SENATE STANDING COMMITTEE ON ENVIRONMENT, COMMUNICATIONS AND THE ARTS

Inquiry Into the Management of Australia's Waste Streams

Submission by WSN Environmental Solutions

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1. Overview of WSN Environmental Solutions

WSN Environmental Solutions ('WSN') is a provider of waste, recycling and resource recovery services. Based in New South Wales, it manages 75 per cent of Sydney's household waste and recyclables.

Its operations include:

- Australia's largest network of 12 recycling and processing facilities, including two advanced waste treatment facilities that process household waste (one of which is under construction);
- The biggest producer of landfill gas to energy in Australia (generating enough baseload power for 35,000 households);
- Processing 400,000 tonnes of recyclables into commodity streams and 150,000 tonnes of compost per year;
- Four modern landfills; and
- Waste collection and management for local government as well as for business.

Since 2001 WSN has been a state-owned corporation. In 2006-7, WSN's total revenue was $204 million, ($162.8 mil excluding the NSW Government waste levy), with a profit of $15 million.

WSN offers comments in regard to the following aspects of the Inquiry:

- Trends in waste production;
- The effectiveness of existing strategies to reduce, recover and reuse waste;
- Potential new strategies to improve waste minimisation and resource recovery;
- The economic, environmental and social costs and benefits of such strategies; and
- The Drink Container Recycling Bill, 2008.

Firstly, however, WSN provides in Section 2 below a summary of its position on a number of salient waste management issues.

2. WSN Position on Salient Waste Management Issues

a) ***GHG emissions of waste from landfills*** is the most important waste and recycling issue. All waste and recycling policy should be viewed through this lens.

WSN advocates:

- The phasing out of untreated degradable organic carbon to landfill over the next 10-15 years;
- Compulsory landfill gas capture systems;

- A national tax on greenhouse gas (GHG) emissions or ETS on **future** (post 2010) waste to landfill or complementary measures;
- An ability to claim offsets for GHG emissions saved on waste landfilled before 2010;
- Recognition of embodied energy in recyclable material in the ETS;
- Continuation of the RECS scheme under MRET to operate alongside ETS; and
- Effective E-waste and hazardous waste collection, as the presence of these materials hamper efforts to recycle organics from mixed waste.

b) ***CDL*** will increase recycling rates, however:

- The total cost to the community should be considered;
- The costs are not certain and are dependent on scheme design; and
- The cost impact on kerbside recycling is uncertain and dependent on many variables.

WSN advocates:

- Completion and disclosure of the proposed design of a national CDL scheme to allow judgement of the costs and benefits; and
- An independent national report into the costs and benefits of the designed CDL scheme versus other ways to reduce waste to landfill and conserve resources.

c) Australia needs an effective, compulsory ***e-waste and household hazardous waste recovery system***, because:

- The waste is toxic and presents a risk;
- It is a waste of valuable resources; and
- The presence of this material in the waste stream hampers the recycling of organics.

d) ***Plastic bags***:

WSN supports reducing all forms of wasteful consumption, however plastic bags are not a major part of the waste stream and there are other waste issues that are more important to devote time, money and effort to.

3. Trends in Waste Production

In Australia, solid waste generation has risen at around 6% a year on average since 1996 (Aust. Bureau of Statistics). This is a rate faster than the Gross Domestic Product. Another study shows Victorian's produced 3.5% more waste and recyclables in 2005-06 than in the previous year (Sustainability Victoria research). Similarly, in Europe the amount of waste being generated is also growing faster than the Gross Domestic Product (GDP) and less than a third of it is recycled (2005).

Increases in Australia's population and in consumption levels over the period are likely to have contributed to these increases. Some of the growth in waste generation, especially in per person terms, has also been driven by changes in population demographics. Australians are living in smaller household groups, with the average household size shrinking by 14% over the 20 years to 2001. As well, homes are becoming more luxurious with the ownership of more durable goods per person and an increase in the consumption of smaller-serve goods (which have higher packaging-to-product ratios than larger-serve goods).

Similarly, the increasing dispersal of settlement (urban sprawl) and changes in lifestyle are likely to be contributing to an increase in per person waste generation. Increased distances between home and work and rising incomes are decreasing the amount of time spent on domestic tasks, such as cooking and cleaning and increasing the purchase of prepackaged food and time-saving devices, such as coffee makers and dishwashers.

Despite the increases in the amount of solid waste being generated in Australia in recent years, the overall trend is towards reduced landfilling and increased recycling of waste. In 2002–03, 30% of municipal waste, 44% of commercial and industrial waste and 57% of construction and demolition waste was recycled.

The biggest conundrum facing waste management policy makers is how to break the nexus between ever increasing GDP and increasing consumerism and consumption of resources. The issue is accentuated by the fact that 'waste' is deemed to be of little or no value hence society wishes to have it managed as cheaply as possible.

4. The effectiveness of existing strategies to reduce, recover and reuse waste

a) The drivers for change

Disposing of most waste types in a landfill is commercially more attractive than recycling. Modern waste management strategies that aim to reduce, recover and reuse waste have to acknowledge this fact first and foremost.

State government levies on general waste are intended to drive alternatives to landfill (as their incidence is on per tonne landfilled). However, in most states these levies have been relatively insignificant and have failed to provide the economic drivers to either minimize waste generation or to facilitate the investment in resource recovery technologies.

The NSW Government is to be applauded for taking the initiative of setting a relatively high levy rate when compared to the rest of Australia (currently $38.60/tonne, with annual $6 increases above CPI, and will be approximately $56/tonne in 2011).
The levy makes adoption of advanced waste treatment technologies (AWT) a potentially viable option to landfilling and hence opens up the opportunity to recover more materials and move towards the 66% recovery target from municipal solid waste that has been set for 2014. While the levy is certainly driving more resource recovery from waste, it remains to be seen what impact this economic stimulis will have on the volume of waste being generated across all three main waste streams, and its rate of growth.

A related challenge to be addressed is that the amount of waste per productive unit of output by business and industry is relatively small, hence there is only a small and relatively insignificant margin or incentive to warrant waste minimization and resource recovery. Thus price/cost for the waste generator is not necessarily the answer on its own. WSN believes that challenging regulation, reflective of our modern carbon-constrained world and mandated extended producer responsibility for problem wastes are also necessary to drive the behavioural changes that are required.

b) Advanced waste treatments
In today's world, technologies are available to efficiently and effectively recover about 70% of materials from household residual waste. They can extract additional recyclables, create products including compost, combustible fuel, water and green energy. However, the right economic incentives are essential if the waste management industry is to invest in these facilities.

A recent study suggests that Australia needs approx $4 billion of investment in modern waste management infrastructure if it is to meet the various state government waste reduction and recycling targets (*Waste Management News,* 21 April 2008).

Alternative waste technologies (AWT) is likely to play a significant role in NSW pursuing its target of 66% recovery of municipal solid waste by 2014 (the current recovery rate is approx. 40%).

With leadership from WSN, the Sydney municipal solid waste market now has a number of AWT options, namely one facility operating as a sub-contractor to WSN, another under construction by WSN and planning approval being sought for others. Aside from WSN, other companies are also adopting AWTs.

c) Extended producer responsibility
Voluntary efforts by manufacturers to take back disused product has generated negligible benefit and additional mandated approaches are required, particularly for problem wastes that cause contamination of organics and prevent recovery of that component.

d) The relative priorities of different wastes
From the perspective of a provider of waste management services, WSN does not see plastic bags as a major priority, given they only account for about 0.1% of all waste by volume. We believe finding ways and means to better recover organics from the municipal solid waste stream for energy and/or compost products is the most important issue. Management strategies in this regard would be aided by targeting the removal of material such as household hazardous and toxic waste and e-waste which hinder and make more expensive the organics recovery process.

Strategies to facilitate greater recovery of materials from the commercial and industrial (C&I) stream should also be a priority.

e) Seed funding for recovery and recycling initiatives
Seed funding of new infrastructure for resource recovery and marketing development is most beneficial, helping to kick start worthwhile initiatives. For instance, financial support for the recovery of electronic waste, paint and mattresses is desired.

The Infrastructure Funds of EcoRecycle Victoria are also a useful model in this regard.

5. Potential new strategies to improve waste minimisation and resource recovery

a) Focus on the carbon footprint of the various waste management options
Currently 8.5 million tonnes of organic material, (that is, some 47% of the total waste volume), is disposed in landfill each year across Australia. In NSW alone, 4.3 million tonnes of food, garden, paper and wood waste is generated annually and only 41% of this is recycled.

When organic carbon is placed in a landfill it degrades, producing a gas that is 50% methane and 50% CO_2. (Methane has 21-25 times the global warming effect of CO_2). Most landfills have inadequate landfill gas capture and management systems (capturing only about half of the gas generated) and some have no such system at all. The best facilities are likely to be capturing no more than 80% of the gas. As a result of this situation, some 15 million tonnes per annum of GHG emissions occur from landfills.

A recent study by Warnken ISE points to the potential to deliver nearly 35 million tonnes of GHG abatement through innovative resource recovery (both organics and inorganics) and improved landfill gas capture practices. That adds up to a reduction of nearly 7% in Australia's total GHG emissions – equivalent to taking all cars off our roads.

This can be achieved by limiting the amount of organic material going to landfills by diversion to large scale composting and advanced waste treatment and better management of the inorganic materials that can be recovered and recycled, hence capitalizing on their embodied energy savings.

In summary, the factors that should be considered regarding the GHG performance of competing waste management technologies include:

- Optimizing the recycling/recovery of materials (fit for purpose);
- Optimizing energy recovery;
- Provision of a totally enclosed system; and
- Production of fit for purpose composts and soil conditioners.

A recent study by Eunomia Research & Consulting in the UK has found that treating residual waste (that is, municipal solid waste after recyclables have been removed) using mechanical biological plants with anaerobic digestion generating heat and electricity has the lowest GHG impact out of 24 processes. Landfilling waste had a five-fold greater impact ('GHG Balances of Waste Management Scenarios', January 2008).

Thus it is recommended that the disposal of degradable organic carbon in landfills (that is, food, garden, paper and wood wastes) be phased out. This phase-out could be achieved by:

- Using a United Kingdom style landfill avoidance trading scheme which sets a cap on how much organic waste councils can send to landfill each year (and being able to trade any credits available under the cap);
- Using substantial landfill levies to incentivize non-disposal and pretreatment;

- Making landfills liable for fugitive emissions from future landfilled material under the Emissions Trading Scheme (ETS) post 2010, by including them as 'stationary emitters' or including the avoidance of the landfilling of organic waste as a carbon offset category;
- Making credits available under the ETS for remediation work undertaken on existing landfills and on pre-2010 landfilled waste which reduces fugitive emissions;
- Recognition of the embodied energy in recyclable material in the ETS;
- Continuation of the RECS Scheme under MRET to operate alongside the ETS; and
- Ensuring all landfills have a performance bond to cover future costs associated with landfill gas management and remediation.

See Attachment 1 for media commentary on a recent speech by the CEO of WSN, Mr Ken Kanofski.

b) Modern regulations that suit a carbon-constrained world
WSN supports the development of waste legislation which defines waste and recovered resources separately and appropriately so that non-waste materials can be extracted from the waste stream without being captured by the strictures of the current definitions of waste. This will streamline approval processes for infrastructure development and material usage.

For instance, as fossil fuel becomes more expensive, and as businesses look to reduce their carbon footprint, it is recommended that government regulations be developed that allow the high calorific fraction of C&I waste to become Refuse Derived Fuels that can be used as a fuel substitute. Such an approach is a win for avoided fossil fuel use and a win by way of a reduced carbon footprint for that facility.

Also, with increased recovery from the organics stream there are various new classes of products being created. These outputs, generally resulting from AWT and increased green waste separation, have potential to return carbon to soils in the agricultural sector. Regulations that address the new variations of product are desired.

c) Regulation for extended producer responsibility
It is recommended that governments regulate for the implementation of extended producer responsibility (EPR) schemes for consumables that contain hazardous materials, for example, electronic equipment (personal computers, televisions, mobile phones, etc), batteries, and gas bottles. Whitegoods recovery also needs greater accountability by the manufacturers.

The voluntary approach by the relevant industries has generated less than satisfactory benefits.

d) Stronger economic incentives for waste infrastructure and sustainability practices
Most state governments have set ambitious waste minimization and resource recovery targets. Achieving them will be strongly dependent on the adoption of advanced waste treatment facilities and enlightened regulation that facilitates moves towards achieving a

lower carbon footprint. The industry is unlikely to deliver these facilities and outcomes in a timely fashion unless it receives the right economic and regulatory signals.

Research suggests that Australia needs $4 billion of investment in modern waste infrastructure (for example, 50 advanced waste technology facilities, 50 commercial and industrial (C&I) 'dirty' material recovery facilities, a 20% growth in kerbside recycling and effective extended producer responsibility) to achieve the targets set by state governments.

In NSW for instance, the biggest waste stream is C&I waste (nearly 50% of the total) yet only 35% of this stream is recycled. One of the dilemmas is that the costs to improve recovery from the C&I stream via mechanical means are prohibitive under the current economic framework. See Attachment 2 for a recent glass recycling joint venture initiative undertaken by WSN.

With regard to organics recovery, urgent attention is required to find a funding solution to transport the various product types to suitable agricultural lands. Given the financial commitment that Governments have recently made in the area of salinity and water management, WSN suggests that government consider providing assistance to facilitate the city-to-country supply of composts and other soil conditioners.

Government initiatives that stimulate the markets for materials with recycled content is also to be encouraged.

e) The pooling of waste volumes by councils
Traditionally, local government councils have managed the wastes within their jurisdictional boundaries. However, economies of scale can be generated where regional groupings of councils pool their waste volumes and take advantage of joint tendering. WSN has supported councils rights to joint tender, with the important rider that long term landfill deals be avoided, on environmental grounds.

6. The economic, environmental and social benefits and costs of such strategies

a) The benefits of advanced waste treatment (AWT)
AWT is a key to optimizing recovery of materials from the municipal solid waste stream.

The benefits of AWT include:

- mechanical biological treatment processes such as anaerobic digestion deliver an excellent carbon footprint;
- only limited land requirements, hence reduced exposure to land costs;
- revenue is created via the sale of output products. With landfilling, generally the only revenue is from the gate fee and landfill-gas-to-energy electricity sales to the grid. With AWT, revenue is gained from the gate fee and recovered recyclables and composts, as well as greater generation of green electricity;
- electricity and water usage costs are lower, as both are sourced from the waste itself, rather than from external providers;
- the waste levy only applies to the landfilled residual, which is approx. 30% of the original weight; and

- remediation and aftercare are not necessary for the recovered portion, and the cost of managing the residual landfilled portion is less because it is largely inert.

Also, given that the waste is actively processed, AWT creates about four times as many jobs per tonne of waste compared to landfilling.

These factors combine to help make AWT more competitive in today's marketplace. See Attachment 3 for information about WSN's new Arrowbio facility under construction at Macarthur Resource Recovery Park.

7. The waste minimisation and resource recovery policy priorities into the future

a) Carbon pricing and management

WSN believes that the ever-increasing political emphasis on climate change will remain for some years to come and that this agenda, together with measures such as GHG reduction targets and trading schemes, will drive higher resource recovery rates and the adoption of more carbon friendly technologies to treat residual waste. WSN supports the waste sector being included in the ETS – with liability for future waste, not retrospectively.

Key future strategies will involve treating residual waste (ie municipal solid waste after the recyclables have been removed) using mechanical-biological treatment plants that generate heat and electricity. Such facilities have a low greenhouse gas impact.

The attention on GHG impacts now avails us with a new opportunity to revisit such matters as utilising the energy embedded in plastics and some fractions of the commercial and industrial waste stream. This energy could be utilised by industry as a fossil fuel substitute and hence reduce the carbon footprint of the business.

Modern waste management strategies should strive to achieve the following:
a) generate the lowest carbon footprint;
b) optimise energy recovery;
c) optimise materials recycling/recovery;
d) provide a totally enclosed system; and
e) produce valuable soil conditioner.

b) Extended producer responsibility

WSN supports EPR systems for high priority wastes (that is toxic or difficult to recycle). We believe the producer should take responsibility for the product at end-of-life and the consumer should pay for this as part of the upfront purchase price ('user pays') rather than leaving it as a problem to be solved and funded by rate or tax payers. We believe EPR places the economic drivers in the correct place.

However, there is one caveat. Society needs to consider the cost and efficiency of collecting the charge through EPR verses collecting it as a rate or tax. Where the cost of an EPR system is much higher than the cost of a tax or rate-based system, and the

incidence of the cost burden is unchanged, then an EPR scheme would seem difficult to justify on economic efficiency grounds.

8. Drink Container Recycling Bill 2008

As a provider of various kerbside recycling and processing services, WSN proffers the following views on the proposed national container deposit scheme:

- Businesses that have invested in current kerbside recycling systems in good faith must be treated fairly in the transitional arrangements to a national scheme, including compensation if necessary;

- The business case (costs and benefits) for a national container deposit scheme remains unclear. It is imperative that details of the design of the proposed scheme be released for public comment to allow interested parties to:
    a) assess the economics of the scheme; and
    b) assess the impact of the scheme on the current kerbside recycling system;

- An independent report on the costs and benefits of the proposed national scheme compared to the status quo is required.

    Details required include:
    a) how many collection/return points will there be (implications for recovery rates and costs)?
    b) what materials may be returned?
    c) who will sort the commodities at the return point (customer or the business)?
    d) how will cleanliness of the returns be assessed and managed?
    e) what will be the administrative cost of the system?;

- It is our view that even with a national CDL scheme, kerbside collection will still be required. Whilst overall recycling rates will increase, the total system costs per tonne recovered will be higher than kerbside and hence a full public discussion is required regarding the environmental, social and economic costs and benefits to society of this move. It could be, for instance that better overall outcomes can be achieved by targeting a reduction in the amount of organics to landfill or by investing more to improve the current system;

- The kerbside material remaining for WSN to process will feature relatively more broken glass and contamination as a percentage of input, which are both loss-makers. On the other hand, the value of some products that WSN can recover and sell is likely to rise – providing it can secure enough volume to compensate. Hence, a key question from a service provider's perspective is "will the increased revenue per unit for some containers offset the drop in volume and the higher handling costs?"; and

- A national scheme is preferred

ATTACHMENT 1

Refocusing the waste debate on carbon

Waste Management & Environment media

Wednesday, 7 May 2008

"[Climate change] is the lens through which we should see all of our waste management programs and policies," said WSN Environmental Solution's CEO Ken Kanfoski at the Enviro 08 conference earlier this week.

WSN's Macarthur Resource Recovery Park

He believes focusing on carbon issues will help policy makers get on track to make important decisions about waste rather than having decisions derailed by "sideline issues" such as plastic bags.

Climate change is widely considered the greatest environmental challenge of modern times, and waste can play a significant role in providing relatively cheap carbon abatement. While only responsible for around 2.7% of Australia's current emissions, it could quite easily reduce the nation's carbon footprint 6-7% if a holistic view of savings was taken – such as looking at the embodied energy benefits of recycling. If left unaddressed while the rest of Australia moves to a 60% emissions cut, by 2050 waste would be responsible for 45% of total emissions.

Nowhere will the financial impacts of waste's climate liabilities be more keenly felt than in the local government sector. Despite this, many seem to be ignoring the issue. In a study of five councils with published plans for carbon neutrality, WSN found none had looked at waste impacts, focusing instead on vehicle fleets and power use.

"Waste is local government's number one climate change issue," Kanofski asserts, adding that – at the end of the day – issues over who is liable for emissions from waste are a moot point: the generator will always end up paying, either directly or through increased costs passed on by waste operators.

He outlined the case of a theoretic "Ecoville" council, which would produce around 16,700 tonnes of CO2e annually if it landfilled all its waste, but could abate nearly 20,000 tonnes of CO2e annually – easily enough to offset all its other impacts - by moving to the less carbon intensive option of processing waste though mechanical biological treatment followed by anaerobic digestion – such as the ArrowBio facility WSN is constructing in Sydney's south west.

In Sydney at least, he says it "ends up a zero sum game" in terms of cost between AWT and landfill, while in Melbourne the AWT option would cost $0.80-1.50 extra per head per week.

Obviously using the platform as a selling point for its current technology, Kanofski also called for waste to energy plants to process commercial and industrial waste, saying current recovery targets will require mixed waste processing in that sector, and refuse derived fuel is one of the most viable options.

ATTACHMENT 2

Glass recycling

Recycled Glass Solutions (NSW) is a joint venture company between Australian Glass Technologies and WSN Environmental Solutions. The business produces high value glass products from glass fines which are a by-product of the sorting of co-mingled recyclables. Glass fines would have previously been disposed of in landfill or used as a low value replacement for sand. The business produces a range of higher value products such as abrasives, material for brick and tile manufacture and water filtration. Recycled Glass Solutions' products meet the high quality standards established by manufacturers.

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The project at this stage has the capacity to prevent approximately 50,000 tonnes of glass fines from going to landfill. The end products have a flow-on effect to industry through reducing imports of abrasives, better water filtration properties than existing materials and better performance criteria as an additive in brick and tile manufacture. The incorporation of recycled glass in manufacturing often has a significant benefit in energy consumption and reduced use of raw materials.

ATTACHMENT 3

Macarthur Resource Recovery Park and AWT
In December 2005, the four councils of the Macarthur region (Camden, Campbelltown, Wingecarribee and Wollondilly) awarded WSN a contract to manage all these councils' putrescible, recyclable and green waste.

WSN proposed that these streams be processed at new facilities to be built at its Jacks Gully Waste and Recycling Centre. WSN is currently seeking development approval for the project. If approved, the new Macarthur Resource Recovery Park will showcase WSN's Ecolibrium concept as the largest, fully integrated waste management site in Australia.

These four councils wanted a solution that would work with their existing collections, treat the waste locally, and provide a "closed loop" approach to resource use by returning as many products as possible to the community and local councils. The Ecolibrium AWT solution proposed for the Macarthur Councils was different to that we chose for Eastern Creek. Two reasons for the different technology offering are the different waste composition (the Macarthur Councils collect green waste separately whereas the Eastern Creek AWT councils generally do not have separate green waste collections), and the smaller scale of the Macarthur development.

The centrepiece of the Park is the Ecolibrium Mixed Waste Facility, using world leading Arrowbio technology from the Arrow Ecology Group in Israel. Its unique water-based process generates significant volumes of green energy while simultaneously facilitating high rates of waste diversion from landfill. Water used by the facility will be extracted from the waste.

The site will also include a fully enclosed tunnel composting system to process 30,000 tonnes of organics each year, a Materials Recycling Facility for sorting up to 30,000 tonnes of recyclables each year, a resident drop-off area, a community visitor and education centre, a "Clean-Up waste" recovery facility and a landfill for inert waste. The development will also assist the local economy, providing between 30 and 50 jobs during construction and 40 full-time jobs when then plant is operational.