Submission No 143

INQUIRY INTO 'ENERGY FROM WASTE' TECHNOLOGY

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Submission to the NSW Parliamentary Inquiry into EfW Technology

New Energy is a leading Australian Energy from Waste (EfW) technology supplier and project development company with the worldwide (ex-Americas) licence for the Entech 'Waste to Gas' low temperature gasification technology developed in Australia. Entech has installed 46 commercial gasification plants through Australia, Asia & Europe over the last 25 years. All new plants are designed to meet the European Union Waste Incineration Directive (WID/IED) emissions standards.

After an extensive Public Environmental Review including community engagement, New Energy received EPA approval from the Western Australian (WA) government for its Port Hedland EfW project in 2013. The project was approved for 255,000 tonnes per annum (tpa) of waste and 18MW of electricity generation. The local government and communities recognised the many advantages the waste infrastructure project compared to the existing landfill, the environmental safety of the technology and consequently there were no opposing public submissions to the project.

In 2015, New Energy also received WA EPA approval for its second EfW project in East Rockingham which is in a metropolitan area only 45km from the centre of Perth. Again extensive consultation and a Public Environmental review was undertaken and only 6 opposing submission were received.

New Energy set up an office in Sydney in 2011 with the view to develop projects in NSW and the East Coast of Australia. Its Business Development Manager has extensive experience in the NSW waste management sector with roles with the NSW state owned waste business (WSN Environmental Solutions) and Suez as well as a leadership role in industry groups such as the Waste Management Association of Australia. We have been educating councils, industry and regulators about Energy from Waste technologies and how to develop successful EfW projects.

New Energy is able to contribute some unique perspectives to this Inquiry as one of only a handful of companies in Australia who have operating examples of a commercially proven technology, have successfully undergone environmental and development permitting both in Australia and overseas and understand the complexities of developing these kind of large infrastructure projects.

New Energy Corporation (New Energy) is pleased to make the following comments to the NSW Parliamentary Inquiry into EfW technology.

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

New Energy strongly supports the NSW landfill levy as an essential tool to encourage recycling and divert waste from landfill.

It is evident that Australian states who have introduced a levy have the highest levels of recycling. Refer to the Australian Government's Waste Generation and Resource Recovery in Australia (WGRRiA) report. NSW has the largest recycling sector in the country and has a number of mixed waste processing facilities. The levy has been key driver for development of these facilities. However large amounts of waste still go to landfill in contradiction to the waste hierarchy. For example, in just the municipal solid waste (MSW) area, the vast majority of Sydney's waste goes to 2 major landfills operated by Veolia and Suez. This amounts to over 1,000,000tpa. This waste could be used to generate energy but is currently lost. Landfill capacity is finite and there are no new landfills proposed to service Sydney future waste needs.

Compared to best practice countries, NSW still has high amounts of residual waste going to landfill. New Energy believes that EfW has a role to play in the NSW Waste Management Industry provided the waste hierarchy is adhered to. If EfW facilities are located in appropriate industrial zoned areas, with access to the electricity grid or heat user, considering local logistics and truck movements, and are designed with best available technologies then they should form part of the future plans to meet capacity needs.

The installation of EfW facilities in Sydney and surrounds would provide a crucial missing part of the current NSW waste management scene and help divert significant volumes of waste from landfill.

New Energy supports the typical model in northern Europe where MSW EfW facilities of 200,000tpa to 300,000tpa are located to service a local community. However we have demonstrated that EfW facilities would also be commercially viable at 100,000tpa in the Sydney, Hunter and South coast regions of NSW.

b. The role of 'energy from waste' to address the ongoing needs and the resulting impact on the future of the recycling industry

Apart from demonstrating environmental performance that meets strict EU limits, one of the key reasons why New Energy's WA projects have been approved by the EPA is that we are installing a Materials Recovery Facility (MRF) prior to energy recovery. This model ensures that only residual waste is processed for energy recovery and that recycling is prioritised.

The Waste Hierarchy (see below) places energy recovery above disposal. It is important to note that the "Recovering Energy" step of the waste hierarchy is for material that is not feasible to compost or recycle. European countries with the best recycling rates also have highest penetration of WtE – they are not mutually exclusive.

The Waste Hierarchy

The model that New Energy is proposing will actually improve recycling rates alongside of much greater diversion from landfill.

New Energy recommends the NSW government supports a number of strategically placed EfW processing residual waste that are of a size that is consistent with the needs of the local communities. This will be an essential part of NSW future waste capacity requirements.

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

In Western Australian, the EPA adopted EU standards for air emissions and technical requirements which are the most well developed standards internationally. This has helped make the process clear and manageable from the proponent, regulator, community and stakeholder perspective.

The NSW EPA has adopted the majority of these elements and is largely consistent with EU standards for air emissions and technical requirements. However there are a number of areas that need to be improved to provide communities, proponents and stakeholders better clarity.

- The Resource Recovery Threshold (RRT) is inconsistent with the waste hierarchy as no RRT are required for landfills which are lower on the waste hierarchy.
- The requirement for 1% chlorine content is a specific requirement for EU hazardous facilities that deal with particularly difficult waste streams. These kind of facilities are specifically excluded from the policy. The policy needs to focus on the environmental outcomes rather trying to control the specific waste inputs.
- The requirement for facilities to have reference plants of similar waste and size internationally is effectively preventing newer technologies like gasification that have less developed track record from proceeding with any commercial facilities. The policy fails to acknowledge that modular technologies like New Energy's gasification technology that have proven adherence to the highest EU standards at a smaller scale higher waste volumes. It is stopping Australian innovate companies and technologies from participating in any EfW projects in NSW. In a recent example New Energy has already been excluded from a particular project in NSW on that basis. Smaller modular gasification plants like the technology promoted by New Energy provide great flexibility over traditional grate incineration that is "preferred" by the NSW Policy. Firstly the plants can be much smaller, secondly gasification has the flexibility to treat a wide range of waste with the same plant configuration. This flexibility issue addresses a major concern of the community and regulators that is encouraging communities to reduce waste generation. Smaller plants reduce the need for large, long term take or pay contracts effectively incentivising communities to sustain the high level of waste generation or face economic penalties. Feed stock flexibility allows plants to treat alternative waste streams when MSW volumes contract due to waste reduction behaviour.
- A Bottom ash policy similar to the British standard needs to be adopted.

d. *"additional factors which need to be taken into account within regulatory and other processes for approval and operation of 'energy from waste' plants"*

Noting the improvements to the policy settings in question "c" above, the current NSW regulations do cover all aspects for approval and operation of EfW plants.

However New Energy recommends that the Energy needs for the local area are better considered in any approval and to reiterate the following point with regard to innovative technologies.

- The NSW EfW policy is currently restrictive with regards to emerging or innovative EfW technologies as they may not be able to demonstrate fully operational reference plants on like waste types. It is recommended that a pathway for approval for these kind of technologies that does not present risk of harm to the environment or health be developed and included into the EfW policy at the earliest opportunity.
- The WA EPA triggered Section 16C advice which allowed them to evaluate waste to energy technologies in mature markets, in particular the European market. This effectively provided leadership to the industry by acknowledging EfW is safe to the community when using best practice technologies and procedures. This issue is fundamental to any industry to develop and for community to have confidence. By failing to acknowledge this, NSW EPA is creating uncertainty in the community regarding the health impact of EfW. It is an irrefutable fact that best practice EfW is safe and the EPA should be showing leadership in this regard.

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

New Energy believes that The NSW EPA is better suited than local government for monitoring of EfW facilities. It supports the current provisions for the NSW EPA to monitor the environmental performance of EfW facilities.

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

New Energy model of MRF + gasification is particularly suited for future advances in technology. Firstly recycling sorting equipment is continually evolving to deal with the changing nature of waste in our modern society. This equipment can be incorporated into a New Energy facility.

Secondly, being modular, the plant can scale up or down depending on the long term requirements of the communities we serve. The technology also produces a syngas that with future R&D can be further refined to create a substitute natural gas suitable for high efficiency gas engines, storage or gas grid injection and into liquid fuels and chemicals for different industries.

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

It could be very reasonably argued that monopolisation in markets for waste disposal already exists with two (2) major waste companies – Veolia & Suez already controlling most of Sydney's waste disposal options for household and commercial wastes and only 1 new waste infrastructure project constructed in the last ten (10) years.

The barriers to entry waste infrastructure are very high as attested to New Energy's experience with over $15m invested and over 7 years of development. We are yet to start construction on the first of our two (2) plants (Port Hedland due to start in Q3/Q4 2017 and Rockingham to start in Q1/Q2 2018).

It needs to be noted that EfW and waste infrastructure projects are very difficult to develop and that the 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 would improve competition.

The model that New Energy is proposing for MRF + EfW facilities with processing capacity of 100,000tpa to 300,000tpa is a sensible and achievable step that would discourage future monopolisation.

With regards to the circular economy the European Commission has recently released a paper that states that EfW has a role to play in transition to the circular economy provided that the waste hierarchy is adhered to. http://ec.europa.eu/environment/waste/waste-to-energy.pdf

In summary, the NSW government needs to take a leadership role in educating the community and local government about EfW and how it relates to the circular economy, providing a streamlined process for planning approvals, and a strategic plan for siting these facilities to move our society away from its dependence on landfills.

h. Any other related matter

<u>New Energy's technology & references</u>

- First Australian EPA WtE project of this type to be approved
  - Advanced Conversion Technology (ACT)
  - Best Available Technology for emissions performance
  - EU WID 2000/76/EC emission standards minimum
  - Low bottom ash with less than 3% carbon content (loss on ignition) and no fly ash
  - Continuous emissions monitoring
  - Meets WA EPA Section 16 advice (21 recommendations)

CLEAN ENERGY FINANCE C

"We need to capitalise on Australian innovations like this and make sure they benefit our country: both directly through their application and through the export opportunities it provides".

Oliver Yates
CEO, Clean Energy Finance Corporation

Project 1150

THERMAL CAPACITY: 1.6 MWt
APPLICATION: Waste Derived Fuel (WDF)
WDF TYPE: Bio-hazardous Waste (@ 40 MJ/kg)
WDF CAPACITY: 3.5 T/day
ENV. STD. : Compliance to equal of US-WID
CUSTOMER: RCO
DATE INSTALLED: 2004
LOCATION: Poland

The Entech-WtGas-RES™ is proven in commercial operation

Project 1142

THERMAL CAPACITY: 4.5 MWt
APPLICATION: Waste Derived Fuel (WDF)
WDF TYPE: By product of Pharmaceutical (@ 20 MJ/kg)
WDF CAPACITY: 30 T/day
ENV. STD. : Compliance to equal of US-EPA
CUSTOMER: Sinopharm Corporation
DATE INSTALLED: 2002
LOCATION: Taiwan

The Entech-WtGas-RES™ is proven in commercial operation

Project 1123

THERMAL CAPACITY: 5.8 MWt
APPLICATION: Waste Derived Fuel (WDF)
WDF TYPE: By product of Food Processing (@ 7.0 MJ/kg)
WDF CAPACITY: 72 T/day
ENV. STD.: Compliance to equal of US-EPA
CUSTOMER: Singapore Food Industries
DATE INSTALLED: 1997
LOCATION: Singapore

The Entech-WtGas-RES™ is proven in commercial operation

Project 1106

THERMAL CAPACITY: 5.7 MWt
APPLICATION: Waste Derived Fuel (WDF)
WDF TYPE: Industrial (@ 25.0 MJ/kg)
WDF CAPACITY: 25 T/day (≈ 60 T/day MSW)
ENV. STD.: Compliance to US-EPA
CUSTOMER: LG Engineering
DATE INSTALLED: 1996
LOCATION: Korea

The Entech-WtGas-RES™ is proven in commercial operation

Conclusion

New Energy is uniquely positioned to be a significant investor in the NSW waste sector, as Australian company with an Australian developed technology and with the first Australian EPA approval for a MRF + gasification energy recovery project.

We are optimistic that the parliamentary inquiry will find that modern EfW facilities are environmental safe and pose no risk to human health and offer an essential part of the waste management sector to divert large amounts of waste from landfill.

Please don't hesitate to contact the undersigned for further information.

Yours sincerely,

Miles Mason
Business Development Manager
New Energy Corporation

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