gas scrubbing during any shut down or breakdown and backup generation to keep critical infrastructure operating during power outages, which minimises any potential impact from emissions.</p> <p>The WAA discusses in detail the solid residues generated by the Facility. Testing of the gasifier slag in Australian NATA registered laboratories indicates that it is likely to have contaminant levels lower than the Industrial Waste thresholds and is likely therefore to be suitable for reuse in road base or other building products. REA have had discussions with potential reuse businesses and providing testwork of the actual gasifier slag produced meets the EPA requirements for reuse, they are confident that the slag produced will be reused and not require disposal to landfill. Should the slag not meet the EPA Industrial Waste Criteria for reuse then it will be sent to a suitably licensed waste treatment facility. Treatment processes of the flue gas generate a relatively small amount of solids which will contain the contaminants that are removed from this stream. Testing of these residues indicates that this material will be classified as prescribed waste and is likely to need to be consigned to a suitably licensed waste treatment facility.</p> <p>This question is directed to the EPA. REA would make the following comment. The proposed facility has been designed, and the technology chosen specifically incorporating the learning's associated with previous and current operations of WtE facilities. Storage of large quantities of residual MSW is not contemplated by the proposed facility and the recent issues associated with waste recycling centres do not apply.</p>	<p>Sections 7, 6.3.1.4</p> <p>Sections 10, 1.3.5, 6.3</p> <p>Section 14</p> <p>Section 1.3.4, 7.7, Appendix 23</p>
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<p>Will non-compliance breaches be policed and will EPA penalties create adequate incentive for the operator to meet standards 100% of the time?</p>	<p>This question is directed to the EPA.</p>	<p>Section 6</p>
<p>Will EPA allow unlimited amounts of airborne emissions simply because they are diluted using fanned/injected air so that they are below threshold dilution</p>	<p>This question is directed to the EPA.  REAA would like to point out that there is no air injected into the flue gas stream prior to the stack and that the induced draft fan operates by drawing flue gas through the various treatment systems prior to directing it to the stack.</p>	
<p>Limits/Standards?</p>	<p>The limits and standards are set by the EPA and the facility will comply with these standards.</p>	<p>Sections 10, 16, 7.4.3.1, 8.3  Appendices 14, 22</p>
<p>What are the social, environmental, health and climate change impacts of such plants?</p>	<p>The WAA addresses the potential social, environmental, health and climate change impacts of the proposed WtE facility. It has been shown that the projected air emissions in both steady state operations and upset conditions will be compliant with the SEPP limits and the health impact assessment concluded that <i>“when the facility is operating under normal operating conditions there are no risks to the health of workers in adjacent industrial areas or residents in the surrounding community. Even where upset operating conditions are considered, there are no risks to the health of workers in adjacent industrial areas or residents in the surrounding community”</i>. Social impacts have been shown to be generally positive with increased employment opportunities, reduced dependence on landfill, lower greenhouse gas emission compared to landfill, and the generation of base load electricity. The impacts of climate change have been evaluated and the risks to the facility or its operation have been rated as low.</p>	
<p>What are the expected airborne products from syngas combustion proposed to be sold to users?</p>	<p>Syngas will not be captured, stored or supplied to any third party. Syngas generated in the gasifier will be combusted in the next stage of the process and the resulting heat used to generate steam. Steam will be used to generate electricity which will be directed to the national electricity grid. There may be opportunities to supply electricity, steam or hot water to surrounding businesses in the future and the facility design will incorporate the necessary infrastructure to allow these options as they develop.</p>	<p>Sections 6.1.2.1, 6.3.4, 6.3.5, 6.3.6,</p>
<p>Would another location on rail help to avoid adding more trucks to the road traffic, increasing road congestion and vehicle pollution in the inner and western suburbs?</p>	<p>This proposal will not increase road congestion and will actually reduce haulage distances reducing the impact of vehicle emissions. REAA’s proposal is based on diverting trucks carrying residual MSW that are already moving through the western suburbs. This proposal will not increase road congestion and will actually reduce haulage</p>	<p>Appendix 12</p>

	<p>How will odour, dust and spillage be controlled from the trucks carting the plant's inputs and outputs, particularly if not owned by REA?</p> <p>Will Government prohibit importation of waste material inputs through the Ports of Melbourne, Geelong and Westernport, especially if trucked through the metropolitan area and then 'gasified' at the plant?</p> <p>Has the EPA, Health and Planning Departments considered alternative locations away from Melbourne suburbs (as per the Precautionary Principle)? We note EPA's prior approval was for Maryvale in Gippsland; Perth's rejection was based on relocation 45km south near Bunbury W.A.; and Sydney's was an outright ban.</p> <p>the proposed W2E gasifiers, we request the tightening of conditions on all existing North Laverton waste treatment plants/incinerators insofar as dealing with the following issues:</p> <ul style="list-style-type: none"> <li>• Redefining the EPA Licenced Material Codes to specifically exclude radioactive materials especially from hospital/dental and other Waste Codes where it could occur.</li> <li>• Frequent random sampling and testing of waste inputs and outputs to ensure that substances comply with the input material Codes and approved output Standards, especially in respect of the substances most of concern to the community mentioned above.</li> <li>• As above for plant closures and start ups (where steady state conditions may be interrupted e.g. for maintenance).</li> <li>• Legislating for improved classification and segregation of municipal household waste so as to</li> </ul>	<p>distances reducing the impact of vehicle emissions.</p> <p>REA proposal requires no changes to the existing council bin collection system, waste aggregation or transport practices. REA have no plans to own or operate the residual waste bin collection system. Odour, dust and spillage controls already in place will remain in place.</p> <p>This question is directed to the Government (EPA). REA have no plans to import materials for treatment through the proposed system. The waste acceptance criterion has been detailed in the WAA.</p> <p>This question is directed to the EPA. REA wish to point out that the proposed site is located within a precinct designated as a waste hub of State significance in the SWRRIP and is located in an IN2 planning zone for which the intended use is consistent with the WtE facility proposed. Further, the Wyndham City Council granted planning approval on 5<sup>th</sup> March 2019 subject to the issuance of a Works Approval.</p> <p>This question is addressed to the EPA. REA would point out that it will comply with all EPA requirements.</p>	<p>Section 1.3.3</p> <p>Section 6.2.5</p> <p>Section 2.3</p>
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	<p>minimise ‘contamination’ of red bin contents and therefore minimise unintended foreign and carcinogenic substances and their waste treatment.</p> <p>We are keen to help avert any possibility of further pollution from factory and waste dump fires/leakages. Would the EPA please survey all warehouses and factories in the western, inner and northern suburbs with a view to identifying unauthorised storage of waste and chemicals whether they are flammable or not? Then relocate, license or prohibit such places with a view to stopping unauthorised land uses and accident consequences?</p> <p>Flemington Association (FA) believes that this WtE proposal, if approved, would compromise the health, safety and amenity of the community principally through its dispersed airborne and solid toxic waste emissions. Buffer zones are inadequate and do not include sufficient trees to replenish air quality especially oxygen content, moisture content or to offset the plant’s atmospheric heat load and micro-climate impact.</p> <p>REA’s community consultation has been sham due to failure to provide requested information and REA’s promotion of the plant’s positive benefits mainly to potential supporters whilst concealing the costs and negative benefits. REA’s Works Approval Application lists 40 questions raised without providing answers (p.92). At most, only a single gasifier pilot plant should be approved at another site to prove the theoretical modelled design claimed by REA is operational.</p>	<p>The answer to this question is beyond the scope of REA. REA would point out that the WAA indicates that they will comply with EPA Guideline <i>Management and Storage of Combustible Recyclable and Waste Materials 2018, Pub: 1667.2</i></p> <p>The WAA includes a health impact assessment which shows that the WtE facility proposed would not compromise the health, safety and the amenity of the community. The IN2 planning zoning specifically implemented to accommodate industrial uses which typically require a protected buffer distance based on land use activity. While the EPA Guidelines <i>Recommended Separation Distances for Industrial Residual Air Emissions</i> indicate that buffer distances for Advanced Resource Recovery Technology are determined on a Case-by-Case basis other similar types of industrial uses such as permanent contaminated soil treatment facility or prescribed industrial waste treatment facility require a buffer of 500 meters. The REA proposed facility is 1700 meters from the nearest residence.</p> <p>REA reject the subjective and unsubstantiated assertion. These questions were examples of the questions asked by the Community at the consultations and presentations REA conducted over the past year and half and were answered directly at that time. Information contained within the completed WAA in most cases implicitly answers these types of questions.</p> <p>In addition to the benefits to the community REA has independently identified, supporting information, advice and review has been sought and presented by REA. This includes information from specialist consultants, local Melbourne metropolitan councils and that provided by 177 community members during the <i>2017 Western Metropolitan Partnership</i> assembly to help determine the key priorities for the Western region. Following lengthy discussion and facilitated workshop sessions at the assembly, all in</p>	<p>Section 6.3.2.5</p> <p>Sections 6.1.4, 16, Appendix 22</p> <p>Section 4</p>
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	<p>Some 20% of the proposed plant’s 200,000 tonnes p.a. of mostly red lid bin municipal waste input, will end up as 40,113 tonnes p.a. of largely toxic solids (slag, ash and residues from the plant p.255). This is proposed to be distributed e.g. for road making where leaching of toxins into watercourses could cause problems. Its toxicity has not been shown to be lower than that of landfill.</p> <p>Efficient and safe transportation 24/7 of the inputs and outputs through the western suburbs has not been fully investigated, nor have the heavy vehicle types, truck queuing or increased road congestion. The EPA has apparently not referred the matter to the Transport Minister and continues to dismiss ‘external’ transport impacts. The noise from extra trucks carrying the proposed plant’s waste inputs and outputs through the western suburbs (particularly night time noise) has been neglected</p>	<p>attendance agreed that the second top priority for the region was to develop:  <i>A centre of excellence for waste addressing three key themes being: natural environment, renewable waste to energy and micro grids</i></p> <p>Table 4.6, <b>Summary of Issues Raised</b>, was developed according to EPA requirements for community engagement, ie, issues raised and method utilised to respond to issue. However, REA acknowledges the technical responses were not provided within the Community Engagement section of the WA submission. To respond to this concern, REA will categorise the questions listed in Table 4.6 of the REA Works Approval application and provide responses which will be uploaded to a Frequently Asked Questions (FAQ) page to be integrated into the REA website</p> <p>Solid waste generated from the proposed WtE facility will consist of gasifier slag (up to 35,365 tonnes/annum) and Flue gas residue from flue gas treatment (up to 4562 tonnes/annum). Testing of gasifier slag in Australian NATA certified laboratories derived from gasifier reference sites has shown that this material is not likely to contain sufficient contaminants to breach the threshold limits which classify industrial waste and as such will not be “toxic” and so would be suitable for recycling into road base or other products. Testing will be required to classify the gasifier slag when in production and this classification will determine its fate. However, it is highly unlikely that it “will end up as ..... largely toxic solids” and if unsuitable for reuse would be sent to a suitably licensed waste treatment facility. The flue gas residue contains the contaminants from the treatment of the flue gas stream and testing has shown that this material will be classified as a prescribed waste and will require disposal to a suitably licensed waste treatment facility. Residuals are tested and required to meet strict EPA leachability standards prior to reuse or disposal to ensure their stability and the protection of watercourses.</p> <p>Heavy vehicle traffic carrying residual municipal waste is already moving through the western suburbs to Wyndham and Ravenhall landfills so REA do not anticipate an increase to existing traffic. Further a traffic impact assessment has been completed and concluded that</p> <ul style="list-style-type: none"> <li>• The peak hour traffic volumes generated by the proposed development are relatively low in traffic engineering terms, and are expected to be easily accommodated by the existing road network; and</li> <li>• There are no traffic engineering reasons which would preclude a permit from being issued for this proposal.</li> </ul>	<p>Sections 6.3.1.3, 14</p> <p>Section 6.3.2.1, Appendix 12</p>
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	<p>by REA. Rail transport and alternative sites were not considered despite FA's request.</p> <p>As well as solid waste, about 730 tonnes p.a. (2 tonnes a day) of toxic airborne gases would flow out of the 40 metre high stack – about 140 pollutants including NOx, SOx, CO, nano-particulates, HF, HCl, fluoride, heavy metals, dioxins, furans and Schedule A toxins/ carcinogens of the EPA's AQM SEPP (p.215, 222, AppB of App15). The toxic gases are similar to an incinerator's. This pollution is excessive for a metropolitan site, not sustainable and avoidable. However, it complies with EPA's ineffective dilution standard. If it were 20 tonnes a day it would still comply because the EPA's milligram per cubic metre of air (mg/m3) limits can be met by mixing more air with the emissions from the stack i.e. diluting them. Indeed, REA proposes iterative adjustments to the air / waste / catalyst ratio to maintain dilution/ compliance especially when unintended waste inputs are extremely toxic.</p> <p>Continuous 24/7 dispersion of these airborne emissions and odours will reach the western and inner suburbs on many days just like the characteristic Laverton emissions and odours that currently travel much further in practice than REA's theoretical dispersion modelling suggests. The community is aware that AERMOD is not a credible prediction model with the assumptions used by REA. The community is strongly opposed to increased stench from Melbourne's 'toxic industry' zones, worsening brown haze overhead, and increased family health risks.</p> <p>As the plant has been designed to be profitable with minimal costs it has omitted several best practice processes. For example, insufficient garbage segregation (as per Victoria's waste management hierarchy) and no garbage input inspection means that the many harmful radioactive isotopes / nuclides, other carcinogenic substances, asbestos, herbicides, solvents etc. produced</p>	<p>The responder has provided an opinion without showing evidence in the form of their calculations. Without the basis of the calculation and the definition used to define "toxic airborne gases" the question cannot be answered. REA points out that the SEPP (Air Quality Management) establishes the framework for managing emissions into the air environment in Victoria from all sources of air pollutants, so that the air quality objectives outlined in SEPP (Ambient Air Quality) are met and Victoria achieves the cleanest air possible, having regard to the economic and social development of Victoria. The management framework and attainment program for protection of the air environment contained in SEPP (Air Quality Management) address not only ambient (or regional) air quality, but also the management of particular sources (for example, industries such as waste to energy) and local air quality impacts, including air toxics, odorous pollutants, greenhouse gases and ozone depleting substances. REA does not propose iterative adjustments to the air and waste ratio for dilution and does not add any catalysts to the process.</p> <p>The air pollution model currently approved for regulatory purposes in Victoria is the AERMOD air pollution model. The AERMOD model is also supported by the United States Environmental Protection Agency (USEPA). The modelling shows that SEPP limits are met at residential areas 1.7km from the proposed site and the Health Risk Assessment has shown now impacts at these same residential areas. To suggest that this project will result in "increased stench from Melbourne's 'toxic industry' zones, worsening brown haze overhead, and increased family health risks" is emotive and inaccurate.</p> <p>The statement is an unsubstantiated opinion not supported by facts. The WAA has evaluated best practice in WtE and shows that the REA proposal meets best practice processes. The financial model requires the proposed project to be profitable but this has not precluded adopting best practice processes defined in the EPA Guideline <i>Demonstrating Best Practice</i> as the best combination of techniques, methods, process or technology used in an industry sector or activity that demonstrably minimises the environmental impact of that industry sector or activity and best practice means</p>	<p>Section 10.6</p> <p>Sections 10.6, 16</p> <p>Sections 6.3.9.1, 7,</p>
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	<p>from unwanted inputs (p.28) will flow through the plant, escape out of the stack and be dispersed in the wind. Despite FA citing common radioactive wastes and carcinogens found in municipal garbage, no solution has been proposed by REA or the EPA for preventing their airshed. Monitoring of radioactive stack emissions is not proposed either but is vital for community health and safety. Improved plant design is therefore essential before further consideration of any approval.</p> <p>Given the deregulation of building inspection, it is likely that corners will be cut by the chemical plant manufacturers/ installers without variations being able to be detected by the government agencies. Also, the EPA's self-monitoring and self-regulation approach for licensed premise compliance is likely to result in non-recording and non-disclosure of compliance data for fear of REA losing its licence. Consequently, before approval, verification is needed that the final plant operating design can be achieved in practice with no unforeseen waste by-products or impacts.</p> <p>The methodology for REA's Health Impact Assessment is misleading as its conclusions of no adverse impacts whatsoever (of a pollution, odour, noise, water, transport, or community hazard nature) stems from it erroneously equating all finite risks found in localised analyses to nil impact. Even if the risks were tripled, the methodology is incapable of a different conclusion. Several risks are ignored e.g. respiratory disease due to carcinogenic and radioactive emissions. The cumulative concentration risks of this proposal's emissions together with other industrial sources of airborne pollution in the zone are concealed. The additional toxic airborne by-products and risks of the proposed WtE plant emissions versus landfill's are neglected.</p>	<p>undertaking all practical measures having regard to technical, logistical and <u>financial considerations</u>. Investigations of the composition of residual waste in Melbourne have shown that hazardous waste of the type indicated (eg. radioactive waste from smoke detectors, pharmaceuticals) comprise a very minor proportion of the waste to be processed and the type of treatment, the temperatures of operation and the flue gas treatment systems will in combination ensure that emissions of hazardous materials will be lower than the EU IED limits and those defined by the SEPP. REA have agreed to install all monitoring equipment defined as best practice in the European Union (2018), Final Draft Best Available Techniques (BAT) Reference Document for Waste Incineration.</p> <p>This question is addressed to the EPA.          REA would like to point out that the granting of a license under the current Works Approval process still requires that REA seek commissioning approval where they will be required to show that the plant as constructed will meet the required license conditions.</p> <p>The health impact assessment methodology can make findings of unacceptable risk if appropriate. For air quality the assessment compares ground level concentrations estimated in the air quality assessment to guidelines from national and international health authorities that indicate what is an acceptable level of exposure. If the air quality assessment had estimated higher concentrations in air at ground level then it would be possible for the risk to have been determined to be unacceptable but it was not. For noise, a similar approach was involved where the modelled levels of noise are compared to guidelines from national and international health authorities about what levels of noise will not cause adverse effects. Again if the noise had been modelled to be higher than it would be possible for the risks to have been deemed unacceptable but it was not. The other types of issues (water, transport etc) were discussed in only a qualitative fashion. This was due to that impact being managed on-site so off-site exposures were not possible (e.g. water) or due to modelling indicating such a small change from the current situation as to be negligible or due to the issue being one that</p>	
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		could only be addressed specifically during construction but where the HIA indicated the approach that would be adopted if required (e.g. unexpected finds in the ground). In each case a qualitative discussion was provided about the matter and the appropriateness of the information provided in the HIA. Background levels of many of the criteria air pollutants were considered in the assessment (e.g. table 4 looks at background particulate levels as well as levels for the plant).	
007	There is a large residential area near the plant. I am not an engineer however I am always suspicious about plants that are positive in every way. There will be emissions. If not then no chimney should be built. Also I would be more at ease if the directors and their families lived next door to the plant.	The WAA indicates that the emissions generated from the stack will meet the limits set out in the EU Industrial Emissions Directive (IED) and the emissions study indicates that emissions will meet the State Environmental Protection Policy limits (SEPP). The health impact assessment indicates that <i>“when the facility is operating under normal operating conditions there are no risks to the health of workers in adjacent industrial areas or residents in the surrounding community. Even where upset operating conditions are considered, there are no risks to the health of workers in adjacent industrial areas or residents in the surrounding community.”</i>	Sections 6.3.1.4, 10, 16 Appendices 15, 22
011, 012, 014, 016, 017, 018, 019, 021, 022, 026	How will emissions be affected if food waste is not diverted from the waste stream to be processed?  How come an independent environmental assessment has not been completed by the EPA for this project?  How will implementation of a gasification plant not undermine the waste hierarchy and waste reduction initiatives that are protected by the environmental protection Act?	The REA WtE Facility has been designed to accommodate Melbourne residual waste as it exists at present and as the waste changes with the introduction of FOGO and other waste reduction measures. Modelling in the WAA has included waste as it exists at present and the reduction in food waste by 50% with the more widespread adoption of FOGO.  The <i>Environmental Effects Act 1978</i> provides for assessment of proposed projects that may have a significant effect on the environment. The Minister administering the Act can review and make a decision as to whether an EES should be prepared. The Act also provides a threshold in regards to greenhouse gas emissions which if they exceed 200,000 tonnes CO <sub>2</sub> e/annum requires an EES. The REA WtE proposal does not generate in excess of 200,000 tonnes CO <sub>2</sub> e/annum.  The REA WtE Project proposes to primarily source MSW from the household residual household bin system which is a source separated waste. Currently the residual bin is wholly disposed to landfill. Most commentary on increasing the separation of recyclables from kerbside collections agrees that increasing the separation at the source is the most effective method of recovering recyclable materials. At present at least 4.2 million tonnes of waste in Victoria is disposed to landfill and it is REA’s view that even with the best endeavours of all involved to reduce the quantity of waste going to landfill that significant quantities of residual waste will be available for processing into the foreseeable future. According to the waste hierarchy, recovery of	Sections 6.2.1, 6.2.2, 6.2.4, 6.2.5  Section 8.1  Section 7.4.3.3

	<p>Why is it based on European standards when it's Chinese technology?</p> <p>What is the evidence that this technology is tried and tested?</p> <p>Will landfill still be required if a gasification plant is in place? Where will the sludge remaining from processed waste be placed? What are the toxicity levels of the sludge produced from processed waste?</p> <p>Will the majority of waste will be unrecyclable plastics? How can plastics be considered renewable energy?</p> <p>What are the long term implications13101310. How does</p>	<p>energy is a higher order waste treatment for wastes that would otherwise go to landfill, and therefore the project is aligned with and practically delivering the objectives of the waste hierarchy. The waste hierarchy foreshadows the need for a waste system to incorporate activity across the whole of the pyramid. In the absence of alternatives to landfill then the hierarchy is functionally constrained. This proposal will add higher order capacity to the waste system not currently available.</p> <p>The technology is designed and developed in China but the Chinese emission regulations are based on the European standards and the technology is required to meet these standards in China.</p> <p>The vertical rotating gasifier technology has been operating in a range of processing facilities since 2004. Improvements have been made to the design since this period and 23 of these plants have been constructed an operated since 2004. A further 10 facilities are in construction and due to be commissioned during 2019 - 2020.</p> <p>Solid waste generated from the proposed WtE facility will consist of gasifier slag (up to 35,365 tonnes/annum) and Flue gas residue from flue gas treatment (4562 tonnes/annum). Testing of gasifier slag in Australian NATA certified laboratories derived from gasifier reference sites has shown that this material is likely to be contain contaminants that are lower than the threshold defining industrial waste as such will not be “toxic” and would be suitable for recycling into road base or other products. Testing will be required to classify the gasifier slag when in production and this classification will determine its fate. However, it is highly unlikely that it “will end up as ..... largely toxic solids” and if unsuitable for reuse would be consigned to a suitably licensed waste treatment facility. The flue gas residue contains the contaminants from the treatment of the flue gas stream and testing has shown that this material will be classified as a prescribed waste and will require disposal to a suitably licensed waste treatment facility.</p> <p>The waste that comes to the plant will be representative of what Melbournians put in their residual waste bin. As this changes over time, the composition of the waste being processed will change. The modular gasification technology that REA are proposing to employ in Laverton North is very flexible and has been demonstrated to operate safely and effectively on a very wide variety of feedstocks. REA do not consider plastics as generating renewable energy.</p> <p>At present at least 4.2 million tonnes of waste in Victoria is disposed to landfill per year</p>	<p>Sections 3, 6.3.1.4</p> <p>Sections 6.3.1.3, 14</p> <p>Sections 6.2, 8.2.7, 8.2.11</p> <p>Section 7.4.3.3</p>
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	this fit in the circular economy model	and it is REA's view that even with the best endeavours of all involved to transition to a circular economy, there will still be significant quantities of residual waste generated for the foreseeable future. In line with the principles of the waste hierarchy and circular economy; once opportunities for materials recovery have been exhausted, the recovery of energy is preferred to sending waste to landfill.	
020	On 26 July 2018, the Minister for Energy, Environment and Climate Change and Minister for Roads and Road Safety announced the establishment of the Inner West Air Quality Community Reference Group. This study is to be complete by end 2019 and any decisions made to approve this facility must be put on hold until the Government has time to digest the results of the study and make recommendations to comment and implement improvements for air quality in the inner west.	This question is directed to the EPA.	
025	<p>Why has there not been a thorough community consultation regarding this?</p> <p>Given that a number of rubbish incinerators locally and in Europe have had emissions issues what guarantees do we have as residents that this will not affect our air quality?</p> <p>Will an independent environmental assessment be completed by the EPA for this project?</p>	<p>The engagement process has been conducted according to EPA requirements and as outlined in <i>Approvals Proposal Pathway Guidelines (Publication # 1560.2)</i> and <i>Works Approval Application Guidelines (Publication #1658)</i>, including implementing EPA example tools as outlined in the EPA fact Sheet, <i>Engaging people actively: A Planning Process for Community Engagement (Publication # 1145.1)</i> IAP2 Public Participation Spectrum.</p> <p>Should the REA WtE proposal be granted works approval, it will be required to meet specific requirements under license conditions designated by the EPA. These license conditions will ensure that residents' air quality will not be affected. Further, modelling of air emissions and a health impact assessment has shown that impacts on residents' air quality or health will be negligible.</p> <p>The <i>Environmental Effects Act 1978</i> provides for assessment of proposed projects that may have a significant effect on the environment. The Minister administering the Act can review and make a decision as to whether an EES should be prepared. The Act also provides a threshold in regards to greenhouse gas emissions which if they exceed 200,000 tonnes CO<sub>2</sub>e/annum requires an EES. The REA WtE proposal does not generate in excess of 200,000 tonnes CO<sub>2</sub>e/annum.</p>	<p>Section 4</p> <p>Sections 10, 16</p> <p>Section 8.1</p>

<p>027</p>	<p>In the context of WtE proposals, the onus is on the project proponent to "demonstrate that the siting, design, construction and operation of WtE facilities will incorporate best practice measures for the protection of land, water and air environments."<sup>1</sup> Specifically, in order to demonstrate best practice in a WAA, it must contain a "best practice analysis" including</p> <ul style="list-style-type: none"> <li>• analysis demonstrating that the total proposed residual emissions or discharges resulting from the best practice approach meet all relevant criteria in statutory policy;</li> <li>• evidence, including a summary of techniques or approaches used to analyse best practice, including clear reference to any detailed analyses, assessments, reports or other sources of information relied upon and ensuring that significant decisions within the analysis are supported by a decision analysis based on clear criteria;</li> </ul> <p>We consider that the material provided to date does not provide the EPA with sufficient independent and robust technical data to enable EPA to make an informed judgement about whether the Project represents best practice.</p> <p>Gasification does not represent best practice technology for thermal treatment of MSW. In contrast with REA's proposal, we understand that the direct combustion of waste is the most commonly utilised WtE technology worldwide, with the majority of the new WtE plants built in the UK over the past ten years being of the direct combustion type. Notably, the recently approved Australian Paper Maryville</p>	<p>The WAA has covered the principles of best practise in some detail. It has shown the proposed facility to be located in a precinct designated as a waste hub of State significance in the Statewide Waste and Resource Recovery Infrastructure Plan. It is located in Planning Zone IN2 which is designed for industries like WtE which require the specific buffers established within this zone. Planning Approval for the development in zone was granted by the Wyndham City Council 5<sup>th</sup> March 2019.</p> <p>The WAA has demonstrated that all emissions and discharges will comply with the EU Industrial Emissions Directive and the State Environment Planning Policy.</p> <p>The WAA has provided detailed information regarding BAT within the report.</p> <p>This assertion is directed to the EPA REA reject the assertion that insufficient data has been provided.</p> <p>Most commonly utilised does not equate to best practise. The justification for the gasifier technology being selected over direct combustion and the implications for best practise are discussed in the WAA</p>	<p>Sections 7, 2.3</p> <p>Section 10, Appendix 15</p> <p>Sections 7, 1.3.4, 6.1.2.1, 6.3.1.4, 6.3.2,</p> <p>Sections 7, 1.3.4, 6.1.2.1, 6.3.1.4, 6.3.2,</p>
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	<p>WtE facility will employ direct combustion. We note that the number of gasification plants treating MSW around the world is significantly smaller than the total number of direct or indirect combustion plants.</p> <p>Furthermore, despite use in Asia, we note that gasification is generally considered to be a developing, rather than established, technology for treating MSW.</p> <p>Specifically, these limitations include the fact that gasification has historically occurred on a smaller scale than what is currently proposed by REA, and that it has been used to treat different feedstock to MSW.</p> <p>We understand that existing gasification plants in Europe range in size on average from 30,000 to 40,000 tpa. The largest plant associated with one of the major European suppliers, Energos, has a throughput of 78,000 tpa. The vast majority of existing gasification plants in Europe have design capacities significantly less than the 200,000 tpa throughput as proposed by REA for the Laverton North facility. This makes the REA plant a relatively large gasification plant compared to most others.</p> <p>An additional hurdle in comparing gasification projects with the REA project, is that gasification, where it has been adopted, is most commonly utilising feedstock such as wood and other homogeneous waste streams such as medical or industrial waste, as opposed to more variable waste streams such as MSW. This is because the gasification process is less tolerant of waste composition changes, as opposed to the direct combustion process which is able to more aptly tolerate variable waste streams.</p> <p>We understand that although gasification has recently been more widely adopted in China, this adoption is mainly of small scale gasification plants. Furthermore, these small scale plants utilise stable feedstock such as wood and other</p>	<p>This is an opinion and not a fact. While it has been considered by some as a developing technology most of these studies were completed some years ago and did not include a consideration of the technology development in Japan and China where more than 60 gasifiers operate on MSW or combinations of MSW and industrial waste.</p> <p>The WAA includes reference to the plants indicated in the response. We agree that these plants are relatively small and the lessons learned through the attempts to upscale gasifiers to large throughput units have been incorporated into the gasifier technology proposed. This is the reason that the gasifiers are modular in design so that each gasifier is sized for a throughput of 34,000 tonnes per annum. The WAA clearly shows that the 200,000 tonne per annum throughput is achieved by combining six gasifiers and each is equivalent to those successfully operating in Europe. EcoWaste has installed 8 gasifiers with modules of this size operating in China and there are an additional 5 facilities under construction using similar or larger gasifiers. Further, several gasifier facilities in Japan operate at more than 150,000 tonnes per annum (Kita-Nagoya, Narumi, Shin-Moji).</p> <p>In earlier generations of gasifiers the feedstock was most often more homogeneous feedstock derived from medical, industrial and hazardous waste streams. More recent advances in the technology have allowed the treatment of less homogeneous waste like residual MSW and general MSW waste. Lahti Energia gasification facility operates on source separated MSW and industrial waste, the plants noted in the response operate on MSW and C&amp;I waste and the Japanese gasifier plants noted in the WAA operate on unsorted MSW. Eight EcoWaste gasifiers are operating in China on unsorted MSW.</p> <p>The assertion that the gasification plants operating in China are small and require stable feedstock such as wood and other biomasses is factually incorrect. Many of the EcoWaste facilities have adopted the 100 tonne per day gasification module and six of these are operating on unsorted MSW at feed rates between 70,000 – 150,000 tonnes</p>	<p>Section 7, 1.3.4</p> <p>Sections 1.3.4, 3.1, 6 Appendix 23</p> <p>Sections 1.3.4, 3, 6 Appendix 23</p> <p>Sections 1.3.4, 3, 6 Appendix 23</p>
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<p>biomasses, limiting the applicability of comparisons to the Project.</p> <p>Specifically, we consider that the WAA does not disclose all underlying sources of data, nor provide the level of background detail we would expect to see in terms of the operating conditions or feedstock composition at the time of emissions sampling.</p> <p>Despite assertions of the prevalence of successful MSW gasification projects worldwide, our review has indicated that there are a number of projects that have failed, largely due to technical and commercial issues. Importantly, we note that the sole example of gasification technology being employed for a MSW feedstock in Australia (EDL, Wollongong) was unsuccessful, with the commissioning phase of the project plagued with technical issues, leading to premature closure of the facility in 2003.</p> <p>Despite the challenges faced by the Victorian recycling industry, we maintain that waste should be managed in accordance with the waste management hierarchy, which preferences reuse and recycling ahead of recovery of energy. We are concerned that the operation of the Project may encourage the incineration of potentially reusable or recyclable materials.</p> <p>In the event that the EPA is able to satisfy itself that the Project meets applicable standards, we have provided below conditions of the Works Approval or subsequent licence we would anticipate as being appropriate for a project of this nature.</p> <p>Due Diligence report scope was limited to performance of the technology, and excluded capital and operating costs,</p>	<p>per annum. The same 100 tonne per day module has also been used for medical and industrial waste feedstock.</p> <p>Some of the data has been provided to the EPA as commercial in confidence because this data was collected and paid for by REA and is proprietary. Sufficient information has been provided in the WAA to allow evaluation of the gasifier technology and its suitability to effectively process Melbourne residual MSW. All sampling at reference plants where emissions data has been presented were processing unsorted MSW.</p> <p>There have been a number of gasification projects that have failed and these have provided specific lessons which have been incorporated in gasification technology as it has evolved in recent years. Development of a improved gasifier feeding systems, development of the vertical gasifier, inclusion of gasifier rotation and bottom grate rotation to mention a few developments have contributed to a robust technology capable of effectively processing MSW. The 2003 EDL Wollongong project quoted in the response was a classic case of issues associate with scale-up from what was effectively a small pilot plant. The EcoWaste gasifier technology has been operating at commercial scale on MSW since 2005.</p> <p>In line with the principles of the waste hierarchy: once opportunities for materials recovery have been exhausted, the recovery of energy is preferred to sending waste to landfill. The REA proposal seeks to process only waste that was otherwise destined for landfill. At present at least 4.2 million tonnes of waste in Victoria is disposed to landfill per year and it is REA's view that even with the best endeavours of all involved to improve material recovery rates and transition to a circular economy, there will still be significant quantities of residual waste destined for landfill for the foreseeable future. As a result, REA do not consider that the proposal will encourage anything other than management of waste in line with the waste hierarchy.</p> <p>Submission content addressed to the EPA</p> <p>As noted in the opening paragraph of the Executive Summary of the thyssenkrupp report, the scope was a Technical Due Diligence study. The report was prepared for a</p>	<p>Sections 1.3.4, 3, 6 Appendix 23</p> <p>Section 7.4.3.3</p>	
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<p>and operational criteria. Scope and limitations of the tkIS report were not clearly defined.</p> <p>Report refers to references that are not provided for review - Hatlar report, and MSW gasification power plant Teheran Operating Manual: Gasifier and Boiler. Hatlar Report be provided.</p> <p>Some of the comments in the tkIS report are unsupported by other information contained in the report. References stated in the reference section of the report do not seem to be sufficient to provide much of the content of the report. It is not clear who wrote the report, and their level of experience in this area. Details of the contributing authors be provided.</p> <p>Little operational data was provided in the tkIS report that demonstrates the operability/reliability of the technology. No data was independently sourced by tkIS from environmental agencies or authorities that monitor the performance of the existing gasification plants. More extensive data from reference facilities be provided.</p> <p>The tkIS report relies heavily on information and data</p>	<p>confidential client and the brief for the study was a desktop review based on data provided, and discussions with the technology provider (Eco-Waste). thyssenkrupp was not engaged to assess commercial topics such as capital and operating costs.</p> <p>REA consider the Hatlar Report to be proprietary</p> <p>REA would like to direct the responder to paragraphs 4 and 5 of the introduction of thyssenkrupp report “thyssenkrupp has a long-standing history in gasification providing end-to-end solutions. As a licensor we have supplied gasification and ancillary technology since the early twentieth century. Our gasification expertise ranges from feedstock’s such as biomass and municipal waste through to coal and oil. thyssenkrupp provides expertise in gas treating and combustion as part of gasification processes and independently. Additionally, thyssenkrupp expertise extends to combustion and boiler services in the sugar industry. In Australia, thyssenkrupp has significant experience with third party gasification and boiler technologies.</p> <p>Recent projects executed by thyssenkrupp in Australia include MSW gasification (for a number of international clients), syngas processing, in-situ gasification, and steam boiler systems. thyssenkrupp has also provided due diligence services to clients reviewing gasification technology acquisitions. The largest gasification project engineered by thyssenkrupp globally was done in Australia based on a third-party technology, for a coal to polypropylene facility in China.”</p> <p>The thyssenkrupp report was compiled by a team of engineering professionals experienced in design and operation of; gasification, combustion, power generation and gas treating facilities. The report was produced by thyssenkrupp as an entity and the names of contributing individuals need not be provided to validate the assessment.</p> <p>Emissions data from existing operating plants is discussed in other sections of the WAA</p> <p>The scope of the study was specifically a desktop review of the Eco-Waste technology using the documentation provided and telephone discussions with the Eco-Waste</p>	
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	<p>provided by Eco-Waste, and was based on a desktop assessment of this information only, with no plant visits undertaken by tkIS. The report contains unsubstantiated opinions of the report author or authors about plant capabilities. Sources of information in the report be stated, and where author experience is relied upon, this be stated.</p> <p>The tkIS report acknowledges that gasification of variable inputs such as MSW is technically challenging, and that there are examples of unsuccessful projects. It states that the reasons for failure have not always been technical, and that such information is not in the public domain. This admission of uncertainty about MSW gasification seems to be inconsistent with the positive opinions expressed elsewhere in the report about the likely performance of this particular plant. It would be helpful if the tkIS report stated why this plant will not suffer the same fate as many others.</p> <p>The report does not assess the proposed facility in terms of the REF (a European best practice manual normally used to assess incineration plant capabilities), and does not define or mention Best Practice. A table of project technical risks and mitigation measures is provided, but there is no Best Practice assessment. A BREF assessment should have been provided as part of this report, especially as it presents itself as a Due Diligence report. The same type of BREF assessment provided in Section 3 of the W AA document should have been undertaken by tkIS.</p> <p>Section 3 of the WAA document is titled Environmental Best Practice, and this refers to the BREF and undertakes an assessment of the proposed facility in accordance with some of the BREF criteria. The qualifications and experience of the author of the BREF assessment in the W AA document are not known or stated in the document. This is an especially important part of the W AA document. It is</p>	<p>personnel. Site visits were conducted by the confidential client</p> <p>This comment is somewhat perplexing as it is obvious that the responder has selectively extracted a comment when it is clear that the following section includes a list of risks identified from past gasification projects and provides commentary on specific design and mitigation measures incorporated in the proposed technology that address these risks . Risks exist for all projects, but issues from past projects based on alternative designs do not necessarily apply to the proposed technology. Learning’s can be incorporated, and mitigation measures can be provided. There are many operating MSW gasification facilities worldwide which have demonstrated that risks can be overcome. Further a history of successful operation of Eco-Waste gasifiers on similar waste and at similar scale as that proposed for Laverton North further demonstrates and supports the operational suitability and capability of this technology</p> <p>The brief for the thyssenkrupp study was to review the suitability of the Eco -Waste technology, not to undertake a comparison of alternative technologies. A BREF assessment was conducted and is discussed in the WAA in Section 7.</p> <p>Section 3 of the WAA is not titled Environmental Best Practice. Section 7 in the WAA presents an assessment of Environmental Best Practice. The response notes that review of the WAA was limited to those sections and appendices relating to the Best Practice Assessment, the Air Quality Assessment (AQA) and the Health Risk Assessment. The review did not address the entire WAA and raises the question as to whether the best practice section of the report was evaluated. tkIS was not employed by REA to undertake a due diligence report and it was made clear in the tkIS report that they were</p>	
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	<p>not even possible to cross check whether the BREF conclusions are similar to those reached by tkIS, the specialist incineration technology company employed to provide an independent due diligence report on the technology, because they didn't undertake a BREF assessment.</p> <p>EPA should require the tkIS report to be amended to address the points outlined above. The independence of tkIS from the project team also needs to be stated. The qualifications and experience of the tkIS report authors should be stated. The title of the tkIS report, Independent Technology Audit is not accurate, as the report relies only on information provided by Eco-Waste. Additional independent investigation of information about the reference plants would assist in this regard.</p> <p>The sources of information upon which Section 1, about the project and Section 6, the process description, and Section 7, the environmental best practice section, should be stated in the WAA document. This may be the Hatlar report referred to in the tkIS report, but this report is not mentioned in these sections, or in the Section 19, the References Section. The tkIS report is mentioned in Section 7, but not included in Section 19 References. Ideally, the Hatlar report, plus other sources of information used to create these sections should be provided, and these sections of the WAA document should be rewritten and properly referenced, with the sources of information identified. Section 3 of the report, which outlines the project team experience and track record should be rewritten to identify the authors of these technical sections and their specific and relevant experience stated. This would provide a greater level of confidence in the WAA than is currently the case.</p> <p>Section 6.2 Source of Residual Waste Supply and Compositional Analysis contains information about the</p>	<p>working for an independent third party who generously provided the report to REA to support the capability of the technology. The brief for tkIS was clearly laid out in their report and contrary to the assertion in the response it was confined to a Technical Due Diligence Study</p> <p>The thyssenkrupp report was intended as indicated in the scope detailed in the document and is not the property of REA. The report is part of an extensive WAA document and was included by REA to provide an independent technical review of the selected gasification technology. Documentation provided by REA in the WAA addresses the other issues raised by the responder. As required by the study brief, thyssenkrupp independently assessed the Eco-waste technology from the information provided.</p> <p>The sources of the information are derived from information provided by the technology provider and with reference to the various BREF documents. As previously indicated the tkIS report was undertaken for an independent third party not connected to REA and its inclusion was only to provide additional support for the capability of the technology. Data sources which are not provided by the technology provider, REA or the various consultants have been referenced appropriately.</p> <p>REA has provided copies of the HRL reports for assessment by the EPA. The data for</p>	
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	<p>sources of waste feedstock, the expected characteristics and composition of the waste. This references work undertaken by MRA on residual waste audits of Melbourne councils, and work undertaken by HRL Technology Group.....This approach seems valid. However, no copy of the HRL report is provided, and the methodology used to derive these cannot be assessed.</p> <p>Diversion of more than 97% of input waste from landfill, as stated in section 1 of the WAA, is very high and relies on slag being used for road base or other products. If the slag is not suitable for this purpose, or not in demand by the market, it will need to be landfilled. A copy of certified chemical analysis reports needs to be provided demonstrating that the slag does not contain elevated total and/or leachable contaminants preventing its proposed use.</p> <p>Demonstration that the proposed development has been built in accordance with the WA and the BAT requirements of the EU BREF (2016 and 2018 draft). EPA specify as a condition of the Works Approval the preparation of a construction verification report prepared by an EPA-appointed auditor demonstrating that the facility has been built in accordance with the WA and the EU BREF (2016 and 2018 draft) before a licence is granted to REA.</p> <p>The uncertainties raised regarding the Best Practice Assessment have a flow on effect of reducing confidence in the modelled air emission rates and subsequently, predicted impacts, and AQA conclusions. Assessment of the potential risk to the local air quality environment surrounding the proposed REA facility should not be</p>	<p>these reports is REA's proprietary information and was provided on a commercial-in-confidence basis.</p> <p>Section 14 (not reviewed by the respondent) describes in detail the expected characteristics of the solid waste residues to be generated by the WtE facility. Solid waste generated from the proposed WtE facility will consist of gasifier slag (up to 35,365 tonnes/annum) and Flue gas residue from flue gas treatment (4562 tonnes/annum). Testing of gasifier slag in Australian NATA certified laboratories derived from gasifier reference sites has shown that this material is likely to be contain contaminants that are lower than the threshold defining industrial waste and as such would be suitable for recycling into road base or other products. Testing will be required to classify the gasifier slag when in production and this classification will determine its fate. REA has in-principle agreements with users of this type of material to take the gasifier slag provided in meets the appropriate classification. The flue gas residue contains the contaminants from the treatment of the flue gas stream and testing has shown that this material will be classified as a prescribed waste and will require disposal to suitably licensed waste treatment facility.</p> <p>The proposed development is in the planning stage and final designs will not be completed until a Works Approval has been granted. Clearly the EPA will require a construction verification report.</p> <p>The response makes an assertion indicating that uncertainties raised regarding the best practice reduce confidence in the air modelling etc without reviewing the document in its entirety. REA do not accept that there are uncertainties of any consequence in the best practice assessment and do not accept that the air modelling and following conclusions are compromised in any way.</p>	<p>Sections 6.3.1.3, 14</p>
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	<p>accepted until uncertainties regarding the proposed technology are addressed.</p> <p>A series of observations are made regarding the proposed process design, specifically relating to achieving required temperatures for destruction of pollutants and rapid temperature quenching to reduce the formation of dioxins/furans. Additional information and assessment is required to demonstrate that combustion temperatures are achieved and that the design will achieve rapid temperature quench.</p> <p>Sensitivity analysis for stack dimensions was arrived at using a 'combined stack' approach with an effective stack diameter determined for three separate flues. No details are available on the building characteristics used (Width, Length and Height) to independently verify that Good Engineering Practice (GEP) has been adopted. Additional information is required to demonstrate that GEP for design of stacks has been achieved to limit entrainment of pollutants in building wakes, and subsequent avoidable impacts at ground level receptors near to the source.</p> <p>The methodology for application of background air quality data to the model predictions is not standard and does not follow the full technical requirements of SEPP(AQM). Annual average measured concentrations from a nearby EPA station were applied with little analysis or justification. The AQ study needs to be supplemented by undertaking further assessment of background levels. The prescribed method, which is to apply background concentrations of pollutants measured (NO<sub>2</sub>, CO and SO<sub>2</sub> in this instance) on an hour-by-hour basis to the model, should be applied.</p> <p>Demonstration that air emissions from the proposed</p>	<p>The technology provider has provided the information regarding process design and this information is based on the design, development, operation and monitoring of their rotating vertical gasifiers operating since 2004. These systems include temperature and flue gas monitoring throughout the process and feedback loops to manage temperatures in the process are supplied by a CEMS system. As part of the tkIS study, actual temperature measurements at the gasifier outlet and secondary oxidation chamber outlet were provided by Eco-Waste for one of their operating plants. These readings showed that required temperatures were being achieved. Rapid temperature reduction occurs through the boiler heat exchanges and this is standard steam heating technology. tkIS commented that the boiler reviewed is designed for fast quench.</p> <p>The AERMOD modelling assumes that there are three flues joined together that effectively make up one stack protruding through the roof of a 2-tiered rectangle building. The first tier where the stack is protruding out of is 28 metres tall and the second tier is at a height of 35 metres. The 'Building Wake' effect was incorporated in the AERMOD modelling. Building characteristics (including dimensions) are featured in drawings in the EPA Works Approval Application. Further, this aspect of detailed design has not been completed at this stage. Good engineering practise be considered and applied in subsequent detailed design phases of the project once the WA is granted.</p> <p>As per the EPA SEPP AQM, information on background air quality was provided and considered as part of the predictive calculations.</p> <p>The input data used for the air modelling was obtained from similar (so far as is</p>	<p>Section 6.3.5</p> <p>Section 10.6.3</p>
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<p>development actually comply with Schedule E of SEPP(AQM) and IED 2010/75/EU in all operating scenarios, including steady state, unsteady state, all transient, part load and start up and shut down operating conditions as defined in IED 2010/75/EU.</p> <p>EPA specify Proof of Performance as a condition of the Works Approval and that this be independently verified by an EPA-appointed auditor before a licence is granted to REA.</p> <p>The uncertainties raised regarding the Best Practice Assessment have a flow on effect of reducing confidence in the modelled air emission rates and subsequently, predicted impacts, and therefore the HRA. Assessment of the potential risk to human health due to the proposed REA facility should not be accepted until uncertainties regarding the proposed technology and the air modelling are addressed.</p> <p>There are inconsistencies in stated concentrations of contaminants used as inputs to the health risk calculations. Some inconsistencies could lead to significant (78x)</p>	<p>reasonably practicable) from Chinese operating plants:</p> <ul style="list-style-type: none"> <li>Steady state operation – average of data from several plants was used for a particular parameter, where available, was applied</li> <li>Upset condition – highest/maximum data point from several plants was used for a particular parameter, where available, was applied (an example of this was arsenic where the Chinese plant value appeared to be high, based on the area where waste will come from in Melbourne, but it was still used in the modelling and explained in the report).</li> </ul> <p>Question directed to the EPA. REA acknowledge that proof of performance will be required as a normal component of the requirements of the commissioning of the WtE facility.</p> <p>The response makes an assertion indicating that uncertainties raised regarding the best practice reduce confidence in the air modelling etc without reviewing the document in its entirety. REA do not accept that there are uncertainties of any consequence in the best practice assessment and do not accept that the air modelling and the Health Impact Assessment and the following conclusions are compromised in any way. The HHRA does depend on the results from the air quality modelling so if there are changes in the engineering of the plant which requires updating of the air quality modelling then the HHRA will also need to be updated. The air quality modelling was undertaken using the approach required by the EPA Victoria and used emissions from plants with less pollution control equipment than is proposed for this plant so it should be appropriate for consideration of risks from this facility. In addition to using information on emissions from reference facilities which were similar but had less pollution control equipment, the HHRA has made conservative assumptions about how long people will be present in areas affected by the emissions and the concentrations of chemicals to which they will be exposed. For example, in residential areas people are assumed to be present in their homes 24 hours a day, 7 days a week all year round. In regard to the multi-pathway exposures, the maximum deposition rate has been used to estimate risks. These conservative assumptions have been included to ensure the risks have been estimated appropriately and not underestimated.</p> <p>The respondent has not made it clear exactly which values are inconsistent. The calculations use the values as provided by the air quality modelling team (in excel format) and these values were used directly from the spreadsheet. The exposure</p>	<p>Sections 7, 16</p> <p>Section 16</p>
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	<p>underestimations in the predicted risk levels. Inconsistencies should be addressed prior to further assessment of potential risk to human health from the proposed REA facility.</p> <p>Questions are raised with regards to some potential exposure pathways that were absent from the risk calculations, including market gardens or stock grazing near to the facility, as well as dermal risk from deposited materials for nearby workers. Comments should be made on the absence of these exposure pathways from the HRA prior to further assessment of potential risk to human health from the proposed REA facility. Cattle grazing should be assessed.</p> <p>In Appendix B, the toxicology is focused on human health risk. Potential ecological impact associated with emissions has not been considered in this report, specifically Hydrogen Fluoride, where the toxicity value is 0.60 ug/m<sup>3</sup> (phytotoxicity) is more stringent than the human health criterion. Potential ecological impact associated with emissions should be considered in this report, specifically Hydrogen Fluoride.</p>	<p>assessment parameters listed in Appendix B are also those listed in the calculations pages in Appendix C. Those parameters are also those recommended for use by the NEPM for the assessment of site contamination agreed to by national health authorities - where such values exist. One difference was noted - where table B3 noted 85% of fruit and vegetables for children was from above ground crops while the relevant spreadsheet has 84% listed. This would not change the results of the calculations.</p> <p>Consideration of stock grazing was discussed in Section 3.2 of the report. Council requirements for the relevant Councils specifically exclude the keeping of farm animals in residential areas in these LGAs. It is noted that potential for uptake of persistent chemicals into livestock is often assessed in these types of assessment for such facilities. However, it is important to consider the land uses in the vicinity of such facilities. In this case, there are no farms keeping livestock in the area and the Councils specifically exclude such in their areas. This is why the assessment focused on home grown fruit and vegetables and chickens (for eggs). The assessment of home grown fruit and vegetables covers the relevant considerations in regard to market gardens. It is noted that there are no market gardens in the vicinity of the proposed facility. In regard to dermal exposure of workers - this pathway has been assessed for residents who are assumed to have significantly more exposure to the soil than workers and the calculations for the resident were based on the maximum deposition rate under normal conditions and the maximum rate under upset conditions so these calculations cover both residents and workers.</p> <p>The assessment that has been undertaken is a health impact assessment. Such reports are based solely on the potential for risks to human health and are not designed to cover ecological risks which is why a guideline based on human health impacts was sourced. It is noted that both the NSW EPA and EPA Victoria provide a 90 day average guideline for Hydrogen Fluoride of 0.5 ug/m<sup>3</sup> based on ecotoxicity. The value for 24 hours is 2.9 ug/m<sup>3</sup> so the acute risk changes from a hazard quotient of 0.008 for max normal and max upset. For the chronic risks the hazard quotient would change from 0.00016 for commercial workers to 0.04 (using the 90 day value) (the hazard quotient for residents is lower than that for workers). So changing the guideline for HF to one that includes protection of sensitive crop species (which are not located anywhere in the vicinity of the plant) would not lead to a change to the conclusions.</p>	Section 16
028	Appendixes 5, 8, 9, 10, 11, 13, 18 are not included in the application released for the public to see and they are not listed in the content page. What do the appendixes content that it is so secret?	These appendixes have been supplied to the EPA for review on a commercially confidential basis. REA regard the information in them as proprietary and do not wish for it to be made available to their competitors.	

<p>The model in the community information session had a By pass duct for the bag house. This is not EU standards. Is there a by pass stack in this plant? If so where is the modelling and the risk assessment for all the by pass paths?</p> <p>What is the emergence evacuation in the syngas chamber? Is it a risk? Is this risk assessed? Is REA capable to understand the risks? What other risks does REA has missed? REA shall list all the risks and its assessment and see if they have the knowledge to be handling this technology.</p> <p>Is the applicant committing to CEMS that meet any standards, like European standards? Which standards? Please answer.</p> <p>The environmental Risk Assessment has 8 lines in Table NO 5-2. Very unsatisfactory. Many massive risks are not addressed: Where is the risk assessed for when the flue gases by pass the bag house? We will not list them all. They should know it. Please provide.</p> <p>Table 7-1 there are many yes which are not in accordance to REA. One example: The use of modelling to provide information of the boiler ....., Ecowaste did not do modelling. Modelling is a very basic activity in the design of BAT. Can EcoWaste do modelling? Please answer with examples. There are many more that need to be discussed by the proponent. Please provide.</p> <p>Compliance with the 11 principles of the EP Act to demonstrate best practice is not presented in the application. Please provide. How can the application be accepted?</p> <p>Where is best recommended the vertical system for</p>	<p>There is no flue gas bypass on the baghouse and no bypass stack exists. The respondent may have mistaken the activated carbon addition point on the model for a bypass.</p> <p>The draft fans operate to draw air from the gasifier and the secondary oxidation chamber and in the event that syngas needs to be urgently evacuated then the waste feed is stopped and the fan speed can be increased. An environmental risk assessment and a preliminary Hazard Assessment have been completed. REA will work with the technology provider, the EPC contractor and consultant engineers together with specialist operational staff to ensure that appropriate expertise is available to operate the facility effectively and safely.</p> <p>REA will comply with the requirements of the EPA Guideline <i>A Guide to Sampling and Analysis of Air Emissions and Air Quality</i> which sets out the requirements for continuous emissions monitoring.</p> <p>The descriptions used to classify consequence (Table 5-2) are commonly used and are compliant with the AS NZS ISO 31000-2009 <i>Risk Management Principles and Guidelines</i>.</p> <p>Table 7-1 summarises the compliance of the proposed WtE system with best practice. The compliance assessment is based on information provided in the WAA.</p> <p>EcoWaste have been designing and building similar gasifiers similar to that proposed since 2004 and they use up to date modelling packages in their designs.</p> <p>A best practice evaluation has been presented in the WAA. Within this section the relevant principles were evaluated.</p> <p>The various BAT documents do not recommend particular technology types or shapes.</p>	<p>Sections 5, 15.4, Appendix 4</p> <p>Section 6, 7, 14</p> <p>Section 3</p> <p>Section 7.4.3</p> <p>Section 7.4.2</p>
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	<p>residual waste?</p> <p>Apart of Ecowaste recommendation to use vertical plant? Where is Europe recommended? 14. Why is Europe plants of the same capacity are not done with the vertical system? How can be the Eco waste system the best available technology? Nobody else uses it in the world. Is it cost the reason to use this plant? Why not? Which other plant is cheaper?</p> <p>The basis for the air modelling, section 10.4.1: The data of the discharge of six plants treating residual waste was received from the manufacturer. The data for two plants were used in the modelling, why not the data from 6 plants?</p> <p>Can EPA get an independent assessor of the modelling to verify the modelling? If yes, can EPA publish the results?</p> <p>How can we believe that the waste input to the reference plants is so similar to the Melbourne residual waste? The proponent says so? The Chinese manufacturer says so?</p> <p>The data used is from stack tests results which do not even state the air references, the methods used, the oxygen content. How can this data be translated to any assessment if it is not referenced to air conditions and oxygen content? The references are not translated? 21. How can we believe these stack test reports? The reports do state the methods used, the instrument serial numbers, the technician name, why was the plant operating at full load, etc.</p>	<p>Design rests with the technology provider.</p> <p>There are far more gasifiers operating in China and Japan than there are in Europe. All manufacturers have developed designs that are proprietary and which are suited to the duties envisaged. The vertical design used by EcoWaste has been developed over many years to operate effectively on MSW.</p> <p>The input data used for the air modelling was obtained from similar (so far as is reasonably practicable) from Chinese operating plants:</p> <ul style="list-style-type: none"> <li>• Steady state operation – average of data from several plants was used for a particular parameter, where available, was applied</li> <li>• Upset condition – highest/maximum data point from several plants was used for a particular parameter, where available, was applied (an example of this was arsenic where the Chinese plant value appeared to be high, based on the area where waste will come from in Melbourne, but it was still used in the modelling and explained in the report).</li> </ul> <p>This response is a question directed to the EPA</p> <p>REA through its consultants have conducted extensive testing of the composition of Melbourne residual waste and together with publically available reports the consultants have developed chemical compositional analysis and this has been shown to fall within the range of compositional analysis being processed in EcoWaste gasifiers.</p> <p>REA provided the data sheets with sufficient translation to understand the emissions information. However, in view of this response and those of others, the entire reports have been obtained and are being translated by an accredited translator. These reports detail the methods used and other parameters like oxygen content. All sampling was undertaken according to the Chinese Standards <i>“Technical Specifications for Emission Monitoring of Stationary Source (HJ/T 397-2007)”</i> and the analysis was done in accredited laboratories using the techniques specified in the Chinese standards.</p>	<p>Section 1.3.4</p> <p>Section 10.4</p> <p>Section 6.2</p>
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	<p>How do we know that the air will leave the stack at 150 degrees Celsius? Where is the thermal assessment to proof this? Is this also because Ecowaste says so?</p> <p>The application states that further information on the data is given in Appendix 21: The data in Appendix 21 cannot be identified with the respect to the data used in the modelling. The data in Appendix 21 does not meet European standards of emissions.</p> <p>Table 14.3: Where in the world there is an incineration plant of residual waste that produces 420 kg of bottom ash per tonne of residual waste treated? Please provide source stating 420 kg.</p> <p>Will dioxins be produced in the facility</p> <p>All risks are moderate, this is too high to me, there is not a way to reduce risk to maximum practicable possible? Why is it not used in this plant? Is it to be best practice?</p>	<p>EcoWaste have designed and built 25 gasifier systems since 2004 and have considerable knowledge of the operation of their technology and the flue gas exit temperatures. This experience, based on actual operating commercial facilities, allows them to indicate the expected exit temperature of the flue gas. An independent technical review of the technology by thyssenkrupp, a German Company, obtained actual temperature measurements at the gasifier outlet and secondary oxidisation chamber outlet from Eco-Waste for one of their operating plants. These readings showed that required temperatures were being achieved.</p> <p>The data used in the air emissions modelling came from the data presented in Appendices 20 and 21. The air emissions assessment clearly indicates that the steady state data that was modelled was based on the average of the entire data set and the upset conditions modelled was taken as the highest reading recorded for that parameter in the data set.</p> <p>The data in Table 14.3 in the response is referenced on page 255 of the WAA and is from a paper authored by Kalogirou E et.al. titled "<i>Fly Ash Characteristics From Waste-to-Energy Facilities and Processes For Ash Stabilization</i>" <a href="http://www.iswa.org/uploads/tx_iswaknowledgebase/Kalogirou.pdf">http://www.iswa.org/uploads/tx_iswaknowledgebase/Kalogirou.pdf</a></p> <p>The facility is designed to minimise the production of dioxins and furans and the emissions of these substances are shown to be lower than the EU IED limits and the SEPP limits. These design aspects are; low oxygen environment in the gasifier limits dioxin formation, gasifier exit temperature of around 850°C destroys dioxins/furans, Operation of the secondary oxidation chamber at 1100°C – 1200°C maximises destruction of dioxins/furans and any precursor molecules, Rapid cooling in the heat exchanges minimises the potential for reformation of dioxins/furans and the addition of activated carbon into the flue gas stream prior to the baghouse filter removes most of the remaining dioxins/furans prior to exhaust in the stack.</p> <p>The WAA specifically states that it has paid particular attention to those risks where the residual risks after design and operational mitigation have been designated as medium or greater. These risks require specific management protocols which will be further elucidated in the Environmental Management Plan for the project. The environmental risk assessment identified a number of risks that were rated as low and these were not specifically addressed in the text of the WAA but were addressed in the Environmental</p>	<p>Section 3</p> <p>Section 10.4.1</p> <p>Sections 6.3.1.4, 6.3.3.1, 6.3.7.4, 6.3.7.5, 6.3.8.2, 6.3.8.3</p> <p>Section 5.1 Appendix 4</p>
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	<p>Appendix 4, table 4: Refer to the risk assessment: how is fire runoff managed? By pumping the liquids into tankers!! Have they consider to seal the site to content the liquid from fire fighting?</p> <p>Are infrared sensors to be used in the bunker? Please answer.</p> <p>Appendix 20: What is the make and model and the serial number of the CEMS equipment used to collect the data? How can this data be considered without stating how the data was collected and the reference of the data.</p> <p>Two accredited EPA auditors for facilities, voted by the community, shall be sent to China to audit the Eco Waste Plants and take stack tests, like tests required by EPA in Victoria. Otherwise, how can the community believe the data? How can EPA believe the data?</p>	<p>Risk Assessment attached.</p> <p>The entire operational area of the site is sealed and bunded and water flows to in-ground sumps from which water can be removed to tankers. In the unlikely event of a catastrophic fire and fire water landed outside the bunding or overflowed from the bunding, the water would flow to a containment basin from where it could be removed via tankers to a licensed treatment facility</p> <p>The WAA indicates that the fire detection and protection systems will comply with the EPA Guideline “<i>Management and Storage of Combustible Recyclable and Waste Materials</i>”. These guidelines require a fire safety study and REA will implement the recommendations of this study. Detailed design has not yet commenced and completing the fire safety study prior to final design will allow the recommendations of this study to be incorporated in the Facility.</p> <p>The CEMS systems operated in the Chinese facilities comply with the Chinese standards; <i>Specifications for Continuous Emissions Monitoring of SO<sub>2</sub>, NO<sub>x</sub> and Particulate Matter in Flue Gas Emitted from a Stationary Source (HJ 75-2017)</i>, and <i>Specifications and Test Procedures for Continuous Emission Monitoring Systems of Flue Gas Emitted from Stationary Sources (HJ/T 76-2007)</i>. Operations of CEMS systems in Australia will be required to comply with Australian standards and the EPA Guideline <i>A Guide to Sampling and Analysis of Air Emissions and Air Quality</i>.</p> <p>This response is addressed to the EPA. REA would like to submit that the data provided has been collected by methods approved by the Chinese equivalent of the EPA (State Environmental Protection Administration) and is in accordance with their specific guidelines. All sampling was undertaken according to the Chinese Standards “<i>Technical Specifications for Emission Monitoring of Stationary Source (HJ/T 397-2007)</i>” and the analysis was done in accredited laboratories using the techniques specified in the Chinese standards. The CEMS systems operated in the Chinese facilities comply with the Chinese standards; <i>Specifications for Continuous Emissions Monitoring of SO<sub>2</sub>, NO<sub>x</sub> and Particulate Matter in Flue Gas Emitted from a Stationary Source (HJ 75-2017)</i>, and <i>Specifications and Test Procedures for Continuous Emission Monitoring Systems of Flue Gas Emitted from Stationary Sources (HJ/T 76-2007)</i>.</p>	<p>Section 12</p> <p>Section 6.3.2.5</p>
029	The proposed process is being described as based on gasification followed by a combustion chamber very similar	The gasifier is quite different to conventional moving grate technology. The gasifier operates in a low oxygen environment and as a consequence no combustion takes	Sections 1.3.4, 3.1, 6, 7.7

	<p>to conventional moving grate technology combustion chambers. We note that there have been notable MSW gasification project that have failed (e.g. Air Products Teeside project in the UK) The independent audit by Thyssen Krupp notes “gasification of variable inputs such as</p> <p>MSW is more technically challenging and there are examples of waste gasifier projects that have not been successful. .... information on the failures is not readily available in the public domain”. In light of this what are the advantages of having the gasification step in the process? And should the process be considered primarily as a combustion technology?</p> <p>We note the proposal has provided 12 month emissions data in summary form for the reference plant in China. Is this duration and format sufficient for Victorian authorities and citizens to ascertain if there have been any emissions breaches or issues with this emerging technology?</p> <p>The proposal states that it will be processing MSW direct from kerbside collections. Is MSW like this classified as residual waste or should pre-processing be required to ensure all recyclables are removed prior to energy recovery.</p> <p>The Works Approval has applied meteorological data from years 2012- 2016. Does EPA consider this to be the most appropriate years to model the potential environmental</p>	<p>place but the organic based products are converted to syngas with the dominant gases being hydrogen and carbon monoxide. The vertical rotating gasifier allows good mixing of the incoming residual MSW ensuring near complete conversion of the waste to syngas and the directly coupled syngas oxidation chamber allows complete combustion of the syngas and precursor organic molecules. Incineration is not as controllable and potentially leads to higher risks of undesirable emissions and incomplete conversion of low-energy content or calorific value waste.</p> <p>There have been a number of gasification projects that have failed and these have provided specific lessons which have been incorporated in gasification technology as it has evolved in recent years. Development of a improved gasifier feeding systems, development of the vertical gasifier, inclusion of gasifier rotation and bottom grate rotation to mention a few developments have contributed to a robust technology capable of effectively processing MSW. The 2003 EDL Wollongong project quoted in the response was a classic case of issues associate with scale-up from what was effectively a small pilot plant. The EcoWaste gasifier technology has been operating at commercial scale since 2005.</p> <p>The reasons for the selection of the gasifier technology have been extensively explored in the WAA.</p> <p>The WAA provided 12 months on line emissions data from two reference plants. Advice from the EPA indicated that 12 months data was appropriate to allow the assessment.</p> <p>The Melbourne kerbside waste collection system is based on source separation and the waste that is not included in the green waste bin or the mixed recycling bin is deemed as residual waste. A high level study of the viability of further sorting the residual bin waste at the proposed WtE facility showed that this was not viable.</p> <p>Question addressed to the EPA</p>	<p>Appendix 23</p> <p>Sections 1.3.4, 7.7</p> <p>Appendix 20</p> <p>Sections 6.2.1, 6.2.3</p>
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	<p>impact or more recent data through to and including 2018?</p> <p>In section 10.4 the application refers to six reference sites which are similar to the proposed WtE facility in for Laverton North. How will the EPA take this into consideration in accessing the Works Approval if the technology or waste feed is not like for like and potentially providing misrepresented data?</p>	<p>Question addressed to EPA</p> <p>REA comment that there are three of the reference facilities operate with identical 100 tonne per day gasifiers treating MSW and these are clearly Like-for-Like systems. One of the other reference sites uses larger gasifiers (150 tonne per day). Two systems are smaller but all these systems are commercial operations</p>	<p>Section 3</p>
<p>030, 033</p>	<p>We demand proper community consultation for the Waste to Energy plant in the West. The recent information sessions on the proposed Waste to Energy plant by Recovered Energy Australia were barely known by residents and poorly attended to get works approval. This is not sufficient for a project with implications for health, environment and local government financial risk. Proper community consultation should not be a tokenistic tick box exercise but a genuine and transparent attempt to inform and provide independent evidence of concerns, risks and answer questions.</p> <p>Waste to energy seems a simple solution for our waste crisis, but the risk with gasification is that this creates gasifier slag, ash residues and flue gas which is technically prescribed industrial waste (PIW). These residues may have contaminates which are too toxic for regular landfill. Approval is being sought from the EPA, but should it be granted, and if so, on what terms?</p> <p>We also demand that there be an independent environmental assessment completed as per the Environmental Act.</p> <p>Limited community awareness and support</p> <ul style="list-style-type: none"> <li>• REA suggests the community are supportive in their executive summary, yet at the community consultation on August 19, may were extremely concerned about this proposition. Negative or sceptical would be a better way to describe most,</li> </ul>	<p>The community consultation requirements of both the Approvals Proposal Pathway application and the Works Approvals application for Recovered Energy Australia's (REA's) proposal to develop a waste to energy facility at 28 Alex Fraser Drive, Laverton North, were developed according to guidelines issued by EPA Victoria, including:</p> <ul style="list-style-type: none"> <li>• EPA fact sheet, <i>Engaging people actively: A Planning Process for Community Engagement (Publication # 1145.1)</i></li> <li>• <i>Approvals Proposal Pathway Guideline (Publication # 1560.2)</i></li> <li>• <i>Works Approval Application Guideline (Publication #1658).</i></li> </ul> <p>This guidance was supported by three meetings with representatives of EPA Victoria Capability, Engagement and Legal division, to ensure a better understanding of the legislative requirements and EPA expectations of a community engagement plan. Ultimately, six iterations of the REA Community Engagement Plan were presented to EPA for review prior to acceptance of REA's Works Approval Application (WAA).</p> <p>An important source of community attitude toward the development of a waste to energy facility was obtained from the 177 community members who attended the <i>2017 Western Metropolitan Partnership</i> assembly to help determine the key priorities for the Western region. Following lengthy discussion and facilitated workshop sessions at the assembly, all in attendance agreed that the second top priority for the region was to develop:</p> <p style="text-align: center;"><i>A centre of excellence for waste addressing three key themes being: natural environment, renewable waste to energy and micro grids</i></p> <p>A presentation to the Annual General Meeting of the Western Region Environment Centre, which included a lengthy question and answer session in December 2017 resulted in REA being invited to display a 1:50 scale model of the proposed REA facility for the local community to scrutinise at the Eco-Living Centre, 28 Ridge Drive, Werribee, from December 2017 until October 2018. The model provided a clear demonstration of</p>	<p>Section 4</p>

	<p>if not all, responses from the community, at this meeting.</p> <ul style="list-style-type: none"> <li>• I learned of this by consultation by chance and I had not received any notification about this project. I contacted the council who had not communicated on the session and put out social media at the last minute. Myself and others doorknocked in Laverton North and neighbours in Laverton who stated they were not aware of this project. It was due to spreading the word through social media and local connections that some residents attended.</li> <li>• REA indicated that community consultation was done at the 2018 Waste Expo. This engagement would be better described as industry consultation, as it's not an event that general public would be expected to attend</li> <li>• REA suggested they advertised in The Age and local papers, which is proven to be ineffective in creating community awareness. A letterbox drop is the normal communication process in conjunction with local council.</li> </ul> <p>Previous consultations about state government or other local government projects have notified the community via a letterbox drop with promotions on social media and local newsletters</p>	<p>the process and encouraged community queries and conversation regarding its operation. The display was supported by Fact Sheets to ensure interested community members were provided with all relevant information. The Fact Sheets included the website URL and REA contact details for easy access to further information if required.</p> <p>Other presentations to local community groups include:</p> <ul style="list-style-type: none"> <li>· An invitation in August 2018, together with Wyndham City Council, to present to a special meeting of the Western Region Environment Centre on the topic of <i>Residual Municipal Solid Waste to Energy</i>.</li> <li>· Rotary Club of Werribee on 5 February 2019</li> <li>· Brooklyn Community Representative Group (BCRG) Community Open House on 6 March 2019</li> </ul> <p>Following submission of the WAA, REA conducted a community information session at the Laverton Community Hub from 6:00pm to 7:30pm on Monday 5 August 2019 to provide information to the community regarding the proposed development of a waste to energy facility at Laverton North and to seek their feedback. The event was promoted in both the Hobsons Bay Star Weekly (circulation 47,769) on page 10 and the Wyndham Star Weekly (circulation 43, 469) on page 15, and appeared in the online editions available at <a href="https://www.starweekly.com.au/">https://www.starweekly.com.au/</a>. A direct email invitation was also sent to all community members registered on the REA community contact database.</p> <p>An additional community event was conducted by EPA Victoria at the same location on Monday 19 August 2019. This event was promoted by EPA through website pages including Engage Victoria and LinkedIn Australia, and Hobson Bay City Council also promoted the event on their Facebook page.</p> <p>This is not a government project and neither the Planning Permit nor the WAA processes require direct communication with each member of the community. The engagement process has been conducted according to EPA requirements and as outlined in <i>Approvals Proposal Pathway Guidelines (Publication # 1560.2)</i> and <i>Works Approval Application Guidelines (Publication #1658)</i>, including implementing EPA example tools as outlined in the EPA fact sheet, <i>Engaging people actively: A Planning Process for Community Engagement (Publication # 1145.1)</i> IAP2 Public Participation Spectrum.</p> <p>This request can only be addressed by the EPA</p>	
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	<p>I am on the engage.vic.au email list and didn't receive notification through this means</p> <p>Energy can be fed to the grid and /or supply of steam or hot water to adjacent industry. Which industry will this be supplied to and what infrastructure / works will be required to enable this?</p> <p>The gasification requires clean waste wood. How is "clean" defined? What quantity is required and how will this be sourced?</p> <p>The executive summary suggests the slag could be recycled into roadbase.</p> <ul style="list-style-type: none"> <li>• What testing and approvals have been done, and are required, for the proposed use of this slag as a material for roadbase.</li> <li>• If slag is not acceptable to use in roadbase, which is suggested in the summary, then which landfill will it be consigned to? It appears there is still a need for landfill regardless and it will not be replaced and there is a risk it will contain other toxic materials.</li> </ul> <p>The facility aims to manage 200,000 t/annum. The executive summary states that a project benefit is a diversion of 195,000 tonnes per annum of putrescible organic waste. This figure needs to be clarified as when questioned at the community consultation, it was implied this is may not be the case on the long term, as not all councils are looking to implement FOGO recycling. If this is the case, how will a 50% or greater reduction in organics affect emissions, slag and ash residues?</p>	<p>Initially electricity will be generated through steam turbines and it will directed into the grid. Provision in the design has been made to allow the later supply of steam and/or hot water to businesses that might require this service. While discussions with some businesses operating in the area have been undertaken, further more specific discussions await granting of the Works Approval.</p> <p>The WAA specifies the type of wood and the quantities. The quantities are relatively small as it requires 6 tonne of wood billets to initiate the gasifier and bring it to temperature from when the residual waste provides all the heating required.</p> <p>The WAA describes in detail the expected characteristics of the solid waste residues to be generated by the WtE facility. Solid waste generated from the proposed WtE facility will consist of gasifier slag (up to 35,365 tonnes/annum) and Flue gas residue from flue gas treatment (4562 tonnes/annum). Testing of gasifier slag in Australian NATA certified laboratories derived from gasifier reference sites has shown that this material is likely to contain contaminants that are lower than the threshold defining industrial waste and as such would be suitable for recycling into road base or other products. Testing will be required to classify the gasifier slag when in production and this classification will determine its fate. REA has in-principle agreements with users of this type of material to take the gasifier slag provided in meets the appropriate classification. The flue gas residue contains the contaminants from the treatment of the flue gas stream and testing has shown that this material will be classified as a prescribed waste and will require disposal to a suitably licensed waste treatment facility.</p> <p>The WtE proposal is based around receiving 200,000 of residual waste per annum. However, the quantity of waste processed will depend on the chemical composition of the actual waste. The introduction of increased source separation or the removal of organic matter by the adoption of FOGO by some Councils will alter the composition of the waste and the quantity of non-carbon based materials entering the facility. The gasifier technology is designed to accommodate a wide range of waste materials and modelling for waste as it exists now and with the reduction in organics by the partial adoption of FOGO has been undertaken to show the versatility of the proposed facility. Reducing food organics by the adoption of FOGO will increase the heating value of the waste which will mean that the throughput is reduced below 200,000 tonnes per annum and while there will be an increase in the percentage of the waste being non-</p>	<p>Section 6.3.1.2.5</p> <p>Sections 6.3.1.3, 14</p> <p>Section 6.2.4,</p>
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	<p>The waste hierarchy in the National waste Strategy preferences waste management to reduce waste generation through 1. Avoidance. 2 reuse. 3 recycle. Can it be considered that this has been fully enacted by state government and local council? If more effective strategies were implemented to avoid, reuse and recycle, which is currently being proposed such as FOGO and recycling systems, how will this affect the waste stock that REA would receive. And any outputs</p> <p>Is there any risk that councils could be locked into a contract requiring waste to be sent to energy recovery which could counteract or undermine initiatives for waste avoidance and reuse, as per the hierarchy?</p> <p>Flue gas treatment residues could be category B PIW, but it could be classified as category A PIW. If this is a category A, how will this be managed? Will diverting organics to FOGO be a variable in the waste stock that will contribute to outcomes of this classification</p> <p>A significant concern for locals is the cumulative effect this facility will have on the area. It is already highly industrial, what impact will another industrial facility and it's emissions have on the area</p>	<p>carbon based but the reduced throughput would mean that the slag generated would remain roughly the same.</p> <p>REA fully support any initiatives to avoid, reuse or recycle the components entering MSW and landfill. However, in the short to medium term various Government bodies have assessed that with the increasing population of Melbourne and the quantity of waste likely to enter the residual bin system, that there will be more than sufficient waste to support the REA proposal. However, in the event that within the operational life of the WtE facility, residual waste volumes reduce then the modular nature of the proposed facility will allow suspension of operations in one or more of the gasifiers to maintain operations while reducing throughput.</p> <p>While the specifics of any contracts are still to be developed REA envisage that these contracts would be for the residual MSW generated by the contracted Councils. The Councils would not be locked into a tonnage contract.</p> <p>The flue gas residue will contain the contaminants removed from the flue gas stream. Test work on the residue from reference sites indicates that it will be categorised as either Category B or Category A. In either case it is proposed to stabilise the residue and consign it to a suitably licensed waste treatment facility. Reducing food organics entering the residual waste stream will change the composition of the waste. However, as indicated earlier this is unlikely to change the quantity of slag or flue gas generated but it may change the chemical makeup of these residues. These will be assessed to determine their classification and this will determine their destination. However, REA expect that the changes will be minor will not alter the expected destinations outline in the WAA.</p> <p>The WAA includes a health impact study which examined the health impacts of the proposed WtE facility and included consideration of the total exposures to contaminants, that is background or existing levels, as well as the additional impact from the proposed facility. This study concluded <i>“when the facility is operating under normal operating conditions there are no risks to the health of workers in adjacent industrial areas or residents in the surrounding community. Even where upset operating conditions are considered, there are no risks to the health of workers in adjacent industrial areas or residents in the surrounding community.”</i></p>	<p>Section 7.4.3</p> <p>Section 14</p> <p>Section 16 Appendix 22</p>
031	For the purposes of the Recovered Energy Australia works	Question directed to the EPA.	



<p>predominantly China and Iran</p> <p>1. Does EPA have confidence in the quality of the data presented?</p> <p>2. Can EPA say with confidence that it believes the data presented has been developed independently of the commercial interests of either:</p> <p>a. Recovered Energy Australia who commissioned the reports?</p> <p>b. Or the technology providers of waste to energy facilities in China, Iran, etc. who are selling the technology to Recovered Energy Australia?</p> <p>3. What process will EPA undertake to verify the independence, integrity and validity of the data presented by Recovered Energy Australia?</p> <p>4. Does EPA consider the datasets presented to be examples of leading practice for waste to energy facilities internationally?</p> <p>5. To what benchmark will EPA assess the purported performance of the Recovery Energy Australia technology?</p> <p>6. What does EPA know about this technology and its application in Australia?</p> <p>The precautionary principle is typically understood that when an activity introduces or raises threats of harm to human health and the environment, that precautionary measures should be taken even if some cause and effect relationships are not presently scientifically established. And in line with this, the proponent of such a proposed activity should bear the burden of proof rather than the</p>	<p>and the analysis was done in accredited laboratories using the techniques specified in the Chinese standards. The CEMS systems operated in the Chinese facilities comply with the Chinese standards; <i>Specifications for Continuous Emissions Monitoring of SO<sub>2</sub>, NO<sub>x</sub> and Particulate Matter in Flue Gas Emitted from a Stationary Source (HJ 75-2017)</i>, and <i>Specifications and Test Procedures for Continuous Emission Monitoring Systems of Flue Gas Emitted from Stationary Sources (HJ/T 76-2007)</i>.</p> <p>Question addressed to the EPA.          REA would like to add that the compilation of the very large quantity of data and studies that are required under the EPA <i>Works Approval Application Guidelines</i> necessitates an applicant employing specialist consultants which the applicant is required to pay. These consultants have broad experience and expertise in the specific areas of their consultancy and if the respondent is inferring that payment by the applicant means the studies are suspect then they are calling into question the integrity of the consultant and that is of utmost concern without having any corroborating evidence. Data to enable the consultants to undertake their tasks must come from reference sites and in this case they are in China and Teheran.</p> <p>Question addressed to the EPA.</p> <p>Question addressed to the EPA.          REA would refer the respondent to the answers provided above regarding the validity of the measurements.</p> <p>Question addressed to the EPA.</p> <p>Question addressed to EPA</p>	
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	<p>public.</p> <p>1. Will EPA categorically be able to say that there will be no detrimental impacts to human health or the environment as a result of this project? If not, why not?</p> <p>2. And if it approves this works approval application, with any uncertainty, what reasons will EPA provide for its decision?</p> <p>3. How will EPA assess known concerns of waste to energy facilities around emissions of particulate matter, sulphur dioxide, nitrogen oxides and any other potentially harmful emissions?</p> <p>4. If a concept of acceptable limits is applied, what are the likely impacts of acceptable limits of pollutants such as particulate matter, sulphur dioxide, and nitrogen oxides on human health and the environment?</p> <p>5. What will be the cumulative effects of these additional pollutants alongside other heavily polluting industries in the western suburbs of Laverton North, Brooklyn and Altona?</p> <p>6. Can EPA be sure in its assessment that there will be no potential for human health concerns and air quality impact on neighbouring communities?</p> <p>7. And to what level will EPA accept any potential</p>	<p>Question addressed to the EPA. REA would like to comment that the Health Impact Study has been completed by a competent and well know consulting group and that the conclusions of this study indicate that no impacts will occur to nearby industrial workers or residents from the proposed WtE facility.</p> <p>Question addressed to the EPA</p> <p>Question addressed to the EPA. REA would like to comment that the air emissions study has reviewed the potential impacts occurring during steady state and upset conditions and found that the emissions will easily meet SEPP limits.</p> <p>Question addressed to the EPA. REA would like to add that the Health Impact Study evaluated the impacts of these contaminants and found that no impacts on the surrounding industrial workers or residents would occur.</p> <p>The Health Impact Assessment considered the total exposures to contaminants, that is background or existing levels, as well as the additional impact from the proposed facility. This study concluded <i>“when the facility is operating under normal operating conditions there are no risks to the health of workers in adjacent industrial areas or residents in the surrounding community. Even where upset operating conditions are considered, there are no risks to the health of workers in adjacent industrial areas or residents in the surrounding community.”</i></p> <p>Question addressed to EPA. REA suggests reference to The Health Impact Assessment which showed that <i>“when the facility is operating under normal operating conditions there are no risks to the health of workers in adjacent industrial areas or residents in the surrounding community. Even where upset operating conditions are considered, there are no risks to the health of workers in adjacent industrial areas or residents in the surrounding community.”</i></p> <p>Question addressed to the EPA</p>	
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	<p>arrive at these weightings?</p>	<ul style="list-style-type: none"> <li>· <i>Approvals Proposal Pathway Guideline (Publication # 1560.2)</i></li> <li>· <i>Works Approval Application Guideline (Publication #1658).</i></li> </ul> <p>This guidance was supported by three meetings with representatives of EPA Victoria Capability, Engagement and Legal division, to ensure a better understanding of the legislative requirements and EPA expectations of a community engagement plan. Ultimately, six iterations of the REA Community Engagement Plan were presented to EPA for review prior to acceptance of REA’s Works Approval Application (WAA).</p> <p>An important source of community attitude toward the development of a waste to energy facility was obtained from the 177 community members who attended the <i>2017 Western Metropolitan Partnership</i> assembly to help determine the key priorities for the Western region. Following lengthy discussion and facilitated workshop sessions at the assembly, all in attendance agreed that the second top priority for the region was to develop:</p> <p style="text-align: center;"><i>A centre of excellence for waste addressing three key themes being: natural environment, renewable waste to energy and micro grids</i></p> <p>A presentation to the Annual General Meeting of the Western Region Environment Centre, which included a lengthy question and answer session in December 2017 resulted in REA being invited to display a 1:50 scale model of the proposed REA facility for the local community to scrutinise at the Eco-Living Centre, 28 Ridge Drive, Werribee, from December 2017 until October 2018. The model provided a clear demonstration of the process and encouraged community queries and conversation regarding its operation. The display was supported by Fact Sheets to ensure interested community members were provided with all relevant information. The Fact Sheets included the website URL and REA contact details for easy access to further information if required.</p> <p>Other presentations to local community groups include:</p> <ul style="list-style-type: none"> <li>· An invitation in August 2018, together with Wyndham City Council, to present to a special meeting of the Western Region Environment Centre on the topic of <i>Residual Municipal Solid Waste to Energy.</i></li> <li>· Rotary Club of Werribee on 5 February 2019</li> <li>· Brooklyn Community Representative Group (BCRG) Community Open House on 6 March 2019</li> </ul> <p>Following submission of the WAA, REA conducted a community information session at the Laverton Community Hub from 6:00pm to 7:30pm on Monday 5 August 2019 to</p>	
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	<p>EPA must clearly outline how confident it is that this facility will be able to operate without presenting a new and additional fire risk to Melbourne and in particular, Melbourne’s western suburbs.</p> <ol style="list-style-type: none"> <li>1. How does it propose to manage the new fire risks associated with introducing a new waste facility in Melbourne?</li> <li>2. How does it propose to manage fire risks with an as yet unproven technology in Australia? Particularly as the assessment above from EPA, MFB and CFA draws the conclusion that waste and resource recovery fires are largely caused by machinery malfunction or human error.</li> </ol> <p>Will Recovered Energy Australia be permitted to stockpile any residual wastes that currently have no end markets such as Bottom Ash? Recovered Energy Australia has claimed it will work to develop end markets for bottom ash in roads construction or for other construction materials. However, presently there are no permitted uses for this material in Victoria. This is a significant environmental and health concern for neighbouring communities.</p>	<p>provide information to the community regarding the proposed development of a waste to energy facility at Laverton North and to seek their feedback. The event was promoted in both the Hobsons Bay Star Weekly (circulation 47,769) on page 10 and the Wyndham Star Weekly (circulation 43, 469) on page 15, and appeared in the online editions available at <a href="https://www.starweekly.com.au/">https://www.starweekly.com.au/</a>. A direct email invitation was also sent to all community members registered on the REA community contact database.</p> <p>An additional community event was conducted by EPA Victoria at the same location on Monday 19 August 2019. This event was promoted by EPA through website pages including Engage Victoria and LinkedIn Australia, and Hobson Bay City Council also promoted the event on their Facebook page.</p> <p>Question Addressed to the EPA.  REa would like to make the following comment. The WAA indicates that the fire detection and protection systems will comply with the EPA Guideline “<i>Management and Storage of Combustible Recyclable and Waste Materials</i>”. These guidelines require a fire safety study and REa will implement the recommendations of this study. Detailed design has not yet commenced and completing the fire safety study prior to final design will allow the recommendations of this study to be incorporated in the Facility.</p> <p>Question addressed to the EPA.  REa would like to make the following comment. The WAA indicates that the waste pit will contain up to 4 days supply of residual waste. Gasifier slag and flue gas treatment residues may stay on site for up to 7 days and these materials will be located in appropriately sized enclosed containers. Testing of the residues from the reference plants indicates that it is likely that the gasifier slag will be categorised as suitable for recycling and should this prove correct, REa has in-principle agreements with third parties operating in the recycling business to take the slag. No stockpiling of residual waste is contemplated on site. Should the unlikely situation develop where a complete shutdown of the facility was required then all residual waste would be redirected to landfill. Note that the proposed facility is modular and individual gasifiers can be taken off-line while the remainder of the facility continues to operate.</p>	
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	<p>How does EPA propose to effectively regulate the generation of residual wastes such as potentially toxic bottom ash?  What impact will the generation and/or storage of bottom ash (that is likely contaminated) have on neighbouring communities and the environment?</p> <p>In the absence of any currently viable end markets for residual bottom ash, how does EPA propose to work with Recovered Energy Australia to manage this issue?</p> <p>Will the bottom ash be permitted to be stockpiled on-site? Or off-site elsewhere, and if so, where?</p> <p>How much residual waste will be generated per annum?</p> <p>And for how long will this residual waste be permitted to be stockpiled?</p>	<p>Question addressed to the EPA</p> <p>Question addressed to EPA .  The WAA indicates that storage on site will be limited to 7 days and all waste products generated will be stored within sealed containments.</p> <p>There are end markets for gasifier slag providing it complies with the appropriate categorisation in the <i>Solid Industrial Waste Hazard Categorisation and Management Guidelines</i>.</p> <p>Question addressed to EPA.  REA indicate that they do not intend to stockpile waste.</p> <p>The WAA clearly indicates the quantities of industrial waste that will be generated per annum. Solid waste generated from the proposed WtE facility will consist of gasifier slag (up to 35,365 tonnes/annum) and Flue gas residue from flue gas treatment (4562 tonnes/annum). Testing of gasifier slag in Australian NATA certified laboratories derived from gasifier reference sites has shown that this material is likely to contain contaminants that are lower than the threshold defining industrial waste and as such would be suitable for recycling into road base or other products. Testing will be required to classify the gasifier slag when in production and this classification will determine its fate. REA has in-principle agreements with users of this type of material to take the gasifier slag provided in meets the appropriate classification. The flue gas residue contains the contaminants from the treatment of the flue gas stream and testing has shown that this material will be classified as a prescribed waste and will require disposal to a suitably licensed waste treatment facility.</p> <p>Question addressed to the EPA</p>	<p>Section 14</p>
<p>032</p>	<p>Previous attempts at gasification plants in Australia have failed. The proposed plant at Port Hedland, in Western Australia, did not proceed due to inadequate waste levels to feed the plant.<sup>3</sup> At Wollongong in 2004, numerous failures with emission levels in the SWERF facility in NSW led to its closure.<sup>4</sup> In addition, there have been issues with European gasification plants exceeding dioxin emission</p>	<p>There have been a number of gasification projects that have failed and these have provided specific lessons which have been incorporated in gasification technology as it has evolved in recent years. Development of a improved gasifier feeding systems, development of the vertical gasifier, inclusion of gasifier rotation and bottom grate rotation to mention a few developments have contributed to a robust technology capable of effectively processing MSW. The 2003 EDL Woolongong project quoted in the response was a classic case of issues associate with scale-up from what was</p>	

	<p>limits.<sup>5</sup></p> <p>Has the proposed technology matured to address these emissions control failures?</p> <p>And are our standards and regulatory processes – and our environmental regulator – sufficiently geared to monitor and address them?</p> <p>The waste hierarchy is a globally agreed approach for dealing with waste. Despite Victoria having endorsed ‘in principle’ a waste hierarchy for many years that strongly advocates re-use and recycling and rejects disposal methods such as landfill and incineration as the least desirable option, in practice our waste management system has been operating under the completely reverse paradigm. How is introducing technological and business operations that depend on receiving a constant flow of non-recyclable waste going to help us turn around this paradigm to align Victoria’s waste management system with the endorsed waste hierarchy? Such facilities may appear to be attractive as short-term solutions to the current crisis. Presumably, they would help to clear the enormous amount of stockpiled waste in storage, as well as addressing the ongoing inflow of non-recyclable waste – while also reducing the reliance on landfill – until such time as waste minimisation and re-use measures are achieving their full effect. However, they would appear to be at cross purposes with the principles of the waste hierarchy and thus a major disincentive to ever recalibrating our system to properly adhere to the hierarchy.</p> <p>We have strong concerns that this waste-to-energy technology has the capacity to suppress the first imperative</p>	<p>effectively a small pilot plant. The EcoWaste gasifier technology has been operating at commercial scale since 2005.</p> <p>The WAA includes a list of risks identified from past gasification projects and provides commentary on mitigation measures incorporated in the proposed technology. Risks exist for all projects, but issues from past projects based on alternative designs do not necessarily apply to the proposed technology. Learning’s can be incorporated, and mitigation measures can be provided. There are many operating MSW gasification facilities worldwide which have demonstrated that risks can be overcome.</p> <p>Question Addressed to the EPA</p> <p>Question Addressed to the EPA.</p> <p>REA would like to make the following comment. The proposed REA WtE Project proposes to primarily source MSW from the household residual bin system which is a source separated waste. Currently the residual bin is wholly disposed to landfill. Most commentary on increasing the separation of recyclables from kerbside collections agrees that increasing the separation at the source is the most effective method of recovering recyclable materials. At present at least 4.2 million tonnes of waste in Victoria is disposed to landfill and it is REA’s view that even with the best endeavours of all involved to reduce the quantity of waste going to landfill that significant quantities of residual waste will be available for processing into the foreseeable future. WtE is an energy recovery process and is therefore preferred to disposal to landfill as per the waste hierarchy.</p> <p>The REA proposal can accommodate a wide range of waste compositions, and has been</p>	<p>Appendix 23</p>
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	<p>of the waste hierarchy – to reduce. An assured level of waste – at the very least consistent – is required to feed the hungry beast. Gasification relies on a feedstock rich in plastics, paper, kitchen and garden waste – plastics aside – these components are also candidates for composting processes. Banning single use plastics and reducing complex and unnecessary packaging, which the Alliance strongly encourages, will result in lower levels of intractable municipal waste and litter. While the effect of reduced levels of waste on available product for the plant due to reduction programs is acknowledged in the submission, we have concerns that a ready solution of this nature will compromise those efforts.</p>	<p>specifically designed and sized to avoid ‘hungry beast’ concerns. Modelling of the process has been undertaken assuming the adoption by Councils of FOGO and shown that the facility will still operate effectively. While aiming for zero waste and heading towards a circular economy are worthy objectives supported by REA; once all feasible material recovery processes have been carried out, recovery of the energy embodied in any remaining end-of-life materials is preferable to disposal to landfill.</p>	
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### Response to Referral Agency Comments

<p>MFB</p>	<p>Table 5.2 ‘Significant Residual Risks’ identified fire in MSW bunker and fire in plant. Based on previous incidents with waste storage, I don’t believe the likelihood is ‘rare’. This bunker can hold up to 2400 tonnes in an enclosed area with no sprinklers, only fire hose reels. Smoke may impact the use of fire hose reels in the bunker as it is in an enclosed building. Furthermore, REA rely on an administrative control to prevent non-compliant materials (e.g. batteries, gas cylinders) being in the waste;</p> <p>Table 5.2 ‘Significant Residual Risks’ identified runoff from fire fighting. A control was identified as pumps available to pump fire water into tankers for offsite disposal. There is no mention of the logistics involved, many tankers would be required for an extended incident or where this water would go. There is no mention of site bunding/containment.</p> <p>As Syngas contains significant amount of hydrogen with the potential for fire and/or explosion it is recommended that REA conduct a fire safety study for the facility. The objective of a fire safety study is to ensure that the proposed fire prevention, detection, protection and fighting measures are appropriate for the specific fire hazard and adequate to</p>	<p>REA acknowledge the comments made by the MFB. REA made a commitment in the WAA that the fire detection and protection systems will comply with the EPA Guideline “<i>Management and Storage of Combustible Recyclable and Waste Materials</i>”. These guidelines require REA to undertake a fire safety study which will inform the facilities detailed design process. The recommendations of the study will be incorporated into the detailed design and subsequently implemented in the operational facility and its management plans.</p> <p>Detailed design has not yet commenced and completing the fire safety study prior to final design will allow the recommendations of this study to be incorporated in the Facility.</p> <p>The syngas will be immediately combusted in the oxidation chamber as part of the process so no syngas will be captured or stored on site. The system runs at atmospheric pressure so there is very little potential risk of explosion.</p> <p>As indicated above, a fire safety study will be completed as a part of the detailed design phase and the recommendations of this study will be incorporated into the final design</p>	
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	meet the extent of potential fires for the subject development.	of the facility.	
EPA	<p>3 Please provide full translations of all air emission monitoring reports included in the Works Approval Application. Translations should be completed by a National Accreditation Authority for Translators and Interpreters (NAATI) accredited translator.</p> <p>4 Please provide evidence that the flue gas emission data supplied as part of the Works Approval Application meets the criteria specified in item 6(a)-(e) below.</p> <p>5. Is additional reference facility air emission monitoring and sampling data available, specifically data from 'like-for-like' Zhejiang ECO-WASTE Technology Co., Ltd. gasifier modules as proposed for the Laverton North premises?</p> <p>6 Please provide additional reference facility air emission monitoring and sampling data specified in item 5 above. All air emission monitoring and sampling data reports must meet the following criteria:</p> <p>a. all reports must be fully translated by a NAATI accredited translator;</p> <p>b. all reports must demonstrate air emission monitoring and sampling methods conducted in compliance with:</p> <p>i. EPA Publication no. 440.1, December 2002 - A guide to the Sampling and Analysis of Air Emissions and Air Quality;</p> <p>ii. Directive 2010/75/EU Of the European Parliament and of the Council of 24 November 2010 on industrial</p>	<p>The full laboratory reports have been sourced by the technology provider from the various businesses both private and government operating the facilities. These have been translated by NAATI accredited translators and are incorporated in updated Appendices 20 and 21. These appendices are large and have been sent separately to the EPA.</p> <p>REA has commissioned studies that confirm the flue gas emissions data included in the WAA substantively meet the requisite criteria set by the EPA. These studies are attached as appendices to inform the EPA technical review.</p> <p>Further data has been obtained from the technology provider for Reference Site 1 and Reference Site 6. Complete laboratory reports and a commissioning/completion report from Reference Site 6 have been translated by accredited translation services and are presented in Appendices 20 and 21. Both these facilities incorporate 100 t/d gasifier modules and both operate on MSW. This additional data is therefore derived from Like-for-Like technology. The laboratory data provided for these two facilities and the laboratory data provided for Reference Site 4, which also operates several 100t/d gasifier modules, show that at the time of sampling MSW was being processed and so these reports reflect data that is directly comparable to what is being proposed by REA.</p> <p>Additional reference facility data has been provided. As indicated in the responses above:</p> <p>(a) All reports have been fully translated by a NAATI accredited translator;</p> <p>(b) Additional expert consultant reports have been commissioned that confirm the reliability and compliance of the source air emissions data provided with the requirements of the Victorian EPA. Reports of the specialist consultants are attached separately to inform the EPA technical review.</p>	

<p>emissions (integrated pollution prevention and control) (IED);</p> <p>iii European Union. (2006). Reference document on the best available techniques for waste incineration. European Commission (BREF 2006); and</p> <p>iv. European Union. (2018). FINAL DRAFT Best Available Techniques (BAT) Reference Document for Waste Incineration. European Commission (BREF 2018).</p> <p>c. all air emission monitoring and sampling must be provided for the full range of indicators specified in the IED, the EU BREF 2006, and EU BREF 2018;</p> <p>d. all air emission monitoring and sampling data must be provided for 'like-for-like' Zhejiang ECO-WASTE Technology Co., Ltd. gasifier modules as proposed for the Laverton North premises;</p> <p>e. all air emission monitoring and sampling data should be complemented by process information that may include, but is not limited to, associated feedstock/fuel compositional analysis and feedstock loading utilised during air emission monitoring and sampling periods.</p> <p>7. Is additional reference facility audit reporting or other documentation, similar in scope, purpose, and detail to Appendix 21 of the application, available for 'like-for-like' Zhejiang ECO-WASTE Technology Co., Ltd. gasifier modules as proposed for the Laverton North premises?</p> <p>8. Please provide the additional reference audit reporting or other documentation specified in item 7 above. If air emission monitoring and sampling data is included as part of the documentation it must meet the criteria specified in item 6(a)-(e) above.</p>	<p>(c) Emission monitoring and sampling for the indicators detailed in the IED have been provided and while TOC and HF are not collected for MSW processing in China these are covered by surrogates carbon monoxide and HCl.</p> <p>(d) Data for three reference sites based on the 100t/d gasifier module has been provided. These facilities were processing MSW at the time of air emissions sampling and are Like-for-Like with that proposed by REA for the WtE facility. While the other reference sites utilise a different size gasifier module they are commercial facilities operating on MSW and provide additional data relevant to the evaluation of the technology.</p> <p>(e) The full translations of the data presented in Appendices 20 and 21 shows substantial process information including the feed material (MSW), the load on the gasifiers at the time of sampling, the flue gas temperature etc. Analysis completed in Section 6.2 of the WAA and in Appendices 9 and 10 together with the Technical due Diligence undertaken by Thyssenkrupp Industrial Solutions (Australia) Pty. LTD attached in Appendix 23 clearly show that the ECO_WASTE gasifier technology is suitable for the treatment of Melbourne MSW.</p> <p>Additional reference facility audit reporting has been provided for Reference Site 6 and this facility utilises the 100 t/d gasifier module proposed by REA for the Laverton North Plant. This is Like-for-Like technology and the report is now separately attached as Appendix 21.</p> <p>The additional reference auditing report has been provided. The additional expert reports confirm the included air emissions data meet the requisite criteria specified. . The expert consultant reports are separately attached to inform the EPA technical review.</p>	
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