NSW Legislative Assembly Standing Committee on Public Works Inquiry into Municipal Waste Management

Submission from WSN Environmental Solutions

April 2006

WSN ENVIRONMENTAL SOLUTIONS

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Part 1: About WSN Environmental Solutions

WSN Environmental Solutions has had thirty-five years' experience providing reliable and responsible environmental services to the greater Sydney area and beyond.

Our range of services includes:

- collection of waste and recyclables
- processing, recycling and recovery of resources from waste streams
- waste disposal
- education, advice, industry programs and other related services
- general contract services related to waste.

We own and operate Australia's largest and most advanced waste management network consisting of ten waste recycling, processing and disposal facilities. We also offer access to Sydney's first large-scale Alternative Waste Technology (AWT) facility for household waste, located at Eastern Creek, and have recently been awarded the contract to build another AWT plant in south-western Sydney.

WSN Environmental Solutions is the only company in Sydney to offer a small vehicle drop-off service for a full range of household waste. We host around 700,000 small vehicle visits to our Sydney network annually.

The WSN network has consistently provided waste disposal and treatment services to Sydney for over 35 years. WSN is proud of its consistent record of constant availability for this essential service, 365 days a year.

WSN's operating facilities are highly engineered, modern, employ advanced technologies and are regulated by strict environmental and planning controls.

WSN is the only waste and recycling business in Australia to publish independently audited sustainability performance indicators developed in accordance with the Global Reporting Initiative and compliant with the AA1000 assurance standard. These performance indicators are published in our Annual Reports. WSN is also the first Australian waste and recycling company to publish its ecological footprint (2004-5 Annual Report).

The business currently employs around 340 people and is wholly owned by the NSW Government. WSN was made a State-Owned Corporation in 2001. It operates profitably and is required to act in accordance with the Government's Guidelines for Competitive Neutrality. All of WSN's business is fully contestable and it receives no funding from NSW taxpayers.

In 2004-5, WSN's revenue was $192million.

Our Charter

The Waste Recycling and Processing Corporation (trading as WSN Environmental Solutions) was corporatised on 1 September 2001 under the *Waste Recycling and Processing Corporation Act 2001*.

The principal functions of the Corporation are to:

- establish, maintain and operate waste facilities, secondary resource facilities and related facilities
- conduct business or provide services relating to waste and secondary resource recovery
- provide waste management services, secondary resource management services and related services
- research, develop and implement alternative technologies for managing waste
- trade in waste and secondary resources.

In exercising its functions, WSN must strive to achieve international best practice in waste management, acting in accordance with the principles of ecologically sustainable development.

On March 21, 2005 the organisation changed its trading name from Waste Service NSW (a name it had operated under since 1992), to WSN Environmental Solutions.

Our Sydney facility locations

Landfill locations – Lucas Heights, Eastern Creek, Belrose and Jacks Gully.
AWT locations – Eastern Creek, Jacks Gully*
Waste and Recycling Centres (transfer stations) – Belrose, Auburn, Artarmon, Ryde, Rockdale, Seven Hills and Chullora.

* seeking planning approval following award of tender on December 5, 2005

WSN – a brief history 1971- 2000

In 1971, WSN was established by the NSW Parliament as the Metropolitan Waste Disposal Authority (MWDA). This was done in response to a need to improve waste disposal arrangements in the Sydney Metropolitan Area (SMA).

It was intended that the MWDA would regionalise waste disposal in Sydney, giving each Sydney council the ability to have an economically and environmentally sound waste disposal system, and to raise the environmental standard of waste facilities. Prior to this, councils ran putrescible landfilling. However, some councils were reluctant to give neighbouring councils access to their facilities, preferring to preserve the local capacity for their ratepaying community. The establishment of the MWDA therefore sought to create a Sydney network that would provide each council access to facilities for disposal of waste. This encouraged the consolidation of putrescible waste facilities, as opposed to a larger number of smaller putrescible landfills (which emerged in Melbourne around the same time, for example).

In addition to its statutory monopoly over putrescible landfilling in the SMA, the MWDA also held regulatory powers, allowing it to approve the development of new waste facilities.

Throughout the late 1970s and the 1980s, demand for disposal capacity rapidly increased. In particular, commercial and industrial waste increased from approximately 500,000 tonnes in 1977 to 2.2 million tonnes twelve years later. This put waste management squarely on the community's agenda. In its regulatory role, the Disposal Authority adopted the waste management hierarchy – very similar to the current State Government waste hierarchy – that emphasised actions "higher up" the chain of production to eliminate the rising "end-of-pipe" volumes. This was in early 1989.

In 1989, the new State Government changed the organisation's name to the Waste Management Authority (WMA). This change reflected the trend toward the management of waste (including minimisation and product stewardship) as opposed to systems entirely constituted by disposal to landfill. In its 1990 strategy, the WMA focussed on integrated waste management and priority was given to reduction at the level of production. It was clear from stakeholder consultation that targets were needed to drive waste minimisation policy. WMA proposed targets complemented by a "carrot and stick" approach to changing behaviours.

In 1992, a significant shift in the evolution of the organisation occurred. Most of the Authority's regulatory and policy functions were given to the Environment Protection Authority (EPA, now Department of Environment and Conservation). The Authority took on the sole role of network operator, and acquired a new official name (Waste Recycling and Processing Service), but thereafter traded as Waste Service NSW.

In 1994, WSN pioneered the first large-scale generation of green electricity from landfill gas (methane) at its Lucas Heights facility.

Waste policy shifted in 1995 with the election of a new state government. The new policy reflected the change in community thinking about the state of the environment. The community expected higher standards of environmental protection, and better use of technology and waste management practice to reduce waste volumes to landfill.

A target was set (originally of 60% reduction of waste to landfill by the year 2000) and regional Waste Boards run predominantly by councillors to manage waste planning were established. Stricter licensing conditions and industry waste plans were introduced.

WSN's current network has been built over the last thirty years (see Table 1). Various facilities were operated by WSN and have since closed. These facilities must be managed for environmental effects (principally ongoing landfill gas and leachate production) for up to thirty years after closure, and are then rehabilitated and returned to the community for appropriate use. Examples of closed sites currently being managed by WSN are Thornleigh (closed 1985), Merrylands (1984) and Castlereagh (1998).

Table 1: Current Operating WSN facilities – year of opening

Landfills	
Jacks Gully	1975
Belrose	1979
Eastern Creek	1984
Lucas Heights 2	1987
Transfer Stations	
Rockdale	1979
Auburn	1984
Ryde	1985
Artarmon	1989
Seven Hills	1993
Belrose	1994
Chullora	1997
Materials Recycling Facilities	
Jacks Gully	1996
Chullora	1997
Alternative Waste Technology	
Eastern Creek AWT PPP	2004

WSN since 2000

Waste Policy

WSN's business strategy in recent times has developed to complement the concerted direction of the NSW Government waste policy. It is WSN's belief that the State Waste Strategy is a reflection of the general public's rising expectations in the area of resource recovery and facility amenity. The raising of standards in the waste sector is consistent with the general thrust of higher expectations for all industries with significant environmental effects.

The major developments impacting on WSN from the Government's Waste Strategy since 2000 have been:

- the Wright Report – *Independent Public Assessment of Landfill Capacity and Demand* (2000);
- the introduction of competition into the Sydney putrescible waste disposal sector (flagged in the late 1990s, and commenced in 2004);
- replacement of the regional Waste Boards with Resource NSW, which is now part of the DEC (2001);
- corporatisation of WSN (2001);
- the setting of new waste strategy targets (2003);
- increases to the waste levy, in particular the increases foreshadowed for the next five years (2006-2011);
- active NSW Government encouragement to councils to not sign landfill deals of greater than five years' duration (2005);
- tighter environmental controls on waste facilities, and
- ongoing NSW Government support for the extended producer responsibility principle.

Corporatisation and Competition

At the time of its corporatisation in September 2001, WSN had poor relations with its key customers (the councils), with many refusing to pay disposal bills to WSN. Financial results, organisational performance and environmental outcomes were all poor and the organisation needed a turnaround if it was to properly face the anticipated competition and changes in the waste and recycling industry.

Competition in the waste sector helped drive change at WSN.

Following corporatisation, and introduction of a new Board and management team, the key tasks were:

- improving relations with council customers,
- reducing losses and/or turning profit on some important business lines (eg materials recycling, green waste recycling and liquid treatment),
- addressing contractual, remediation and operational legacy issues;
- obtaining additional capacity via new technologies and/or additional landfill space;
- becoming a lower cost operator, - and thereby,
- improving dividend payments to the shareholder.

By 2005-6, all of these objectives had been substantially achieved:

- anecdotal feedback, formal independent surveys and tender wins suggest a positive turnaround in councils' views on WSN,
- WSN has exited liquid waste via lease of its Lidcombe plant, and the MRF losses have been reduced;
- WSN has regained control of most of its sites via insourcing at end of an outsourcing contract or negotiating early release. Some sites (Lucas Heights, Seven Hills, Auburn) remain outsourced. Insourcing has improved environmental, operational and cost performance and has made WSN much more flexible and responsive. Nevertheless some legacy issues remain;

- New putrescible capacity has been attained via additional resource recovery, better compaction, approval of additional space at Eastern Creek, successful implementation of AWT and development of a new dry waste business;
- Cost reduction at key insourced sites has led to lower costs per tonne overall.

The current WSN strategy seeks to build on the turnaround, centring on further cost reduction, diversifying service offerings and superior environmental performance.

WSN's 2005-8 Corporate Plan bases WSN's strategy on five key strategic objectives:

- Build customer satisfaction, reputation and brand;
- Continue the turnaround of the existing business;
- Diversify and grow the business;
- Continue to build capability; and
- Lead on sustainability.

An important part of WSN's strategy is to continue the development of AWT for local councils. This is part of WSN's charter in our governing Act. WSN has taken a lead in this important area.

Diversification

WSN's putrescible disposal volumes have dropped 40% on a daily average tonne basis over the past 4 to 5 years.

With the loss of putrescible disposal volume (its main line of business) to AWT and a competitor, as well as new and improved recycling systems, WSN needed to look for new ways to grow its business.

The WSN Board oversaw the move into collection of waste, AWT, resource recovery, dry waste processing and commercial and industrial waste management.

By the end of 2005-6, WSN estimates that around 30% of its revenue and profit will come from business lines that it was not undertaking at the time of corporatisation.

Technology

At the same time as competition over putrescible treatment/disposal service provider was emerging, competition was also developing over environmental outcomes and the technological options for treating this challenging waste stream. This reflected a discernible shift among local government customers in particular, who were expressing interest in AWT as a means of achieving much improved environmental outcomes, meeting their State Waste Strategy targets and delivering on their ecologically sustainable development charters.

WSN commenced a worldwide search for the best range of technologies for the Sydney market. This is discussed in detail in the next section.

Part 2: WSN - Municipal Waste to Resource

2.1 WSN's Scope of activities

WSN handles approximately 25% by weight, of all the streams of "waste" generated in Sydney. This percentage is higher when concentrating on the municipal waste stream. The DEC estimates that the total municipal waste generated in the Sydney Metropolitan Area (SMA) in 2002-3 as being 1.94million tonnes, 39% of which was recycled (DEC, "Waste Avoidance and Resource Recovery in NSW – A Progress Report 2004": 14-15). WSN processes approximately 50% of the waste collected by councils in Sydney, and about one-third of the State's volume. WSN handles all municipal waste streams including putrescible, clean-up (dry), recyclable and green waste.

Graph 1: Municipal Waste streams processed by WSN (approximate)

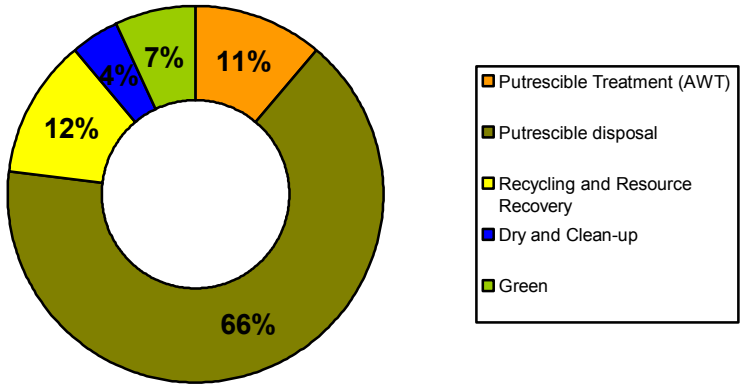


Table 1: Approximate Sydney municipal share held by WSN, by stream

Stream	Approx. Sydney Municipal Share (%)
Putrescible Disposal	75
Putrescible treatment (AWT)	100
Materials Recycling	35
Dry	15
Green	25

WSN therefore has a significant role to play in the achievement of increased resource recovery, reducing reliance on landfill, and delivery of the NSW Government's State Waste Strategy, which incorporates a goal for the municipal sector of 66% diversion from landfill by the year 2014.

WSN has strongly supported the State Waste Strategy, and has a strategic direction consistent with the Strategy. WSN is leading the shift towards treating waste as a resource.

WSN has also entered the municipal waste collection sector, and has several kerbside collection contracts – including with Fairfield Council and Parramatta Council, and soon, Ryde Council. WSN is not a major player in council collections at this stage.

2.2 Management of municipal waste – current initiatives

WSN is a commercial service provider, including to local government. WSN is therefore in the position of responding to councils' needs. WSN generally offers a range of treatment and disposal options to councils. However, the ultimate decision is up to the councils. It is WSN's experience that councils have differing

needs and priorities, and, accordingly, WSN's offerings are flexible and tailored to suit the councils concerned.

That said, it is clear that performance against the State Waste Strategy is a growing factor in councils' thinking about waste. At its inception in 2003, it was estimated by the DEC that 26% of municipal waste (all streams) was at that point being diverted from landfill. The most recent available calculation by the DEC estimates the NSW diversion rate at the end of 2002/3 at 34%. The figure for Sydney is higher (39%).

WSN has based its forward strategy on a gradual shift away from landfilling of waste to treating it as a valuable resource. WSN has already taken the lead in this area. In its service offerings to councils, WSN is mindful of its responsibility, and councils' responsibilities, to take steps to meet the State Waste Strategy target by 2014. Based on recent and anticipated developments, WSN believes that such a goal is achievable within the current policy framework, which includes targets, an escalating levy on waste sent to landfill, discouragement of long-term landfill deals and emerging EPR.

2.2.1 Alternative waste technology

It is generally accepted that the "low hanging fruit" in municipal resource recovery has been picked. It is highly unlikely that the State Strategy can be fulfilled by 2014 without a significant role for alternative waste technology (AWT) in putrescible waste management. That is, new AWT plants will be essential in moving diversion rates from current levels (estimated at about 40%) to 66% over the next eight years. We understand that the Department of Environment and Conservation (ie the Strategy regulator) supports the view that AWT is an essential element in achieving 66% diversion.

The putrescible stream is the hardest stream to recover resources from, containing mixed waste including rotting (putrescible) waste. This waste has traditionally been landfilled, and still mostly is. However, increasingly, Alternative Waste Technology (AWT, ie alternative to landfill) is used to process this stream of waste, extracting additional recyclables, creating various products including variously, compost, combustible fuel, water and green energy. Such technologies generally divert around 70% of putrescible waste volumes from landfill. WSN, with State Government support, has led the way in introducing such technology to Sydney.

Eastern Creek AWT

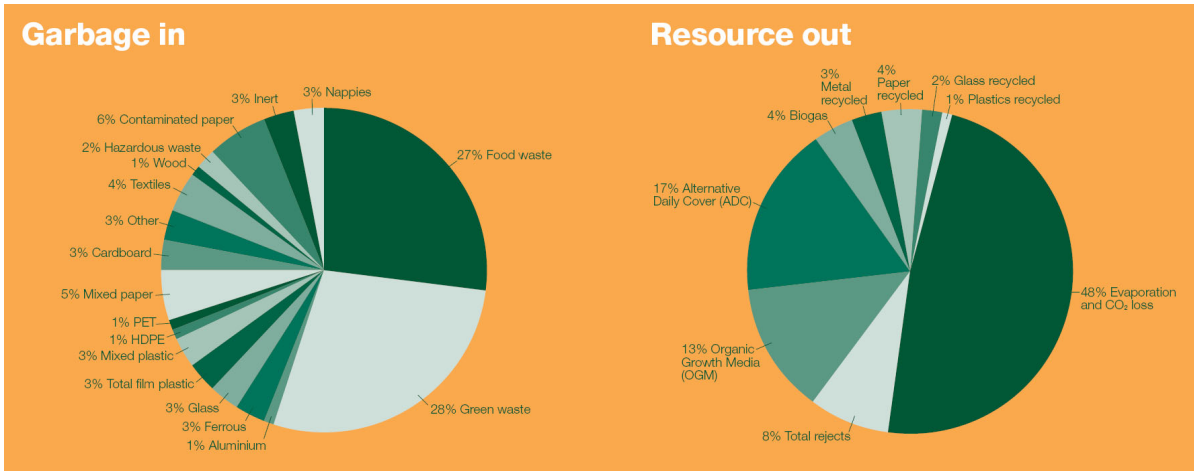
In 2001 WSN, with State Government support, commenced a search for the leading putrescible waste treatment technologies. A worldwide expression of interest attracted 48 responses from both domestic and overseas waste processing technology providers. In 2002, WSN chose Global Renewables, an Australian company promoting proven European technology, as its public-private partner for the construction of Sydney's first large-scale AWT plant. Global Renewables owns and operates the plant for the benefit of WSN's customers.

This plant, known as UR-3R (for Urban Resource – Reduction, Recovery and Recycling), was built at a cost of approximately $71million. The plant uses a four-stage Mechanical Biological Treatment (MBT) process that mechanically sorts the waste to remove recyclables and inert materials. It then biologically treats the organic materials such a food scraps and garden clippings. Waste is transformed into resources, including metals, glass, paper, green electricity, water and compost. Design benefits of the facility include:

- it is self-sufficient in energy and water;
- reduction is noise, dust and odour due to waste being handled locally and in an enclosed system; and,
- safer roads and cleaner air because waste is not transported over long distances and greenhouse gases are captured.

The plant is designed to divert up to 80% of the putrescible waste it receives from landfill. With a capacity of 175,000 tonnes, the annual amount expected to be diverted from landfill is equivalent to the contents of about 20,000 garbage trucks. This large plant, of itself, is expected to increase the statewide volume of municipal waste diverted from landfill by about 4%. In other words, this alone represents another 4% gain towards the 2014 target of 66% diversion.

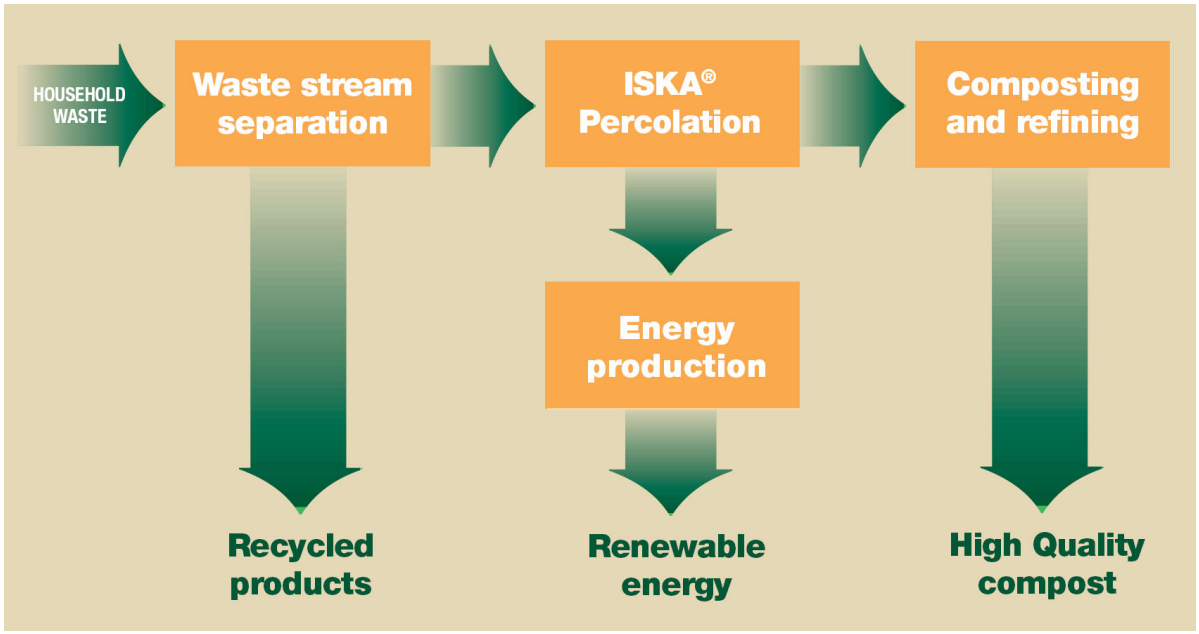
Pie charts of the expected input and output compositions of the plant are over the page.



The plant was opened by then Premier Bob Carr MP in September 2004. Fairfield City Council became WSN's foundation partner. Since then WSN has sold most of the capacity of the plant, with four other Sydney councils opting to put all or part of their waste stream through this plant.

The plant has been successfully promoted for the processing of rubbish from major events. For instance, garbage collected from the 2005-6 Sydney CBD New Year's Eve celebrations, and the 2005 Royal Easter Show, were processed through UR-3R, allowing organisers to promote their events as leading edge in resource recovery.

How the Eastern Creek AWT Facility works



As with all such large industrial plants, UR-3R has been undergoing a commissioning period since its opening. The plant has just successfully completed its proving phase, having this month completed the required round of independent technical and financial sustainability sign-offs.

Macarthur Resource Recovery Park and AWT

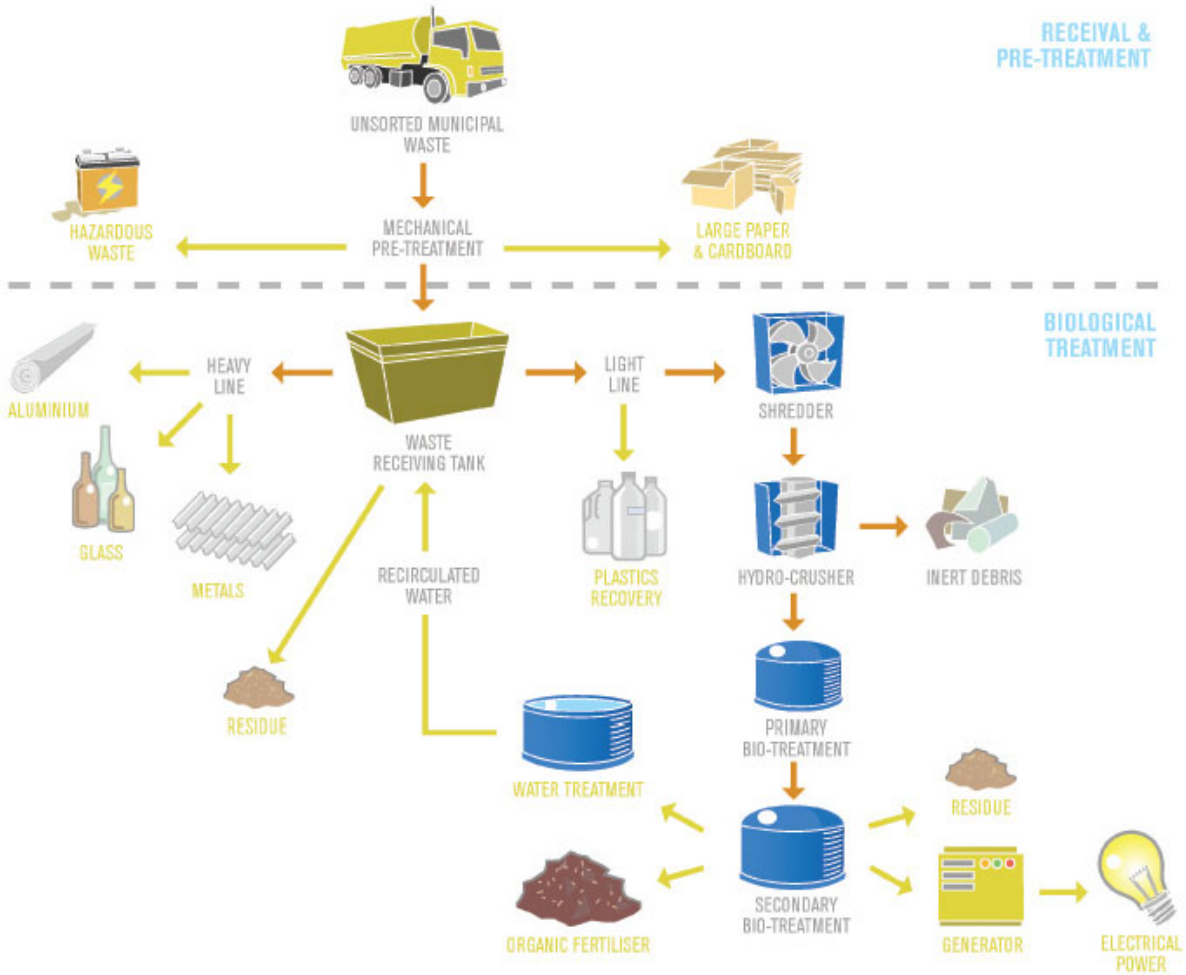
In December 2005, the four councils of the Macarthur region (Camden, Campbelltown, Wingecarribee and Wollondilly) awarded WSN a contract to manage all these councils' putrescible, recyclable and green waste. WSN proposed that these streams be processed at new facilities to be built at its Jacks Gully 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 Ecolibrium Mixed Waste Facility , as proposed for the Macarthur Resource Recovery Park

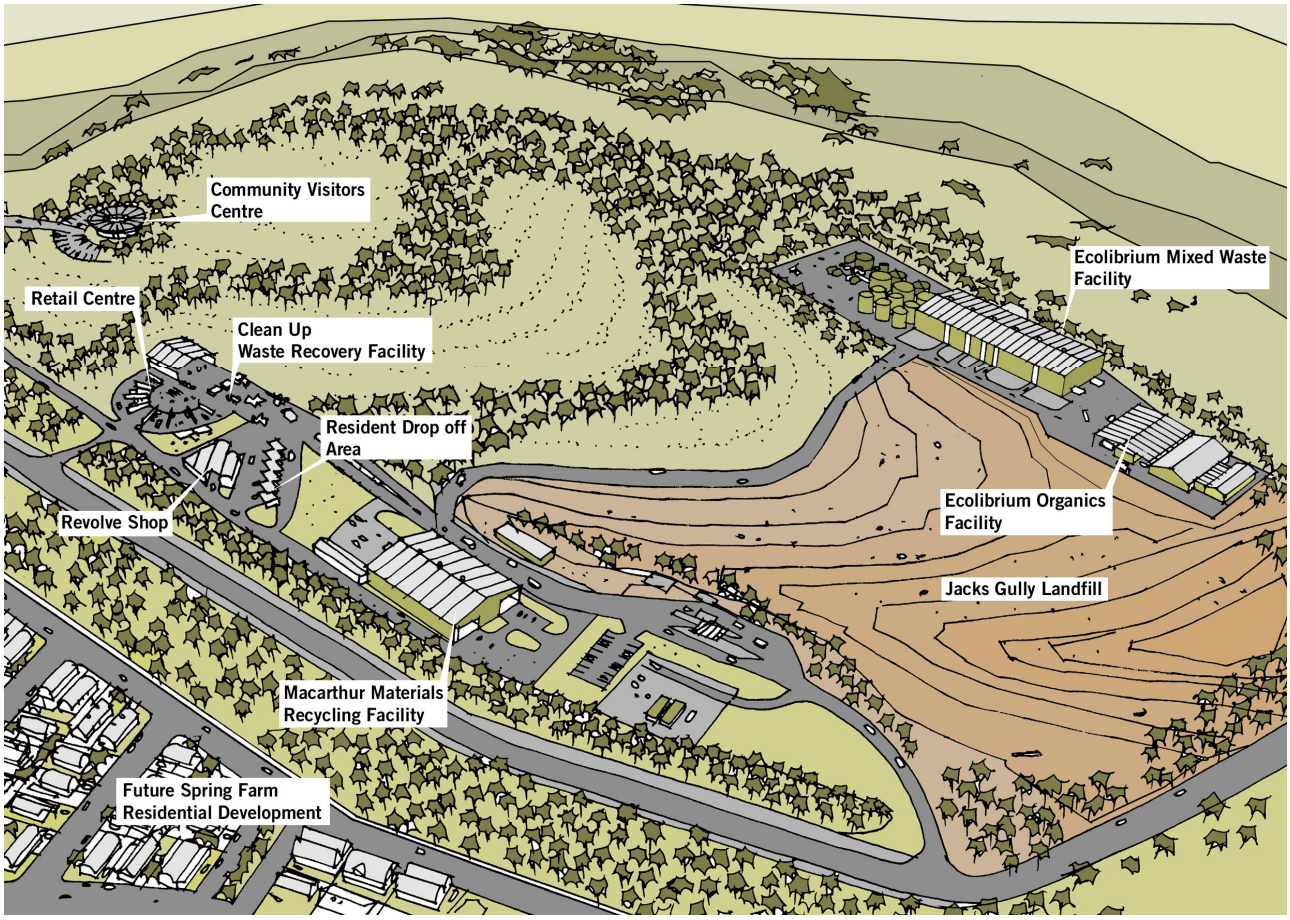


The site will also include a fully enclosed tunnel composting system to process 30,000 tonnes of organics each year, a Materials Recycling Facility for sorting up to 30,000 tonnes of recyclables each year, a resident drop-off area, a community visitor and education centre, a "Clean-Up waste" recovery 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.

The plant will be designed to:

- process up to 90,000 tonnes of household waste per year – twice the weight of the Sydney Harbour Bridge;
- divert around 70% of this waste from landfill;
- recover enough green energy to power around 2,500 homes;
- recover 19,000 tonnes of recyclables that otherwise would go to landfill;
- produce 10,000 tonnes of fertiliser;
- produce 11,700 kilolitres of treated water;
- be self-sufficient in water.

Artist's impression of the Macarthur Resource Recovery Park



Of itself, this plant, which is scheduled to commence commissioning in 2007, will add about a further 2% towards the 66% State Waste target, and immediately place all four Macarthur councils well over their individual 66% resource recovery targets. The waste diverted is equivalent to the contents of about 9,000 garbage trucks per year.

WSN intends to continue offering appropriate AWT solutions to interested councils.

In short, AWT offers the following benefits:

- much improved resource recovery;
- much less demand for landfill;
- no demand for scarce water reserves;
- minimal loss of greenhouse gas to atmosphere;
- the plants power themselves from the green electricity generated, often with spare green power to send to the state grid;
- creates about four times as many jobs per tonne as landfilling;
- less odour, dust and noise through enclosing the process; and,

- will be necessary to fulfill the State Waste Strategy targets.

WSN wishes to acknowledge the contribution that the Government's landfill levy system has made towards the shift to AWT. As the levy does not apply to that portion of the waste diverted from landfill, the levy system has provided a significant incentive for councils to look at new technology, from a future cost perspective. The recently foreshadowed rises in the levy should further aid this process. In addition, the levy provides certainty to industry, required for investment in new processes and technologies such as AWT. The levy system therefore strongly complements and helps facilitate the objects of the State Waste Strategy.

2.2.2 Dry waste separation

This is a relatively new business for WSN, with our business in this area almost doubling last financial year. Dry waste processing helps conserve landfill space and increases resource recovery.

WSN intends to build on recent initiatives such as the opening of a dedicated dry waste processing site at Alexandria, by adapting and reconfiguring existing sites.

2.2.3 Landfill life extension

Outside of Sydney, putrescible landfilling is generally the province of local government. Often councils will own and operate these facilities. As part of its regional NSW approach, WSN has opened up dialogue with several councils which are facing decisions in the shorter term on their future management of municipal waste. Generally, these issues relate to extending an existing landfill, opening a new landfill site, or moving down the AWT path.

An attractive interim option for these councils is to extend the life of their putrescible landfill by stepping up efforts to separate out dry waste for resource recovery. This win-win situation allows councils to buy time before having to make a major investment decision with potential community impacts, recovers resources from the waste stream, and saves councils substantial sums of money. WSN advises regional councils on the methods it uses in Sydney to minimise dry waste disposal in putrescible landfills.

Appendix 1 is a case study in this approach, as it applies to Gosford City Council.

2.2.4 Landfill gas-to-energy

In late 2004, WSN landfills generated their millionth megawatt (MW) hour of green electricity. Landfill gas to energy was pioneered at WSN landfills in NSW in 1994, and they have been producing green energy ever since. All WSN's active landfills produce green energy. WSN's Lucas Heights facility is Australia's largest single producer of electricity from landfill gas, with a current installed capacity of around 20 MW – enough to power 20,000 households all day, every day, with green electricity. Overall WSN sites have the capacity to power the equivalent of 30,000 homes, 24 hours a day, 7 days a week.

2.2.5 Recycling

WSN operates the largest Materials Recycling Facility (MRF) in the Southern Hemisphere, at Chullora. WSN has a second MRF at its Jacks Gully site. There are several other MRFs in Sydney, operated by other companies.

A MRF is similar to a factory, where the recyclable materials collected from businesses or by councils from kerbsides are taken to be sorted into different streams such as paper, plastics and aluminium. These materials are then sold or exported as feedstock for manufacturing processes.

Each year, Chullora MRF recovers about:

- 65,000 tonnes of mixed paper;
- 4,000 tonnes of glass;
- 3,800 tonnes of plastic;
- 1,300 tonnes of steel cans; and
- 500 tonnes of aluminium cans.

Chullora is an advanced MRF, but improvements to the process are constantly being made. These improvements increase the quality of the separated waste streams, increase resource recovery, increase the value of the streams through reduced contamination, and further reduce demand for landfill.

Initiatives undertaken in recent years include:

- increased resource recovery from the glass stream. Glass loads are typically contaminated by the presence of aluminium, plastic and other metal. Following WSN taking full control over the MRF at the conclusion of a sub-contract, WSN was able to apply resources to this stream, reducing its size by about 25% through separation of these contaminants, which are themselves valuable when separated.
- application of additional capital to extract metals and plastic from the residual waste stream in the MRF. This stream, which represents the small balance sent to landfill, was further reduced when a magnet was used to target metal, and an optical sort unit was applied to pull out plastic. As a result, the residual stream to landfill has been reduced by almost 40%.

Further, in 2004, the Jacks Gully MRF was completely overhauled. WSN introduced a more efficient resource recovery system, which has lifted the resource recovery rate from 76% to over 90%.

2.2.6 Garden Organics (Green waste)

WSN now handles around 150,000 tonnes of green waste annually. About 80,000 tonnes of this is collected by Sydney's councils. Several Sydney councils do not have a green waste collection, although the number has decreased in recent years. In fact, several of those councils nevertheless have very high comparative resource recovery rates because they send their putrescible stream (including their green waste) through Eastern Creek AWT. Green waste helps the UR-3R compost creation process by creating a better blend of organics.

WSN is not directly involved in the marketing of compost outputs, as this is in the hands of WSN's partners.

2.2.7 ChemClear® program

WSN is diversifying geographically and is contributing to the safe management of rural chemicals throughout Australia following its re-appointment to undertake the national ChemClear® program. We are running the program on behalf of Agsafe, an independent subsidiary of the National Association for Crop Production and Animal Health (Avcare), responsible for implementing industry stewardship programs.

ChemClear® is an industry stewardship initiative for the collection and safe disposal of unwanted rural chemicals, set up and funded under an agreement between Avcare, the Veterinary Manufacturers and Distributors Association and the National Farmers' Federation.

The program aims to reduce the amount of unwanted chemicals stored on farming properties and enhance occupational health and safety and environmental practices in the rural sector.

2.2.8 CleanOut unwanted chemicals program

To help residents protect their homes and the environment from the effects of hazardous chemicals we provide the CleanOut chemical collection program in the Sydney, Hunter and Illawarra regions under contract to the NSW Department of Environment and Conservation.

One of the most successful CleanOut days was held in April 2005 in the Warringah Council area. Around 940 people attended the drop-off centre to deposit over 31 tonnes of unwanted household chemicals such as paint and paint-related products, pesticides and herbicides, solvents and household cleaners, motor oils and fuels, batteries, gas bottles, fire extinguishers and pool and hobby chemicals.

2.2.9 Closed Site Rehabilitation and aftercare

Included in the responsibilities of all landfill providers is the obligation to rehabilitate such sites after their closure to customers, and return them to the community for beneficial use.

Some of the projects that WSN is involved in this area are:

Ridge Athletics Track, Lucas Heights

The development of sporting and recreational facilities at the closed landfill site at Lucas Heights 1 is continuing, with the opening of the Ridge Athletics Track in September 2004. The facility is part of the Ridge Sports Complex and is a joint project between WSN and Sutherland Shire Council.

WSN is contributing approximately $50 million over 10 years to this project by way of civil engineering works, contributions to the council's Sport and Recreation Fund, and funding obligations for finishing works.

The eight-lane synthetic athletics track and field event area meets International Amateur Athletics Federation Standards and is floodlit for day/night competition. When completed around 2011, the facility will also include an 18-hole golf course, a community sports and recreation club and passive recreation areas including equestrian trails. The project is an example of WSN transforming rehabilitated land into significant community assets.

Grange Avenue, Blacktown

We have been talking with Blacktown Council regarding rehabilitation of this closed landfill. In 2004 we reached an agreement that includes revegetation of the site including grass and trees. During 2004-2005, around 124,000 tonnes of natural fill was placed on site for contouring and capping.

We have also installed a gas field that allows us to collect gas to generate electricity.

Castlereagh

In 2004-2005, around 20,000 trees were planted at the closed Castlereagh landfill. It is expected that around 20-40 hectares will be planted annually over next four years.

2.2.10 Waste Education

WSN has a small team of staff dedicated to supporting educational programs. This team works closely with local government customers, as education about waste and recycling practices must complement the waste system and educational initiatives used by that municipality.

In the last financial year, key initiatives we have taken in the education area include:

- the **Manly Waste-to-Art Competition**, initiated and sponsored by WSN, the competition encourages students to find new uses for old materials that would otherwise be disposed of. It is open to primary and high school students in the Manly Local Government Area.
- the **"Planet Protectors™" Education Program**. The comprehensive and easy-to-use program includes information and activity sheets, posters, DVD and a video that can be used by teachers and waste educators to teach children about the waste hierarchy and the importance of recycling.
- **Planet Ark Campaign Sponsorship**, which focused on reducing the contamination caused by plastic bags when they enter the recyclables stream.
- **"Keep Australia Beautiful" Waste Watchers Program**. WSN is a founding sponsor of this program, which has been in place for over ten years. Waste Watchers has increased the understanding of waste, litter and stormwater issues for about 30,000 primary-aged schoolchildren across NSW each year.
- **Bankstown City Council Waste Game**. Sponsored by WSN, the game was developed by the Council to meet the objectives of the Environmental Education Policy for Schools. The game will assist local infants and primary schools in the Bankstown area to understand their environment, and to adopt practices and behaviours to protect it.

- **Gosford Council Schools Environmental Awareness Program**, which is sponsored by WSN. This program is guided by the Council and covers topics such as waste management, biodiversity, resource audits and stormwater. Schools are encouraged to undertake local environmental activities and projects.
- **Parramatta City Council Plastic Bag Reduction Campaign**, which ran in mid-2004. The Council used WSN's sponsorship funds to purchase hemp bags that were distributed at local shopping areas as a replacement for plastic bags.
- **Recycling Education in Ku-ring-gai**, in which $20,000 was provided to Council as part of a recent recycling contract. These funds are being used to improve recycling practices in the municipality.

2.2.11 Grass Roots Sponsorship

WSN is helping local councils and communities achieve tangible outcomes through education and sponsorship of environmentally sustainable projects.

To support this, in 2005 we launched our "Grass Roots" sponsorship program for councils contracted to WSN.

Community groups apply to WSN through their local council. Grants are allocated on the basis of their relevance to the local community, sustainability outcomes and chances of success.

The program aims to inspire local residents to identify projects that benefit their community and the environment. Project ideas could range from installing a composting system in a school, establishing an eco-garden, or developing a public art sculpture made from recycled materials.

Successful projects chosen for sponsorship in 2005 were announced in October. These are listed in Table 2. A showcase event will be held in May 2006 to highlight projects across Sydney that received funding. WSN intends making Grass Roots sponsorship an annual event.

Table 2: Grass Roots Sponsorship Grants – 2005

Council	Community group	Project	Grant (ex GST)
Blacktown	Bidwell Community Garden	Composting toilet	$5,000
Blacktown	St Andrew's College	Revegetation. Extension of native garden - threatened ecological community	$600
Canada Bay	Concord Public School	Compost tumbler	$700
Canterbury	Cooks River Clean-up volunteers	Riverworks Environmental Art Workshop and Competition	$6,000
Fairfield	Old Guildford Public School	Bring back the bush - Tree planting	$1,300
Fairfield	Fairfield Creeks and Wetlands Group	Cabramatta Wetland restoration project	$5,500
Gosford	Pretty Beach Public School	Waste free canteen - reusable crockery	$1,200
Gosford	Somersby Public School	Compost bins, worm farms, reuse shed	$3,650
Gosford	Kariong Community Earthcare	Eco garden	$16,500
Gosford	Davistown / Saratoga Wetland Support Group	Bush regeneration - fencing	$2,300
Gosford	Walsingham Community Pre-school	Kick start for kids - intro to environmental awareness project. Compost bin, worm farms etc.	$455
Ku-ring-gai	West Pymble Preschool	Install rainwater tank to supply garden	$1,800
Ku-ring-gai	Permaculture North	Mobile community education facility	$18,000
Mosman	Middle Harbour Public School	Threatened species garden	$5,200
Parramatta	Toongabbie West Public School	Sustainable living - improving biodiversity through tree planting	$1,050

Parramatta	Fida Haq	Mosaic public art work using recycled materials	$3,500
Randwick	Community Park Old Tram Line Volunteers	St Pauls Triangle landscape improvements	$5,425
Rockdale	Bethany College	Eco garden, compost, worm farm	$8,200
Sutherland	Como Public School	Bush regeneration - green corridor	$2,400
Sutherland	Yarrawarrah Public School	Build a school compost	$410
Sutherland	Royal National Park Enviro Education Centre	Compost bin installed in a local school - production of related education materials	$1,300
Waverley	Bush Habitat Restoration Co-operative	Tamarama Gully Bushland Restoration	$4,700
Woollahra	The 3rd Bear Preschool	Establishing a school organic garden	$400

2.2.11 Other Municipal Sponsorships

- **Clean Up Australia Day**: since 1990, WSN has accepted, free of charge, all the waste collected by Sydney councils on Clean Up Australia Day. In 2005 more than 1,600 tonnes were collected at a cost of $98,400. Each year, WSN provides a $10,000 prize to the best performing council area on the day. This grant is to be spent on local community waste reduction initiatives. In 2005, the winner was Marrickville Council, where 71% of schools participated in the campaign.
- **World Environment Day Awards**: WSN is sponsoring the Local Government category of the World Environment Day Awards 2006, run by the United Nations Association of Australia. This national awards program provides an opportunity for all sectors to showcase the many important and exciting environmental projects developed across Australia over the past year.
- **Local Government Waste Management Awards**: WSN sponsored the Local Government and Shires Association Waste management Awards as part of their annual Excellence in the Environment Awards.

Part 3: Issues in NSW Municipal Waste Management

The Committee's Terms of Reference are:

"The NSW Standing Committee of Public Works has resolved to inquire into municipal waste management practices in New South Wales with a view to examining and reporting on those processes and whether alternative municipal management practices might lower incremental costs and preferred environmental outcomes. The Committee will in particular examine:

1 The effectiveness and appropriateness of current municipal waste management;
2 Impediments and incentives to best practice municipal waste management;
3 Best practice methods, including cost effectiveness, of planning and providing municipal waste management services;
4 The development of new technologies and industries associated with waste management;
5 Minimising harm to the environment in the provision of municipal waste management services".

WSN's comments are set out below.

1 The effectiveness and appropriateness of current municipal waste management

2 Impediments and incentives to best practice municipal waste management

Overall, WSN believes that local government performs its waste management functions well. WSN's particular focus is the Sydney Metropolitan Area, with its land and associated constraints. Around the world, waste management is usually a locally managed function, generally reflecting the ongoing nature of the task, the street-by-street "intimacy" of the industry, the need for local facilities and means of transport, and the limited economics of scope. It is also generally managed by the public sector, either by direct service delivery or with some functions outsourced to the private sector.

Many Sydney councils have responded quickly to recent changes in the industry. Two examples are choice of putrescible treatment/disposal provider, and new technology take-up.

It is clear that the regulatory environment, incorporating a target, a levy, regulator monitoring of councils' performance and the ESD obligation in councils' charters is helping to drive the shift to treating waste as a valuable resource in the municipal sector.

Councils generally manage waste within their boundaries. However, Regional Organisations of Councils have taken advantage of joint tendering where they believe outcomes for residents can be maximised through this process. WSN has supported councils' rights to joint tender, with the important rider that long-term landfill deals should be avoided, where possible, on environmental grounds.

The significant increase in the resource recovery rate from the municipal sector in recent years is testament to the fact that local government is meeting the contemporary challenges in waste management. The fact that nine of Sydney's councils have committed to processing all or part of their putrescible waste through AWT in the last two years shows that change is occurring.

Outside of the SMA, the land constraints are generally significantly lower. The combination of the availability of land, and a reduced or non-existent waste levy, means that AWT begins on a less competitive footing than landfilling. Nevertheless, AWT has been taken up by several coastal councils, including Port Stephens, Coffs Harbour and Port Macquarie. Other councils are confronting short- to medium-term decisions on creating a new landfill or extending an existing one. WSN has found that some these councils are motivated to take advice on combining lengthening the life of existing landfills by recovering resources from them – a win-win situation for councils and the environment.

3 Best practice methods, including cost effectiveness, of planning and providing municipal waste management services

Market Based Instruments

In general, WSN believes the most efficient resource recovery outcomes will be supplied by high-level economic signals from government and a robust system of regulation. This reflects the framework already in place. In recent times, there has been discussion on the development of an alternative mechanism, generally referred to as a Market Based Instrument (MBI).

MBIs send the clearest signal with the least interference, allowing both waste generators and service providers to deal with the challenges in their own way.

WSN endorses the development of a more precisely targeted market-based instrument (MBI) for resource recovery. Over time, WSN contends that there should be a migration from the existing waste levy structure to a more precisely targeted MBI. However, we would make the following points about such a shift:

- any transition needs to maintain the price pressure that helps drive resource recovery. Without regulation seeking to allocate the externalised cost of landfilling activity, and the underpricing of natural resources, into the cost functions of producers and aggregators of waste, it is unlikely that alternatives to landfill disposal will continue to emerge.
- WSN notes that the likely shape of a targeted Market Based Instrument would be in the form of certificate trading, modelled on schemes that operate for electricity and water. Essentially such schemes trend down in volume over time, with liable parties who perform better than the targeted rate trading unused “environmental bad units” (in waste’s case, disposal to landfill) with those who have not met the target. This represents a subsidy from poor performers to better performers, and creates a bottom-line incentive to be “ahead of the game”. For such a market to operate, a starting point has to be set. It is unreasonable to expect that early movers who have already taken action to reduce their disposal rate should face the same burden as those who have not. This is not seeking to break new ground: these early mover issues have been addressed in earlier trading schemes.
- The issue of national versus state based application is also important. WSN believes that any such scheme would need to be implemented on a national basis.
- Finally, the process of developing an MBI should be open and transparent, so as to minimise the inherent uncertainty that surrounds proposed regulatory change.

Accordingly, the task of developing an MBI should be considered very carefully before being embarked upon.

Extended Producer Responsibility

Although not strictly a municipal waste management issue, extended producer responsibility (EPR) will have a significant impact on the process on the municipal sector.

WSN has had a long history of support for the so-called waste hierarchy, which stresses avoidance at the level of production as the first step in the chain of waste minimisation. An emerging principle that will help drive waste minimisation initiatives at the producer level is EPR. EPR vests responsibility for end-of-life management of goods and their packaging with the producer of the good. The concept is closely related to the more diffuse chain of responsibility envisaged in product stewardship programs.

The NSW Parliament has passed legislation that allows the Minister for the Environment to require producers to take responsibility for the post-consumer stage of a product’s life cycle (*Waste Avoidance and Resource Recovery Act 2001*, Part 4).

WSN has experience in organising EPR collection programs. We have worked under contract for both industry and government in servicing two chemical collection programs - the state wide Cleanout chemical collection program and the agricultural industry collection program ChemClear.

WSN supports programs that promote environmental benefits and encourage organisations to think about the environmental impact of products throughout their entire life cycle.

In particular:

- EPR needs support from the Federal Government and COAG to address import and orphan issues, and to minimise intra-state differences that can create perverse outcomes.
- WSN notes that earlier trials (for example the RecycleIT trial conducted in 2002-3 in Sydney) found that the best sites for IT recycling drop-off were existing waste and recycling sites. WSN is well-placed to provide such a service, but such a service needs the support of producer industries. Again, a bounty system may provide appropriate incentives.
- WSN is confident it can extract most materials from the putrescible waste stream, provided a producer is prepared to pay the appropriate price to receive the recovered material back.

Cost of AWT

AWT has already been identified as key to opening up the putrescible waste stream. However, there is a perception that AWT is significantly more costly than landfill, and will thereby result in unacceptable rises in costs to ratepayers. This is not the case.

AWT creates about four times as many jobs per tonne than landfilling. This makes intuitive sense, as more is done with the waste than simply burying it. However, at least five factors combine to defray costs in areas other than capital and labour, and increase revenue:

- the cost of land in Sydney makes landfilling in Sydney more expensive than anywhere else in Australia. AWT is not so land-intensive, so its exposure to land prices is not as great;
- revenue is created in the process of sale of output products. With landfilling, generally the only revenue is from electricity sales to the grid. With AWT this includes the recovered recyclables and composts, as well as greater generation of green electricity;
- costs are lower in the area of electricity and water usage, as both are sourced from the waste itself, rather than from external providers,
- the waste levy only applies to the landfilled residual, which is generally around 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.

These factors combine to make AWT price competitive with landfill today.

4 The development of new technologies and industries associated with waste management

Compost market development

A consequence of increased resource recovery is the creation of new classes of products from waste. These include composts of various standards and quality.

WSN would encourage Government support for developing markets for these new compost products. These outputs, generally resulting from AWT and increased green waste separation, have great potential to return carbon to soils west of the Divide.

The main issue is the cost of transport. Given the financial commitment that Governments have shown in the area of salinity, WSN suggests that government consider providing assistance for starting up city-to-country supply of composts and green waste.

Regulatory certainty

Another issue in this area is the development of regulatory certainty around minimum compost standards and the process of approving outputs against those standards. While sub-standard outputs should not be used in land application, it is critical that promoters of new technology have a comfortable degree of certainty around how, and against what, their outputs will be assessed.

WSN notes that it is working well with DEC on this matter as affects WSN's AWT projects. It is important to the industry that co-operation remains in place.

5 Minimising harm to the environment in the provision of municipal waste management services

Licensing and AWT

Community expectations about the environmental standards that apply to waste and recycling facilities are rising all the time. This is reflected in higher expectations from the environmental regulator (the DEC), as expressed in Environment Protection Licenses.

Part of the motivation for WSN leading the shift to alternative waste technologies is the greater ability of most AWT to contain the environmental effects of managing putrescible waste. This is principally in the area of noise, odour and dust. WSN's AWT processes are enclosed, with facilities under negative pressure to minimise egress of offensive odours.

Provision for rehabilitation and aftercare

One area of particular concern to Government in the environmental area should be ensuring that facilities operators are properly providing for the cost of aftercare of closed facilities, and the eventual rehabilitation and return to the community for beneficial use. The economics of landfilling requires very significant expenditures after revenues have ceased, providing unscrupulous operators with the incentive to "cut and run" after the gates have closed to customers. This matter is partly addressed by legislation, but concerns remain over whether some smaller industry players are appropriately providing for this liability.

Putrescible waste at Dry waste landfills

WSN is also concerned about the use of dry waste facilities for the disposal of putrescible waste. Disposal costs at dry waste landfills are cheaper than for putrescible landfills. This is, in significant part, a reflection of the less onerous engineering requirements required for dry waste landfills. As dry waste is considered to be inert (ie does not decompose producing methane and leachate), there is no need for the higher standard of landfill clay lining, or for costly gas and leachate collection infrastructure and maintenance. However, contrary to the theory, WSN is aware that the DEC has identified significant gas and leachate generation from such dry waste landfills.

WSN acknowledges the efforts of the DEC in seeking to regulate this area (for instance, Operation Dirty Ibis, in which the DEC identified possible offending dry waste landfills through the presence of scavenging Ibis birds, who gather at sites containing putrescible waste), and WSN would encourage ongoing policing in this area.

Appendix 1 – Gosford City Council Case Study

GOSFORD CITY COUNCIL CASE STUDY

WSN is working together with Gosford Council to extend landfill life, increase resource recovery and provide the necessary time to plan the most appropriate technology solution for their community's waste management.

THE CHALLENGE

Gosford City Council faced diminishing capacity of both the Kincumber and Woy Woy landfills. Dry and green wastes were taking up valuable putrescible waste landfill air space. Of greatest concern was the real prospect of the Kincumber landfill closing within eight months, effectively leaving the city of Gosford with one remaining landfill in Woy Woy to meet the needs of an area of over 1,000 square kilometres. Woy Woy landfill only had five years of landfill space remaining.

HOW WE HELPED

Following a successful trial in mid 2004, WSN won a three year contract in March 2005 to manage the Gosford City Council's landfills. The basis of the contract is to significantly divert waste away from landfill and to increase the amount of resources recovered from the waste stream to help extend the life of the landfills.

WSN provides machinery, equipment, transport services and experienced staff. We work with the council to remove from landfill tonnes of inert waste, garden organics, untreated timber, steel and cardboard.

THE RESULTS

- A large portion of the organic and council clean-up waste that previously went to landfill is now recovered, reused or reprocessed into new products such as compost, metal and cardboard
- We are recovering around 65% of green organics, construction and demolition waste
- Increasing revenue for the council by selling recovered resources to commodity markets and return S.88 waste levy for all materials not landfilled
- Increasing Gosford City Council landfill employees' skills for managing resource recovery
- Extending the life of the Class 1 landfill at Kincumber to an extra three years for putrescible waste
- Extending Woy Woy landfill by at least 14 years
- Establishing two Resource Recovery Centres for the residents of Gosford long after the landfills are closed. This also increases community engagement in resource recovery.
- Provided Council with more time to consider the most appropriate integrated waste management solutions.

OUR GOSFORD TAILORED SOLUTION ACHIEVED:

- 14 year extension of the Woy Woy landfill
- 3 year extension of Class 1 landfill at Kincumber
- Recovery of 65% of organics, construction and demolition waste from landfill
- New revenue streams through the sale of recovered resources such as compost, metal and cardboard
- Provided time for Gosford City Council to consider their long term options for waste management

For more information on any of WSN Environmental Solutions' services: www.wsn.com.au
Customer Service Centre: 1300 651 116 info@wsn.com.au Locked Bag 7699, Chatswood DC, NSW 2067

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