NSW GOVERNMENT | Planning & Environment

Mr David McNamara
Director, Secretariat
Independent Planning Commission
GPO Box 3415
SYDNEY NSW 2001

Dear Mr McNamara

I refer to your correspondence dated 22 May 2018 requesting a response to a series of questions regarding the Department of Planning and Environment's assessment of the proposed energy from waste facility at Eastern Creek (SSD 6236).

The Department's response to the Independent Planning Commission's questions is provided in **Attachment A** to this letter. Our response reiterates information already presented to the Commission in the Department's Assessment Report, the Environment Protection Authority's (EPA) submission (dated 9 March 2018) and the supporting technical reports prepared in March 2018 by our independent experts, ARUP Pty Ltd and EnRisks. Relevant references to the existing information have been provided for ease of reference and further explanation has also been provided for clarity.

The Department has also considered the information presented in the Applicant's *Response to DPE Assessment Report*, dated 21 May 2018, prepared by Urbis, in consultation with the EPA and our independent experts. The information provided by the Applicant does not alter the views expressed by the EPA in its submission, the recommendations of the technical experts or the Department's conclusions in its assessment report. Our comments on the Applicant's response is provided in **Attachment B**.

The Department remains of the view that as the Applicant has not identified a suitable reference facility, the proposal remains inconsistent with the EPA's *Energy from Waste Policy Statement* (2015). This presents uncertainty around the performance of the facility and the long-term risks to the environment and the health of the local community. Given these uncertainties, the Department considers the construction and operation of the proposed energy from waste facility in close proximity to densely populated residential areas, schools, childcare centres and employment areas in Western Sydney, is not appropriate, and the application should be refused.

Should the Commission have any further enquiries about this matter, please contact me on (02) 9274 6413 or by email at chris.ritchie@planning.nsw.gov.au.

Yours sincerely

C. Ritchie 14/6/18

Chris Ritchie
Director
Industry Assessments

ATTACHMENT A

Response to Independent Planning Commission Questions
Eastern Creek Energy from Waste Facility (SSD 6236)

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1. Is the shutdown process proposed by the Applicant international best practice?

The European Union *Best Available Techniques for Waste Incineration Reference Document* (BREF, 2006) represents international best practice in terms of the design and operation of energy from waste facilities. The Department's independent expert, ARUP Pty Ltd, is unable to confirm whether the shutdown process proposed by the Applicant is international best practice as the engineering design details have not been provided as part of the development application.

However, the Applicant has stated the overall basic requirements of the proposed facility for shutdown will be incorporated into the design, being a Continuous Emissions Monitoring System and an automated shutdown system. These basic requirements have been evaluated by the Applicant against the BREF document (refer to Appendix M of the *Response to Submissions Report* (Ramboll, September 2017), based on the stage of design development the facility is currently at for the development application. The Applicant concludes the design fulfils the requirements defined by the BREF (2006) for this stage of design development.

A new edition of the BREF (2017, WIP) is currently being drafted and it is expected further requirements will be proposed. The date of implementation of the new BREF is not known but likely to be within the lifetime of the proposed facility. It would be important that any application for an energy from waste facility continue to review the design during its development at key design milestones against the current and proposed BREF to ensure it continues to demonstrate that international best practice is being achieved.

There is typically a spike in emissions during start-up and shutdown operations due to emissions being easier to control during routine operation than during start-up and shutdown operations. The main factor is the use of auxiliary burners to maintain the design temperatures. The burners operate during the shutdown process when the furnace drops below the required minimum temperature and typically continue to operate until there is no more waste in the incineration chamber. The auxiliary burner produces higher carbon monoxide (CO) emissions, therefore, minimising start-up, shutdown and abnormal operating conditions are key design drivers.

2. Please provide a background on the necessary 'safety margin' that EnRisks has assumed in its report (Table 13) in addition to the modelled Human Health Risk Assessment and Air Quality Impact Assessment outcomes. Are there other similar jurisdictions that have adopted similar (or other) levels of safety margin?

The Applicant's air quality impact assessment (AQIA) and human health risk assessment (HHRA) evaluated five operating scenarios. However, none of the scenarios were based on data derived from the actual fuel proposed for this facility. Additionally, no modelling was conducted to predict the emissions from this facility.

The reference to a 'margin of safety' in relation to the HHRA was discussed in detail in Section 6.2 of the Department's Assessment Report and in EnRisks' technical report (Appendix I of the Department's Assessment Report). It was used to demonstrate how close each of the scenarios assessed in the HHRA were to being "unacceptable" (i.e. exceeding the adopted acceptable hazard index of 1). The comments about 'margin of safety' were included to assist in understanding how important the level of uncertainty was in considering the acceptability of the proposed facility and to illustrate the following:

- for Scenario 2 (modelled at the POEO Limit) – the calculated risk in the HHRA was 0.5 compared to the acceptable value of 1 (2 fold difference)
- for Scenario 4 (modelled at the IED Limit) – the calculated risk in the HHRA was 0.25-0.3 compared to the acceptable value of 1 (3-4 fold difference)
- for Scenario 1 (emission values from other UK reference facilities, including Ferrybridge) – the calculated risk in the HHRA was 0.15 compared to the acceptable value of 1 (9-10 fold difference).

It is not possible to operate such a facility with an average concentration (or high-end estimate of the average) close to a limit value. The engineering does not allow such subtle control. Scenario 2 (modelled at the POEO Limit) and Scenario 4 (modelled at the IED Limit) were evaluated to show that, even if the facility emits at the maximum permitted level all the time, then the risks would still be acceptable. This is required to demonstrate the acceptability of proposed licence limits and is a normal part of an HHRA for such a facility.

Given that:

- none of these scenarios are based on the actual fuel composition of the proposed facility

- the calculated risks are based on actual emissions from a facility that may have a different fuel composition.
- all of the calculated risks are not that far from the value that would indicate the facility was "unacceptable" (i.e. a risk estimate greater than the adopted "acceptable" hazard index of 1)
- the proposed facility is large and is proposed to be in a location where the emissions will be spread over a large area in the Sydney airshed,

While the risks had been calculated appropriately based on the assumptions made, there was still a higher than normal level of uncertainty.

Emissions from energy from waste facilities are variable over time and measuring the emissions also has a level of uncertainty (i.e. taking a representative sample and measurement uncertainty at the laboratory). It is common to consider an order of magnitude between the calculated risks and the "acceptable" risk value to be sufficient to cover such variability/uncertainty. This is not a hard and fast rule but is used to give an indication of whether there is sufficient information to make a decision or whether additional work is required.

When the calculated risks for a proposal are less than an order of magnitude different from the "acceptable" risk value, more consideration is needed as to whether there is a normal/common level of uncertainty in the assessment. Based on the advice from the EPA and ARUP that the NSW EPA's *Energy from Waste Policy Statement* (2015) (EfW Policy) 'reference facility' requirement had not been met, it was considered there was more than a normal/common level of uncertainty in the inputs to the HHRA for this facility. As such, the discussion regarding the 'margin of safety' was included in the review comments.

3. **In addition to the potential Human Health Risk Assessment and Air Quality Impact Assessment outcomes, and scenarios 2 and 5, are there any other actual known health and/or air quality outcomes? Is there some data to support EnRisks' 'safety margin' assumptions?**

As discussed in Section 6.2 of the Department's assessment report and in EnRisks' technical report (Appendix I of the Department's Assessment Report), all scenarios (1-5) in the Applicant's HHRA were found to pose "acceptable" levels of risk for the proposal in accordance with national guidance. The issue is whether those estimates are reliable given that the inputs to the risk calculations were more uncertain than usual as the 'reference facility' requirement of the EfW Policy has not been met.

As discussed in Question 2 above, there is normally a level of uncertainty in such calculations which is due to the way the calculations are done and the data they use. This is managed by ensuring scenarios have some conservativeness built in. In this case, because the assessment is based on emissions from energy from waste facilities that do not burn the same materials as the proposed facility, there is more than the usual level of uncertainty as to what they will actually emit. The emissions used in the assessment are not based on any consideration of the actual waste that will be burnt in this facility.

The issue raised in the review of this HHRA was that the risk estimates were not sufficiently reliable due to this more than usual uncertainty and that a relatively small change in the emissions could result in risks that were in the unacceptable range. The requirement for a reference facility in the EfW Policy seeks to avoid this situation.

4. **Please provide further explanation as to why the Department considers Ferrybridge to be an inappropriate 'reference facility', particularly in reference to the composition of the feedstock (refer to Table 4 on page 5/8 of ERM's response in Appendix C, from the applicant's additional information dated 21 May 2018).**

The Department's evaluation of the proposal against the EfW Policy reference facility requirement was provided in Section 6.1 of the Department's Assessment Report. This is supported by the EPA's submission dated March 2018 (Appendix A of the Department's report) and ARUP's merit review (Appendix I of the Department's report).

During consultation and development of the EfW Policy, the reference facility requirement was considered critical in ensuring the suitability and performance of an energy from waste facility. Implementation of best practice techniques, such as process design and control and emission control and monitoring, are also required by the EfW Policy and are critical in ensuring that air pollutants and particulate emissions are below levels that may pose a risk of harm to the community or environment. However, these features may be viewed as a last line of defence, as measures should be in place to ensure that technologies are proven and capable of handling the proposed waste. As such, as required by the EfW Policy, reference to a 'fully operational plant'

using the same technologies and 'treating like waste streams' is critical to reduce uncertainty relating to the performance and impacts of a proposed energy recovery facility.

To meet the reference facility requirement in the Policy, operational information must be provided on the waste being thermally treated at the reference facility. This is to ensure that the operating performance of the reference facility is comparable to that of the proposed facility, and to provide certainty that the proposed facility can operate without increased risk to human health or the environment.

While the Department, EPA and ARUP agree that Ferrybridge represents a facility with similar technology in a like jurisdiction, the waste that Ferrybridge has been operationally treating is significantly different to that proposed at the Eastern Creek facility. The reference facility requirement specifies that it must be a facility that treats 'like waste streams'. This information is necessary to understand the operation of the plant, to verify that it is capable of handling the proposed wastes, and to provide context and certainty around the air emissions data and how this may apply to the proposed facility.

Attachment A of the EPA's most recent submission (March 2018) provided detailed information on the key differences between the waste streams identified for thermal treatment at the proposed facility and the waste streams thermally treated at Ferrybridge. It provided information on the composition of the waste and pre-processing activities conducted on the waste (before being thermally treated), which would result in significant differences between the waste feedstocks.

The Ferrybridge operational data provided by the Applicant in its most recent report (Urbis 2018) indicates it treats wastes which are 100% Solid Recovered Fuel (SRF) derived from Municipal Solid Waste (MSW) and Commercial and Industrial wastes (C&I). This is significantly different to the wastes proposed at the proposed facility, where a MSW and C&I mix is not proposed, and where Construction and Demolition (C&D) wastes would also be accepted.

This is important, as it is this reference facility data that has been used as input data to some of the air emissions and HHRA modelling (the data used for Scenario 1 – Expected Operating Conditions). If this data is not representative of the actual material streams and composition being proposed, then it creates further uncertainty about the likely performance and outcomes associated with the pollution control technologies as the last line of defence for environmental and human health impacts. This is contrary to the intent of the EfW Policy.

The Ramboll Ferrybridge Memo response in Appendix C of the Applicant's response dated 21 May 2018 refers to the Refuse-derived fuel (RDF), a pre-processed waste-derived fuel used as the waste feedstock during Ramboll's analysis. RDF and SRF are used interchangeably in the UK waste industry to describe fuel manufactured from the processing of waste. It states that the waste sample from the Ferrybridge facility "does not reflect the typical average split of 50% RDF from C&I and 50% RDF from MSW but rather near to 100% RDF from MSW." (page 5/8, paragraph 4). The proposed facility is not proposing to accept MSW, therefore the proposed wastes are not consistent with the wastes being treated at Ferrybridge.

This is reflected in Table 4 on page 5/8 of Ramboll's response in Appendix C in the Applicant's response (Urbis 2018). In Table 4 of Ramboll's response, the waste proposed by the Applicant includes 31.16% wood/timber, whereas the Ferrybridge operational waste is comprised of 7.41% wood/timber, which is four times less than the amount of wood/timber proposed at the proposed facility. Furthermore, the organic component (excluding wood/timber) is 19.82% at the proposed facility, but at the Ferrybridge facility the organic component is 38.08%, almost twice as much as that proposed for the Eastern Creek facility.

The proposed facility also proposes to accept and treat shredder floc waste (approximately 15% of the design fuel). Shredder floc is the residual waste, or by product, generated when metal shredders process, crush and extract recoverable metals from scrap metals, such as end-of-life vehicles and fridges. Shredder floc generally consists of plastics, rubber from tyres, foams, glass, wood and paper. It can also contain hazardous materials (such as heavy metals and hydrocarbons) and needs to be treated appropriately to protect the environment and human health. Under its permit, the Ferrybridge facility cannot accept shredder floc. This is another significant difference in the wastes being proposed for acceptance and treatment at the proposed facility compared to the operations at Ferrybridge.

The reference facility requirement is one line of evidence (in tandem with air emissions modelling and human health risk assessment) to assess potential risks to human health and the environment, and to minimise any potentially harmful emissions, by-products and residues. The failure to address the reference facility

requirement of the EfW Policy increases the uncertainty of the medium to long term operational and environmental risks posed by this facility.

5. Does the Department assume that feedstock is diverted from higher use priorities? Is it assumed that the plant would run at full capacity even if insufficient 'appropriate' feedstock is available?

As discussed in Section 6.1 of the Department's Assessment Report, the EPA considers energy recovery to be a complementary waste management option for the residual waste produced from material recovery processes or source-separated collection systems. The inclusion of resource recovery criteria (RRC) in the EfW Policy ensures that energy from waste activities in NSW will not undermine current or future material resource recovery and higher order management options.

Where further reuse or recycling is not feasible, it may be possible to recover the energy from residual wastes. This is in line with the waste hierarchy, which underpins the objectives of the *Waste Avoidance and Resource Recovery Act* (2001) (WARR Act).

The EPA have not assumed that the proposed feedstock would be diverted from higher use priorities, or that the plant would run at full capacity even if insufficient 'appropriate' feedstock is available. Rather, the EPA has outlined that the Applicant has not provided sufficient information to demonstrate compliance with the RRC criteria of the Policy. The Policy's objectives in setting RRC are to drive the use of best practice material recovery processes and ensure that only residuals from bona-fide resource recovery operations are eligible for use as a feedstock for an energy recovery facility (part 4, page 7 of the Policy). It is critical to demonstrate compliance with the RRC to ensure that higher order outcomes for resource recovery are maximised in NSW.

As concluded in Section 6.1.4 of the Department's assessment report, the Department considers the methodology used to calculate the total volume of residual waste in the Metropolitan Levy Area (MLA) and justify the scale of the facility is inappropriate and has the potential to result in waste being used for energy recovery rather than higher order resource recovery outcomes. This would directly contravene the overarching principles of waste avoidance and recovery enshrined in NSW State waste legislation.

Thermal energy from waste plants can operate below their design capacity, however, it can affect their functionality and efficiency. Energy from waste plants are not designed to be stop/start operations and are designed to operate on a base load design input and output scenario. If they operate below that base load, they either require auxiliary burners to be used to supplement the lack of calorific input to achieve the design output, or be inefficient in terms of their output. However, the use of auxiliary burners is limited as the emissions profile from burning auxiliary fuel (generally in the form of gas or diesel) will be different from that when operating on just waste, and will typically be higher especially for CO and nitrogen oxides (NO_x), and could result in licence condition emission limit breaches.

For an energy from waste facility that is generating electricity, it is likely that the operator will have entered into power purchase agreement for the electricity offtake. Therefore, the operator can be financially penalised for not producing the amount of electricity he has committed to generate.

6. Can the EPA confirm that the landfill has or can be appropriately licensed to receive residual ask from the facility (including if it did contain floc)?

The Dial-A-Dump landfill located next to the proposed energy from waste facility is currently not licensed to accept ash resulting from any process, including waste incineration.

There are three types of ash that will be generated at the proposed facility:

- **Air Pollution Control (APC) ash or Flue Gas Treatment Residues** will contain fly ash and reaction products from the hydrated lime scrubber and spent activated carbon. This type of ash is typically classified as hazardous waste (due to the heavy metal concentrations). There are no landfills that accept hazardous waste in NSW and therefore the APC ash will need to be immobilised (i.e. treated) to meet the classification of restricted solid waste (RSW) and disposed of to the only landfill in NSW that can accept RSW, being the Kemps Creek facility on Elizabeth Drive operated by SUEZ. The Dial-A-Dump landfill will not be permitted to accept hazardous or restricted solid waste, as it has not been constructed with the appropriate controls (such as geosynthetic lining and leachate or gas treatment systems) to deal with those types of wastes.
- **Boiler ash** can be classified differently depending on which boiler pass it is accumulated in. Until it is appropriately classified, it will be assumed to be hazardous waste and disposed with the APC residues as above.

- **Bottom ash** is part of the non-combustible coarser residue of combustion in a furnace or incinerator. It is likely to be classified as general solid waste (non-putrescible) and may be able to be received at the Dial-A-Dump landfill, providing the appropriate controls, procedures and licensing are in place.

7. Please provide a comparison of the greenhouse risks/benefits and overall impact on energy costs? Note that the Department acknowledges potential greenhouse gas savings from reduced volumes of residual waste being sent to landfill and the recovery of energy from waste.

In Section 6 of the Department's assessment report it is acknowledged the proposed development would provide broad environmental and economic benefits, including greenhouse gas (GHG) savings from reduced volumes of residual waste being sent to landfill and the recovery of energy from waste. The Department's view was based on the assessment provided by the Applicant and advice received from the EPA.

The EPA and ARUP advise the Greenhouse Gas Assessment conducted for the proposal assessed the facility's GHG emissions in accordance with relevant guidelines and methods, and was therefore suitable to use to assist in evaluating the GHG benefits associated with the facility.

The EPA confirms the proposed facility will have a net positive GHG impact with an emissions intensity[1] lower (0.53 tonnes CO_2e/MWh) than that derived from the current NSW electricity grid (0.93 tonnes CO_2e/MW/h). Based on the calculated Scope 1 and 2 GHG emission estimates, the net reduction in GHG emissions due to the facility were estimated to be, on average, 15.3 million tonnes of carbon dioxide equivalent (CO_2e) over 25 years or approximately 612,000 CO_2e tonnes per annum.

The EPA notes emissions estimations are highly dependent on waste material source and composition and other relevant parameters. Consequently, variations in waste streams and waste composition will result in fuel mixes different to the "average" design fuel mix used in the project calculations, and different GHG emission profiles. An increase in the relative percentage of plastics and other fuels of fossil origin carbon (coal, oil and natural gas) remaining in the residual waste, would result in an increase in GHG emissions. Since the proposed fuel mix is largely made up of biogenic[2] waste it makes incineration an attractive choice from a GHG emission perspective.

ARUP had advised the GHG assessment provided by the Applicant is very high level and a more detailed analysis of the greenhouse impact would include more precise calculations of emissions, and may consider alternatives such as additional sorting and separation to separate fossil carbon and organic carbon or landfill methane capture to improve emissions intensity.
With regards to energy pricing, ARUP advises this is an arduous exercise to accurately estimate the 'levelised cost of energy' (LCOE)[3] production. The Department does not have the relevant expertise to undertake a reliable and accurate assessment of energy costs associated with operation of the facility.

In terms of the facility's impacts on energy prices, ARUP would expect this plant to be too small to have any meaningful effect on the overall electricity market in NSW. It would therefore seem likely that the plant would obtain similar prices for its electricity as other thermal power stations in the region.

8. What constitutes international best practice in regard to waste stream quality assurance?

International best practice for waste stream quality assurance is a broad topic, however, Section 4.1.3 of the BREF (2006) provides guidance and techniques. As discussed in Section 6.1.2 of the Department's Assessment Report the Department and EPA were not satisfied the information regarding the proposed quality control processes provided in the Applicant's Response to Submissions was sufficiently detailed or robust enough to provide assurances PVC (and other waste containing halogenated organic substances) would be removed from the feedstock material.

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[1] Emissions intensity of electricity generation is expressed as the rate of emissions (tonnes or kilograms of carbon dioxide equivalent (CO_2e) per net unit of electricity produced (megawatts per hour or kilowatts per hour).
[2] A biogenic substance is a substance produced by life processes.
[3] LCOE represents the total cost of each unit of energy that a generation facility produces over its lifetime as a function of initial cost (e.g. capital cost) as well as ongoing maintenance costs.

9. Are there any disincentives to not burn more waste or conversely are there commercial incentives to burn waste?

There are several commercial incentives to burn, or thermally treat waste, these include:

- **Exemptions from NSW waste levy** - The *Protection of the Environment Operations Act 1997* (POEO Act) requires certain licensed waste facilities in NSW to pay a contribution for each tonne of waste received at the facility. Referred to as the 'waste levy'[4], the contribution provides an economic disincentive to sending waste to landfill, and aims to reduce the amount of waste being landfilled and promote recycling and resource recovery. Waste that is processed for energy recovery (and which meets the requirement of the EfW Policy) is not levy liable, so facilities are exempt from paying the waste levy on this material. However, waste outputs from the energy recovery process that must be landfilled (such as fly ash) still attract the waste levy. These waste outputs will have a significantly lower financial liability due to reduced weight when landfilled compared to the original waste inputs. As such, there is a large financial incentive for waste facilities or businesses involved in waste management to thermally treat waste to reduce the amount of levy liable waste sent to landfill.
- **Revenue from waste facility gate fees** - Waste facilities receive fees (known as 'gate fees') to manage waste that is received. This represents a key revenue stream for waste management facilities. It is expected that energy recovery facilities would collect gate fees for wastes that they accept and thermally treat, creating a revenue stream. The more waste a facility can accept, the more revenue they will receive in the form of gates fees.
- **Increase the lifespan of landfills** - There is diminishing landfill capacity in parts of NSW, especially in metropolitan Sydney. Due to a number of constraints, there are generally limited opportunities to establish new landfills in metropolitan areas. Thermally treating waste significantly reduces the amount of material that is required to be landfilled. If a landfill could reduce the quantity of waste landfilled (through thermal treatment) it would extend the lifespan of the landfill, as it would be filled at a slower rate. This would create major financial incentives as it would significantly extend the lifespan of the landfill and the long-term revenue stream (derived from gate fees).

10. Is the scrubber technology input agnostic? i.e. does it perform the same role regardless of input materials?

The Department's independent expert, ARUP, has advised the system is not input-agnostic, and must be designed to cost-effectively achieve compliance for the full variety of expected feedstocks. There is an inherent trade-off between the cost of sorting and mixing activity to achieve a homogenous feedstock and the cost of a system which can tolerate a wider range of feedstocks while still operating efficiently and achieving regulatory compliance. In practice, this means that a range of acceptable feedstock compositions must be defined which can be economically supplied throughout the day/year by sorting and mixing. The system must then be designed to accommodate this range of input compositions, and operating procedures must be enforced which ensure that feedstocks always conform to the design parameters.

For example, there is an upper limit on the flue gas chloride and sulphur oxides (SO_x) content which can be managed by the hydrated lime system, which should be sized to accommodate the largest concentration spike which could reasonably expected or controlled to occur in the system. An unusually high concentration of PVC waste would produce much more chloride content than the system would be designed to handle and emissions compliance of chloride would be breached. Similarly, if there were to be an unusually high concentration of CCA treated timber waste, the concentration of heavy metals in the flue gas may exceed the capacity of the activated carbon dosing system.

In both of these cases, appropriate controls to limit or prevent the sources of contaminant of concern entering the feedstock or mixing of input materials must be undertaken to produce feedstock which conforms to design limits. If properly enforced this is an acceptable alternative to over-sizing the dosing systems and semi-dry reactor for these outlier scenarios.

This is not an exhaustive study of the input constraints and is merely highlighting some examples of the many ways that this system is not input-agnostic. ARUP stresses the importance of defining limits on the input waste stream, appropriately designing, building, operating and maintaining the system to accommodate input streams within these limits, and to mitigate the likelihood of an input stream falling outside these limits.

[4] The 2016-17 Levy rate for facilities in the Metropolitan Levy Area, such as those located in Sydney, is $135.70 a tonne. The rate for those facilities in the Regional Levy Area is $79.60 a tonne.

11. Are the Department and government agencies satisfied the existing regulatory framework gives significant confidence that the project can be appropriately regulated if approved?

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Protection of the Environment Operations Act 1997* (POEO Act) provide the legislative framework for the regulation of these types of facilities in NSW. The EP&A Act provides an appropriate regulatory framework to regulate any activity for which development consent is granted. This is primarily through the imposition of conditions on a development consent and the enforcement and investigative powers given to Departmental officers under the Act. Conditions may be imposed to:

- prevent, minimise, and/or offset adverse environmental impacts
- set standards and performance measures for acceptable environmental performance
- require regular monitoring and reporting
- provide for the ongoing environmental management of the development,

Compliance Officers have the power to enter and search premises, conduct interviews, obtain information and records and require persons to answer questions. If a company is found to have breached its conditions, our compliance officers take enforcement and other actions including:

- prosecution for the most serious offences;
- issuing fines;
- issuing official cautions; and
- negotiating practical solutions.

The Department has confidence in the existing planning framework under the EP&A Act to regulate an energy from waste facility. However, in this case, the Department's assessment report (Section 7: Conclusion) has stated why the Department considers the application is not approvable. As previously stated in the Department's report, the concerns raised by the Department, key government authorities and the Department's experts and the potential impacts of the proposed facility cannot be appropriately dealt with by conditions of consent. It would not be appropriate to modify the application through conditions to bring it into compliance with the requirements of the EfW Policy as this would set a precedent for future applications assessed against the Policy.

As explained above, conditions are imposed on a consent to prevent, minimise and/or offset environmental impacts, not to amend the design of a proposal. An application must be assessed on its merits. Changing the design of the proposal through conditions is not considered appropriate as this would result in a very different proposal for which the Applicant has not sought consent or assessed the potential environmental impacts. This approach also puts the onus on the Department to determine whether the amended proposal (amended through the conditions) would operate without harm to human health or the environment.

The POEO Act is the key piece of environment protection legislation administered by the EPA and it provides the regulatory framework for protecting the environment and human health in NSW. The POEO Act contains legislative requirements in relation to obtaining and holding an environment protection licence (EPL) and sets out the penalties for non-compliance. The WARR Act requires that resource management options are considered in accordance with the waste hierarchy and the EfW Policy sets out the policy framework and overarching criteria that apply to facilities in NSW proposing to thermally treat waste or waste-derived materials for the recovery of energy.

EPL's contain conditions in relation to operations, limits, reporting and monitoring that licensees must comply with or face regulatory action by the EPA. EPL conditions can include requirements for continuous and real-time monitoring; stringent quality assurance processes for incoming waste; and audits to be conducted by independent experts.

The POEO Act sets out the powers of EPA authorised officers to enforce the requirements of the POEO Act and EPL conditions. Non-compliance with licence conditions can result in substantial fines, suspension or revocation of the EPL or prosecution.

Proposals for energy from waste facilities in NSW must obtain the appropriate development consent(s) from the consent authority, demonstrate compliance with the EfW Policy and meet all the requirements to obtain an EPL from the EPA. The EPA is confident that, by following this process and meeting the EPA's requirements during this process, it can appropriately regulate an energy from waste facility. However, in this case, the Applicant has not met the requirements of the EfW Policy.

ATTACHMENT B

Eastern Creek Energy from Waste Facility
Response to Independent Planning Commission

Response to matters raised at the Independent Planning Commission public meeting on 14 May 2018

The Department considers the matters raised by the community at the Independent Planning Commission's public meeting were similar to the issues raised in submissions on the application. These matters have been identified and considered in Section 5.2 and Section 6 of the Department's Assessment Report, respectively.

Response to Applicant's *Response to DPE Assessment Report,* prepared by Urbis, date 21 May 2018

1. NSW Energy from Waste Policy Statement (EPA, 2015)

The NSW Energy from Waste Policy Statement sets out the policy framework and overarching criteria that apply to all facilities in NSW proposing to thermally treat waste or waste-derived materials for the recovery of energy. As discussed in Section 3.1 of the Department's assessment report, the NSW EPA's *Energy from Waste Policy Statement* (2015) (EfW Policy) underpins the key policy objectives of two Acts that relate to the management of waste in NSW, being:

- the *Protection of the Environment Operations Act 1997* (POEO Act), which sets the framework to ensure human health and the environment are protected
- the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act), which aims to ensure waste management is considered in an orderly manner (i.e. avoid, reuse, recycle and energy recovery).

As such, the EfW Policy is a key matter for a consent authority to consider as it is:

- the primary policy in NSW which governs the assessment and consideration of these proposed facilities
- provides technical criteria to assess to ensure the potential social and environmental impacts of the proposal are considered and to determine if the proposal is in the public interest, which are all matters required to be considered by a consent authority under section 4.15 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) (the former section 79C).

1.1 Operational Reference Facility

The ARUP merit review (Appendix I of the Department's Assessment Report), provided a detailed assessment of the adequacy of the proposed facility against the reference facility requirement set out in the EfW Policy (refer ARUP report - Section 5.1). This included a comparison of the design fuel mixes based on source waste stream and chemical composition, as well as a consideration of waste types in the design fuel mix in comparison to those waste types accepted at the Ferrybridge facility.

Waste Streams

The Ferrybridge Multifuel 1 energy from waste facility in the UK is presented by the Applicant as the most comparable reference facility to the proposed facility. The ARUP assessment concluded that the Ferrybridge facility is similar to the proposed facility in terms of technology selection, size and operational jurisdiction. However, as outlined in Section 6.1.4 of the Department's Assessment Report, the Ferrybridge facility is not treating like waste streams, and therefore does not meet the requirements of the EfW Policy.

As described in Section 5.1.2 of the ARUP review, ARUP's assessment relied on the definition of 'waste streams' in Section 3 of the NSW *Waste Levy Guidelines* (EPA, 2015), which defines 'waste streams' as:

1. **Municipal waste (MSW)** consists of one or more of the following waste 'types': domestic waste, other domestic waste, council waste, or garden organics (as those terms are defined in 3.1.1 below)
2. **Commercial and industrial waste (C&I)** includes waste generated by businesses (including shopping centres), industries, schools, hospitals, other institutions, or government offices
3. **Construction and demolition waste (C&D)** is generated from construction or demolition works, and includes asphalt waste or excavated natural material
4. **Other** if it is not possible to identify whether the waste is MSW, C&I or C&D waste.

As described in Section 5.1.2 of the ARUP report, and Table 10 of the Department's Assessment Report, the design fuel mix for the Ferrybridge facility can be summarised as follows:

- SRF/RDF[1] (from MRF[2] and MSW sources) - 60%

[1] SRF means 'solid recovered fuel'. RDF means 'refuse derived fuel'. These terms are used interchangeably in the UK waste industry to describe fuel from the processing of waste.

[2] MRF means a 'material recycling facility'.

- Mixed C&I - 30%
- Wood Waste - 10%

This is the mix of fuel which Ferrybridge is permitted to receive.

Operational data for Ferrybridge was obtained by ARUP during the assessment process and also provided by the Applicant as part of the Applicant's *Response to DPE Assessment Report* (Urbis, 2018). The two data sources concur that the Ferrybridge facility is accepting and operating on:

- combustible waste (RDF)
- other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11[3].

Appendix C of the Applicant's *Response to DPE Assessment Report* states that the RDF that Ferrybridge is operating on generally comes from around 50% MSW and 50% C&I waste streams. However, the Applicant proposes that the design fuel mix for the Eastern Creek facility would be made up from C&I and C&D waste streams, including floc waste, which the Applicant has categorised as C&I waste.

According to the operational data provided for the Ferrybridge facility, it is not accepting or treating any C&D waste or floc waste, and is accepting RDF sourced from MSW and C&I streams. It is accepted that the C&I fraction would be considered a 'like waste stream' (with the exception of the floc waste component of the C&I) however, MSW is quite different to C&D and is not considered a 'like waste stream'.

Therefore, as concluded in Section 6.1.4 of the Department's assessment report, the Department concurs with ARUP and the EPA that Ferrybridge is not thermally treating a 'like waste stream' and therefore the Department is not satisfied the reference facility requirement of the EfW Policy has been adequately met.

Waste Types

'Waste types' are defined in Section 3 of the NSW *Waste Levy Guidelines* and can typically be described as the waste components or fractions that make up the waste stream. For example, MSW can contain glass, food, plastics, textiles, non-ferrous metals, ferrous metals, which are all types of waste. The list of types of waste is not limited to that provided in the NSW *Waste Levy Guidelines*, and can also be linked to the specific source of waste, however, the NSW guidelines do provide a useful reference to demonstrate the difference between 'streams' and 'types'.

The ARUP merit review (March 2018) considered the individual waste types in the proposed facility design fuel mix in comparison to permitted waste types accepted at the Ferrybridge facility (Refer Section 5.1.3). The ARUP review concluded:

- while it is noted that there is not explicitly defined C&D waste type accepted at the Ferrybridge facility, it is reasonable that source separated C&D waste and the Chute Residual Waste (CRW) if generated from the mechanical treatment of waste, could be considered to comprise of similar like waste types to what is permitted at Ferrybridge (refer Section 5.1.5 of the ARUP technical report).
- it is reasonable that residual C&I waste from a C&I MRF could be considered to comprise of similar like waste types to what is accepted and permitted at Ferrybridge (refer Section 5.1.6 of the ARUP technical report).

However, the latest information received from the Applicant (Urbis, 2018) clearly states that the operational feedstock for the facility is RDF derived from the mechanical treatment of MSW and C&I waste, and no source segregated C&D waste is received at the Ferrybridge facility. Therefore, while permitted to accept C&D waste, operationally the facility is not currently treating waste from a C&D source.

Refer also to the Department's response to Question 4 in **Attachment A**.

1.2 Floc Waste

Section 5.1.4 of the ARUP merit review discusses floc waste and compares it to the permitted waste types that can be accepted at the Ferrybridge facility. Applying the same criteria of waste types that can be accepted at Ferrybridge to the composition of the floc waste provided by the Applicant, only approximately 20% of the floc waste would be permitted for acceptance at Ferrybridge.

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[3] 19 12 11 refers to the European Waste Catalogue waste code for 'other wastes (including mixtures of materials) from mechanical treatment of waste containing hazardous substances'.

Furthermore, the ARUP report sets out that concerns remain over the suitability of floc waste as feedstock for a moving grate incinerator. Recent conversations held by ARUP staff at the IFAT Trade Fair in Munich, Germany (May 2018) with waste to energy technology providers from Europe, suggest that floc waste needs to be very carefully managed and controlled if used as a feedstock. Due to its very light composition it can be explosive if burnt on its own. It is suggested by the technology providers that its most suitable use is when mixed and blended with waste with a high moisture content or very dense waste and should not compose of any more than 20% of the mixed waste.

There is also concern in Europe that floc waste can contain elevated concentrations of chlorine (between 4 – 4.5%), and the compositional analysis undertaken by the Applicant and provided in the RTS documentation in November 2017 did not test for chlorine so no comparison can be made.

The Applicant's proposed design fuel mix has been estimated to have a moisture content of 21.43%, and will consist of C&I and C&D waste and will not contain any putrescible (food) waste from an MSW sources. Therefore, the physical properties of the feedstock will be more akin to non-putrescible waste which is also referred to as 'dry waste'. On this basis the need to mix and blend the waste with a lighter fraction would be limited, and may limit the ability for the floc waste to be incorporated into the fuel mix if accepted.

1.3 Temperature Requirements

The Industrial Emissions Directive (IED) provides temperature requirements for hazardous wastes with a content of more than 1% of halogenated organic substances, expressed as chlorine. The EfW Policy applies these temperature requirements to all wastes, not just hazardous wastes. This is because waste materials that contain these substances can be found in many waste streams, not just hazardous waste streams, e.g. polyvinyl chloride (PVC) piping in C&D waste.

Higher temperatures are required to ensure the destruction of harmful compounds, such as dioxins and furans, to ensure that air emissions do not pose a risk of harm to the community and the environment. In NSW, temperature requirements are applied to all wastes to minimise the risk of harmful air emissions for all proposed energy recovery facilities.

Information provided by the Applicant was not robust enough to demonstrate that the amount of potentially halogenated substances (PVC) would remain below 1% throughout the operation of the plant. Given the risks and the potential for harmful emissions, the Applicant has not adequately justified the appropriateness of lower temperatures for the proposed facility.

2. Air Quality and Human Health Risk

Air Quality

The information presented by the Applicant regarding air quality does not change the evaluation of conclusions made in Section 6.2 of the Department's assessment report or expressed in the EPA's submission on the Applicant's *Response to Submissions Report* (Urbis, December 2017).

Human Health Risk

With respect to the Applicant's comments on the Department's assessment of human health risk (Section 4.2.2 of the Applicant's Response), this matter has been addressed in the Department's response to Question 2 of **Attachment A.**

The concept of compounding conservativeness was raised in regard to risk assessments a few decades ago, when it was an issue for some assessments. Since that time, national guidance has been revised on a number of occasions and the revisions have attempted to strike the right balance between being sufficiently conservative but not too conservative. This risk assessment has used the assumptions recommended in current guidance for such assessments in Australia.

3. Scale of the Facility

The scale of the development is a planning consideration as the size of the development has implications for the extent of environmental impacts. The likely impacts of the development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality, are key matters for consideration under Section 4.15 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Furthermore, the Secretary's Environmental Assessment Requirements (SEARs) for the application require the Applicant to provide a detailed description of the development, including justification for the development taking into consideration its location, any environmental impacts of the development, the suitability of the site

and whether the development is in the public interest. The SEARs for the application are available on the Department's website at:
https://majorprojects.accelo.com/public/32a6f7a82c04fdcec76df5774b391d8c/Eastern%20Creek%20Energy%20from%20Waste%20DGRs.pdf

China National Sword Policy and Interstate Transport of Waste

In their response to DPE's Assessment Report, the Applicant asserts that the impacts of China's National Sword Policy and the reintroduction of a waste levy in Queensland justify the scale and strategic importance of the proposal.

China has recently begun enforcing its National Sword policy, restricting the types of recyclable material it will accept. China was the largest importer of recyclable material in the world and its decision is presenting global challenges that are impacting recycling in NSW. The major impact was on the end-markets for NSW kerbside recyclables, which includes plastic/glass bottles, paper and cardboard. As the Applicant is not proposing to treat kerbside recyclables at its Eastern Creek facility, the impacts of China's National Sword policy would therefore have very limited implications for the proposed Eastern Creek facility.

Recyclable wastes have a higher priority waste management option, namely to be processed into new products. Recycling keeps materials in the productive economy and benefits the environment by decreasing the need for new materials. In accordance with the EfW Policy and the NSW waste hierarchy, only residual wastes which cannot be recycled or reused, are suitable for energy recovery.

Furthermore, the Applicant is not proposing to treat kerbside recyclables at its Eastern Creek facility, so any assertions to the contrary are not in accordance with the proposal in addition to being inconsistent with NSW Government policy, priorities and programs.

The long-distance transport of waste to landfill in Queensland has largely occurred because Queensland does not have a waste levy and there are higher fees for using NSW landfill facilities. On 1 June 2018, the Queensland Government announced it will reintroduce a waste levy. The NSW Government supports this decision which will reduce the financial viability of transporting waste from NSW to Queensland, and which will increase the viability of the waste processing and higher order reuse of wastes in NSW.

The proposed facility is not a viable alternative to respond to these market challenges. There are mechanisms, programs and policies in place to ensure better environmental and economic outcomes are achieved for these wastes. Energy from waste does not represent a better resource recovery outcome when compared to recycling and reuse alternatives, in accordance with the waste hierarchy and international best practice.

4. Resource Recovery Criteria

Section 4 of ARUP's merit review (Appendix I of the Department's Assessment Report) provided a review of the material availability presented by the Applicant as potential feedstock for the facility (detailed in Appendix J of the Applicant's Response to Submissions (RTS)). The Applicant presented the proposed feedstock which would be available through their own existing and planned facilities and they also considered the total potential available suitable feedstock in the Metropolitan Levy Area (MLA).

ARUP has advised it was not clear in the Applicant's documentation that the two assessments were completely independent of each other and should have been read separately. ARUP considered the review of the MLA available feedstock was to demonstrate the additional eligible feedstock that would be potentially available to the Applicant and to demonstrate that there is sufficient potential eligible feedstock in the system. This is the reason that ARUP discounted the Applicant's existing or planned facilities capacity in Section 4.4.4 of its review.

Section 4.3 of the ARUP report considered the Applicant's existing and planned facilities and the proposed waste feedstock which would be sourced from these facilities. The facilities presented were:

- Genesis facility at Eastern Creek (EC)
- Genesis Material Processing Centre (MPC)
- Genesis Eastern Creek landfill
- Genesis facility at Alexandria.

In addition, the Applicant presented one new facility, a C&I dirty MRF, which would receive mixed C&I waste and undertake resource recovery.

ATTACHMENT B

For each facility, ARUP considered the methodology applied to determine the availability of feedstock and challenged some of the assumptions made. In some cases, ARUP did not agree with the assumptions made by the Applicant to determine the material availability and in these cases, ARUP discounted the waste availability. For example, the Genesis MPC facility applied a resource recovery rate of 75% to determine the amount of residual material that would be available as feedstock for the proposed facility. However, MRA have stated elsewhere that the Genesis MPC facility is actually achieving a resource recovery rate of higher than 80%, therefore, it would only have 20% residual material available as feedstock for the waste to energy plant (Section 4.3.2 of the ARUP report).

With regard to floc waste, the Applicant claims 100% to be residual from a resource recovery activity, under the assumption that the previous facility is meeting the relevant NSW EPA resource recovery criteria. However, as described in Section 4.3.3 of ARUP's merit review, floc waste does not fall under C&I resource recovery criteria. Further, it was noted that no consultation with NSW EPA was documented in the MRA review on this waste streams eligibility to be classified under the EfW Policy Statement's resource recovery criteria.

Mixed waste received and handled through the Alexandria facility was also discounted on the basis that the Alexandria facility is a transfer station and after consultation with the NSW EPA, could not be considered a bone fide resource recovery facility. Other waste material received through other genuine resource recovery facilities was not discounted.

With regard to the planned expansion of the Applicant's existing Genesis facility, the Applicant indicated that the streams of textiles and wood would be the focus of growth (Table 21 of the MRA Report, Appendix J of the RTS). While this statement is reasonable, the rate of growth proposed for these type wastes was considered very significant compared to what is currently received at the facility and would also represent a reasonable proportion of the total available in the MLA. Therefore, while it could be possible the Applicant could increase its market share of these wastes, ARUP considered it unlikely it would reach the level that is proposed in the MRA report (refer Section 4.31, Table 2 and 3 of ARUP's review). ARUP therefore applied a conservative approach of applying the current percentage of textile and wood waste received at the Genesis facility to determine the potential future amount of these wastes.

In the Applicant's most recent report (Urbis 2018), the Applicant has challenged the statement made in the Department's assessment report that:

> *'The resource recovery criteria percentage limits have been applied to the total volume of residual waste in the MLA market, rather than on an individual facility basis, as required by the EfW Policy.'*

MRA challenge the validity of the statement by referring to the application of percentage limits to specific facilities as described on Page 30 and Table 19 of MRA's Feedstock Study.

However, the Department notes that Table 19 of the MRA Feedstock Study actually describes the eligible tonnes arising from the Genesis EC landfill and was part of the Applicants commentary about their existing and planned facilities and was not part of the MLA assessment.

Based on the advice from the EPA (Attachment A of EPA's March 2018 submission) and ARUP (Sections 4.3 and 4.4 of ARUP's merit review), the Department maintains its view that the Applicant has incorrectly applied the resource recovery criteria as a target rather than a limit and therefore has considerable concerns that the proposal has the potential to undermine higher order resource recovery outcomes. Furthermore, the Applicant has taken a 'mass balance' approach to calculating the eligible tonnes in the MLA and has not accounted for current recycling and recovery activities on an individual facility basis. Detailed site-specific information is required for the proposed feedstock to demonstrate compliance with the resource recovery criteria requirements of the EfW Policy.

5. Issues Raised in Submissions

The information presented by the Applicant in its response does not alter the evaluation and conclusions made in Section 6.3 of the Department's assessment report.

6. Public Interest

The information presented by the Applicant in its response does not alter the evaluation and conclusions made in Section 6.4 of the Department's assessment report.