



RESOURCE RECOVERY RESPONSE

WOODLAWN BIOREACTOR

WOODLAWN EXPANSION PROJECT

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1 Introduction

1.1 Background

Veolia Environmental Services (Australia) Pty Ltd (Veolia) owns and operates the Woodlawn Bioreactor and Crisps Creek Intermodal Facility. These facilities have been operational since 2004 and receive putrescible waste from Sydney by rail, for the production of renewable energy. The Woodlawn Bioreactor recently received approval to receive putrescible waste by road from regional areas. The Woodlawn Bioreactor is located within the void of a former open cut mine, and forms an integral part of the Woodlawn Eco-Precinct.

Veolia's Woodlawn Expansion Project, lodged under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to increase the maximum input rate of the Bioreactor to 1.13 million tonnes per annum (tpa), and the maximum throughput rate at the Crisps Creek Intermodal Facility to 1.18 million tpa, is currently being assessed by the Department of Planning.

This report has been prepared as part of the Submissions Report and responds to the specific request made by the Department of Planning (DoP) to consider the submissions received on the Environmental Assessment regarding resource recovery.

As part of this response, the report also discusses the waste avoidance and resource recovery issues raised by the Department of Environment, Climate Change and Water (DECCW) in their submission to DoP regarding the Environmental Assessment for the Woodlawn Expansion Project (Project).

The recommendations made by DECCW in their submission were as follows:

- a. *Provide details of resource recovery associated with the Proposal in order to fulfil the requirements of the SEPP (Infrastructure) 2007, including how the Proposal is contributing to the NSW Waste recovery targets in a manner commensurate with its scale.*
- b. *Provide an analysis of the economic impact of the Proposal on the gate prices of landfilling in the Greater Sydney Region and on resource recovery and resource recovery facilities in the Greater Sydney Region."*

1.2 Policy Context

1.2.1 WARR Strategy

In order to discuss the Woodlawn Expansion Project in the context of the Infrastructure SEPP, it is useful to provide a context regarding the current NSW waste avoidance and resource recovery policy.

The *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) forms the basis of a framework for waste management in NSW and establishes a hierarchy to minimise the consumption of natural resources and final disposal of waste by encouraging waste avoidance, reuse and recycling.

The WARR Act promotes integrated waste and resource management planning, programs and service delivery on a state-wide basis to ensure that waste is managed to reduce environmental harm in accordance with the principles of ecologically sustainable development and the objectives of the *Protection of Environment Operations Act 1997* (POEO Act).

The *NSW Waste Avoidance and Resource Recovery Strategy 2007* (WARR Strategy) provides a practical framework to achieve the policy objectives of increased diversion of waste to recycling, increased processing of residual waste and safe disposal of waste to minimise environmental harm.

The WARR Strategy focuses on solid wastes that, unless recovered and diverted to beneficial uses, would be disposed to putrescible and inert waste landfills throughout NSW. It contains broad targets for waste reduction, resource recovery and diversion of waste from landfill that supports the priorities of the State Plan and Sydney Metropolitan Strategy. Greenhouse gas abatement is also a key environmental driver of the WARR Strategy.

The WARR Strategy identified a goal of not generating any more waste in NSW in 2008 than in 2003 as well as reducing the amount of waste sent to landfill. It also set targets for increasing collection and recycling of materials by 2014 for each waste stream – 66% for municipal waste, 63% for commercial and industrial (C&I) waste, and 76% for construction and demolition (C&D) waste.

The WARR Strategy recognises that waste avoidance and resource recovery practices, including progressive development of AWT systems, must be supported by safe, secure disposal options that minimise environmental harm.

Since the WARR Strategy was developed, there have been a number of reviews of waste management performance within NSW. These include the *Public Review of Landfill Capacity and Demand 2009* (Wright Report), the *Review of Waste Strategy and Policy in New South Wales 2010* (Richmond Report), and the *Discussion draft: Strategic Directions and Implementation Plan 2011-2015* (draft Plan), which is DECCW's response to the Richmond Report.

At a national level, the *National Waste Policy: Less Waste, More Resources* (National Policy) was released in 2009 to help set the agenda for waste and resource management across Australia.

1.2.2 Current Policy Direction

As described in Section 1.2.1, the WARR Strategy set resource recovery targets for each waste sector by 2014. The *Review of Waste Strategy and Policy in New South Wales 2010* (Richmond Report) is the most recent review of the state's performance against the objectives and targets in the WARR Strategy, and presents the findings of an independent steering committee that was established to undertake the review. In response to the Richmond Report, DECCW has prepared a *Discussion draft: Strategic Directions and Implementation Plan 2011-2015* (draft Plan).

This report discusses how Veolia's resource recovery initiatives at Woodlawn and throughout NSW relate to the focus area and strategies suggested in the draft Plan.

Table 1 provides a summary of the state's performance to date against the WARR Strategy targets, and shows that much progress has been made since 2000.

Table 1: Progress towards waste diversion targets (Source: draft Plan)

Waste sector	2000 State Plan baseline	2002–03	2004–05	2006–07	2008–09 (provisional)	2014 State Plan target
Municipal	26%	30%	33%	38%	44%	66%
Commercial and industrial (C&I)	28%	34%	38%	44%	52%	63%
Construction and demolition (C&D)	65%	64%	62%	67%	73%	76%
Overall	–	45%	46%	52%	58%	

The draft Plan aims to refocus the NSW Government on efforts to achieve the WARR Strategy targets through five new focus areas, each of which include a number of recommended strategies:

1. Making it easier for households to manage their waste
2. Making it easier for businesses to manage their waste
3. Reducing or removing problem waste from the waste streams to ensure that resource recovery is cost effective and produces environmentally safe materials
4. Facilitating investment in waste infrastructure
5. Reducing litter and combating illegal dumping

The draft Plan recognises the need to significantly improve the planning and regulatory systems that affect resource recovery delivery, including facilitating site development and standards for the output of resource recovery plants.

2 Woodlawn Resource Recovery

The Woodlawn Bioreactor is Australia's first waste by rail project, and delivers residual waste for treatment at a purpose built bioreactor facility. Bioreactors are designed to rapidly degrade and stabilise waste and generated renewable energy through highly efficient bio-gas production. Bioreactor technology works by breaking down waste via the application of moisture, bacteria and nutrients; hence create optimal conditions for micro-organisms to decompose waste.

Moisture is controlled by re-circulating nutrient rich leachate and injecting additional water whilst the pH and temperature levels are continually monitored. A series of discrete treatment zones enable effective leachate recirculation and the capture of biogas.

At full capacity, the Woodlawn Bioreactor would have up to 24 gas engines on site, facilitating faster rates of decomposition and waste volume reduction, representing enough electricity to power almost 26,000 homes.

2.1 Infrastructure SEPP Considerations

Several discussions have been held between Veolia and government agencies regarding the proposal to increase the annual tonnage input rate at the Woodlawn Bioreactor, and its accord with clause 123 of the *State Environmental Planning Policy (Infrastructure)* (Infrastructure SEPP). This section responds to the issues raised by DECCW regarding the Infrastructure SEPP by considering each criterion in clause 123.

While Veolia has obtained legal advice to the contrary (and reserves its rights in that regard), for the purposes of this report, Veolia has assumed that clause 123 of the Infrastructure SEPP applies to the Project. On this basis, the primary purpose of this report is to discuss the Woodlawn Expansion Project in the context of clause 123 of the Infrastructure SEPP.

Clause 123 of the Infrastructure SEPP states:

"In determining a development application for development for the purpose of the construction, operation or maintenance of a landfill for the disposal of waste, including putrescible waste, the consent authority must take the following matters into consideration:

- (a) *whether there is a suitable level of recovery of waste, such as by using alternative waste treatment or the composting of food or garden waste, so that the amount of waste is minimised before it is placed in the landfill, and*
- (b) *whether the development:*
 - i. *adopts best practice landfill design and operation, and*
 - ii. *reduces the long term impacts of the disposal of waste, such as greenhouse gas emissions or the offsite impact of odours, by maximising landfill gas capture and energy recovery, and*
- (c) *if the development relates to a new or expanded landfill:*
 - i. *whether the land on which the development is located is degraded land such as a disused mine site, and*
 - ii. *whether the development is located so as to avoid land use conflicts, including whether it is consistent with any regional planning strategies or locational*

principles included in the publication EIS Guideline: Landfilling (Department of Planning, 1996), as in force from time to time, and

whether transport links to the landfill are optimised to reduce the environmental and social impacts associated with transporting waste to the landfill.”

Table 2 provides an assessment of the Woodlawn Expansion Project with regards to clause 123 of the Infrastructure SEPP, which provides matters for the consent authority to take into consideration in determining whether to grant consent to the Project. This summary shows that the attributes of the Woodlawn Bioreactor address the criteria in clause 123 of the Infrastructure SEPP. Further details regarding the resource recovery benefits of the Woodlawn Bioreactor are provided in Section 2.

Based on this information, Veolia believes that a suitable level of recovery of waste is achieved before the residual waste is deposited into the Woodlawn Bioreactor, and that the consent authority can be satisfied that the considerations set out in clause 123 of the Infrastructure SEPP have been adequately addressed. Moreover, there is no basis to require treatment of the waste by an alternative waste treatment or composting facility prior to delivery to the Woodlawn Bioreactor.

Table 2: Clause 123 of Infrastructure SEPP Assessment

Criteria	Description
(a) whether there is a suitable level of recovery of waste, such as by using alternative waste treatment or the composting of food and garden waste, so that the amount of that waste is minimised before it is placed in the landfill.	<p>The Woodlawn Bioreactor is designed to capture as much gas as possible for the conversion of organics to renewable energy, and to the end of 2010 has recovered approximately 25,000 tonnes of organics.</p> <p>In addition to the on site energy recovery, there are a number of recovery measures prior to residual waste being received at Woodlawn such as:</p> <ul style="list-style-type: none"> • Councils delivering residual waste to Woodlawn also provide source separated collection services which enables Veolia to achieve high diversion rates for municipal customers, with an average of 50% of this waste being recycled or reprocessed, which is higher than the current state average. • Veolia has implemented a number of initiatives for its commercial and industrial customers, including dedicated recycling and organics truck runs for customers separating at the source, which enables Veolia to divert a significant proportion of commercial and industrial waste for recovery.
(b) (i) whether the development adopts best practice landfill design and operation	<p>The Woodlawn Bioreactor operations are underpinned by the objective of best practice environmental performance. This objective is supported by the conditions of development consent, which include a Bioreactor Performance Management Program.</p> <p>Design of the Woodlawn Bioreactor allows for the gradual staging of cells and lifts in response to monitoring and current best practices.</p> <p>Best practice design and operation at the Woodlawn Bioreactor can</p>

Criteria	Description
	<p>be demonstrated by environmental management practices such as:</p> <ul style="list-style-type: none"> • Continuous leachate recirculation and monitoring to optimise biological degradation rates and maximise methane production; • Achieving high levels of methane capture with both horizontal and vertical gas collection systems, which results in significant environmental benefits, when compared to traditional processes; • Renewable energy production under the Green Power scheme, with renewable energy credits (RECs) and NSW Greenhouse Abatement Certificates (NGACs) generated for all power; • Hydrogen sulphide control using in-situ addition of metal-oxide to the waste as placed; and, • Leachate management and disposal using biological treatment and evaporative control. <p>These standards have been recognised through an award received by the Woodlawn Bioreactor in waste management, engineering, transport and logistics almost every year since operations commenced.</p>
<p>(b) (ii) whether the development reduces the long term impacts of the disposal of waste, such as greenhouse gas emissions or the offsite impact of odours, by maximising landfill gas capture and energy recovery</p>	<p>The Woodlawn Bioreactor reduces long term impact of the disposal of waste, such as greenhouse gas emissions and the offsite impact of odours, by maximising landfill gas capture and energy recovery.</p> <p>This can be demonstrated by the following bioreactor performance measures:</p> <ul style="list-style-type: none"> • Achieving high levels of methane capture from waste to maximise landfill gas collection and renewable energy production, thus minimising fugitive greenhouse emissions and odours. • 17,300 MWh of renewable energy was exported to the grid in 2010, which is enough electricity to power over 2,000 homes for that year • Since operations commenced almost 35,000 RECs and 130,000 NGACs have been registered from the Woodlawn Bioreactor • Abated approximately 180,000 tonnes of CO₂e to the end of 2010 through flaring and electricity production • Approximately 40 km of gas infrastructure installed to date
<p>(c) (i) whether the landfill on which the development is located is degraded land such as a</p>	<p>The Woodlawn Bioreactor is located on a disused mine site that operated as an open cut, which resulted in a 25 million m³ void, and underground base metals mine during the 1980s and 1990s.</p> <p>The bioreactor operation provides for the progressive rehabilitation of the mine void, and Veolia is now responsible for the whole of mine</p>

Criteria	Description
disused mine site.	<p>site rehabilitation which is outlined in the Mining Operations Plan. Rehabilitation activities that have been undertaken by Veolia since commencing the bioreactor operations include:</p> <ul style="list-style-type: none"> • Rehabilitation of the western ridge of the void to divert water away from the void, including compost application and initial planting; • Demolition of concentrate silos and removal of higher contaminated material to the tailings dam; and, • Ongoing research investigating suitable rehabilitation methods for the main degraded areas including tailings dams.
(c) (ii) whether the development is located so as to avoid land use conflicts, including whether it is consistent with any regional planning strategies or locational principles including the publication EIS Guideline: Landfilling (Department of Planning, 1996), as in force from time to time.	<p>The Woodlawn Bioreactor is not in conflict with the surrounding land uses and is consistent with the relevant regional planning strategies, including:</p> <ul style="list-style-type: none"> • Sydney Canberra Corridor Regional Strategy – Woodlawn is an important local industrial employment generator • Goulburn Mulwaree Strategy 2009 – Woodlawn provides for local economic development through ongoing local expenditure <p>Consistency with the locational principles of the Landfilling guideline can be demonstrated by the Woodlawn Bioreactor being located within the Woodlawn Eco-Precinct, which provides a 6,000 hectare buffer area around the facility.</p>
(d) whether transport links to the landfill are optimised to reduce the environmental and social impacts associated with transporting waste to the landfill.	<p>The Woodlawn Bioreactor optimises transport links by utilising long-haul rail transport, which is a more fuel efficient transport method than road freight, minimising the environmental and social impacts associated with transporting the waste to the Woodlawn Bioreactor.</p> <p>This rail transport results in three times less emissions than road transport, contributing a major greenhouse benefit. Avoiding long-haul road freight generates amenity benefits by reducing traffic congestion, noise and air quality impacts.</p>

2.2 Organics Recovery

Within NSW and across much of the global business, Veolia has a strong focus towards the recovery of renewable energy through anaerobic digestion, both in vessel, and through operation and design of bioreactors. Both these processes maximise the recovery of energy through digestion of the organic matter which is present in food, wood, paper and green waste, and the collection of

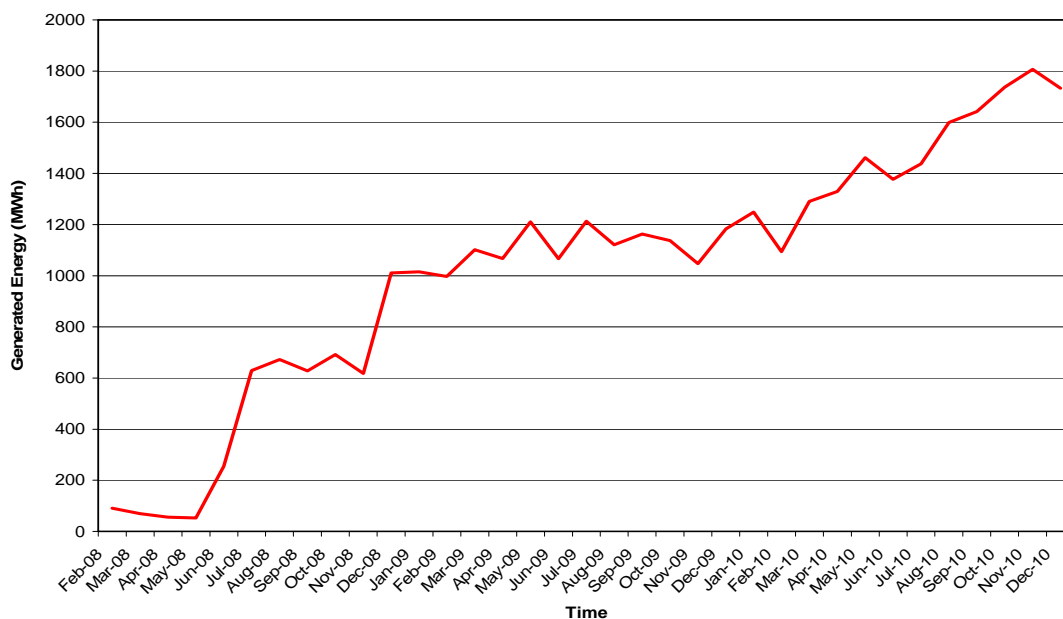
methane for electricity production. In NSW, Veolia’s commitment to this area is evident in the Earthpower (in vessel) and Woodlawn Bioreactor (open vessel anaerobic) energy recovery facilities.

Whilst the environmental benefits of these facilities are significant, the recovery of organics at a highly managed anaerobic digestion facility such as the Woodlawn Bioreactor is not recognised as contributing to the NSW resource recovery targets. It is unfortunate that this diversion is not recognised, as it represents a significant amount of organics (approximately 25,000 tonnes to the end of 2010) that has been recovered through the Woodlawn Bioreactor process.

The Woodlawn Bioreactor seeks to receive waste that is beneficial for the sustainable anaerobic digestion process; to optimise the degradation process and gas utilisation as a renewable energy source. All biodegradable waste accepted into Woodlawn is ultimately recovered for electricity generation.

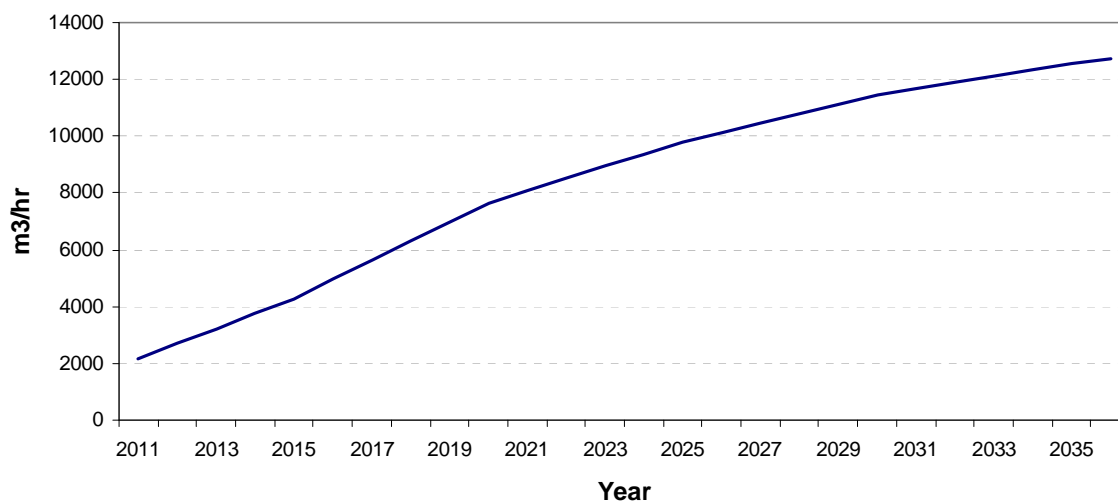
Figure 1 shows the total amount of renewable energy generated by the Woodlawn Bioreactor to the end of 2010. The energy production at the Woodlawn Bioreactor has increased since the first engine was installed, with three engines currently operating and a fourth engine expected to be operational later this year. At full capacity the Woodlawn Bioreactor would have up to 24 engines, representing the potential to produce enough electricity to power almost 26,000 homes.

Figure 1: Renewable Energy Generated at the Woodlawn Bioreactor to end of 2010



Through this facility, and other similar facilities, Veolia’s capacity and commitment to renewable energy continues to increase every year. Figure 2 shows the results of a model (GasSimLite) used to assess the potential gas generation capacity of the site. This gives a modelled estimate only, as the actual generation of gas is extremely complex. Nevertheless, the results can be used to estimate the energy generating capacity of the site. The maximum gas generation shown in Figure 2 represents an installed capacity of 24MW.

Figure 2: Potential Gas Generation at the Woodlawn Bioreactor – 2011 to 2036



In view of the high level of organics recovery and renewable energy production being achieved at these facilities, Veolia remains strongly focused in this area, and fully supports the current NSW strategic direction which recognises the role that energy from waste may have in future resource management for NSW. This NSW Government position is recognised in Strategy 4.6 of Focus Area 4 in the draft Plan, which refers to facilitating investment in waste infrastructure through a review of the energy from waste policy within NSW.

2.3 Further Resource Recovery

The resource recovery benefits of the Woodlawn Bioreactor are not limited to the high levels and gas capture and conversion of organics to energy, which is core of the design and operation of the facility. There are also a range of waste avoidance and resource recovery initiatives that occur before the waste reaches the Woodlawn Bioreactor, which contribute to the level of resource recovery that the overall Woodlawn Bioreactor solution achieves, and in turn the NSW waste recovery targets for both the municipal and C&I waste streams.

The Woodlawn Bioreactor is designed to receive residual waste, with recyclable materials remaining separate to achieve the highest value possible by not being mixed with other waste streams. To promote this, Veolia is focused on working with customers to encourage at source separation through initiatives such as education programs with Councils and dedicated food waste runs for commercial vehicles. Customers are also invited to visit Woodlawn to better understand the resource recovery performance of the overall project.

These waste avoidance and resource recovery initiatives are in addition to the energy recovery benefits of the Woodlawn Bioreactor and can be characterised in terms of the waste streams that they target, that is the municipal waste stream, the C&I waste stream or both waste streams.

Municipal waste initiatives include source separated recycling programs of the Councils that deliver their waste to the Clyde Transfer Terminal, which currently feeds the Woodlawn Bioreactor, as well as education programs for Councils.

C&I waste initiatives include on site waste and recycling management services to major commercial customers such as shopping centres, as well as restructuring runs for Veolia commercial waste trucks to increase the number of dedicated collections by waste types rather than area.

Educational site tours are also offered to interested parties to visit the education centre at Woodlawn and learn more about waste and resource management practices in general.

Table 3 provides a summary of the range of resource recovery initiatives that contribute to the overall waste recovery rates of the Woodlawn Bioreactor life cycle, and references the relevant strategies in the *Discussion draft: Strategic Directions and Implementation Plan 2011 – 2015* (draft Plan).

Table 3: Summary of additional resource recovery related to the Woodlawn Bioreactor

Type of Initiative	Waste Stream	Location	Description	Relevant Strategy from draft Plan
Source Segregation	Municipal	Households	Council recycling collection services	Strategy 1.1 – Encouraging Councils to adopt best practice models of household collection bins
Source Segregation	C&I	Commercial Businesses	Dedicated recyclable collection services	Strategy 2.3 – encouraging small/medium businesses to move to a best practice model of a two-bin system
Recovery	C&I	Shopping Centres	On site waste management and resource recovery services	Strategy 2.1 – encouraging large businesses to move to a best practice model of source separated materials
Education	C&I	Commercial Businesses	Greenhouse Gas Estimator	Strategy 2.7 – Targeted education program
Education	All	Woodlawn Bioreactor	Woodlawn EcoPrecinct Education Centre	Strategy 1.4 & 2.7 – Targeted education programs

2.3.1 Municipal Waste

The Woodlawn Bioreactor receives a combination of waste from commercial customers and Councils. The waste received from Councils consists of the residual waste stream, that is, waste that has not been separated by the householder in to dry recyclable or green waste bin at the kerbside.

Table 4 provides a summary of the disposal and recycling volumes for the Councils that deliver their residual waste to the Clyde Transfer Terminal for containerisation and rail transport to the Woodlawn Bioreactor.

Table 4: Municipal recycling rates for Councils delivering waste to Woodlawn (Source: State of the Environment Reports - 2008-09 reporting period)

Council	Residual waste	Recyclables & green waste	Percentage recycled
Auburn	21,500	7,551	26%
The Hills Shire	41,690	36,287	47%
Canterbury	32,737	23,939	42%
Hornsby	21,500	37,749	64%
Ku-Ring-Gai	21,500	33,396	61%
Strathfield	7,474	4,962	40%
Total	146,401	143,884	50%

Councils delivering residual waste to the Woodlawn Bioreactor, on average, are achieving a diversion rate of 50%, which is greater than the current average NSW diversion rate of 44%. By providing a solution for Council's residual waste, the Woodlawn Bioreactor is contributing to Council's ability to meet the resource recovery targets set by the NSW Government.

In recognition of the further resource recovery measures being achieved for this residual waste stream at the Woodlawn Bioreactor, Veolia provides renewable energy reports to Councils delivering their waste to Woodlawn. These reports show how much renewable energy has been generated from the waste they have sent to the Woodlawn Bioreactor. An example of a Renewable Energy Report is provided in Appendix A.

These collection services for Councils are consistent with Strategy 1.1 of Focus Area 1 in the draft Plan, which aims to make it easier for households to manage their waste by encouraging Councils to adopt best practice models of household collection bins.

2.3.2 C&I Waste

2.3.2.1 Dedicated Recyclable Collection Services

Veolia's new service, RecyclePak, provides businesses with a flexible waste and recycling solution based on individual needs. RecyclePak aims to reduce the amount of reusable materials being sent to landfill, as well as allowing businesses to reduce their waste management costs.

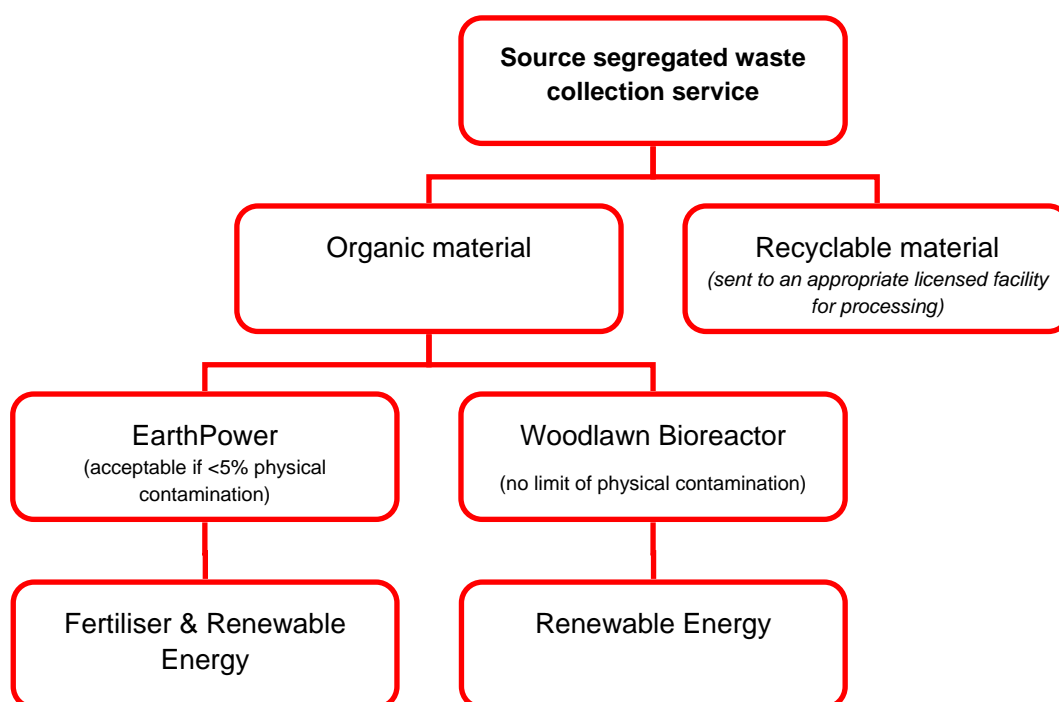
This service includes an extensive education program with interactive, face-to-face training sessions for small to large groups of employees to encourage businesses to get wise about waste. Supporting documentation such as bin signage, posters and information on how to recycle waste more effectively is also offered to businesses. A copy of the RecyclePak brochure is provided in Appendix A.

RecyclePak is a refinement of the recyclable collection services that Veolia already provides to businesses for a range of source separated material, including plastics, paper, cardboard, comingled recyclables, and organics.

Over the past few years, Veolia has spent time educating clients regarding these services to ensure that they understand the type of material that can be accepted in each of these waste streams. This focus on promoting these services has resulted in a doubling of the volume of recyclable material collected from dedicated runs in the past twelve months, and RecyclePak is expected to build on these services in the future.

Figure 3 is a diagram showing where the source segregated waste collected by Veolia is delivered. For organic material, the level of contamination determines which with facility it is delivered to, and therefore whether the material is utilised for renewable energy at Woodlawn or renewable energy and fertiliser at EarthPower.

Figure 3: Recyclable Collection Service Flowchart



These services are consistent with Strategy 2.3 of Focus Area 2 in the draft Plan, which aims to make it easier for businesses to manage their waste by encouraging businesses to move to best practice model of a two-bin system.

2.3.2.2 On-site Resource Management

Veolia provides total on site waste management and resource recovery services to several major commercial and industrial services clients. These contracts incorporate the management of all types of waste, such that segregated recyclable materials are delivered to appropriate processing facilities, and residual waste is delivered to the Woodlawn Bioreactor, ensuring that all organic material from these contracts is recovered for renewable energy production.

The nature of these contracts is such that recovery performance is required to be reported regularly to the client to show that high levels of recovery are being achieved. The residual material is sent to the Woodlawn Bioreactor, and the recovery benefits of that facility are included as a key performance indicator in these contracts regarding their sustainability outcomes.

The overall recovery rates for these services as generally very high, as shown by the following examples:

- Veolia provides a total waste management system to the Carlingford Court Shopping Centre, which achieves a 75% recycling rate, incorporating both primary and secondary recovery.
- Veolia recently introduced the onsite waste management system at the Top Ryde Shopping Centre, extracting primary recoverable from within the general waste stream, from each active dock. The new system has been in place since October 2008, and the site is now achieving 60-65% recycling rate, with the potential of achieving up to 75-80% that includes both primary and secondary recovery.
- Veolia also provides similar services to Westfield shopping centres as part of a national contract.

These services are consistent with Strategy 2.1 in Focus Area 2 of the draft Plan, which aims to make it easier for businesses to manage their waste by encouraging large businesses to move to a best practice model of source separated materials.

2.3.2.3 Greenhouse Gas Estimator

In 2009, Veolia launched a Greenhouse Gas Estimator and Reporting Tool to help Australian businesses understand and minimise waste-related greenhouse gas emissions. This is an important tool for businesses looking to reduce their operational costs, whilst also looking at potential reductions in their greenhouse gas emissions through alternative waste management solutions.

The Greenhouse Gas Estimator provides a customer with a waste stream by stream breakdown of greenhouse gas emissions for existing services and demonstrates the positive greenhouse gas impacts from diverting waste to resource recovery. It allows companies to compare various waste transport and disposal scenarios and the potential greenhouse gas savings that can be made by diverting waste to resource recovery and implementing a split waste stream recycling and disposal systems.

In delivering this reporting and modelling capability to our customers, Veolia has been able to go beyond contractual requirements and provide customers with an innovative value-adding solution and has been rolled out to clients such as George Weston Foods, Mirvac and Aldi.

This tool is consistent with Strategy 2.7 of Focus Area 2 in the draft Plan, which aims to make it easier for businesses to manage their waste by using targeted education, communication and partnerships to improve resource recovery by businesses.

2.3.3 Woodlawn Education Centre

Veolia believes that targeted education programs to better inform households and businesses about waste management and resource recovery are a fundamental component of any waste strategy.

Veolia's commitment to education is reflected by the establishment of an education centre at Woodlawn as part of the development of the Woodlawn Bioreactor. The initial purpose of the education centre was to encourage people to visit the site and learn about the Bioreactor operations as well as the history of the mine site.

Since then, the education centre has been grown to include information about all activities within the Woodlawn EcoPrecinct. It was used to undertake community consultation programs during the development assessment phase for both the Woodlawn Windfarm, which has now commenced construction, and the Woodlawn Alternative Waste Technology facility. Information regarding these

facilities remains within the education centre to enable visitors to gain an understanding of all the activities within the Woodlawn EcoPrecinct.

In 2010, over 700 people visited the site, comprising of about 80% community members, 15% industry members and 5% Council representatives. Community members include school and university groups as well as members of the general public.

Further education initiatives developed by Veolia relating to Woodlawn include a video that provides a comprehensive description of operations, including the technology utilised on site as well as the environmental benefits of the facility.

This education centre is consistent with Strategy 1.4 of Focus Area 1 and Strategy 2.7 of Focus Area 2 in the draft Plan, which aims to make it easier for households and businesses to manage their waste by using targeted education, communication and partnerships to improve resource recovery.

2.3.4 Woodlawn AWT Considerations

Veolia is fully committed to the development of Alternative Waste Technology (AWT) facilities in the right conditions. Such conditions relate to long term demand, technology, contractual risk, markets, and long term economic viability. Veolia has been granted consent to develop an AWT facility at Woodlawn, nevertheless the right conditions must apply before the plant would be viable.

The original concept designs commenced in 2004 and following a Part 3A planning process, the development was granted development consent in November 2007. Since then, there have been a number of hurdles for all businesses actively seeking to access the AWT market. These include the need to secure of waste volumes to enable the significant investment required to construct an AWT facility, as well as uncertainty regarding the regulatory regime surrounding the AWT market.

There are obvious synergies between the outputs of an AWT and the need for nutrient rich material to rehabilitate large areas of degrade mine land, nevertheless the commercial and regulatory issues described above are significant.

2.3.4.1 Resource Recovery Exemptions

The development of Resource Recovery exemptions, for the use of compost which has been derived from mechanical biological processing (or AWT), has been an involved process with significant input from industry and the Department of Environment, Climate Change and Water (DECCW), through the AWT Derived Organics Rich Fractions (DORF) Working Group and others. The AWT DORF process has taken some time to complete, and the General Exemption (organic outputs derived from mixed waste) was developed and issued in 2010, which is still the subject of ongoing discussions.

Implicit in this process is the need for both technology providers and DECCW to ensure that land application of compost products will in no way result in pollution of the soils to which they were applied. Veolia has maintained a proactive dialogue with DECCW during this time to help gain clarity regarding the outputs of AWTs and how this is likely to affect the Woodlawn AWT.

Woodlawn has some obvious advantages over other AWT locations by being located on a disused mine site under Veolia's full control, so there is an existing and suitable market for the outputs. As such, Veolia has sought approval for a site specific exemption at Woodlawn to recognise the unique conditions on site and provide certainty in the medium to long term for rehabilitation of poor quality areas. Discussions between DECCW and Veolia have been underway since 2006, and Veolia is

fully committed to the process of achieving a Site Specific Exemption, suitable for the rehabilitation of Woodlawn that takes into account the issues outlined above.

2.3.4.2 Securing Volume

Veolia has actively sought to secure AWT customers at Woodlawn to enable the construction and operation of the facility. Veolia has expended significant cost and resources in the preparation of bids for several contracts for Sydney Councils which collectively equate to hundreds of millions of dollars in net revenue, for the provision of an AWT at Woodlawn. However, all these tender processes have been either cancelled, put on hold, or the Councils have decided to go for a short term disposal options.

Public confidence in the viability of these technologies may have been affected by the issues surrounding clear guidelines for use of compost materials and the “failure of AWTs to live up to the expectations” (Wright Report, 2009). This has resulted in a lower uptake of AWTs, such that the demand for these facilities is unclear, and projects are difficult to justify financially without the ability to secure long term contracts.

In Veolia’s view, the key issues currently faced by Councils and technology providers to the tender process, include finding suitable markets for materials, cost of processing, technology issues, regulatory certainty, and Council commitment / willingness to share risk.

For technology providers, these market conditions, and the fact that the cost of AWT is higher currently than disposal (Wright Report, 2009), means that there is a need to ensure a reasonable return commensurate with the risk profile of such a venture. Before any facility can be built, contracts need to be secured where a group of Council would be prepared to pay a premium at least in the short term for delivering their waste to an AWT facility.

This position is supported by the Wright Report (2009), which states that “demonstrated demand is required to make these sorts of investment projects bankable, especially in the current economic conditions.”

Experience to date suggests that AWT processes are likely to result in over 50% residual material that needs to be disposed of at a suitable putrescible disposal facility. One way in which this volume issue may be addressed is through support for Energy from Waste for the residual waste stream, although clearly there will be residues that still require disposal and the long lead times are unlikely to address shortfalls in disposal capacity in the short to medium term.

Despite these challenges, Veolia continues to progress its plans for an AWT at Woodlawn, including a revised design that accounts for international best practice technology.

3 Veolia Resource Recovery

The following section provides a summary of Veolia’s resource recovery initiatives within NSW. Consistency with the NSW Government’s waste strategy is provided through references to the relevant focus area or proposed enhancement from the most recent NSW government waste strategy reports that are.

Resource recovery initiatives that are specific to the Woodlawn Bioreactor are included in the section, as well as other Veolia initiatives that target different waste streams. Table 5 provides a summary of the key resource recovery initiative undertaken by Veolia in NSW, which are described in more detail later in this report.

Table 5: Veolia NSW Resource Recovery

Waste / Facility Type	Location / Activities
C&I waste facilities (non-putrescible waste)	Port Botany Resource Recovery Centre Greenacre Resource Recovery Centre Horsley Park Waste Management Facility
Services to C&I waste generators	On site waste management and resource recovery services Dedicated source separated commercial collection services
E-waste facility	E-recycling (joint venture with Sims)
Organics recovery facilities	EarthPower (joint venture with TPI) – food waste Woodlawn Bioreactor – mixed waste
Services to Industrial Services customers	On site waste management and resource recovery services

The following section provides details on the resource recovery initiatives listed above in Table 5 regarding C&I waste facilities, E-waste and organics recovery facilities that have not already been discussed in Section 2.3 based on their contribution to resource recovery for the Woodlawn Bioreactor project.

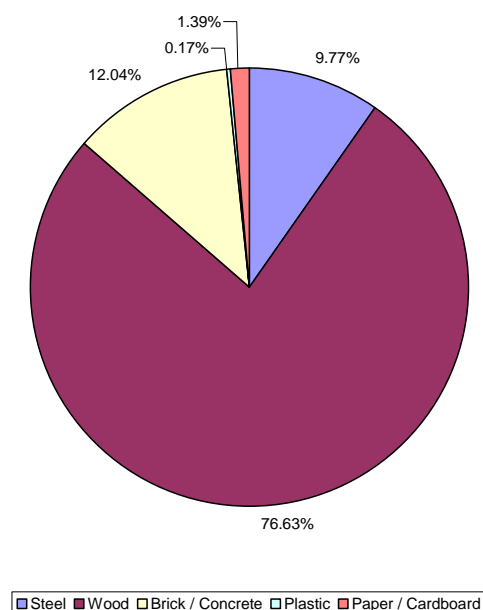
3.1 C&I Waste Facilities

3.1.1 Existing Facilities

Veolia operates two Resource Recovery Centres that receive non-putrescible solid waste in Sydney, located at Port Botany and Greenacre. Residual materials are then sent to the Horsley Park Waste Management Facility. The Horsley Park Waste Management Facility also accepts waste directly from customers, and further recycling activities are undertaken at this site, particularly for wood waste.

These facilities target a range of material for recycling, separation and diversion from landfill, including paper / cardboard, plastics, steel, wood and brick / concrete. Figure 4 shows the different types of recovered recyclable materials from all three of these facilities.

Figure 4: Breakdown of material recovered from Veolia's C&I facilities



Since 2008 Veolia has been developing our capacity to extract concrete, steel, greenwaste, wood residues, plastics, and electronic goods at the facility. In 2009, the total volume of material recovered from the three sites increased by 20%.

In 2009, the recycling initiatives at Port Botany alone have saved an estimated 11,600 tonnes of greenhouse gas (tCO₂e), which is equivalent to planting over 43,000 trees, or taking almost 3,000 cars off the road for a year.

During this time, Port Botany has been able to achieve monthly recycling rates of over 20% through these manual sorting initiatives Veolia believes the operations are now close to the maximum achievable level of recovery for manual sorting processes. These recovery initiatives provide a good basis for moving into the next stage of recovery through the use on mechanical sorting processes.

3.1.2 Proposed Facilities

Veolia's commitment to increased resource recovery from non-putrescible Commercial and Industrial (C&I) is presently focused around the trial of processes at Port Botany Resource Recovery Centre to recover additional resources from the waste stream to assist in future plans to for the development of a C&I waste processing facility.

Veolia continues to investigate markets for recovered resources and has already invested significant funding to undertake detailed designs for C&I sorting infrastructure. This is demonstrated by confirmation from the Department of Planning in February 2011 that Veolia's proposal to develop a Material Recycling Facility (MRF) in Sydney has been declared a major project to which Part 3A of the *Environmental Planning and Assessment Act 1979* applies. A copy of this letter is provided in Appendix A.

Veolia is proposing to develop a C&I processing plant that would produce raw materials suitable for recycling and subsequent use in manufacturing of other products. The proposed facility would enable the recovery, sorting and diversion of up to 150,000 tonnes per annum of non putrescible waste for reuse in secondary markets.

The proposed MRF would be designed to process a range of, C&I and C&D waste including plastics, paper, wood, metals and aggregates. The process would be a multi stage system including trommels, air separation, shredders and magnets, with the potential to allow for a refuse derived fuel stream for energy recovery.

Veolia has undertaken comprehensive waste composition audits for C&I waste at our facilities to ensure the proposed MRF will be designed to suit the existing market. Veolia is also able to draw on the wealth of knowledge and experience within the group internationally to design a best practice facility.

Veolia is currently in the process of undertaking a detailed technology review for further mechanised sorting of the material identified in the waste audits, followed by on site trials and analysis of the findings to ensure the processing technology design is suited to the target market. The outcome of this process would be a planning application for a C&I MRF in Sydney.

Veolia is fully committed to maximising resource recovery and in providing technical and operational expertise to solve the problem of increased recovery. This can be demonstrated by Veolia's heavy investment in recovery of materials from C&I waste streams but without market development and the removal of regulatory hurdles, further recovery will be limited.

The work undertaken to date to develop C&I recycling initiatives has made it clear to Veolia that limitations on resource recovery lie not with technology but in the security of markets for the materials, and the development of clear policy around both the markets and the resource recovery infrastructure is needed to encourage further recovery.

These initiatives are consistent with Strategy 2.9 of Focus Area 2 of the draft Plan, which refers to making it easier for businesses to manage their waste by supporting the development of new facilities to maximise recovery of material from mixed C&I wastes, as well as Strategy 4.3 of Focus Area 4, which refers to facilitating investment in waste infrastructure by actively promoting and assisting new entrants to the waste infrastructure market. Veolia fully supports these initiatives, and sees them as being essential to enabling further resource recovery.

3.2 Other Recycling Facilities

3.2.1 E-waste

Veolia and Sims run a joint venture operation in Villawood that recycles e-waste from all across Australia. This e-recycling facility is Australia's first electronics waste recovery and processing solution and ensures that electronic equipment containing hazardous substances are diverted from landfill and processed so that they can be used as raw materials.

Electronic waste collected undergoes a manual dismantling process. Individual material such as circuit boards, cabling, glass and plastics are recovered and processed so they can be re-used in the manufacture of new products. This e-recycling facility has been established to deliver the highest environmental outcome, and at present delivers approximately 95% to 98% recovery based on the product mix received.

This facility is consistent with Focus Area 3 of the draft Plan, which refers to reducing or removing problem wastes from the waste streams to ensure that resource recovery is cost effective and produces environmentally safe materials.

3.2.2 Food Waste

EarthPower is a joint venture between Veolia and Transpacific Industries, and is Australia's first regional food waste-to-energy facility. EarthPower is designed to process four specific waste streams for the production of renewable energy and nutrient rich fertiliser. These organic waste streams include: solid organic waste with maximum inorganic contamination of less than 5%, spadable sludges, liquid wastes, and selected packaged wastes.

Anaerobic digestion facilitates the conversion of solid and liquid food wastes using bacteria operating in a controlled environment. This produces biogas which is recovered and used to fuel cogeneration engines producing green electricity.

A by-product of the anaerobic digestion process is a nutrient rich sludge, which is dried and granulated for sale as a fertiliser into the agriculture and horticultural markets. Waste heat from the cogeneration engines is used in the fertiliser drying process and to heat the digesters.

At full capacity, EarthPower is expected to produce enough green electricity to power approximately 3,600 homes.

3.2.3 Industrial Services

In addition to waste management and resource recovery services, Veolia provides industrial clients with a full suite of industrial cleaning services, including facilities management, industrial cleaning, refractory management, pipeline services and protective coatings. Veolia provides these services in NSW to industrial clients primarily in the Hunter and Illawarra regions.

Veolia current provides a range of industrial services to Bluescope Steel, and has recently won the contract for fully integrated waste and resource management services on site, which will commence this year. Bluescope currently generates approximately 15,000 tonnes per annum of general solid waste, and Veolia's solution will enable them to recover up to 70% of this waste by establishing a material recycling facility on site.

4 Economic Analysis

The key policy document driving waste avoidance and resource recovery programs in NSW is the Waste Avoidance and Resource Recovery Strategy 2007 (WARR Strategy). In support of the WARR Strategy, there have been several reviews of waste management policy and performance within the past five years, some of which have included an analysis of economic drivers for the putrescible waste market.

These include, the *Public Review of Landfill Capacity and Demand 2009* (Wright Report), and the *Review of Waste Strategy and Policy New South Wales 2010* (Richmond Report) which all have discussions regarding economic drivers, and specifically the waste and environment levy.

The Wright Report presents the outcomes of a review in putrescible waste landfill capacity and demand for the Sydney region, including a discussion regarding the waste and environment levy and its potential role in encouraging the uptake of AWTs. The Wright Report discusses the likely role of the levy on the uptake of AWTs, in particular for the C&I waste sector.

The Richmond Report discusses the economic and social factors in waste and suggests that the likely drivers for waste generation are household consumption and population for municipal waste and State Final Demand (expenditure on consumption and capital formation) for C&I waste. However, it also states that the relationship between waste disposal and these drives has changed over time due to increases in recycling, reuse and waste avoidance. Given their breadth and depth in the economy, drivers such as the rapid increase in goods being imported into NSW are likely to be much more significant than any price signal for a single service.

Therefore, it is believed that there would be limited benefit in Veolia undertaking a further assessment as Veolia would not have access to data for the entire waste industry, making it difficult to accurately assess the true drivers for other businesses within the industry.

4.1 Independent Assessment

Veolia believes that the independent reviews previously undertaken on behalf of the NSW Government effectively represent the likely pricing scenarios for waste sector in the short to medium term, and that these scenarios would not be affected by the increase in tonnage at the Woodlawn Bioreactor.

It stands to reason that any subsequent economic analysis of this market should also be undertaken independently. The majority of information used in previous analyses would still be relevant to any subsequent analysis looking at the potential impact of increasing the annual input rates at Woodlawn.

An independent assessment would be able to use already collated information to consider any potential impact, whereas Veolia does not have access to this information. This means that any analysis undertaken by Veolia would need to rely on several assumptions regarding other industry members rather than accurate data.

There are a number of factors that are specific to each technology provider that may have an influence on the market. These include business strategies, current infrastructure investment, and ownership models. Government policy and regulatory mechanisms also have an impact on the pricing of waste management and resource recovery services.

Given these factors, Veolia believes that an independent assessment would be the most effective means of assessing the gate prices of facilities receiving residual waste from the Greater Sydney Region.

4.2 Supply & Demand

In 2009, the Wright Report stated:

“There is however a serious, and probably chronic, shortfall between the annual amount of putrescible waste presenting for disposal and the nominal aggregate annual waste input limit. This issue needs to be resolved without delay ...”

The putrescible waste generated in Sydney that is either sent to a disposal facility or an alternative waste technology (AWT) facility is the relevant market that has been considered in the following sections. This essentially refers to residual putrescible waste, as it excludes any material that is sent directly to a composting facility or a material recycling facility (MRF). The estimated volume of this market is over 2 million tonnes and includes waste from both the municipal and C&I waste streams.

This total volume of this market has remained fairly constant in recent times. That is, while waste avoidance and resource recovery initiatives are reducing the volume of residual waste, other factors such as population growth and economic growth are increasing the volume of waste generated, resulting in a negligible change in the total volume of residual putrescible waste in Sydney.

Comparison of the potential demand with various supply scenarios based on annual input rate, shows that there is a clear demand for facilities that are able to accept residual putrescible waste. The base case of existing operations receiving their maximum approved annual input rates suggests that by 2014 the shortfall in supply will be greater than 20% and increasing every year.

There are currently two approved AWT facilities that are not yet operational; to be located at Woodlawn and Lucas Heights. By adding these facilities to the existing operations, it is expected that there will still be a shortfall in annual supply of over 10% by 2014, and increasing to 35% by 2018. Therefore, based on all currently approved facilities operating at their maximum annual input rates, the supply well and truly outstrips the demand in the medium to long term.

There are currently two proposed developments of relevance to this analysis; Chullora AWT and Woodlawn Bioreactor tonnage increase. Assuming that both these proposals are approved and operational, the annual supply is still expected to result in a shortfall of over 10% by 2018. Therefore, an increase in the annual input rates at the Woodlawn Bioreactor would not be a driver for more waste to be generated, but rather form part of the solution for the existing demand.

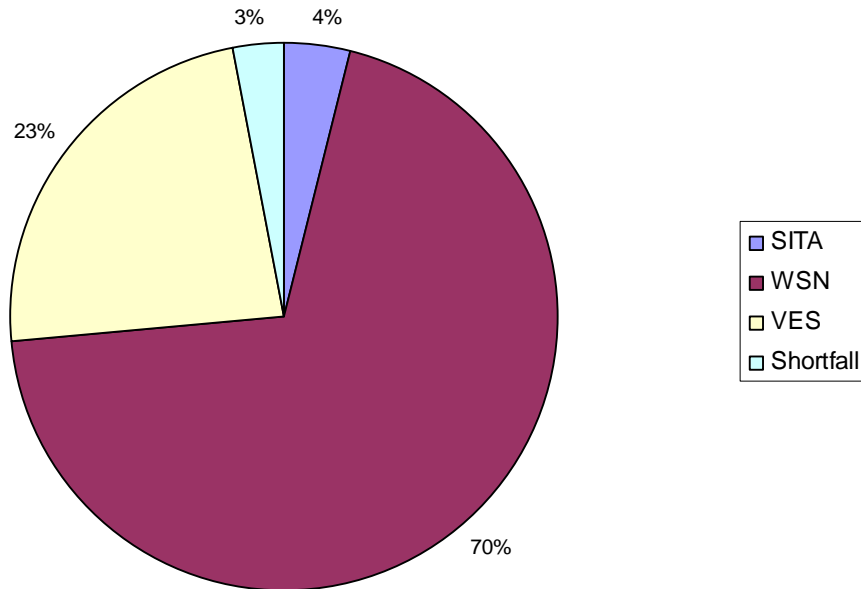
This comparison shows that the demand exists for residual waste facilities and that with all existing and proposed facilities operational, there is not expected to be an excess in supply for available annual volumes. Further, it shows that the most significant influencing factor on the market is likely to be the exhausting of existing approved disposal capacity, resulting in supply no longer being able to cope with the demand in the medium to long term unless new facilities are developed.

4.3 Market Analysis

The Sydney putrescible waste market comprises three main businesses: WSN Environmental Solutions (WSN), SITA Environmental Solutions (SITA), and Veolia Environmental Services (Veolia). In 2010, WSN had the majority of the volume with approximately 70% of the market and

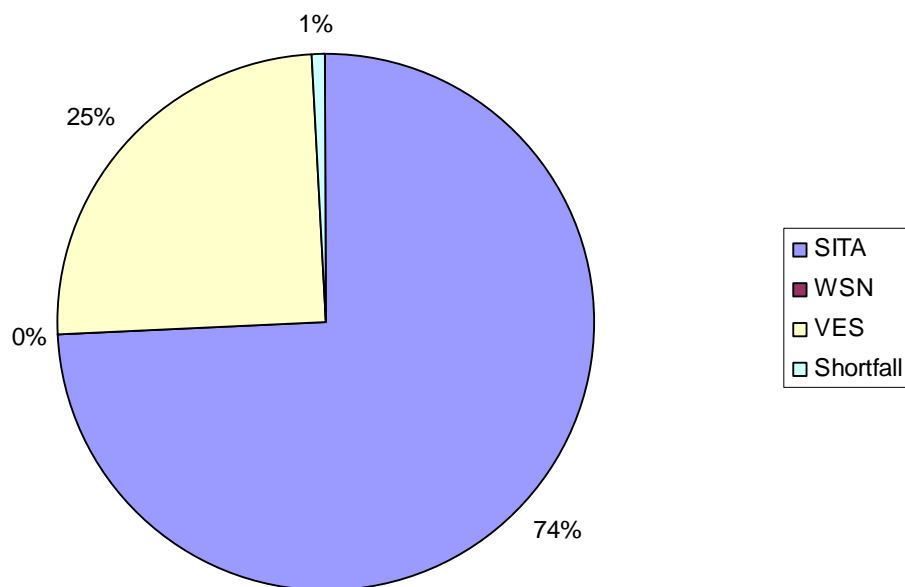
Veolia represented approximately 20% of the market, including both the Woodlawn Bioreactor and the EarthPower facility. Figure 5 provides a breakdown of the market share by business in 2010.

Figure 5: Profile of Sydney Putrescible Waste Market 2010



At the end of 2010, an announcement was made that WSN had been sold to SITA. Given the limited number of businesses in the putrescible waste market, this sale had a significant impact on the market profile. Based on the assumption that SITA has acquired all of the WSN businesses, SITA has now become the major player with over 70% of the market, as shown in Figure 6 which provides a breakdown of the market share in 2011.

Figure 6: Profile of Sydney Putrescible Waste Market 2011



The maximum input rate proposed for the Woodlawn Bioreactor for putrescible waste from Sydney is 900,000 tonnes per annum, which represents less than 50% of the market, compared with the current market dominance by SITA at over 70%. This shows that the Woodlawn Bioreactor will continue to be only a part of the solution for Sydney’s putrescible waste and SITA will continue to have the majority of the market share in the short to medium term.

As described in Section 4.2, new technology providers will need to enter the market in the medium to long term to cater for the significant shortfall in supply. Given the existing demand for residual waste facilities, and the increasing scarcity of disposal capacity, the likely impact of an increase in the annual tonnage input rate at the Woodlawn Bioreactor, would only act to provide a redistribution of this market share, not an increase in the market itself.

While Veolia believes the demand exists for the tonnage increase, we would only seek to increase our market share if it is both sustainable and profitable. Further, any potential increase in Veolia’s market share would also be dependent on customers deciding to deliver their waste to Woodlawn.

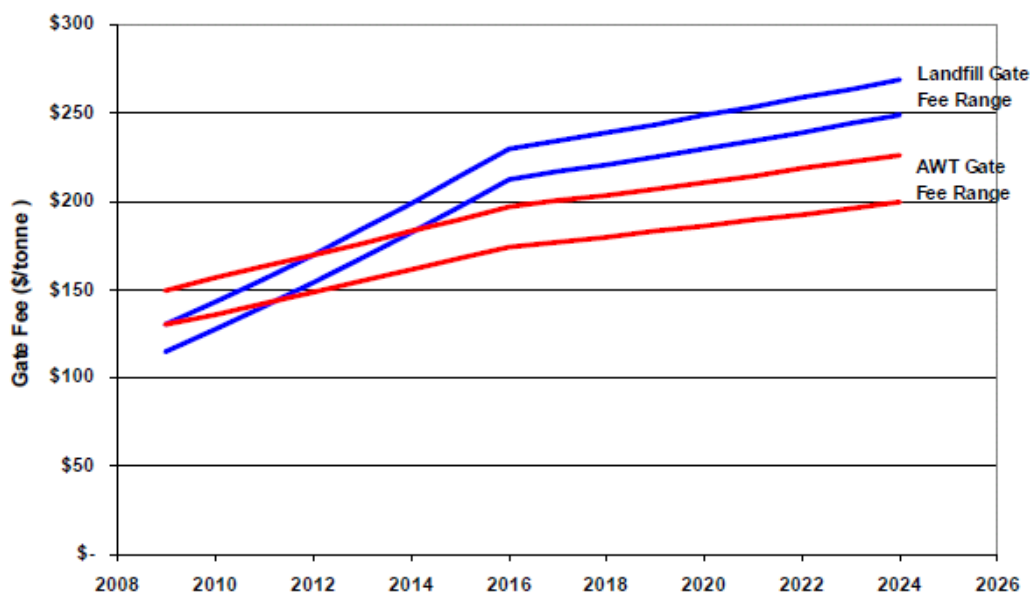
Based on this analysis, Veolia believes that an increase to the annual input rate at the Woodlawn Bioreactor has a limited capacity to influence Sydney’s residual putrescible waste market.

4.4 Pricing Signals

The waste and environment levy (levy) is one of the key policy tools within NSW to help drive waste avoidance and resource recovery by providing economic incentive to reduce waste disposal and stimulate AWTs.

Both the Richmond Report and the Wright Report suggest that the likely cross over date for landfills and AWT gate rates in the C&I waste sector is around 2014, as shown in Figure 7.

Figure 7: Landfill gate price outstrips AWT gate process driving AWT investment for C&I waste processing (Source: Wright Report)



Following this assessment, the NSW Government acknowledged that the Levy is the key market based instrument for driving greater waste avoidance and resource recovery. In a fact sheet published by the Department of Planning in August 2010, the NSW Government made the following statement:

“When Government comes to consider the applications for expansion at both the Woodlawn and Eastern Creek landfills, the waste input caps that apply to these facilities will be reviewed, with an ultimate view to phasing them out altogether. ...

The Government will have a regulatory role to place with regard to waste input caps until around 2014 to ensure the right balance between demand and supply of approved landfill space is maintained. Beyond 2014, the waste market will operate freely, with the NSW Waste and Environment Levy alone driving change and investment in resource recovery and recycling.”

Consistent with this statement, the Eastern Creek landfill extension has since been approved. In its regulatory role of assessing this application regarding the Woodlawn Bioreactor, it is expected that a similar approach will be taken whereby the annual input caps for the Woodlawn Bioreactor would also be removed.

Once the waste market is operating freely, the drivers regarding the pricing of residual waste in Sydney are likely to be the increasing scarcity in approved disposal capacity, resulting in a diminishing commodity, which under typical market conditions is likely to result in an increase to the value of the commodity.

The Wright Report was published in 2009, after the initial application to increase the tonnage at the Woodlawn Bioreactor has been made, and states:

“Removal of the annual input caps would have no adverse impact on other resource recovery initiatives such as kerbside recycling and C&I dry material recycling because the caps are not the current driver of resource recovery by third parties (local government and waste generators).

Removal of the annual input caps would not result in increased putrescible waste being sent to landfill as the existing input caps have had no impact on the amount of waste disposed, nor have they been a driver of investment in waste processing technology.

The underlying contract landfill gate price leaves little margin for further gate price cuts. In any case, it is clear that factors other than the annual input caps are the drivers of waste generation. And the scale of the announced annual escalation rate for the Waste and Environment Levy will be the real driver of an accelerating AWT uptake rate.”

Therefore, Veolia does not believe that the proposed tonnage increase at the Woodlawn Bioreactor would have an influence on the gate rates for other AWT or disposal facilities, or the predicted cross over between landfill and AWT gate rates of around 2014.

4.5 *Potential Annual Input Rates*

Given this analysis, the driver for increasing the annual input rate at the Woodlawn Bioreactor is likely to be the ability for Veolia to physically deliver the additional waste to Woodlawn Bioreactor. Based on this information, Table 6 provides a potential outline of the timing for the increase in the total annual input rate at the Woodlawn Bioreactor.

Table 6: Potential Timing of Annual Input Rates

Timing	Maximum Input Rate (tonnes per annum)
Pending determination of this Project	500,000
Upon approval of this Project	700,000
One year after approval of this Project	900,000
From 2014	1,130,000

5 Conclusion

This report shows that a suitable level of recovery of waste is achieved through the overall Woodlawn Bioreactor process and that the consent authority can be satisfied that the considerations set out in clause 123 of the Infrastructure SEPP have been adequately addressed.

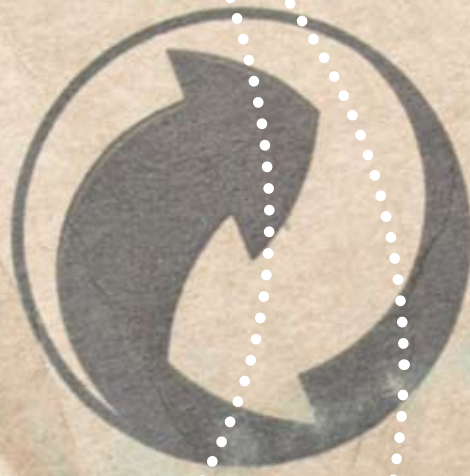
Further, the Woodlawn Expansion Project is not expected to have a significant impact on the putrescible waste market on the basis that the demand exists for the development of additional residual waste facilities, with the exhausting of approved disposal capacity likely to be the most significant influencing market factor.

Woodlawn will continue to be only a part of the solution for Sydney's putrescible waste. The findings of independent analyses were that beyond 2014 the market will operate freely due to the cross over between landfill and AWT gate rates, enabling annual input caps for individual facilities to be phased out altogether. This is reflected by the potential timing for the increase in the total annual input rate at the Woodlawn Bioreactor.

Appendix A Examples of Information Regarding Veolia's Resource Recovery Initiatives

- *Renewable Energy Report*
- *RecyclePak Brochure*

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RecyclePak

A Smarter Way to Recycle



“Recycling waste makes a positive contribution to climate change”



What is RecyclePak?

RecyclePak is Veolia's newest service offering and provides businesses with a flexible waste and recycling solution.

The RecyclePak system aims to not only reduce the amount of reusable materials being sent to landfill, but also allows businesses to reduce their waste management costs.

What are the Benefits of RecyclePak?

- › Complete flexibility to suit your individual business needs
- › Diverts waste from landfill
- › Reduces waste-related greenhouse gas emissions
- › Increases recovery of reusable materials including plastic, glass, aluminium cans etc.
- › Quick and easy to implement

Why Recycle?

- › Aluminium – Manufacturing aluminium cans using virgin materials uses 20 times more energy than cans made from recycled aluminium.
- › Paper – Recycled paper pulp uses 60-70% less energy and 55% less water than manufacturing from virgin pulp.
- › Plastics – Producing new plastic from recycled material uses only two-thirds of the energy required to manufacture plastic from unused materials.
- › Food organics – turning 1 tonne food waste into compost saves 800kgs of GHG emissions.



Implementing Veolia's Unique RecyclePak System

The RecyclePak system can be easily implemented into your business. Veolia provides you with the flexibility to choose the level of recycling you require, based on your individual waste and recycling needs.

Choose from the following RecyclePak solutions:

StarterPak	Suitable for businesses with small waste volumes.	General Waste Bin + Paper/ Cardboard Bin
SilverPak	Suitable for businesses looking to implement a basic waste and recycling system.	General Waste Bin + Paper/Cardboard Bin + Commingled Bin
GoldPak	Suitable for businesses looking to implement a comprehensive waste and recycling system.	General Waste Bin + Paper/Cardboard Bin + Commingled Bin + Choice of Bin (Food/Organics, Timber, Metal, Plastics, etc.)
PlatinumPak	Suitable for businesses looking to include a holistic educational and reporting component to their comprehensive waste and recycling system. Would suit businesses with high volumes of waste across major waste streams.	GoldPak + Education Services + Greenhouse Gas Reporting Tool

RecyclePak Waste Streams*



Bin Sizes*

Rearlift Collection		Frontlift Collection		Bulk	Compaction Systems
120-240L	660L-1100L	1.5m ³ -4.5m ³		2m ³ -15m ³	<ul style="list-style-type: none"> - 5m³-35m³ - Optional bin lifters - Operator training

*Availability of Bin sizes and RecyclePak waste streams varies across all States.



GHG Estimator – Helping Businesses Combat Climate Change

Veolia has developed a unique Greenhouse Gas (GHG) Estimator to help Australian businesses understand and minimise waste-related GHG emissions. The GHG Estimator provides a customer with a waste stream by stream breakdown of GHG emissions for existing services plus it demonstrates the positive GHG impacts from diverting waste to resource recovery.

Recycling Education Services

Veolia offers our customers an education component to assist in ensuring their RecyclePak system is utilised to its full capacity. Veolia provide bin signage, posters and informational material on how to recycle waste more effectively. We also provide interactive, face-to-face training sessions for small to large groups of employees.

Veolia – A One Stop Shop

Veolia also provide collection, recycling and disposal services for:

- > Confidential / secure documents
- > Hard waste / office clean ups
- > Sanitary waste
- > Medical waste (including sharps containers)
- > Grease trap
- > Waste oils
- > Hazardous liquid waste
- > Electronic waste (including printers, PCs, monitors)
- > Printer cartridges
- > Fluorescent lamp / batteries / mobile phones
- > Building and construction waste
- > Glass
- > Polystyrene
- > General waste



Want more information about Veolia's services, simply contact us:

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♻️ 100% recycled paper waste

Appendix B Material Recycling Facility Declaration Letter

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Planning

Contact: Felicity Greenway
Phone: 02 9228 6338
Fax: 02 9228 6466
Email: felicity.greenway@planning.nsw.gov.au
Our ref: MP10_0013

Mr Doug Dean
Managing Director
Veolia Environmental Services
Level 4, 65 Pirrama Rd
PYRMONT NSW 2009

Dear Mr Dean

Horsley Park Material Recycling Facility Declaration as a Major Project

Please be advised that on 29 January, 2010, the above project was declared a 'major project' to which Part 3A of the *Environmental Planning and Assessment Act 1979* applies.

Please submit your Preliminary Environmental Assessment (PEA) at your earliest convenience. Once you have submitted your PEA, we will prepare the Director General's Requirements (DGRs) in consultation with the relevant authorities.

If you would like any more information on this process, please contact me on (02) 9228 6338 or by email, felicity.greenway@planning.nsw.gov.au.

Yours sincerely

Felicity Greenway 2/2/2010

Felicity Greenway
Senior Planner
Major Development Assessment