

**Submission
No 216**

INQUIRY INTO 'ENERGY FROM WASTE' TECHNOLOGY

Organisation: Re.Group

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28 May 2017

The Hon. Paul Green MLC
Portfolio Committee No. 6
NSW Parliamentary Inquiry into Energy from Waste technology

Dear Mr Green,

RE: Energy from Waste technology

Re.Group is an Australian company that specialises in providing high quality services for recycling and the recovery of resources from waste. Our mission is to design, build, operate and optimise infrastructure that enables the maximum amount of waste to be diverted from disposal and positively reused as a renewable resource. Our existing operations and focus areas span all urban waste streams, including operating Material Recovery Facilities (MRFs) for traditional 'yellow bin' recycling, and enclosed composting facilities for 'green bin' organics recycling. We are also seeking to develop new opportunities to recover resources from parts of the waste stream that cannot be recycled or composted, and are currently being disposed to landfill.

Re.Group is working in conjunction with EnergyAustralia to determine the feasibility of developing a new Energy from Waste (EfW) boiler adjacent to the existing Mt Piper power station, which is located near Lithgow and is one of the newest, most reliable and thermally-efficient plants of its kind in NSW. If the Mt Piper Energy Recovery project proceeds, approximately 100,000 tonnes per annum of Refuse Derived Fuel (RDF) would be combusted in a purpose built RDF boiler, with steam from the new boiler used to improve the efficiency of the existing power station. The aim of the energy recovery project is for Mt Piper to produce more electricity while using the same amount of coal as it does now¹.

The Mt Piper Energy Recovery Project has been designed and would be developed in accordance with the NSW Energy from Waste Policy. We have received Australian Government support via the Australian Renewable Energy Agency (ARENA) to conduct the detailed feasibility study into this project. Secretary's Environmental Assessment Requirements (SEARS) for

¹ <https://www.energyaustralia.com.au/sites/default/files/2017-02/Energy%20Recovery%20Factsheet.pdf>

the project were issued in April 2017, and additional information on the project is available via the Project Overview and Preliminary Environmental Assessment that is publicly available via the NSW Government's Major Project Assessments portal.²

In the sections below we have provided Re.Group's responses to the 8 specific questions outlined in the Terms of Reference. Please note these responses are general in nature, and not specific to the Mt Piper Energy Recovery Project. We would be pleased to provide additional information as required.

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;

RESPONSE:

The Australian Government's Waste Generation and Resource Recovery in Australia (WGRRiA) report³ applies a consistent methodology for assessing and reporting data from each Australian jurisdiction. The most recent report (using data from 2011), demonstrates the relative scale of the waste sector in NSW, and the success of waste levies being used as a market based tool to drive landfill diversion and achieve a high level of recycling. NSW has far and away the biggest resource recovery sector of all Australian jurisdictions, recovering 10.7 million tonnes of material from the waste stream in 2011.

The importance of the NSW landfill levy in driving resource recovery is demonstrated by looking at the impact this levy has on different parts of the NSW waste stream. Specifically, compared to other Australian jurisdictions, NSW has a relatively high recovery rate for construction and demolition (C&D) waste streams, and household waste streams. As further explained in the table below, these waste streams are more sensitive to the application of landfill levies, compared with commercial and industrial (C&I) waste. In relation to C&I waste, NSW performance is on-par with the national average.

² http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8294

³ <http://www.environment.gov.au/protection/national-waste-policy/publications/waste-generation-and-resource-recovery-australia-report-and-data-workbooks>

Waste Stream	NSW Performance	Comment
Municipal Solid Waste (MSW)	MSW generation was about 4.8 Million tonnes (Mt) in 2010-11 with a resource recovery rate of 57%, which is 6% above the Australian average.	Councils aggregate MSW and have the capacity to enter long term arrangements for its management and disposal. Levies have a strong impact on MSW, because councils are exposed to (and feel) the direct impact of increasing disposal costs. Councils therefore have an incentive to seek alternatives to disposal in NSW.
Commercial and Industrial (C&I)	NSW C&I waste generation was about 5.5Mt in 2010-11 with a resource recovery rate of 60%, which is 1% above the Australian average.	Waste is generally a small proportion of the total operating costs of C&I customers (typically <2%) and therefore cost is not a major focus. Additionally, many C&I customers pay for waste services by volume rather than weight, and are therefore less sensitive to changes in disposal costs due to the application of landfill levies.
Construction and Demolition (C&D)	NSW C&D waste generation was about 6.9Mt in 2010-11 with a resource recovery rate of 75%, which is 9% above the Australian average.	C&D waste streams are typically heavy, and are often generated on a project basis. This means the application of landfill levies can be very noticeable for C&D waste generators. At the same time, this material is relatively homogenous (compared to MSW or C&I) and therefore it is easier to process the material for resource recovery.

The Section 88 landfill levy has been a critical factor underpinning the development of resource recovery infrastructure across NSW. The levy incentivises diversion, increasing demands for alternative technology and markets, as well as providing an important source of funds that can be reinvested in the industry. In the MSW space, there are currently five (5) mixed waste processing facilities in operation or commissioning, with combined processing capacity of more than 600,000t/a:

- Global Renewables Eastern Creek (220,000t/a)
- Veolia Woodlawn (150,000t/a)
- Suez Kemps Creek (134,000t/a)
- Suez Raymond Terrace (50,000t/a)
- Biomass Solutions Coffs Harbour (50,000t/a).

By comparison, there are no mixed waste processing facilities in Victoria (noting Melbourne has a much lower levy than Sydney, and less reinvestment back to industry); only one facility of this type in Queensland at Cairns (where there is no levy); and two comparable facilities in Perth (where there is a landfill levy, combined with local geological conditions that make it difficult to establish landfills). While cheap disposal is not the only barrier to developing this sort of long-term infrastructure, it is clear that landfill levies can underpin a level of private investment in resource recovery infrastructure that is not viable in jurisdictions where landfill is cheap and considered an acceptable way to deal with the community's waste.

Key members of the Re.Group team were integral to the establishment and optimisation of the Global Renewables Eastern Creek facility, which has been operating since 2004. This is the biggest Mechanical Biological Treatment (MBT) facility in the southern hemisphere. It currently processes 220,000t/a of Sydney's household "red bin" waste, and diverts 70% of this away from landfill. This facility provides meaningful jobs for more than 70 FTEs, and since commencing operations has avoided more than 1 million tonnes of waste being disposed to landfill.

While the Eastern Creek MBT achieves a market-leading diversion rate, there is still 30% of the feedstock that currently has to be disposed to landfill because it cannot be recycled and cannot be made into compost. This material does, however, have a significant energy content, and Global Renewables has Development Approval to install a new fuel circuit that would prepare this residual material into RDF. Based on the NSW Energy from Waste Policy, around 65,000t/a of RDF could be manufactured at the Eastern Creek MBT. The production of this RDF could increase the facility's landfill diversion rate to more than 90%.

The unfortunate reality is that modern society generates waste that must be dealt with; there is no "do nothing" scenario. Waste generation rates in NSW continues to increase and, unless additional resource recovery capacity is developed, we will eventually need to develop a new landfill (or landfills) to service the Sydney population. The application of the landfill levy to assist in funding further infrastructure is critical to ensure that preference is given to the development of new resource recovery infrastructure, rather than new disposal sites.

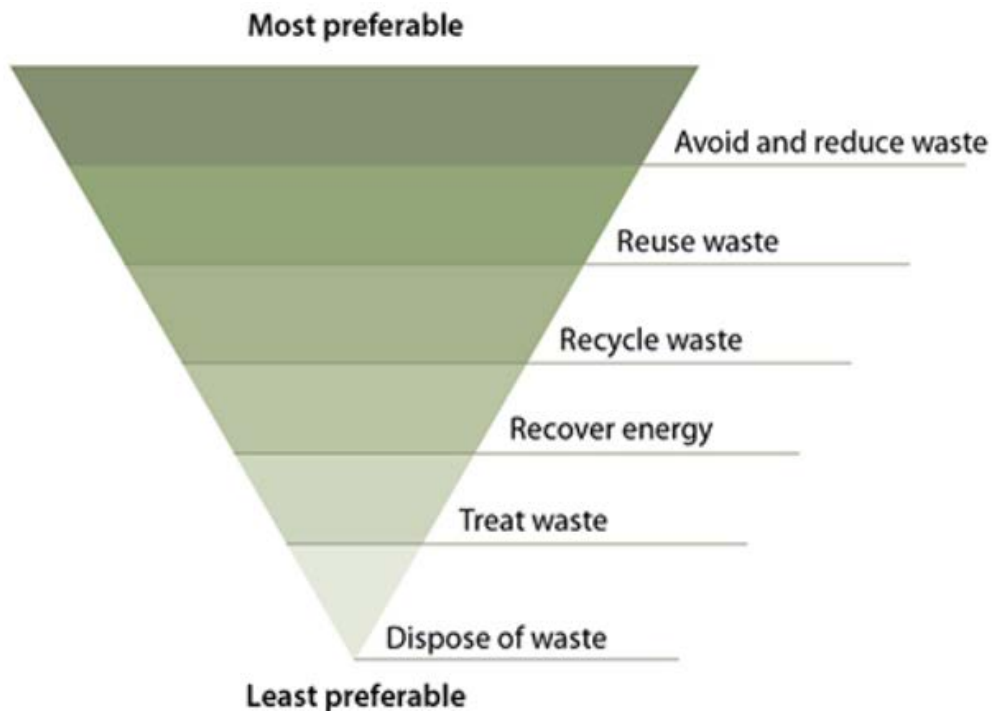
While there is significant scope for development of additional facilities to recover recyclable items and other material value from mixed waste streams (via MBTs, like the Eastern Creek facility), a pathway is also required to recover resources from those parts of the waste stream that do not have a material value. This includes the sorts of materials that the Eastern Creek facility is looking to manufacture into RDF, and which could potentially be used as a fuel source.

By global standards NSW has relatively high recycling rates. However, a comparison against other comparable countries demonstrates that the amount of material disposed to landfill is also relatively high in NSW. A key reason is that, on top of having well-established recycling systems, many other countries also have access to energy from waste (EfW) facilities.

The WGRRIA Report considers Australia's performance compared with other nations that are members of the OECD, and notes that:

"Australia's levels of MSW resource recovery were similar to those in the UK, Finland, Italy and the US, but were significantly below many northern and western EU nations and Korea. These nations make greater use of EfW facilities and often also divert a greater proportion of MSW to composting. Nations such as Switzerland, Austria, Sweden, Denmark, Norway and Belgium dispose of less than 2% by weight of MSW directly to landfill."

Re.Group strongly supports the concept of a 'waste hierarchy' that ranks ways of dealing with waste in order of preference, with avoiding the creation of waste the most desired outcome, and disposal the least desired outcome. This hierarchy concept, which sets priorities for the efficient use of resources, has been widely adopted by various government bodies in Australia and internationally. In NSW the waste hierarchy depicted below underpins the objectives of the *Waste Avoidance and Resource Recovery Act 2001*.



In accordance with the waste hierarchy, Re.Group supports the view that where further recycling is not feasible, it is preferable to recover the energy from the material and feed it back into the economy, rather than disposing of this material. This energy recovery obviously must be undertaken in a manner which is acceptable to the community, including managing the risks of harm to human health and the environment. Re.Group believes that these outcomes can be delivered by EfW facilities developed in line with the existing NSW EfW Policy, which is based on (but even more prescriptive than) European best practice standards.

Re.Group is aware that the relatively high landfill levy in NSW current results in a perverse outcome of some waste being transported to Queensland for disposal. This undermines the local market. However, we believe the solution lies in the introduction of similar levies in other jurisdictions, which would achieve similar public policy objectives as are already being successfully demonstrated in NSW.

Terms of Reference

b) the role of 'energy from waste' technology in addressing waste disposal needs and the resulting impact on the future of the recycling industry;

RESPONSE:

As detailed in response to Question a) above, Re.Group strongly supports the waste management hierarchy that underpins NSW and international policy. In accordance with the hierarchy concept, if waste cannot be avoided or reduced, then subsequent approaches, in order of decreasing preference, are reuse of waste items, recycling of the materials, recovery of the energy embodied in the wastes, treatment, and finally disposal to landfill.

There are various types and suppliers of EfW technology, many of which have been extensively proven in international applications over many years. Re.Group is directly aware of multiple organisations that have a proven track record in establishing EfW facilities that recover energy resources from waste, and which have been demonstrated to operate in a manner that results in minimal risks to the environment or human health.

EfW facilities have been successfully integrated into the waste management systems for many leading global cities. The NSW EfW Policy is generally based on systems which have been developed in Europe, and are proven to provide a safe and reliable method to recover energy resources, and reduce reliance on waste disposal.

One area where the NSW EfW Policy is novel is in the application of 'Resource Recovery Criteria' designed to limit the percentage of residual waste that can be directed to energy recovery, based on the degree of source-separated resource recovery that has taken place upstream. Councils with a 2-bin system (commingled dry recyclables, and residual waste) can only direct up to 25% of their residuals to energy recovery. Councils with a 3-bin system (the third being garden organics) can direct up to 40% of residuals to energy recovery. Only councils with a 'best practice' collection system for food organics (either a 4th bin, or co-collected with garden organics) are allowed to send all of their remaining residuals to energy recovery.

The net effect of the Resource Recovery Criteria is that the NSW Government is not just talking about the internationally accepted waste hierarchy as a lofty aspirational concept; it has implemented a policy clearly designed to force waste generators to act in accordance with the principles of the hierarchy. The objective is to discourage the development of 'mass burn' incineration projects, and ensure energy is only recovered from materials with no higher-order recycling potential. Re.Group fully supports this objective.

We are aware that Resource Recovery Criteria do not currently apply to landfill disposal, and we note the inconsistency of providing higher regulatory hurdles to the use of a recognised higher-order outcome (EfW) compared to the lowest order outcome (disposal to landfill).

Re.Group supports consideration of options to restrict the disposal of materials to landfill, which would further encourage development of additional resource recovery infrastructure in accordance with the established waste management hierarchy.

Re.Group strongly supports the NSW Government's efforts to ensure the development of an EfW industry does not undermine higher order recycling and reuse programs. Regulatory limits on the proportion of waste that can be directed to EfW, combined with a strong price signal to discourage landfill disposal, will lead operators to continue focusing on opportunities to recover material resources, especially through MBT processing of mixed wastes.

We consider there is a very clear role for EfW technology in NSW, enabling the recovery of resources from waste which would otherwise be disposed. We also consider the current NSW policy will encourage best practice outcomes, and indeed can be considered international best practice given it adopts the same high level of controls on the operation of EfW facilities while also ensuring a focus on material recovery from the waste stream prior to using EfW.

Terms of Reference

c) current regulatory standards, guidelines and policy statements oversighting 'energy from waste' technology, including reference to regulations covering:

- i. the European Union
- ii. United States of America
- iii. international best practice;

RESPONSE:

Re.Group was involved, through various industry associations, in discussions around the development of the NSW EfW Policy. We are aware that the NSW EPA undertook detailed review of international best practice, and has drawn strongly from the experience of other countries where EfW has been successfully and extensively used over many years.

While there are many sources of information on international approaches, we draw the attention of the committee to the various reports and policy statements developed in the UK over the last decade. In particular, the 2014 document "Energy from Waste: a guide to the debate"⁴ provides comprehensive information and carefully considered policy principles. Chapter 5 of this document contains useful information about future policy direction, with the following section providing a concise summary:

The Government sees a long term role for energy from waste both as a waste management tool and as a source of energy. Energy from waste is in a unique position to fulfil a range of objectives across a number of Government departments. For Defra it

⁴ <https://www.gov.uk/government/publications/energy-from-waste-a-guide-to-the-debate>

helps divert waste out of landfill, for DECC it is a potential source of low carbon energy, for DCLG it can be a contributor to waste planning objectives and for DfT it is a potential source for a variety of transport fuels. It can also contribute to growth in the waste and energy sectors as well as the construction sector through infrastructure development.

As detailed in previous sections, we consider the current NSW policy will encourage best practice outcomes, and indeed can be considered international best practice given it adopts the same high level of controls around the operation and control of impacts from EfW facilities, while also ensuring a focus on material recovery from the waste stream prior to using EfW.

Terms of Reference

c) additional factors which need to be taken into account within regulatory and other processes for approval and operation of 'energy from waste' plants

RESPONSE:

The current NSW regulations and processes for approval and operation are comprehensive, covering all aspects relating to waste to energy facilities. This includes emission control and residual emissions, health impact, social license, transport, recycling, and carbon benefits. As explained above, Re.Group considers the NSW EfW Policy – which was only released in 2014 – encapsulates all aspects of current international best practice, and indeed 'lifts the bar' on the proven European standards by also introducing mechanism to encourage higher order recycling outcomes prior to enabling energy recovery.

There have been extensive studies undertaken into existing EfW facilities in other countries, and again we would refer the committee to the UK experience given many similarities and the relatively recent adoption of EfW in the UK. For example, guidance published by Public Health England in 2010 regarding *Municipal waste incinerators emissions: impact on health*⁵, found that:

Since any possible health effects are likely to be very small, if detectable, studies of public health around modern, well managed municipal waste incinerators are not recommended

While Re.Group understands the importance of providing the NSW community with confidence that this technology can be developed safely, we encourage a focus on evidence based assessments, using best available data.

In relation to scale, the significant capital investment required to develop modern, best practice EfW facilities means input fuel volumes must also be significant. However, there may be benefits associated with a distributed network of facilities, as opposed to centralizing all activity at one site, especially as the community becomes familiarized with this style of infrastructure.

⁵ <https://www.gov.uk/government/publications/municipal-waste-incinerators-emissions-impact-on-health>

Terms of Reference

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

RESPONSE:

Re.Group supports the current provisions for the NSW Government (through the EPA) to monitor the environmental performance of EfW facilities. The NSW EPA is better suited than local government for monitoring of EfW facilities. The NSW EPA is required by law to consider the potential environmental impact across a wider geographic area than just one local government area, and it has greater resources to monitor these kind of facilities including technical, policy and legal expertise.

Terms of Reference

f) opportunities to incorporate future advances in technology into any operating 'energy from waste' facility

RESPONSE:

Modern EfW facilities and technology providers are faced with competitive and regulatory pressures to continually improve performance of key components, and the overall efficiency of the plant. Most modern EfW facilities are constructed in a modular facility, which readily enables the upgrade of the process and equipment items with newer technology (e.g. furnace, boiler, turbine, air pollution control, ash recycling and treatment).

As with the development of any large scale, long term infrastructure, decisions relating to EfW facilities must be based on the best available information at the time of the proposal. Proponents and regulatory authorities should assess the technologies proposed on the basis of current best practice. Future upgrades and optimisations would be assessed on their own merits at the time that such new technology becomes available.

Terms of Reference

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

RESPONSE:

A key barrier to a competitive waste market in NSW is the challenge of gaining approval and investing in long term infrastructure. Whilst landfill development is hard, in many circumstances advanced resource recovery technology is even harder to establish. High barriers to developing new resource recovery infrastructure have the effect of reducing market competition; there are a limited number of organisations with the scale and resources required to develop any waste or recycling infrastructure in NSW.

If the objective is to develop a more competitive recycling market, then serious thought must be given to streamlining current planning and approvals processes, in order to provide the market with a higher degree of confidence in the ability to develop new facilities. Re.Group supports the concept of planning reforms that reduce the time, cost and uncertainty associated with gaining approval, and is of the view that this reform can be undertaken in a manner which does not increase the risk of poor outcomes for the community or the environment.

We note that development of new EfW facilities would increase market competition compared with the current situation, given it would provide a new opportunity for managing materials which are currently disposed landfill facilities. Once the Eastern Creek Landfill closes, in the coming months, there will only be two putrescible waste landfills servicing all of Sydney.

In relation to enabling a 'circular economy' model for the waste industry, we note that the European Commission recently (26 January 2017) released a communique on 'the role of waste-to-energy in the circular economy'⁶. This paper concludes that:

"Waste-to-energy processes can play a role in the transition to a circular economy provided that the EU waste hierarchy is used as a guiding principle and that choices made do not prevent higher levels of prevention, reuse and recycling. This is essential in order to ensure the full potential of a circular economy, both environmentally and economically... it is only by respecting the waste hierarchy that waste-to-energy can maximise the circular economy's contribution to decarbonisation".

This conclusion by the European Commission is aligned with the view of Re.Group, that the management of waste should be undertaken in accordance with the waste hierarchy. This hierarchy sets out that energy recovery is a better option than disposal, where it is safe to do so.

We are aware of and support WMAA's suggestion regarding the potential introduction of a State Environmental Planning Policy (SEPP) that streamlines current planning and approval processes to provide market confidence for investment for waste and resource recovery facilities in NSW. Re.Group also believes there is an important role for government (both local and state) in protecting and making available suitable sites to enable the development of new resource recovery infrastructure, which provides an essential service to modern society.

State government leadership in the emerging EfW sector is necessary to create the environment for investment and to provide clear direction. In particular, councils should be given greater guidance on how to procure regional infrastructure, as is normal in overseas infrastructure procurement. Policy settings that align with waste hierarchy, local needs, pricing and limitations on cheap landfill disposal are required to provide an attractive investment environment.

⁶<http://ec.europa.eu/environment/waste/waste-to-energy.pdf>

Terms of Reference

h) any other related matter

RESPONSE:

Re.Group will be happy to provide additional information as required by the committee, following its review of initial submissions.

Yours Sincerely,

David Singh
Managing Director