City of Lake Macquarie
Waste Strategy 2015-2023

Lake Macquarie
City Council

Table of Contents

List of tables

List of figures

Introduction

In 2009, Council embarked on the development of a new waste strategy for the City. Some actions resulting from the research and consultation around developing new services and infrastructure are already underway.
This document outlines those developments, describes existing services and new opportunities, and identifies plans for future improvement. It sets clear targets and strategies to achieve them, and orientates these strategies within the broader framework of Council's policies and plans, and the regional context.

Why do we need a waste strategy?

This Lake Macquarie City Waste Strategy has been developed to contribute to achieving Council's vision of a sustainable and equitable City. It identifies aims, barriers and costs involved in delivering current and future waste services and facilities consistent with achieving that vision. It seeks to address, at a local level, global imperatives such as optimising the use of scarce natural resources, beneficially reusing materials, and minimising the impact of waste on society and the environment.

A number of key local issues are also driving the development of sustainable waste management practices:

Limited landfill capacity

Council's only active landfill at Awaba has limited capacity. As of December 2014, it had space for just over three years of the City's waste. Any wastes that cannot be recovered and recycled are destined for landfill. Long-term access to suitable landfill capacity is a key element of Council's waste management strategy.

Community expectations

The people of Lake Macquarie enjoy the natural environment that the lake and its surroundings offer. They also expect clean, efficient and cost-effective waste collection and disposal services. This Waste Strategy aims to deliver high quality, accessible and affordable waste services that represent best practice while minimising environmental impacts. There will always be a need to dispose of some types of residual wastes in landfill that cannot be otherwise recovered and processed; however, there is increasing community interest in resource recovery.

Community surveys demonstrate that waste services consistently rank highest among the range of services provided by Council in terms of importance and satisfaction. Consultation programs have identified a community expectation that Council's operations and services become more sustainable over time and, in particular, that Council continue to manage the City's waste within its boundaries.

Cost efficiency

Council disposes of residual wastes at the Awaba Waste Management Facility. Managing the landfill does not generate income for Council. Fees paid at the landfill for accepting waste, and through commercial and domestic waste management charges, balance the ongoing costs of managing the facility. These charges include covering the costs of plant, equipment, staff and environmental monitoring at the site as well as the site's remediation. They also include a NSW Government levy, the Waste Levy, that is charged per tonne of waste deposited in landfill.

The Waste Levy has been rising annually in line with NSW Government targets aimed at driving increased resource recovery and reduction of waste to landfill. Council must include these levy increases in their fees and charges. Landfilling is becoming a more and more expensive waste management practice and alternative methods that focus on recovering resources from the waste stream are becoming more economically attractive. Projects that focus on recovery of materials are therefore becoming financially and socially viable.

In summary, rising charges associated with landfill are driving waste management practices away from waste disposal via landfilling and into more sustainable practices of resource recovery.

Scope and timeframe

This Strategy documents Council's waste management direction to 2023. The Strategy describes existing and planned waste management facilities and services provided or supported by Council to manage the City's waste.

The Strategy includes management practices for the majority of waste streams generated within the City, but focuses mainly on household wastes. It does not cover management of liquid waste or the management of mining and power generation waste, such as coal tailings, chitter, fly ash and fugitive gas emissions.

Priorities

The Lake Macquarie City Waste Strategy aims to define and drive development of sustainable and equitable waste management practices for the City, with the following priorities:

1. Resource consumption impacts are minimised
2. Waste generation is minimised
3. A range of tools is available to guide development of sustainable, safe and attractive infrastructure in the City
4. Required infrastructure is provided in a timely manner
5. Relationships with key agencies are fostered
6. Opportunities are available for members of the community to have input on matters that affect them
7. Council advocates on behalf of its community on matters of importance to the City

Demographics of Lake Macquarie City

The City of Lake Macquarie City (Figure 1) is home to a population of about 200,000 people. This community is expected to grow to around 260,000 by 2030, creating demand for an estimated 36,500 new dwellings.

Lake Macquarie City covers a geographical area of 757 square kilometres. It stretches from the coastal areas of Whitebridge and Dudley in the north, south to Swansea and Catherine Hill Bay and across the lake to Wyee. The LGA is predominantly a mix of suburban and peri-urban land uses, with the urban populations concentrated around Lake Macquarie.

There are currently around 82,000 premises in the City for which waste services are available. The majority (70,000) are residential single unit dwellings (SUDs). There are also around 3,500 commercial premises and 8,000 residential multi unit dwellings (MUDs). These MUDs are typically in low-rise complexes of less than 10 dwelling units.

Most residential premises (99 per cent) and about 55 per cent of commercial premises utilise Council's kerbside and other waste services. The remainder are serviced by private providers.

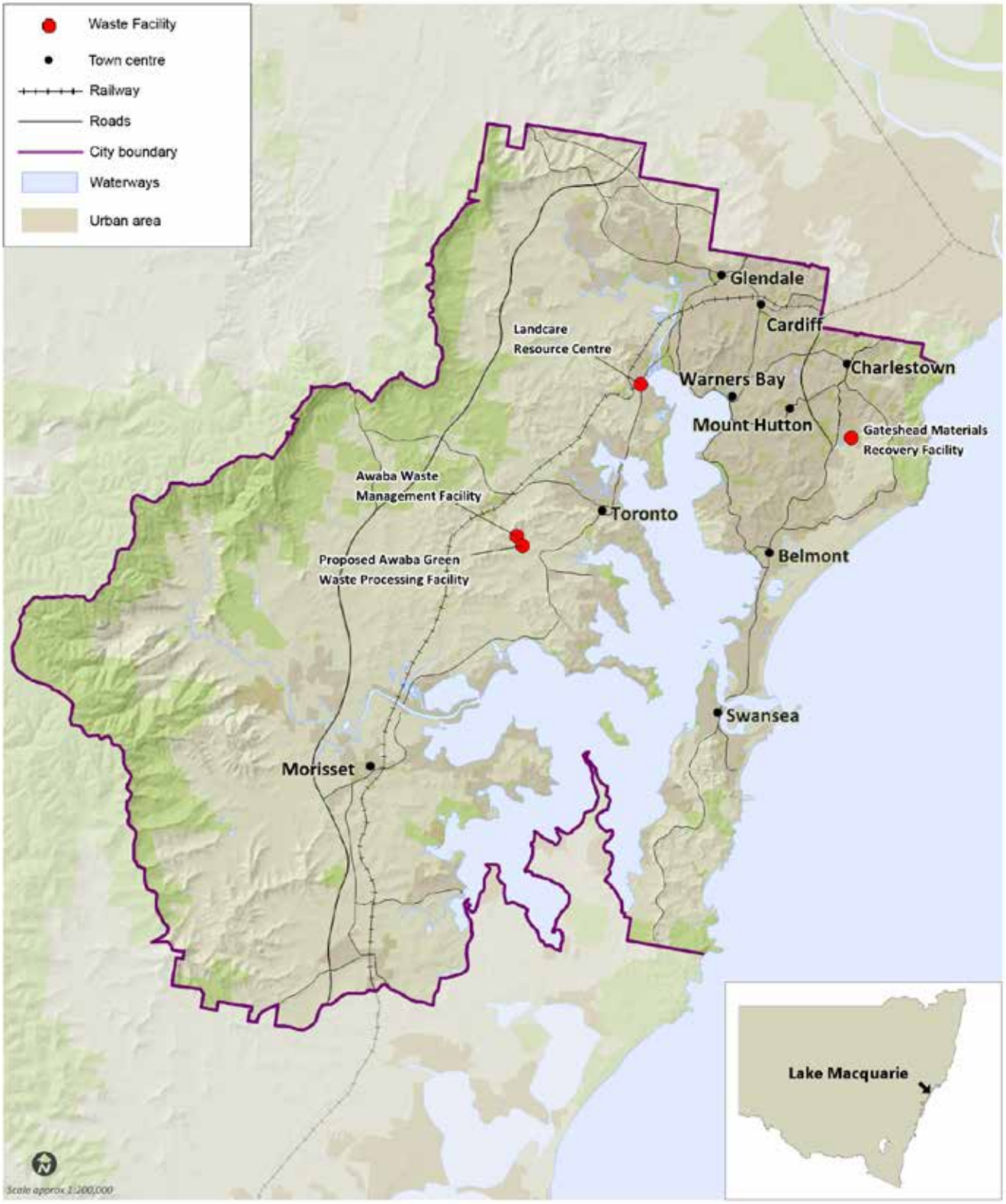

Figure 1: Locality plan of Lake Macquarie City, showing location of key waste facilities

Community involvement in the development of this Strategy

In early 2010, Council conducted a comprehensive Review of 'Best Practice' Waste Management Alternatives. This review examined a range of waste management technologies and provided Council with 10 waste recovery and treatment options (pages 19 and 20).

Over the period of July 2010 to October 2010, Council conducted extensive community engagement to raise awareness and seek community input on the future of waste in the City, culminating in the public exhibition of the preferred waste technology for the City. The consultation methods included workshops, information sessions, an online discussion forum, structured debate, one-on-one correspondence, submission forms and a representative community survey. In total, more than 1,600 residents contributed to the discussion on the future of the City's waste services.

The preferred solution that Council took to the local community in late 2010 involved the following key elements:

1. Introduction of a phased 3-bin kerbside waste service. Phase 1 involved a new kerbside green bin for garden waste only, collected fortnightly. Phase 2 involved adding food waste to the green bin, collecting the green bin weekly, and collecting the garbage bin fortnightly.
2. Construction of a new organics composting plant to process the City's garden and food waste into high quality mulch and compost.
3. Expansion of the Awaba Waste Management Facility for the long-term disposal of the City's residual waste.

The clear message from the consultation was that the majority of the respondents support the preferred solution. The key results were:

- 64 per cent of submissions during public exhibition preferred the phased 3-bin option and 22 per cent preferred the alternative two bin option.
- 69 per cent of survey respondents preferred the phased 3-bin option as the best option for their household, 18 per cent preferred a two-bin system and 9 per cent would be satisfied with either.

On 28 February 2011 Council resolved to adopt a waste processing strategy incorporating:

1. *A phased three bin, source separated organics (SSO) system with phasing of:*

a. *Phase 1 – a source separated green (garden) SSG, fortnightly collection commencing as soon as is practicable;*

b. *Phase 2 – a source separated organics (garden and kitchen) SSO weekly collection commencing as soon as is practicable.*

2. *A weekly mixed solid waste (MSW) collection during Phase 1 of the SSO system and fortnightly MSW collection during Phase 2 of the SSO system.*

3. *Continuation of a fortnightly dry recyclables kerbside collection.*

In late 2012, Council commenced an extensive community education program to support the introduction of the Phase 1 service, which began on 1 April 2013. On 1 July 2013, Council, through Hunter Resource Recovery, commenced a new recycling contract with Solo Resource Recovery, which delivered considerable cost savings to ratepayers.

In 2013, Council placed on hold an overall waste strategy for the City pending the outcomes of the NSW Government's waste reforms, release of the draft NSW Waste Avoidance and Resource Recovery (WARR) Strategy, and development of the draft Hunter Region Waste Avoidance and Resource Recovery Strategy.

Once these state and regional waste strategies were completed, Council was in a position to update the draft Lake Macquarie City Waste Strategy and seek further community input.

The draft Lake Macquarie City Waste Strategy 2015-2023 was publicly exhibited between 9 July 2015 and 24 August 2015 and was adopted in September 2015.

Policy context and drivers

NSW and Federal laws and schemes provide the policy environment for development of new waste strategies for Lake Macquarie City.

Federal Government

Lake Macquarie's directions will be influenced by an emerging national policy environment. The Federal Government has developed a National Waste Policy, which sets a 10-year framework of priorities and guiding principles for managing resource recovery issues and relevant stakeholder relationships. This initiative includes extended producer responsibility and related initiatives to concentrate attention on problematic waste streams such as e-waste and hazardous materials.

The first of these product stewardship schemes relates to the management of television and computer waste. This waste stream is particularly important given the environmental impacts of e-waste components and the high turnover of electrical devices, particularly following the roll-out of digital television.

NSW Government

Waste in NSW is regulated primarily through the following legislative instruments:

- *Protection of the Environment Operations Act 1997* and associated Regulations
- *Environmental Planning and Assessment Act 1979*
- *Waste Avoidance and Resource Recovery (WARR) Act 2001*.

In December 2014, the NSW Government released the NSW Waste Avoidance and Resource Recovery Strategy 2014-21 (WARR Strategy). This Strategy revises the waste hierarchy (Figure 2) and documents waste management targets for NSW across six key result areas (Table 1).

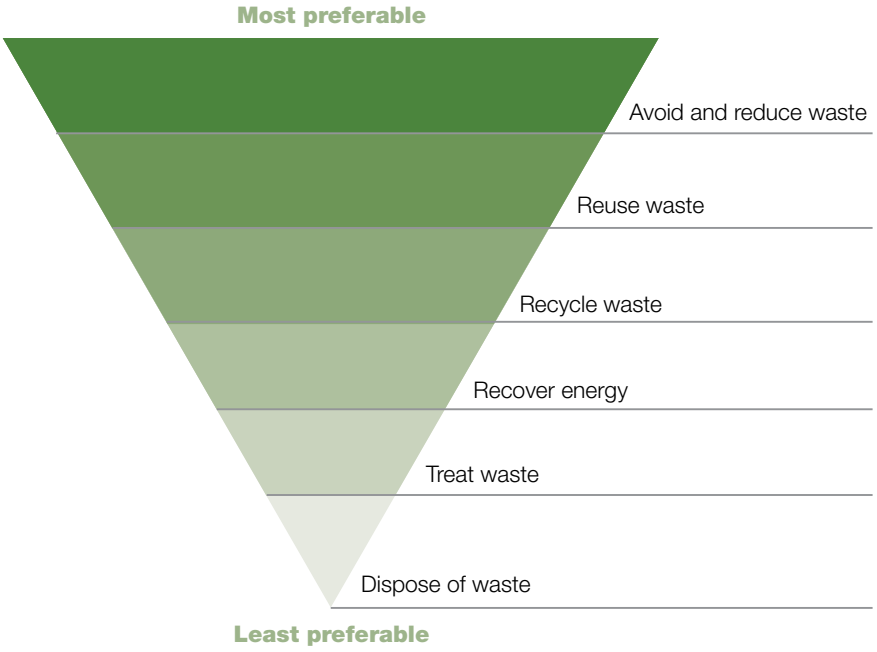

Figure 2: Waste hierarchy adopted by the NSW Government in 2014

Table 1: NSW Waste Avoidance and Resource Recovery Strategy targets

Key Result Area	Target
1. Avoid and reduce waste generation	By 2021–22, reduce the rate of waste generation per capita
2. Increase recycling	By 2021–22, increase recycling rates for: • municipal solid waste from 52% (in 2010–11) to 70% • commercial and industrial waste from 57% (in 2010–11) to 70% • construction and demolition waste from 75% (in 2010–11) to 80%
3. Divert more waste from landfill	By 2021–22, increase the waste diverted from landfill from 63% (in 2010–11) to 75%
4. Manage problem wastes better	By 2021–22, establish or upgrade 86 drop-off facilities or services for managing household problem wastes state-wide
5. Reduce litter	By 2016–17, reduce the number of litter items by 40% compared with 2011–12 levels and then continue to reduce litter items to 2021–22.
6. Reduce illegal dumping	From 2013–14, implement the NSW Illegal Dumping Strategy 2014–16 to reduce the incidence of illegal dumping state-wide As part of this strategy, by 2016–17: • reduce the incidence of illegal dumping in Sydney and the Illawarra, Hunter and Central Coast regions by 30% compared with 2010–11 • establish baseline data to allow target-setting in other parts of the state

In addition to the WARR Strategy, the NSW Government has a range of other waste policy instruments including the:

- NSW Illegal Dumping Strategy 2013-15;
- Energy from Waste Policy; and
- Waste Reduction and Purchasing Policy.

The NSW waste levy

To discourage landfilling, the NSW Government charges a levy, on a per tonne basis, for all the material that is disposed of in landfill. The levy for Lake Macquarie is set at $133.10 per tonne for the financial year 2015-16. The future of the Waste Levy beyond 2016 is uncertain. The cost of the levy to Lake Macquarie waste services in 2014-15 is likely to be about $11.6 million, which directly affects charges for ratepayers.

Waste Less Recycle More initiative

Another financial motivator is the NSW Government's Waste Less Recycle More (WLRM) Initiative, introduced in 2013. WLRM returns a small portion of the Waste Levy receipts to local government through its Better Waste and Recycling Fund (BWRF). The BWRF to Council in 2014-15 was $425,095.

In addition to this direct funding, local government may compete for a range of grant programs supported by the WLRM Initiative. Since commencement of this competitive grants program, Council has received the following grants:

- Early start Community Recycling Centre ($0.25m) (2013-14);
- Regional Illegal Dumping Squad ($1.60m) (2013-14);
- Love Food Hate Waste ($0.07m) (2013-14);
- Orphaned Asbestos Clean Up ($0.17m) (2013-14, 2014-15);
- Combatting Illegal Dumping ($0.15m) (2014-15);
- Organics Infrastructure ($1.40m) (2014-15); and
- Organics Collection ($0.69m) (2014-15).

Limitation on landfill approvals

The third element of the NSW Government's waste avoidance and resource recovery program is a limitation on new landfill facility approval. Under amendments to State Environmental Planning Policy (Infrastructure), the relevant consent authority is required to consider how a proponent proposes to minimise waste to landfill, and in particular:

1a) whether there is a suitable level of recovery of waste, such as by using alternative waste treatment or the composting of food and garden waste, so that the amount of waste is minimised before it is placed in the landfill.

Hunter Region Waste Avoidance and Resource Recovery Strategy

One of the key initiatives of the NSW Government's 2013 waste reforms was to enhance regional collaboration in the development and implementation of waste and resource recovery strategic plans.

In 2013, nine Hunter councils (Lake Macquarie, Newcastle, Port Stephens, Maitland, Cessnock, Singleton, Muswellbrook, Upper Hunter and Dungog) agreed to develop a regional waste strategy. The draft Hunter Region Waste Avoidance and Resource Recovery Strategy 2014-2021 describes a vision for management of waste in the Hunter and seven key themes for regional action, which closely align with the targets in the WARR Strategy:

1. Waste avoidance and reduction;
2. Increased recycling and resource recovery;
3. Diversion of waste from landfill;
4. Managing problem household wastes;
5. Reducing litter;
6. Reducing illegal dumping; and
7. Governance and leading by example.

The draft Strategy for the Hunter focuses on domestic waste. It includes analysis of the 2011-12 waste management infrastructure and services of the region, and a number of options for regional collaboration to improve waste management in the Hunter. Options investigated include:

- The status quo (baseline to compare other options against);
- Maximising performance by better utilising existing infrastructure;
- Constrained garbage bin capacity, either through a 140 litre bin collected weekly or a 240 litre bin collected fortnightly;
- Organic waste collection and processing of:
  - Food waste treated through anaerobic digestion
  - Garden waste treated through windrow composting
  - Mixed food and garden waste treated through in-vessel composting;
- Mechanical biological treatment, based on the Bedminster facility at Port Stephens;
- Waste avoidance through increased education campaigns;
- Regional landfilling, rather than each council operating its own landfill; and
- Waste to energy through gasification of residual garbage with pre-treatment.

None of these individual options has the capacity to achieve the WARR Strategy targets for domestic waste; however, combined effort across a number of options could do so.

Local policy

Council operates its waste services in accordance with the requirements of the NSW *Local Government Act 1993* and its established policy framework.

Local Government Act

The Local Government Act has specific requirements for councils to provide an integrated, not-for-profit waste service to domestic ratepayers. Councils do not generally have the capacity to compel commercial tenants and ratepayers to use their waste services.

Environmental Sustainability Action Plan

Council has established its own waste reduction target, which is documented in the City of Lake Macquarie Environmental Sustainability Action Plan 2014-2023. This target is to achieve a 75 per cent reduction in per capita waste to landfill for the City by 2023, relative to a 2007-08 baseline of 616 kg per capita. This equates to 154 kg per capita to landfill in 2023.

Lifestyle 2030 and Community Plans

Council's Lifestyle 2030 Strategy provides the long-term direction for strategic land use and land management planning in the City, while the Community Strategic Plan 2013-2023 has a key focus on caring for the environment. This focus area includes provision of waste management services that enhance and sustain the natural, social, cultural and built environment, and contribute to an equitable regional and global ecological footprint. The Delivery Program 2013-2017 sets out Council's objectives and plans for managing and expanding existing commercial and residential waste collection and processing services to maximise resource recovery.

Environmental policies

Council has a number of other policy positions that influence this Waste Strategy including its Sustainability Policy, which requires Council to minimise the use of natural resources and waste generation in its own operations, and its Greenhouse Gas Emissions Reduction Targets Policy, which seeks to reduce carbon emissions from both Council and the City.

A snapshot of our City's waste

Waste streams

In order to develop best management practices, an understanding of the City's different waste streams is required. Council has carried out a range of waste audits in order to understand the composition of the City's major waste streams. This includes waste collected at the kerbside and from public places, and the waste that is disposed of at the Awaba Waste Management Facility.

Three main types of waste are commonly identified by the waste collection and processing industry:

- **Domestic waste** - often called municipal solid waste or MSW, most of this is collected via kerbside collections but also includes waste hauled to landfill by residents.
- **Commercial and industrial waste** – often referred to as C&I waste, since it is sourced from commercial and industrial enterprises. This waste can comprise one type of material (e.g. cardboard packaging from an electronics store) or mixed materials (e.g. food waste, packaging, plastics, papers etc from a restaurant).
- **Construction and demolition waste** – C&D waste is primarily inert building waste, such as wood, bricks and concrete.

Waste to landfill in the City is generally declining (Table 2). The majority of waste presented at the Awaba Waste Management Facility is MSW generated by households (74 per cent; 76,305 tonnes; Figure 3). Most of this material is derived from Council's weekly household garbage bin collections (54 per cent, 40,853 tonnes) a smaller proportion is driven to the landfill by residents themselves (5 per cent, 3,468 tonnes) or collected via Council's bulk waste collections (8 per cent, 6,237 tonnes).

Green waste bin collections make up 24 per cent (18,513 tonnes) of the MSW category presented at Awaba. This garden waste is combined with a further 3,700 tonnes of green waste from other streams. A total of 22,219 tonnes of green waste was diverted from landfill in 2013-14.

In addition to waste sent to landfill and green waste diverted, 23,339 tonnes of dry recyclables were recovered for reuse in 2013-14.

In 2013-14 C&I and C&D wastes made up 26 per cent of waste presented at the Awaba Waste Management Facility. The majority of this is C&D waste, of which 15,240 tonnes was landfill and 8,122 tonnes usable for operational purposes. Only 3,632 tonnes of C&I waste was landfilled.

In general, the City is making substantial progress in reducing the amount of waste it sends to landfill, and increasing the amount of material recovered for reuse. There is, however, opportunity to further improve the City's waste management performance, particularly in relation to minimising waste generation and encouraging the commercial sector to participate in resource recovery activities.

Table 2: Waste to landfill and resources recovered (in tonnes) in Lake Macquarie City

Waste stream	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
MSW received at AWMF	72,842	72,948	80,933	81,484	78,529	76,560	77,634	79,528	82,258	76,305
C&I received at AWMF[1]	60,430	40,294	32,487	39,215	25,348	22,360	21,061	25,756	4,943	3,632
C&D received at AWMF[1]	6,177	6,628	19,282	38,705	26,905	30,954	15,915	18,667	28,691	23,362
Total received at AWMF	139,450	119,870	132,702	159,404	130,783	129,874	114,611	123,950	115,892	103,299
Cover material	21,833	648	12,270	32,036	23,015	29,433	14,844	18,341	12,680	8,122
Green waste diverted[2]	8,144	7,459	6,057	9,839	7,597	8,143	4,594	6,873	8,608	22,219
Inert diverted	1,927	1,378	1,242	1,217	1,050	727	725	599	642	580
Total landfilled at AWMF	**107,546**	**110,385**	**113,134**	**116,311**	**99,121**	**91,570**	**94,447**	**98,137**	**93,963**	**72,378**
MSW landfilled at other facilities										10,885
Total waste landfilled	**107,546**	**110,385**	**113,134**	**116,311**	**99,121**	**91,570**	**94,447**	**98,137**	**93,963**	**83,263**
Kerbside dry recycling	16,600	17,000	17,650	18,110	17,645	17,842	18,690	17,599	17,514	19,596
Kerbside green waste[3]									3,905	18,513
Total waste recovered	**26,671**	**25,837**	**24,949**	**29,166**	**26,292**	**26,712**	**24,009**	**25,071**	**26,764**	**42,395**
Total waste generated	**134,217**	**136,222**	**138,083**	**145,477**	**125,413**	**118,282**	**118,456**	**123,208**	**120,727**	**125,658**

1 A reclassification of C&I and C&D codes occurred between 2011-12 and 2012-13

2 Includes kerbside green waste and self-hauled green waste

3 Service commenced 1 April 2013 – part year only

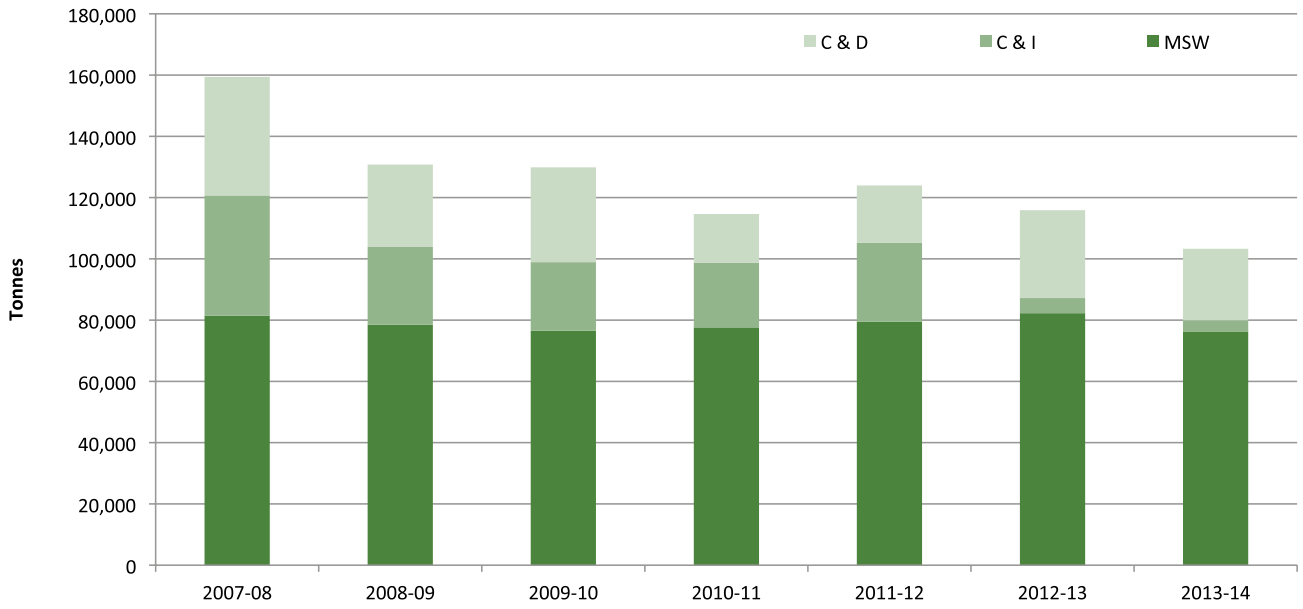

Figure 3: Proportion of different waste streams entering the Awaba Waste Management Facility 2007-08 to 2013-14 (MSW, C&I, C&D) (note: C&I reclassification in 2012-13, diversion of MSW to Summerhill commenced in 2013-14)

Waste composition

Awaba Waste Management Facility

In 2013-14 103,299 tonnes of material were presented at Awaba for disposal or reprocessing. Waste audits of self-hauled (MSW, C&I and C&D) material delivered to the Awaba Waste Management Facility in 2010 and residential bin audits for 2013 indicated that a large proportion of material sent to landfill is potentially recoverable (Figure 4). Nearly 20,500 tonnes of food and garden waste currently presented at the Awaba Waste Management Facility could be processed into a useful compost product. This represents about 16,000 tonnes from kerbside garbage bin collections and 4,500 tonnes from self-hauled waste. About 22,000 tonnes of garden waste from kerbside collections, bulk waste collections and self-hauled waste is currently recovered for beneficial reuse as landscaping and soil amelioration products.

Self-hauled MSW (Figure 5) contained 21 per cent garden waste and 5 per cent kitchen waste. A further 4 per cent was organic waste that could be composted (unrecyclable cardboard, paper).

This means over 30 per cent of waste self-hauled by residents to Awaba Waste Management Facility is potentially compostable waste that need not be landfilled. The other major fractions of material to Awaba Waste Management Facility by householders is recoverable including recyclable paper, e-waste and metals (18 per cent).

A further 33 per cent has the potential for future recovery or re- processing via a transfer station (untreated timber, carpet, furniture etc). The residual portion with no currently feasible method for recovery makes up the remaining 19 per cent.

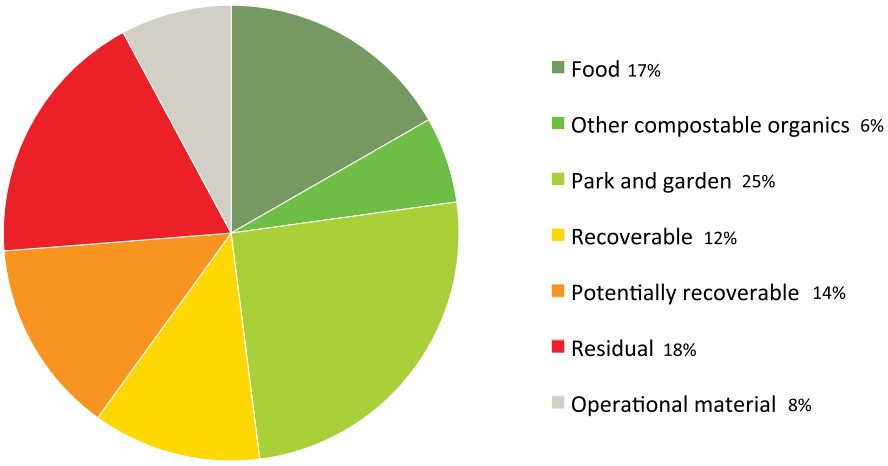

Figure 4: Composition of waste received at the Awaba Waste Management Facility in 2013-14

Waste from C&I activities represents about 3 per cent of waste received at the Awaba Waste Management Facility. A very high proportion (35 per cent) of C&I waste to landfill is organic in nature; 29 per cent is food and kitchen wastes (e.g. collections from restaurants, food retailers, supermarkets etc) and a further 6 per cent is vegetation and garden waste (Figure 6). Other potentially compostable components make up about 15 per cent of this waste stream (paper, cardboard).

About 23 per cent of waste received at the Awaba Waste Management Facility is derived from the C&D sector. This stream is mostly building materials (Figure 7), most of which is potentially recoverable.

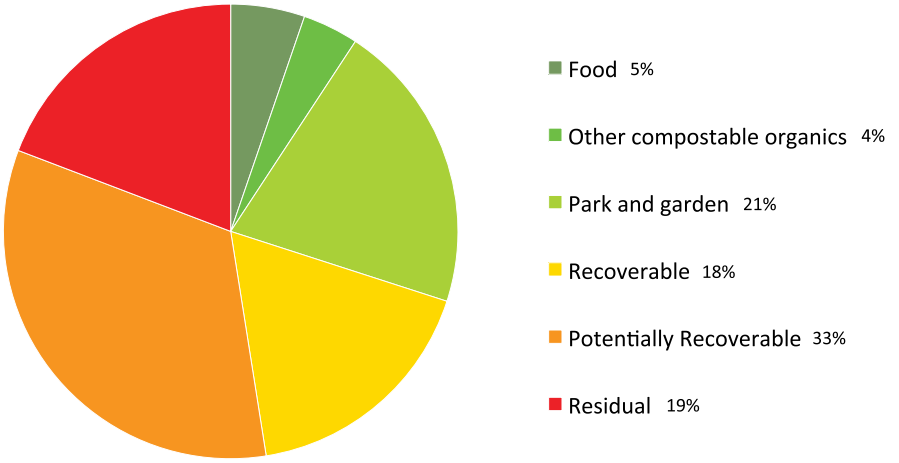

Figure 5: Self-hauled waste sent to the Awaba Waste Management Facility in 2010

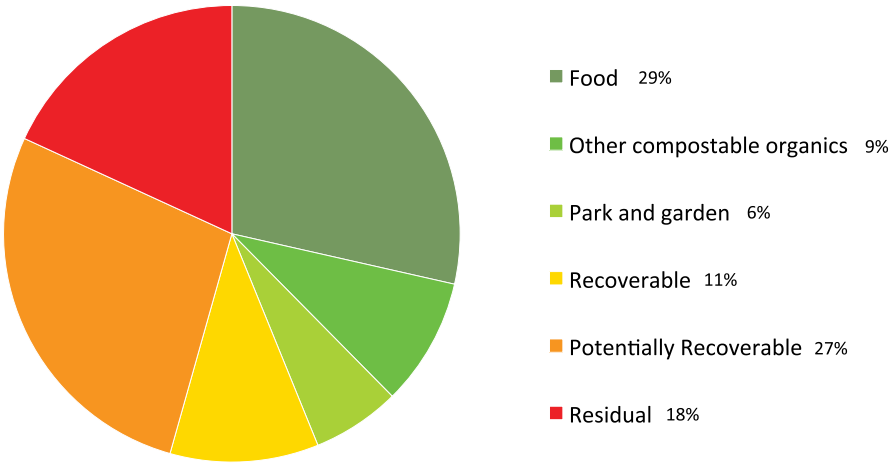

Figure 6: Commercial and industrial waste sent to the Awaba Waste Management Facility in 2010

Kerbside domestic waste from single unit dwellings

As indicated in Figure 3, the majority of material received at the Awaba Waste Management Facility is MSW waste, collected at kerbside. Audits of the kerbside domestic waste service show that there is still a substantial amount of recoverable resources in the garbage bin (Figure 8), but that contamination in the recycling and green bins is very low.

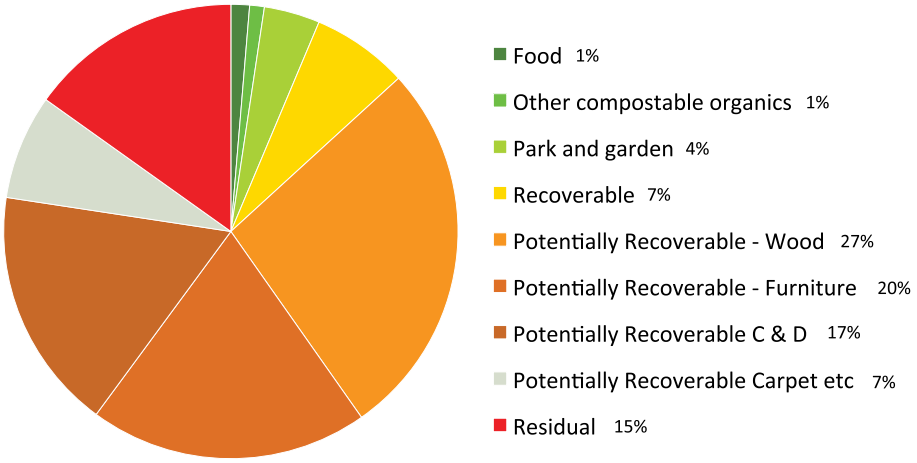

Figure 7: Construction and demolition waste composition (excluding cover material) in 2010

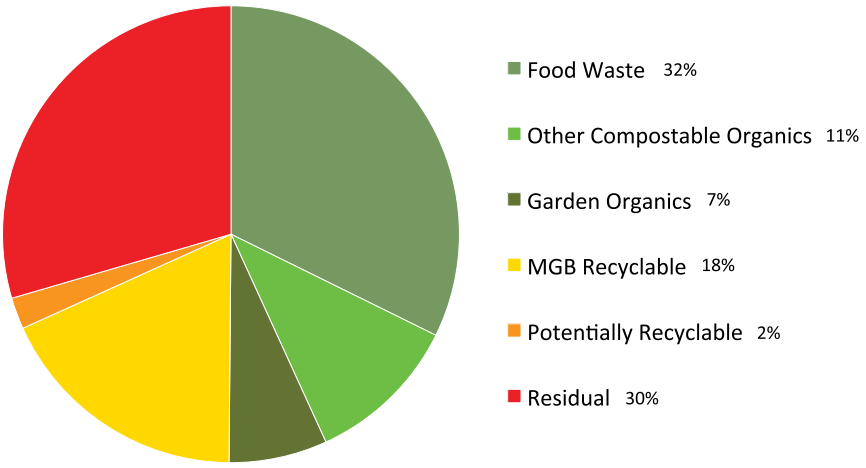

Figure 8: Composition of kerbside garbage waste bins for single unit dwellings in 2013

Waste collected during biannual domestic kerbside bulk waste collections contained 14 per cent garden waste, with a further 10-12 per cent compostable organic wastes (paper, cardboard, kitchen wastes). Other wastes collected from the kerbside include plastics (9 per cent), painted wood and furniture (9 per cent), rocks/dirt (6 per cent), electrical items (7 per cent), mattresses (5 per cent) and computers/office equipment (5 per cent) (Figure 9).

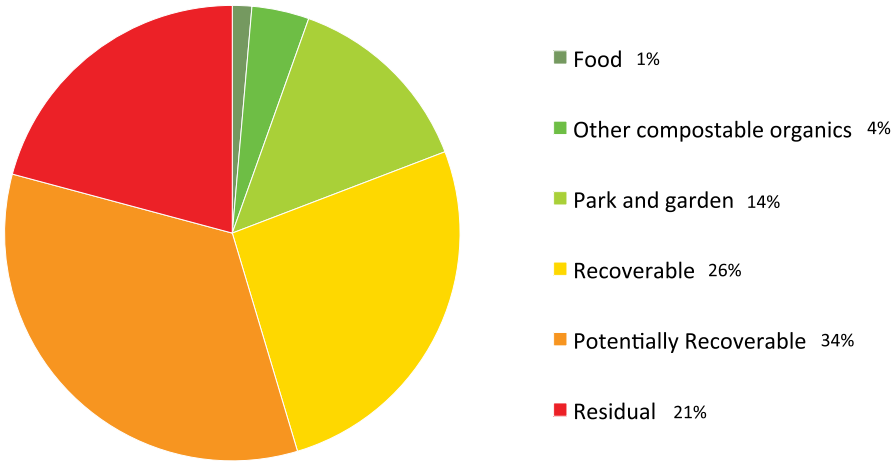

Figure 9: Biannual kerbside domestic bulk waste composition in 2010

Waste from multi unit dwellings

MUDs generate 4.55 per cent of the total domestic waste stream. Audits found that although MUDs generate significantly less mass of waste per household (44.0 per cent of the SUD mass), the composition of waste is quite similar (Figure 10).

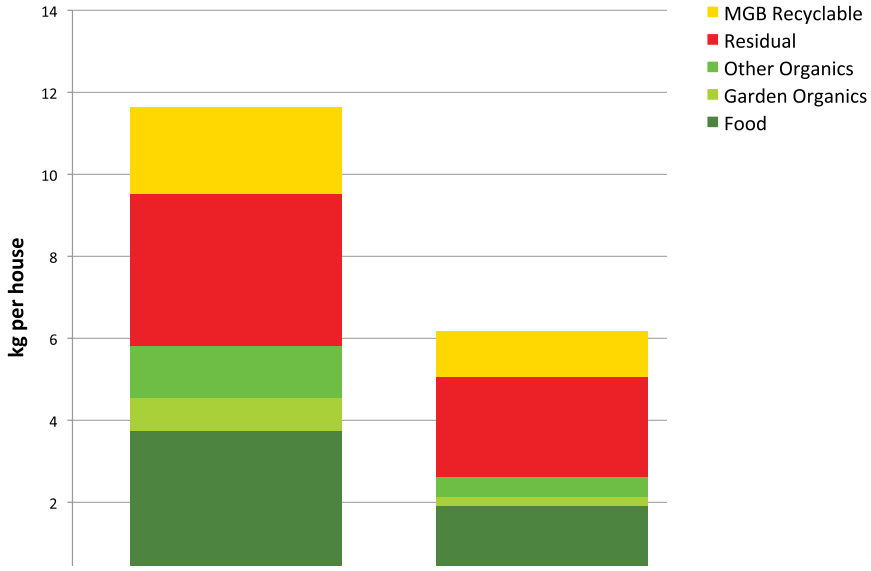

Figure 10: Waste composition of MUDs (multi unit dwellings) compared to SUDs (single unit dwellings) in 2013

Commercial waste

In October 2014 an audit of commercial properties that have a Council garbage collection service was undertaken. The primary purpose was to identify resources that could be recovered from properties that do not currently have a Council green or recycling service. The results show that there is a large portion of recoverable resources in the commercial garbage waste stream, with an average of 19 per cent food waste and 41 per cent dry recyclables presented (Figure 11).

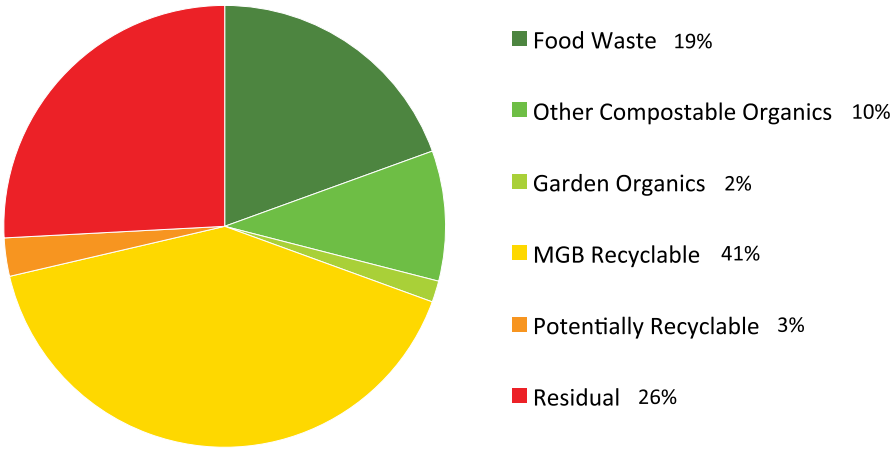

Figure 11: Composition of commercial garbage bins in 2014

Council's waste

Council is committed to reducing its own use of resources and generation of waste. In October 2013 Council commissioned a "snapshot" audit of six facility types (two operational buildings (Customer Service Centre and Works Depot) and four public facilities (caravan park, multipurpose centre, library and pool) (Figures 12a-f). Analysis of waste from these facilities indicates room for improvement in utilising available resource recovery services and has prompted staff engagement efforts to increase uptake of recycling and organics recovery opportunities.

In addition to waste from its facilities, Council generates substantial waste from its construction and maintenance activities. This waste is managed to maximise resource recovery and reuse.

Due to the history of land contamination across the City, particularly black slag from the former Pasminco lead smelter, the management of lead-contaminated soil is a key constraint to Council's construction works program. Management of lead-contaminated soil in the City is also an issue for the building and construction sector, more generally.

Figure 12: Composition of waste from six Council facilities in 2013

Figure 12: Composition of waste from six Council facilities in 2013

Analysis of waste collection
and processing technology options

As part of development of the Draft Waste Strategy in 2010, Council examined 10 potential technology options (Table 3). These options were assessed against a set of triple bottom line weightings, and Option 3 (3-bin source separated collections, with phased introduction of garden and then food waste, and in vessel organics composting) was selected as the preferred technology. This option retained the existing garbage disposal (Awaba Waste Management Facility) and recycling sorting (Gateshead Material Recovery Facility) technologies (see pages 25 and 26 for further details).

Table 3: 10 potential technology solutions for the City's kerbside waste

No.	Waste Treatment Option	Bin Configuration	Description
1	3 Bin Source Separated Green Waste – Windrow Composting		Green garden waste only (i.e. excluding food waste) collected in a third bin and composted in open windrows.
2	3 Bin Source Separated Organics - In-vessel Composting		Green and food waste collected in a third bin and composted in enclosed tunnels.
3	Phased 3 Bin Source Separated Organics – In-vessel Composting		Green and food waste collected in a third bin and composted in enclosed tunnels. Same end situation as option 2, but staged so that the third bin collection starts out with garden waste only, composted in open windrows (same as option 1). When Council chooses (+3 years used for analysis), food waste collection in the third bin commences and composting occurs in enclosed tunnels.
4	3 Bin Source Separated Organics – Anaerobic Digestion		Green and food waste collected in a third bin and composted without oxygen, anaerobic digestion. Methane produced, captured and burnt for energy.
5	2 Bin Landfill		Mixed waste collected (red lidded bin) and deposited directly in landfill. Same as current waste system.
6	2 Bin bioreactor		Mixed waste collected (red lidded bin) and deposited directly into a land fill specially designed to accelerate and maximise methane generation while maximising methane capture. Methane burnt for energy.
7	2 Bin In-vessel composting		Mixed waste collected (red lidded bin) and composted in enclosed tunnels.
8	2 Bin In-vessel composting (Port Stephens)		Mixed waste collected (red lidded bin), transferred to the Port Stephens composter at Raymond Terrace for processing in a drum composter followed by enclosed windrow composting.
9	2 Bin In-vessel composting (Port Stephens) plus Energy from Waste		Mixed waste collected (red lidded bin), transferred to the Port Stephens composter at Raymond Terrace for processing in a drum composter followed by enclosed windrow composting. Additionally, energy is generated from Biogas and/or reject material at the facility, hence energy from waste. The energy component is a proposed future addition to the Port Stephens facility.

Key		
Yellow bin		In all options, yellow lidded, recyclables bin continues to be serviced by Hunter Resource Recovery.
Red bin		In options with three bins, the red lidded bin collection is taken to land fill. In the two bin options, the red lidded bin collection is processed (options 7, 8, 9, and 10) or landfilled (options 5 and 6).
Green bin		The options shown with a green bin are all three bin options and incorporate source separation of part, or all, household waste. Each description above describes the role the green bin takes in each individual circumstance.

Current waste **services**

Council offers a range of cost-effective, convenient and environmentally responsible waste management services. These services are available for domestic and commercial customers.

Domestic waste services

Domestic waste is managed broadly via:

- Kerbside collections;
- Permanent drop-off facilities; and
- Periodic special events waste collection.

Kerbside collections

Council currently provides the following kerbside collection services:

- Weekly garbage bin;
- Fortnightly recycling bin;
- Fortnightly green waste bin; and
- Biannual kerbside collection of bulk waste including green waste, e-waste, mattresses and metals.

The garbage and bulk waste services are provided by Council's collection staff, while the recycling and green waste services are provided by Council contractors, Hunter Resource Recovery and Solo Resources, respectively.

The contract term for the Hunter Resource Recovery recycling collection service is to 30 June 2023. The contract term for the Solo green waste collection is to 31 March 2022, with an option for two nine-year extensions.

Kerbside bin size for single unit dwellings is typically 240 litre for each service, although Council also offers a 360 litre recycling bin.

MUDs are offered a range of servicing packages (Table 4) to cater for their lower waste generation, as well as space constraints for bin storage and kerbside presentation.

Table 4: Waste packages available for multi unit dwelling complexes

Packages	Garbage bins per unit	Recycling bins per unit	Green bins per unit
Standard	1 x 240 litre	1 x 240 litre	1 x 240 litre
Upsize	1 x 240 litre	1 x 360 litre	1 x 240 litre
Downsize	1 x 140 litre	1 x 140 litre	1 x 140 litre
Shared standard	One 240 litre between two units	One 240 litre between two units	One 240 litre between two units
Shared upsize	One 240 litre between two units	One 360 litre between two units	One 240 litre between two units

Note: there are also 660 litre and 1,100 packages available, but there has been zero uptake to date

Biannual bulk waste collections allow residents to dispose of large items (up to 2 m^3 each collection). E-waste, mattresses and metals collected through this service are recycled. Garden waste is processed into mulch by Council's green waste processing contractor at the Awaba Garden Waste Processing Facility. Residual bulk waste is sent to the Awaba Waste Management Facility for landfilling.

Periodic and permanent special waste drop-off events

Chemical CleanOut is the only regular periodic special waste drop-off event currently offered in the City. This event is held twice each year, usually at Glendale TAFE. Materials accepted at the event are:

- Solvents and household cleaners;
- Floor care products;
- Ammonia based cleaners;
- Fluorescent globes and tubes;
- Car batteries;
- Motor oils, fuels and fluids;
- Paint and paint related products;
- Pesticides and herbicides;
- Poisons;
- Gas bottles;
- Fire extinguishers;
- Pool chemicals;
- Hobby chemicals; and
- Acids and alkalis.

In addition to this periodic drop-off service, Council supports a number of permanent special waste drop off points for household quantities of the following materials:

- Problem household wastes including car batteries, paints, oils, polystyrene, light globes, household batteries, motor oil, smoke detectors, e-waste, fire extinguishers, and gas bottles are collected at the Community Recycling Centre at the Awaba Waste Management Facility;
- Problem household wastes (excluding liquids and car batteries) are collected through Council's four largest libraries (Charlestown, Swansea, Toronto, Belmont and Morisset) and Administration Centre, Main Road, Speers Point;
- Sharps are collected at six pharmacies (Charlestown Pharmacy, Glendale Chemistworks, Cardiff Chemist, Guardian Pharmacy Warners Bay, Pharmacy Morisset Priceline, Swansea Discount Drug Store and Caves Beach Pharmacy), the Salvation Army at Bolton Point, Belmont Hospital and Toronto Polyclinic; Sharps are also able to be safely disposed of in purpose built containers in most public toilets;
- Household quantities of waste motor oil is collected at Council's depot, Creek Reserve Road, Boolaroo; and
- Mobile phone and accessories are collected through libraries (Charlestown, Swansea, Toronto, Morisset, Cardiff, Belmont and Wangi Wangi) and at Council's Administrative Centre, Main Road, Speers Point. They are then sent to MobileMuster for reprocessing.

Commercial, industrial, construction and demolition waste services

Council offers a kerbside garbage collection service to all non-residential premises, as well as recycling and garden waste on an opt-in basis. Garbage bin sizes range from 240 litre to 1,100 litre. A 1.5 and 3 cubic metre bin is also available for recycling and green waste services. Commercial services can be serviced up to twice per week.

Commercial tenants and ratepayers also have access to a range of private waste services, as well as the Awaba Waste Management Facility.

Public place waste services

Council currently services approximately 1,500 mobile garbage and recycling bins that are located in Council's open spaces and shopping districts. Most of these bins are serviced twice weekly. While some of them have vandal-proof enclosures, most are on bin stands.

Council has also recently trialled paired public place garbage and recycling stations at three of its swimming pools (Charlestown, Speers Point and Swansea). Each station consists of one recycling and one garbage bin each with a distinctive bin lid to encourage separation of wastes. Due to high demand, Speers Point pool recycling collections take place weekly, while the remaining two pools have fortnightly collections. It is envisaged that the lessons learned from implementing this trial will assist in the rolling out of recycling bins to other Council facilities.

School waste services

All of the City's 91 schools have access to Council's commercial waste services. Depending on the number of students enrolled, Council's recycling contractor also provides a minimum of three 240 litre recycling bins free of charge to encourage recycling in the school grounds and foster waste awareness among students. Other services are available for a fee.

Illegal dumping compliance services

Council's illegal dumping program consists of three elements:

- Deterrence works;
- Community engagement; and
- Compliance.

Council is responsible for responding to illegal dumping that occurs on public (Council) land.

Council hosts the Hunter-Central Coast Regional Illegal Dumping (RID) Squad, which is a partnership among 10 local councils (Lake Macquarie, Cessnock, Wyong, Gosford, Newcastle, Maitland, Singleton, Muswellbrook, Upper Hunter, Dungog) and the NSW Environment Protection Authority.

The RID Squad operates across local government boundaries to:

- Encourage a strategic, coordinated approach to illegal dumping;
- Investigate illegal dumping incidents and take action against offenders;
- Track down illegal landfills;
- Identify changes and trends in illegal dumping across a regional area; and
- Deter and educate the community in relation to illegal dumping.

Community engagement and support services

Council is committed to working with local people to encourage them to take personal responsibility for minimising waste generation and the impacts of waste on the environment. Specific programs that Council delivers include:

1. Clean Up Australia Day

Council promotes and supports the regular annual volunteer Clean Up Australia Day event. This support includes promotion of the event, logistics support for volunteers, collection and recycling/disposal of collected waste. The EPA provides a Waste Levy exemption for disposal of this waste to landfill.

2. Eco Angel Program

Due to the outstanding support for Clean Up Australia Day in Lake Macquarie City, Council developed a program to enable local volunteers to clean up public places at any time. This program operates similarly to Clean Up Australia Day, but with higher level of Council support as there is no involvement with the national Clean Up Australia Day organisation. The EPA currently also provides a Waste Levy exemption for disposal of this waste to landfill.

3. Super Street Sales

The Super Street Sale Program assists residents to hold garage sales in their street to enable reuse of their unwanted goods. In a similar manner to the Eco Angel Program, Council developed Super Street Sales following introduction of the national Garage Sale Trail initiative, to support Lake Macquarie residents to hold garage sales throughout the year.

Council provides promotion and support to households wishing to participate in the program, and encourages those households to hold their events prior to their twice-yearly bulk waste collection in order to reduce the amount of materials collected for recycling/disposal.

4. Community gardening

Community gardening can help to reduce food waste by both providing a ready source of fruit and vegetables, which can help reduce food wastage and minimise packaging, and creating demand for compost and mulch. Council supports community gardening across the City through a number of avenues:

- A demonstration facility is available at Council's Landcare Resource Centre, Teralba;
- Community land can be made available for community gardening activities; and
- Council officers provide advice and support to a network of community gardeners across the City.

5. Community waste education

Council runs a range of workshops on gardening, home composting, worm farming, backyard chickens, food waste avoidance etc. Many of these workshops are held at Council's demonstration facility at the Landcare Resource Centre, Teralba.

6. Waste education in schools

Council runs a regular program of workshops in schools to support students and teachers to learn good waste management practices. Recycling workshops are also provided by Hunter Resource Recovery.

7. Environmental sustainability grants

Grants of up to $3,000 are available to school and community groups to deliver environmental sustainability projects. Many of these projects are waste related, such as binless schools, composting facilities, community gardens etc.

8. Fridge Buyback

The NSW Government's Fridge Buyback scheme, which supports residents to dispose of their second fridge, is also available in the City.

9. Waste services guide

This easy-to-use flip-booklet details all Council's waste services and provides a kerbside bin collection calendar. It is delivered to all households once a year.

The information is also available on Council's website. Information about bin collection days is available through the my.lakemac.com.au website.'

10. Internal Council engagement activities

Council has implemented a 3-bin waste system with source separation for general waste, recycling and food waste in the lunch-room and the café bars throughout its Administration building. These waste hubs, the removal of individual desk tidies, internal staff engagement and bin signage led to significant economic and environmental savings for Council. Separate waste and recycling bins have subsequently been installed at Council's depot. Feedback is sought from staff to continue to improve the system and to ensure that contamination rates remain low.

11. Natural disaster waste management

Council plays an important role in natural disaster recovery by delivering special services to deal with post-disaster waste. This may include additional bulk waste pickups, reduced waste disposal charges for material affected by storm, flood or fire, and in some cases free waste disposal services.

Current waste **facilities**

Awaba Waste Management Facility

Council operates a licensed solid waste landfill on the western side of Lake Macquarie, off Wilton Road, Awaba. The Awaba Waste Management Facility is open to Lake Macquarie City residents for waste disposal. The site's Environment Protection Licence permits waste defined as Solid Waste Class 1 to be received at the site.

Waste arrives at the landfill from a variety of sources, including Council collection vehicles, waste collection contractors, and self-haulage by businesses and residents. Upon entering the Awaba Waste Management Facility, the waste is classified and charged in accordance with the following categories:

- mixed waste;
- clean fill;
- organic garden waste;
- household recyclables;
- special wastes eg. asbestos; and
- mattresses.

The above waste categories incur varying fees in accordance with differing environmental safeguards applicable to their management onsite. A range of domestic quantities of source separated household dry recyclables and problem wastes are accepted free of charge through the Community Recycling Centre (see below).

As of December 2014, the Awaba Waste Management Facility had approximately three years of remaining landfill capacity.

Summerhill and Buttonderry Waste Facilities

Due to the limited life of the Awaba Waste Management Facility, Council has entered into contracts with Newcastle City Council to the north and Wyong Shire Council to the south to transport garbage to the Summerhill and Buttonderry waste facilities, respectively.

Awaba Community Recycling Centre

In April 2014, Council converted its former Reuse Centre at the Awaba Waste Management Facility into the Awaba Community Recycling Centre. This facility accepts the following items in household quantities, free of charge:

- paint - oil and water-based;
- gas cylinders;
- fire extinguishers;
- electronic waste;
- fluorescent light globes and tubes;
- car batteries;
- household batteries;
- polystyrene;
- motor oils;
- other oils;
- smoke detectors; and
- dry recyclables.

Awaba Garden Waste Processing Facility

REMONDIS operates a garden waste processing facility at the Awaba Waste Management Facility. This operation processes garden waste collected through Council's kerbside green bin service, bulk kerbside collections, and self-hauled green waste to the site.

Gateshead Materials Recovery Facility

Dry recyclables collected from the kerbside recycling service are sorted at Solo Resource Recovery's Gateshead Material Recovery Facility. This facility also sorts material from the Port Stephens, Cessnock, Singleton, Maitland and Newcastle local government areas.

The facility was upgraded in 2013, and now has a processing capacity of 100,000 tonnes per annum.

Recovered materials are sorted into:

- paper and cardboard;
- metals (tin, steel and aluminium);
- plastics (PET, HDPE, mixed plastics); and
- glass (green, brown, clear and glass fines).

Once sorted, these materials are sent on to processing facilities outside the Hunter region. Residual waste is sent to landfill.

E-waste and metals processing facilities

E-waste collected from biannual kerbside collections and the Awaba Waste Management Facility is transported to a local e-waste processing facility for dismantling, sorting and recycling.

Scrap metals collected from these collections are initially stored and pre-sorted at the Awaba Waste Management Facility and then collected by a local metal recycler.

Waste oil collection

A facility for collection of household quantities of used oil is available at Council's depot.

Problem and hazardous waste processing facilities

There are no facilities in Lake Macquarie City for the processing of problem and hazardous wastes, including waste soil contaminated by the activities of the former Pasminco lead smelter.

The following materials are able to be received at Transpacific's facilities at Kooragang Island, in the City of Newcastle, or Rutherford, in the City of Maitland:

- acid waste;
- caustic waste;
- contaminated storm water;
- grease trap waste;
- oily rags, filters, coolants;
- oily sludges;
- oily water;
- septic waste;
- solvents;
- trade waste;
- triple interceptors;
- used cooking oil;
- wash water; and
- waste oil.

A number of private operators collect problem and hazardous wastes in the area and send them to various facilities in Sydney and interstate for processing and/or disposal.

Future waste facilities

Expansion of the Awaba Waste Management Facility

Council has project approval under Part 3A of the *Environmental Planning and Assessment Act 1979* for an expansion of the Awaba Waste Management Facility to accommodate the City's future residual waste disposal requirements.

This expansion includes a number of new landfill cells, upgraded weighbridge and amenity infrastructure, a new transfer station and a new community recycling centre.

This expansion will provide approximately 25 years of additional capacity at current landfilling rates. This lifespan is likely to be considerably extended by proposed resource recovery activities.

Expansion of organics collection and processing capability

Council is currently preparing for the introduction of food organics into the kerbside green waste bin.

Development consent has been granted for the construction of a 30,000 tonne per annum tunnel and windrow composting facility adjacent to the Awaba Waste Management Facility. The Awaba Green Waste Processing Facility, to be owned and operated by REMONDIS, is scheduled to be completed by May 2016. The contract term for REMONDIS to provide organics processing services to Council is 18 years from the commencement of Phase 2 operations. At this stage, the likely contract expiry date is around May 2034.

Council intends to introduce food waste to the kerbside green waste bin service around July 2016. At this time, the garbage bin, which is currently collected weekly, will be collected fortnightly. The green bin, which will contain most odorous waste material, will be collected weekly.

This service will be available to domestic and commercial customers. Self-hauled material, excluding biosolids and liquid waste, will also be accepted at the facility.

It is likely that generation of food and garden waste from the City will reach the approved capacity of the Awaba Green Waste Processing Facility within the first 12 months of operation. It will be necessary to expand the facility to meet the City's requirements.

Council supports use of the Awaba Green Waste Processing Facility to process organics from elsewhere in the Hunter, providing that Council's requirements are met.

Materials processing capability

Council supports the expansion of regional capacity to process materials recovered from the waste stream. Initiatives to develop this capacity are described in the draft Hunter Region WARR Strategy.

Community Recycling Centre

Council is investigating the feasibility of a second Community Recycling Centre on the eastern side of the lake to increase service accessibility for residents in coastal suburbs.

Waste to energy

Council remains open to the prospect of using a waste to energy (WtE) facility for the disposal of residual waste that would otherwise have been sent to landfill. At this stage, there is one proposal to develop a WtE facility in the lower Hunter. Omega Energy is in the process of preparing a development application for a graphite plasma arc gasification plant at the Hunter Industrial Ecology Park, Weston.

Should this facility become operational, with a price point for disposal that is competitive with landfill, Council will conduct more detailed analysis of this option.

Council's threshold for risk-free use of waste to energy technology is a minimum of three years stable operation.

Future waste services

Waste avoidance and reduction

How is waste generation determined?

Waste generation may be considered to be the sum of all material discarded from a premise. This includes material that is sent to landfill and material that is either reused, recycled or used to generate energy. Council cannot determine the total waste generated by Lake Macquarie City, as it has no mechanism to track waste generated from commercial, industrial, construction and demolition activities that is not managed through a Council service. Council can, however, track the amount of waste received at its waste facilities within the City.

In Lake Macquarie City, waste generation is defined as the sum of material received at these facilities (Awaba Waste Management Facility, Awaba Green Waste Processing Facility, Gateshead Materials Recovery Facility).

As Council is unable to quantify the amount of waste material from one premises that is reused at another premise, reuse strategies are included under this section on Waste Avoidance and Reduction.

Council will review the definition of waste generation if, and when, further data become available. In the meantime, Council will advocate for the NSW EPA to provide improved data on the generation of commercial, industrial, construction and demolition waste.

Council's target for waste avoidance, waste reduction and waste reuse is a 10 per cent per capita reduction in total waste generation by 2023, compared to a 2007-08 baseline.

Strategies to avoid and reduce waste generation and reuse waste

Council intends to continue to support activities that avoid and reduce the amount of waste that is generated within the City and encourage the reuse of waste. Specific strategies include:

- support for industrial ecology initiatives across the Hunter, where relevant to Lake Macquarie business interests;
- advocacy for reduction in waste generated across the supply chain of goods and services used in the City;
- community education and support to avoid the generation of waste (eg. food waste avoidance, lifecycle assessment of goods and services etc); and
- community education about reuse options available across the City and support to access those options (eg. Super Street Sales, directories of second hand dealers and charities, upcycling activities etc).

Specific actions for 2015-16 are described in Section 1 of Appendix 1.

Increased recycling and diversion of waste from landfill

Recycling is defined as material that enters the waste collection system and is not sent to landfill. In Lake Macquarie City there is no practical difference between material that is recycled (ie waste from one activity is used as an input to another) and material that is diverted from landfill (ie material that arrives at the landfill and is able to be recovered for input to another activity). This approach is supported by the WARR Strategy, which identifies recycling as the key strategy to divert waste from landfill.

The target for diversion of waste from landfill is a 75 per cent reduction in per capita waste to landfill for the City by 2023, relative to a 2007-08 baseline of 616 kg per capita.

The target for recycling is to recover 75 per cent of material presented at the kerb of domestic premises by 2023, relative to a 2007-08 baseline of 18 per cent.

As mentioned above, it is not possible for Council to determine C&I and C&D diversion percentages, as data are unavailable for the amount of waste generated from these sources. Council will review targets for these waste streams if and when further data become available.

Strategies to recycle and divert waste from landfill

Audits of domestic and commercial kerbside garbage bins (Figures 7 and 10) indicate that there are substantial quantities of recoverable resources, both organic and dry recyclables, that could be recovered from the garbage stream.

Specific actions for 2015-16 are described in Section 2 of Appendix 1.

Organics

The key strategy to recover organics from the waste streams sent to landfill is to introduce food waste to the kerbside green waste collection service. This is contingent on construction of the Awaba Green Waste Processing Facility (see page 25), which is scheduled for completion in 2016. The indicative commencement date for kerbside

food waste collection is 1 July 2016. The service will be available to both domestic and commercial premises; however, with opt-in arrangements for commercial premises, uptake is likely to be low (estimated at 5 per cent).

Dry recyclables

Strategies to recover dry recyclables from the garbage stream include:

- promoting the uptake of recycling bins by commercial premises;
- promoting the uptake of 360 litre recycling bins to domestic households;
- advocating for extended producer responsibility schemes;
- promoting consumption of goods that include recycled content and/or are recyclable;
- supporting development of improved materials recovery facilities within the City and the region; and
- educating the community about what can be recycled and where it can be recycled.

Electronic waste

Strategies to recover e-waste from the garbage stream include:

- providing biannual domestic kerbside collections;
- providing permanent drop off centres at libraries and the Awaba Waste Management Facility;
- participating in the Computer and Television Product Stewardship Scheme; and
- educating the community about e-waste recycling services.

Mattresses

The strategy to recover resources from mattresses is to offer a recycling service. Mattresses will continue to be collected via the kerbside bulk waste service and at the Awaba Waste Management Facility.

Minor recycling streams

There is a range of other minor waste streams that are able to be recycled through specialist services. These include light bulbs, batteries, gas bottles, extruded polystyrene, paints, smoke detectors. These materials will continue to be collected via the Community Recycling Centre at the Awaba Waste Management Facility. Lake Macquarie libraries and the Administrative Centre will continue to receive some of these materials (see page 22).

Emerging recycling technologies

Council is committed to keeping abreast of emerging recycling technologies and opportunities as they arise, with a view to enhancing the current range of services if assessed to be financially and practically beneficial for the City. An example of this is the potential for disposable nappy recycling service in NSW, which Council has indicated it is willing to trial. Council previously part-funded a compost trial of nappies, which demonstrated contemporary composting techniques could not cost-effectively manage such waste.

Managing problem wastes

Problem wastes may be defined as those wastes that are not able to be recovered for beneficial reuse. These may include materials that must be sent to landfill, or those that are problematic in the garbage and recycling collection and processing systems due to their potential to harm human health and/or the environment. These materials may be recyclable with special processing techniques or require disposal at a licensed waste facility.

Problem household wastes are managed with EPA funding, which is committed until June 2017 for the current Community Recycling Centre and Chemical CleanOut drop-off events.

The target for managing problem wastes in Lake Macquarie City is that these wastes are appropriately managed.

Strategies to manage problem wastes

Key strategies to manage problem wastes include:

- effective management of the Awaba Waste Management Facility;
- appropriate drop off facilities for problem household wastes;
- community education about appropriate methods of disposal;
- advocating for extended producer responsibility; and
- establishment of a second CRC on the east side of the lake, if possible.

Specific actions for 2015-16 are described in Section 3 of Appendix 1.

Reducing litter

Litter is defined as waste in the environment that is not transported by a vehicle. The WARR Strategy identifies common types of litter as “cigarette butts, small pieces of paper, chip and confectionery wrappers, fast-food packaging, bottle caps, plastic straws, broken glass, drink containers and plastic bags.”

Council aims to support the NSW Government’s state-wide litter reduction campaign and contribute to the WARR Strategy’s litter reduction target (see Table 1).

Strategies to reduce litter

Key strategies to reduce litter in Lake Macquarie City include:

- supporting volunteer efforts to clean up public land through the national Clean Up Australia Day program and Council’s Eco Angel program;
- supporting the EPA’s state-wide litter campaign;
- compliance activity undertaken by Council Rangers; and
- promoting sustainable events on Council land.

Specific actions for 2015-16 are described in Section 4 of Appendix 1.

Reducing illegal dumping

Illegal dumping is defined as the transportation of waste to an unlicensed location by vehicle.

The target for the City is to contribute to a 30 per cent reduction in the incidence of illegal dumping in the Hunter by 30 June 17.

Strategies to reduce illegal dumping

The key strategies to reduce illegal dumping in the City include:

- participating in a strategic coordinated regional approach to illegal dumping;
- investigating illegal dumping incidents and taking action against offenders;
- tracking down illegal landfills;
- identifying changes and trends in illegal dumping across the City; and
- deterring and educating the community in relation to illegal dumping.

Specific actions for 2015-16 are described in Section 5 of Appendix 1.

Participation in regional activities

Council has identified that the following elements of the Regional Waste Strategy are particularly relevant to Lake Macquarie City:

- waste avoidance, reduction, reuse and recycling engagement campaigns, where relevant to the City;
- advocating for extended producer responsibility, manufacturing standards, etc;
- expanding the range of materials that can be collected for recycling;
- maintaining community recycling centres for problem household waste;
- investigating opportunities to process waste via alternative treatment methods, such as waste to energy;
- investigating opportunities for shared waste processing facilities;
- supporting industrial ecology opportunities, where beneficial to the City; and
- hosting the Hunter/Central Coast RID Squad until 30 June 2017 and supporting its continuation thereafter.

Review

The strategy forms part of an integrated framework of planning documents that guide Council's activities in Lake Macquarie City.

The Lake Macquarie planning and reporting framework provides for long-term strategic direction through the City's 10 Year Community Plan and Environmental Action Plan, and Council's four year Delivery Program and annual Operational Plan.

This Strategy will be reviewed, and updated as necessary, in 2017 concurrently with the creation of Council's new four year Delivery Program 2018-2023. Amendments to the Strategy will also inform four-yearly updates to the Lake Macquarie City Environmental Sustainability Action Plan. An annual action plan will be developed each year, with priority actions included in Council's Operational Plan.

Acronyms

AWMF	Awaba Waste Management Facility
BWRF	Better Waste and Recycling Fund
C&D	Construction and Demolition
C&I	Commercial and Industrial
EPA	Environment Protection Authority
HRR	Hunter Resource Recovery
LGA	Local government area
LMS	Landfill Management Services
MUD	Multi unit dwelling
MSW	Municipal Solid Waste
NSW	New South Wales
RID	Regional Illegal Dumping
SUD	Single unit dwelling
SSG	Source separated garden
SSO	Source separated organics
TAFE	Technical and Further Education
WARR	Waste Avoidance and Resource Recovery
WER	Waste, Environment and Rangers
WLRM	Waste Less Recycle More
WtE	Waste to Energy

Glossary

Construction and demolition waste (C&D waste)	Solid waste sourced from construction and demolition works, including building and demolition waste, asphalt waste and excavated natural material.
Commercial and industrial waste (C&I waste)	Solid waste generated by businesses, industries (including shopping centres, restaurants and offices) and institutions (such as schools, hospitals and government offices) but not C&D waste or MSW.
Diversion rate	The proportion of all recycled materials or those otherwise recovered (through an energy-from-waste facility or composting organic waste) compared with total amount of waste generated.
Energy from waste	The process of recovering energy from waste materials: the energy is used to produce usable heat, steam, electricity or a combination of these.
E-waste	End-of-life electronic equipment, such as televisions, computers, mobile phones, stereos and small electrical appliances (but not white goods).
Green bin	The green-lidded bin is for organic materials. These generally include weeds, grass clippings, flowers, leaves, prunings and small branches. The green bin may also be used for food waste depending on the facility where the materials are taken for processing and the availability of downstream markets for the processed materials.
Industrial ecology	Using the by-products from the production process of one company as a resource in another.
Landfill	The disposal of waste materials through burial.
Recycling bin	The yellow-lidded recycling bin is for dry recyclable materials. These generally include paper, cardboard, glass, some hard plastics and ferrous and non-ferrous metals. The type of recyclable materials collected in the yellow lid bin can vary depending on the facility where the materials are taken for further separation and the availability of downstream markets for the materials.
Waste	Includes (as defined by the *NSW Protection of the Environment Operations Act 1997*): • any substance (whether solid, liquid or gaseous) that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment, or • any discarded, rejected, unwanted, surplus or abandoned substance, or • any otherwise discarded, rejected, unwanted, surplus or abandoned substance intended for sale or for recycling, processing, recovery or purification by a separate operation from that which produced the substance, or • any processed, recycled, re-used or recovered substance produced wholly or partly from waste that is applied to land, or used as fuel, but only in the circumstances prescribed by the regulations, or • any substance prescribed by the regulations to be waste • a substance is not precluded from being waste for the purposes of the Act merely because it is or may be processed, recycled, re-used or recovered.
Waste avoidance	Waste that does not enter the waste-management system.
Waste generation	The total amount of waste disposed of to landfill and diverted (based on available data).
Waste management system	Waste materials from MSW, C&I and C&D sectors that are collected kerbside, recovered from the waste stream for recycling or energy recovery or disposed to landfill.

Appendix 1

Lake Macquarie Waste Management
Action Plan 2015-2016

Section 1:		Avoid and reduce waste generation and reuse waste			
Objective and target		Action	Detail of action	Responsibility	Potential for regional collaboration
1.1	Reduce the generation of waste by changing behaviours of community and businesses through community education, engagement and involvement. *Target: Reduce waste generation per capita consistently to achieve a 10 per cent reduction by June 2013, from a 2007-08 baseline*	1A	Continue to support Super Street Sales program, including investigation of options to expand to regional program	Sustainability (LMCC)	Yes
		1B	Continue to support and promote community gardens and home composting	Sustainability (LMCC)	Yes
		1C	Continue to promote food waste avoidance	Sustainability (LMCC)	Yes

Section 2:		Increased recycling and diversion of waste from landfill			
Objective and target		Action	Detail of action	Responsibility	Potential for regional collaboration
2.1	Increase the recovery of recyclable resources from domestic premises *Target: Recover 75 per cent of MSW by June 2023, from a 2007-08 baseline*	2A	Promote uptake of 360 litre recycling bins	Sustainability (LMCC)	Maybe
		2B	Renew mattress recycling contract	Sustainability (LMCC)	Yes
		2C	Participate in Hunter Resource Recovery community engagement campaigns	Sustainability (LMCC)	Yes
		2D	Prepare for introduction of food waste to the green bin, including change of bin collection frequencies for garbage and green waste	Sustainability, WER, Communications (LMCC), Solo, REMONDIS	No
		2E	Continue to provide biannual bulk waste collection service, for recovery of e-waste, metals, mattresses and green waste	WER (LMCC)	No
		2F	Continue to provide free recyclables drop off at the Awaba Waste Management Facility (see Action 3A), Lake Macquarie libraries and Council's Administration Building	Sustainability, WER , Cultural Services (LMCC)	No
		2G	Distribute waste services guide to all households	Sustainability (LMCC)	Maybe
		2H	Seek modification of consent to expand Awaba Green Waste Processing Facility	REMONDIS	No
		2I	Continue to maximise recovery of resources from the tip face at the Awaba Waste Management Facility	WER (LMCC)	No
		2J	Continue to collect domestic and commercial dry recyclables and garden waste	Hunter Resource Recovery, REMONDIS	No

Section 2:		Increased recycling and diversion of waste from landfill			
Objective and target		Action	Detail of action	Responsibility	Potential for regional collaboration
2.2	Increase the recovery of recyclable resources from commercial premises *Target: Divert 75 per cent of per capita waste from landfill by June 2023, from a 2007-08 baseline*	2K	Increase uptake of recycling services at commercial premises	Sustainability (LMCC)	Maybe
		2L	Continue to divert Council construction waste from landfill for beneficial reuse	CiviLake (LMCC)	No
		2M	Roll out recycling bins to Council office facilities	Sustainability, Facility Managers (LMCC)	Maybe
		2N	Continue to capture and reuse landfill gas from the Awaba Waste Management Facility	WER (LMCC), LMS	No
		2O	Participate in regional efforts to support local business/industry to develop new markets for recycled products	Sustainability (LMCC)	Yes
2.3	Increase the recovery of energy from waste *Target: Divert 75 per cent of per capita waste from landfill by June 2023, from a 2007-08 baseline*	2P	Maintain a watching brief on progress of Omega Energy's planned facility at Weston	Sustainability (LMCC)	Maybe

Section 3:		Managing problem wastes			
Objective and target		Action	Detail of action	Responsibility	Potential for regional collaboration
3.1	Ensure adequate community access to facilities that accept and manage problem wastes. *Target: Divert 75 per cent of per capital waste from landfill be June 2023, from a 2007-08 baseline* *Target: Problem wastes are appropriately managed*	3A	Maintain Community Recycling Centre for problem household wastes and other recyclables (see Action 2F)	WER, Sustainability (LMCC)	No
		3B	Hold at least one Chemical Cleanout for hazardous and problem household waste each year	Sustainability (LMCC), EPA	Maybe
		3C	Promote appropriate methods of problem household waste disposal	Sustainability (LMCC)	Yes
3.2	Effectively manage the Awaba Waste Management Facility. Target: Problem wastes are appropriately managed	3D	Operate the Awaba Waste Management Facility in accordance with its Environment Protection Licence and community expectations	WER (LMCC)	No
		3E	Continue to collect domestic and commercial waste	WER (LMCC)	No
		3E	Progress expansion of the Awaba Waste Management Facility to provide long-term landfill capacity for the City, in particular connection to the sewer and upgrade of the Wangi/Wilton roads intersection.	WER, General Manager's Secretariat (LMCC)	No
		3F	Continue to transport waste to Buttonderry and Summerhill waste facilities to extend the life of the Awaba Waste Management Facility while extension works are in progress.	WER (LMCC)	Maybe

Section 4:		Reducing litter			
Objective and target		Action	Detail of action	Responsibility	Potential for regional collaboration
4.1	Minimise the amount of litter in the environment *Target: Contribute to NSW litter reduction campaign* *Target: Contribute to WARR Strategy litter reduction target*	4A	Support NSW EPA's statewide litter reduction campaign	Sustainability (LMCC)	Yes
		4B	Participate in regional baseline data gathering exercise to identify the extent of littering across the region,	Sustainability (LMCC)	Yes
		4C	Continue to support Clean Up Australia Day	Sustainability (LMCC)	Yes
		4D	Continue to support the Eco Angel program	Sustainability (LMCC)	Maybe

Section 5:		Reducing illegal dumping			
Objective and target		Action	Detail of action	Responsibility	Potential for regional collaboration
5.1	Minimise the social, environmental and economic impacts of illegal dumping. *Target: Contribute to a reduction in illegal dumping incidents by 30 per cent of the 2010-11 levels by 2016-17*	5A	Continue to host the Hunter Central Coast Regional Illegal Dumping Squad	Sustainability (LMCC)	Yes
		5B	Expand illegal dumping compliance messages through the RID Squad	RID Squad	Yes
		5C	Continue to promote appropriate waste disposal options	Sustainability (LMCC)	Yes
		5D	Continue to roll out illegal dumping deterrence measures	Sustainability (LMCC)	Yes
		5E	Collaborate with Coastal Land Managers to establish a permit system for 4WD access to Nine Mile Beach	Sustainability, Community Planning (LMCC)	No

Section 6:		Governance			
Objective and target		Action	Detail of action	Responsibility	Potential for regional collaboration
6.1	Effectively govern waste management activities within Council	6A	Review and update Council waste management procedures, and undertake activities in accordance with those procedures	Sustainability, WER (LMCC)	No
		6B	Maintain strong communication between key Council staff and the elected Council	Sustainability, WER (LMCC)	No
6.2	Participation in regional waste collaborations	6C	Participate in Regional Waste Strategy meetings, including the Hunter Waste Educators Group	Sustainability (LMCC)	Yes
		6D	Participate in Regional Illegal Dumping Squad Steering Committee	Sustainability (LMCC)	Yes
		6E	Participate in Hunter Resource Recovery meetings	Sustainability (LMCC)	Yes
		6F	Participate in regional Waste Management Association of Australia meetings	WER, Sustainability (LMCC)	Yes

City of Lake Macquarie **Waste Strategy** 2015-2023

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