

A decorative graphic on the right side of the page. It consists of a jagged white shape that looks like a tear in a piece of paper, revealing a pattern of brown hexagons underneath. The hexagons are arranged in a honeycomb-like structure, with some missing in the center of the tear.

## Waste Avoidance and Resource Recovery Strategy Progress Report 2010–11

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## Contents

<b>1. Executive summary .....</b>	<b>1</b>
1.1 Key findings.....	1
1.1.1 Increased resource recovery.....	1
1.1.2 Waste prevention and avoidance .....	2
1.1.3 Reducing toxic substances .....	3
1.1.4 Reducing litter and illegal dumping .....	3
1.2 Key NSW policies and programs supporting the WARR strategy .....	4
<b>2. Introduction.....</b>	<b>5</b>
<b>3. WARR strategy targets .....</b>	<b>6</b>
<b>4. Key result area 1: Increasing recycling and use of secondary materials .....</b>	<b>7</b>
4.1 Resource recovery by region .....	8
4.1.1 Sydney metropolitan area .....	8
4.1.2 Extended regulated area.....	9
4.1.3 The rest of NSW .....	9
4.2 Resource recovery by waste stream .....	9
4.2.1 Municipal waste stream .....	9
4.2.2 Commercial and industrial waste stream.....	13
4.2.3 Construction and demolition waste stream.....	14
<b>5. Key result area 2: Preventing and avoiding waste .....</b>	<b>18</b>
5.1 Waste disposal.....	18
5.2 Waste generation by region and by waste stream.....	19
5.3 Waste generation per capita .....	20
<b>6. Key result area 3: Reducing toxicity in products and materials .....</b>	<b>22</b>
<b>7. Key result area 4: Reducing litter and illegal dumping .....</b>	<b>24</b>
7.1 Litter.....	24
7.2 Illegal dumping.....	26
<b>8. Key NSW policies and programs supporting the WARR Strategy.....</b>	<b>27</b>
<b>9. Appendix A: Data methodology .....</b>	<b>29</b>
<b>10. Appendix B: Recycling, disposal and generation tonnages by waste stream and region 2002–03 to 2010–11 .....</b>	<b>30</b>
<b>11. Appendix C: Generation, disposal and recycling by waste stream and material 2010–11.....</b>	<b>33</b>
<b>12. Appendix D: NSW Litter Report 2011–12.....</b>	<b>35</b>

## Abbreviations

AWT	alternative waste technology
C&I	commercial and industrial
C&D	construction and demolition
EPA	Environment Protection Authority NSW
ERA	extended regulated area (Hunter, Central Coast, Illawarra)
KAB	Keep Australia Beautiful
KRA	key result area
OEH	Office of Environment and Heritage NSW
PIN	penalty infringement notice
PVC	polyvinyl chloride
RID	regional illegal dumping
RRA	regional regulated area, this includes: Ballina, Bellingen, Blue Mountains, Byron, Clarence Valley, Coffs Harbour, Dungog, Gloucester, Great Lakes, Greater Taree, Kempsey, Kyogle, Lismore, Muswellbrook, Nambucca, Port Macquarie-Hastings, Richmond Valley, Singleton, Tweed, Upper Hunter, Wollondilly
SMA	Sydney metropolitan area
WARR	waste avoidance and resource recovery

## 1. Executive summary

This Waste Avoidance and Resource Recovery (WARR) Progress Report 2010–11 provides a snap shot of progress toward achieving the objectives and targets in the NSW Waste Avoidance and Resource Recovery Strategy 2007 (the WARR Strategy). The WARR Strategy objectives and targets are to:

<b>1. Increase recovery and use of secondary resources</b>	<p>By 2014:</p> <ul style="list-style-type: none"> <li>increase recovery and use of materials from the municipal waste stream, from 26% (in 2000) to 66%</li> <li>increase recovery and use of materials from the commercial and industrial waste stream, from 28% (in 2000) to 63%</li> <li>increase recovery and use of materials from the construction and demolition sector, from 65% (in 2000) to 76%</li> </ul>
<b>2. Prevent and avoid waste</b>	<ul style="list-style-type: none"> <li>to maintain the level of total waste generated for 5 years from the release of Waste Strategy 2003</li> </ul>
<b>3. Reduce toxic substances in products and materials</b>	<p>By 2014:</p> <ul style="list-style-type: none"> <li>to phase out priority substances in identified products as a first choice or, if not possible, to achieve maximum recovery for re-use</li> </ul>
<b>4. Reduce litter and illegal dumping</b>	<ul style="list-style-type: none"> <li>reduce total amount of litter reported annually</li> <li>reduce total tonnes of illegally dumped material reported by regulatory agencies and regional illegal dumping squads annually.</li> </ul>

The WARR Progress Report 2010–11 is based on 2010–11 data.

### 1.1 Key findings

#### 1.1.1 Increased resource recovery

The community has made good progress towards the 2014 recycling targets listed in the WARR Strategy. The resource recovery rate has increased across all three waste streams since the last progress report and since the first WARR strategy was introduced (Table 1).

**Table 1: Progress towards the NSW recycling targets by waste stream**

	<b>2002–03*</b>	<b>2004–05</b>	<b>2006–07</b>	<b>2008–09</b>	<b>2010–11</b>	<b>2014 recycling target</b>
Municipal	31%	33%	38%	44%	<b>52%</b>	66%
Commercial & industrial	34%	38%	44 %	52%	<b>57%</b>	63%
Construction & demolition	64%	62%	67%	73%	<b>75%</b>	76%
Overall	45%	46%	52%	59%	<b>63%</b>	

\*First WARR Strategy established.

NSW recycled 63% of its waste in 2010–11, up from 59% in 2008–09 and 45% in 2002–03. This represents 10.7 million tonnes of material put back into the NSW economy.

Recycling has increased across all NSW regions, with significant increases in regional areas outside Sydney.

- Recycling in the Hunter, Central Coast and Illawarra regions increased from 59% in 2008–09 to 68% in 2010–11. Resource recovery in the commercial and industrial (C&I; at 70%) and commercial and demolition (C&D; at 77%) streams is already exceeding the 2014 targets of 63% and 76% respectively.
- Recycling in rural and regional areas grew from 42% in 2008–09 to 50% in 2010–11.

In Sydney, total recycling increased from 62% in 2008–09 to 64% in 2010–11. This included a significant jump in municipal recycling, which increased from 51% to 59% during this period as a result of a number of councils moving to best practice recycling systems for household waste. Recovery in the C&D stream continued to meet the 2014 target, as it has since 2008–09.

From a materials perspective, good progress has been made between 2008–09 and 2010–11, particularly on the recovery of glass. Glass has seen an additional 48,000 tonnes recycled and increased its recovery rate from 63% to 72%. Significant increases in the recovery of paper/cardboard, timber, ferrous metal, masonry and other organics (biosolids, manures, sludges and sawdust) were also recorded.

Key challenges include:

- Food waste remains the largest component of the NSW waste stream, making up almost 20% of all waste going to landfill. It is also the largest component in the municipal waste stream (35%) and the C&I waste stream (18%) going to landfill. Only 13% of food waste was recovered in 2010–11.
- Recovery of plastics also remains low, at only 11%, despite making up 10% of all waste going to landfill in NSW. Recovery of plastics has remained stagnant between 2008–09 and 2010–11. It increased slightly in the municipal stream, but fell back in the C&I stream over this period, leaving the recovery rate unchanged.
- Large quantities of dry recyclables (paper, cardboard, glass, metals and rigid plastics) and organics are recovered through kerbside recycling systems, but households continue to send significant amounts of these materials to landfill. Twenty two per cent of materials in the household waste stream are dry recyclables and almost 10% are garden organics, all of which could be recovered through recycling systems where available.
- Significant tonnages of food, garden organics, timber, paper and plastics are going to landfill in the C&I waste stream.

### 1.1.2 Waste prevention and avoidance

- The total amount of waste generated in NSW (waste recycled and waste disposed to landfill) rose from 16.2 million tonnes in 2008–09 to 17.1 million tonnes in 2010–11, an increase of 5.2%.
- Waste generation is closely linked to population growth and economic activity. Over the 2008–09 to 2010–11 period, gross state product grew at virtually the same rate as waste generation and the NSW population increased by 3.4%. These factors placed significant upward pressure on waste generation.
- The overall increase in waste generation was off-set by an even greater increase in recycling. The amount of waste sent to landfill in NSW decreased by 333,500 tonnes between 2008–09 and 2010–11, dropping from 6.7 million tonnes to 6.4 million tonnes, while recycling increased by 1,184,000 tonnes over the same period. This meant the quantity of waste landfilled in 2010–11 (6.4 million tonnes) was less than the quantity of waste landfilled in 2002–03 (6.5 million tonnes) even though the NSW population and the economy have grown substantially.
- Compared to 2008–09, the Sydney area saw a 1% decrease in waste generation. This was driven by falls across C&I generation (–8.5%) and C&D generation (–2.3%) within this region. These falls were off-set by a 15.4% increase in Sydney municipal waste generation. The Sydney population increased by 4% over this period.

Areas outside of Sydney saw significant increases in waste generation. For example:

- Waste generation in the Hunter, Central Coast and Illawarra region increased by 15.1% between 2008–09 and 2010–11 driven by strong increases in municipal (13.9%) and C&D (21.9%). C&I grew at 5.4%. Population grew by 2.7% in this region.
- Waste generation grew by 18.4% in the rest of NSW on the back of strong growth in C&I (34.2%) and C&D (28.2%). Waste generation in the municipal stream increased by 4.5%. Population grew by 2.5% in this region.
- On a per capita basis, waste generation only grew by 1.8% between 2008–09 and 2010–11. This was driven by strong per capita growth in the regions outside of Sydney. In the Hunter, Central Coast and Illawarra, per capita generation increased by 12%, while in the rest of NSW it grew by 15.5%. Sydney per capita generation decreased by 4.7% over this period.

### 1.1.3 Reducing toxic substances

The NSW Government continued to work with the Australian Government, all other state and territory governments, industry, local governments and the broader community to bring about co-ordinated and consistent national action on product content and toxicity issues. This included supporting the Australian Government's introduction of national product stewardship legislation and the regulation of TVs and computers in 2011.

The NSW Government also continued to work with national product stewardship initiatives run by industry to address particular product groups, such as batteries, mobile phones, mercury-containing lamps, polyvinyl chloride (PVC) plastics, agricultural and veterinary chemicals and their containers, and tyres.

The NSW Government was also directly involved in ensuring the safe recovery and treatment of household hazardous products through the Household Chemical CleanOut Program in the greater Sydney area and funding similar local government programs in regional areas.

Between 2003 and 2010–11, the Household Chemical CleanOut Program supported 164,282 households in the greater Sydney region to safely dispose of over 5.8 million kilograms of household hazardous materials. In 2010–11, 1.188 million kilograms of household hazardous materials were collected from across NSW through 103 collection events.

Of the materials collected in 2010–11, by weight paint made up 60%, motor oils 13%, batteries 9% and gas bottles and fire extinguishers 6%. The remaining 12% was made up of low-volume, high-toxicity items, such as poisons and pesticides.

### 1.1.4 Reducing litter and illegal dumping

The number of littered items in NSW continued to decline between 2005–06 and 2011–12. The number of littered items per 1000 square metres decreased by 28% from 80 items per 1000 square metres in 2005–06 to 58 items in 2011–12.

The 2011–12 litter item count placed NSW directly on the national average for litter item counts in all states and territories.

Cigarette butts were the most littered item and the most common littered item at retail sites, shopping centres and car parks. Paper/cardboard and plastic items were the next most prevalent littered items. These were most common at industrial sites. Recreational parks and residential areas had the lowest litter counts.

Illegal dumping also declined, although the number of illegal dumping incidents in NSW remained above the national average. Between 2006–07 and 2011–12, the volume of illegal dumping per 1000 square metres in NSW dropped from 7.15 to 2.17 litres. The national average in 2011–12 was 1.1 litres. Appendix D contains a link to the NSW Litter Report

2011–12, which contains more information on NSW litter results. The meets the requirements under section 146D of the *Protection of the Environment Operations Act 2007*, that the EPA report biennially on meeting waste and resource recovery targets. It contains more information on NSW litter results.

## **1.2 Key NSW policies and programs supporting the WARR Strategy**

The NSW Government has a comprehensive suite of policies and programs to support progress toward achieving the objectives and targets in the WARR Strategy. This includes a mix of legislative and economic tools and policies, as well as programs and grants.

The primary economic tool is the NSW Waste and Environment Levy, which raises the cost of disposing of waste materials to landfill and therefore makes recycling more viable.

Resource recovery exemptions provide clarity and certainty on the legal requirements for using waste as a fuel or for application to land.

Education programs and grants for infrastructure are provided through the *Waste Less Recycle More* initiative. This initiative includes a mix of programs and grants worth \$465.7 million distributed over a 5 year period to 2017. The initiative aims to facilitate action at all stages of the waste management process to help achieve the WARR Strategy targets, including waste avoidance, source separation of materials, collection, infrastructure for processing and development of end markets for recovered materials. The initiative also addresses litter and illegal dumping.



## 2. Introduction

This Waste Avoidance and Resource Recovery Progress Report 2010–11 (the Progress Report) summarises improvements made by the NSW community in avoiding waste, achieving better materials recovery, reducing litter and illegal dumping, and reducing toxicity risks. It also indicates areas where greater effort is still needed to achieve the targets in the NSW Waste Avoidance and Resource Recovery Strategy 2007 (the WARR Strategy) and provides a robust evidence-base to inform the development of further policies and programs to achieve these targets.

The *Waste Avoidance and Resource Recovery Act 2001* requires the NSW Environment Protection Authority (EPA) to report to the Minister for the Environment every two years on progress towards meeting the targets established in the NSW WARR Strategy. The Progress Report meets this requirement and reports against the key result areas identified in the WARR Strategy, including the overall amount of waste being generated, tonnes being disposed to landfill and amounts being recycled across the three major waste streams: municipal, commercial and industrial (C&I), and construction and demolition (C&D) waste. The report also covers progress on reducing toxicity in products and litter, and illegal dumping.

This report is based on 2010–11 data. Although more recent data is available for some parts of the waste picture (e.g. disposal to landfill, household recycling and litter data), newer data is lacking for C&I and C&D recovery streams. The most recent complete data set covering all aspects of the solid waste stream is only available for the 2010–11 financial year. A complete data set is needed to provide a comprehensive analysis of progress against all targets in the WARR Strategy. The Progress Report's methodology is outlined in Appendix A.

The Progress Report complements and should be read together with the WARR Strategy and the NSW *Waste Less Recycle More* initiative. The WARR Strategy defines the long-term targets and objectives that the NSW community aims to achieve on waste avoidance and resource recovery, and against which this report is measuring progress. The *Waste Less Recycle More* initiative provides an indication of the actions, programs and funding that the NSW Government has committed from 2013 to 2017 to achieve the targets outlined in the WARR Strategy. The effectiveness of this initiative and the legislative and policy framework within which it sits will be measured by future iterations of this report.

### 3. WARR strategy targets

The NSW Waste Avoidance and Resource Recovery Strategy 2007 (the WARR Strategy) maintained the long-term targets established in the first WARR Strategy released in 2003. These targets aimed to achieve significant outcomes by 2014 across four key result areas covering resource recovery, waste avoidance, toxicity, and litter and illegal dumping.

Table 2 lists the key result areas and targets in the WARR Strategy.

**Table 2: Key result areas and targets in the WARR Strategy.**

<b>1. Increased recovery and use of secondary resources</b>	<p>By 2014:</p> <ul style="list-style-type: none"> <li>• increase recovery and use of materials from the municipal waste stream from 26 (in 2000) to 66%</li> <li>• increase recovery and use of materials from the commercial and industrial waste stream, from 28% (in 2000) to 63% and</li> <li>• increase recovery and use of materials from the construction and demolition sector, from 65% (in 2000) to 76%.</li> </ul>
<b>2. Preventing and avoiding waste</b>	<p>To maintain the level the total waste generated for 5 years from the release of <i>Waste Strategy 2003</i>.</p>
<b>3. Reducing toxic substances in products and materials</b>	<p>By 2014:</p> <ul style="list-style-type: none"> <li>• to phase out priority substances in identified products as a first choice or, if not possible, to achieve maximum recovery for re-use.</li> </ul>
<b>4. Reduce litter and illegal dumping</b>	<p>By 2014:</p> <ul style="list-style-type: none"> <li>• reduce total amount of litter reported annually</li> <li>• reduce total tonnes of illegally dumped material reported by regulatory agencies and regional illegal dumping squads annually.</li> </ul>

## 4. Key result area 1: Increasing recycling and use of secondary materials

The 2010–11 waste and recycling data indicates that NSW continued to make solid progress towards achieving the WARR Strategy resource recovery targets for 2014. Recycling rates across all waste streams have grown steadily since 2002–03, when WARR Strategy targets were first established, as well as since the last progress report, which reported 2008–09 data. In 2010–11, NSW was recycling 63% of all waste generated, up from 45% in 2002–03 and 59% in 2008–09 (Table 3).

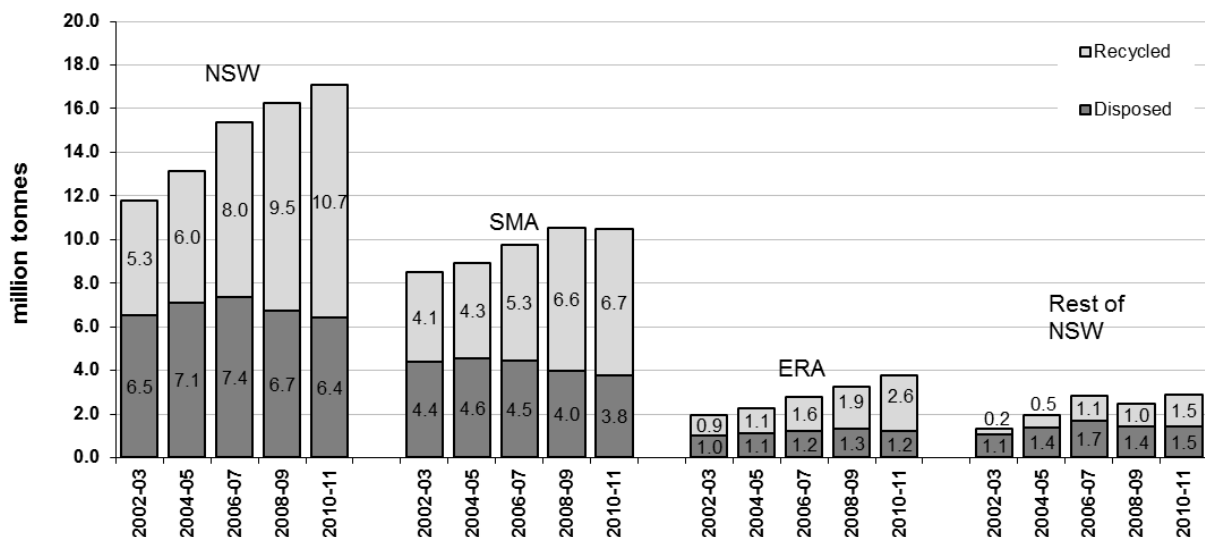
**Table 3: Progress towards NSW recycling targets by waste stream**

	2002–03*	2004–05	2006–07	2008–09	2010–11	2014 recycling target
<b>Municipal</b>	31%	33%	38%	44%	52%	66%
<b>C&amp;I</b>	34%	38%	44 %	52%	57%	63%
<b>C&amp;D</b>	64%	62%	67%	73%	75%	76%
<b>Overall</b>	45%	46%	52%	59%	63%	

\* WARR Strategy targets first established. C&I = commercial and industrial; C&D = construction and demolition.

In actual tonnages, the change has been even more significant due a continued growth in the amount of waste generated. Since 2008–09, the amount of materials recycled increased by close to 1.2 million tonnes (Figure 1).

Resource recovery has also more than doubled since 2002–03, increasing from an estimated 5.3 million tonnes in 2002–03 to 10.7 million tonnes in 2010–11, although this increase was partially the result of improved data collection and an expanded scope of materials recorded.



**Figure 1: Total estimated tonnes of waste generated (recycled plus disposed) for key regions (SMA, ERA and the rest of NSW) and the whole of NSW from 2002–03 to 2010–11. SMA = Sydney metropolitan area; ERA = extended regulated area, consisting of the Hunter, Central Coast and Illawarra regions.**

## 4.1 Resource recovery by region

### 4.1.1 Sydney metropolitan area

The recycling rate in the Sydney metropolitan area (SMA) has increased from 48% in 2002–03 to 64% in 2010–11 (Table 4). On a tonnage basis, this equates to an increase of 2.6 million tonnes, from 4.1 million tonnes recovered in 2002–03 to 6.7 million tonnes recovered in 2010–11 (see Appendix B for recycling, disposal and generation tonnages for each waste stream by region from 2002–03 to 2010–11).

By waste stream, the SMA recycled 59% of municipal waste in 2010–11 (up from 51% in 2008–09), 52% of commercial and industrial (C&I) waste (up from 50% in 2008–09) and 76% of construction and demolition (C&D) waste (down from 77% in 2008–09). The recycling rate for C&D waste in the SMA already meets the 2014 target of 76%.

**Table 4: Progress towards NSW recycling targets by waste stream and region**

	2000 baseline †	2002–03	2004–05	2006–07	2008–09	2010–11	2014 recycling target
<b>NSW</b>							
Municipal		31%	33%	38%	44%	52%	66%
C&I		34%	38%	44 %	52%	57%	63%
C&D		64%	62%	67%	73%	75%	76%
Overall		45%	46%	52%	59%	63%	
<b>SMA</b>							
Municipal	26%	33%	37%	42%	51%	59%	
C&I	28%	33%	35%	42%	50%	52%	
C&D	65%	68%	66%	70%	77%	76%	
Overall	38%	48%	49%	54%	62%	64%	
<b>ERA</b>							
Municipal		28%	33%	41%	44%	51%	
C&I		45%	53%	48%	60%	70%	
C&D		67%	65%	72%	68%	77%	
Overall		47%	50%	56%	59%	68%	
<b>The rest of NSW#</b>							
Municipal		25%	23%	29%	32%	38%	
C&I		22%	37%	48%	56%	61%	
C&D		1%	26%	48%	40%	55%	
Overall		18%	28%	40%	42%	50%	

†Baseline recycling rates in 2000 were only available for the Sydney metropolitan area (SMA). This data was used to establish the NSW Waste Avoidance and Resource Recovery Strategy 2007 targets. ERA = extended regulated area (Hunter, Central Coast and Illawarra regions). # Prior to 2010–11 the rest of NSW included all areas of NSW outside the regulated areas. In 2010–11, the rest of NSW includes the regional regulated area and all areas outside the regulated area.

#### 4.1.2 Extended regulated area

The recycling rate in the extended regulated area (ERA), which is made up of the Hunter, Central Coast and Illawarra regions, increased from 47% in 2002–03 to 68% in 2010–11. This represents an increase from approximately 0.9 million tonnes recycled in 2002–03 to over 2.5 million tonnes recycled in 2010–11.

This was driven particularly by significant increases in recycling across all waste streams between 2008–09 and 2010–11 when the overall recycling rate in the ERA increased from 59% to 68%. Municipal recycling increased substantially from 44% to 51% during this period (an additional 128,000 tonnes). There was also a substantial jump in C&I recycling from 60% to 70% (123,500 additional tonnes). C&D recycling increased from 68% in 2008–09 to 77% in 2010–11.

#### 4.1.3 The rest of NSW

The regional regulated area (RRA) was formed in July 2009. It consists of 21 councils on the north-east coast of NSW as well as the Upper Hunter, Blue Mountains and Wollondilly councils. Although disposal data is collected separately for the RRA, systems are not yet robust enough to present separate resource recovery data for the area. Therefore, it is not possible to report progress separately for this region and data for this area is still incorporated with the remainder of regional and rural NSW.

Recycling data for the rest of NSW indicated an overall recycling rate of 50%, up from 42% in 2008–09. Based on available data in 2010–11, this area recycled around 38% (up from 33% in 2008–09) of municipal waste, 61% (up from 56% in 2008–09) C&I waste and 55% (up from 40% in 2008–09) of C&D waste in 2010–11.

## 4.2 Resource recovery by waste stream

### 4.2.1 Municipal waste stream

In 2010–11, 28% of the total amount of waste generated in NSW and 23% of the total amount of materials recycled came from the municipal waste stream. Fifty-two per cent of the stream was recycled.

As indicated in Figure 3, significant percentages of masonry (bricks, concrete, plasterboard, rubble), steel and non-ferrous metals, biosolids, paper and cardboard, and glass were recovered from the municipal waste stream in 2010–11 (see Appendix C for a full breakdown of waste streams by material). Key waste streams where large quantities of material continue to go to landfill include food waste, garden organics, plastics and 'other materials' (materials that were not categorised in the data reporting). Of these, food waste, at almost 800,000 tonnes disposed, was the largest material waste stream going to landfill. Less than 10% of food waste was recycled from the municipal stream.

Municipal waste includes household waste and waste from other council sources, such as street sweepings, litter bins, clean ups, etc. In 2010–11, household waste represented 92% (2.12 million tonnes) of municipal waste disposed to landfill.

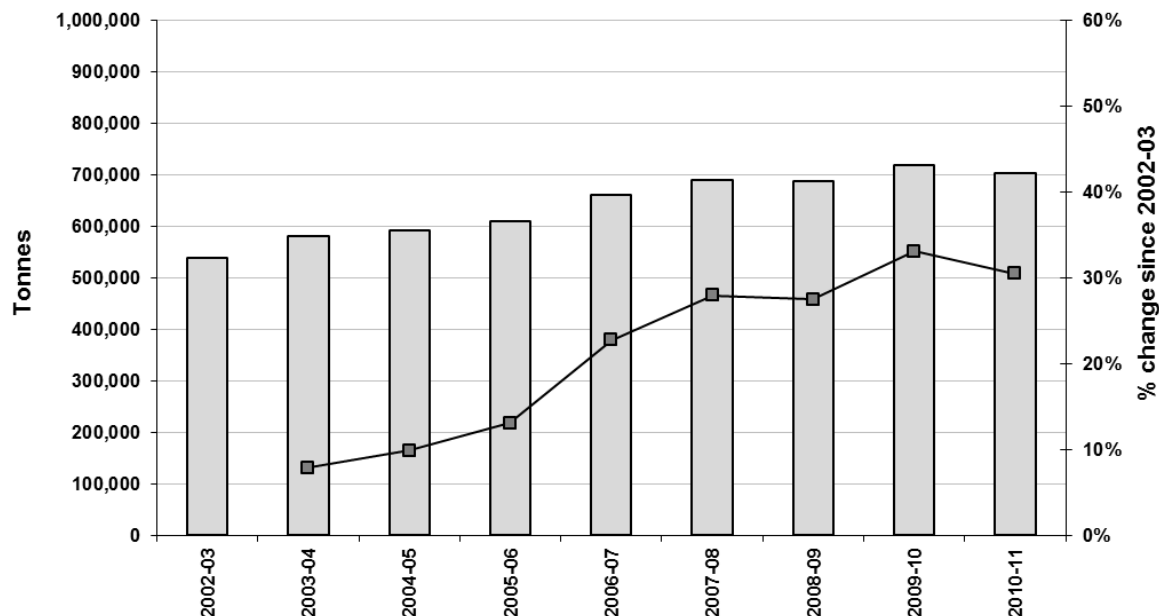
Resource recovery systems for household waste differ both within council areas and between councils, depending on the population density, type of residence (single unit dwelling versus multi-unit dwelling), access to reprocessing markets and other factors.

In 2010–11, 83% of councils provided a kerbside recycling system (127 councils) and 94% of NSW households had access to kerbside recycling. Kerbside systems in 64 councils also collected garden organics (up from 59 councils in 2008–09). Ten councils also offered a kerbside food-waste collection service, two in the SMA and eight in the RRA.

## Household dry recyclables

Kerbside recovery of household dry recyclables such as paper, cardboard, glass, metals and some plastics has grown steadily – up from 539,000 tonnes in 2002–03 to 704,000 tonnes collected in 2010–11 (Figure 2). This also represents an increase of about 17,000 tonnes on that collected in 2008–09.

Mobile garbage bins (MGBs) are the most common collection system for dry recyclables. In 2010–11, 119 of the 127 councils with kerbside recycling used MGBs (up from 77 councils in 2002–03). Of these, 108 councils used the EPA’s recommended system (240-litre commingled MGB or two 120-litre MGBs, one for paper and one for containers).



**Figure 2: Annual household dry recyclables collected at kerbside (tonnes) in NSW from 2002–03 to 2010–11.**

In the Sydney metropolitan area, per capita recovery of dry recyclables was 99.2 kilograms in 2010–11 compared with 90.4 kilograms in 2002–03. This is 3.3 kilograms per person per year less than in 2008–09. Recovery per household in 2010–11 averaged 279 kilograms per year, a reduction of 6.8 kilograms compared to 2008–09.

In 2010–11, the average person in Sydney recycled:

- 62 kilograms of paper and paper products
- 27 kilograms of glass
- 7 kilograms of plastic
- 2.6 kilograms of steel cans and
- 0.6 kilograms of aluminium cans.

In the ERA (Hunter, Central Coast and Illawarra), the amount of dry recyclables collected from kerbside for each person continued to increase in 2010–11, up by 15% since 2002–03. Per capita recovery was 104.6 kilograms in 2010–11 compared with 94 kilograms in 2002–03. This reflects the substantial increase in the provision of recycling services in these areas. Recovery per household in 2010–11 averaged 277 kilograms per year.

In 2010–11, the average person in the ERA recycled:

- 58 kilograms of paper and paper products
- 35 kilograms of glass
- 5.5 kilograms of plastic

- 4 kilograms of steel cans and
- 0.8 kilograms of aluminium cans.

In 2010–11, audits of household kerbside waste and recycling bins in 66 council areas, covering 14,000 households in single unit dwellings (SUD) and multi-unit dwellings (MUD) found that:

- Recyclable paper was the largest component of a 'typical' household recycling bin at 53.8%, followed by recyclable glass at 29%.
- The recycling composition profiles from SUD and MUD households were indistinguishable.
- Regional differences existed. For example, paper and cardboard made up a higher proportion of dry recycling in the SMA than the ERA and RRA (55% in the SMA, compared to an average of 49% in the ERA and RRA).
- The SMA recyclable glass mean composition at 27% was significantly lower than the ERA and RRA means of 34%
- The overall contamination level in the recycling bin was 7.3%, and the two major contaminants were organic compostable materials (2.3%) and non-recyclable paper (1.3%).
- Contamination was significantly higher in MUDs (9.9%) than in SUDs (7.6%).
- There were differences in contamination by region. The RRA had the least contamination (4.2%), followed by the ERA (6.1%) and the SMA had the highest contamination at (8.0%).
- Twenty-two per cent of materials (by weight) in the average red-lid waste bin were dry recyclable materials that could have been recycled if placed in the yellow-lid recycling bin. This included recyclable paper/cardboard (8.2%), rigid plastics (8.4%) and glass packaging (3.2%).

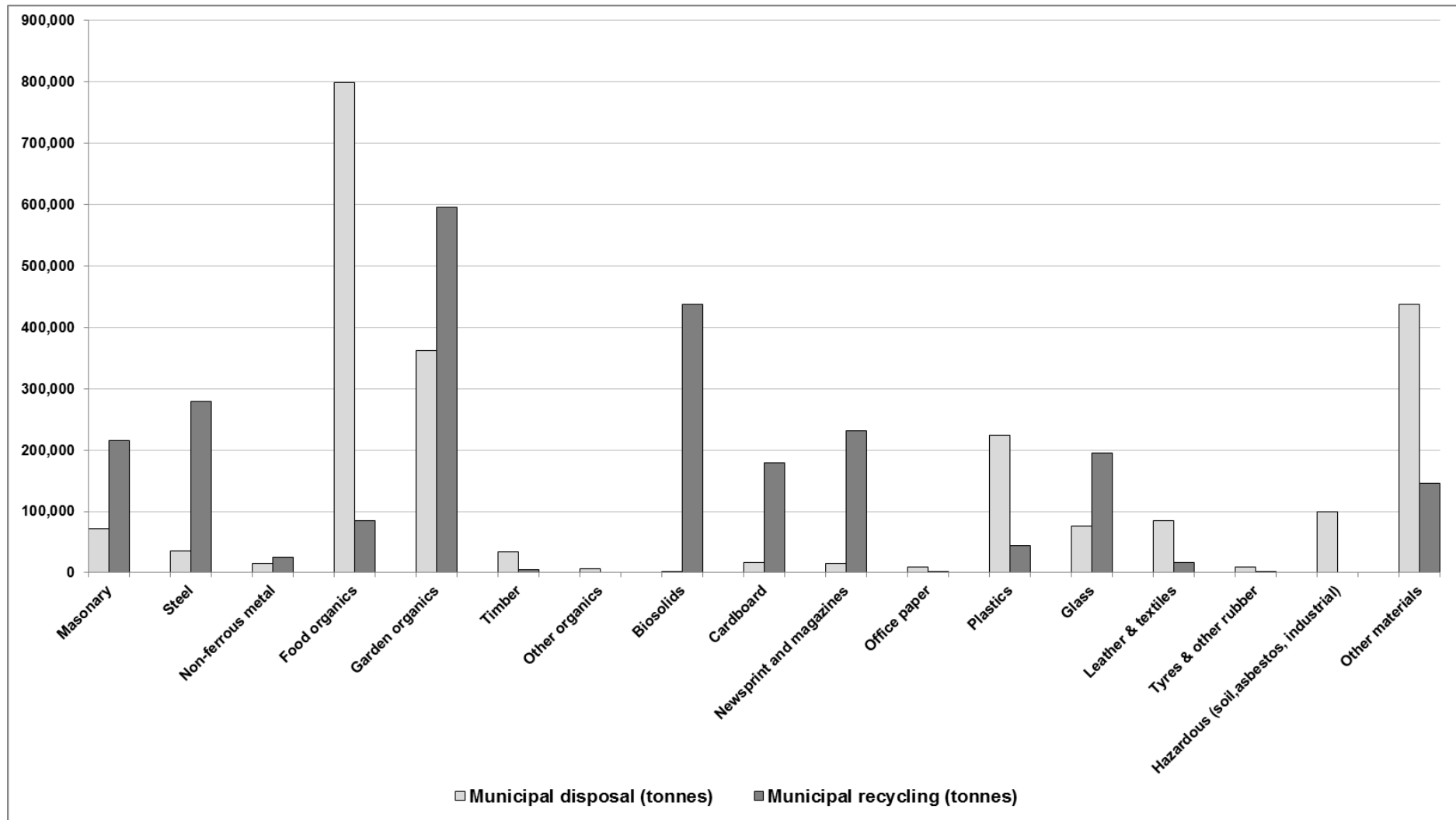


Figure 3: Municipal waste and recycling by material in NSW in 2010–11.



## Household organics

In 2010–11, 62% of municipal garden organics were being recycled, up from 60% in 2008–09. Garden organics were collected through kerbside drop-off and clean-up services, as well as through council operations at parks and gardens.

In 2010–11, 64 councils in NSW provided a kerbside collection service for garden organics, compared with 59 in 2008–09. In Sydney, 34 of 38 councils offered a kerbside garden organics service. The increase in services contributed to a 25% increase in the amount of organic material recovered from kerbside collections between 2008–09 and 2010–11 and a 124% increase since 2002–03.

In Sydney, the amount of garden organic material recycled increased from 147 kilograms per household in 2008–09 to 191 kilograms in 2010–11 (30%). In the Hunter, Central Coast and Illawarra regions there was a smaller increase from 134 kilograms per household to 144 kilograms over the same period (7%).

In 2010–11, audits of the kerbside bins found:

- Households that had a three-bin kerbside system (a green-lid organics bin, a yellow-lid dry recycling bin and a red-lid waste bin) recovered on average 89.5% of the garden organics generated.
- The average organics bin contained 93.9% garden organics, 3.3% food waste and 2.8% contamination.
- The two major contaminants in the garden organics stream were wood/timber (1.0%), other paper and paper products (0.5%), and earth-based materials (0.6%).
- The SMA and ERA organics composition profiles differed. More garden organics was collected in the ERA (99%) than the SMA (95%); however, more food waste was collected in the SMA (3%) than the ERA (0.03%). This reflects the introduction of combined kerbside food and garden organics collections in a small number of councils in the SMA.
- Across NSW, 9.7% of the materials (by weight) in the average red-lid waste bin were garden organics that could have been recycled through a kerbside organics collection service. A further 35.3% of material (by weight) was food waste. Over 1 million tonnes of organic material, including food waste and garden organics, were sent to landfill from the municipal waste stream in 2010–11.

### 4.2.2 Commercial and industrial waste stream

In 2010–11, the C&I waste stream made up 32% of all waste generated in NSW and 29% of the amount of materials recycled.

Overall 5,451,500 tonnes of C&I waste was generated, which was 26,500 tonnes more than in 2008–09. At the same time, an additional 260,000 tonnes were recycled in 2010–11 compared to 2008–09, bringing the total amount of C&I materials recycled to 3,099,500 tonnes. This resulted in a five-percentage point increase in the C&I recycling rate, from 52% in 2008–09 to 57% in 2010–11.

Increased recovery rates were recorded across most material streams. The largest increase was recorded in glass, which jumped from a recycling rate of 53% in 2008–09 to 72% in 2010–11. Sand/soil/rubble recycling increased from 48% to 68% and recycling of 'other organics' (biosolids, manures, sludges, sawdust) increased from 87% to 93%. At the same time, the recovery rate for C&I concrete fell from 90% to 87%, garden organics fell from 78% to 70%, and C&I plastics reduced from an 8.5% recycling rate to 7%, the lowest recycling rate for all C&I material streams.

In terms of regional performance, the largest increase in recycling over the 2008–09 and 2010–11 periods was in the ERA, which saw a 21% reduction in disposal of C&I waste to landfill and a 23% increase in C&I recycling. At the same time, there was a 48,500 tonne

increase in the amount of C&I waste generated in the ERA, bringing the total C&I waste generation in the ERA to 953,000 tonnes, which was 17% of the total for NSW.

This was offset by a 123,500 tonne increase in the amount of C&I materials recovered, bringing the total amount of C&I materials recovered in the ERA to 670,500 tonnes, or 22% of all C&I materials recycled in the state. This significant increase lifted the C&I recycling rate in the ERA from 60% in 2008–09 to 70% in 2010–11, which already exceeded the state-wide 2014 C&I recycling rate target of 63%.

Materials that saw significant increases in their recovery rates included glass, which increased from a 57% recycling rate in 2008–09 to 81% in 2010–11, sand/soil/rubble, which moved from 48% recycling to 73%, 'other organics', which went from 82% to 96%, and timber, which moved up from a low base of 9% in 2008–09 to 15% in 2010–11.

Between 2008–09 and 2010–11 The amount of C&I waste generated in the SMA declined by almost 9%, reducing from 3,671,000 tonnes in 2008–09 to 3,358,500 tonnes in 2010–11. Falls were recorded across many materials, in particular garden organics and concrete, bricks and tiles. The total amount of C&I materials recovered in the SMA also fell by 85,000 tonnes from 1,817,000 in 2008–09 to 1,732,000 in 2010–11. This represented 56% of all recycled C&I materials in NSW.

Along with these reduced recycling tonnages, the amount of C&I waste sent to landfill fell even further, resulting in an overall increase in the SMA C&I recycling rate from 50% in 2008–09 to 52% in 2010–11. Despite this improved recycling status, the SMA C&I recycling rate remained five percentage points below the statewide average of 57%. Recycling rates for many C&I materials were lower in the SMA than in the ERA or the rest of NSW. For example, glass, plastics and paper and cardboard all had lower recycling rates in the SMA than in the other key regions.

In the rest of NSW, the amount of C&I waste generated increased by 290,500 tonnes between 2008–09 and 2010–11 to 1,140,000 tonnes, or 21% of all C&I waste generated in NSW. The largest increase was in the 'other organics' category, which saw an increase of 123,500 tonnes. The overall amount of C&I materials recycled in this region also increased from 473,000 tonnes to 697,500 tonnes, indicating a 48% increase in recycling tonnages over that two-year period. This brought the C&I recovery rate up from 56% in 2008–09 to 61% in 2010–11, four percentage points above the state-wide average.

An analysis of material flows across the C&I sector in 2010–11 showed that there was strong recovery in masonry (bricks, concrete, sand, and rubble), steel and non-ferrous metals, 'other organics', paper and cardboard, glass and rubber (Figure 4). Food waste, timber and plastics continue to go predominantly to landfill, with food waste being the largest material stream going to landfill.

#### 4.2.3 Construction and demolition waste stream

The construction and demolition (C&D) waste stream makes up the largest proportion of waste generated in NSW. In 2010–11, 6,905,000 tonnes of C&D waste was generated, representing 40% of all waste generated in NSW. It also had the highest amount of materials recycled (5,156,000 tonnes), representing 48% of all recycled materials across NSW. This resulted in a recycling rate of 75%, which was only one percentage point below the 2014 target of 76% for C&D recycling.

As shown in Figure 5, the range of materials in the C&D waste stream in 2010–11 was relatively limited and dominated by steel and masonry (asphalt, bricks, concrete, rubble, plasterboard, concrete sheet). Recycling rates for these materials in 2010–11 was strong. At the other end of the scale, the C&D waste stream also had significant quantities of hazardous materials, such as contaminated soil and asbestos. These materials made up 10% of all C&D waste generated in 2010–11, but 40% of the C&D

materials that went to landfill. These materials place a limit on resource recovery in this waste stream as there is limited capacity for these materials to be recycled.

Overall recycling in the C&D waste stream increased by 327,000 tonnes between 2008–09 and 2010–11, which largely accounted for the 316,500 tonne increase in C&D generation of over the same period. A small decrease in C&D waste to landfill resulted in the statewide C&D recycling rate increasing from 73% in 2008–09 to 75% in 2010–11.

In the SMA, C&D waste generation dropped by 107,000 tonnes between 2008–09 and 2010–11, with falls recorded particularly in the concrete, bricks, tiles and timber categories. This led to a fall in the overall tonnage of C&D materials recycled in this region, from 3,684,500 tonnes in 2008–09 to 3,532,500 tonnes in 2010–11. In addition, the amount of materials that went to landfill increased from 1,075,500 tonnes to 1,120,000 tonnes. This combination resulted in an overall fall in the SMA C&D recycling rate from 77% to 76%. This still matched the 2014 C&D recycling target in the WARR Strategy.

In the ERA, C&D waste generation increased by 318,500 tonnes between 2008–09 and 2010–11, while recycling increased from 365,000 tonnes to 1,359,500 tonnes. This resulted in a significant increase in the C&D recycling rate in the ERA, from 68% in 2008–09 to 77% in 2010–11, putting it above the statewide 2014 WARR Strategy target of 76%. Significant increases were recorded for masonry materials, such as concrete, bricks, tiles, asphalt, and sand, soil and rubble.

The rest of NSW also saw a marked improvement in recycling for the C&D waste stream in 2010–11 compared to 2008–09, with a 105,500 tonne increase in C&D generation and a 114,000 tonne increase in recycling and a 8500 tonne decrease in C&D waste to landfill. This led to an increase in the C&D recycling rate in this region from 40% in 2008–09 to 55% in 2010–11. The strongest gains were in the steel, timber and asphalt streams.

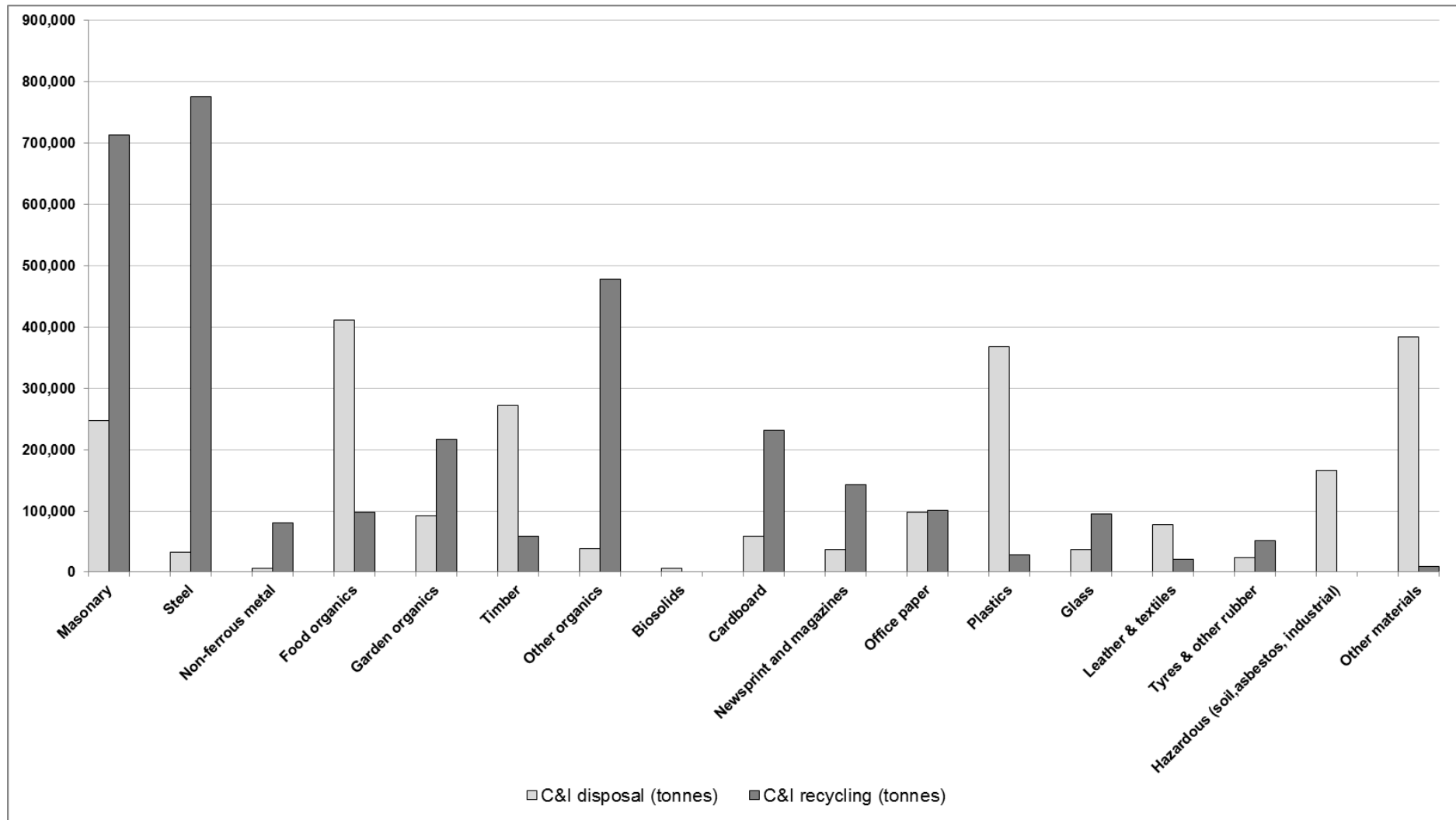


Figure 4: Commercial and industrial (C&I) waste and recycling by material 2010–11.

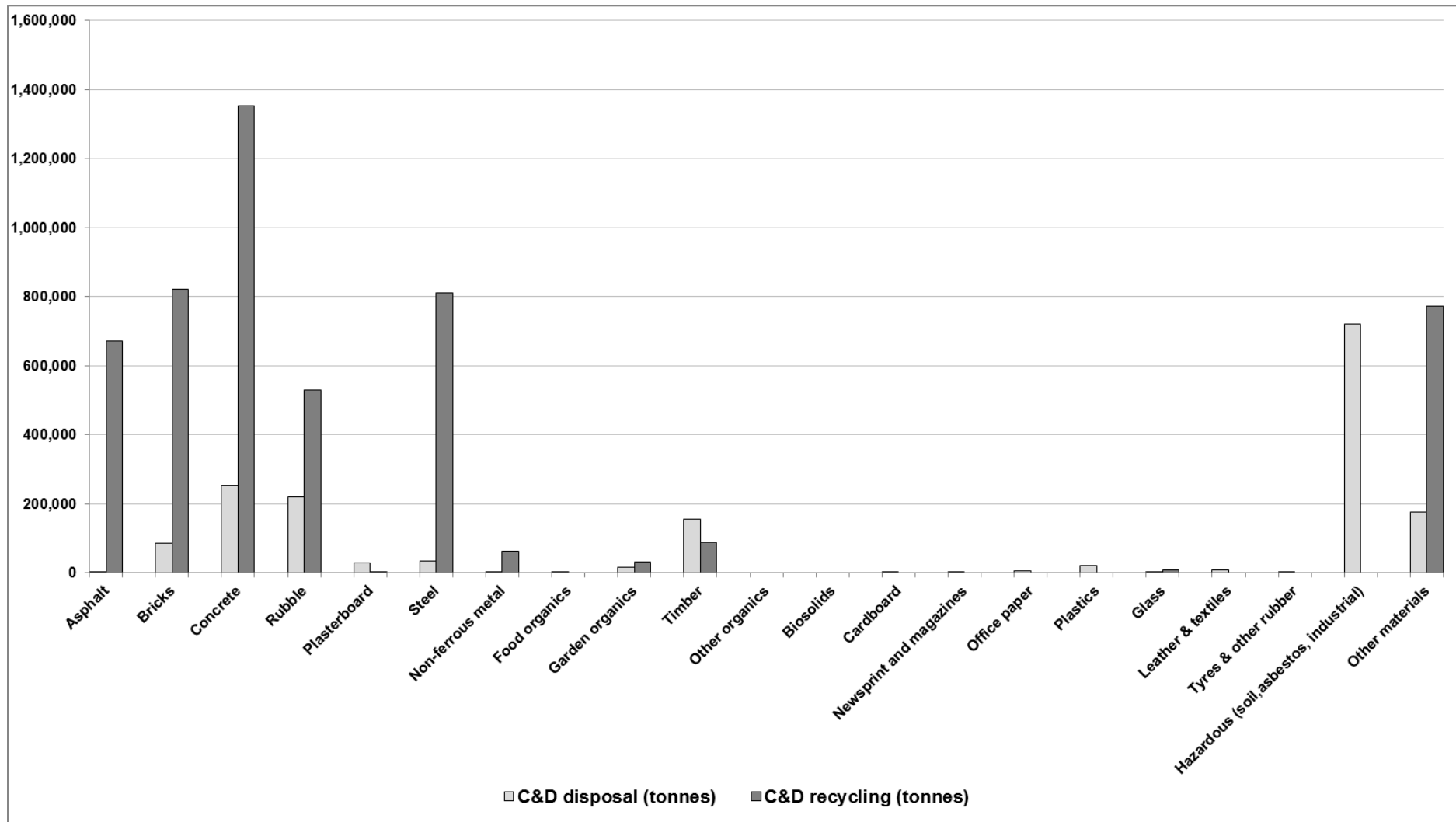


Figure 5: Construction and demolition (C&D) waste and recycling by material 2010–11.

## 5. Key result area 2: Preventing and avoiding waste

Waste prevention and avoidance activity is very difficult to measure, aggregate or report. By their nature, activities that are avoided do not take place and therefore cannot be measured in the same way as, for example, tonnes of materials going over a weighbridge. The NSW Waste Avoidance and Resource Recovery Strategy 2007 (WARR Strategy) addressed this issue by linking waste prevention and avoidance activity to waste generation, which is the sum of all measured waste disposal and recycling. A target was set to hold the total waste generation level for 5 years from the release of the 2003 WARR Strategy, i.e. by 2008.

This target was not achieved, although this was to a certain extent a result of changes in data collection methodologies as much as increases in actual waste tonnages. Between 2002–03 and 2008–09, data collection was significantly improved and the scope of materials measured was expanded. Adding additional material streams to the data set inevitably showed up as additional generation on paper, even though these materials had been in the waste stream prior to being measured. It has only been since 2008–09 that there has been a consistent data set. Therefore, examining waste generation trend data prior to this time should be treated with caution.

Waste generation is driven by a number of factors, including economic activity, population growth, climatic conditions and consumer behaviour. For example, between 2008–09 and 2010–11, the NSW population grew by 3.4%. This placed upward pressure on the amount of materials passing through the NSW waste management system.

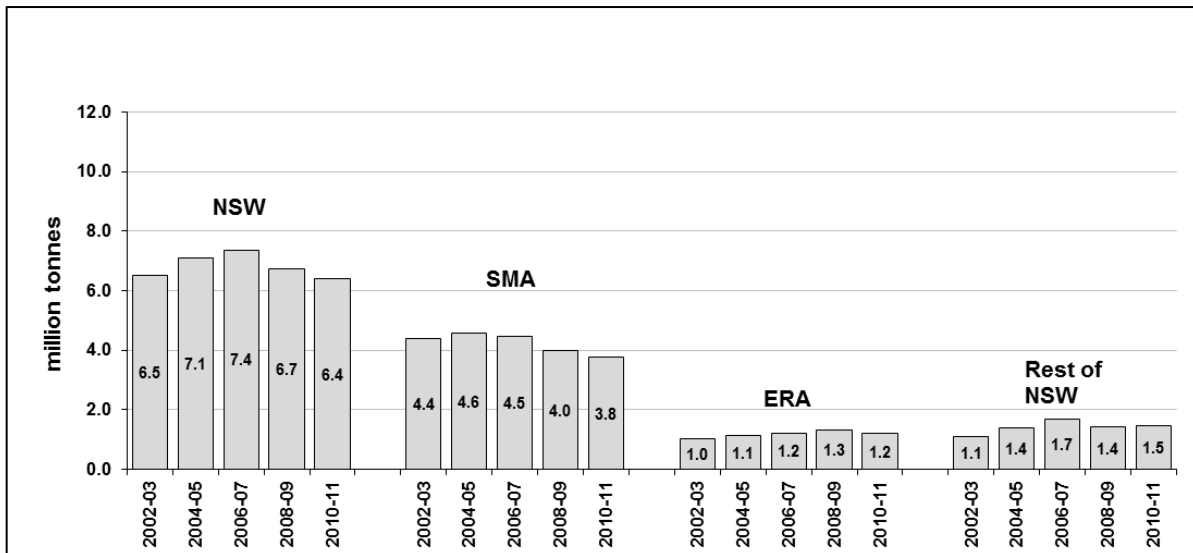
In 2010–11, 17,112,500 tonnes of waste and recycling was generated in NSW, an increase of 850,500 tonnes or 5.2% from 2008–09. Over the same period, the NSW Gross State Product (a measure of economic activity) grew by 4.6%. Less than 100,000 tonnes of waste separated these two factors from having identical growth rates, which is well within the level of uncertainty in the NSW waste data. This indicates that economic activity and waste generation are very closely linked.

### 5.1 Waste disposal

The increase in waste generation between 2008–09 and 2010–11 was absorbed into additional recycling. Overall, the amount of waste sent to landfill in 2010–11 fell by 333,500 tonnes compared to 2008–09, while recycling increased by 1,184,000 tonnes.

This trend of off-setting increased waste generation by increased recycling has led to a significant decrease in waste being sent to landfill. After steadily increasing from 2002–03 to 2006–07, the total amount of waste disposed to landfill in NSW has steadily decreased across all regions and all waste streams. Between 2006–07 (when waste disposal peaked) and 2010–11, the total amount of waste disposal to landfill in NSW dropped from 7.4 million tonnes to 6.4 million tonnes, a decrease of 14% (Figure 6). This has brought the amount of waste being disposed to landfill in NSW to less than the 2002–03 level of 6.5 million tonnes.

The amount of waste going to landfill has also decreased on a per capita basis, falling from 964 kilograms per person in 2008–09 to 877 kilograms per person in 2010–11. This is below the 2002–03 level of 1059 kg per person. The greatest decrease has been in the Sydney Metropolitan Area (SMA), where per capita disposal in 2010–11 was 932 kilograms, 302 kilograms below the high point of 1224 kilograms per person reached in 2004–05. Per capita disposal in the extended regulated area (ERA; Hunter, Central Coast and Illawarra) peaked in 2007–08 at 1035 kilograms per person and subsequently dropped to 879 kilograms per person in 2010–11.



**Figure 6: Total calculated tonnes of waste disposed of for the whole of NSW and key regions from 2002–03 to 2010–11. SMA = Sydney metropolitan area; ERA = extended regulated area (Hunter, Central Coast and Illawarra regions).**

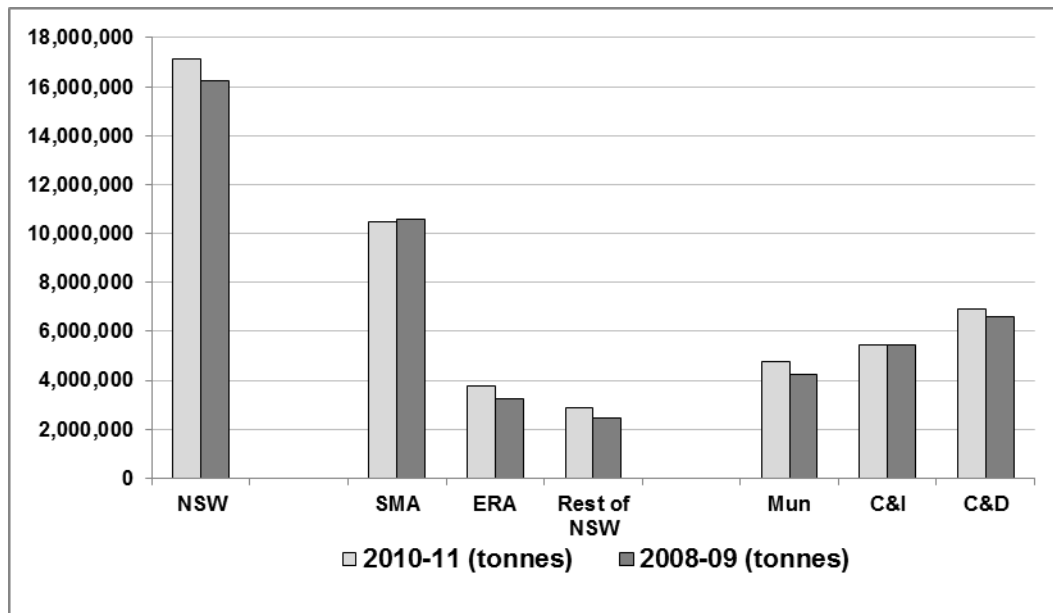
## 5.2 Waste generation by region and by waste stream

In 2010–11, 61% of all waste generated in NSW was generated in the SMA (10.5 million tonnes), 22% (3.8 million tonnes) was generated in the ERA, and 17% (2.9 million tonnes) was generated in the rest of NSW.

Compared to 2008–09, the SMA saw a drop in waste generation of 91,500 tonnes or 0.9%. This was driven by falls across both C&I generation (–8.5%) and C&D generation (–2.3%) within the SMA. These falls were off-set by a 15.4% increase in the SMA municipal waste generation figure.

The ERA and the rest of NSW saw significant increases in waste generation of 15.1% and 18.4% respectively (Figure 7).

From a statewide waste-stream perspective, all three waste streams recorded increased waste generation on a tonnage basis compared to 2008–09. The municipal sector recorded the largest increase, jumping 11.9% or 507,500 tonnes. Construction and demolition waste increased by 4.8% (317,000), while the commercial and industrial waste stream showed the least change increasing by only 26,500 tonnes or 0.5%.



**Figure 7: Comparison of waste generation tonnages by region and by waste stream from 2008–09 to 2010–11. SMA = Sydney metropolitan area; ERA = extended regulated area (Hunter, Central Coast and Illawarra regions); Mun = municipal waste stream; C&I = commercial and industrial waste stream; C&D = construction and demolition waste stream.**

### 5.3 Waste generation per capita

On a per capita basis, NSW waste generation increased by 1.8%, from 2329 kilograms per capita in 2008–09 to 2370 kilograms per capita in 2010–11, an increase of 41 tonnes (Figure 8).

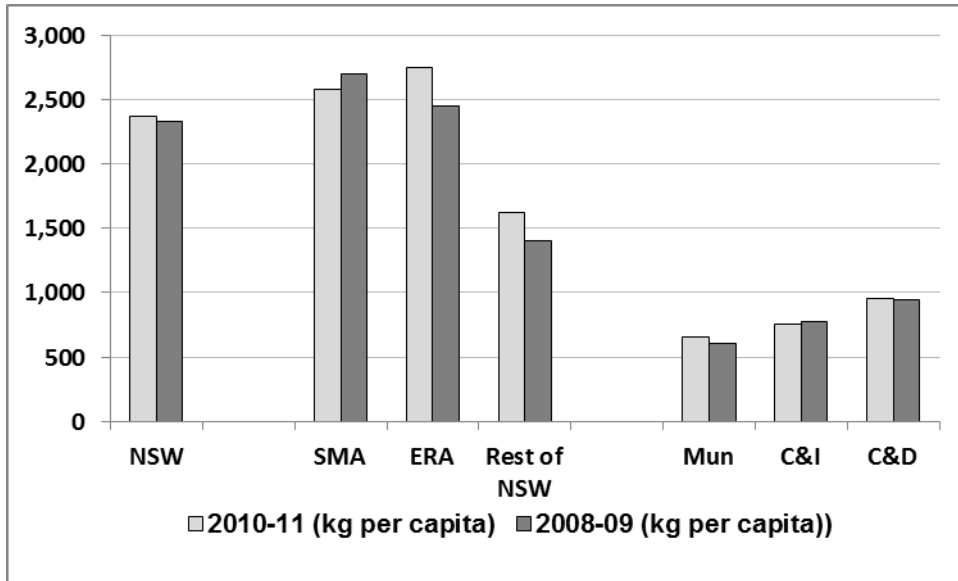
This was driven particularly by strong per capita growth in waste generation in the ERA and the rest of NSW, which recorded increases of 12% and 15.5% respectively, while per capita generation in the SMA actually decreased by 4.7% over the 2008–09 to 2010–11 period. The decrease in SMA per capita generation was driven by a 12% drop in SMA C&I waste generation and a 6% drop in C&D waste generation. Per capita waste generation in the SMA municipal stream jumped up by 11%, which somewhat off-set the declines in C&I and C&D waste generation.

In the ERA, the growth in waste generation was mostly due to C&D waste, which increased by 18.7% (from 1096 tonnes to 1300 kg per capita) and municipal waste, which jumped 10.8% (from 674 kg to 747 kg per capita). C&I waste generation in the ERA increased by 2.6% per capita over this period. As a result of these increases, per capita waste generation in the ERA (at 2746 kg capita) now exceeds generation in the SMA (2576 kg).

In the rest of NSW, growth in per capita waste generation was driven by significant increases in the C&I and C&D sectors, which experienced 30.9% and 25% increases, respectively. Part of this increase may be attributed to continuing improvements in data collection. Municipal per capita waste generation only grew by 1.9% in this region. Overall per capita waste generation in this region (at 1618 kg) remains significantly lower than per capita levels in the SMA and ERA.

At the statewide level, per capita waste generation in the municipal stream had an average overall increase of 8.3%. For C&D, the average increase was 1.4%, while for C&I, per capita waste generation decreased by 2.8%.





**Figure 8: Comparison of per capita waste generation by region and by waste stream from 2008–09 to 2010–11. SMA = Sydney metropolitan area; ERA = extended regulated area (Hunter, Central Coast and Illawarra regions); Mun = municipal waste stream; C&I = commercial and industrial waste stream; C&D = construction and demolition waste stream.**

## 6. Key result area 3: Reducing toxicity in products and materials

NSW, like all states and territories in Australia, is constrained by national market requirements when dealing with product content requirements. NSW has therefore sought to influence product content and toxicity issues in products by working closely with the Australian Government and all other state and territory governments, industry, local government and the broader community to bring about co-ordinated and consistent national action.

For example, NSW has supported action by the Australian Government to set mandatory limits to reduce the mercury content in fluorescent lamps and NSW continues to work with the polyvinyl chloride (PVC) industry through the Vinyl Council of Australia (VCA) to phase out the use of heavy metals in additives by specified dates. Through this initiative, cadmium stabilisers were phased out in 2004 and the VCA reports that in 2011 the phase out of lead stabiliser use by members neared completion, with a reported decrease of 82% from 2010, and a reduction of over 99% since 2002. The PVC industry also reports that it has made good progress in phasing out the use of lead, cadmium and hexavalent chrome pigments where technically feasible and when alternatives are available.

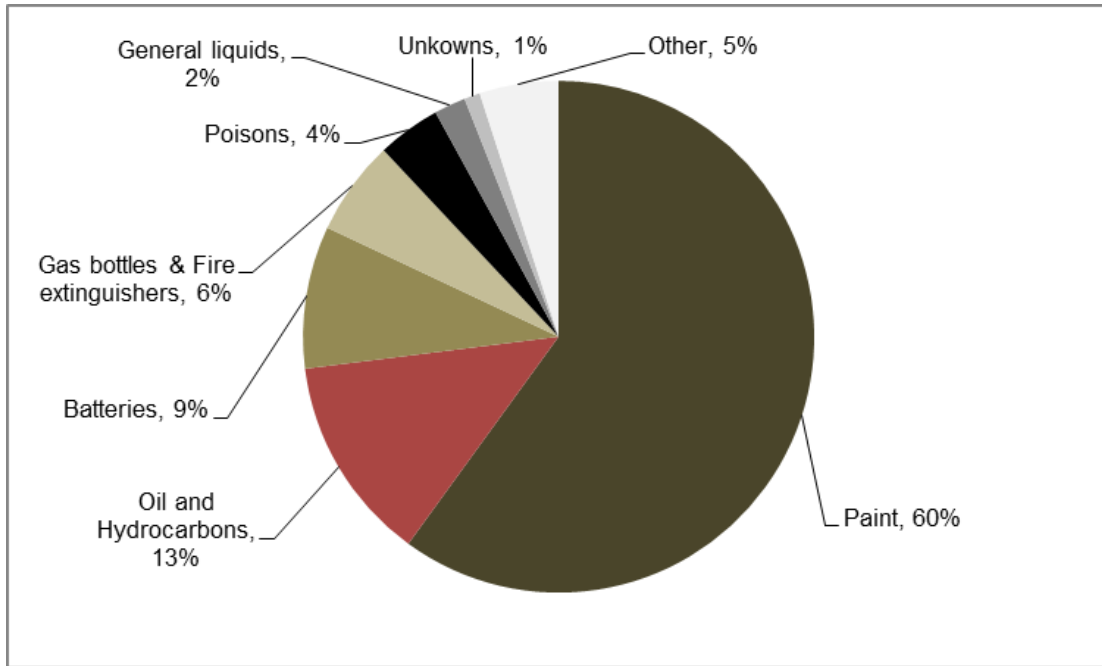
NSW has also been working at the national level to facilitate the development of effective national product stewardship schemes to properly manage and, where appropriate, recycle, waste products that contain toxic substances. NSW played a leading role in developing a product stewardship scheme for televisions and computers and supports the Australian Government's Product Stewardship Framework legislation, which came into effect in August 2011.

NSW also continues to work with existing product stewardship schemes to ensure effective implementation in NSW. This includes ChemClear and DrumMuster for agricultural and veterinary chemicals and chemical containers, MobileMuster for mobile phones, Fluorocycle for mercury-containing lamps from the commercial sector (where an estimated 90% of mercury from lamps is currently generated), and the Product Stewardship for Oil Program for used motor oil.

The NSW EPA is also directly involved in ensuring the safe recovery and treatment of household hazardous products and materials through the Household Chemical CleanOut Program, which is run in the Sydney, Hunter and Illawarra areas, and through providing funding for similar local government programs in regional NSW. These programs provide NSW householders with a safe and environmentally appropriate means to dispose of potentially hazardous household wastes.

Between 2003, when the Household Chemical CleanOut Program began, and 2010–11, the program supported 164,282 households in the Greater Sydney region to safely dispose of over 5.8 million kilograms of household hazardous materials. In 2010–11, these programs collected 1.188 million kilograms of these materials across NSW through 103 collection events, involving over 27,000 households.

Of the materials collected, paint made up the largest amount, accounting for over 60% by weight of materials (Figure 9). Motor oils made up 13%, batteries 9% and gas bottles and fire extinguishers 6%. Together, these made up 88% of materials. The remaining 12% was made up of low volume, high toxicity items, including poisons and pesticides, which were disposed of safely as a result of the program.



**Figure 9: Types and percentages of materials collected in the NSW Household Chemical CleanOut Program and regional events 2010–11.**

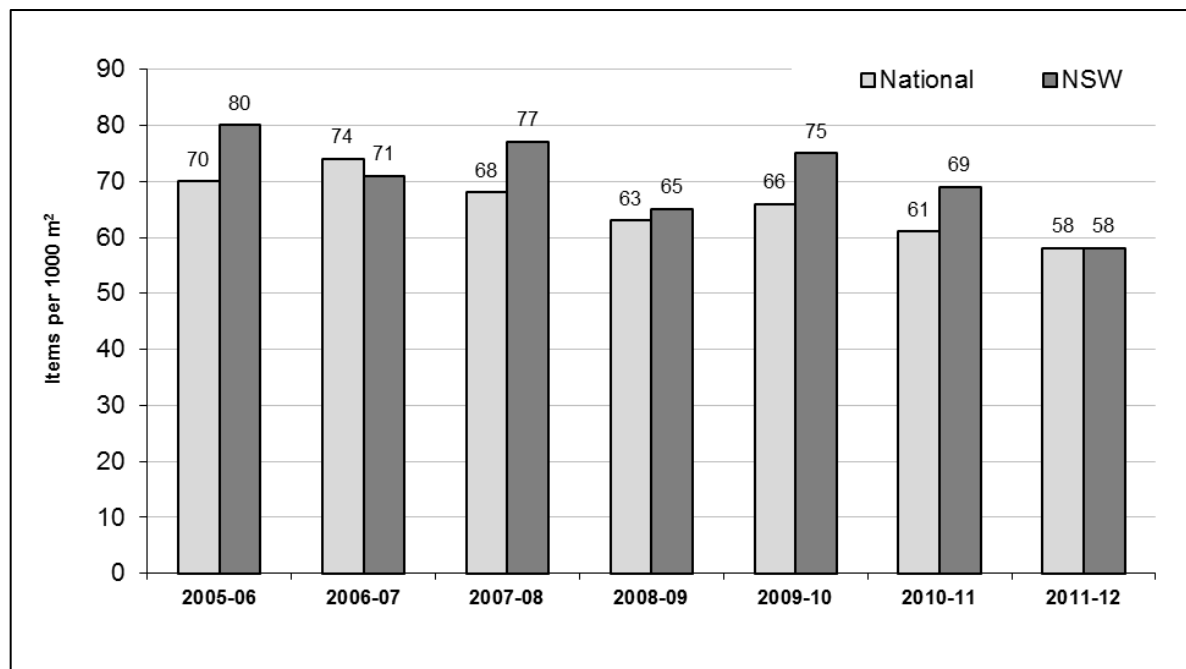
## 7. Key result area 4: Reducing litter and illegal dumping

The NSW Waste Avoidance and Resource Recovery Strategy 2007 (WARR Strategy) targets for litter and illegal dumping call for the total amount of litter and illegal dumping to be reduced on an annually basis. In 2011–12, these targets were being met.

The analysis of litter and illegal dumping is based on data drawn from the Keep Australia Beautiful (KAB) National Litter Index survey, which has been undertaken each year in NSW since 2005–06 and covers both litter and illegal dumping.

### 7.1 Litter

Since the first National Litter Index in 2005–06, NSW has reduced the number of items littered by 27.5%. While there have been annual fluctuations in litter counts, the KAB data indicates that litter in NSW has trended downward. The number of litter items recorded by KAB in NSW has fallen from 80 items per 1000 square metres in 2005–06 to 58 items in 2011–12. The 2011–12 item count places NSW directly on the national average for litter item counts in all states and territories (Figure 10).



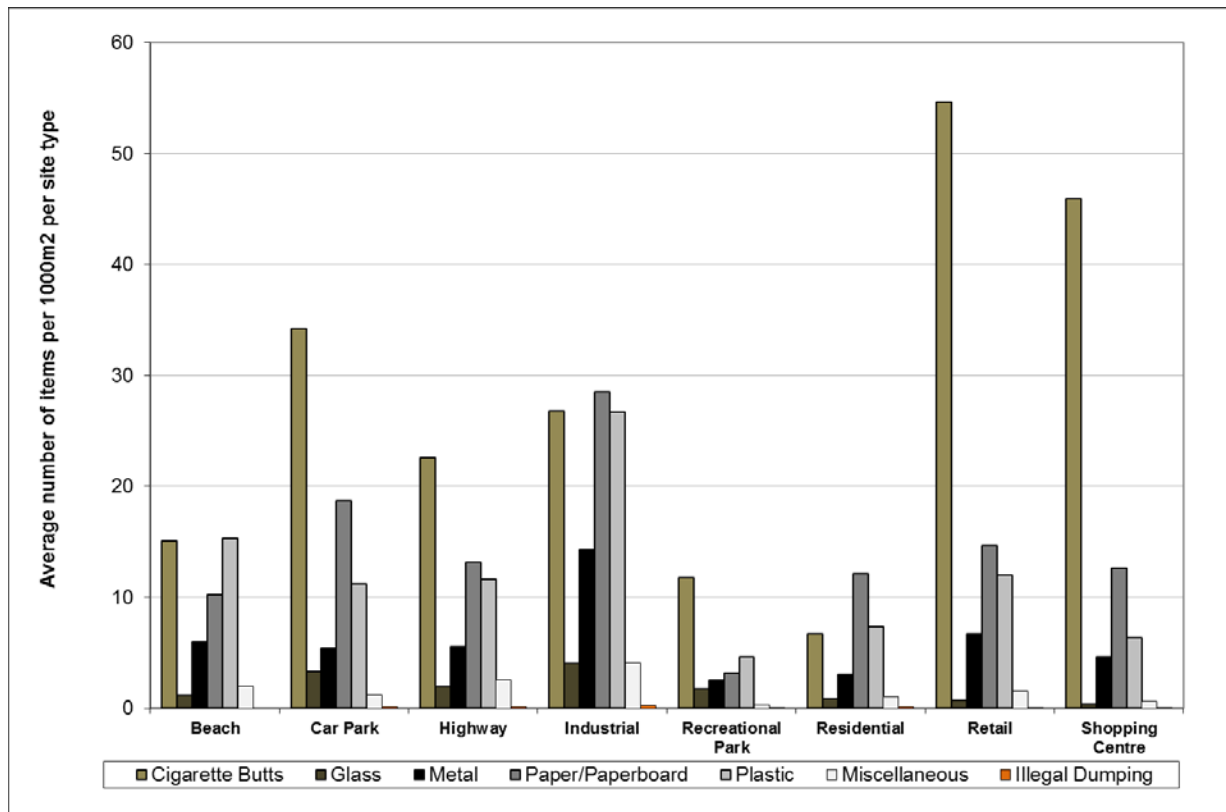
Source: Keep Australia Beautiful National Litter Index 2012.

**Figure 10: NSW and national average litter items per 1000 square metres for 2005–06 to 2011–12.**

In 2011–12, the largest numbers of items per 1000 square metres in NSW were associated with industrial sites (105 items), retail sites (90 items), car parks (74 items) and shopping centres (71 items). Average levels of litter per 1000 square metres were recorded at highways (58 items), while beaches (50 items), residential sites (31 items) and recreational parks (24 items) recorded low litter item counts. These findings are similar to earlier years and consistent with litter in other jurisdictions.

Cigarette butts were the most frequently identified item recorded within NSW for the year 2011–12, with 25 butts per 1000 square metres (down from 33 butts in 2010–11).

Cigarette butts were the dominant litter item at retail sites, shopping centres and car parks (Figure 11).



Source: Extrapolated from Keep Australia Beautiful National Litter Index 2012.

**Figure 11: NSW litter item count per 1000 square metres by type of item and site category 2011–12.**

Paper/paperboard and plastic items contributed the second- and third-highest number of litter items to the litter stream in NSW, with paper/paperboard items adding 14 items per 1000 square metres and plastic items adding 11 items per 1000 square metres during 2011–12. The largest concentration of these items was found in industrial sites, with recreational parks having the lowest numbers.

Plastic litter was the largest contributor to litter volume in NSW, at 2.75 litres per 1000 square metres. This was followed closely by paper/paperboard objects at 2.34 litres per 1000 square metres. Cigarette butts accounted for only 0.003 litres per 1000 square metres of litter volume.

The NSW government and NSW local governments continued strong enforcement action against littering. For the 12-month period between 2009–10 and 2010–11, the NSW Government and local councils issued almost 13,500 penalty infringement notices (PINs) for littering, compared to 14,055 PINs issued in the two-year period from 2007 to 2009.

Regular reporting on litter composition, quantities and locations in NSW that represent significant littering activity is a requirement under Section 146D of the *Protection of the Environment Operations Act 1997*.

The latest NSW Litter Report 2011–12 is at included in Appendix D.

It contains a more detailed analysis of NSW litter performance and is based on the KAB National Litter Index survey results for 2011–12. The survey was undertaken in November 2011 and May 2012 at 151 sites across NSW covering eight distinct site types and with the litter and illegal dumping coded into one of seven material categories.

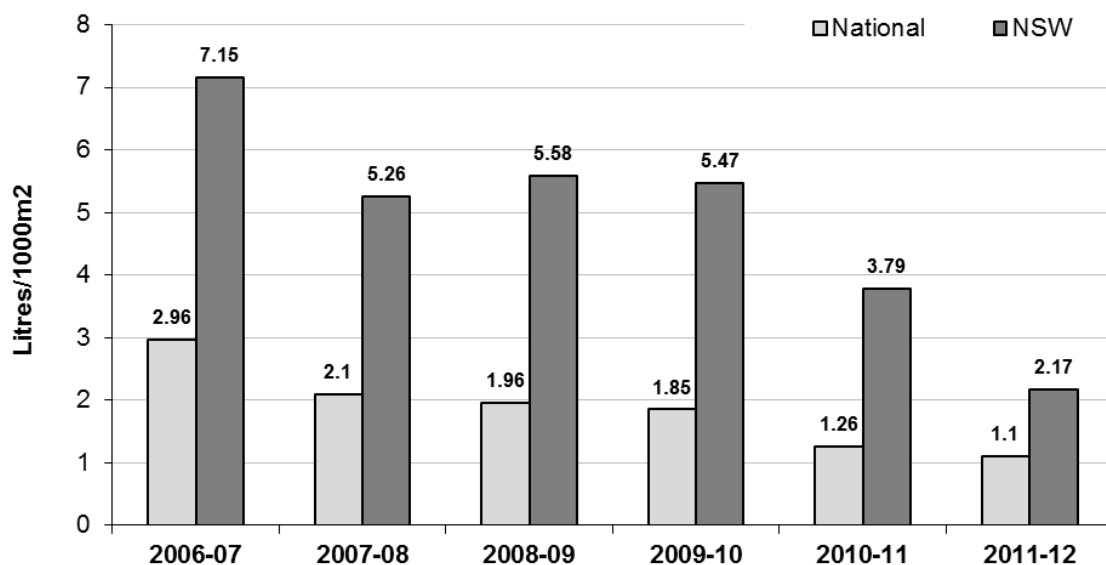
## 7.2 Illegal dumping

According to data from the KAB National Litter Index survey the incidence of illegal dumping in NSW is trending downward, although it remains significantly higher than the national average (Figure 12).

In 2011–12, KAB found an average of 2.17 litres of illegally dumped items per 1000 square metres in NSW (down from 7.15 litres in 2006–07), while the national average for all states and territories was 1.10 litres per 1000 square metres (down from 2.96 litres in 2006–07). The percentage of illegal dumping in the overall litter and illegal dumping stream has also been decreasing, falling from 49% of all litter and illegal dumping volume in NSW in 2006–07 to only 24% of the total volume in 2011–12.

Illegal dumping varies from small bags of rubbish dumped in public places and industrial sites to large-scale dumping of materials in bushlands and along the urban fringes. In NSW, KAB recorded a wide variety of illegally dumped items, including household items such as wardrobes, lounges, mattresses, desks, televisions, heaters, vacuum cleaners, ironing boards and prams. Other illegally dumped items included pallets, abandoned shopping trolleys, abandoned car parts including tyres and rims, bumper bars, fenders and motor parts.

Action to tackle illegal dumping has been increasing. The number of illegal dumping investigations by regional illegal dumping squads has grown from 3479 in 2009–10 to 5247 in 2010–11. PINs issued in this period increased from 583 to 832. Clean-up notices issued have decreased from 154 (2009–10) to 122 (2010–11).



**Figure 12: NSW and national average illegal dumping volume per 1000 square metres for 2006–07 to 2011–12.**

## 8. Key NSW policies and programs supporting the WARR Strategy

The NSW Government has a comprehensive framework of policies and programs to support progress towards achieving the objectives and targets in the NSW Waste Avoidance and Resource Recovery Strategy 2007 (WARR Strategy). This includes a mix of legislative and economic tools and policies, as well as education programs and grants.

The regulatory framework for waste comes under the state's primary environment protection legislation, the *Protection of the Environment Operations Act 1997* (POEO Act), together with the *Waste Avoidance and Resource Recovery Act 2001* and the Protection of the Environment Operations (Waste) Regulation 2005. These key statutes contain the requirements for managing, storing, transporting, processing, recovering and disposing of waste.

This includes resource recovery exemptions that facilitate the bona-fide, fit for purpose, reuse of waste materials as fuel or for application to land that pose minimal risk of harm to the environment or human health. Since 2008, 31 general exemptions and 150 specific exemptions have been issued that have facilitated the beneficial reuse of over 2.6 million tonnes of waste.

The POEO Act also enables the government's key economic instrument for driving waste avoidance and greater resource recovery: the Waste and Environment Levy. The Waste and Environment Levy applies to waste received at licensed waste disposal facilities and helps to drive waste avoidance and resource recovery by increasing the cost of waste disposal. This makes avoidance and resource recovery more viable and helps to stimulate investment and innovation in resource recovery technologies.

In January 2012, the then Minister for the Environment, the Hon Robyn Parker, announced an independent review of the Waste and Environment Levy, including a review of the funding arrangements for programs to facilitate greater investment in recycling infrastructure and increased resource recovery. In response to the review's recommendations, in February 2013 the NSW Government announced the five-year \$465.7 million *Waste Less Recycle More* initiative.

The *Waste Less Recycle More* initiative includes a mix of programs and grants that provide a comprehensive approach to improve the management of waste materials through the NSW economy. The initiative is made up of:

- \$250 million Waste and Recycling Infrastructure Package, consisting of:
  - \$70 million Organics Infrastructure Fund
  - \$70 million Community Recycling Centre Fund
  - \$60 million Waste and Recycling Infrastructure Fund
  - \$35 million Business Recycling Fund
  - \$15 million Recycling Innovation Fund
- \$137.7 million Supporting Local Communities Fund, which includes:
  - \$38.7 million Waste and Sustainability Improvement Payment Transition Fund
  - \$70 million Local Government Waste and Resource Recovery Fund
  - \$13 million Regional Local Government Fund
  - \$9 million Regional Waste Avoidance and Resource Recovery Strategy Fund
  - \$7 million Regional Landfill Consolidation Fund
- \$58 million Illegal Dumping Fund
- \$20 million Litter Fund.

The *Waste Less Recycle More* initiative aims to facilitate action at all stages of the waste management process to help achieve the WARR Strategy targets, including waste avoidance, source separation and collection, infrastructure and processing, and end-markets for recovered materials, as well as addressing litter and illegal dumping. The development of the grants and programs in the initiative were informed by the data contained in this progress report, as well as broad consultation with key stakeholders.

For further information about the Waste Less Recycle More initiative go to [www.epa.nsw.gov.au/waste/WasteLess.htm](http://www.epa.nsw.gov.au/waste/WasteLess.htm)



## 9. Appendix A: Data methodology

The Waste Avoidance and Resource Recovery (WARR) Progress Report 2010–11 (the Progress Report) is based on data gathered from a number of sources described below. Most data is for the period 2010–11.

Resource recovery data is extrapolated from data collected from local government and from reprocessors. Disposal data is drawn from weighbridge records in the regulated areas and is of high quality; i.e. Sydney metropolitan area (SMA) and the extended regulated area (ERA) of the Hunter, Central Coast and Illawarra regions.

From July 2009 the new regional regulated area (RRA) was formed which comprises 21 councils on the north-east coast of NSW, the Upper Hunter, Blue Mountains and Wollondilly councils. Although disposal data is collected separately for the RRA, systems are not yet robust enough to present separate recovery data and therefore reporting for this region is still incorporated with the remainder of regional and rural NSW, which is referred to as 'rest of NSW' or regional and rural NSW in this report.

Principal data sources are:

- information reported by councils on amounts and composition of materials disposed and recovered, collected through an annual survey and kerbside bin audits
- a survey of construction and demolition reprocessors undertaken by the Waste Management Association of Australia
- a survey of organics reprocessors undertaken by Compost Australia for the EPA
- a survey of glass reprocessors undertaken by MS2 on behalf of the EPA
- a national survey of plastics reprocessors undertaken by the Plastics and Chemicals Industries Association on behalf of the EPA, other jurisdictions and the plastics industry
- a survey of paper reprocessors undertaken by IndustryEdge on behalf of the EPA
- mandatory monthly disposal and recovery tonnages collected from disposal facilities that pay the Waste and Environment Levy
- mandatory annual waste disposal tonnages provided by waste facilities in the rest of the state
- information on hazardous materials and products from the Household Chemical Cleanout Program
- reports from product stewardship initiatives such as the ChemClear program
- reports on litter and illegal dumping from: the Keep Australia Beautiful survey, supported by the EPA, reports by regional illegal dumping squads, co-funded by the EPA and through calculations from penalty infringement notices issued.

Some data sources and measurement methodologies impact on the interpretation of results. For example, recycling is estimated from information on materials passing through reprocessors and therefore inherently underestimates the actual recycling rate in NSW.

Materials reprocessed on-site or reused on another site without first passing through a reprocessor are not captured and therefore not measured or reported. For example, demolition material used on-site for road base or fill, or transported by a construction company for reuse on another construction site would not be captured.

Similarly, commercial and industrial materials that are sent directly from one business to another to be used as a raw material would not be captured. The same is true in the municipal stream with home composting activities.

The EPA has published the report, Quality Declaration Waste Avoidance and Resource Recovery Strategy Recycling Rates (EPA 2012). This report provides the context surrounding data collection and analysis used for determining recycling rates provided in the Progress Report. It allows users to understand the factors affecting the quality of these recycling rates.

## 10. Appendix B: Recycling, disposal and generation tonnages by waste stream and region 2002–03 to 2010–11

<b>Municipal</b>				
	<b>Total disposed (tonnes)</b>	<b>Total recycled (tonnes)</b>	<b>Total generation (tonnes)</b>	<b>Percentage recycled</b>
NSW 2010–11	2,298,000	2,457,500	4,755,500	52%
NSW 2008–09	2,384,500	1,863,500	4,248,000	44%
NSW 2006–07	2,408,000	1,482,500	3,890,500	38%
NSW 2004–05	2,143,500	1,037,000	3,180,500	33%
NSW 2002–03	2,155,000	945,000	3,100,000	31%
Sydney 2010–11	1,000,000	1,454,500	2,454,500	59%
Sydney 2008–09	1,050,000	1,076,000	2,126,000	51%
Sydney 2006–07	1,093,500	801,500	1,895,000	42%
Sydney 2004–05	1,021,000	605,000	1,626,000	37%
Sydney 2002–03	1,185,000	595,000	1,780,000	33%
ERA* 2010–11	502,000	517,500	1,019,500	51%
ERA* 2008–09	506,000	389,500	895,500	44%
ERA* 2006–07	506,500	351,500	858,000	41%
ERA* 2004–05	485,000	239,000	724,000	33%
ERA* 2002–03	479,500	189,500	669,000	28%
Rest of NSW <sup>#</sup> 2010–11	796,000	485,500	1,281,500	38%
Rest of NSW <sup>#</sup> 2008–09	828,500	398,000	1,226,500	32%
Rest of NSW <sup>#</sup> 2006–07	808,000	329,500	1,137,500	29%
Rest of NSW <sup>#</sup> 2004–05	637,500	193,000	830,500	23%
Rest of NSW <sup>#</sup> 2002–03	490,500	160,500	651,000	25%
<b>Commercial and industrial</b>				
	<b>Total disposed (tonnes)</b>	<b>Total recycled (tonnes)</b>	<b>Total generation (tonnes)</b>	<b>Percentage recycled</b>
NSW 2010–11	2,352,000	3,099,500	5,451,500	57%
NSW 2008–09	2,588,500	2,836,500	5,425,000	52%
NSW 2006–07	2,921,000	2,297,000	5,218,000	44%
NSW 2004–05	2,984,500	1,835,000	4,819,500	38%
NSW 2002–03	2,643,500	1,371,500	4,015,000	34%

## Waste Avoidance and Resource Recovery Strategy Progress Report 2010–11

Sydney 2010–11	1,626,500	1,732,000	3,358,500	52%
Sydney 2008–09	1,854,500	1,816,500	3,671,000	50%
Sydney 2006–07	2,087,000	1,528,000	3,615,000	42%
Sydney 2004–05	2,246,500	1,214,500	3,461,000	35%
Sydney 2002–03	2,029,500	1,022,000	3,051,500	33%
ERA* 2010–11	283,000	670,500	953,500	70%
ERA* 2008–09	358,000	546,500	904,500	60%
ERA* 2006–07	383,000	354,500	737,500	48%
ERA* 2004–05	362,000	401,000	763,000	53%
ERA* 2002–03	325,000	269,500	594,500	45%
Rest of NSW# 2010–11	442,500	697,000	1,139,500	61%
Rest of NSW# 2008–09	376,000	473,500	849,500	56%
Rest of NSW# 2006–07	451,000	414,500	865,500	48%
Rest of NSW# 2004–05	376,000	219,500	595,500	37%
Rest of NSW# 2002–03	289,000	80,000	369,000	22%
<b>Construction and demolition</b>				
	<b>Total disposed (tonnes)</b>	<b>Total recycled (tonnes)</b>	<b>Total generation (tonnes)</b>	<b>Percentage recycled</b>
NSW 2010–11	1,749,500	5,156,000	6,905,500	75%
NSW 2008–09	1,759,500	4,829,000	6,588,500	73%
NSW 2006–07	2,035,500	4,215,500	6,251,000	67%
NSW 2004–05	1,971,500	3,146,500	5,118,000	61%
NSW 2002–03	1,708,000	2,980,500	4,688,500	64%
Sydney 2010–11	1,120,500	3,532,500	4,653,000	76%
Sydney 2008–09	1,075,500	3,684,500	4,760,000	77%
Sydney 2006–07	1,286,000	2,978,500	4,264,500	70%
Sydney 2004–05	1,306,500	2,508,000	3,814,500	66%
Sydney 2002–03	1,177,000	2,505,000	3,682,000	68%
ERA* 2010–11	414,000	1,359,500	1,773,500	77%
ERA* 2008–09	460,500	994,500	1,455,000	68%
ERA* 2006–07	327,500	851,500	1,179,000	72%
ERA* 2004–05	277,000	504,000	781,000	65%
ERA* 2002–03	232,000	473,000	705,000	67%
Rest of NSW# 2010–11	215,000	264,000	479,000	55%

## Waste Avoidance and Resource Recovery Strategy Progress Report 2010–11

Rest of NSW# 2008–09	223,500	150,000	373,500	40%
Rest of NSW# 2006–07	422,000	385,500	807,500	48%
Rest of NSW# 2004–05	388,000	134,500	522,500	26%
Rest of NSW# 2002–03	299,000	2500	301,500	1%
<b>Total</b>				
	<b>Total disposed (tonnes)</b>	<b>Total recycled (tonnes)</b>	<b>Total generation (tonnes)</b>	<b>Percentage recycled</b>
NSW 2010–11	6,400,000	10,712,500	17,112,500	63%
NSW 2008–09	6,733,000	9,529,000	16,262,000	59%
NSW 2006–07	7,364,500	7,994,500	15,359,000	52%
NSW 2004–05	7,099,500	6,018,500	13,118,000	46%
NSW 2002–03	6,506,500	5,297,000	11,803,500	45%
Sydney 2010–11	3,746,500	6,719,000	10,465,500	64%
Sydney 2008–09	3,980,000	6,577,000	10,557,000	62%
Sydney 2006–07	4,466,500	5,308,000	9,774,500	54%
Sydney 2004–05	4,574,000	4,327,500	8,901,500	49%
Sydney 2002–03	4,391,500	4,122,000	8,513,500	48%
ERA* 2010–11	1,199,000	2,547,500	3,746,500	68%
ERA* 2008–09	1,324,500	1,931,000	3,255,500	59%
ERA* 2006–07	1,217,000	1,557,000	2,774,000	56%
ERA* 2004–05	1,124,000	1,144,000	2,268,000	50%
ERA* 2002–03	1,036,500	932,000	1,968,500	47%
Rest of NSW# 2010–11	1,454,500	1,446,000	2,900,500	50%
Rest of NSW# 2008–09	1,428,500	1,021,000	2,449,500	42%
Rest of NSW# 2006–07	1,681,000	1,129,500	2,810,500	40%
Rest of NSW# 2004–05	1,401,500	547,000	1,948,500	28%
Rest of NSW# 2002–03	1,078,500	243,000	1,321,500	18%

\* ERA = Hunter, Central Coast and Illawarra regions; # Prior to 2010–11 the Rest of NSW included all areas of NSW outside the regulated areas. In 2010–11, the Rest of NSW included the regional regulated area (RRA) and all remaining areas outside the regulated area; Tonnage figures have been rounded.

## 11. Appendix C: Generation, disposal and recycling by waste stream and material 2010–11

Waste categories	Waste types	Municipal disposal (tonnes)	C&I disposal (tonnes)	C&D disposal (tonnes)	Total disposal (tonnes)	Municipal recycling (tonnes)	C&I recycling (tonnes)	C&D recycling (tonnes)	Total recycling (tonnes)	Total generation
<b>Masonry materials</b>	Asphalt	0	500	2500	<b>3000</b>	0	0	671,500	<b>671,500</b>	<b>674,500</b>
	Bricks	32,000	26,500	87,000	<b>145,500</b>	28,500	130,500	820,500	<b>979,500</b>	<b>1,125,000</b>
	Concrete	0	27,500	253,000	<b>280,500</b>	46,500	215,000	1,353,500	<b>1,615,000</b>	<b>1,895,500</b>
	Rubble	38,000	176,000	221,500	<b>435,500</b>	140,000	365,500	531,000	<b>1,036,500</b>	<b>1,472,000</b>
	Plasterboard and cement sheeting	1500	16,500	29,000	<b>47,000</b>	0	1500	3000	<b>4500</b>	<b>51,500</b>
<b>Metals</b>	Steel	36,000	33,000	35,000	<b>104,000</b>	279,500	775,000	810,000	<b>1,864,500</b>	<b>1,968,500</b>
	Aluminium	12,500	5000	4000	<b>21,500</b>	17,000	54,500	42,500	<b>114,000</b>	<b>135,500</b>
	Non-ferrous metals (ex. aluminium)	2500	1000	500	<b>4000</b>	8500	26,500	21,000	<b>56,000</b>	<b>60,000</b>
<b>Organics</b>	Food organics	799,500	410,500	0	<b>1,210,000</b>	84,500	98,000	0	<b>182,500</b>	<b>1,392,500</b>
	Garden organics	362,500	92,000	16,500	<b>471,000</b>	596,000	216,500	31,500	<b>844,000</b>	<b>1,315,000</b>
	Timber	34,000	271,500	157,000	<b>462,500</b>	4500	58,500	89,500	<b>152,500</b>	<b>615,000</b>
	Other organics	7000	38,000	0	<b>45,000</b>	0	478,500	0	<b>478,500</b>	<b>523,500</b>
	Biosolids	0	6500	0	<b>6500</b>	437,000	0	0	<b>437,000</b>	<b>443,500</b>
<b>Paper and cardboard</b>	Cardboard	16,500	58,500	3500	<b>78,500</b>	180,000	231,000	0	<b>411,000</b>	<b>489,500</b>
	Liquid paperboard (LPB)	2000	0	0	<b>2000</b>	4000	0	0	<b>4000</b>	<b>6000</b>

Waste Avoidance and Resource Recovery Strategy Progress Report 2010–11

	Newsprint and magazines	16,000	36,500	2000	<b>54,500</b>	231,000	143,000	0	<b>374,000</b>	<b>428,500</b>
	Office paper	9000	97,500	5500	<b>112,000</b>	2000	101,000	0	<b>103,000</b>	<b>215,000</b>
<b>Plastics</b>	Polyethylene terephthalate (PET)	21,000	14,000	1000	<b>36,000</b>	21,000	13,500	0	<b>34,500</b>	<b>70,500</b>
	High density polyethylene (HDPE)	20,000	113,500	6500	<b>140,000</b>	20,000	12,500	0	<b>32,500</b>	<b>172,500</b>
	Polyvinyl chloride (PVC)	3000	21,500	1000	<b>25,500</b>	1000	500	0	<b>1500</b>	<b>27,000</b>
	Other plastics	179,500	218,500	12,000	<b>410,000</b>	2500	1500	0	<b>4000</b>	<b>414,000</b>
<b>Glass</b>	Glass	76,000	36,500	3000	<b>115,500</b>	195,000	94,500	10,000	<b>299,500</b>	<b>415,000</b>
<b>Other</b>	Leather & textiles	85,000	78,500	9500	<b>173,000</b>	16,500	21,500	0	<b>38,000</b>	<b>211,000</b>
	Tyres & other rubber	9000	23,500	0	<b>32,500</b>	500	51,000	0	<b>51,500</b>	<b>84,000</b>
<b>Hazardous</b>	Quarantine	3000	11,500	0	<b>14,500</b>	0	0	0	<b>0</b>	<b>14,500</b>
	Contaminated soil	0	500	504,000	<b>504,500</b>	0	0	0	<b>0</b>	<b>504,500</b>
	Industrial waste	95,500	148,000	26,000	<b>269,500</b>	0	0	0	<b>0</b>	<b>269,500</b>
	Asbestos	1000	6500	191,500	<b>199,000</b>	0	0	0	<b>0</b>	<b>199,000</b>
<b>Other</b>	Other materials *	436,000	383,000	177,500	<b>996,500</b>	141,500	9500	772,000	<b>923,000</b>	<b>1,919,500</b>
	<b>Totals</b>	<b>2,298,000</b>	<b>2,352,500</b>	<b>1,749,000</b>	<b>4,148,500</b>	<b>2,457,000</b>	<b>3,099,500</b>	<b>5,156,000</b>	<b>10,712,500</b>	<b>17,112,000</b>

\* 'Other materials' were materials that were not possible to assign to a more precise category in audits. These included for example mixed fines (<300 mm), composites and containerised materials. C&D = construction and demolition; C&I = commercial and industrial.

## 12. Appendix D: NSW Litter Report 2011–12

For a copy of the NSW Litter Report 2011–12 go to: [www.epa.nsw.gov.au/wastetools/local-councils.htm](http://www.epa.nsw.gov.au/wastetools/local-councils.htm)