



**NSW GOVERNMENT SUBMISSION
TO THE
STANDING COMMITTEE ON PUBLIC WORKS
INQUIRY INTO MUNICIPAL WASTE
MANAGEMENT IN NSW**

April 2006

INTRODUCTION

The Waste Avoidance and Resource Recovery Act 2001 built on the foundations laid by the previous Waste Minimisation and Management Act 1995. The previous Act set a target of 60% reduction in waste going to landfill. The Waste Avoidance and Resource Recovery Act went beyond this to optimising the recovery of useable resources from waste and managing residual wastes in an environmentally responsible way.

The legislation required the development of a framework and support for the implementation of statewide, regional and local programs to avoid waste and recover resources. To achieve this, the NSW Waste Avoidance and Resource Recovery Strategy (the Strategy) was released in 2003.

The Strategy provides a framework for reducing waste and making better use of resources. It was a first for Australia and is available on the Department of Environment and Conservation (DEC) website at <http://www.resource.nsw.gov.au/strategy.htm>.

The NSW Government is seeking to change our approaches, technologies and actions to make better use of our resources and minimise waste, rather than continue to increase the use of landfills to dispose of the waste we create. To that end the Strategy has set ambitious waste reduction and recycling targets backed up by market-based incentives to stimulate new technologies and approaches.

The current levels of waste generation are unsustainable, and increasing. This has driven a new approach to resource management with governments and businesses re-working their activities to reduce their rate of resource use, and adopt new technologies to meet human needs with reduced environmental impact.

The targets and the new approaches have received strong community support as they align with observable consumer and community preferences for products that have a reduced impact on the environment in their production and disposal.

From a Government perspective, this kind of approach requires developing frameworks to support innovation and technological development. NSW is seeking to be an early leader in Australia of a well-established international trend.

Municipal waste is one of the three major waste streams, the others are Commercial and Industrial (C&I) waste and Construction and Demolition (C&D) waste. The table below describes each of the streams.

Waste Streams	Solid waste generated from:
<i>Municipal</i>	<i>Household kerbside collections and waste collected by councils from municipal parks and gardens, street sweepings, council engineering works and public council bins.</i>
<i>Commercial and Industrial (C&I)</i>	<i>Businesses and industries (including shopping centres, restaurants, offices warehousing and logistics, manufacturing, repair workshops, all retail outlets, hotels, clubs etc.) and institutions (such as schools, hospitals, universities, nursing homes and government offices).</i>
<i>Construction and Demolition (C&D)</i>	<i>Construction, refurbishment, demolition, excavation activities.</i>

The Strategy identifies four key areas where action is needed to achieve results and sets broad targets in each area (as set out in the following table). These targets reflect international best practice, and are achievable with contributions from all sectors of the community.

Broad targets for each outcome area as set out in the 2003 NSW Waste strategy

Outcome area	Target
<i>Preventing and avoiding waste</i>	<i>To hold level the total waste generated for the next 5 years.</i>
<i>Increased recovery and use of secondary resources</i>	<i>By 2014, to:</i> <ul style="list-style-type: none"><i>- Increase recovery and utilisation of materials from municipal sector from the current 26% to 66%;</i><i>- Increase recovery and utilisation of materials from the commercial & industrial sector from the current 28% to 63%; and</i><i>- Increase recovery and utilisation of materials from the construction & demolition sector from the current 65% to 76%.</i>
<i>Reducing toxic substances in products and materials</i>	<i>By 2014 or earlier:</i> <i>To phase out priority substances in identified products as a first choice or, if not possible, to achieve maximum recovery for re-use.</i>
<i>Reduce litter and illegal dumping</i>	<i>Reduce total volume and tonnages of litter reported annually.</i> <i>Reduction in total tonnages of illegally dumped material reported by regulatory agencies and Regional Illegal Dumping (RID) squads annually.</i>

NSW Government role in municipal waste management

The Department of Environment and Conservation NSW (DEC) is the key government department involved in municipal waste management. It is responsible for administering environment protection legislation, licensing certain facilities and premises and undertaking regulatory action to protect the community and environment. This includes compliance for landfills and resource recovery technologies, guidelines on waste classification, waste tracking of hazardous industrial wastes and facility licensing to prevent pollution and emissions. It enforces the waste and environment levy and prosecutes for illegal dumping or other waste related offences.

It is also charged with developing, reviewing and reporting on the State's Waste Avoidance and Resource Recovery Strategy. The areas where it works to achieve significant results are:

- Developing support frameworks for education, market expansion for recovered resource and waste management systems;
- Influencing practices for improved waste management and resource recovery practices adopted by governments, the private sector and the community; and
- Contributing to ecologically sustainability development through avoiding waste, conserving natural resources, increased use of renewable and recovered resources and reducing toxicity in the environment.

DEC also develops policy and guidelines and reviews legislation relating to waste and resource recovery, advises the Minister for the Environment on Extended Producer Responsibility (EPR) and product stewardship schemes, and co-ordinates the implementation within NSW of nationally negotiated approaches such as the National Packaging Covenant.

The NSW Department of Planning is responsible for land use planning and environmental impact assessment in NSW. The policies, regulation and guidelines provided by the department are designed to ensure that developments occur within a framework that protects human health and the urban environment. Proposals for development of waste facilities are governed by statewide planning controls and are subject to risk assessment to ensure they will not pose a significant risk to people, property or the environment.

The Department of Local Government manages the legislative framework under which councils are established, given powers and levy rates and charges. The domestic waste management charges for municipal waste management services are subject to specific requirements.

The role of Councils in municipal waste management

Councils play a major role in waste management in NSW, being largely responsible for municipal waste collection and recycling and “clean up” collections, as well as garbage and recycling services in public areas and street cleaning.

Council arrangements for municipal waste management vary greatly. Some councils use day labour whilst the majority outsource the service to contractors. There is no single standard contract configuration. A council municipal waste management contract can include any combination of options encompassing waste and recycling collections, residual waste disposal, sorting of dry recyclables¹, organics processing, use of alternative waste technologies and periodic clean-ups.

Local government also has regulatory and enforcement responsibilities. Council enforcement officers undertake a number of duties, including enforcement associated with illegal dumping and littering. The level of focus on this area is dependent on individual council priorities and ranges from minimal through to proactive investigation and enforcement. Some councils elect to remove litter and dumped waste in preference to enforcement to maintain the amenity of their local area.

Through their Development Control Plan (DCP) councils can influence the provision of adequate waste facilities within developments and may require waste management planning for developments in the construction and/or demolition stage to maximise resource recovery and promote waste avoidance at the design phase.

Councils have an important role in directly influencing a range of activities and behaviours within their communities through waste avoidance and resource recovery initiatives and community education programs.

Areas where councils play a significant role are:

- Service delivery and integration of best practice resource recovery systems;
- Land-use planning and development through Local Orders and Policies, Waste Not Development Control Plans, infrastructure development and strategic land use planning;
- Purchasing recycled content products and using recycled materials in municipal activities, such as landscaping and road construction;
- Educating communities and delivering local programs on waste avoidance and resource recovery; and
- Data collection and reporting.

¹ Includes paper, cardboard, liquid paperboard, glass, plastics, aluminium (cans) and steel (cans and tins) collected through kerbside recycling collection and sorted at a Materials Recovery Facility (MRF).

Local Government Domestic Waste Management Service Charges

Councils must make and levy an annual charge for the provision of domestic waste management services for each parcel of rateable land for which the service is available. (S496 Local Government Act 1993 (LGA)).

Section 504(3) LGA requires that the charge for Domestic Waste Management Services must not exceed the reasonable cost to the council of providing those services. The LGA dictionary defines domestic waste services as comprising the periodic collection of domestic waste from individual parcels of rateable land and the activities that are associated with providing those services.

Domestic Waste Management Services could include:

- Weekly (or other periodical) garbage or waste collection from domestic premises;
- Extra collection services (multiple or larger bins);
- Periodical clean-ups from domestic premises;
- "On-request" clean up services; and
- Recycling activities or services for domestic premises.

Domestic waste services would not include providing a landowner access to a tipping site, removal of waste from commercial, business or industrial premises, street cleaning, emptying public bins, or managing wear and tear on roads by garbage trucks.

The reasonable cost to council, which is the basis of the charge, could include provision for future events such as waste disposal site rehabilitation and the acquisition of new facilities or equipment directly associated with providing the service.

The provisions contained in the Act are considered to provide councils with the necessary flexibility to finance community service demands and obligations for waste management.

Councils are also able to levy annual waste charges for services other than domestic waste. However, unlike domestic waste charges, the council must provide a service to the property in order to levy the charge. The amount of such a charge is set by council.

Neither Domestic Waste Management nor Waste charges are subject to rate pegging and councils can determine the level of service they will provide. The cost of implementing best practice recycling services can be recovered through the Domestic Waste Management charging (DWM). There are significant variances in council Municipal Waste Management charges. The highest DWM charge in 2003/04 was \$325 and the NSW average was \$207².

Differing Municipal Waste Management Structures

Of the total 152 local government councils in NSW, 38 councils are located within the Sydney Metropolitan area (SMA), 13 councils in the Extended Regulated Area (ERA) and 101 councils within Rural Regional NSW.

NSW councils can each have differing municipal waste management structures and levels of service provision. These are affected by financial capacity, the demographics of its area and priorities.

All Councils within NSW provide a residual waste (putrescible) collection service to residential premises with the exception of a small number of rural councils. All Councils

² NSW Department of Local Government Report – Comparative Information on NSW Local Government Councils 2003/2004.

within the SMA and ERA and large regional centres also provide recycling collection services for dry recyclables.

The highest concentration of residents is in the Greater Sydney area (SMA and ERA), with 75% of the population living on the coastal strip between Port Stephens and the Shoalhaven area. This area generates the majority of the solid waste disposed to landfill.

The lower population densities and greater distance between centres of population outside the SMA and ERA present different, but significant, challenges for councils and waste management in those areas. These include higher transport costs for recovery and distance to markets for many potentially recoverable materials.

Management of infrastructure also varies throughout NSW. Landfills, transfer stations and materials recovery facilities in the Sydney Metropolitan region are largely owned and operated either by WSN Environmental Solutions (a state owned corporation) or private enterprise.

In contrast, Councils in rural regional NSW usually own and operate waste management facilities, including landfills, transfer stations and recycling drop off facilities. Some also have contracts for resource recovery technologies for organics and technologies to reprocess residual waste. Other services that councils may provide include business waste and recycling collections and household chemical collections.

The difference in services provided and other variables affecting municipal waste management is summarised in the table below:

SMA & ERA	Rural Regional Areas
Provide a kerbside containerised waste and recycling service.	Larger regional urban areas have a kerbside waste and containerised recycling service. Some smaller councils use drop off facilities or do not provide any recycling.
The landfills, transfer stations and material recovery facilities are owned and operated by a state owned corporation or private enterprise in the SMA and by councils or private enterprise in the ERA.	Landfills, transfer stations and material recovery facilities are generally owned and operated by local councils.
A State Government <i>Waste and Environment levy</i> is applied to waste disposed in the SMA and ERA.	There is no State Government levy applied to rural regional landfills.
Greater capacity to access processing facilities and markets. Because of this there is the opportunity to provide a more comprehensive recycling service.	Costs to transport, process or market recovered materials may limit resource recovery.

1. EFFECTIVENESS AND APPROPRIATENESS OF CURRENT MUNICIPAL WASTE MANAGEMENT

In NSW, the greatest volume of waste is produced in the Greater Sydney Region (metropolitan Sydney plus the Hunter, Central Coast and Illawarra). In 2004-05 this Region disposed to landfill over 5.6 million tonnes of waste (DEC 2005). This roughly consists of 45% commercial and industrial (C&I) waste, 32% municipal waste and 23% construction and demolition waste (C&D).

Municipal waste management deals with post consumer waste, primarily from households. It also includes waste from street cleaning, public places, litter and illegal dumping and, in some cases, commercial waste from small to medium enterprises (SMEs).

DEC's Progress Report on the Waste Avoidance and Resource Recovery Strategy, released in 2004, confirmed that progress had been achieved in increasing the recovery of materials for recycling, and reducing the level of waste being disposed to landfill in the Sydney Metropolitan region.

Highlights included a:

- 7% reduction in waste disposed of in the Sydney region since 2000 and good progress towards recovery targets;
- 10% increase in the recovery of organics since 1998; and
- 10% increase recovery of recyclables from householders since 2000 (from 84 kilos per person to 92 kilos per person).

Data submitted by councils for 2004-05 indicates that improvements are continuing in the municipal sector with the average recovery rate per household per year at 283 kilos representing an increase from 92 kilos to 101 kilos person. We are also at the world best practice for newsprint recovery.

Recycling of all major dry recyclables has improved in comparison with previous years. The average participation rate in household kerbside recycling is 80% with 95% of households having access to a kerbside recycling service³.

In 2004-05 each person's annual contribution to recycling in the Sydney Metropolitan Area was on average:

- 64.1kg of paper and paper products;
- 27.7kg of glass;
- 6.7kg of plastic;
- 2.3kg of steel cans; and
- less than 1kg of aluminium cans⁴

Whilst there have been notable gains in resource recovery from municipal waste through the efforts of councils, service providers and householders, opportunities exist for additional recovery of dry recyclables, organics and large consumer goods.

Recent audits of municipal waste and recycling bins indicate there is potential to extract a further 20% of recyclable materials from the garbage bin. This improvement can be achieved via the current infrastructure, and through education and better practice by householders.

³ Waste Avoidance and Resource Recovery in NSW A Progress Report 2004 (Page 9).

⁴ Survey of Councils' domestic recycling performance for the National Environment Protection Measure (NEPM) 2004-2005.

Improvements in Municipal Waste Collection and Processing

There have been major improvements in recovery infrastructure since the Waste Avoidance and Resource Recovery Strategy was released. Many councils have improved their municipal waste management through adopting better practice in collection systems and, in some cases, by pursuing a collaborative regional approach.

Regional strategies often include regional processing arrangements that involve a co-operative agreement between a group of councils to aggregate the waste and recyclable material they each collect as part of their domestic waste management service. An increasing number of regional approaches by councils is contributing to:

- Consolidation and improvements to infrastructure, and therefore reduced environmental impacts;
- Collection service efficiencies that enable the delivery of high quality municipal waste management services to smaller councils;
- Stabilised pricing and provision of price certainty over the period of the contract;
- Increased processing capacity and capability and therefore improved efficiencies;
- Maximised resource recovery and reduction in material disposed to landfill;
- Improved householder behaviour/practice through consistency of services and information delivery;
- Community access to state-of-the art recycling facilities and best practice collection services; and
- Savings through cost sharing between participating councils for such things as legal costs, production of information and implementation of education programs.

Examples of councils working together to achieve more efficient and effective waste management and resource recovery outcomes are provided below.

- The Macarthur Councils of Campbelltown, Camden, Wollondilly and Wingecarribee awarded a fully integrated waste management regional contract in December 2005, which will see the development of a range of resource and residual waste recovery systems. The integrated approach is estimated to divert more than 80% of the region's waste from landfill when the infrastructure becomes operational in 2008.
- The Inner Sydney Councils of Ashfield, Auburn, Burwood, Canada Bay, Leichhardt and Strathfield commenced a regional municipal recycling contract in October 2003 that facilitated the development of new infrastructure, the Botany Material Recovery Facility, which processes approximately 25,000 tonnes of recyclable material per annum. Besides providing councils with predictable costs for their recycling processing services over a long term, the regional contract has proved more cost effective than any arrangement the councils could have negotiated on an individual basis.
- In rural regional NSW the Netwaste Councils of Orange, Cabonne, Parkes, Forbes and Blayney have agreed to a regional waste and recycling collection and processing contract that will save approximately 1,057 tonnes per annum of material going to landfill. The new service introduces recycling to households in Parkes and an expansion to the recycling services in Blayney, Cabonne and Forbes. A state-of-the-art upgrade for the Orange Material Recovery Facility

(MRF) will potentially provide a 90% recovery rate to Orange residents. (The old MRF recovered 35% due to its inferior technology).

- The councils of Coffs Harbour, Bellingen and Nambucca have collaborated to provide their residents with a state-of-the-art regional municipal waste management program. Through this arrangement, cost savings are estimated at 22% for processing 55,000 tonnes of materials from waste per annum. The agreement will consolidate the region's infrastructure, resulting in three of the landfills converting to transfer stations and the construction of a Biomass Plant for processing the regions food and garden organics stream.

Rural / Regional NSW – Voluntary Regional Waste Groups (VRWG)

It is recognised that a different support structure is required to reduce waste tonnages and encourage resource recovery in rural regional areas, compared with Sydney and the ERA.

The NSW Government has implemented a collaborative program over the past 4 years that provides for statewide coverage of the management, minimisation and resource recovery from solid waste. Eight Voluntary Regional Waste Groups (VRWG) have been established, covering over 90% of NSW, with membership of 99 rural/regional councils.

A collaborative approach provides rural and regional councils with the opportunity to share resources and knowledge; coordinate planning and resolve issues co-operatively at a regional level.

DEC provides sponsorship through these VRWGs to support the implementation of programs that focus on regionally specific issues. They are designed to:

- Increase resource recovery rates in balance with environment improvement;
- Rationalise and improve municipal waste management infrastructure; and
- Maintain and develop existing and new regional recycling contracts. The regional groups have managed some coefficient rural collection contracts for specific services, including garden organics, household/farm chemical waste and scrap metal.

Regional partnerships have proved effective for councils in rural regional NSW. These partnerships represent the commitment of regional councils to achieve the objectives of the Strategy. Regional planning and establishment of these networks have provided statewide coverage of waste reduction and resource recovery programs which have resulted in:

- Management and resolution of issues, such as landfill rationalisation, joint collection contracts for resource recovery, aggregated processing, and transport logistics;.
- Better delivery of government support to rural regional areas.
- Remote areas accessing services previously not offered because they were not economically viable. There are now regional contracts for the collection of a range of materials, including metal, hazardous chemicals, plastic, agricultural drums, silage plastic and green waste.

The following quantities of materials have been recovered for processing from the rural regional areas between 2002 and 2005:

- 29,290 tonnes of scrap metal
- 187,440 cubic metres of garden waste
- 267,168 agricultural chemical drums
- 960,000 plastic bags

- 115,900 kg of household chemical waste
- 44,7000 tonnes of C&D materials

The rural regional waste avoidance and resource recovery plans for the next three years will encompass:

- Plans to consolidate regional municipal waste management infrastructure through shared arrangements;
- Integrated management planning for organics processing and reuse within the regions;
- Opportunities for regional waste and recycling collection and processing contracts;
- Waste reduction and management planning with local businesses; and
- Collation of data on quantity and types of materials for resource recovery to encourage the establishment of reprocessing facilities and development of local markets.

Community Participation in Resource Recovery

Community concern about resource management and support for waste avoidance continues to be a strong driver of NSW waste policy and programs delivered by a range of stakeholders.

Councils have been effective in encouraging participation and increasing municipal recycling rates in their communities.

Providing householders with a good kerbside recycling collection system has tapped a widespread desire to take action to protect the environment and has also encouraged participation in other environmental and waste minimisation related programs.

The strong community support for individual and government action to reduce waste and encourage recycling is demonstrated through:

- Increasing household recycling rates. In 2004, Sydney residents set aside an average of more than 100kg of material for recycling, which was 17kg more than in 1990;
- A recent Dell computer recycling take-back program in Sydney, which yielded 9.6 tonnes of computers in one day, far exceeding the expected response; and
- An increase of 30% over three years in attendance at the household chemical drop off, with over 43,000 people depositing over 1.5 million kilograms of chemicals.

In addition, a recent survey undertaken by the Waste Management Association of Australia and the Alternative Waste Treatment Working Group to test consumer support for new waste and resource recovery technologies found that over 90% of respondents think that new waste technologies that use organic waste for compost and green energy is a good or excellent idea. Reasons for supporting new technologies included: making good use of waste; environmental benefits; taking pressure off landfills; reducing and eliminating waste; increasing recycling; creating renewable energy; and reducing fossil fuel use.

Almost 90% of surveyed respondents were willing to pay additional weekly fees to encourage new technologies, with 60% willing to pay an additional \$2 per week.

Effectiveness in managing litter and illegal dumping

Litter and illegal dumping is another issue for municipal waste management and is dealt with mainly through council services for street cleaning, collection of public place bins, bulky clean ups and education.

Sydney has been recognised as a clean city with lower than average levels of littering behaviour, combined with higher than average rates of people 'doing the right thing' and using the bin⁵. However litter and illegal dumping and landfilling continue to be a cost to the community.

A research project commissioned by DEC in 2004 collated all available information and data on illegal dumping in NSW⁶. It concluded that:

- NSW councils spend \$10 million per year trying to combat illegal dumping and landfilling;
- Total recorded dumping incidents were comprised of household waste (44%), green waste (15%), abandoned cars (13%), construction and demolition waste (12%), soil and excavation (8%) and tyres (6%); and
- NSW Government agencies and private organisations also incur considerable costs on cleanup and enforcement.

NSW has conducted a number of successful education programs designed to encourage individual and group action to tackle waste related issues. Many of these campaigns are designed to enable councils to pick up generic materials and deliver them to their own communities. The NSW Government has provided funding to councils for various campaigns to enable them to do this, for example *Tosser* and clean up and deterrence grants.

The 2000-03 '*Tosser*' litter education program exceeded expectations with 96% of people sampled in NSW having seen the '*Tosser*' advertisement at least once and 65% indicating that they had seen it four or more times. More than nine out of 10 people who recalled seeing the last '*Tosser*' commercial understood the following main messages:

- Disposing of litter is everyone's personal responsibility (97%);
- Littering in the streets and other public places is not appropriate (95%);
- The community disapproves of littering (94%); and
- Every bit of litter damages the environment (91%).

The 2000-2003 Litter Prevention Program, which built on the 'Do the right thing' campaign, has had a positive effect on the knowledge, attitudes and behaviours of the public. Outcomes of the Program include:

- A trend to connect litter to wider environmental issues of waste management, illegal dumping and recycling;
- A growth in people's concern that litter is damaging to the environment. Explicit mentions of litter getting into waterways and being hazardous to wildlife increased over the period of the whole campaign;
- An increase in the social unacceptability of littering, even amongst those who continue to litter;
- A growing knowledge that personal actions are needed to reduce littering, rather than dependence on actions by authorities; and
- A significant increase in awareness of and strong support for littering fines, with three in four people agreeing that people who litter should be fined.

Illegal dumping clean up and deterrence grants were provided to 92 councils and one Aboriginal Land Council between 2002-2004.

⁵ Beverage Industry Environment Council Littering Behaviour Studies.

⁶ Undertaken by Institute for Sustainable Futures for DEC in 2004. Currently unpublished.

2. IMPEDIMENTS AND INCENTIVES TO BEST PRACTICE MUNICIPAL WASTE MANAGEMENT.

A number of changes are occurring within the waste policy framework, to waste management technology and to other systems that are creating strong incentives to councils and the waste industry to continuously improve their waste management services.

Infrastructure and planning challenges⁷

Waste is often regarded as a measure of resource inefficiency, so it makes sense to reduce the amount of potentially recoverable material lost to the productive economy. But the technical and commercial viability of resource recovery depends greatly on the availability of purpose-designed infrastructure, so infrastructure planning and guidance will play an increasingly important role in either supporting or restricting opportunities for increased resource recovery. This will be driven in particular by increased growth and expansion of urban areas.

Additional challenges relate to increasing difficulties in ensuring that new facilities to service the existing, ever-consolidating Metropolitan Region are installed at locations that optimise logistics. Waste industry operators must invariably make compromises in selecting sites for waste facilities: market and operational considerations must be tempered by the limited availability of suitable sites. Achieving logistically optimal deployment of facilities in these circumstances is challenging.

Logistics costs dominate the waste management value chain at around 60 percent of the total value chain. Both distance and traffic congestion are contributing factors in the operational cost mix. The relative deployment of network facilities, such as transfer stations, MRFs and alternative waste treatment (AWT) facilities, is important to the commercial success of waste management operators. Aside from cost, logistics inefficiencies compound air pollution and traffic noise – important, but unpriced, externalities.

Getting facilities built close to waste sources is feasible for new development release areas, just as land use planning arrangements ensure that land is reserved for other utility services. Early planning can reduce land use conflicts and, equally importantly, can enable the trialling of innovative waste management concepts: new schemes for source separation, collection, and transfer.

A further level of complexity applies in relation to municipal waste contract arrangements. Current thinking by those local government service-buyers who are inclined to tender for waste processing services is to issue tender documents that call for both an AWT facility and a processing site. This can result in ad-hoc location of facilities as well as conferring competitive advantage on tenderers that have existing sites close to the waste source.

The environmental and social characteristics of potential locations also add a further dimension to the site selection task. Considerations are the compatibility of proposed waste management and resource recovery facilities with nearby land uses, suitability of land use zoning, and avoidance of especially sensitive areas. When considering potential sites, it is a base-line assumption that facility emissions and local environmental impacts will be properly managed.

⁷ Ideas and issues in this section are drawn from work commissioned by NSW Planning.

Available landfill space and the associated environmental and social costs

Sydney has a relative shortage of approved available landfill capacity compared with other capital cities around Australia. State Environment Planning Policy (SEPP) 48 applies to major putrescible landfill sites that receive waste from more than one local government area when the volume of waste to be received exceeds specified thresholds. It identifies matters the Minister will need to take into account when assessing a proposal, specifically ensuring that there is a legitimate demand for a landfill and that it is appropriately located. This ensures that new landfills are only approved following a comprehensive assessment.

Siting of new landfills for Sydney's waste also poses challenges as it has historically met with very strong community opposition.

The difficulty in establishing new putrescible landfills is driving new approaches for dealing with residual waste. There are emerging technologies for processing residual waste that are providing substantial environmental benefits. These technologies are especially relevant for councils in the Sydney, Newcastle and Wollongong areas. In addition, some major regional centres may also provide sufficient material to justify alternative treatment plants, particularly where there are potential opportunities to combine with neighbouring councils in areas of high growth. The application of new technologies is less likely to be a viable option in other rural areas, where a small population base is coupled with high transport costs.

Waste infrastructure recognised as Major Projects under Planning System

On 1 August 2005, the NSW Government introduced a new project approval regime for the assessment and approval of major projects by the Minister for Planning under Part 3A of the Environmental Planning and Assessment (EP&A) Act 1979. SEPP - Major Projects was also gazetted on 1 August 2005.

The SEPP defines certain waste infrastructure developments as major projects to be determined by the Minister for Planning under Part 3A. Criteria for resource and waste related infrastructure projects are set out in Schedule 1 of the SEPP. Many new waste, resource recovery and recycling facilities will now be assessed and determined by the Minister.

Use of economic instruments to drive continual improvement

Economic instruments can provide a powerful driver to influence actions to reduce waste and increase resource recovery and resource efficiency. The NSW Waste and Environment levy is a key economic tool for waste reduction in NSW. It is simple to apply, readily understood and broad in its coverage.

The levy has been in operation since 1971. In 1997, the levy was increased from \$7.20 to \$17 per tonne in the metropolitan region and to \$10 in the ERA. In 2005-06, the levy is \$22.70 in the metropolitan area and \$15.00 in the ERA.

The levy has provided an ongoing price incentive to promote the diversion of materials from disposal to other economically viable uses, as well as a source of funds for a range of programs to overcome the financial, technical, institutional and social barriers to reducing waste disposal⁸. The levy has been particularly effective for large tonnages of materials and for heavy wastes such as construction and demolition waste.

⁸ Report on the Waste Minimisation and Management Act (EPA 2001)

However, the NSW Government has recognised that an increased levy would provide an immediate competitive advantage to businesses that avoid creating waste and a firm basis for investment in new waste recovery and recycling technologies. A stronger signal to reduce waste generation and increase resource recovery from waste is required to make further progress towards the targets of the Waste Avoidance and Resource Recovery Strategy.

In November 2005, the NSW Premier announced the *City and Country Environment Restoration Program*, which aims to:

- provide a major funding boost to environment restoration over the next five years to tackle our most significant environmental challenges;
- send a strong economic signal about the importance of avoiding the creation of waste and the need to recover, reuse and recycle our valuable resources; and
- reward councils who provide waste management services that meet good practice standards specified by DEC in consultation with the Local Government and Shires Associations for delivering good environmental performance in waste avoidance and resource recovery.

Aspects of the program include:

- (a) implementing urban sustainability programs, including stormwater harvesting for recycling, waste reduction and increased recycling;
- (b) providing performance payments to local government to reward achievements and support councils that meet improving standards for waste collection and recycling for their ratepayers; and
- (c) implementing, through DEC, an \$18 million program over the next five years to prevent and control illegal dumping and deliver active enforcement against non-compliance. This will be undertaken in a co-ordinated way which links with local government enforcement, the Regional Illegal Dumping squads and other compliance activities.

In relation to the levy, it includes

- a \$6 per tonne plus CPI annual increase in the waste levy in Sydney and in the Hunter, Central Coast and Illawarra regions, to apply each year for 5 years;
- reform to various rebates and exemptions to improve the administration and enforcement of levy provisions, including:
 - limiting operational purpose rebates
 - ending concessions that have been provided for disposal of virgin excavated natural material, and
 - linking the payment of recycling and reprocessing rebates to where the material is despatched from the landfill.

These changes to levy arrangements will encourage:

- Waste generators to reassess options for waste reduction, particularly in the case of heavier, bulky materials such as cardboard, paper, construction and excavation materials;
- a greater number and range of alternative waste technologies; and
- the establishment of additional recycling capacity that can compete with landfill.

The levy has already been successful in driving waste reduction and resource recovery as demonstrated by NSW's achievements in organics recycling:

- Recovery of organics is estimated to have increased from 40% of the total generated in 1998 to over 50% in 2002-03 (in 1990, no coordinated organics recycling existed in NSW); and
- In 2004, 61 licensed composting facilities existed (there was no coordinated organics recycling in NSW in 1990). More than 71 councils provided regular organics recycling services in 2004.

Currently householders are paying more than \$4 per week in council waste management charges to cover household waste collection, transport, recycling and disposal costs. The levy is only a small proportion of the disposal component of those charges. From July 2006, average households in Sydney, the Illawarra and the Hunter will pay only 4 cents per week extra because of the levy, rising to less than 20 cents by 2011 or 40 cents if councils choose to use the performance payments for other purposes.

Even after the recently announced increases, the NSW levy remains quite low compared to parts of the United States, Britain and other parts of Europe. For example, the Blair Government in the UK is increasing its waste levy from \$A35 to \$A82 per tonne, in addition to implementing a cap and trade scheme for landfill.

Complementary grants and other programs

The effectiveness of the NSW levy is enhanced by a range of complementary programs, including:

- A new Local Government Waste Performance Improvement Payment, worth up to \$80 million over five years to help local government to achieve improvements in local waste management activities - this payment will be made to councils who achieve specified outcomes in waste management practices and improve resource recovery outcomes. A critical component is improved quality of separated waste streams, making it easier to reuse and recycle materials;
- Urban sustainability grants worth \$80 million over five years for local governments to work in partnership with business and the community to address priority urban sustainability issues;
- Guidelines and decision making tools to assist councils to assess alternative waste technologies, composting and recycling options;
- Community education work and support programs;
- The Cleaner Production program, which assists companies to identify options for alternative uses of waste streams;
- New assessment guidelines for non-standard fuels that provide certainty for beneficial energy-from-waste proposals;
- New regulations to ensure that only substances that are of benefit and do not cause harm are used for growing plants – allowing for waste reuse opportunities to be distinguished from basic land disposal practices; and
- Establishing best practice guidelines for kerbside recycling, public place and events waste recycling, office paper recovery and performance benchmarks for particular industry sectors.

There are a number of factors impeding councils adopting best practice, which are listed below. DEC has produced a range of tools and guides for councils to tackle these barriers. (A detailed list of studies undertaken and resources produced can be found under section 3 – Best Practice Methods).

- **Inconsistency of council systems.** There are many differing municipal waste management systems with differing resource recovery collection systems across NSW. These can range from varying bin configurations to different products collected for recycling. These inconsistencies in systems and approaches cause confusion within the community about what is accepted for recycling which can lead to high levels of contamination⁹. To maximise opportunities for education, increased participation and increased resource recovery, systems need to be more uniform and consistent.
- **Lack of knowledge and expertise in deciding on Alternative Waste Technologies (AWT) and Resource Recovery technologies.** Alternative waste technology may provide significant benefits in reducing the residual waste stream going to landfill however, compared to landfilling, AWT is a new way of managing waste. Because contracts are re-tendered at long intervals, there is a challenge for council staff in maintaining a detailed level of knowledge about emerging systems. This can impede a council officer's ability to inform their councillors for decision-making purposes. DEC has undertaken studies showing that environmental performance is the single most important aspect the community wants to see their waste management system delivering – well ahead of financial performance. To assist councils, DEC has developed the Alternative Waste Technology Assessment Tool and Handbook and provides training on how to use it.
- **Lack of information to assist decision-making in green purchasing and using recycled content products.** Sustainable resource recovery is dependent on market growth for products made from post consumer recycled materials. Councils have significant purchasing power which places them in a prime position to influence the market, achieve greater efficiency of resources, contribute to the development of markets for recyclable materials and 'close the recycling loop'. Through their purchasing practices, councils have the opportunity to demonstrate environmental leadership to the community and make 'buying recycled' a priority. However, councils have limited time and resources to identify environmentally preferred products and to investigate and verify the products' performance and credentials. To this end, the Environmental Trust is sponsoring a joint project between DEC and the Local Government Association of NSW and Shires Association of NSW, the *Local Government Sustainable Purchasing Alliance*, which will provide a comprehensive resource kit and website containing a searchable supplier database.
- **Varying quality of recycling materials returned through different systems.** Contaminated recycling reduces the usability of the material, e.g. batteries in composted materials; materials in recycling bins that are not recyclable such as crockery, clothes, food waste, paints and oils etc.

Councils address the contamination issue in different ways. The usual method is through householder education programs. Depending on the conditions of the waste and recycling contract, this becomes the responsibility of either the council or its recycling contractor.

DEC recently released the Preferred Resource Recovery Practices by Local Councils. This document sets consistent standards and minimum service levels aimed at producing the highest return in recovery rates from single dwellings in the SMA, cities and regional centres.

⁹ Any introduction into the environment or a product (water, air, soil, or recyclable materials) of micro organisms, chemicals, wastes, or waste water in a concentration that makes the environment or the product unfit for its intended use. Contaminants can have a detrimental impact on the quality of recycled materials and can spoil the potential for resource recovery. Definition from WARR Strategy 2003.

Rural Regional Specific Issues

- **Limited resources** in small rural councils impacts on their capacity to implement sound environmental practices in the management and operation of their landfills. Some councils are tackling these issues by rationalising landfills. Smaller landfills are converted to transfer stations and waste is redirected to a well managed and purpose designed regional landfill which may serve more than one council.
- **Regional and remote areas** face particular challenges relating to distance, limited access to processing facilities and availability of markets for recovered materials.

Financial and other environmental spin-offs from waste related improvements

Environmental and cost efficiencies in other activities can be achieved as a result of implementing best practice municipal waste management. This is illustrated in a project described below where recycled materials were used in roadside landscaping.

DEC partnered with the NSW Roads and Traffic Authority (RTA) to trial the use and performance of recycled crumb rubber tyres in asphalt pavements, recycled crushed glass as a cement, sand and aggregate replacement in concrete and recycled organic materials in roadside landscaping. These trials have achieved:

- 10% replacement of virgin aggregate with recycled concrete in Sydney roads¹¹;
- Replacement of 5% of virgin aggregates with 850,000 tonnes of coarse blast furnace slag generated at Port Kembla steelworks¹²;
- Use of around 20% of Port Kembla blast furnace slag as cement¹³ (with significant greenhouse emission savings)¹⁴; and
- Use of scrap rubber in road pavements is resulting in lower vehicle tyre noise than pavements using asphalt¹⁵.

In addition to numerous private businesses and state government authorities, local councils use significant quantities of recycled materials. Examples of the savings that local councils have found using recycled materials¹⁶ include:

- Newcastle City Council used recycled materials in road construction and found that material costs were approximately 40% of those for conventional products;
- Sutherland Shire Council used recycled products for the construction of a road in Caringbah and found the materials cost 55% less than conventional products, with no difference in performance; and
- Willoughby Council used recycled material for the construction of a car park, with savings to council of approximately 50% compared with using conventional road base.

DEC has also undertaken research that demonstrates clearly to councils the real environmental benefits and cost savings of resource recovery systems. One such study is the *Assessment of Garden Organics Collection Systems*, which supports strategies

¹¹ New South Wales State of the Environment 2003, Environment Protection Authority, Sydney.

¹² Ibid

¹³ Ibid

¹⁴ *Reducing Greenhouse Emissions from Commercial and Industrial Buildings; what local government can do*, Australia Greenhouse Office, Department of Environment and Heritage, Australian Government, (2002)

¹⁵ Hicks (2002) *Asphalt Rubber Design And Construction Guidelines. Volume I Design Guidelines*, Northern California Rubberized Asphalt Concrete Technology Centre & California Integrated Waste Management Board, Sacramento.

¹⁶ IPWEA (2006) *Greenspec Case Studies*, Institute of Public Works Engineering Australia Limited, Sydney.

for source separation, collection and recycling of organic materials. The study found that:

- The environmental value of each tonne of garden organics is estimated to be \$114 (including resource savings, and reduced fertilizer use, air and water pollution impacts and greenhouse emissions);
- The management of organics through source-separated collection systems, commercial composting and the application of recycled organics to agriculture offers substantial benefits to the environment, including: net greenhouse emission reductions, even where the recycled materials have to be transported up to 600 km for agricultural applications; and positive effects for all the other environmental indicators, including reduced potential for human toxicity, ecotoxicity and eutrophication. However, there were some minimal negative environmental impacts in the form of air pollution and non-renewable resource depletion, largely from the use of the diesel fuel consumed while applying the compost material to agricultural soils;
- The benefits of providing collection bins for recycled organics are related to the volume of material collected. The report recommended that councils with a high rate of garden organics (over 175kg per household each year) introduce fortnightly collections;
- The net increase in total waste management costs for providing a separate garden organics collection varies from \$5 to \$15 per household per year assuming landfill disposal of domestic garbage; and
- Where garbage is thermally treated, the provision of a separate garden organics collection service reduced overall waste management costs.

The full report is available at:

[http://www.resource.nsw.gov.au/data/Assessment_of_Garden_Organics_Collection_Systems_\(2005\).pdf](http://www.resource.nsw.gov.au/data/Assessment_of_Garden_Organics_Collection_Systems_(2005).pdf)

Sydney Construction Materials Strategy

The Sydney Construction Materials Strategy (SCMS) is being prepared to plan for the continued supply of sand, hard rock and clay-shale to the Sydney construction market over the next 25-30 years. There are three parts to the Strategy – resource management in key supply areas, industry best practice and initiatives to increase the use of substitutes to natural material. The substitutes being considered include recycled construction and demolition material, manufactured sand (from crushed hard rock residue), blast furnace slag products, fly ash from coal fired power stations and spoil (excavated rock and soil) from major developments. This component of the SCMS will consider a range of actions to promote increased use of substitutes. These include:

- Increasing the use of standards and product accreditation schemes to increase confidence in substitutes;
- Encouraging industry research into alternative construction materials;
- Increasing awareness through education on the use of substitutes (e.g. product directories, case studies);
- Introducing best practice and system improvement mechanisms (e.g. codes of practice);
- Encouraging the use of planning controls such as Development Control Plans (DCP) for use by councils to require construction and demolition material to be sorted, recycled and reused on development sites; and
- Investigating the potential for levies on the use of natural materials.

The Department of Planning, DEC and other agencies are working on the substitute's component of the SCMS, with input from industry. It is expected that this component will be completed by the end of 2006.

Council Purchasing Practices to support sustainable resource recovery

There is strong community support and an expectation that councils will offer opportunities for resource recovery. For the system to be sustainable, markets for recyclable materials must be developed and the demand for products made from recycled materials must be increased. There is a need to encourage the use of recyclable materials as substitutes for virgin materials in existing products, or new products.

Through purchasing policies and practices, councils can demonstrate environmental leadership to their communities and make environmental purchasing a priority.

DEC has a joint project with the Local Government Association of NSW and Shires Association of NSW that makes purchasing environmental friendly products easy for councils. The Sustainable Purchase Alliance, which is an expansion of the Local Government Buy Recycled Alliance, focuses on products that are preferred due to water, energy and other environmental savings.

Benefits of the Alliance program include:

- Development of stronger market demand for secondary resources, recycled content and green house friendly products;
- improvement of councils' sustainability performance;
- reduced environmental impacts; and

- reduced toxicity of products and materials in use through the inclusion of environmental and sustainability considerations in specifications for contracts and tenders.

Benefits of Recycled Organics in Municipal Works

Using recycled organics on council parks and gardens can save councils thousands of dollars while helping the environment. The *Cost/benefit of Using Recycled Organics in Council Parks and Gardens Operations in NSW* helps councils to identify which parks and gardens can benefit most from compost and how much money this composting might save.

The garden trimmings that many councils collect from their residents can be recycled into quality landscaping products that can be used to provide significant environmental benefit to the councils' local areas. Over 80% of councils in the Sydney metropolitan, Hunter and Illawarra areas provide a garden waste collection service to householders.

For a typical Western Sydney council, it has been estimated that savings of over \$25,000 per year can be achieved by using compost top dressings across eight sporting grounds and five parks. Also through applying a good quality compost top dressing on sporting grounds, councils can realise a savings of up to 30% of normal water and fertiliser needs.

The guide also highlights that sporting grounds regularly top dressed with compost can better tolerate low rainfall conditions. This is a great benefit for councils that may have had to close sporting fields due to the continuing drought conditions which have made it difficult to maintain turf growth and a safe surface for play.

Penrith City Council has been first to use the guide to help in managing their parks and gardens. Trials have been established to renovate three heavily used sporting grounds. The turf growth has improved across all fields, despite low rainfall and high temperatures experienced during summer.

To view the guide visit www.environment.nsw.gov.au/education/organicscostbenefit.htm

3. BEST PRACTICE METHODS, INCLUDING COST EFFECTIVENESS, OF PLANNING AND PROVIDING MUNICIPAL WASTE MANAGEMENT SERVICES.

Improved knowledge and understanding of both user behaviour and systems

There have been numerous studies undertaken to improve municipal waste management. A great deal has been learnt about community attitudes, how systems work and what works best. DEC has compiled a comprehensive information to provide clear guidance for implementing best practice municipal waste management in the areas of:

- Municipal waste and recycling collection Model Contracts;
- Best performing collection systems for waste, recycling and organics;
- Education, campaigns and resources;
- Specifications for recycled materials;
- Standards for bin colours; and
- Guidance on the range of dry recyclables for kerbside systems.

The programs and resources listed below have been developed collaboratively with councils and industry. There has been substantial positive feedback and uptake of these resources.

Preferred Resource Recovery Practices by Local Councils

This is a guide for councils in the SMA, cities and regional centres to use when deciding on their municipal waste management system for single dwellings.

The guide forms the basis for delivering performance improvement payments under the City and Country Environment Restoration Program. It sets out the preferred minimum service level for kerbside resource recovery and residual waste collection and provides clear guidance on when and how councils should collect garden organics.

The best performing recycling collection systems have been identified to be:

- A separate bin for garbage (80, 120 or 140ltr size bin) collected weekly, with both a 120ltr paper bin and a 120ltr container recyclables bin, collected on alternative weeks. This system delivers more than 300kg of recyclables per household annually with minimal contamination; or
- a separate bin for garbage (80, 120 or 140ltr bin) collected weekly with mixed recyclables in a 240 litre bin, collected fortnightly.

The best performing organics collection systems are:

- A 240 litre mobile bin collected fortnightly, which delivers high garden organics volumes of 175kg or more per household per year. The cost for providing this service is estimated at \$45 per household per year. However, with the landfill savings taken into account the net financial cost reduces to less than \$5 per household per year. When the environmental benefits are included, the net cost/benefit results in a net overall benefit of \$37.50 per household per year; or
- in situations where less than 175kg per household per year is generated, a tied and bundled collection rendered four times per year is the preferred minimum standard.

The guide also sets out standard range of dry recyclables for municipal collections:

- Recyclable paper and cardboard including newspapers, magazines, phone books, cardboard packaging and liquid paperboard;
- Glass bottles and jars;
- Steel cans and aerosols;
- Aluminium rigid and semi rigid packaging; and
- All plastic containers.

Other available tools and programs:

- *A 'Model Waste and Recycling Collection Contract' package.* Sound contracts are important factors in ensuring efficient and effective waste and resource recovery collection systems. This tool helps councils develop quality contracts, streamline the tendering process and save time and money.
- *Waste & Resource Recovery Service Development Timeline.* This is a tool to assist councils with the two year planning process when developing a new service contract. It's easy to read (Microsoft Excel format) and provides checklists, timeframes, tips and resources associated with the critical phases of the process. The tool covers Consultation and Planning; Preparing Tender Documents; Tendering; New Service Commissioning and Monitoring and Review for new service development and implementation.
- *Assessment of Garden Organics Collection Systems.* This helps councils weigh up the costs and benefits of using recycled organics in municipal parks and gardens.
- A pilot project is underway to test the *feasibility of commercial recycling by local councils* to expand council resource recovery services to small to medium businesses.
- *The Alternative Waste Technology Assessment Tool and training* provides decision makers with a methodical and accountable means to evaluate alternative technology proposal for the treatment of wastes.
- *Assessment of Garden Organics Collection Systems.* This is a resource to assist council decision-making when considering Garden Organics and Alternative Waste Technology systems. The costs of council providing a separate garden organics collection are minimal. The service can actually reduce overall waste management costs.
- *Benefits of Recycling Study.* The outcomes of this are easy to understand facts and figures for councils on the environmental benefits of kerbside recycling, for use in education, communications and policy making. It substantiates why systems with high net diversion rates should be promoted.
- *Environmental Benefits of Recycling Calculator.* This is an excel based tool that provides a tangible measure of environment benefits of kerbside recycling collections. By inputting the kerbside tonnages in a Local Government Area, councils are able to demonstrate energy, greenhouse, and water savings.
- *CD: Getting more from our resource recovery systems.* This is a series of resources and tools relating to recycling and garden organics. The CD provides the latest information on municipal recycling, waste collection and resource recovery. Most of the resources have been developed in consultation with Local Government. It contains information to improve resource recovery; implement good practice performance measures for kerbside recycling, plus a range of tools and resources to assist and support council's decision-making process.
- *A strategic action plan by the Litter and Illegal Dumping Alliance.* The Alliance is a reference group with wide-ranging membership, which guides and coordinates programs to tackle litter and illegal dumping.

- A *'Multi Unit Dwelling Illegal Dumping Education Kit'*. The Kit aims to change the behavioural patterns of tenants in multi unit dwellings (MUD) and public housing estates and was developed from extensive social research. This Kit has been successfully trialled in the Kogarah Local Government Area. .
- A *Local Government Action Plan* (currently in draft). This will set out the negotiated position with the Local Government Association and Shires Association of NSW on ways and means to meet the targets in the Waste Avoidance and Resource Recovery Strategy.
- *Formation and Support of Regional Illegal Dumping (RID) Squads*. This is a Local Government collaborative program established to tackle the problem of illegal dumping. RID Squads combine resources and expertise from participating councils with the support of DEC. The Squads aim to reduce illegal dumping incidents within their operational regions by using covert surveillance and high profile patrols and also investigate and prosecute offenders.
- *Household Chemical Clean Out program*. This program is a partnership between DEC and councils, designed to help improve recycling by removing contaminants from the municipal waste stream and make homes safer.
- *Better Practice Guide for Public Place Recycling*. This is a guide for implementing a public place recycling system.
- *A Rural and Regional Transfer Station Design Handbook*. This is a catalogue of findings from a range of councils on the planning, building and operation of waste management and resource recovery systems/infrastructure.
- *Wastewise Events Kit*. This assists councils and event organisers with planning and implementing an effective waste management and recycling program at community events. A waste wise event is one that takes responsibility for waste management by adopting sound purchasing and packaging policies, waste and recycling collection services and clean up practices.
- *Integrated Contamination Management for Recycling and Organics* presents a series of case studies on how councils handle recycling contamination issues. The aim is to build capacity within councils to tackle contamination in municipal kerbside collected organics and dry recyclables destined for composting or reprocessing.
- *Sustainability Health Check (LGMA)* DEC has partnered with the Local Government Managers Australia (LGMA) to develop a 'Sustainability Health Check' document and program that will assist councils in their transition to sustainability. The program aims to raise awareness and education about sustainability, encourage analysis and review of council policies, systems and practices, and promote cultural change.
- *Don't be a Tosser Council Resource Kit*. This Kit is aimed at helping councils mount cost-effective and successful litter prevention campaigns. The kit provides a range of materials on CD, including bumper stickers, cinema slides, posters and press ads that can support clean-up, enforcement and education activities. Press and radio materials are also provided in eight community languages. The materials have been designed so that councils can choose a theme most relevant to their local area, their litter prevention activities and campaign priorities, whether it's littering from cars, at the beach or small scale illegal dumping.

ATTACHMENTS:

Tools and programs to advance best practice municipal waste management

1. *Progress in Waste Avoidance and Resource Recovery in NSW August 04*
2. *Working with Local Government brochure October 2005*
3. *Consultation – Preferred Resource Recovery Practices by Local Councils July 05*
4. *Getting More from our Resource Recovery Systems – Recycling and Garden Organics CD*
5. *Getting more from our recycling systems – Good practice performance measures for kerbside recycling systems*
6. *Getting more from our recycling systems – Good practice performance measures for kerbside recycling systems – an overview*
7. *Getting more from our recycling systems – Assessment of domestic waste and recycling systems – an overview*
8. *Assessment of garden organics collection systems*
9. *Benefits of recycling*
10. *Alternative Waste Treatment Technologies – AWT is it for you?*