

NSW Waste Avoidance and Resource Recovery
Performance Report
2006

Department of **Environment & Climate Change** NSW



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In April 2007, the name of the Department of Environment and Conservation (NSW) changed to the Department of Environment and Climate Change NSW (DECC).

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ISBN 978 1 74122 610 2

DECC 2007/484

First published September 2006. Reprinted October 2007.

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1 Performance at a glance

Waste Strategy 2003 contained waste avoidance and resource recovery targets in four key outcome areas:

1. preventing and avoiding waste;
2. increasing recovery and use of secondary materials;
3. reducing toxicity in products and materials; and
4. reducing litter and illegal dumping.

In 2004 a progress report provided data and described programs undertaken by the then Department of Environment and Conservation (DEC) and a range of other stakeholders that were contributing to the Strategy's targets. This report builds on that report to update the progress achieved against the 2003 Strategy.

Waste disposal and resource recovery in NSW is measured regionally through the Sydney Metropolitan Area (SMA), the Extended Regulated Area (ERA) comprising the Hunter, Central Coast and Illawarra regions and the Non-Regulated Areas (NRA) encompassing the remainder of the State.

Disposal

- Sydney disposed of 7.2% less waste per person in 2004–05 than in 2000; this is 94kg less per person.
- The Hunter, Central Coast and Illawarra regions disposed of 1.2% more waste per person in 2004–05 compared with 2000; this is 12kg more per person.
- Sydney has reduced the amount of waste per \$100 spent by 10.4% since 2000 (down from 3.12kg/\$100 in 2000 to 2.8 kg/\$100 in 2004–05).
- The Hunter, Central Coast and Illawarra regions have reduced the amount of waste per \$100 spent by 2.2% since 2000 (down from 2.05kg/\$100 in 2000 to 2.01 kg/\$100 in 2004–05).

Recycling

- Sydney recycled 49% of its total waste in 2004–05 compared with 48% in 2002–03.
- The Hunter, Central Coast and Illawarra regions recycled 50% of their total waste in 2004–05 compared with 47% in 2002–03.
- Tonnages of recyclables (packaging and organics) collected at kerbside in Sydney increased from 125kg per person in 2000 to 137 kg per person in 2004-05.
- Packaging collected from kerbside increased from 88kg per person in 2000 to 101.5kg per person in 2004–05.

Total waste created

- Sydney is generating more waste but is recycling a higher percentage of it. (8.81 million tonnes (mt) in 2004–5 compared with 8.64mt in 2002–03)
- Per capita, Sydney waste generation increased by only 0.4% between 2002-3 and 2004-5.

- Hunter, Central Coast and Illawarra regions are generating more waste but recycling a higher percentage of it (2.25mt in 2004–05 compared with 1.88mt in 2002–03).

2 Outcome 1: Preventing and avoiding waste

Waste Strategy 2003 identified a goal of holding level the total amount of waste generated over a five-year period.

The total amount of waste generated (created)¹ combines two sets of data, namely, tonnages of waste disposed and tonnages recycled.

The two data sets needed to report on this outcome have only been gathered since 2002-03 so only two sets of data are available. It is therefore not yet possible to make conclusions about progress towards this goal but the reduction of disposal to landfill in the Sydney region is a promising start.

3 Outcome 2: Increasing recovery and use of secondary materials

Waste Strategy 2003 set targets, to be met by 2014, for increasing the recovery and use of secondary materials in the three major waste streams. The targets were as follows:

- Municipal waste – from a baseline 26% to 66%;
- Commercial and industrial (C&I) waste – from a baseline 28% to 63%;
and
- Construction and demolition (C&D) waste – from a baseline 65% to 76%.

Waste disposal

The SMA and ERA produce most of the waste in NSW, disposing of more than 5.6 million tonnes of waste in 2004–05.

There are several different ways of measuring waste: on a per capita basis; by measuring absolute tonnages; or against the level of economic activity.

Per capita waste disposal

Sydney is performing reasonably well in terms of the amount of waste disposed of per person, with an overall decrease in per capita waste disposal of 94kg or 7.2% since the year 2000.

By waste stream, the decrease was strongest in the municipal waste stream, where per capita waste disposal was down 83kg, followed by the commercial and industrial waste stream - down 45kg/person. However, these gains have been partially offset

¹ This calculation does not account for any materials that are either disposed of or recycled on site; it can only measure tonnages of waste reported as being disposed of or recycled.

by an increase in the construction waste stream, up 34kg per capita between 2000 and 2004–05.

By contrast, the Hunter, Central Coast and Illawarra regions have increased total weight of waste disposed of per person by 12 kg/person or 1.3% since 2000. This is made up of an increase of 9kg per capita for municipal waste and 49kg per capita for construction waste since the year 2000. Commercial waste has rallied against this trend, down 45kg per capita.

Tonnages of waste disposed

Overall tonnages of waste disposed of in Sydney across all three waste streams were down 3.4%, or 159,176 tonnes, between 2000 and 2004–05.

Tonnages of municipal waste and commercial waste disposed of in Sydney in 2004–05 were less than in 2000 but these gains were offset by an increase in the amount of construction waste that was disposed of in the same period.

By contrast, and consistent with the per capita trend, waste disposed of in Hunter, Central Coast and Illawarra regions increased 6.6%, or 68,871 tonnes, between 2000 and 2004–05.

Tonnages of commercial waste disposed in the period were less than in 2000 but this gain was offset by increased disposal of municipal and construction waste.

In rural and regional NSW, improved data now covers both licensed and non-licensed landfills. This has provided a different data picture in 2004–05 to the one presented in the previous Strategy. The 2003 Strategy estimated that about one million tonnes were disposed of from all waste streams, but the data was not complete and was limited to rural licensed landfills. Improved 2004–05 data suggests that 1,402,572 tonnes were disposed of. It is likely that this increase is mainly due to improved data as well as population and economic growth in regional and rural NSW over the past few years.

Waste disposal per \$100 GSP

The amount of waste disposed can be calculated against the State's key economic indicator, Gross State Product (GSP), and represented as kilograms disposed of per \$100 spent. On this basis there was improvement between 2000 and 2004–05. Sydney performed best having dropped from 3.12kg of waste for every \$100 spent to 2.80kg (down 10.4%). The Hunter, Central Coast and Illawarra regions reduced by 2.2%, down from 2.05 kg per \$100 spent in 2000 to 2.01kg in 2004–05.

Where the waste comes from

The proportion of waste coming from each of the three waste streams, municipal, commercial and construction has remained unchanged since 2000.

In Sydney, commercial waste still accounts for almost half of total waste (49%) disposed of. There is slightly less municipal waste (down from 27% to 22%) and construction waste has increased slightly (up from 24% to 29%).

In the Hunter, Central Coast and Illawarra regions, the municipal waste stream is still the largest (43%). The commercial waste stream has reduced slightly (down from 38% to 24%) and construction waste has increased slightly (up from 19% to 25%).

Proportions across the three waste streams in rural and regional NSW are estimated to be similar to the Hunter, Central Coast and Illawarra regions with the municipal waste stream the dominant stream.

Virgin excavated natural material (VENM)

VENM refers to material such as clay, gravel, sand, soil and rock that is not mixed with any other waste or contaminated with manufactured chemicals and, that has been excavated from areas that are not contaminated, as the result of industrial, commercial, mining or agricultural activities. Previous analysis has distributed this material across the three major waste streams.

The improved data shows that VENM is primarily a Sydney-based issue and that tonnages have increased substantially since 2000 – up from 784,951 tonnes to 1,285,205 tonnes.

Recycling

Recycling data is compiled from a number of sources:

- a statewide survey of companies that reprocess recycled materials;
- information reported by local Councils about amounts and composition of materials collected through kerbside recycling;
- annual analysis of the amount of garden organics being recovered and reprocessed; and
- recycling tonnages reported by landfills.

The Bottom Line – proportion of total waste recovered for recycling

Based on all available data, in 2004–05 Sydney recovered 49% of its total waste for recycling - an improvement on the 48% recycled in 2002–03.

By waste stream, more municipal waste was recovered for recycling - up from 33% to 37% recycled, and the proportion of commercial waste recovered for recycling was also up – from 33% to 35% recycled. However, less construction waste was recycled in 2004–05, down from 68% in 2002–03 to 66%.

The Hunter, Central Coast and Illawarra regions also improved. In 2004–05 these regions recovered 50% of their total waste for recycling – an improvement on the 47% recycled in 2002–03.

By waste stream, the best performer was commercial which jumped to a recycling rate of 52% in 2004–05, up from 45% in 2002-03. Municipal waste recycling also increased - up from 28% to 33%. Consistent with Sydney, less construction waste is being recycled, down from 67% in 2002–03 to 65% in 2004-05. As noted previously, one of the driving factors behind the reduction in construction waste recycling is the appropriate disposal of asbestos waste and contamination of other demolition wastes with asbestos.

Organics recycling

The total amount of organics waste (garden, food, wood/timber, biosolids, agricultural) received by NSW reprocessing facilities increased from 1.34 million tonnes in 2003–04 to 1.41 million tonnes in 2004–05.

The amount of recycled organics received (garden, food, wood/timber and biosolids) increased 8.9% in this period (72,000 tonnes). Half of this increase in tonnage

comprised garden organics – a rise attributed to a slight increase in the amount of rainfall in Sydney during the period.

The total amount of garden organics disposed of in Sydney, and the Hunter, Central Coast and Illawarra regions has remained steady at 400,000 tonnes per year. The majority (80%) of the State's garden waste disposal is in Sydney.

Markets for recycled organic materials grew by 6.5% between 2003–04 and 2004–05. This growth occurred in all markets except biofuels, with the biggest growth in the rehabilitation market, which doubled between 2002–03 and 2003–04. Intensive agriculture uses have also grown (10% per year) and extensive agriculture uses have grown at 7%.

Kerbside recycling

The performance of kerbside recycling continues to show that efficient systems that are easy to use can deliver good quantities of material for recycling. As council contracts have been reviewed, improved systems have been replacing long-term collection arrangements. Adding together tonnages from both dry recyclables and organics collections, overall collection from kerbside systems in Sydney has increased from 125kg per person in 2000 to 137kg per person in 2004–05.

Kerbside recycling of dry recyclables

More councils are now providing kerbside recycling collections for packaging and paper. 109 councils are now providing kerbside collections, a 7% increase since 2000. An average of 95% of households have access to the service within each council area and average householder participation is constant at 80%.

There has been a big increase in systems using mobile garbage bins since 2001 (up from 50% of councils to 68%), and overall tonnages collected through these systems continue to grow. 593,000 tonnes were collected statewide in 2004–05, compared to 450,000 tonnes in 2000–01.

In Sydney, each person set aside 101.5kg of material for recycling in 2004–05 compared with 88kg in 2000, and recovery per household now amounts to an average of 283kg per year.

In terms of materials being recycled, there has been an annual increase in the recycling of every major material, with the average householder's annual contribution to recycling in 2004–05 by category as follows:

- 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 cans³

Contamination rates in Sydney have dropped substantially since 2000, down from 8% in 2000 to 3% in 2004–05. The Hunter, Central Coast and Illawarra regions also recorded improved contamination rates, down from 12% in 2000 to 10% in 2004–05.

³ Survey of Councils' domestic recycling performance for the National Environment Protection Measure (NEPM) 2004–2005

Kerbside recycling of garden organics

In Sydney more collection systems for garden organics have been introduced with 29 out of 38 councils offering a service in 2004-05. The amount of material being recovered per household has remained steady since 2000 at around 94kg.

4 Outcome 3: Reducing toxicity in products and materials

Waste Strategy 2003 identified a goal of phasing out priority substances in identified products by 2014 or earlier as a first choice or, if not possible, of achieving maximum recovery for re-use. It also identified a need for a cross sectoral steering group to identify/deal with priority harmful substances.

The Extended Producer Responsibility (EPR) Expert Reference Group that was formed to monitor sectors identified in the EPR Priority Statement has been encouraging and monitoring industry efforts to reduce toxicity though a focus on the products nominated in the current Priority Statement. In its 2004 report to the Minister and DECC, the Expert Reference Group specifically raised the issue of potentially hazardous substances in relation to computers, televisions, other consumer electronics, PVC, batteries, fluorescent tubes and shredder floc. The Minister for the Environment has requested that these sectors report on initiatives to reduce hazardous substances by the end of 2006.

5 Outcome 4: Reducing litter and illegal dumping

Waste Strategy 2003 identified a target of reducing total volumes and tonnages of litter and illegally dumped material reported by regulatory agencies and Regional Illegal Dumping (RID) squads annually, using 2003 as the base year.

A NSW Litter Monitoring Protocol has been developed to capture long-term trends in litter across NSW. Biennial surveys will report on litter types and monitor changes in littering behaviour.

Initial results, detailed in *The NSW Litter Report 2004*² (the first in the biennial series) found that NSW scored as 'moderately clean' (3.8 out of a possible 5). The rating combined an assessment of bin infrastructure and littering behaviour and attitudes. By volume, cigarettes, plastics, and paper made up more than 80% of litter; by weight, cigarette butts, paper, and glass comprised 70% of the litter stream.

The number of fines for littering in 2004-05 was 19% higher than in 2001-02, with 7,256 penalty infringement notices (PIN) issued in 2004-05. This is less than the record 9,000 PINs issued in 2002-03. Most fines are currently for littering from vehicles and are imposed by local councils and RID squads (over 60%).

The number of stormwater pollutant devices, sediment traps and litter booms has increased, according to Sydney Water. Litter booms in Sydney Harbour collected

² *The NSW Litter Report 2004*, Department of Environment and Conservation (NSW), December 2004 (www.environment.nsw.gov.au/litter/download/litter-rept04.pdf)

84 cubic metres in 2004–05 compared with 66 cubic metres the previous year; Botany Bay traps collected 32 cubic metres compared with 212 cubic metres previously. Of the 1,859 cubic metres collected in 2004–05, about 25% was non-organic, anecdotally reported as packaging and plastics.

Waste Strategy 2003 committed to establishing a Litter and Illegal Dumping Alliance. This Alliance was formed and has a wide-ranging membership including government agencies, Councils and non-government organisations (NGO). It is chaired by DECC and its role is to guide and coordinate programs to tackle litter and illegal dumping. The Alliance developed a Strategic Action Plan in 2005.

6 Other commitments in *Waste Strategy 2003*

Waste Strategy 2003 also identified a need for other key actions to support the achievement of waste avoidance and resource recovery goal and targets in NSW.

The 2003 Strategy stressed the need for better data and this has been achieved in a number of ways. In addition to the improved waste disposal data system that includes electronic lodgement of data (see 1.1 above), formal audits of commercial, industrial and construction waste being disposed of to landfill have now been undertaken and will be repeated on a regular basis. These audits have provided important new information and have assisted the development of targeted programs to increase recycling.

DECC is also working with the Department of Local Government to develop a more comprehensive and streamlined data collection system for local councils, and the DECC survey of reprocessors has been important to help establish tonnages being recycled within NSW.

The Strategy also stressed the need for the establishment of whole-of-supply chain monitoring, reporting and product stewardship initiatives.

The first NSW *Extended Producer Responsibility Priority Statement* was published in March 2004 identifying 16 wastes of concern. Following a report by an Expert Reference Group (ERG) appointed by the Minister for the Environment to evaluate sector performance, a new EPR Priority Statement was published in March 2006.

Measures are now underway to improve performance and reporting of progress in NSW on existing national schemes for mobile phones, agricultural and veterinary chemicals, chemical containers and polyvinyl chloride. In addition, DECC is working with industry and other jurisdictions to implement product stewardship schemes for computers, televisions, tyres and plastic bags, office paper and treated timber.

To provide an impetus to thinking about waste avoidance, the *Waste Strategy 2003* committed to exploring the issues and developing a strategy to tackle Waste Prevention. A discussion paper, informed by workshops and consultation with community organisations, industry and local government resulted in the publication of *Producing and consuming efficiently to conserve our resources*.³ Feedback on this paper has been used to inform consideration of waste avoidance in *Waste Strategy 2006*.

³ *Producing and consuming efficiently to conserve our resources*, Department of Environment and Conservation (NSW), February 2004

7 Key programs that contributed to *Waste Strategy 2003* outcomes

To fulfil its role in leading and coordinating programs that contribute to Strategy targets and outcomes, the DECC initiated or facilitated a wide range of waste reduction and resource recovery programs since *Waste Strategy 2003* was released. Key areas for action have included:

- better data;
- improving understanding of community attitudes and motivations;
- supporting markets for recycled materials;
- better recovery systems and waste management;
- decision making and guidance tools;
- government agency initiatives;
- identifying partnership opportunities;
- better Industry practices; and
- producer responsibility.

More details on the above programs areas are provided in **Appendix 1**.

Appendix 1 Summary of DECC programs

A wide range of waste reduction and resource recovery programs have been initiated or facilitated by DECC since *Waste Strategy 2003* was released. These were designed to contribute to Strategy outcomes. Key areas for action have included:

- better data;
- improving understanding of community attitudes and motivations;
- supporting markets for recycled materials;
- better recovery systems and waste management;
- decision making and guidance tools;
- government agency initiatives;
- identifying partnership opportunities;
- better Industry practices; and
- producer responsibility.

Programs highlights between 2003 and 2006 are provided below, followed by more detailed program descriptions.

- More than 460 organisations have now been directly involved in cleaner production projects through the \$5M Industry Partnerships Program, which is engaging sectors as diverse as: agriculture, boating and marina, metals, composites, paint and ink manufacturing and other manufacturing, engineering, food production, retail, logistics, plumbing, commercial painting and printing.
- DECC has worked with the Department of Commerce to help develop sustainability requirements for NSW Government contracts worth approximately \$300M. Key contracts include personal computers, photocopiers, cleaning products, small electrical goods and recycling collection services.
- 180 collection events under the Household Chemical Collection Program collected 1,668 tonnes of material from around 46,000 participants in the Sydney, Hunter and Illawarra regions. Collections were also assisted in other regions. Where possible chemicals and materials were reused and recycled.
- Research and demonstration sites established in partnership with the Hawkesbury Nepean Catchment Management Authority have demonstrated the potential for the use of compost and composted mulches in catchment management and rehabilitation across NSW.
- A comprehensive tendering package called the Model Waste and Recycling Collection Contract is assisting Councils to increase the efficiency and effectiveness of their resource recovery services. The contract includes vehicle emission management systems and best practice handling, compaction and contamination practices. To date two training sessions have been conducted, attended by 18 officers representing 15 Councils.
- DECC has been working nationally with key industry sectors including TVs, computers, packaging, tyres, mobile phones and plastic bags to

develop effective product stewardship schemes to increase the recycling of these products at end of life.

- DECC assisted with the development of the strengthened National Packaging Covenant that was approved by the nation's Environment Ministers in July 2005. DECC chaired the NSW Jurisdictional Recycling Group (JRG) under the National Packaging Covenant. The Group delivered a wide range of projects between 2003 and 2005 to help improve kerbside recycling efficiencies in NSW. The NSW Government and the packaging industry jointly funded these projects.
- An *Ethnic community action program* has resulted in more than 470 sessions for 11,000 participants being run by 20 bilingual educators in eight community languages. The project aims to encourage people from culturally and linguistically diverse backgrounds to learn about, and take care of, their local environments at home, work and play.
- Implementation of Environmental Management Plans (SEMPs) in more than 200 Government and non-Government schools across the state has resulted in: school environmental audits; the development of school environmental education teaching/learning activities on waste and resource reduction; waste, water and energy reduction plans and staff training.
- More than 6000 items of IT equipment were collected and reused or recycled during a computer equipment recovery trial run by DECC and the Australian Information Industry Association. The pilot also provided valuable information to assist the development of an industry-run recycling scheme.
- A Benefits of Recycling Study looking at the environmental benefits of recycling different materials found that kerbside recycling results in large savings in greenhouse gas emissions, as well as water and energy savings. A new calculator enables Councils to determine the environmental benefits of recycling to their own communities.
- The first major government/non-government partnership in NSW to conduct coordinated programs to promote sustainable living commenced in 2005 as a new phase of the *Our Environment, it's a living thing* community education campaign.

Better data

A number of audits of the C&I and C&D waste streams have improved available waste data and informed priority setting, including:

- a major audit of C&I waste to 16 major landfills in Sydney (undertaken in 2003);
- a major audit of C&D waste to five Sydney landfills (2004);
- an audit of the contents of plastic garbage bags that made up 20% of the 2003 C&I audit stream (2005).

Audit results confirmed food, paper, cardboard and plastics as the recovery priorities for the C&I waste stream, while priority materials for the C&D stream over the next two to three years are:

- Soils;
- C&D MRF fines;

- Timber;
- Concrete and brick; and
- Metals.

Audit results also delivered the following key outcomes for work in the C&I and C&D waste streams:

- Improved understanding of target material flows from source to final disposal, as well as industry capacity and drivers for recovery within the Sydney area. Focus materials have been glass, paper and metals. This work has provided an insight to possible opportunities for greater diversion to reuse or reprocessing from landfill and opportunities for the uses of recycled materials in various manufacturing processes.
- Scoping of further development and inclusion of additional products in the 'GreenSpec' program, in collaboration with the construction and demolition industry, the Roads and Traffic Authority, Local Government and other industry groups. The focus has been on the use of rubber and asphalt in road base, and glass in sand and cement.
- Progression of work with Sensis to enhance the Yellow Pages search capability as a directory for recycling services providers and recycled content products.
- Research and preparation of guidelines for the design of rural waste transfer stations.

DECC has also completed its third annual survey (2003-04) of the NSW re-processing industry. A combined report was produced for the 2001-02 and 2002-03 financial years due to a variation in response rates between different material sectors in the first year.

Mapping of municipal solid waste flows in the Sydney Metropolitan Area and the development of a database of waste, recycling and re-processing facilities in the Sydney region have been completed. This is the first time such data has been collated and this will greatly assist with planning and infrastructure placement.

Improving understanding of community attitudes and motivations

Research funded by DECC, Sydney Catchment Authority and the NSW Department of Energy, Utilities and Sustainability during 2004 looked at the eight largest *ethnic communities* in NSW. It provided insights into the ways that environmental knowledge, attitudes and behaviours differ between the groups, as well as information about media use and preferred communication channels of each community. This is assisting planning, review and implementation of agency programs.

An *illegal dumping* study completed in 2004 drew together all available data and experience on illegal dumping behaviour, locations and responses from local and international literature, government agencies, NGOs and councils.

A '*Multi Unit Dwelling Illegal Dumping Education Kit*' was successfully trialled in the Kogarah local government area. The Kit was developed after extensive social research, which highlighted a need to significantly change the behavioural patterns of renters in multi unit dwelling (MUD) units and public housing residents.

Supporting markets for recycled materials

Trials and demonstration sites have been established in partnership with the Hawkesbury Nepean Catchment Management Authority to test the effectiveness of recycled organic materials in catchment management and rehabilitation. The demonstration sites have used 5,500 cubic metres of compost and composted mulches. Field days for catchment management personnel and landholders have been held at the sites to demonstrate the use and benefits of this material.

A partnership trial with the RTA on Windsor Road at Rouse Hill has tested composted mulch with a view to including this material in RTA specifications. An extension to this work tested the application of composted mulch through 'blower' trucks, a new and improved method for large scale compost spreading.

A long-term cost/benefit analysis of recycled organics use in agriculture, specifically in vegetable growing and wine grape growing, is progressing in partnership with the NSW Department of Primary Industries. Various factors will be tested in research plots over a four-year period to measure the true cost/benefit of compost use in agriculture.

Regional organics inventories have been established across NSW to encourage aggregation of materials and linkages between industry sectors, designed to improve the potential for recycling organic materials in regional NSW.

An innovative program, City to Soil, has linked household garden waste recycling practices with local farm users. Based in Queanbeyan, the program helped householders understand the need for uncontaminated garden waste by following its transformation into compost for use in a local vineyard.

Markets for construction waste have been assisted through a number of projects. The *Council and RTA Greenspec* is a specification for the supply of recycled materials, primarily crushed concrete, brick and reclaimed asphalt blends (for use as a road base for urban roads), select fill (for use on sub-grades), and a bedding material (for paving blocks and as a drainage medium). The specification was designed to encourage local authorities and the private sector to maximise the use of recycled materials in their public works. It was developed by DECC, C&D re-processors and the Institute of Public Works Engineering of Australia.

Tamworth Regional Council has successfully negotiated with the RTA to use *Greenspec* compliant recycled material in a road-widening project. The 2004 Manilla Road project involved widening a 530-metre section of the road on the outskirts of Tamworth, including the provision of a centre-turning lane and pavement reconstruction. Approximately 2,000 tonnes of recycled concrete road base, produced at the Forest Road Landfill outside Tamworth, was used for the project.

The *Local Government Buy Recycled Alliance* (LGBRA) program supports and encourages NSW Councils in buying products and services that contain recycled content. As at October 2005, the Local Government Buy Recycled Alliance (LGBRA) had 61 member Councils. A final report on the LGBRA was produced in December 2005. Steps are underway to enlarge the scope of the LGBRA from a 'buy recycled' focus to a wider 'eco-buy' program covering environmentally friendly products, for example, products with low toxicity.

Better recovery systems and waste management

A range of materials and programs to improve recovery systems and services have been delivered by DECC, many in consultation with NSW Councils.

Waste and Resource Recovery Service Development Timeline (2005) provides checklists, timeframes, tips and resources associated with critical phases of new waste and recycling collection services.

A Model Waste and Recycling Collection Contract (2005) package covers every aspect of writing a contract for new services. To date two training sessions have been conducted, attended by 18 officers representing 15 Councils.

Benefits of Recycling Study (2005) looked at the environmental benefits of recycling different materials. The study found that kerbside recycling makes a large contribution to greenhouse gas reduction, and water and energy savings, as well as helping to conserve non-renewable virgin resources. A calculator enables Councils to measure the environmental benefits of recycling to their own community.

Assessment of Garden Organics Collection Systems (2006), using an Environmental Economic Valuation, found that the environmental value of each tonne of garden organics recycled is around \$114 in 'Eco dollar' terms. This covered resource savings and the environmental benefits associated with avoided use of chemical fertilisers, avoided air and water pollution impacts and reduced global warming potential.

Preferred Resource Recovery Practices by Local Councils (2006) documented preferred minimum service levels. These include bin-based recovery systems, a mobile bin colour standard, a standard set of materials to be collected from kerbside, baseline and aspirational performance outcomes, as well as clear guidance on when and how Councils should collect garden organics from single dwellings.

Getting more from our recycling systems – good practice performance measures for kerbside recycling systems (2004) established performance measures for key elements of kerbside recycling systems in order to assist councils deliver more effective and efficient systems.

The *Better Practice Guide for Public Place Recycling* was developed to assist the establishment of consistent recycling systems in public places.

Councils in Sydney and the extended regulated area (ERA) were invited to participate in a pilot project to test the feasibility of commercial recycling by local Councils. A consultant has been appointed to assist three Councils (Wollongong, Blue Mountains and Willoughby) to develop a business case to introduce or expand resource recovery services to small to medium businesses.

Assistance has been provided to Councils entering into agreements to reprocess their waste collections using alternative waste technologies (AWT). The Macarthur Group of Councils has entered into a substantial contract to process domestic recyclables, organics and residual waste, which is expected to result in a diversion/recovery rate of 86%.

A Local Government Sustainability Health Check has been produced and the management diagnostic tools produced under this project are now being trialled by eight Councils.

New and increased commercial recycling services have been developed in the Illawarra and South Coast resulting in collection of around 3,300 tonnes of additional material for recycling per year. Some Councils in the region have introduced or expanded kerbside services for commercial premises.

Work involving councils has also targeted construction waste and household chemicals. Assistance has been provided to Councils in their role as consent authorities for development applications to change waste management and resource recovery behaviours. *Waste Not Development Control Plans (DCPs)* require development proponents to demonstrate how the construction and demolition wastes from a proposed development will be recycled or reused as well as how ongoing recycling and recovery systems will be incorporated into the development. The adoption of DCPs by 45 Councils across Sydney since 1996 has contributed to a significant increase in the amount of construction and demolition materials being recycled in NSW. In 2003-04 well over 2.5 million tonnes were recycled, up from a base of around 300,000 tonnes in 1996.

Since its inception in 2003 a total of 180 collections have been conducted under the Household Chemical Collection (HCC) Program, which has processed approximately 1,668 tonnes of material from about 46,000 participants. Where possible chemicals and materials have been reused and recycled, with stabilisation and disposal only as a last resort.

Improved frameworks for managing problem waste started in November 2005, to investigate and identify gaps or barriers in legislation or policy in the treatment, disposal or reuse of problem wastes such as chlorinated solvents. An Interim Report has been prepared which includes the results of investigation into metallurgical industry waste.

Partnership programs were negotiated with major landfill operators including WSN Environmental Solutions, SITA Environmental Solutions and Collex Pty Ltd following the 2003 C&I landfill audit. This initiative targeted additional recovery of an estimated 20,000 tonnes per annum through the introduction of additional low tech/low cost recovery opportunities for cardboard, metal and wood at a number of sites.

R&D to assist recycling

A Research and Development Grants Program was initiated in 2003. The Program targeted barriers to increased recovery of specific resources, the development and testing of best practice models, and market development for recovered and recycled resources. More than \$2M was awarded to a range of companies and research institutions.

The projects represented a diverse range of projects including: work on bio-filtration of landfill methane gas using recycled organics; optimising paper recovery at Materials Recovery Facilities (MRF); integrated recovery of construction materials at a dry recyclables MRF; a grease trap waste co-generation facility; increasing market demand for stormwater management products made from recycled organics; a portable bio-fertiliser production facility; a feasibility study on increasing textile recycling; recycling of sodium polyacrylate (SPA) from disposable nappies in compost/mulch applications; and research into an integrated bio-system for rural towns.

Work is continuing to address barriers to increasing the recovery of waste wood. DECC has funded studies by the Commonwealth Scientific and Industrial Research

Organisation (CSIRO) to develop sampling and testing methodologies to ensure chemically treated timbers are excluded from the recovered timber stream. DECC is continuing to work with research organisations and industry to undertake the implementation of these safeguards as well as developing new techniques.

Regulatory enforcement driving better practice

DECC has continued to target unscrupulous behaviour in the waste industry. Between July 2003 and June 2006, DECC's Sydney Waste Section completed 31 waste campaigns. These included blitzes on waste situations posing risks to the environment and identifying and following up non-compliances with the law. There have also been initiatives to raise awareness and improve industry's knowledge, targeting areas such as unlawful disposal of waste at landfills, litter and illegal dumping, proper handling and disposal of asbestos waste, inspection of waste transport vehicles, and the management of liquid waste.

The 'Regional Illegal Dumping (RID) Squads' is a local government collaborative program to tackle the problem of illegal dumping. RID Squads combine resources and expertise from the participating local Councils with the support of the DECC. since its inception in July 1999 the Western Sydney RID Squad:

- completed 6,217 investigations;
- issued 99 clean up/prevention notices; and
- issued 1,498 penalty infringement notices totalling \$993,042.

In March 2004 the Greater Southern RID Squad started work, with the participation of three Illawarra Councils, and the funding and participation of the Sydney Catchment Authority. In the 18-month period from inception to October 2005, the Squad:

- initiated 2,556 investigations;
- issued 40 cleanup notices; and
- issued 296 penalty notices totalling \$185,595.

Decision making and guidance tools

DECC has developed an *Alternative Waste Technologies Assessment Tool* and Handbook to assist Councils with decisions about the adoption and selection of suitable technologies. The Department has assisted groups of Councils with the use of the tool, supported by a training program which is currently provided on a needs basis.

DECC has also been working with Local Government to develop and agree on an Action Plan to establish commitments and targets that Local Government could adopt to contribute to meeting the targets and goals in the NSW *Waste Strategy*. As a result of an extensive consultation process the draft Local Government Action Plan has been revised and is expected to be finalised in September 2006.

DECC also published a Guidance Note for the assessment of Non-Standard Fuels. DECC recognises that the use of non-standard fuels can benefit the environment and the community, for example, by reducing greenhouse gas emissions that would otherwise be generated from standard fuels such as coal. This will also reduce reliance on non-renewable and virgin fuels and offer a value-adding opportunity for materials that may otherwise be sent to landfill. However, burning some materials may have adverse environmental impacts and the key aim of the Guidance Note is to

encourage the beneficial use of non-standard fuels while ensuring that there are no unacceptable impacts to human health or the environment.

Government agency initiatives

DECC has worked with the Department of Commerce to help develop sustainability requirements for NSW Government contracts worth approximately \$300M. Key contracts include personal computers, photocopiers, cleaning products, small electrical goods and recycling collection services.

The DECC *Greengoods* website was launched in 2004 to assist government agencies and other interested organisations to implement sustainable procurement policies and source environmentally preferable products.

DECC is also working with the RTA to make NSW road construction more sustainable through the recovery, purchase and use of recycled content materials and products. RTA is committed to sustainable change by revising standards, specifications and procurement policy based on proven technical performance and demonstrated economic and environmental benefits. Initiatives include a number of trials, including the use of crumbed recycled rubber tyres in asphalt pavements; recycled crushed glass as a cement, sand and aggregate replacement in concrete; and recycled organic materials in roadside landscaping.

The first *whole-of-government WRAPP progress report* was released in 2004 with aggregated information and data from 131 agencies and state owned corporations for the two reporting periods, 2001 and 2003. The report for 2003 showed that:

- there was a reduction in the total amount of waste office paper generated by agencies;
- there was an increase in the amount recovered for recycling – for example, paper recycling increased from 59% to 73%; and
- the purchase of recycled content copy paper nearly doubled from 19 per cent in 2001 to 36 per cent in 2003.

The second *whole-of-government WRAPP progress report* will be released in mid 2006 with aggregated information and data from 121 agencies and state owned corporations for the three reporting periods 2001, 2003 and 2005. The data for 2005 shows that:

- paper recycling increased from 73% in 2003 to 82% in 2005;
- cardboard recycling rate increased from 40% in 2003 to 82% in 2005;
- recycling of vegetation waste rose from 81% in 2003 to 87% in 2005;
- recycling of construction and demolition waste increased from 75% in 2003 to 86% in 2005; and
- purchase of recycled content copy paper has increased from 36% in 2003 to 44% in 2005.

Identifying partnership initiatives

Since 2002 DECC has provided funding of \$4M to support seven *Voluntary Regional Waste Groups*. Covering more than 90% of NSW and with a membership of 85 councils, through collaborative approaches these groups have diverted from landfill:

- 31,656 tonnes of scrap metal;
- 283,829 cubic metres of garden organics;
- 521,957 agricultural drums;
- 1.2 million plastic bags;
- 145 tonnes of household chemical waste;
- 44,700 tonnes of construction and demolition waste ;
- 254,100 litres of used oil; and
- 8,000 tyres.

In 2005, DECC expanded its work with major property owners to develop a Sustainable Property Cluster designed to accelerate the uptake of sustainability within the sector. The cluster participants are AMP Capital Investors, Colonial First State Property, GPT, ING Real Estate, Macquarie Asset Services and Stockland. The aim is to assist businesses in integrating efforts to address energy, water and waste and then benefit from shared experience. Cluster partners have developed Action Plans that involve a number of significant resource recovery initiatives.

The *Sustainable Schools and young people's participation in sustainability* program supports personal responsibility, eco-sustainability and community responsibility in schools and among young people as part of the NSW Government's *Learning for Sustainability* environmental education plan. The program is focused on ensuring a coordinated and integrated approach to long-term sustainability, including the implementation of school environment management plans. Now underway in 200 schools across NSW, the program is a joint initiative between the DECC and the Department of Education and Training. A Joint Agency Support group of relevant State Government Departments has also been formed to co-ordinate input and assistance to schools. Key results include:

- Implementation of School Environmental Management Plans (SEMPs) in more than 200 Government and non-Government schools across the state resulting in: school environmental audits; the development of school environmental education teaching/learning activities on waste and resource reduction; waste, water and energy reduction plans and staff training.
- Preparation of educational resources for placement on the DECC's website in order to support SEMPs.
- Training on sustainable purchasing provided to administration staff from 20 schools.
- A partnership with the Bishops of Catholic Earthcare to develop a policy statement on environmental education for all Catholic Schools in NSW that will promote Catholic schools' participation in the Sustainable Schools Program and the use of School Environmental Management Plans as a way to tackle resource consumption in Catholic Schools.
- Agreement with Local Government and Shires Association to assist local government environmental education officers to work with schools to improve environmental outcomes.
- The formation of a statewide Youth Environment Forum and a framework for the DECC to work with young people, aimed at increasing young people's participation in sustainability issues, including sustainable consumption of resources.

An *Ethnic community action program* has conducted more than 470 sessions for 11,000 participants, run by 20 bilingual educators in eight community languages. The project aims to encourage people from culturally and linguistically diverse backgrounds to learn about, and take care of, their local environments at home, work and play, with a particular focus on leading sustainable lifestyles. Topics covered include sustainable living, water conservation and restrictions, recycling and waste reduction, sustainable gardening, composting, stormwater, biodiversity conservation, energy reduction and conservation, air pollution, green cleaning, and the safe use of pesticides.

The *Our Environment, It's a Living Thing' (OEILT) Council partnership program* assists Councils to extend the program to local, grassroots levels through integrated and locally relevant education and communication projects in partnership with other stakeholders. Assistance is provided in the form of grants to local Councils to develop sustainability education programs, as well as mentoring and support for Council educators.

Learning from one another

Valuable insights into a range of successful community waste education campaigns have been produced as case studies and placed on the DECC website. Projects are grouped across five different areas: supporting council waste services; organisational change; schools; the community; and industry.

As part of the *Local Council Partnership Program* DECC is also working with a range of councils to support the planning and delivery of community education projects to address local waste issues. The program provides a structured learning program for council environmental educators to help integrate their education with their council's other household services. DECC recently hosted a conference at which council educators were able to present outcomes and achievements of their education projects to their peers.

The *Our Environment it's a living thing* community education campaign entered a new phase in 2005 by establishing the first major government/non-government partnership in NSW to conduct an integrated and coordinated program to promote sustainable living. DECC is working in partnership with leading environmental groups including: the Total Environment Centre, the Australian Conservation Foundation, the NSW Nature Conservation Council and the NSW Council of Social Services, as well as the Department of Energy, Utilities and Sustainability, to deliver a 2½ year environmental education program.

Better Industry practices

The *Industry Partnership Program (IPP)* is a \$5 million (matched funding) cleaner production program that started in late 2001 and will finish in June 2006. It has focussed on activities to reduce the use of resources (raw materials, water and energy) and to reduce the volume and toxicity of waste and other emissions. More than 400 businesses have participated in the IPP through 45 partnership projects that have delivered environmental and financial savings totalling:

- 32.4 million KWh of electricity and 18,000 Gigajoules of gas;
- 34,000 tonnes of CO2 emissions;
- 9,300 tonnes of raw materials;
- 290 ML of water;

- 8,100 tonnes reduction in waste to landfill; and
- almost \$10 million in financial savings.

With a strong emphasis on waste avoidance, reuse and recycling, the IPP has involved a diverse range of industry sectors, including: galvanisers; metals manufacturers; food processors; boating and marina facilities; poultry producers; the textile industry; the construction industry; and plumbers. More than 20 case studies have been developed to profile the achievements of individual companies and clusters. Annual landfill savings of 8,000 tonnes have been documented, although this figure is very conservative as it is difficult to 'capture' supply chain and other 'flow on' waste achievements. Waste highlights include:

- Insurance Australia Group's (IAG) work with its 400-strong preferred smash repair network to address the annual generation per repairer of 10 tonnes of scrap metal/aluminium, plastics, paper/cardboard, as well as liquid wastes, oil filters and other wastes of a hazardous nature. This network undertakes 70% of the smash repair work in NSW and highlights the value of supply chain approaches.
- The recycling efforts of Hawker de Havilland who are sending 500 tonnes of aluminium swarf (shavings) off-site for reuse and filtering and reusing 250,000 litres of cutting fluid, representing a saving of \$1.1 million per year.
- Johnson Diversey's product stewardship approach in recovering and reprocessing chemical drums. This work is diverting 2,400 cubic metres (314 tonnes) from landfill, eliminating the resource use of manufacturing new drums and saving the company \$600,000 per year.
- The collaborative efforts of companies in the Lithgow cluster who have joined together to establish a viable commercial recycling program for the area.

The *NSW Business Sustainability Compacts* are voluntary negotiated agreements between the DECC and leading companies to work together to advance sustainability practices within the companies and to promote sector-wide environmental improvement. The first NSW Business Sustainability Compact was signed with Hewlett-Packard Australia (HP) in November 2005. HP has committed to a range of initiatives that have the potential to deliver significant e-waste outcomes, including:

- product stewardship, including the development of a community computer take-back program for all HP computers and the support of industry wide initiatives;
- working with the NSW Government to evaluate IT take-back and recycling schemes around the world for possible sector-wide implementation in NSW;
- increasing printer cartridge recycling;
- helping to develop guidelines for environmentally preferable IT purchasing for the community, business and government; and
- reducing water and energy use, and waste generation at HP facilities in NSW.

The *Efficient Clubs Project* is addressing major waste and other environmental issues in NSW Clubs in partnership with Clubs NSW. Phase 1 involves working with six selected clubs and has revealed the scope of the waste problem and the opportunity for improvement. Projects are now underway to lift recycling rates and

reduce the amount of food waste being sent to landfill, through the trial of an innovative 'Pulpmaster' system, which is collecting food waste for use at the EarthPower anaerobic digester at Rosehill.

The *Environmental Action Series* is a major update of the former 'Solutions to Pollution' information booklets, which places considerable emphasis on improved waste management and cleaner production opportunities. New booklets covering printers, service stations, wood products and furniture manufacturing will be launched in 2006.

Producer responsibility

DECC is negotiating extended producer responsibility (EPR) outcomes for specific products identified in the (annual) NSW *Extended Producer Responsibility Priority Statement* and via the Environment Protection and Heritage Council (EPHC) to ensure that producers take physical or financial responsibility for the environmental impacts of their products throughout the products' life cycle.

The first *Priority Statement* was published in March 2004. It listed 16 'wastes of concern', namely, TVs, computers, tyres, mobile phones, NiCad batteries, agricultural and veterinary chemicals and chemical containers, packaging, plastic bags, cigarette butts, polyvinyl chloride, treated timber, office paper, used oil/lubricants, end-of-life vehicle residuals and other electrical equipment. This list has been maintained in the *EPR Priority Statement 05/06*.

DECC has been working nationally with industry sectors such as TVs, computers, packaging, tyres, mobile phones and plastic bags to develop effective national product stewardship schemes to increase recycling, or in the case of plastic bags, phase out the use of these products.

A pilot computer recycling project was run in eight Western Sydney councils between November 2002 and March 2003. The pilot was a joint initiative between government and industry to test the feasibility and cost of running collection centres for computers and electronic equipment. A total of 6,383 items was collected from seven permanent sites and six special collection events. Monitors and Hard Drive boxes represented approximately 60% of the items collected. 677 different brands, on average between 9 and 13 years old, were collected, with approximately 45% of equipment collected no longer having a parent company trading. The pilot has also provided valuable information for the computer industry to assist development of an industry-run recycling scheme.

A range of programs focussing primarily on kerbside recycling was delivered under the first *National Packaging Covenant*, all aimed at assisting decision-making by providing information on system design, packaging uses and specifications, and establishing best practice. To date, new Covenant programs have focussed on:

- designing a strengthened regulatory instrument to deliver the NEPM in NSW;
- developing an improved data base for identifying and monitoring non signatories;
- analysing data reporting requirements and designing projects to enable gathering of data to report against the KPIs; and
- design of some initial programs focussing on away from home recycling targeting the commercial sector.

The NSW Government and the packaging industry have also jointly funded projects. These have included the establishment of good practice kerbside performance benchmarks for local councils, an assessment of alternative domestic waste and recycling systems, an education program to tackle kerbside contamination, and a study on best practice elements for glass compaction and market opportunities for glass fines. DECC continues to chair the state based projects group (Jurisdictional Projects Group (JPG)) under the new Covenant.

