Submission No 148

INQUIRY INTO 'ENERGY FROM WASTE' TECHNOLOGY

Organisation: Veolia Australia and New Zealand

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26 May 2017

Parliament of NSW
Portfolio Committee No 6
Parliament House
6 Macquarie Street
Sydney NSW 2000

Electronic submission via website

Dear Committee,

Portfolio Committee No. 6 inquiry into and report on matters relating to the waste disposal industry in New South Wales, with particular reference to 'energy from waste' technology

The Veolia group is a global leader in waste and resources management. With over 173,000 employees worldwide, the group designs, delivers and operates water, waste and energy management solutions that contribute to the sustainable development of communities and industries. Through its three complementary business activities, Veolia helps to protect the environment, preserving the planet's available resources.

Veolia has designed, developed and operate numerous waste recycling and recovery reference facilities globally and are acknowledged as being a global leader in the circular economy. Specifically, this includes over 60 conventional Energy from Waste incineration plants, providing heat and power, a number of food waste to energy Anerobic Digestion facilities and numerous Landfills with Landfill Gas recovery and power generation.

In Australia, Veolia is a leading waste management company with the proven experience and track record in providing effective and reliable waste and resource recovery infrastructure. We own and operate a network of 20 modern resource recovery facilities in Australia, including:

- Woodlawn Bioreactor Landfill, Tarago NSW – 1,100,000 tonnes per annum (tpa)
- Woodlawn Mechanical and Biological Treatment,Tarago NSW – MSW 144,000 tpa
- Clyde & Banksmeadow Rail Transfer Terminals, Sydney, NSW – 900,000 tpa combined
- Bulla Organics Recovery Facility, VIC – In Vessel green waste facility, 85,000 tpa
- Ti Tree BioEnergy, QLD (50/50 JV) – Bioreactor landfill 500,000 tpa
- EarthPower, Sydney NSW (50/50 JV) – Solid and liquid food waste anaerobic digester 52,000 tpa

Veolia appreciates the opportunity to respond to this inquiry. Our submission focuses on the Sydney Metropolitan area rather than wider NSW, which due to legislation, dynamics and scale, present different challenges and will require different outcomes to the broader NSW market. The terms of reference are addressed as follows:

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*

The solid waste market, from the perspective of treatment, is separated into distinct but overlapping sectors and these wastes are predominantly managed through different licensed facilities. The main categories of the industry can be summarised as;

- **Putrescible Waste Treatment and Disposal** - of Municipal Solid Waste (MSW), i.e. household collected waste and Commercial and Industrial (C&I) waste of a similar composition to MSW (i.e. the red top bin), containing food waste.
- **Non-putrescible Waste Treatment and Disposal** – C&I waste without food organics, Council Clean-up waste.
- **Construction and Demolition (C&D) Waste Recycling** – typified by bulk bin/skip collections of construction waste, concrete crushing and grading, to produce recycled aggregates, soils, timber mulch. Contaminated soils, particularly asbestos contaminated soil, also forms a large part of this sector.
- **Household Waste Recycling and similar C&I Recycling** – of separated glass, plastic bottles, cans, paper and card, sorted and sent for further processing into raw materials for re-manufacture either within Australia or more commonly Asia.
- **Composting of Garden (and occasionally Food waste) Organics**
- **Hazardous Wastes**

For the purposes of provision of services, this differentiation is important, given different facilities are licensed to manage different waste streams. For this submission, albeit the boundaries between waste types can be somewhat blurred, we will specifically focus on the first 2 residual streams, being the most relevant to the enquiry, having the most potential for further recycling and recovery.

The third being C&D waste, already experiences recycling rates of 80% with the exception of asbestos and asbestos contaminated material, which can only be landfilled, as non-putrescible waste.

Similarly, household waste recycling and composting of garden waste in Sydney is generally recognised as being well ahead of other State jurisdictions, primarily due to the alternative cost of Landfill in Sydney, directly as result of the imposition of the Landfill Levy, applicable to wastes arising in Sydney, Newcastle and Wollongong.

This leaves residual waste streams, which certainly have potential for further recycling and recovery, but the current regulatory environment isn't sufficient to address this.

Putrescible waste – Market and Competitors

There are two major companies engaged in the putrescible waste sector serving Sydney metro, being Suez and Veolia.

Historically, WSN, a NSW government owned and operated company, managed the putrescible waste arising in the Sydney Metro, through a network of waste transfer stations and 2 large landfill sites at Eastern Creek in the West and Lucas Heights in the South, with a smaller, now closed landfill at Belrose in the north east.

In 2004, in competition with WSN, Veolia opened the Clyde waste transfer terminal in Auburn, to service its Woodlawn Landfill in Tarago, near Goulburn, then a new landfill void with capacity to receive over 40m tonnes of waste and the first alternative to the WSN monopoly in Sydney.

In 2008, the NSW government privatised the WSN business, with Suez purchasing the assets and taking over the operation of the sites. Suez additionally operate the Elizabeth Drive (SAWT) Alternative Waste Treatment plant processing 134,000 tonnes per annum (tpa) of household waste from Councils in Western Sydney and have a long term contract with GRL (part of ReGroup) at their Eastern Creek site (UR-3R) for the treatment of a further 220,000tpa.

In 2016, Veolia opened a second waste transfer terminal in Banksmeadow to service long term waste treatment contracts with the Southern Sydney Regional Organisation of Councils (SSROC) and secured approval at Woodlawn to accept 1.1m tonnes per annum, through the Woodlawn Landfill and the new Woodlawn Mechanical Biological Treatment (MBT) plant, processing 144,000tpa for SSROC and NSROC. This facility, together with the other 2 treatment plants all work on the principle of extracting the organic content from the mixed waste to produce a compost product for site rehabilitation, diverting over 50% from landfill.

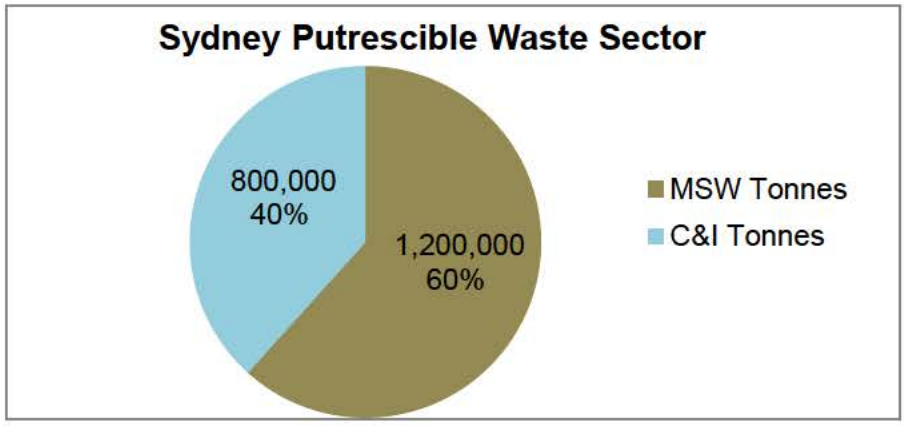
In summary, the Putrescible waste market is dominated by 3 large landfills and 3 treatment facilities, managing an estimated 2m tonnes of putrescible waste generated in the Sydney metro annually.

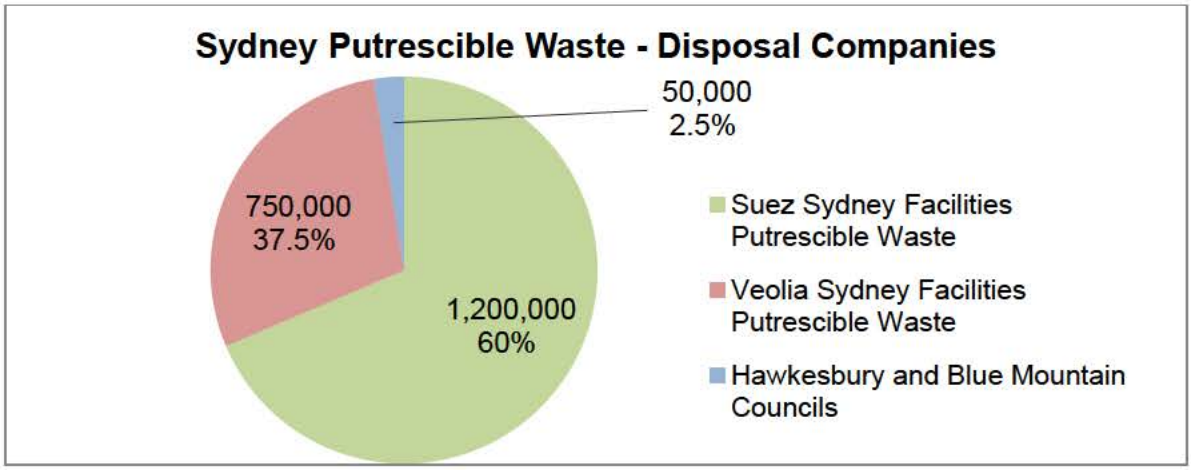
However, the Eastern Creek Landfill, controlled by Suez, but remaining owned and operated by the NSW government, which has provided over 650,000tpa of capacity into the market, is due for closure in July of this year.

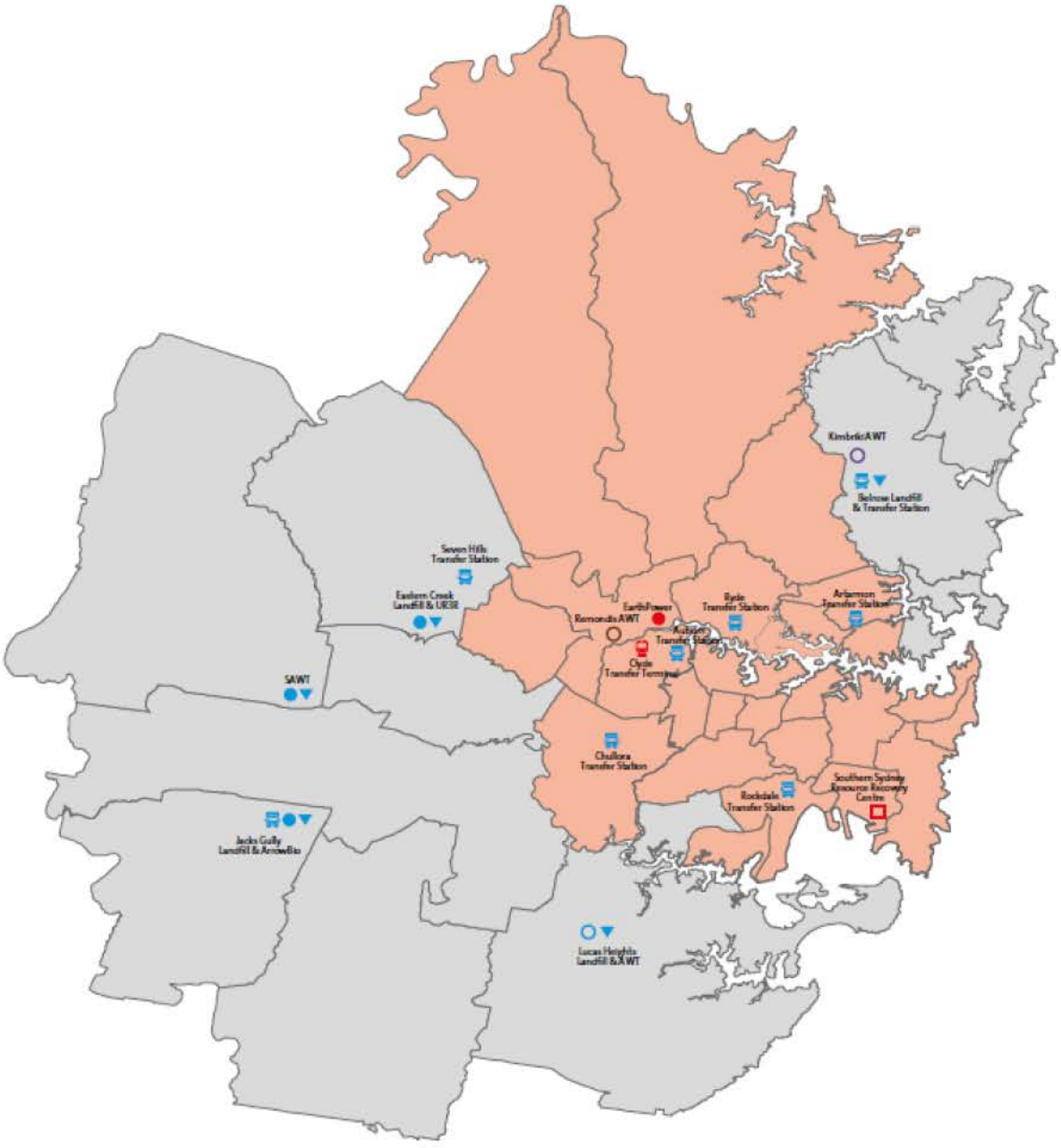
The newly opened Veolia Banksmeadow site together with the Woodlawn MBT plant and increased approvals at Woodlawn Landfill address some of this imbalance in supply and demand, Suez also sought and gained approvals to increase capacity at their Lucas Heights facility to 850,000 tonnes per annum together with a further 200,000tpa through a future waste treatment facility.

These existing and proposed facilities, in combination, provide sufficient capacity at about 2.5m tonnes annually, at current levels of putrescible residual waste generation, to serve the immediate waste disposal requirements for putrescible waste in Sydney. However, a long term strategic view of waste management in Sydney needs to recognise that as the population continues to increase and the city expands, it will be essential to have the infrastructure in place to manage the projected waste and recovered material streams.

The following graphics indicate broadly the market and market share using what waste data from 2010-2011 that is publicly available. NSW EPA, with the advent of new industry reporting requirements now has access to more up to date information which we understand is soon to be published.




Sydney Putrescible Waste - Disposal Companies
50,000
2.5%
750,000
37.5%
1,200,000
60%
Suez Sydney Facilities Putrescible Waste
Veolia Sydney Facilities Putrescible Waste
Hawkesbury and Blue Mountain Councils


Kimbriki AWT
Belrose Landfill & Transfer Station
Seven Hills Transfer Station
Eastern Creek Landfill & UREF
Remondis AWT
Earth Power
Ryde Transfer Station
Artarmon Transfer Station
Auburn Transfer Station
Clyde Transfer Terminal
SAWT
Chullora Transfer Station
Rockdale Transfer Station
Southern Sydney Resource Recovery Centre
Jacks Gully Landfill & Arrowfield
Lucas Heights Landfill & AWT

Putrescible waste – Opportunities

MSW and putrescible waste more generally contains up to 60% organic content, predominately waste food organics, garden waste, and paper and card.

Currently NSW EPA Energy from Waste (EfW) policy, from a principle of higher order use prior to energy recovery and a sustainable circular economy, is structured to ensure Councils introduce systems to either process this waste to extract the organic content or separately collect and process the food waste in conjunction with garden waste.

Sydney and to a degree NSW more broadly has seen some Councils adopt Alternative Waste Treatment (AWT) or Mechanical Biological Treatment (MBT), terms broadly describing the same technical solution, to extract the organic content of MSW to produce a compost product, achieving the diversion of approximately 60% of the waste from landfill. In the regional areas many Councils are proceeding down a path of FOGO (Food and Garden Organics) collection and enclosed or in-vessel composting of a mixed household organic waste stream.

Additionally, a small number of Councils are trialling separate collection of food waste from households and processing this at EarthPower, which uses Anaerobic Digestion, to produce methane for energy generation and a compost fertiliser for agriculture.

The additional costs and complexities of collecting food waste and then the additional costs of processing either separately or with garden waste, are the major hurdles in future expansion of these types of solution. However, these solutions provide a more sustainable delivery model rather than utilising the organics, which have a relatively low fuel value, as an alternative fuel source.

In conclusion, Veolia supports the NSW EPA EfW policy and suggests the extraction and processing of organic waste from MSW prior to EfW should be encouraged. Without such policy constraints, economic drivers will result in this waste being sent for energy recovery rather than recycled.

Non-putrescible waste – Market and Competitors

This market is dominated by process residues from recycling facilities, manufacturing wastes, Local Council cleansing and clean-up (bulky/hard) waste and separately collected C&I waste, predominantly from bulk bin/skip collections. It is differentiated from Construction and Demolition(C&D) waste which tends to comprise a large percentage of inert, heavy waste and contaminated soils, being generally processed through a large and diverse network of recycling facilities prior to landfilling of residues.

Tonnage data for non-putrescible waste is more difficult to establish, given the blurring of lines between C&D and C&I waste, a myriad of recycling options and the fact that non-putrescible landfills also receive C&D residues and a significant volume of contaminated soils. NSW EPA will now have more precise information since the recent advent of new waste reporting requirements.

Sydney has a number of non-putrescible landfills, although their number and capacity is diminishing. Within the next 3 years there will be one large facility servicing the Sydney metro area, that being the DADI facility in Eastern Creek with capacity for 700k tpa. Landfills operated by Veolia at Horsley Park, Cleanaway at Erskine Park, Suez at Kemps Creek and a number of other smaller facilities currently operating, all have a finite life and are expected to be closed within this timeframe. One additional landfill and recycling facility at Patons Lane, Orchard Hills, with a combined capacity of 500k tpa is approved and in the development stages.

Non-putrescible waste – Opportunities

There are a number of C&I recycling facilities proposed for Sydney, which either have a Development Approval or are in the final stages of that process. These would be expected to take up any excess in waste supply on the closure of these non-putrescible landfills. However, the delivery of these facilities will be stalled until the landfill cost differential between NSW and QLD can be addressed.

Veolia estimates there is approximately 1.5-2m tonnes per annum of non-putrescible waste, excluding contaminated soils, generated in Sydney metro. Currently over 600,000tpa of C&I and C&D waste is currently being transported via road and rail to landfills in Queensland, this being a lower cost option, avoiding NSW Landfill levies.

Landfill rates for non-putrescible waste have also traditionally been less expensive than for putrescible waste, that differential has been reducing, due to supply and demand, however the current market price is currently governed by the alternative option to transport and landfill of waste in QLD, being <$180/tonne.

QLD, which has an abundance of landfill, therefore a low landfill cost and no landfill levy, will remain the lowest cost option for disposal of non-putrescible waste in Sydney, unless regulation can address the imbalance. The current situation provides no long term regulatory certainty and insufficient levels of revenue for waste in Sydney to generate the required financial returns on any potential investment in recycling.

Whilst NSW EPA in conjunction with QLD, have been trying to establish mechanisms to halt this practice, their attempts to do so have so far failed. Until this is resolved, further future investment in recycling in Sydney metro is unlikely.

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

Landfill has served as the final disposal option for waste for most of human history. The challenge through the past 50 years and more recently over the past 10-20 years has been the changing nature of waste, society and human behaviour, resulting in what have been growing waste volumes, and very different wastes for disposal.

There is a wide range of materials disposed of through landfill which have resource value, but unfortunately the regulation, cost benefit, incentives, public education and infrastructure to separate and reclaim these materials isn't as sufficiently advanced as in other OECD countries.

This is a challenge for the industry and one which requires regulatory intervention to achieve better environmental outcomes. NSW and Australia more widely needs to look across the other OECD countries at best practice in Environmental Regulation to drive better outcomes.

The economics of Landfill and EfW

Landfill is a relatively cost effective method of disposal, with landfilling rates, dependant on specific site engineering requirements and economies of scale resulting in rates as low as $25-$30 per tonne, where capacity is abundant and regulation is weak, although generally averaging $40-$60 per tonne, to ensure sufficient future provisioning for site restoration and aftercare costs.

Intermediate waste transfer and transport to landfills, which are now remote from the point of waste generation, add an additional $50-$100 per tonne to costs, resulting in a total cost to landfill of $100-$160 per tonne.

This is the effective (net) cost per tonne to households, with a further $135 per tonne being applied to customer rates by landfill operators for the NSW Landfill levy. This, whilst a tax for both Councils and Commerce, when paid by Local Government, and ultimately the householder, is effectively returned the householder indirectly through State government revenue.

Household and Commercial recyclables separation at source and separate collections are generally widespread in metropolitan areas, where the economies of scale and access to markets provide a commercial environment whereby given the total cost of landfill, recycling is cost competitive.

There is a limited amount of recycling that can be achieved on the mixed residual waste stream to recover resources, including organic waste streams as discussed above, which is improved if the alternative cost, being landfill, is maintained at an artificially high (taxed) level.

In comparison, Veolia estimates the costs of EfW, at a scale of 200-300k tpa will range between $200 and $300 per tonne, depending on such variables as regulation of the disposal of residues and revenues and renewable subsidies for energy generation.

Energy from Waste as an alternative

There are alternative forms of EfW.

- Landfill Gas - Decomposition of the organic material within landfills under anaerobic conditions produces landfill gas that comprises approximately 50 percent methane (a potent greenhouse gas). The landfill gas can be recovered and used to generate electricity or for an alternative fuel. This process is currently used at most medium and large landfills in Australia and the electricity that is generated is generally supplied to the grid. In some cases, the gas is supplied for industrial use
- Anaerobic Digestion - The biological decomposition process can also be achieved in a controlled industrial process environment. This approach requires source segregated collection and anaerobic digestion of the organic content of waste (i.e. food waste) to produce a compost product along with renewable electricity generation. There are a limited number of these anaerobic digestion facilities currently operating in Australia.
- Refuse-Derived Fuels - Alternative fuels can be produced from waste. Many non-biogenic waste materials (i.e. plastics and textiles which are derived from organics but not biodegradable) or waste wood products which biodegrade but only very slowly, can be extracted from waste and converted into a fuel to be used as a replacement for fossil fuels in industrial applications. Currently, there are a very limited number of facilities in Australia that can either produce and/or utilise the refuse derived fuel. Some of this material is presently being produced in Australia and exported to cement kilns as a fuel replacement in other parts of the APAC region

Thermal Treatment - the direct combustion of waste by incineration - is the most traditionally recognised form of EfW. These large-scale facilities are designed specifically to treat mixed waste and release the inherent heat energy of the waste to generate electricity and in certain circumstances are also used as an indirect supply of heat energy. For the purposes of this submission it is this technology that is considered to be the focus of the debate.

Energy from Waste (EfW) provides an alternative environmentally sustainable form of waste treatment and is a recognised element of the overall waste management infrastructure of many developed countries.

There are currently no large-scale waste to energy facilities operating in Australia although 3 in Western Australia have been granted approvals. We would estimate the timeframe required to

implement such a large-scale project from conception to delivery, particularly within the NSW planning framework, could take from seven to ten years.

Veolia operate over 60 EfW plants across the world, using proven technology solutions, with limited environmental impact. These technologies are safe and are considered to have a low overall environmental impact. The Veolia facilities are predominantly located in Western Europe and have generally been built in partnership with the Local Government, under long term contracts to service their waste treatment needs, to process Household, Municipal Solid Waste (MSW) and some Commercial and Industrial Waste (C&I). All have energy recovery options, i.e. the production of electricity and in some cases cogeneration of heat.

With a market based approach to service delivery favoured by NSW government, together with the imposition of fiscal measures in isolation, using a landfill levy to equalise the total cost of landfill compared to the cost of energy recovery will inevitably allow an EfW solution to be cost competitive with landfill and therefore deliverable, but without any further improvements in recycling.

The development of EfW projects globally has generally been driven by a combination of need and/or legislation. In countries or regions where EfW is prevalent, there is generally a lack of available space to landfill (unlike Australia). Alternatively, government regulation has imposed landfill bans or high landfill taxes to encourage diversion from landfill and investment in recycling and energy recovery solutions (which is the case currently in NSW and being considered in some of the other Australian states).

In the current regulatory environment, despite a NSW EfW policy which proposes to limit energy recovery before recycling, EfW in NSW may compromise the recycling and resource re-use potential of existing waste streams, as potentially recyclable materials which are landfilled now, due to cost and lack of obligation, will in future simply be disposed of through EfW.

Veolia consider that further regulation in line with other OECD countries is necessary, to achieve a better environmental outcome ahead of EfW.We expand on how this can be avoided in section (h) below.

Deliverability of EfW

There are many barriers to the development of EfW projects, which apply anywhere, not just across Australia. For a project to succeed, a number of issues need to come together:

- Commercial incentive - the commercial environment needs to provide the right incentives to make EfW competitive with the alternative disposal option for residual waste, being landfill. High landfill costs through scarcity of supply (determined by State Planning Policy) or through taxation (i.e. levies) need to exist to allow EfW solutions to be cost comparative. Typical gate fees for EfW are estimated to be between $200-$300 per tonne, therefore landfill costs and levies need to be high to ensure cost comparison with an EfW solution.
- As a general rule, the projects that are most likely to provide a viable business case for EfW, are those that can locate both the processing and energy generation plant on the site where the energy will be used ie. for heating water, steam and operational electricity consumption, so major industrial users. This provides higher energy revenues and greater plant efficiencies, reducing the overall cost of the facility. Alternatively, in supplying electricity into the grid, there is a degree of uncertainty and limited government subsidy for renewable energy generation, to provide sufficient certainty on energy revenues over the operational life.
- Planning Approvals - there are significant planning hurdles to overcome in the development of a project. These facilities will be state-significant and therefore will require the support of both State and Local Government and most importantly, the support of the local communities in which these facilities will operate. In NSW, State and Local Government structures are not

well suited to support or even initiate projects in a strategic manner, where ideally this needs to link development with energy need, waste generation and associated logistics infrastructure.

- Financing - the construction of these facilities is a significant capital investment. The financing of this investment will not be supported without a secure revenue stream from a long-term 20-30 year waste supply agreement for at least 70% of the waste inputs over the operating life of the facility. This can effectively only be delivered through a supply agreement from (a group of) Local Councils for delivery of residual MSW over that period.
- Reliability and risk management - in the funding and development of these projects, financiers are looking to reputable designers, developers and operators of facilities to ensure a project is deliverable and will be operated and maintained to regulatory standards. Proven technologies have limited risk, given they are widespread. If the technology isn't operated elsewhere, using similar waste, it will then be inherently more difficult to develop. Veolia support proven technology solutions, from a limited number of suppliers as its preferred operating solution. Furthermore, the operation of EfW facilities will be heavily regulated, and the processes, controls and systems in place to minimise the effect through emissions to the environment need to be robust to meet the criteria set by regulators. Having experienced facility designers, constructors, operators and representative facilities that can be visited by decision makers is considered to be essential to address these concerns.

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

Veolia were part of the NSW EPA's Energy from Waste Consultative Committee, which was formed to provide expert advice on the development of the current NSW Energy from Waste Policy Statement. The Policy in its current form, as far as control of potential emissions is concerned, follows the principles of the European Waste Incineration Directive (WID) and therefore provides adequate protection of the environment and human health.

i. the European Union

The Waste Incineration Directive (WID; 2000/76/EC) was designed to prevent or limit, as far as practicable, any negative effects on the environment. In particular it relates to the pollution of air, soil, surface and groundwater and the resulting risk to human health by emissions from the thermal treatment of waste.

Management and re-use of Incinerator Bottom Ash (IBA) is typically dealt with on a national level. In England and Wales the EPA use Standard rules SR2012 No13 of the Environmental Permitting (England & Wales) Regulations 2010 to licence the treatment of IBA.

ii. *United States of America*

The operation of EfW facilities in the USA is regulated under the federal Clean Air Act (CAA;1970) and similar state laws which govern emissions limits and required pollution control.

iii. *international best practice*

Japan has a significant number of EfW plants, which are regulated under the Japan Environmental Governing Standards (JEGS) 2010. The national emissions limits are more stringent for metropolitan than for rural areas and can be less stringent than for the European WID.

It is generally agreed that international best practice standards are set and continuously improved from European legislation. This includes regulatory frameworks promoting the circular economy, source separation, and recovery of organics and recyclables prior to landfilling or EfW.

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

One of the major uncertainties in proving a deliverable costed solution for EfW is the regulation of residual waste, being Incinerator Bottom Ash (IBA) and Air Pollution Control (APC) residuals, which account for approximately 20-25% and 2-3%, respectively, of the inputs by weight to an EfW facility.

Looking to the UK, where EfW is well embedded in the waste infrastructure, IBA is permitted to be reprocessed further into a secondary aggregate for use in construction, primarily for roadways. However, this requires a regulatory framework to operate within, and this does not currently exist in Australia which means landfill of IBA is the only current valid choice.

In general, APC residuals are generally regarded as a hazardous waste and have to be further treated to stabilise and/or landfilled in appropriately licensed facilities. Note that there are a very limited number of these facilities in Australia, which may act as another barrier or constraint of future facility development.

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

In the current regulatory environment NSW EPA has the responsibility for the environmental monitoring of EfW facilities. This is the appropriate regulatory regime.

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

Generally, once a facility is built, it has a design life of 25-30 years. These facilities are generally modular in construction and improvements in technology over their operating life are generally driven by commercial or regulatory factors. Any future requirements to upgrade or improve emissions controls for example can be (and with older European EfW facilities has been) implemented.

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*

State Planning Policy should ensure the industry adopts a portfolio approach to the introduction of EfW facilities. And ensure the individual plants are sized according to need and local catchment to receive waste, to;

- reduce the overall impact from a planning perspective in terms of physical scale
- reduce the impact on local transport infrastructure
- where practical, adopt a principle of managing waste within the region it arises
- not sacrifice future recycling
- maintain commercial competition within the industry

The development of a facility of the capacity proposed at Eastern Creek, has the potential to create competition with the existing waste transfer landfill infrastructure but would probably preclude any development of further EfW facilities in competition, due to the availability of sufficient waste and as a result of the competitive economies of scale in the operation of such a large facility. The Development Approval for any future EfW facility should therefore first establish need.

The majority of EfW facilities developed across the world are generally built to service Local Councils or Groups of Local Councils waste needs, supplemented with residual C&I waste arising within the locality. A small number of C&I merchant plants have more recently been developed subsequent to further legislation in some European countries, implementing landfill bans and/or a result of the increasing scarcity of landfill and increasing landfill costs, including levies.

What the industry has experienced more recently, when established EfW infrastructure exists, in an environment with reducing residual waste volumes as a direct result of increases in recycling and reductions in residual waste generation due itself to changes in environmental legislation, is the importation of waste across international borders, simply to maintain waste supply. This prioritises commercial outcomes whilst compromising recycling opportunities in the source country. With open European borders, this happens extensively between northern mainland Europe and the UK where high waste levies in the UK result in export of waste as a fuel for EfW plants in the Netherlands, Germany and Scandinavia. A situation not dissimilar to the current export of waste from NSW to QLD.

Typically, in other OECD countries, the majority of EfW plants are sized between 200,000-300,000 tpa, being a size which manages the waste arising in the region the facility serves. Larger facilities are in existence or development, however, these serve very high density metropolitan areas, where the volumes of waste arises locally or these tend to be well served by alternative transport infrastructure such as waste by rail or by river, to minimise traffic impacts.

Using Japan again as an example, Tokyo is served by 23 EfW facilities, generally within this 200,000-300,000tpa capacity, providing disposal capacity for individual local prefectures.

Veolia recommends NSW EPA infrastructure needs analysis be published which it is considered will reinforce the point that size is a major consideration in development of waste infrastructure and that further, the requirement for "need" be part of the NSW Planning Policy considerations when determining future applications.

h) any other related matter.

Extended Producer Responsibility (EPR)

In other jurisdictions with Energy from Waste as part of the waste management solution, Extended Producer Responsibility (EPR) is widespread.

Extended Producer Responsibility (EPR) is defined in the 2001 OECD Guidance as *"an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle"*.

It adopts the Polluter Pays Principle (PPP), an environmental policy principle which requires that the costs of pollution be borne by those who cause it.

And the Circular Economy concept, aiming to close materials loops and extend the lifespan of materials through longer use and the increased use of secondary raw materials, improving resource security.

The following is an extract from a paper published on EPR, "The State of Play on Extended Producer Responsibility (EPR): Opportunities and Challenges - Global Forum on Environment: Promoting Sustainable Materials Management" 17-19 June 2014, Tokyo, Japan"

> *"(EPR) is increasingly recognised worldwide as an efficient waste management policy to help improve recycling and reduce landfilling of products and materials. The basic feature of EPR is that producers assume responsibility for managing the waste generated by their products put on the market. Since its first developments in the early 1990s, such schemes have contributed to significant increases in recycling rates and reductions of public spending on waste management in many countries. In addition, producers under an EPR scheme are incentivised to maximise the material benefits from their products throughout the value chain."*

Today, most OECD countries and many emerging economies have EPR programmes and policies in place. Such programmes are also in the scoping stage in some developing countries in Asia, Africa and South America.

In Australia the Commonwealth Product Stewardship Act 2011 ("the Act") sets up the legal framework for EPR. It establishes three levels of engagement: Mandatory, Co-regulatory (joint industry and government delivery) and Voluntary.

To date there are no mandatory schemes under the Act, one co-regulatory scheme (TVs and computers) which has had its challenges and two accredited voluntary arrangements (MobileMuster and FluoroCycle), which only scratch the surface of the potential opportunity. Several other voluntary schemes exist, but have not been accredited (including schemes for tyres and paint), funded by a tariff on the product.

To deliver tangible recycling, these schemes either need to be mandatory or have Commonwealth government step in when they fail to operate as they should. Unfortunately, in spite of industry frustration at the slow rate of change, mandatory schemes do not seem to be much in favour at the Commonwealth level. Whilst a product list for each year is tabled in Parliament, there is no debate on the validity of the schemes. The question is will the Commonwealth use the legislation as it was intended, to progress the establishment of schemes and mandate them when there is a lack of movement. Australia falls way behind other comparable countries in this respect, which is a lost opportunity.

Mandatory schemes provide the funding and the certainty required to establish infrastructure to separate, collect and recycle various waste streams. EPR obligations may cover either specific products or a broader category of products or industries. Small consumer electronics appear to be the

most prevalent product covered under EPR across the world. These are followed by large appliances, packaging (including plastics, beverage containers), tyres, end of life vehicles(ELV) and batteries with other products targeted by EPR including waste oil, paint, chemicals and fluorescent light bulbs.

The introduction of Energy from Waste solutions prior to the introduction of such mandatory legislation creates a number of potential challenges;

- The loss of potentially recyclable and recoverable material back into a circular material economy and
- The incineration of wastes which have no energy value
- The incineration of wastes of a hazardous nature with potential implications on emissions to atmosphere and in the residual disposal of incinerator bottom ash.

For this reason alone, caution may need to be exercised, when considering the specific waste inputs into facilities.

Policy makers in OECD and emerging economies are now implementing EPR policies as an efficient target-oriented environmental tool along with traditional instruments and regulations such as landfill taxes or emission standards for waste treatment facilities.

Finally, where EPR has been introduced into countries where EfW is the disposal option for residual waste, such as in Japan, subsequent reductions in residual waste generation as a result of recycling through EPR has resulted in reductions of available waste to incinerate, leading Councils to adjust their recycling systems, collecting less, to ensure sufficient waste is available to feed the EfW plants.

In conclusion, legislative drivers need to be introduced to get waste out of landfill into recycling, before the introduction of EfW, otherwise introducing EfW given it is price competitive against landfill in a high levy environment will clearly result in lost recycling opportunities.

Summary

Veolia considers EfW provides an alternative environmentally sustainable form of waste treatment and supports the NSW EPA EfW policy however, further regulation in line with other OECD countries is necessary to achieve a better environmental outcome ahead of EfW.

In the current regulatory environment, despite a EfW policy which proposes to limit energy recovery before recycling, EfW in NSW may compromise the recycling and resource re-use potential of existing waste streams. Regulation and legislative drivers such as the extraction and processing of organic waste from MSW prior to EfW and the establishment of a mandatory EPR scheme will limit the amount of potentially recyclable and recoverable material back into a circular material economy.

The current disparity in landfill costs and landfill levy rates, with specific reference to the movement of waste from NSW to QLD, driven by market forces, to find the most effective and economical solution for treatment and disposal, will hinder future investment in recycling in the Sydney metro.

Significant capital investment is required for the construction of an EfW facility and the viability and funding of such a facility is dependent on a long-term waste supply agreement, experienced and, reputable facility design and operation, and preferable co-location of the plant with a major industrial user of heat, steam and electricity.

Finally, State Planning Policy should ensure the industry adopts a portfolio approach to the introduction of EfW facilities to ensure individual plants are sized according to need and local catchment to receive waste, to;

- reduce the overall impact from a planning perspective in terms of physical scale

- reduce the impact on local transport infrastructure
- where practical, adopt a principle of managing waste within the region it arises
- not sacrifice future recycling
- maintain commercial competition within the industry

Finally, a long term strategic approach to waste management in Sydney, driven by Government, is essential to have the infrastructure in place to manage the projected residual waste streams and the recoverable material streams.

We trust you will find our submission informative and that we have provided sufficient relevant information to assist you with this inquiry. If you require additional information or clarification relating to this document please contact the undersigned on

Kind Regards,

Mark Taylor
General Manager, NSW Resource Recovery
Veolia Environmental Services (Australia) Pty Ltd