

Blacktown City Council submission to the Portfolio Committee No. 6 Planning and Environment inquiry on 'energy from waste' technology

Summary position

Regardless of whether the first energy from waste (EFW) facility is built at Eastern Creek or not, New South Wales needs specific controls for EFW facilities that reflect what can be achieved with best available and developing technology.

We have learnt that we must work together to ensure:

- the risks have been adequately assessed
- the right environmental controls are put in place
- there is adequate community consultation
- there are no compromises and no concessions.

We are recommending the Environment Protection Authority's Energy from Waste Policy provides mandatory requirements for any future proposal including:

- clear and defined minimum requirements for Energy from Waste facilities in the NSW *Protection of the Environment Operations Act 1997*
- Energy from Waste facilities proprietorship, operator checks and licensing restrictions
- planned obsolescence of the facility to meet the requirements of the NSW *Waste Avoidance and Resource Recovery Act 2001*.

It is our view any Energy from Waste Policy statement must be specifically referred to in the act and/or regulations to ensure compliance with it is compulsory.

To supplement the Environment Protection Authority's Energy from Waste Policy Statement we believe there needs to be minimum standards for emissions that are specific to, and absolutely reflect the best technology available for Energy from Waste facilities.

If we are to follow the world's example and embrace Energy from Waste as a solution to our waste disposal needs, we need to learn from the overseas examples and show our local communities that our standards are the best.

Case study – The Next Generation Eastern Creek proposal

1. Council has concerns about a State Significant Development (SSD) application lodged with the Minister for Planning by The Next Generation (TNG) NSW Pty Ltd for a 3 lot subdivision, roadworks and construction of an Energy from Waste (EFW) plant having the technological capacity of 1.35 M tonnes per annum in Honeycomb Drive, Eastern Creek.
2. We engaged an independent environmental consultant company (Jacobs Group (Australia) Pty Limited) to review the amended Environmental Impact Statement (EIS) relating to the proposal. Following the review it was concluded that there are gaps in the information provided that are of significant concern.
3. Council made a submission to the Department of Planning and Environment on the proposal recommending that the application be refused as:
 - There are still gaps in the EIS that we have significant concerns about, including the source of the waste and the inability of the applicant to guarantee procedures and processes that satisfactorily demonstrate how all waste will be satisfactorily sorted.
 - The EIS has not verified that the predicted emissions are valid and achievable.
 - The proposal fails to meet the objectives of the IN1 zone and is therefore prohibited.
 - The proposal will have a significant impact on critically endangered ecological communities.
 - The proposal as submitted fails to promote biological diversity.
 - The location and design of the EFW plant fails to encourage a high standard of development.
4. A copy of the submission to the NSW Department of Planning and Environment is provided at **attachment 1**.
5. As our findings following the EIS review may assist with the outcome of the Portfolio Committee No. 6 Planning and Environment inquiry, it is the main 'case study' referred to throughout this submission.

Case Study – Our UK experience

1. As the scale of this development is a first for Australia, Council sent a technical delegation overseas to visit and understand how comparable facilities work and understand the state-of-the-art environmental controls and safeguards that must be put in place.
2. The delegation toured 4 facilities in the United Kingdom to gain a balanced understanding of the complexities of these types of facilities from the perspective of the operator, the regulator and representatives of the communities where these plants are located.
3. The delegation met with our equivalents at national, regional and local government levels, and community representatives.
4. The full itinerary included:
 - a. Site inspections of 4 EfW facilities in the United Kingdom, including:
 - Runcorn Energy from Waste Facility, Halton, England
 - Ardley Energy Recovery Facility, Oxfordshire, England
 - Trident Park Energy Recovery Facility, Cardiff, Wales
 - Riverside Resource Recovery Centre, Bexley, London.
 - b. Meetings with government representatives from:
 - Halton Borough Council
 - Welsh Government
 - Greater London Authority
 - London Borough of Islington.
 - c. Meetings with community representatives against Energy from Waste facilities, including:
 - President Jeff Meehan, Halton Resident Action Group, and 2 other Action Group members
 - Councillor Nicky Gavron - former Deputy Mayor of London and current member of the London Assembly.
5. Following the technical tour, Council endorsed 25 recommendations that should be considered as part of any current or future energy from waste incinerator development. Our findings are included as a further case study where relevant to the Portfolio Committee No. 6 Planning and Environment's Terms of Reference.
6. A full copy of our The Energy from Waste Technical Tour report is at **attachment 2**.

A voice for our community

1. In June 2016, the Mayor, Councillor Stephen Bali, and senior Council officers met with the Hon. Mark Speakman MP, the then Minister for the Environment, and representatives of the Minister for Planning and the EPA.
2. We made it clear we do not want a compromised solution for our City. We asked that adequate safeguards be put in place from the beginning (at the planning stage) through to the ongoing operation of the plant (the environmental controls).
3. We also held a series of well attended community forums across our City and the Penrith and Cumberland local government areas, to explain our concerns with this proposal and give the community an opportunity to express its concerns.
4. In August 2016, the Mayor and Council officers again met with representatives from the Department of Planning and Environment and the Environment Protection Authority. At the time we were advised that the applicant had been given an opportunity to address the outstanding concerns about the proposal, with this being the final opportunity to address the concerns.
5. In December 2016, the Mayor and Council officers met with the then Minister for the Environment. By this time the EIS was on exhibition.
6. Council hosted a joint community information forum with the applicant on 6 February 2017 in Minchinbury. Community members expressed their health fears and environment concerns with this proposal and it was evident that the Blacktown community, in particular Minchinbury residents, do not want this proposal to go ahead.
7. Community members also expressed concerns with the validity of the proposal as a solution to waste disposal. A copy of a very recent review by the European Commission of EFW in Europe is provided in **attachment 3**. This raises valid concerns about the value of EFW plants in the waste hierarchy, where they can have the result of significantly discouraging the achievement of recycling targets.

Terms of reference

This submission outlines our concerns in line with the following Parliamentary Committee's terms of reference:

- a) the current provision of waste disposal and recycling, the impact of waste levies and the capacity (considering issues of location, scale, technology and environmental health) to address the ongoing disposal needs for commercial, industrial, household and hazardous waste
- b) the role of 'energy from waste' technology in addressing waste disposal needs and the resulting impact on the future of the recycling industry
- c) current regulatory standards, guidelines and policy statements over sighting 'energy from waste' technology, including reference to regulations covering:
 - i. the European Union
 - ii. United States of America
 - iii. international best practice
- d) additional factors which need to be taken into account within regulatory and other processes for approval and operation of 'energy from waste' plants
- e) the responsibility given to state and local government authorities in the environmental monitoring of 'energy from waste' facilities
- f) opportunities to incorporate future advances in technology into any operating 'energy from waste' facility
- g) the risks of future monopolisation in markets for waste disposal and the potential to enable a 'circular economy' model for the waste disposal industry, and
- h) any other related matter.

Our submission

Our responses to the Portfolio Committee No. 6 Planning and Environment inquiry's Terms of Reference have been grouped under the following sub-headings:

	Section	Terms of Reference
1	Waste management concerns	a, b and g
2	Environmental concerns	c
3	General environmental concerns	d and f
4	Licensing concerns	e
5	Community engagement	h
6	Conclusion	
7	Attachments	

1. Waste management concerns

Terms of reference:

- a) the current provision of waste disposal and recycling, the impact of waste levies and the capacity (considering issues of location, scale, technology and environmental health) to address the ongoing disposal needs for commercial, industrial, household and hazardous waste
- b) the role of 'energy from waste' technology in addressing waste disposal needs and the resulting impact on the future of the recycling industry
- g) the risks of future monopolisation in markets for waste disposal and the potential to enable a 'circular economy' model for the waste disposal industry, and

Key issues

1. A local council is best placed to provide valued and cost effective waste and recycling services to its community. Each council provides services that meets its community's needs and provides the best resource recovery outcomes for the domestic waste generated.
2. However there are key strategic waste planning issues that need to be addressed in partnership with local councils to ensure that they are able to access local resource recovery facilities that provide the best economic and environmental benefit to its community.
3. We acknowledge that the *Protection of the Environment Operations Act 1997* Section 88 waste levy was introduced as an economic driver to encourage all sectors to reuse and recycle, and that it has assisted in increasing recycling across NSW. However the amount of revenue generated by the levy and the amount returned to councils and the industry has not leveraged a new alternative waste processing facility in the Sydney metropolitan area for domestic waste in the last 8 years.
4. Energy from waste is part of the waste management solution but only if the other elements of the waste hierarchy have been utilised. Waste to energy will provide the best outcomes only when the waste stream has been processed, providing the best high value resource recovery available.
5. Within the domestic, commercial and industrial, and construction and demolition sectors there needs to be investment in facilities that will undertake the recycling process to provide feed stock to EFW facilities. This will provide the best resource recovery outcomes. There does need to be balance, as increasing the amount of material recovered through the processing may impact recycling markets.
6. We are concerned that there is no coordinating body to strategically plan Sydney's waste infrastructure needs. If Sydney is to plan for its growth and all three streams of waste generated (domestic, commercial and industrial, and construction and demolition) then there needs to be body larger than a group of councils who can ensure that the increase in waste generation in all three streams has local facilities that offer best resource recovery outcomes.
7. There is concern that EFW technology is being phased out for a circular economy. A copy of a recent review by the European Commission raised concerns about the value of EFW facilities in the waste hierarchy, where they can result in a reduction in the recycling rates achieved.

Evidence

1. The Department of Planning and Environment appears to be taking no role in planning for such infrastructure particularly identifying appropriate locations. Waste processing and disposal is an essential household and commercial service, and should be planned as such, similar to water, energy, roads and other essential infrastructure. The Greater Sydney Commission's District Plans do not identify where key waste infrastructure will be located ensuring that there is no residential encroachment and providing a local solution to this growing issue.
2. The closure of the Eastern Creek Landfill, provides the NSW state government and particularly Property NSW with an opportunity to plan for a resource recovery park at the site. Providing valuable land, an ongoing issue, on which alternative waste treatment facilities could be placed to assist in increasing the resource recovery options for the domestic, commercial and industrial, and construction and demolition waste streams.
3. The Western Sydney Regional Organisation of Councils Waste and Recycling Infrastructure Needs Assessment (2015) (included as **attachment 5**) has identified that by 2021 there is approximately a 994,000 tonne gap in facilities available to process mixed waste treatment, garden organics processing and putrescible organics processing compared to projected waste generation figures. The use of the blunt instrument of the levy has not leveraged the investment required to facilitate the alternative waste treatment processes needed to ensure that the waste streams generated can be delivered to local facilities.
4. The percentage of revenue collected from the Section 88 levy reinvested into waste planning and infrastructure has been too little to ensure there are long term solutions and competition within the sector. We acknowledge the NSW Waste Less Recycle More Program however, there is a huge discrepancy between the revenue generated by the Section 88 levy and that provided back through this program.
5. By way of example, in Blacktown City for our domestic waste, even with 63% waste diverted from landfill (2015/16 figures) we paid \$7,026,657 in Section 88 levy. In 2015/16 under the Waste Less Recycle More Program we received \$783,834 back in tied funding.
6. The Section 88 levy has not motivated additional investment by the private sector in alternative waste treatment facilities in the Sydney Metropolitan area. It has been 8 years since a waste processing facility for domestic waste has been commissioned.

Case study - Circular Economy Model

1. The report from January 2017 to the European Parliament concluded that EFW technology is being phased out for a circular economy. It raises concerns about the value of EFW plants in the waste hierarchy, where they can significantly discourage recycling and resource recovery.
2. Increasing waste prevention, reuse and recycling are key objectives of a circular economy which aims to slow, close and narrow material and energy loops.
3. As waste incineration sits at the bottom of the waste hierarchy, along with landfilling it is the least favourable options for reducing greenhouse gas emissions. As we move towards a gradual diversion of waste from landfill, this should go hand in hand with greater recycling capacity and we need to ensure EFW does not create infrastructure

barriers to the achievement of higher recycling rates.

4. Care must be taken to avoid the creation of an overcapacity of non-recyclable waste treatment that may lead to the risk of stranded assets. This can be done by a life cycle analysis that ensures the overall impacts do not offset the sought benefits.
5. A copy of a recent review by the European Commission of EFW in Europe is provided in **attachment 3**.

Case study – The Next Generation Eastern Creek proposal

1. The proposed EFW plant at Eastern Creek will be fuelled by waste derived fuels. The EIS states that the proposal will be a 'green' electricity generation plant and NSW's first (and Australia's largest) Energy from Waste plant. It will have the technological capacity to process up to 1.35 million tonnes of residual waste fuel per annum.
2. The following table provides a summary of the total amount of waste to be processed and where the waste will come from. These figures are discussed in the sections below.

Source	Volume in tonnes per annum (tpa)	Percentage	
Directly from the Genesis material processing centre after being screened (i.e. enters the EFW plant via a conveyor)	136,000 tpa	12%	= 55% from the Genesis plant
Redirected from the Genesis material processing centre without screening and prior to entry, as this is waste that would have been landfilled according to the applicant (i.e. arrives at the EFW plant in trucks)	469,000 tpa	43%	
From third parties (i.e. via the public road system)	500,000 tpa	45%	= 45% from unknown sources
TOTAL	1.105 million tpa	100%	100%

3. Of the 1.105 million tonnes of input material, approximately 136,000 tonnes per annum (tpa) will be sourced directly from the neighbouring Genesis material processing centre. A private underground culvert and conveyor will be provided to transfer the 136,000 tonnes of waste material from the Genesis material processing centre to the EFW plant. This is 'left-over' waste that would otherwise have been sent to landfill following the sorting/recycling process at the material processing centre. We agree that this left over material is an appropriate waste source.
4. In response to Council's written concerns about the source of the waste, the applicant stated that a further 469,000 tpa will be 'redirected from Genesis'. This is waste which currently goes to Genesis to be landfilled, as it is waste of a type which cannot be recycled. It is claimed that it will be viewed and classified either at Genesis and redirected from there to the EFW, or will be viewed and classified at

the EFW plant. It is also claimed that these procedures will be verified by the EPA, to ensure that they comply with EPA guidelines, and ensure that none of the material is capable of further recycling.

5. We are concerned that this material may be unsuitable for the EFW plant (e.g. it may contain hazardous material such as asbestos, with asbestos fibres not being able to be completely incinerated) and should continue to be sent to landfill, or it may be capable of recycling. More information and justification is required to clarify this and the procedures for the classification of the waste.
6. Each load should undergo a thorough sort (rather than just a quick visual inspection) prior to determining if it should be rejected or not. If the acceptability of the load is determined by a visual inspection only, there is the potential for problem items (e.g. asbestos, gas bottles, other hazardous materials and those foreign objects not suitable for incineration) to be concealed. We believe all waste should first go through the Genesis plant to prevent this from occurring.
7. Based on the EFW plant having a processing capacity of 1.105 million tpa, this would mean that only 55% of the waste fuel is coming from the Genesis plant. This is a significant difference from the pre-lodgement discussions with Council which suggested that the majority of the fuel for the EFW plant would be obtained from the Genesis MPC (up to 95%). This would have ensured that controlled screening measures were in place.
8. The fuel for the EFW plant will include everything from glass and paper to garden organics. It is considered totally unsatisfactory that paper, garden waste, etc. is being added to the fuel stream for the proposed EFW plant and is not being recycled.
9. This highlights a major issue with the EIS - it does not provide clear information on fuel sources and whether these materials can be further recycled, and there are inconsistencies with the originally claimed source of material being largely from the Genesis recycling and landfill plant.
10. The Managing Director of TNG, Mr Ian Malouf, when he addressed the Council meeting in November 2016, made claims that all recyclable material will be recovered. This is not verified in the EIS.
11. Almost half of the waste will be sourced from unknown third parties. The revised EIS contains a confidential waste report. This report was not provided to Council to enable us to make a complete assessment of waste sources and the procedures for validation and sorting.
12. As only 55% of the input waste material will be sourced from the Genesis plant, the balance (45%) will come from unknown sources.
13. The Genesis Xero Waste plant lodged a separate Section 75 W application under the *Environmental Planning and Assessment Act 1979* to seek approval for the construction of an undercover pre-sort centre (PSC) on its site to increase the amount of recycling achieved. This was approved by the Department of Planning and Environment in September 2016. It will give the operator an improved opportunity to sort and recover commercial and industrial type waste. Whilst we strongly oppose the approval of the EFW plant, if it is approved it should be contingent on this being constructed. If the proposal is approved, the EFW plant must not operate until the new pre-sort centre is constructed and operational, and

the resource recovery rate meets the minimum levels set in the NSW EPA Energy from Waste Policy Statement.

14. Based on the EFW plant having a processing capacity of 1.105 million tpa, the balance would be approximately 500,000 tonnes. It is still unclear where the remainder of the waste will come from, if the 500,000 tpa will be sourced from EPA accredited bodies, and what type of waste will be included in the 500,000 tpa (though it appears to include paper, glass, green waste, etc). Clarification is required for the following:
 - a. Why the 500,000 tpa (45%) is not first going through the Genesis plant for screening/recycling
 - b. Details of the eligibility criteria for any waste directly from a third party
 - c. What measures will be in place to ensure hazardous materials are not mixed with the third party waste.
15. TNG advised that it is in the commercial interest of the approved third parties (who are sizeable organisations in their own right) to do their own recovery operations and collect materials that are suitable for reprocessing and re-selling. The resulting residue material (i.e. 500,000 tpa) will then be transported to the EFW plant.
16. It is unclear, however, if the residue material (500,000 tpa) has the ability to be recycled further (i.e. is it material that does not hold commercial value to the third parties, but still is capable of being recycled?). It is also unclear what measures will be put in place to prevent hazardous materials from being placed in this waste stream. Incinerating recyclable material contradicts the waste hierarchy which underpins the objectives of the Waste Avoidance and Resource Recovery Act 2001 (NSW).

Case Study – Our UK experience

1. The Runcorn facility has no ash processing on site, so this currently goes to landfill. There is the potential for the ash to be used for making construction blocks in the future, however this needed to be determined at the planning stage.
2. We confirmed the source of the waste is critical in terms of viability of the plant and to control emissions. Without proper sorting asbestos or other hazardous material can enter the facility.
3. The plants we visited relied heavily on securing municipal waste contracts, despite their original intent of being reliant on commercial and industrial waste.
4. The Trident Park facility confirmed that it would be too time consuming to check all waste that entered the facility.
5. The Ardley facility has no waste pre-sorting, resulting in the potential for inappropriate and hazardous material entering the waste stream.

Recommendations

1. Any EFW proposal in NSW must be required to demonstrate that all waste (with no exclusion) undergoes validated pre-treatment at off-site waste transfer stations, or otherwise undergoes sufficient sorting prior to incineration.
2. The NSW EPA must require any proposal in NSW to outline how the resource recovery criteria for mixed wastes as outlined in the NSW Energy from Waste Policy Statement will be achieved.
3. To demonstrate best practice, any EFW proposal in NSW should be required to

demonstrate a plan for ash processing on site. This will enable possible reuse opportunities for the ash and will reduce the amount sent to landfill.

4. To ensure the best resource recovery, the NSW EPA should impose annual licensing requirements that set maximum incineration limits based on the plant's ability to meet the NSW Waste Avoidance and Resource Recovery targets, which for 2021/22 are 70% for C & I waste and 80% for C & D waste. The licence requirements should consider prior year tonnages, to monitor performance and ensure recycling remains a priority.

2. Environmental concerns

Terms of reference:

- c) current regulatory standards, guidelines and policy statements over sighting 'energy from waste' technology, including reference to regulations covering:
 - i. the European Union
 - ii. United States of America
 - iii. international best practice

Key issues

1. Incineration will always cause potentially harmful emissions, regardless of the presence of an accompanying Energy from Waste facility.
2. It is Council's firm view any incineration process must be controlled and regulated by planning and environmental standards which reflect current world's best practice and that can be amended as the technology changes.
3. The NSW State Government will fail in its duty of care, should existing standards be allowed to remain in place. Council considers current technology to be behind available best practice technology, potentially allowing suboptimal operators to enter the market. There is genuine potential to cause physical harm to the surrounding residents and ruin the reputation of a potentially expanding industry, should the current emission limits not be improved.

Evidence

- The following table compares the emissions criteria for the European Union, United States of America and New South Wales.

Table 1: Emission criteria comparison: NSW and other parts of the world.

Pollutant	NSW POEO Clean Air Regulation Schedule 3 (Group 6) (One hour averaging period)	EU Industrial Emissions Directive (IED) (2010/75/EU) A (100%) (Half hourly average)	EU Industrial Emissions Directive (IED) (2010/75/EU) B (97%) (Half hourly average)	EU Industrial Emissions Directive (IED) (2010/75/EU) (Daily Average)	EU Industrial Emissions Directive (IED) (2010/75/EU) (Average over a sampling period of a minimum of 30 min average and a maximum of 8 hours)	United States Environmental Protection Agency Final Emission Limits for Large Municipal Waste Combustors
Solid particles /Dust/ Particulate Matter (mg/m ³)	50	30	10	10	No applicable standard	20
Nitrogen dioxide NO ₂ (mg/m ³)	500 (reported as 350 previously)	400 (for new plants)	200 (for new plants)	200	No applicable standard	300 (after first year of operation)
TOC (mg/m ³)	40 (as VOC)	20	10	10	No applicable standard	1
Dioxins and furans (ng/m ³)	0.1	No applicable standard	No applicable standard	No applicable standard	0.1	13
Hydrogen Chloride HCL (mg/m ³)	No applicable standard	60	10	10	No applicable standard	37
Cadmium Cd (mg/m ³)	0.2	No applicable standard	No applicable standard	No applicable standard	.05	0.01
Mercury Hg (mg/m ³)	0.2	No applicable standard	No applicable standard	No applicable standard	.05	0.05
Sulphur Dioxide SO ₂ (mg/m ³)	No applicable standard	200	50	50	No applicable standard	84
Hydrogen Fluoride HF (mg/m ³)	No applicable standard	4	2	1	No applicable standard	No applicable standard
Carbon Monoxide CO (mg/m ³)	125	No applicable standard	No applicable standard	50	100	No applicable standard

2. The emission criteria are generally less stringent in NSW than the European Union and the USA, with the exception of dioxins, which have a shorter averaging period, and therefore are stricter. In NSW, there needs to be minimum standards for emissions that are specific to, and absolutely reflect the best technology available for Energy from Waste facilities.
3. The NSW EPA Energy from Waste Policy Statement outlines:
 - There must be continuous measurements of **NO_x, CO, particles (total), total organic compounds, HCl, HF and SO₂**. This data must be made available to the EPA in real-time graphical publication and a weekly summary of continuous monitoring data and compliance with emissions limits published on the internet. The continuous measurement of HF may be omitted if treatment stages for HCl are used which ensure that the emission limit value for HCl is not being exceeded.
 - There must be **at least two measurements per year of heavy metals, polycyclic aromatic hydrocarbons, and chlorinated dioxins and furans**

Case study – The Next Generation Eastern Creek proposal

1. An independent environmental consultant company, Jacobs Group (Australia) Pty Limited (Jacobs), was engaged by Council to review the technical accuracy of the amended EIS and specialist studies.
2. Our consultant's review focused on:
 - a. The technology proposed in the EIS
 - b. The specialist reports contained in the amended EIS.
3. Jacobs reviewed the technology proposed in the EIS and concluded that:
 - a. The TNG concept, based on a steam cycle waste to energy (WTE) plant, with grate combustion system, is sound and reflects good practice for standalone WTE plants.
 - b. The concept design should be demonstrated using heat and mass balances for solids, liquids and gases, i.e. heat balance for the steam cycle, fuel and ash balance, air and flue gas balance and water balance. The heat and mass balance is essential to demonstrate the performance of the plant, which is the basis for all fuel, ash, air and water emissions.
 - c. An air cooled condenser (ACC) has been proposed as the main cooling system. This may not be best practice. Air cooling reduces the efficiency of the plant, particularly during summer time, but has low water consumption. The alternative is wet evaporative cooling towers which are reported to be more efficient and less affected by higher ambient temperatures. This alternative could be a better fit in Australian climatic conditions and needs to be considered.
 - d. The EIS also notes the air cooled condenser will initiate a plant 'trip' at ambient temperatures above 37°C. It is not explained in the EIS why the applicant would use this type of technology when the temperatures in summer are often over 37°C. When it is over 37°C the system will shut down, which may have financial or efficiency implications.
 - e. This is explained further in the next section 3. Environmental concerns.
4. Council sought additional clarification of the greenhouse gas assessment following the Council meeting on 15 February 2017. The additional Jacobs advice concluded:
 - a. The calculation of how much GHGs are avoided by the project relates to the carbon being combusted resulting in carbon dioxide (CO₂) rather than

decomposing in the landfill and emitting methane (CH₄) which is more than 20 times more potent in terms of global warming potential (GWP) than CO₂. Additionally the combustion of waste carbon to generate electricity will offset some existing fossil fuel electricity generation GHG emissions.

- b. In summary the approach to calculating GHG reduction from diverting waste from landfill is reasonable. However, as noted in the Jacob's review report CH₄ capture and combustion which is best practice at many landfills to reduce GHG emissions is not currently adopted at the Genesis facility and is stated to not form part of the future operations. As such it can be viewed that GHG emissions reduction associated with the proposed EFW facility are over stated in the EIS as they are not currently adopting best practice GHG emissions reductions at the landfill.
5. The review of the EIS by Jacobs, which includes recommendations to the Department of Planning and Environment, is provided at **attachment 4**.

Case Study – Our UK experience

1. The Trident Park facility undertook air quality monitoring prior to the facility operating, to provide baseline data for the operation of the facility.
2. The Riverside facility voluntarily funds the continued operation of the existing air monitoring stations in the surrounding area
3. The Runcorn facility is given an “abnormal operation” allowance. This is where it does exceed emission levels. This potentially happens any time a foreign object, e.g. a gas bottle or an engine block, enters the treatment area.
 - a. Abnormal operations requires notification to the Environmental Agency within 24 hours. The Environmental Agency allows 4 hours leeway to fix the problem, and up to 60 hours of abnormal operations per year.
4. The Trident Park Energy from Waste facility has a policy for no large items to be processed, to prevent blockages in the hopper.
 - a. The facility has a shredding facility on site, although it also continues to have problems with the waste stream, including engine blocks that act as a heat sink during incineration and gas bottles exploding.
5. The European Union's Industrial Emissions Directive was adopted in November 2010 and came into force in January 2011. It includes a Best Available Technology reference document, which is currently being reviewed. This is what the EPA's policy is based on.
6. Discussions with Islington Borough revealed that the proposed North London Waste Authority replacement energy recovery facility at Edmonton will use the most effective treatment technologies available. This will make it amongst the best performing facilities in Europe.
 - a. The technology proposed goes beyond the requirements of the Industrial Emissions Directive. For example the Directive has a limit of 200mg/m³ for nitrogen oxides, the new permit proposed requires 80mg/m³, however the consultation document indicates that the proposed facility's expected range is 10-25mg/m³.
 - b. This highlights what can be achieved with foresight, proper environmental planning and consultation. This type of precautionary approach should be applied to any new facility.

Recommendations

1. Any EFW proposal in NSW must demonstrate how inappropriate objects will be excluded from the waste stream, to prevent abnormal operation that impacts its ability to meet emission criteria. This is consistent with the NSW EPA Energy from Waste Policy Statement outlines that unprocessed mixed waste streams, and hazardous materials must be excluded as potential waste streams.
2. All commercial and industrial waste must either pre-sorted and shredded or sorted and shredded at the facility prior to incineration, to ensure an even fuel source and prevent any contaminants like fuel cylinders and engine blocks entering the incineration process.
3. Any proposal in NSW must broadcast real time emission testing data online, giving the general public the ability to view and monitor the daily emissions from the plant.
4. Prior to any approval for an facility in NSW, the NSW EPA needs to develop new emission standards that reflect what can be achieved with best available and developing technology.
5. Mandatory monthly testing of heavy metals, polycyclic aromatic hydrocarbons, and chlorinated dioxins and furans.
6. Any proposal in NSW must ensure the calculations for determining any greenhouse gas reductions (GHG) must not be overstated, if the facility where the waste is diverted from does not adopt best practice GHG emissions reductions at the landfill.
7. Any proposal in NSW must undertake air quality monitoring for a period of one year prior to the plant operating, to obtain accurate baseline data to be used to determine that the plant is not adversely impacting on the air quality of the surrounding area when operations commence.

3. General environmental concerns

Terms of reference:

- d) additional factors which need to be taken into account within regulatory and other processes for approval and operation of 'energy from waste' plants
- f) opportunities to incorporate future advances in technology into any operating 'energy from waste' facility

Key issues

1. There are currently no guidelines for energy from waste facilities in NSW. The EPA has indicated guidelines will be published in early 2017. The success of regulation of the EFW industry will relate directly to the proper implementation of guidelines that adequately address areas of concern in the industry.
2. There is the potential that without proper future planning that the integration of new technologies as they emerge may be missed. This could restrict the implementation of environmental upgrades. There must be mandated research for improved technology to enable tighter emission regulations.
3. There are currently no requirements in NSW for independent environmental certification for the operation of EFW plants

Evidence

1. An important point in the NSW EPA EFW policy statement is that the net energy produced from thermally treating waste must be positive. A facility must also ensure that at least 25% of the energy generated is captured as electricity.
2. EFW facilities must also demonstrate that any heat generated is recovered as far as practicable. This may be a challenge in the Australian setting where the use of residual heat for heating homes is not a viable option.
3. As outlined in the NSW EPA Energy from Waste Policy Statement an efw facility must incorporate international best practice techniques in particular:
 - a. Process design and control
 - b. Emission control equipment design and control
 - c. Emission monitoring with real-time feedback control
 - d. Arrangements for the receipt of waste
 - e. Management of residues from the energy recovery process.
4. The technology used must be proven, well understood and capable of handling the expected variability of the feed stock. This can be best achieved by referencing fully operational plants using the same technologies.
5. The following case studies outline examples of where the technology may be improved.

Case study – The Next Generation Eastern Creek proposal

EFW in the Australian climate

1. The EIS stated that:

“An extremely hot day with ambient air temperatures above 37°C causing an excessively high back pressure in the ACC, in turn initiating a turbine trip and necessitating a shutdown of the whole EFW plant”.

2. Jacobs have confirmed that the EIS requires clarification surrounding the air cooled condenser system as it also states that:
“The potential of a turbine trip can be significantly decreased by a reduction of the waste load to approximately 80%”.
3. Our submission to the Department of Planning and Environment stated:
The technology proposed is based on European climatic conditions with shutdowns potentially at ambient temperatures above 37°C. The application must be refused as the technology proposed is not appropriate to the Australian setting.
4. The EIS also notes the air cooled condenser will initiate a plant 'trip' at ambient temperatures above 37°C.
5. It is not explained in the EIS why the applicant would use this type of technology when the temperatures in summer are often over 37°C. When it is over 37°C the system will shut down, which may have financial or efficiency implications.
6. Jacobs is certain the capacity of the furnace would need to be reduced on hot days to enable operation to continue, however this has not been made clear in the EIS, and however unlikely, a plant shut down at 37°C is still possible.

Technology Comparison of air cooling versus water cooling

1. An air cooled condenser as proposed may not be best practice in the Australian setting, as it reduces the efficiency of the plant, particularly during summer time. Although one advantage is it would use less water than a water cooling system.
2. By comparison wet evaporative cooling towers are more efficient, have greenhouse gas benefits by improving the electrical generation capacity of the plant, and are less affected by high ambient temperatures in summer. The disadvantage is it requires a lot of water.
3. A technical memo in TNG EIS prepared by Ramboll, the proponent's environmental consultant, dismissed cooling towers due to the potential for a visible plume without consideration of:
 - locally available recycled water sources e.g. St Marys Water Recycling Plant
 - different climatic conditions in Australia
 - best practice.

Is there an alternative to air cooled systems?

Although both air cooled condensers and water cooling towers are acceptable solutions for a waste to energy plant, the potential for the shutdown is a result of the cooling system, and a build-up of pressure in the air cooled condenser. The use of cooling towers would remove the potential shutdown in 37°C.

Emission control - SCR vs. SNCR

1. The difference between the amount of nitrogen dioxide stack emissions is due to the use of either selective non-catalytic reduction (SNCR) or selective catalytic reduction (SCR) technology.
2. The reason behind SCR technology not often being implemented in EFW facilities is most likely due to the increased costs. There is also a problem with the storage of

large amounts of ammonia, which requires a dangerous goods classification.

3. There is also the potential for 'ammonia slip' to occur, which can result in straight ammonia discharging from the stack however it could be argued this isn't as bad as increased Nitrogen Dioxide emissions. One other reasoning behind not using SCR is to avoid the flue gas reheating for the catalytic reaction.
4. Having the SCR technology available as a future technology option for any proposed EFW facility would potentially enable the facility to retrofit the design to meet stricter standards should they be required, however considering the POEO regulation is currently 500mg/m³ any reduction in emission parameters would most likely put it in line with the EID level of 200mg/m³, thus a change in the emission criteria would be required.

Case study – Our UK experience

1. The Riverside facility has complete ISO 14001 environmental certification for on-site processes.
2. The Trident park facility outlined the importance of having third party certification for all equipment.

Recommendations

1. The EPA's Energy from Waste Policy Statement requires best practice. Therefore, prior to any approval, there needs to be a requirement that the proponent demonstrates that it goes beyond the requirements of the European Union's Industrial Emissions Directive's Best Available Technology reference document.
2. Any EFW proposal in NSW would need to demonstrate that it will be using current international best practice techniques, and ensure that toxic air pollutants and particulate emissions are below levels that may pose a risk of harm to the community or environment.
3. The NSW EPA needs to confirm whether the technology is appropriate to the Australian setting.
4. Any EFW proposal in NSW must obtain ISO 14001 environmental certification to demonstrate that the process being undertaken is industry best practice using the best available technology.
5. Prior to any approval, NSW Health must undertake its own review of the potential effects of Energy From Waste plants in the Australian setting and be satisfied there are no impacts on the health of residents. This is consistent with the NSW EPA Energy from Waste Policy Statement that requires that an EFW proposal must not harm human health or the environment.
6. The NSW EPA licence should incorporate requirements for commitments to the use of future technologies as they emerge and environmental upgrades to be researched and mandated for implementation.

4. Licensing concerns

Terms of reference:

- e) the responsibility given to state and local government authorities in the environmental monitoring of 'energy from waste' facilities

Key issues

1. Any EFW facility approved in NSW must be licensed by the NSW Environment Protection Authority (EPA) and would need to comply with the EPA's NSW Energy from Waste Policy Statement.
2. Planning approval and EPA licence provisions need to be considered concurrently. There is no point issuing planning approval if, in the end, the licence requirements and emission levels cannot be met. After the plant is built, it is far too late to consider licence requirements, environmental standards and regulatory oversight.

Evidence

1. In the event that an EFW plant is approved, we contend that, as the EIS is based on models and assumptions, our community needs assurances that:
 - a. the predicted emissions are valid and achievable
 - b. the human health assessment is valid and achievable
2. If the operator does not meet the predicted levels when the plant is operational, they will be held accountable for the required upgrades or the plant will be closed.

Case Study – Our UK experience

1. The Runcorn facility has its own Environmental Agency representative, exclusively looking at statutory performance. Day to day issues are handled by Halton Borough Council which also acts as a single tier authority for planning.
2. In the United Kingdom, individuals cannot hold an Environmental Agency licence if they have had a previous conviction for an environmental offence.

Case Study – The Next Generation Eastern Creek proposal

1. The proposal has indicated that a Continuous Emissions Monitoring System (CEMs) will be used with live feed and 24-hour access given to the NSW EPA.

Case Study – The regulation of the coal industry in NSW

1. There is concern that a major power station in NSW used partial monitoring of its units to manipulate emissions data.
2. The NSW EPA licence required the Bayswater power station in the Hunter Valley to only report pollution at one of its four generation units.

3. Participants at a public meeting held with the current plant owners in Muswellbrook in March 2017 indicated that staff at the facility supplied lower sulphur coal to the unit being monitored, and used dirtier coal in the other three.
4. The owner has claimed that monitoring at all four units has since been introduced, and indicated that blending of coal can be done to ensure compliance with licence requirements.
5. The NSW EPA is now requiring all licenced power stations in NSW to clarify their emissions reporting in line with the National Pollution Inventory, and require answers within six weeks.

Recommendations

1. Prior to any approval, the NSW EPA must be satisfied that the operator's environmental credentials, as well as that of the designer and builder, will ensure the required technology, controls, maintenance and monitoring will continually be a priority.
2. Any EFW proposal in NSW should have a designated NSW EPA regulatory officer to exclusively monitor the environmental performance of the plant.
3. The NSW EPA should review its licence fees, to ensure the ongoing regulation of the plant is adequately resourced.
4. Prior to any development approval, all the NSW EPA licence issues and conditions need to be considered and approved as part of the development approval process.
5. Prior to any development approval, the NSW EPA must ensure the proponent is an appropriate entity to hold an environmental licence, including assessing prior convictions for environmental offences by way of an accreditation system.
6. Any consent granted for the EFW plant must also be licensed by the NSW EPA and must meet the NSW EPA's Eligible Waste Fuels Guidelines. If the plant is seeking to treat a waste or waste-derived material that is not a listed eligible waste fuel, then it must meet the NSW EPA's requirements for an energy recovery plant.

5. Community acceptance

Terms of reference:

- h) any other related matter.

Key issues

1. The NSW EPA Energy from Waste Policy Statement considers that energy from waste to be a valid pathway for residual waste granted that community acceptance to operate such a process has been achieved.
2. During the approval process it is essential that the proponents provide effective information and public consultation. Genuine dialogue is required to ensure that all stakeholders are provided with accurate and reliable information. This includes having readily available information about emissions and resource recovery options.
3. Developing trust and accountability to the community in which the plant operates helps with positive community engagement and protects the operator's reputation and 'licence to operate'.

Evidence

1. The NSW EPA's Energy from Waste Policy states:

"The Environment Protection Authority (EPA) recognises that the recovery of energy and resources from the thermal processing of waste has the potential, as part of an integrated waste management strategy, to deliver positive outcomes for the community and the environment. Energy from waste can be a valid pathway for residual waste where:

further material recovery through reuse, reprocessing or recycling is not financially sustainable or technically achievable

community acceptance to operate such a process has been obtained."

2. It also states:

".... it will be essential that proponents provide effective information and public consultation about energy from waste proposals. As proposals progress from the concept to detailed development assessment stage, proponents should engage in a genuine dialogue with the community and ensure that planning consent and other approval authorities are provided with accurate and reliable information.

The operators of an energy from waste facility will need to be 'good neighbours' – particularly if near a residential setting but also where there are workers in other facilities. This would apply to waste deliveries and operating hours, but most importantly with respect to readily available information about emissions and resource recovery outcomes."

Case study – The Next Generation Eastern Creek proposal

1. Council hosted a joint community information forum with The Next Generation on 6 February 2017 in Minchinbury, which is the residential suburb closest to the proposal. Community members expressed their health and environment concerns with the

proposal and it was evident that the Blacktown community, in particular Minchinbury residents do not want the proposal to go ahead.

Case Study – Our UK Experience

1. The Ardley facility is open to local community groups and schools and a liaison group meets monthly. This consists of the 5 person management team, site managers, and a communications team member, along with a considerable group of local objectors. The minutes from the local liaison group are made public.
2. The Ardley facility had a fully interactive visitor centre and full time community liaison officer.
3. Viridor have developed a new Viridor Community Strategy that sets out commitments to deliver lasting community benefits and to meet community priorities.
4. The Belvedere community forum was formed with initial input from the facility. They hold an annual open day for residents.

Recommendations

1. Any EFW proposal in NSW must establish a Community Liaison Group of local stakeholders, including nearby businesses, objectors and residents, Council and the NSW EPA, which will be a forum to discuss concerns and monitor the ongoing performance of the plant.
2. Any EFW proposal in NSW must offset some community concerns by funding local community improvements and enhancement programs, which must be outlined in a Community Strategy and incorporate a visitor information and education centre within the plant. This should be operated for the life of the plant without charge to visitors.
3. Any EFW proposal in NSW must host regular community forums and hold an annual open day to allow residents to tour the plant.
4. Any EFW proposal in NSW must consider payment of a host fee to the host Council (similar to the current arrangements at the Eastern Creek Resource Recovery facility), based on a fee per tonne of waste processed, to assist in offsetting the impact of the plant on the community, e.g. damage to road surfaces from significant heavy vehicle movements and the enhancement of existing open space areas in the nearby suburbs, to improve the quality of life of residents who feel impacted by the plant.

Conclusion

The current Australian standards and planning processes for energy from waste facilities lack the rigor that is required for effective controls to ensure that the best in technology is used in Australia. Failure to implement these new controls and standards will condemn residents, their children and future generations to dangerous and harmful health impacts.

Attachments

1. Council submission to the Department of Planning and Environment on TNG proposal at Eastern Creek
2. Blacktown City Council's Energy from Waste Technical Tour report – January 2016
3. European Commission - The role of waste-to-energy in the circular economy (dated 26 January 2017).
4. Jacobs Group (Australia) Pty Limited EIS review
5. Western Sydney Regional Organisation of Councils Waste and Recycling Infrastructure Needs Assessment (2015)