

**Meeting Date:** Tuesday 28 October 2014  
**Location:** Council Chambers, Level 6, Civic Centre, 1 Devlin Street, Ryde  
**Time:** 7.30pm

**ATTACHMENTS FOR COUNCIL MEETING**

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# WASTE MANAGEMENT STRATEGY 2014

 City of Ryde

Lifestyle and opportunity  
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# Introduction OUR CITY





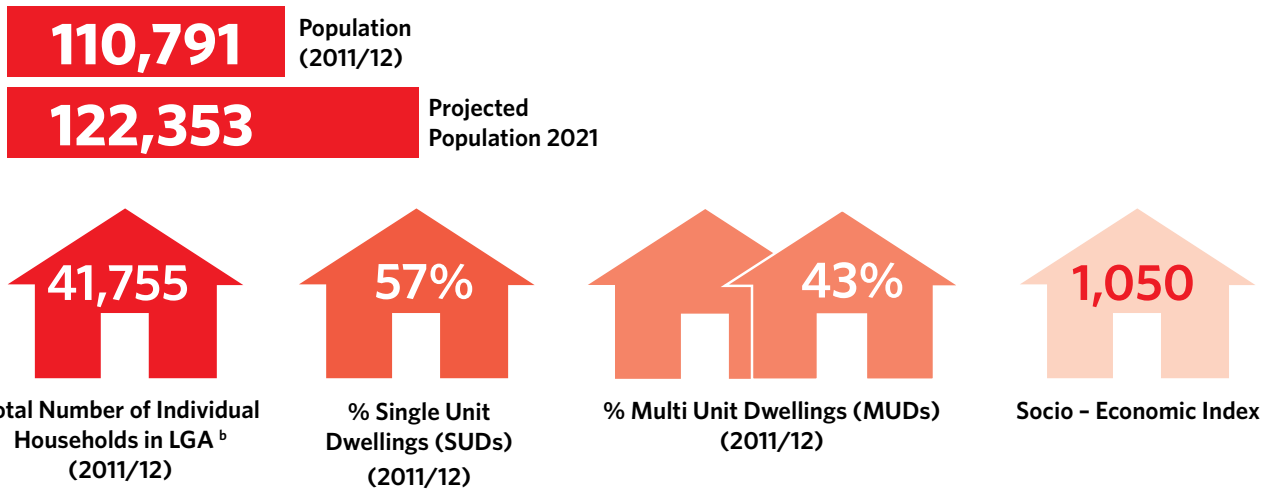
The City of Ryde has a rich history with the traditional Aboriginal owners of the land being the Wallumedegal clan of the Dharug people.

Our city is located in Sydney’s north-western suburbs, 12 kilometres from the Sydney CBD. Set in scenic surrounds between the Parramatta and Lane Cover River, we are connected to other parts of metropolitan Sydney via major road systems, rail, bus and ferry services.

We encompass a total land area of approximately 40 square kilometres including waterways and parklands. Within this sits Macquarie Park, one of Sydney’s largest business precincts, four town centres and 29 neighbourhood centres, Macquarie University, Ryde and Meadowbank Colleges of TAFE, over 33,000 businesses, five public libraries, 24 primary schools, five high schools and five hospitals.

The City is made up of 16 suburbs with over 40,000 dwellings, of which approximately 48% are of medium or high density. The City also has a diverse, growing population (currently 110,791 people) of which approximately 36% are from non-English speaking backgrounds. The population in the City of Ryde has grown by around 10% over the past 6 years, with the majority of new dwellings being of medium to high density.

**City of Ryde Household Statistics as at 30 June 2012:**



This Waste Strategy outlines the steps our City is taking to better manage our waste streams, focusing on the key areas of waste avoidance, resource recovery, and Advanced Waste Treatment methods. We will be implementing a Waste Minimisation Plan to reach the City’s desired outcomes as identified in our Community Strategic Plan 2025.

Council will continue to engage, inform and educate the public and industries of the benefits of clever waste management and recycling to meet the City’s current and future needs.





# Key Waste Management CHALLENGES AND OPPORTUNITIES





## Key Waste Management CHALLENGES AND OPPORTUNITIES

### Meeting the needs of a growing population

Sydney's population is expected to grow to six million people by 2036, with an average annual increase of 56,650 people. Ryde's population is forecast to be over 135,000 by 2031. The City's popularity is likely to bring even stronger growth and demand on existing infrastructure and services.

**Our Challenge** is to meet the increasing pressure and needs of a growing population and changing demographics, while maintaining the prosperity, uniqueness and liveability of our city. The ability to service the waste needs of this growing community with minimal impact on the environment, within the capabilities of waste collection services, will be a challenge.

### Reduce, Reuse, and Renew

Sydney metropolitan and NSW landfill capacities are limited. The NSW State Government has set a target of 70% diversion of municipal waste from landfill by 2020 in its Waste Less, Recycle More Strategy. Council will continue to work with its residents and businesses to deliver environmentally responsible and sustainable waste management solutions.

**Our Challenge** is to educate and influence the community to take on long term changes to reduce unnecessary waste at its source, and offer opportunities to reuse and renew valuable resources which would otherwise be sent to landfill.

### Resource Recovery - Adopting Advanced Waste Technology

In the past decade, new technologies have emerged for better recovery of resources from waste, and for capturing and utilising energy from the residual waste stream. These methods are generally termed "Advanced Waste Treatment" (AWT) and encompass different approaches ranging from sorting systems through to high-tech power generation. AWTs will be a key feature in managing our waste streams to provide environmentally responsible and sustainable waste management solutions into the future.

**Our Challenge** is to identify and adopt the most suitable technology to recover resources from our 'left-over' (residual) waste.

### Adapting to climate change

There are many natural and human challenges that confront our city and region including the potential impact of changes to our climate. Carbon emissions generated at existing waste landfill sites have also added to this problem.

**Our Challenge** is to address the impact that waste has on Climate Change by adopting low emission waste management solutions where feasible.





# Core Waste Services







## Core Waste Services

### MUNICIPAL WASTE

Under the Local Government Act 1993, Council is responsible for providing efficient waste management services to all residents which include:

- Collecting, sorting, processing and disposing of putrescible waste, recyclable material and garden vegetation (green waste)
- Provision of a community waste education program
- Control and management of litter and illegal dumping
- Diverting problem wastes from landfill.

### Domestic Waste Management

The City of Ryde provides a comprehensive range of services to residents to encourage good waste management practices and waste avoidance. These include:

- Comprehensive domestic waste and recycling collection service
- At-call Electronic Waste Collection
- Booked Chipping & Mulching Service at the kerbside
- Second-hand Saturday promotions
- Problem waste recycling – batteries, globes, mobile phones & printer cartridges
- Clothing Bins
- Public place and parks recycling
- Free Medical waste collection – sharps and dialysis tubing
- Annual household chemical collection
- Worm farm & composting demonstrations
- Comprehensive community education programs

**The standard domestic waste collection bin regime as at February 2014 was as follows:**

Dwelling	Residual Waste		Recycling		Garden vegetation	
	Bin Size	Frequency	Bin Size	Frequency	Bin Size	Frequency
Single / Multiple House	140L	Weekly	240L	Fortnightly	240L	Fortnightly
Multiple Unit	240L	Weekly Share 1 between 2 units	240L	Fortnightly Share 1 between 2 units	-	-
Multiple Unit	660L	3 times per week Share between 16 units	1100L	Weekly Cardboard	-	-
Multiple Unit	1100L	3 times per week Share between 27 units	-	-	-	-

### Successful Diversion of Waste from Landfill

With the introduction of a fortnightly garden vegetation (green waste) collection in 2006 and ongoing education campaigns, diversion from landfill was increased to 48%. This was an increase of around 25% from 2004. However, the city's municipal waste diversion rate appears to have plateaued at around 47-48% since 2009, which is significantly short of the 2014 target of 66%. Advanced Waste Treatment (AWT) technologies have the potential to bridge this gap, but there is currently limited AWT processing capacity within the Sydney metropolitan area.

Council will continue to work with other Councils in joint regional initiatives to achieve and meet State Government landfill diversion targets, as well as to decrease our City's environmental footprint.



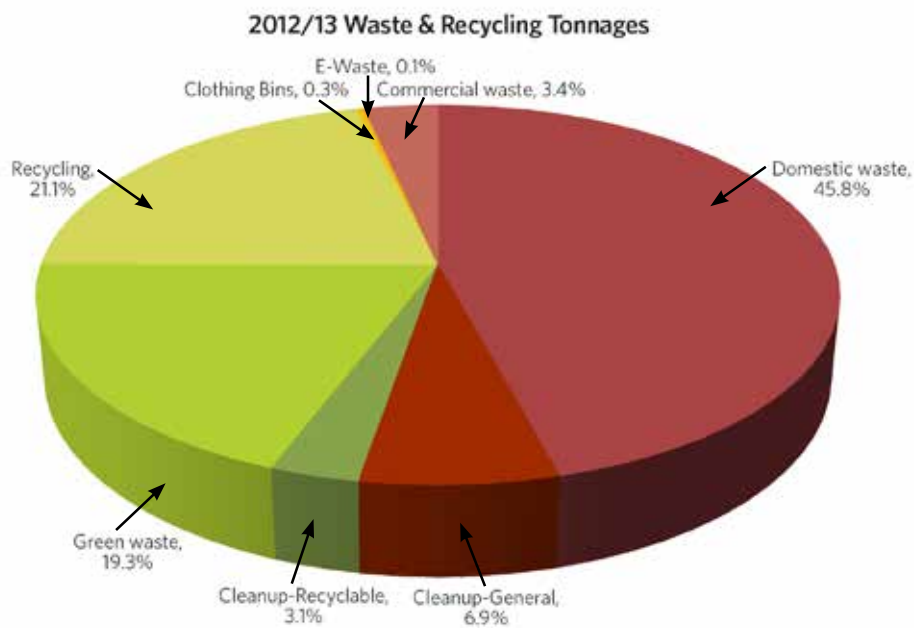
**Comprehensive Education Program**

Council provides an active waste education program that promotes recycling, resource recovery, waste minimisation, composting and worm-farming, as well as demonstrations and waste tours for the community. The Annual Waste Collection Calendar, which is distributed to all households, identifies the waste, recycling and garden vegetation (green waste) days and household clean-up collection dates. Additional information is also provided for events & workshops and our comprehensive waste services. Information on our programs is available on Council’s website.

**Waste & Resource Recovery Tonnage data**

The City of Ryde’s residents produced almost 47,000 tonnes of waste and recycling in 2012-2013. Society is discarding more material than ever before partly due to increased consumption as the economy grows and the rapid turnover and disposal of products.

The chart below shows the dissection of the total wastes collected in 2012-13 and percentages per category. Total Domestic Waste:



Total Recyclables	Total Waste to Landfill	TOTAL Domestic Waste Generated
Domestic Kerbside, Clean Up, Drop off, AWT Recyclables	Domestic Kerbside, Clean Up, Drop off	
Tonnes	Tonnes	Tonnes
20,940	21,475	42,415.05

(Figures as at 30 June 2012)



## Core Waste Services

### Household Clean-up Service

As at February 2014, Council provided five scheduled clean-ups for household waste items. A marked increase in presentation rates for clean-ups was observed between 2009 and 2011, potentially corresponding with a marked rise in minimum waste transfer station tipping charges to residents.

Clean Up Electronics (e-waste)	Clean up Garden vegetation	Clean Up Metals	Clean Up Others	Clean Up Bulky Goods	Clean up other Recyclables	Total Domestic Clean Up Recyclables + Vegetation + Metals + Other	Total Domestic Clean Up Waste to Landfill	Total Domestic Clean Up Waste Generated
Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes
19	621	404	0	4261	132	1750	3687	5437

(Figures as at 30 June 2012)

Council will be reviewing its scheduled clean-up service, including analysis of scheduled and "at call" collection options, with the view to move to an "at call" service. This option maybe a more efficient use of resources and should aid in the reduction of costs as well as enable better management of illegal dumping.



### COMMERCIAL WASTE MANAGEMENT

Council provides a comprehensive commercial waste management service, offering varying sizes and frequencies of waste and recycling collections.

The City encourages better commercial waste management by:

- Offering a range of flexible collection services
- Continuing education programs and targeted campaigns for small and medium businesses
- Fostering closer relationships with businesses through involvement in local community groups and chamber of commerce
- Local planning controls to ensure appropriate recycling infrastructure and bin storage

### CONSTRUCTION AND DEMOLITION WASTE

The EPA set a 2014 landfill diversion target for commercial and industrial waste of 76%. Council has actively pursued this target with regard to its construction and demolition (C&D) waste generated from Council's construction works. Tracking of recycling rates for 2013-14 for waste concrete, asphalt and soil indicated that these waste products were recycled on or off-site at a rate exceeding 80%.

There is scope for further improvements in diversion of C&D waste and Council's efforts will be centred around:

1. Improving soil management, from the point of generation to the point of disposal
2. Increasing re-use of soils generated from Council's construction works
3. Increasing recovery or source separation of other recyclables such as timber and plastic.

# Engaging OUR COMMUNITY







## Engaging OUR COMMUNITY

In 2012, Council conducted a Waste and Recycling Survey of its residents to obtain feedback on our waste services. Participants were also encouraged to provide ideas on service enhancements and ways to improve recycling.

The survey was completed by over 4,000 participants (representing approximately 10% of our households) and the results demonstrated that over 80% of respondents were satisfied with their current waste service. The survey also identified a number of ways to improve waste management in our city including:

- Reducing waste on a household level, encouraging composting and worm farming to reduce food waste in the domestic waste stream
- Increasing recycling and garden vegetation (green waste) collection
- Better managing waste from household clean-ups across the City
- Improving access to problem waste recycling, including light globes and batteries
- Expanding multilingual education campaigns to reach our diverse population
- Ongoing planning for a sustainable future

This feedback aids in the development of a tailored Waste Strategy to meet the community's needs and aspirations.





# Our Waste Management OBJECTIVES AND STRATEGIES







**Vision for Waste Management at the City of Ryde**

Council will provide a waste management program that contributes to improving the environment and well-being of our community, which is focused on waste avoidance, resource recovery and landfill minimisation.

**Our Objectives, Actions and Performance Measures**

To meet essential waste management requirements for our growing City, as well as the long term goals of the NSW Waste Avoidance & Resource Recovery (WARR) Strategy, Council will focus on the following objectives:

1. Meeting Community Needs
2. Reducing Waste Generation
3. Increasing Recycling
4. Exploring Advanced Waste Treatment Options
5. Better Managing Problem Waste
6. Creating a Cleaner City by Reducing Litter and Illegal Dumping
7. Integrating Waste Management Solutions into Future Developments

**1. Meeting Community Needs**

**OBJECTIVE**

Provide a comprehensive waste management service which meets the needs of the residents.

**STRATEGY**

A 2013 Waste & Recycling survey completed by nearly 10% of rateable properties demonstrated that, while over 80% of respondents were satisfied with their waste service, key suggestions for improvement included:

- Expanded multilingual education campaigns on recycling and waste processing
- Revised management of household clean-ups
- Incentives to reduce waste – options for smaller bins at lower rates
- Revised frequency of recycling and garden vegetation (green waste) collection
- Access to problem waste recycling such as light-globes and batteries

**Actions:**

- Broader waste education programs
- Review the household clean-up service offered
- Review bin size options and collection frequencies
- Promotion of Council’s available waste services through various media channels

**TARGETS & PERFORMANCE MEASURES**

- Annual report on community engagement conducted by the waste team
- Biennial Surveys conducted to ensure needs of community are met
- Reduced tonnages of municipal solid waste per capita across the city
- Meet the NSW Government municipal waste diversion target.





## Our Waste Management OBJECTIVES AND STRATEGIES

## 2. Reducing Waste Generation

### OBJECTIVE

Promote the efficient use of materials across the community and discourage generation of unnecessary waste.

### STRATEGY

The Waste Levy was introduced by the State Government to provide an economic incentive to reduce waste going to landfill.

Council will continue its active role in educating the community in ways to reduce household waste generation. Council will also continue its contribution to focus groups and industry dialogue in this regard.

### Actions:

- Education program designed to encourage long term behavioural changes such as food waste avoidance and promotion of local produce markets
- Promotion of “package-free” options and increase awareness of benefits of the “No Plastic Bags” campaign
- Conduct free waste audits for businesses to help reduce wastage and recognise achievements through an accreditation program
- Provide onsite resource recovery – chipping & mulching of garden waste for reuse
- Provision of incentives for small waste generators

### TARGETS & PERFORMANCE MEASURES

Annual monitoring and reporting on residual waste tonnage trends

## 3. Increasing Recycling

### OBJECTIVE

Improve community awareness of best practices for recycling through targeted communication and education programs.

### STRATEGY

Audits carried out on the Municipal Solid Waste (MSW) stream have indicated that 23% of the red bin contents could have been recycled, and that a further 40% was food and organic materials.

Recycling rates may be improved through targeted education programs tailored around behaviour change, access to increased services and focus on resource recovery.

Product stewardship and Extended Producer Responsibility are important factors in improving long term product and packaging design to enable better resource recovery.

### Actions:

- Increased access to recycling & resource recovery services
- Consider expansion of available drop off recycling points to increase in availability for residents to recycle batteries, light globes, cartridges etc
- Expand community education programs & materials
- Review existing bin size and collection frequency to encourage recycling
- Improve multi-unit dwelling participation through improved bin bay design, signage, and revised collection systems
- Ongoing assessment of disposal options including Advanced Waste Treatment methods that maximise recovery rates
- Encourage reuse of wanted goods through local garage sales
- Recycling of old clothing through clothing bins & SWAP parties
- Council will support and advocate any State and National programs that assist in minimising packaging and reducing manufacturers waste

### TARGETS & PERFORMANCE MEASURES

- Annual report on calculated recovery of recyclables and garden vegetation (green waste)



## Our Waste Management OBJECTIVES AND STRATEGIES

### 4. Exploring Advanced Waste Treatment Options

#### OBJECTIVE

Advanced methods of waste processing put in place to divert materials from entering landfill, through materials and energy recovery.

#### STRATEGY

There is a diminishing supply of approved landfill capacity accessible in the Sydney metropolitan area. Alternative technology options need to be investigated and encouraged to enable Councils to meet the landfill diversion targets set by the EPA. In March 2013 the EPA released the NSW Energy from Waste Draft Policy Statement, which may open up new means of diversion from landfill.

#### Actions:

- Work with the NSROC Group of Councils to establish joint regional waste disposal management initiatives
- Monitor industry developments with regard to AWT processing / disposal options
- Target & Performance Measures
- Annual report on AWT options and contemporary industry AWT processing capacity for Sydney wastes

### 5. Better Managing Problem Waste

#### OBJECTIVE

Reduce the environmental impact of harmful household wastes such as paint, gas bottles, motor oils, batteries, smoke detectors, fluorescent lamps and globes and other toxic and hazardous materials through source separation.

#### STRATEGY

Over the past 10 years, the EPA has funded household chemical collection events to discourage residents from disposing of toxic waste in landfill. Council will continue to explore options to increase the availability of drop-off facilities and mobile collection facilities for the disposal of harmful materials.

#### Actions:

- Educate the community on problem waste and its effects on the environment
- Promote and enhance existing services provided by Council, including the e-waste collection and drop-off options to prevent harmful materials entering landfill
- Investigate options to expand problem waste management methods and mobile recycling options
- Investigate options for disposal of asbestos for households to compliment the EPA Initiative.

#### TARGETS & PERFORMANCE MEASURES

- Annual report on e-waste and problem waste quantities collected and disposal options available to the community - Statistics





**Our Waste  
Management**  
OBJECTIVES AND  
STRATEGIES

## 6. Creating a Cleaner City by Reducing Litter and Illegal Dumping

### OBJECTIVES

Creating “the place to be for lifestyle and opportunity” through a change in attitudes and behaviour towards littering and illegal dumping through targeted education programs and enforcement.

### STRATEGY FOR REDUCING LITTER

Litter is a prime concern of the community as it pollutes the City’s streets, parks, waterways, and the local environment. Targeted education campaigns, as well as adequate litter bins, appropriate signage, and enforcement can be utilised to reduce the incidence of littering.

#### Actions:

- Engage the community to help identify and combat littering “hot spots”
- Targeted education campaigns and community recognition awards

### STRATEGY FOR ILLEGAL DUMPING

The reasons for illegal dumping are wide ranging. They include lack of awareness about the City’s waste services, how to avoid waste, or insufficient options to reuse items. Most illegal dumping is generated from households, although some businesses also dump illegally.

The City aims to encourage and enable reuse of bulky items before disposal to extend their useful life. Council will also review its household clean-up strategy to reduce illegal dumping occurrences and the volume of waste going to landfill.

#### Actions:

- Provide education programs on the City’s waste services and the impact of illegal dumping on the local environment
- Encourage reuse or correct disposal of unwanted goods
- Review household clean-up collection options
- Consider supplementary ‘hotspot’ clean-ups
- Work with Body Corporates and Strata Managers to implement strategies to reduce illegal dumping outside multi-unit dwellings
- Beautification of public places and improved surveillance of illegal dumping hotspots
- Working with NSROC to explore a RID Squad to assist in monitoring and regulating illegal dumping

### TARGET & PERFORMANCE MEASURES

- Statistics on number of illegal dumping incidents by location

## 7. Integrating Waste Management Solutions into Future Developments

### OBJECTIVE

Anticipate and plan for future waste service needs in new high density multi-unit dwellings to streamline waste and recyclables collection and meet the needs of the community.

### STRATEGY

The City of Ryde is a fast growing area with a high percentage of multi-unit and mixed business developments. These developments pose significant challenges from a waste servicing and bin storage perspective. Areas for consideration include site restrictions, parked cars, access, and allocation of adequate bin storage areas.

#### Actions:

- Develop standard guidelines and performance requirements for provision of waste services in multi-unit dwellings
- Update the Waste Minimisation DCP
- Introduce enhanced onsite storage and recycling collections – E-waste, clothing bins, bulk cardboard to multi-unit dwellings

### TARGET & PERFORMANCE MEASURES

- Number of Development applications which meet waste service collection standards



### NEXT STEPS

Complete the development of a waste management system that aligns with our CSP2025.

Pursue joint regional waste disposal initiatives, with a view to promoting AWT technologies.

Ensure new collections and disposal contracts are consistent with Council's Waste Strategy document

Review Waste Minimisation section of DCP to meet ongoing development trends within the City.





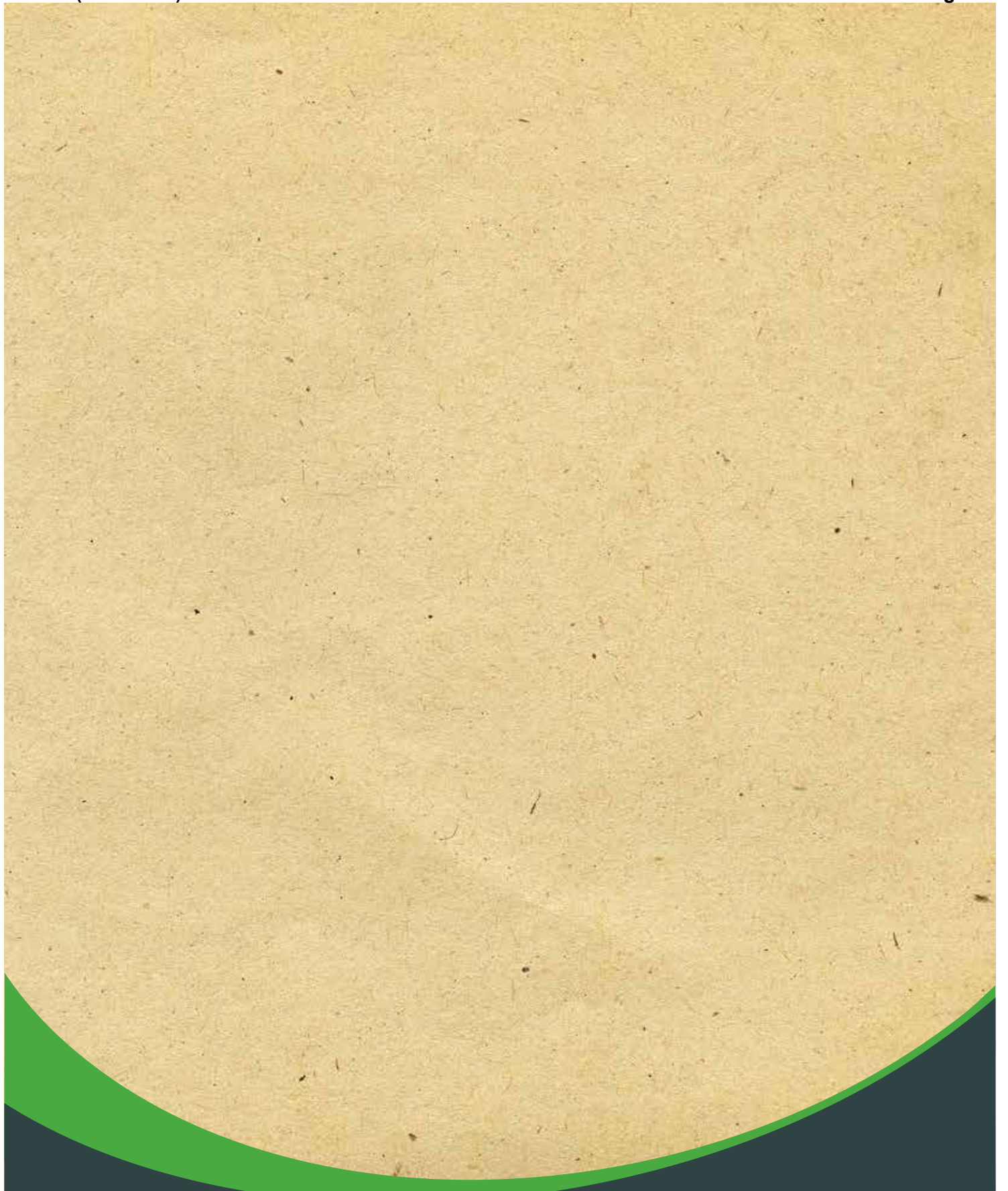
**WASTE  
STRATEGY  
2014**

# Action Plan Table

Priority	Description	Action	Timeframe
High	Waste Collection and Disposal Tenders	Develop Tender documentation for waste, recycling, garden vegetation (green waste) and clean-up collection contract and award a new contract.	November 2014
		Work with NSROC to develop a Regional Waste Disposal and Processing Tender for domestic and commercial waste, clean-up, street sweeping and illegal dumping and award contract.	January 2015
High	Multi-Unit Dwellings - Education	Continue to improve programs to deliver better understanding of recycling systems and waste diversion to residents of MUD's through Strata Managers and Real Estate agents. (Funding approved by EPA).	Ongoing
High	DA Planning	Review existing Waste Minimisation DCP and develop standard guidelines to ensure new high rise developments meet Waste Collection constraints and public domain amenity.	April 2015
High	Reduce waste generation	Introduce an 80L waste bin at a reduced cost to encourage waste diversion.	May 2015
		Continue to promote and deliver food waste avoidance programs and messages to encourage behavioural change.	Ongoing
		Provide regular composting and worm farm demonstrations with residents and school groups to encourage waste avoidance.	Ongoing
		Increase awareness of problems relating to packaging and plastic bags.	June 2015
High	Household Clean-up Collection	Review the current scheduled household clean-up service offered against an 'At Call' service	November 2014
High	Educational Promotion	Promote Waste Avoidance & Resource Recovery through local community activities, school programs and through media releases in the local newspaper.	Ongoing
High	Provide & deliver Waste Collection Calendars	Design and deliver residential waste collection calendars to all residents in the Ryde LGA. Calendars will provide garbage, recycling, garden vegetation (green waste) days and household clean-up dates if required. It will also deliver educational information on best practice waste management procedures and identify any community workshops.	Yearly
High	Website	Continue to provide website updates to City of Ryde residents on upcoming programs, educational materials and links to suitable sites for further information.	Ongoing



High	Community & Schools Education	<p>Deliver expanded and enhanced waste communication and education programs designed to encourage long term behavioural changes.</p> <p>Provide workshops and waste reduction education programs to community groups and schools eg. Ryde Environmental Education Network (REEN).</p>	Ongoing
High	Resource Recovery	<p>Continue to encourage participation in programs to promote resource recovery on site eg Chipping and Mulching, reuse of unwanted goods through garage sales, recycling old clothes through clothing bins.</p>	Ongoing
High	Manage Problem Waste	<p>Promote existing services provided by Council including Medical waste disposal, E-waste collection and drop off options and supply of plastic sharps containers for free from Customer Service.</p> <p>Promote and support household chemical collections provided by EPA.</p> <p>Investigate options to expand problem waste management methods for mattresses and household chemicals and increase drop off points to recycle mobile phones, batteries, globes and cartridges.</p>	<p>Ongoing</p> <p>Yearly</p> <p>December 2015</p>
High	Create a Cleaner city by reducing litter and Illegal Dumping	<p>Identify illegal dumping hot spots and introduce beautification programs and surveillance systems.</p> <p>Engage with Strata Managers to implement strategies to reduce illegal dumping outside units ie provide monthly booked clean-up collections.</p> <p>Ensure adequate litter bins, signage and enforcement is in place to reduce litter.</p>	<p>June 2015</p> <p>May 2015</p> <p>Ongoing</p>
High	Commercial/ Business Waste	<p>Promote and deliver a comprehensive waste and recycling collection service to businesses within Ryde.</p> <p>Work with businesses to increase recycling through providing waste audits and education programs.</p> <p>Trial a separate food waste collection and processing service for existing customers.</p>	<p>Ongoing</p> <p>June 2015</p> <p>June 2015</p>
Medium	Public Event Recycling & Waste Services	<p>Provide comprehensive waste and recycling management services to public events including Granny Smith, Australia Day, Carols by Candlelight, Cinemas in the Park.</p>	Ongoing
Medium	Statistical & Data Management	<p>Maintain databases of statistics of waste and recycling figures generated for Management Plan and EPA Reporting.</p> <p>Develop and update Waste Service spreadsheet into a database.</p> <p>Manage and maintain Council's waste systems.</p> <p>Continue to maintain Contractor Obligations reports and customer services statistics.</p>	<p>Ongoing</p> <p>March 2015</p> <p>Ongoing</p> <p>Ongoing</p>
Medium	Industry Networking	<p>Share information and knowledge with industry and Council staff by attending waste meetings, conferences and workshops.</p>	Ongoing
Medium	Container Deposit Legislation	<p>Investigate the impact of CDL on our recycling services and how it will be managed to assist in litter reduction.</p>	June 2015



 City of Ryde

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NORTHERN SYDNEY  
REGIONAL WASTE STRATEGY 2014 - 2021  
Action Plan

Date last updated: 1 July 2014



## OVERVIEW

This document outlines the steps required to implement the Northern Sydney Regional Waste Strategy and provides a guide to monitor progress against the key actions for each project. The Strategy has been supported by the NSW Environment Protection Authority (EPA) with funding from the waste levy.

The Action Plan presents the required actions for the five highest scoring projects assessed as part of the Project Options Assessment process. The scoring process enabled the projects to be prioritised, however the remaining five projects plus those included in the original long list not identified in this Action Plan will be reviewed for potential inclusion as part of the overall implementation of the Strategy.

Progress against each project action will be updated on a quarterly basis for submission to councils and then an annual review (from mid-2015) will be undertaken for submission to the EPA to determine if the project Key Performance Indicators (KPIs) for each project have been or are likely to be achieved.

Refer to the Action Plan's Working Document for on-going reporting and tracking purposes. The Working Document is the 'live' document providing further detail on the Action Plan including a list of SMART actions (i.e. actions that are specific, measurable, achievable, realistic and timely) for each focus area/ project.

## REGIONAL OBJECTIVES

Concept	Regional Objective
1 Service Quality	<ul style="list-style-type: none"> <li>To continuously improve waste management services for the community.</li> </ul>
2 Responsibility	<ul style="list-style-type: none"> <li>To better integrate waste management into council policies, plans and processes.</li> <li>To contribute to an improved policy framework with appropriate allocation of roles and responsibilities consistent with statutory powers.</li> </ul>
3 Amenity and Public Health	<ul style="list-style-type: none"> <li>To improve public amenity and maintain public health and safety through effective waste management.</li> </ul>
4 Community Engagement	<ul style="list-style-type: none"> <li>To increase the regional community's understanding of and participation in waste reduction, recycling and resource recovery.</li> </ul>
5 Innovation and Sustainability	<ul style="list-style-type: none"> <li>To increase access to improved waste management services and facilities for the region.</li> </ul>
6 Value for money	<ul style="list-style-type: none"> <li>To increase the cost effectiveness of waste management services.</li> </ul>

## REGIONAL TARGETS

Regional Target	Relevance to WARR Themes
<b>a</b> 70% landfill diversion by 2021-22 (based on regional 2010-11 data)	✓ Increase recycling
	✓ Divert more waste from landfill
<b>b</b> 1% per capita reduction in waste generation by 2021-22 (based on regional 2013-14 data)	✓ Avoid and reduce waste generation
<b>c</b> Access to waste drop-off centre for all NSROC LGA residents on basis of 1 per 50,000 households by 2021-22 OR within 11 km <sup>1</sup> of home	✓ Divert more waste from landfill
	✓ Manage problem wastes better
	✓ Reduce illegal dumping
<b>d</b> 20% reduction in reported illegal dumping incidents by 2021-22 (based on regional 2012-13 data) <sup>2</sup>	✓ Reduce illegal dumping
	✓ Manage problem wastes better
<b>e</b> Increased promotion of active community participation in litter control through targeted programs	✓ Litter

Table notes:

- Distance inferred from Program Grant guidelines 2013.
- Measurement of WARR target only includes incidents where more than 200m<sup>3</sup> of illegal dumped waste is detected.

Date last updated: 1 July 2014

**ACTION PLAN**

Project	Objectives	Targets	Actions to be undertaken	Indicative Cost	When	Time Period <sup>1</sup>	Provider(s) <sup>2</sup>	KPIs																								
<b>Regional Drop-Off Centres for Problem Wastes</b>	<b>Aim:</b>  To provide accessible and affordable problem waste disposal options to the region.	<table border="1"> <tr><td>1</td><td>✓</td><td>a</td><td>✓</td></tr> <tr><td>2</td><td></td><td>b</td><td></td></tr> <tr><td>3</td><td>✓</td><td>c</td><td>✓</td></tr> <tr><td>4</td><td>✓</td><td>d</td><td>✓</td></tr> <tr><td>5</td><td>✓</td><td>e</td><td></td></tr> <tr><td>6</td><td>✓</td><td></td><td></td></tr> </table>	1	✓	a	✓	2		b		3	✓	c	✓	4	✓	d	✓	5	✓	e		6	✓			<b>Interim Actions for Business Case Development and Project Roll-Out:</b> Undertake desk-based waste audit of materials to be accepted at the proposed drop-off centre, quantify and collate details from existing household hazardous waste clean-up events and drop-off at the Hornsby depot and the NSW Environmental Trust/EPA's guidelines: <i>Improved Systems for Household Problem Wastes – Community Recycling Centre (Drop Offs)</i> <a href="http://www.environment.nsw.gov.au/resources/grants/130614ApGdeCRC.pdf">http://www.environment.nsw.gov.au/resources/grants/130614ApGdeCRC.pdf</a>	\$20,000	July 2014	1 month	NSROC/ Councils/ Consultant	Contribution to regional targets a), c) and d)
			1	✓	a	✓																										
			2		b																											
			3	✓	c	✓																										
			4	✓	d	✓																										
			5	✓	e																											
			6	✓																												
			Undertake demand analysis to estimate the anticipated tonnage and demand of facility																													
			Determine and rationalise sites through a desk-based study, including identifying appropriate locations for new sites and investigating upgrading existing sites, including an overview of licensing and legislative requirements																													
			Stakeholder consultation, including engagement with other regional organisations of councils, private industry (incl. owners of current transfer sites if relevant, transport companies, processing facilities, etc) and other potential business partners/ social enterprises (e.g. mission direct / community)			\$10,000 - \$20,000	July 2014	1 month	NSROC/ Councils/ Consultant																							
			Draft budget and project plan. Organise workshop with Councils to ensure scoping, projected milestones, budget and level of commitment agreed on																													
			Undertake Business Case to update estimated costs for options implementation and review licensing and legislative requirements			\$10,000	August 2014	< 1 month	NSROC/ Consultant																							
			Submit Business Case to the EPA prior to funding grant [Infrastructure for community recycling systems – Round 2] closing date and allow for application processing time			Internal cost	<b>August 2014</b>	3 months	NSROC																							
			<i>Where application is successful:</i> Perform visual audit/survey of SUDs and MUDs clean-up waste types			\$10,000	October – November 2014	2 months	NSROC/ Councils/ Consultant																							
			Community consultation including engagement with local residents and businesses to assess demand for service, financial impacts to the community associated with program funding, and to assess acceptable distance public will travel to utilise drop-off centre(s)			\$10,000	September – November 2014	3 months	NSROC/ Councils/ Consultant																							
Negotiate site purchase / annual lease, organise and oversee site improvements and construction activities			To be determined	January 2015 – January 2016 +	12-18 months	Consultant																										
<b>Monitoring and Evaluation:</b> Quarterly progress reports against timeline for internal tracking purposes and submission to councils, particularly in relation to potential expansions/ changes to services and including stakeholder consultation to determine satisfaction with drop-off centres			Internal cost	Quarterly	Quarterly	NSROC																										
Prepare and submit annual reports to the EPA			Internal cost	June 2016	Annually	NSROC																										
Baseline data required for evaluation of KPIs			Internal cost	July 2014	Immediately	NSROC																										
Review and update of baseline data			Internal cost	June 2016	Annually	NSROC																										



Collect baseline data for evaluation of KPIs, determine sites and consult stakeholders / potential business partners

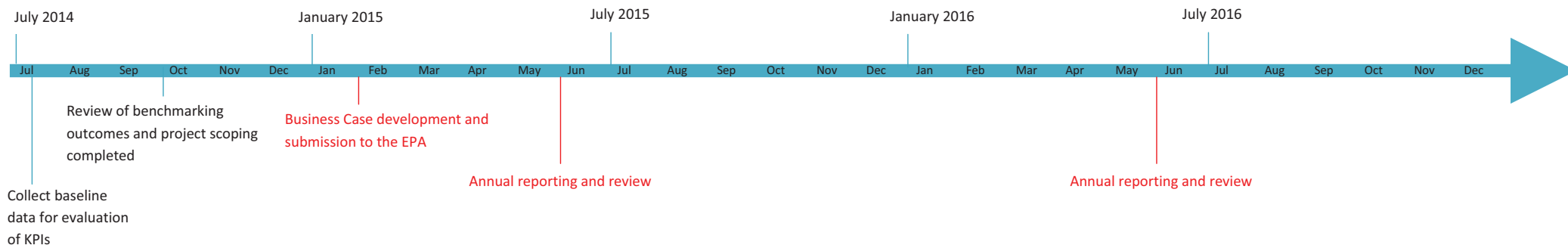


NORTHERN SYDNEY  
REGIONAL WASTE STRATEGY 2014 - 2021  
Action Plan



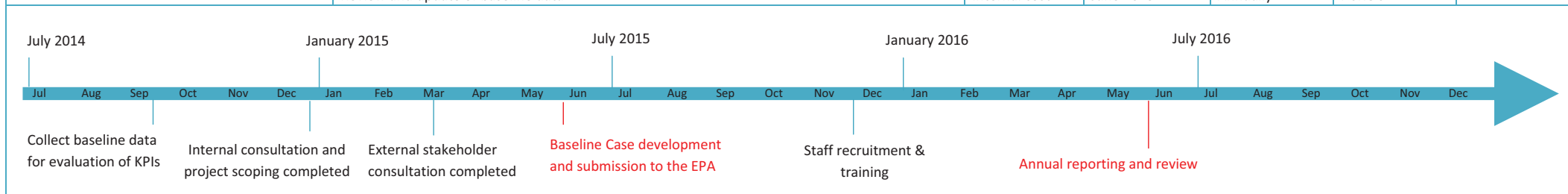
Date last updated: 1 July 2014

Project	Objectives	Targets	Actions to be undertaken	Indicative Cost	When	Time Period <sup>1</sup>	Provider(s) <sup>2</sup>	KPIs																						
<b>Regional Illegal Dumping Program</b>	<b>Aim:</b>  To develop and implement a regional illegal dumping program for the proactive prevention and management of illegally dumped wastes.	<table border="1"> <tr><td>1</td><td>✓</td></tr> <tr><td>2</td><td>✓</td></tr> <tr><td>3</td><td>✓</td></tr> <tr><td>4</td><td>✓</td></tr> <tr><td>5</td><td></td></tr> <tr><td>6</td><td></td></tr> </table> <table border="1"> <tr><td>a</td><td>✓</td></tr> <tr><td>b</td><td></td></tr> <tr><td>c</td><td></td></tr> <tr><td>d</td><td>✓</td></tr> <tr><td>e</td><td></td></tr> </table>	1	✓	2	✓	3	✓	4	✓	5		6		a	✓	b		c		d	✓	e		<b>Interim Actions for Business Case Development and Project Roll-Out:</b> Identify target area and undertake quantification and compositional audit/surveys of illegally dumped wastes, collate and compare existing number and frequency of illegal dumping incidences from each member Council to determine baseline conditions	\$30,000 - \$40,000	July – September 2014	3 months	NSROC/ Council/ Consultant	Contribution to regional targets a) and d)
			1	✓																										
			2	✓																										
			3	✓																										
			4	✓																										
			5																											
			6																											
			a	✓																										
			b																											
			c																											
d	✓																													
e																														
Perform a desk-based benchmarking study of existing regional dumping programs (e.g. recruitment and training of rangers) involving consultation with other ROCs who have employed RID squads or equivalent and identify best practices successfully employed in similar communities																														
Review benchmarking outcomes with councils and scope program based on best practice for northern Sydney																														
Undertake consultation with land managers to determine their level of involvement in the program	\$10,000	October 2014	1 month	NSROC/ Council/ Consultant																										
Undertake Business Case to estimate costs and define scope of operation, administrative details, number of rangers/coordinators, resources required, etc	\$10,000	November – December 2014	2 months	NSROC/ Consultant																										
Submit Business Case to the EPA and allow for application processing time	Internal cost	<b>January 2015</b>	3 months	NSROC/ Council																										
<i>Where application is successful:</i> Recruit and provide training for staff (e.g. rangers), organise dedicated vehicles, resources etc	To be determined	April – June 2015	4 months	NSROC/Council																										
<b>Monitoring and Evaluation:</b> Quarterly progress reports against timeline for internal tracking purposes and submission to councils, particularly in relation to number and frequency of illegal dumping incidences and including stakeholder consultation to determine public awareness and satisfaction with the program	Internal cost	Quarterly	Quarterly	NSROC																										
Prepare and submit annual reports to the EPA	Internal cost	June 2015	Annually	NSROC																										
Baseline data required for evaluation of KPIs	Internal cost	July 2014	Immediately	NSROC																										
Review and update of baseline data	Internal cost	June 2015	Annually	NSROC																										



Date last updated: 1 July 2014

Project	Objectives	Targets	Actions to be undertaken	Indicative Cost	When	Time Period <sup>1</sup>	Provider(s) <sup>2</sup>	KPIs																								
<b>Improved Waste Management in MUDs</b>	<b>Aim:</b>  To manage waste generated in MUDs through regional planning policies and to develop a supporting education program.	<table border="1"> <tr><td>1</td><td>✓</td><td>a</td><td>✓</td></tr> <tr><td>2</td><td>✓</td><td>b</td><td>✓</td></tr> <tr><td>3</td><td>✓</td><td>c</td><td></td></tr> <tr><td>4</td><td>✓</td><td>d</td><td>✓</td></tr> <tr><td>5</td><td></td><td>e</td><td>✓</td></tr> <tr><td>6</td><td>✓</td><td></td><td></td></tr> </table>	1	✓	a	✓	2	✓	b	✓	3	✓	c		4	✓	d	✓	5		e	✓	6	✓			<b>Interim Actions for Business Case Development and Project Roll-Out:</b> Undertake research of MUDs, document existing waste infrastructure in MUDs and determine minimum requirements for new waste infrastructure in MUDs, examine visual audit/survey details if available and undertake MUDs compositional audit where existing MUDs compositional data is not satisfactory (optional), and identify best practice council planning tools for integrating waste management into MUD development requirements.	\$80,000 - \$100,000	September - November 2014	3 months	NSROC/Council/ Consultant	Contribution to regional targets a), b), d) and e)
			1	✓	a	✓																										
			2	✓	b	✓																										
			3	✓	c																											
			4	✓	d	✓																										
			5		e	✓																										
			6	✓																												
			Undertake stakeholder consultation (1 x workshop) with Council waste managers/officers to consult those councils having well-established MUDs/MUDs education programs (including review of their monitoring and evaluation outcomes) and to discuss possible areas for improvement in current DCPs, internal communication and planning protocols, and training for council staff.																													
			Undertake stakeholder consultation (2 x workshops) with councillors, planning and waste departments at each council to identify pathways for improved waste management planning and improved internal/ external communications relating to waste management planning provisions.																													
			Scope education program based on the above investigations into existing and new planning guidance for waste management in MUDs and determine sources of funding. This campaign is likely to involve recruitment of rangers or equivalent	Internal cost	December 2014	2 months	NSROC/ Council																									
			Conduct workshops with strata managers/ building managers to discuss MUD management and communication protocols, interest in re-fitting MUDs where practicable, best-fit educational program for existing MUDs, key outcomes the community would like to see, other requirements for delivery of the program	\$20,000 - \$30,000	January – March 2015	3 months	NSROC/Council/ Consultant																									
			Prepare business case to update estimated cost for options implementation	\$10,000	May 2015	1 month	NSROC/ Consultant																									
			Submit business case to the EPA and/or via standard internal processes	Internal cost	June 2015	1 month	NSROC																									
			Recruit and provide training for MUD liaison staff	To be determined	September – November 2015	2 months	NSROC/ Council																									
Develop policy and protocol & educational/marketing materials	To be determined	September – November 2015	2 months	NSROC/ Council/ Consultant																												
On-going monitoring and evaluation to compare number and frequency of illegal dumping incidences associated with MUDs, increase in recycling rates for comparison with baseline, and including stakeholder consultation to determine satisfaction with the program		On-going		NSROC/Council																												
<b>Monitoring and Evaluation:</b> Quarterly progress reports against timeline for internal tracking purposes and submission to councils, particularly in relation to number and frequency of illegal dumping incidences associated with MUDs and increased recycling rates for comparison with baseline, and including stakeholder consultation to determine satisfaction with the program	Internal cost	Quarterly	Quarterly	NSROC																												
Prepare and submit annual reports to the EPA	Internal cost	June 2015	Annually	NSROC																												
Baseline data required for evaluation of KPIs	Internal cost	July 2014	Immediately	NSROC																												
Review and update of baseline data	Internal cost	June 2015	Annually	NSROC																												





Date last updated: 1 July 2014

Project	Objectives	Targets	Actions to be undertaken	Indicative Cost	When	Time Period <sup>1</sup>	Provider(s) <sup>2</sup>	KPIs																						
<b>Regional Community Education Programs</b>	<b>Aim:</b>  To develop a regional education campaign that provides consistent and relevant messaging to the public and promotes active community participation and behaviour change in waste management.	<table border="1"> <tr><td>1</td><td>✓</td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td>✓</td></tr> <tr><td>4</td><td>✓</td></tr> <tr><td>5</td><td></td></tr> <tr><td>6</td><td>✓</td></tr> </table> <table border="1"> <tr><td>a</td><td>✓</td></tr> <tr><td>b</td><td>✓</td></tr> <tr><td>c</td><td></td></tr> <tr><td>d</td><td>✓</td></tr> <tr><td>e</td><td>✓</td></tr> </table>	1	✓	2		3	✓	4	✓	5		6	✓	a	✓	b	✓	c		d	✓	e	✓	<b>Interim Actions for Business Case Development and Project Roll-Out:</b> Scope education program and establish information on problem areas to identify target waste streams such as litter, hazardous and/or problem wastes. Also , determine sources of funding	\$20,000 - \$50,000	September - December 2014	3 months	NSROC/Council/ Consultant	Contribution to regional targets a), b), d) and e)
			1	✓																										
			2																											
			3	✓																										
			4	✓																										
			5																											
			6	✓																										
			a	✓																										
			b	✓																										
			c																											
d	✓																													
e	✓																													
Undertake research/pilot program to determine target areas, community response, potential opportunities for community involvement and public-private partnerships																														
Prepare business case to update estimated cost for options implementation	Internal cost	April 2015	1 month	NSROC																										
Submit business case to the EPA and/or via standard internal processes	Internal cost	May 2015	1 month	NSROC																										
Recruit and provide training for waste education staff (optional)	To be determined	October-November 2015	2 months	NSROC/Council																										
Develop educational/marketing materials	To be determined	October-November 2015	2 months																											
Roll-out program - establish community and public-private partnerships and undertake workshops, community participation activities, and public awareness events	To be determined	January 2016	2 months	NSROC/ Council/ Consultant																										
<b>Monitoring and Evaluation:</b> Monthly progress reports against timeline for internal tracking purposes and submission to councils, including stakeholder consultation to determine public awareness and satisfaction with the program/s	Internal cost	Quarterly	Quarterly	NSROC																										
Prepare and submit annual reports to the EPA	Internal cost	June 2016	Annually	NSROC																										
Baseline data required for evaluation of KPIs	Internal cost	December 2014		NSROC																										
Review and update of baseline data	Internal cost	June 2015	Annually	NSROC																										



Date last updated: 1 July 2014

Project	Objectives	Targets	Actions to be undertaken	Indicative Cost	When	Time Period <sup>1</sup>	Provider(s) <sup>2</sup>	KPIs																						
<b>Regional Waste Processing and Disposal Contract</b>	<b>Aim:</b>  To achieve council participation in a regional tender for the processing and disposal of waste to stimulate development of increased recycling processing and residual treatment capacity for the region.	<table border="1"> <tr><td>1</td><td>✓</td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td></td></tr> <tr><td>4</td><td></td></tr> <tr><td>5</td><td>✓</td></tr> <tr><td>6</td><td>✓</td></tr> </table> <table border="1"> <tr><td>a</td><td>✓</td></tr> <tr><td>b</td><td></td></tr> <tr><td>c</td><td></td></tr> <tr><td>d</td><td></td></tr> <tr><td>e</td><td></td></tr> </table>	1	✓	2		3		4		5	✓	6	✓	a	✓	b		c		d		e		<i>Note: All Councils have considered the tender and 5 of 7 Councils have agreed to participate in the joint contract. Currently finalising documentation including Request For Tender (RFT), Contract, and Evaluation Plan. These documents are likely to be completed in the 2014/15 financial year.</i>		June 2014		NSROC	Contribution to regional targets a)
			1	✓																										
			2																											
			3																											
			4																											
			5	✓																										
			6	✓																										
			a	✓																										
			b																											
			c																											
			d																											
			e																											
			<b>Interim Actions for Business Case Development and Project Roll-Out:</b>	\$10,000 - \$20,000	July 2014	1 month	NSROC/ Consultant																							
Prepare a process mapping plan to add to the RFT and to ensure new service delivers same or better levels of payment security, service quality and reporting etc (NSROC to engage a consultant for this purpose)	Internal cost	July - September 2014	3 months	LGP/ Councils																										
Call for RFT (through Local Government Procurement [LGP])	\$30,000	August – October 2014	3 months	NSROC/ Consultant																										
Establish a mechanism for managing the contract (i.e. a contract management role)	Internal cost	October – November 2014	2 months	LGP/ Councils																										
Review tender submissions to decide on contractor	Internal cost	December 2014	1 month	Councils																										
Individual contract to be signed with each Council	\$10,000	February 2015	1 month	NSROC/ Councils/ Consultant																										
Evaluate actions and learnings for application to future contracts. Review cost and service delivery changes achieved by joint tender compared with individual contracts	To be determined	To be determined	To be determined	NSROC/ Councils																										
Identify further regional procurement opportunities and develop business case for councils	To be determined	To be determined	To be determined	NSROC																										
Prepare business case to update estimated cost for options implementation	To be determined	To be determined	To be determined	NSROC																										
Submit business case to the EPA	Internal cost	On-going	Monthly (first 3 months then quarterly thereafter)	NSROC/ Councils																										
<b>Monitoring and Evaluation:</b>																														
Review contractor performance on a regular basis including council/public complaints log, waste tonnages, inconsistencies in data et and update baseline for evaluation against KPIs																														





NORTHERN SYDNEY  
REGIONAL WASTE STRATEGY 2014 - 2021  
Action Plan

Date last updated: 1 July 2014



Project	Objectives	Targets	Actions to be undertaken	Indicative Cost	When	Time Period <sup>1</sup>	Provider(s) <sup>2</sup>	KPIs
<b>Regional Coordination of the Waste Strategy</b>			Produce summary/ flyer of the Regional Waste Strategy for public (e.g. use in public foyers)	Internal cost	Immediately following approval	< 1 month	NSROC	Documents produced
			Develop and update waste service spreadsheet into database and look to standardise Council reporting		Quarterly	Quarterly		
			Regular meetings with member Councils including Waste Advisory Groups, Professional Officer Groups and Waste Educators		Monthly	Monthly		
			Continue liaison with other ROCs for knowledge transfer and identifying further opportunities for cross regional collaboration		Quarterly	Quarterly		
			Liaison with statutory bodies (i.e. Department of Planning and Environment, EPA etc) to advocate for more infrastructure development policy for waste		Bi-annually	Bi-annually		
			Meet with industry (e.g. WMAA) and business representatives		Bi-annually	Bi-annually		

Table Notes:

1. Time period excludes procurement and contract execution.
2. Assumes NSROC to oversee the works where Consultant or Councils only indicated.



**NORTHERN SYDNEY**  
**REGIONAL WASTE STRATEGY 2014 – 2021**  
**Directions Report**

# NORTHERN SYDNEY

## REGIONAL WASTE STRATEGY 2014 - 2021

### Directions Report

Prepared for and in consultation with the Northern Sydney Regional Organisation of Councils and its member Councils by:

SLR Consulting Australia Pty Ltd  
ABN 29 001 584 612

E: [sydney@slrconsulting.com](mailto:sydney@slrconsulting.com) [www.slrconsulting.com](http://www.slrconsulting.com)

This strategy has been supported by the NSW Environment Protection Authority with funding from the waste levy.

This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with the Client. Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Northern Sydney Regional Organisation of Councils, the member councils and the New South Wales Environment Protection Authority.

No warranties or guarantees are expressed or should be inferred by any third parties.

This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.



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## Abbreviations and Acronyms

AWT	Alternative or advanced waste treatment
C&D	Construction and demolition
EfW	Energy from waste
EPA	Environmental Protection Authority
e-waste	Electronic waste
LGA	Local Government Area
MGB	Mobile garbage bin (i.e. wheelie bin)
MSW	Municipal solid waste
MUD	Multi-unit dwelling
NSROC	Northern Sydney Regional Organisation of Councils
NSW	New South Wales
POEO Act	Protection of the Environment Operations Act
SMA	Sydney Metropolitan Area
SUD	Single-unit dwelling
Draft WARR Strategy	Draft NSW Waste Avoidance and Resource Recovery Strategy 2013-21



Alternative or Advanced Waste Treatment (AWT)	A facility or chain of facilities that diverts a significant proportion of waste from disposal through biological, mechanical and thermal processes.
Co-mingled	Recyclable materials that are different but are collected together in a single container or receptacle and sent to a materials recovery facility for separation.
Composting	Composting is the biological process of breaking down organic wastes such as food waste, manure, and garden organics in the presence of oxygen.
Garbage	Discarded unwanted materials.
Mechanical Biological Treatment (MBT)	A type of waste processing facility that combines a sorting facility with a form of biological treatment such as composting or anaerobic digestion.
Municipal Solid Waste (MSW)	Solid waste from households and local government operations, including waste placed at the kerbside for council collection and waste collected by councils from municipal parks and gardens, street sweepings, council engineering works and public council bins.
Organics	Organic matter is comprised of carbon-containing compounds that have come from the remains of dead organisms such as plants and animals and their waste products in the environment.
Putrescible Waste	Solid waste that contains organic matter capable of being decomposed by micro-organisms.
Reducing Waste	Reducing waste generation by avoiding or preventing the creation of waste, where possible, along the various parts of the supply chain.
Residual Waste	The waste remaining after reduction, recycling and waste to energy processes.
Resource Recovery	The selection of disposed materials for a specific next use, such as recycling, composting or energy generation.
Sustainable	Capable of being sustained, able to be used without being completely used up or destroyed.
Thermal	Use or production of heat.
Waste Avoidance	Waste that does not enter the waste management system.
Waste Composition	The makeup of waste types disposed of or recycled.

## 1 THE STRATEGY

### 1.1 Purpose of the strategy

The Northern Sydney Regional Organisation of Councils (NSROC) is a voluntary organisation of local councils established to provide strong local government leadership, to work co-operatively for the benefit of the Northern Sydney region, and to effectively advocate on agreed regional positions and priorities.

The NSROC region is made up of the following member councils:

- Hornsby Shire Council (Hornsby);
- Hunter's Hill Council (Hunter's Hill);
- Ku-ring-gai Council (Ku-ring-gai);
- Lane Cove Council (Lane Cove);
- North Sydney Council (North Sydney);
- City of Ryde Council (Ryde); and
- Willoughby City Council (Willoughby).

The NSROC councils have come together to prepare a Regional Waste Avoidance and Resource Recovery Strategy (herein referred to as the 'Strategy') to advance sustainable waste management practices within the NSROC region. This strategy has been supported by the NSW Environment Protection Authority (EPA) with funding from the waste levy. Effective municipal solid waste (MSW) management is a crucial responsibility of councils in the NSROC region, as set out in the Local Government Act 1993. Collectively the NSROC councils generate over 250,000 tonnes of domestic waste each year. The Strategy will also support the region's proposals for support under the programs of the *Waste Less, Recycle More* initiative.

To ensure consistency and allow comparison with other regions, the structure of this report has been based on the EPA's *Regional waste avoidance and resource recovery strategy* guidance document (the Guidance document)<sup>1</sup>. The Guidance document provides a suggested structure for the Strategy that supports a focus on increased dry recycling, targeting organics, reducing waste to landfill, and combatting illegal dumping and littering.

The Strategy was prepared for NSROC by SLR Consulting Australia Pty Ltd in consultation with the waste management staff of the seven councils in the region. The willingness and capacity of the council staff to contribute to the development of the Strategy was instrumental in producing the Strategy in the available timeframe. Their efforts are greatly appreciated and NSROC will continue to build on this regional cooperation as the Regional Waste Strategy is implemented.

---

<sup>1</sup> Regional waste avoidance and resource recovery strategy, NSW EPA, Final Draft, March 2014

## 1.2 Strategy development for the NSROC region

The Northern Sydney Regional Waste Strategy encompasses a series of reports which are outlined below:

- This Directions Report presents the NSROC councils' vision for future sustainable waste management for the region between 2014 and 2021. It sets out the region's objectives, targets and projects to deliver this vision. It also identifies the priority waste management areas for the region and how progress will be monitored each year. It is designed to align with the NSROC Regional Priorities, the NSW 2021 Plan and the Draft *NSW Waste Avoidance and Resource Recovery Strategy 2013-21* (Draft WARR Strategy), including:
- The Regional Profile Report establishes the NSW waste management context for the Northern Sydney region and describes its geographic and demographic profile and the waste management services currently delivered by the councils. The report provides an overview of the NSROC councils' baseline position and was developed through a condensed stakeholder consultation process (see **Section 1.4**).
- The Project Options Assessment Report explains the process and the results of an appraisal of a range of regional waste management options developed in consultation with representatives from the Northern Sydney councils. It identifies the highest priority options to help achieve the NSROC region's waste management targets and objectives.
- The Action Plan presents a detailed list and timetable of actions necessary to implement the prioritised projects. The Action Plan is a living document which will be regularly reviewed to reflect progress made in achieving the vision and updated to ensure actions are based on the best available information. The will allow NSROC councils to adapt to any changes in the waste management environment and compete effectively for EPA funding available through the *Waste Less, Recycle More* initiative.

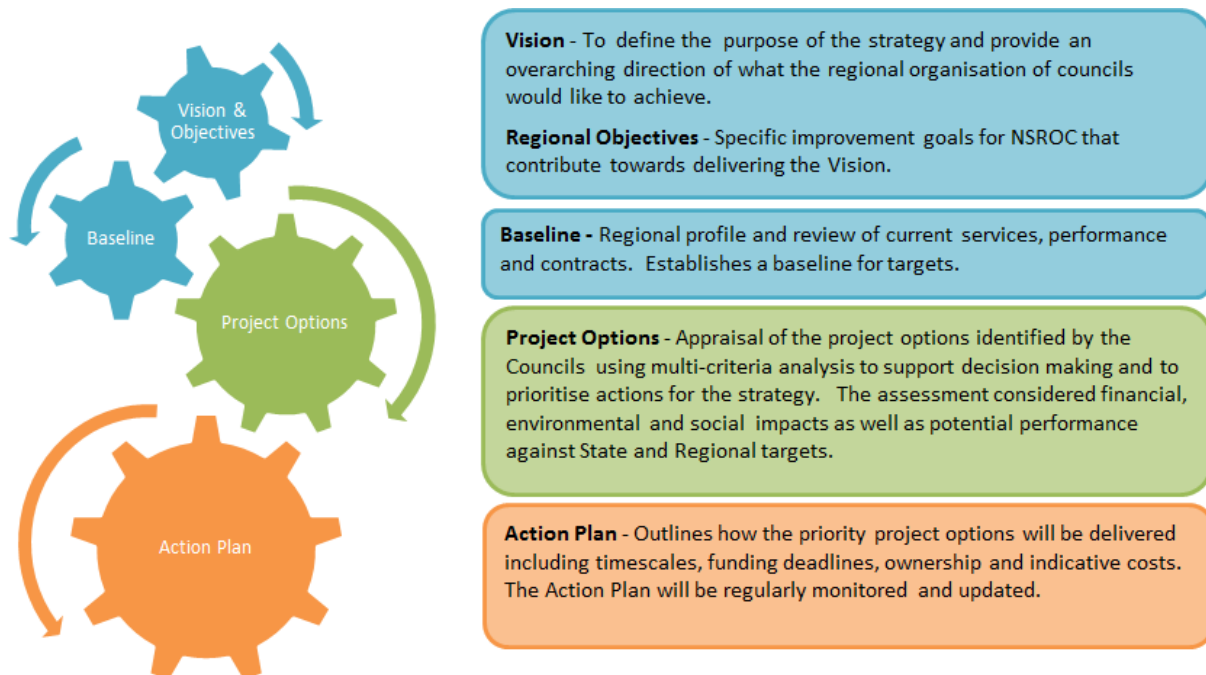
The Strategy is intended to assist the NSROC councils to develop a set of key actions to deliver the region's vision and objectives for MSW management. The conceptual basis of the Strategy is the response to the following questions:

- What are the key drivers for change?
- What are we doing today?
- Where do we want to get to?
- What is the Region's action plan for implementing change?
- How will we measure success?

A summary of the Strategy development process is represented in **Figure 1**.



**Figure 1 Key Steps for Delivery of the NSROC Regional Waste Strategy**



### 1.3 How the strategy fits with other regional plans

The NSW Government has developed NSW 2021 which identifies key achievement goals across all portfolio areas. Regional Action Plans are in place at the next level of the planning hierarchy. The Northern Sydney Regional Action Plan includes the NSW Government's commitment to support a regional waste strategy for northern Sydney to increase recycling, combat illegal dumping, minimise waste creation and tackle litter.

**Figure 2** shows how the Strategy fits within the context of the wider regional planning framework. The Strategy will also be informed by and contribute to each individual Council's Community Strategic Plan under the Integrated Planning and Reporting Framework for local government across NSW.

**Figure 2 Regional Planning Framework**

#### 1.4 Strategy consultation process

All seven councils in the region have developed their Community Strategic Plans (CSPs) based on extensive community consultation. The Plans are reviewed every four years after each Council election. Waste management is an integral component of the CSP and the four year Delivery Programs and one year Operational Plans which underpin it.

In addition, NSROC facilitates several cross-council professional officer groups (POGs) and advisory groups which meet on a regular basis to exchange information on relevant technical issues. The NSROC Waste Advisory Group (WAG) came together in 2013. Its members are waste managers from each member Council and it was established to develop a shared service approach to regional waste disposal and processing for residual (red bin) waste.

The consultation process for this Strategy involved workshops with members of the WAG and other waste staff from each Council, staff from NSROC and review by Council General Managers. Waste management staff are engaged in the day-to-day delivery of the Councils' waste services and have a very good understanding of their community's needs and aspirations as well as an appreciation of what improvements in waste services are realistic and achievable, given resources and other constraints.

Feedback was sought from each WAG member throughout the development of the Strategy to ensure the Strategy development process was informed by the knowledge and experience of the NSROC councils.

## 2 WHAT ARE THE KEY DRIVERS FOR CHANGE?

Waste management is influenced by a complex web of legislative, policy, market, demographic and behavioural factors. In developing the Strategy, these factors have been condensed and taken into account as a set of key drivers, identified and discussed in brief below:

- Changes in waste composition;
- Changes to population and housing mix;
- Key legislative and policy drivers;
- Waste Hierarchy; and
- Lack of waste infrastructure in the Northern Sydney region.

### 2.1 Changes in waste composition

The composition of MSW in urban areas such as the NSROC region changes continuously, albeit generally slowly, as a result of dynamic settlement patterns, new forms of product packaging, and changes in consumer demand, behaviour and attitudes.

Changes in waste composition affect the methods by which waste can be collected, transported and treated. Advances in design, manufacturing and delivery have resulted in the use of more complex products and packaging materials which impact on the local availability of opportunities for re-use, recycling and recovery. Specific examples of waste streams are provided in the Regional Profile report.

There is often a lag time between the release of significant volumes of new waste materials into the market and the ability of the recycling and recovery industry to respond with treatment technologies and suitable markets for these products. As a result, existing waste infrastructure can become obsolete prior to reaching its design life and new waste infrastructure is needed to meet new demands in advance of expected capital investment cycles.

Waste composition also changes in terms of the relative share of the total volume contributed by different waste materials. For example, the share of dry recyclables accounted for by newspapers is reducing as news is increasingly consumed through electronic devices.

Waste management practices under the Strategy must allow for the currently observed trends in waste composition change, and be sufficiently flexible to deal with emerging waste streams.





## 2.2 Population is growing and the housing mix is changing

The total population for the NSROC region is expected to grow to 700,000 people by 2031. Adding to this challenge is the fact that waste generation has historically grown faster than population, which is increasing at around 1.3% per annum.

In the absence of a major reduction in waste generation per capita or per household, increases in the population and concomitant number of dwellings in the NSROC region will have a direct impact on the demand for waste collection and disposal services, particularly in areas where the increased number of dwellings are coming from more conversion to multi-unit dwellings (MUDs).

The EPA has reported<sup>2</sup> that while single-unit dwelling (SUD) domestic households can divert more than 50% of domestic waste from landfill, the current recovery level in MUDs is often significantly less than 50%. An increasing proportion of MUDs compared to SUDs will result in additional challenges in achieving and maintaining high recycling rates due to reduced space for recycling and storage of waste and a lower volume of garden refuse.

Initiatives to press down on growth in waste generation per household must form part of the national and State-wide response to the region's vision for waste management in the future. Local councils alone or acting in groups are not resourced or enabled by legislation to tackle such major social changes.

## 2.3 Key legislative and policy drivers

The way in which NSW local councils manage waste is affected by a number of pieces of legislation and their associated regulation, including the:

- *Local Government Act 1993*;
- *Protection of the Environment Operations Act 1997 (includes provisions for NSW Waste and Environment Levy)*;
- *Protection of the Environment Administration Act 1991*
- *Waste Avoidance and Resource Recovery Act 2000*; and
- *Product Stewardship Act 2011*.

Alongside this legislation are policies impacting regional waste management, including:

- National Waste Policy: Less Waste, More Resources Implementation Plan;
- The Waste Avoidance and Resource Recovery Strategy;
- The Waste Less, Recycle More Initiative;
- The Energy from Waste (EfW) Policy Statement; and
- National Television and Computer Recycling Scheme.

The Strategy takes into account relevant National and State legislation, policies, and targets in developing waste management options and long-term strategies. While Local Government will maintain its frontline delivery role, the Strategy's success will rely in large part on supporting policies and funded programs from other levels of government to implement the improved practices developed in the Strategy.

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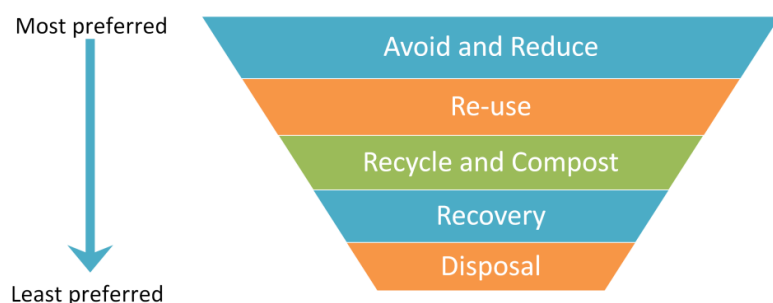
<sup>2</sup> Better Practice Guide for Waste Management in Multi-Unit Dwellings, Department of Environment and Climate Change (now NSW EPA), June 2008

## 2.4 Waste Hierarchy

The Waste Hierarchy is an internationally recognised guideline for prioritising the management of waste to deliver the best overall environmental option. It is generally accepted as the basis for the development of best practice waste management policy in Australia. NSROC councils have all adopted the Waste Hierarchy as the underlying conceptual framework for their waste management practices.

The benefits of applying the Waste Hierarchy are asserted to include: prevention or reduction of greenhouse gas emissions, reduction of pollutants released into the environment, reduced energy consumption, resource conservation and job creation. The five key steps in the hierarchy are shown below.

**Figure 3 Waste Hierarchy**



Source: *Environmental Protection Act 1970*

Further details of the Waste Hierarchy are provided in the Regional Profile report.

## 2.5 Lack of waste infrastructure for the northern Sydney region

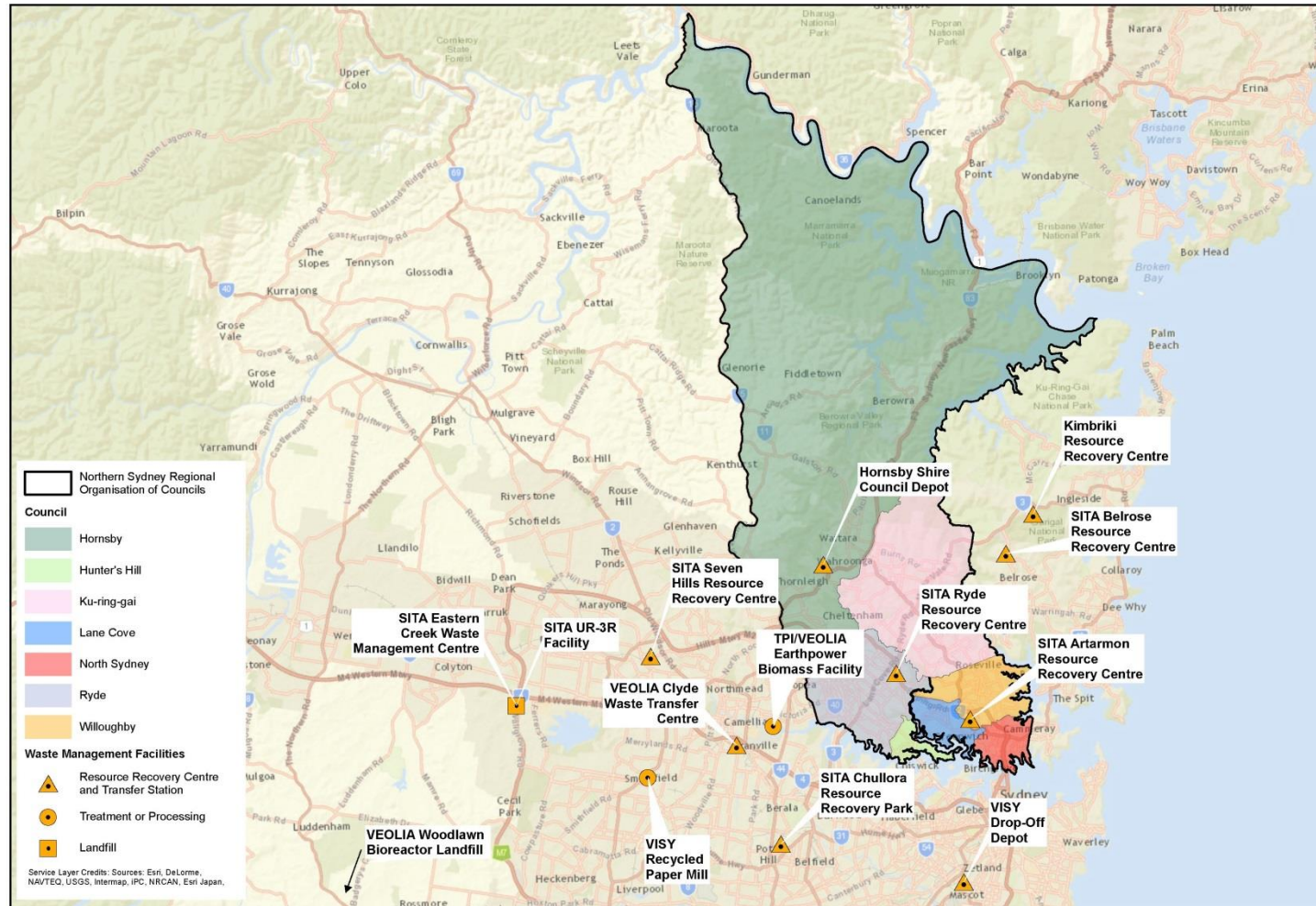
Constrained capacity for the management of residual waste has been highlighted in the Draft WARR Strategy as a key issue, due to the diminishing supply of approved landfill capacity in the Sydney Metropolitan Area and the low likelihood of new or expanded landfills being approved. In order to address this capacity shortfall, the NSW Government's Draft WARR Strategy identifies the need for increased recycling and recovery of waste to meet growing demands.

The majority of the NSROC councils do not have ownership or control over waste sites in their LGA and those that do, do not own, manage or control waste transfer, processing or disposal sites for MSW (refer to **Figure 4**). Following the sale of the State-owned waste business WSN Environmental Solutions (WSN) in 2011, there is as a consequence, a complete dependence on privately-owned waste service contractors.

This reality has informed the Strategy's directions and it is expected that the projects under the Strategy will support increased recycling achievements.

However, the Strategy cannot solve the fundamental challenge of inadequate waste infrastructure for northern Sydney. Advocating for action by other players to make decisions that result in change to this situation will continue to be a policy advocacy position of NSROC and its member councils.

Figure 4 Existing Municipal Waste Transfer and Treatment Facilities Utilised by the Region's Contractors



### 3 WHAT ARE WE DOING TODAY?

#### 3.1 Current services

The seven NSROC councils each offer their residents kerbside collection services for the following waste streams:

- residual waste (garbage);
- dry recyclables
- garden organics (as an additional charge in some LGAs); and
- bulky waste (as a clean-up service).

All NSROC councils have employed the Australian Standard colour coded bin lid system (i.e. red lid for residual waste, yellow lid for co-mingled recycling, blue lid for paper/cardboard recycling, and green lid for garden organics).

All NSROC Councils contract private sector companies for the core residential waste collection and disposal services. Council waste management staff are responsible for setting policies, managing certain in-house services and assuring performance under contracts for residential services.



The exact configuration of the waste and recycling services offered in each LGA is influenced by a number of factors, many of which also serve to distinguish them from the other councils in the Sydney region. Some notable differences include:





























- The proportion of MUDs and SUDs in each LGA (for example, Hornsby, Hunter's Hill and Lane Cove have less than 35% MUDs as a proportion of total residences compared to North Sydney with 70% MUDs); and
- The wide range in population density (for example, Hornsby has 357 residents per square kilometre whereas North Sydney has nearly 6,500 residents per square kilometre).

These differences mean that some residents in the region with larger properties have a higher demand for garden waste collections, while residents living in MUDs have a much lower requirement for green waste collection but a higher demand for bulky waste collection due to restrictions on waste storage space and the propensity for increased turnover in occupancy.



An essential element of this Strategy is to continue to improve and expand upon current waste minimisation and re-use initiatives. Across the NSROC region there are a number of initiatives in which NSROC councils are supporting participants or the responsible providers. These are summarised in **Table 1**.

**Table 1 Council Waste Minimisation Initiatives**

Initiatives	Provider/s	Description
National Television and Computer Recycling Scheme		Free drop-off site organised by councils (typically 1 day per year) for residents for up to 15 items including televisions, computers, printers and scanners.
Household Chemical CleanOut		Free drop-off site organised by councils (typically 1 day per year) for residents for hazardous household wastes.
The Compost Revolution		Online educational resource. Councils offer subsidised bins to the community and organise workshops and information sessions on composting and worm-farming.
Love Food, Hate Waste	  	The Food Lovers' Republic initiative aims to raise awareness about the impact of food waste in NSW and reduce how much 'good' food we waste.
Recyclable Drop-Off (Council buildings)	 	Drop-off of domestic recyclable items such as mobile phones, fluorescent light globes, printer toners and household batteries.
Public Place and Events Waste Management		Bins provided in public places such as parks and bus stops, and wastes management for local events.
Christmas Tree Collections		Free Christmas tree collections offered in January.
Chipping and Mulching Services		Mobile (kerbside) and/or site-based service provided for residents.
Fridge Buyback	 	Rebate provided to residences for a working second fridge.
MobileMuster	 	Product Stewardship Program supported by local councils aimed at keeping mobiles out of landfill.
Garage Sale Days		Garage sale events advertised for the region to encourage re-use of unwanted household items.
Clothing Bins	 	Bins provided by charities for old/ unwanted clothing drop-off.
Medical Waste Disposal	 	Councils support pharmacies in the local area providing facilities for needle and sharps disposal.
Public Facility Tours	 	Tours of waste management facility sites offered to the public on a regular basis.
Commercial Waste Services		Including residual, paper & cardboard, mixed recycling and garden waste
Better Business Partnership	 	Project designed to improve the sustainability of businesses on Sydney's North Shore including cost saving benefits through reduced energy and water bills and improved environmental performance.
Anti-litter and illegal dumping programs	 	Educational campaigns supported and operated by Councils, involving research, community engagement and development of marketing materials. Also, monitoring and investigation into illegal dumping and problem waste areas.
Recycling Near You		Website containing information about the recycling and waste services offered by Councils and local drop-off options.

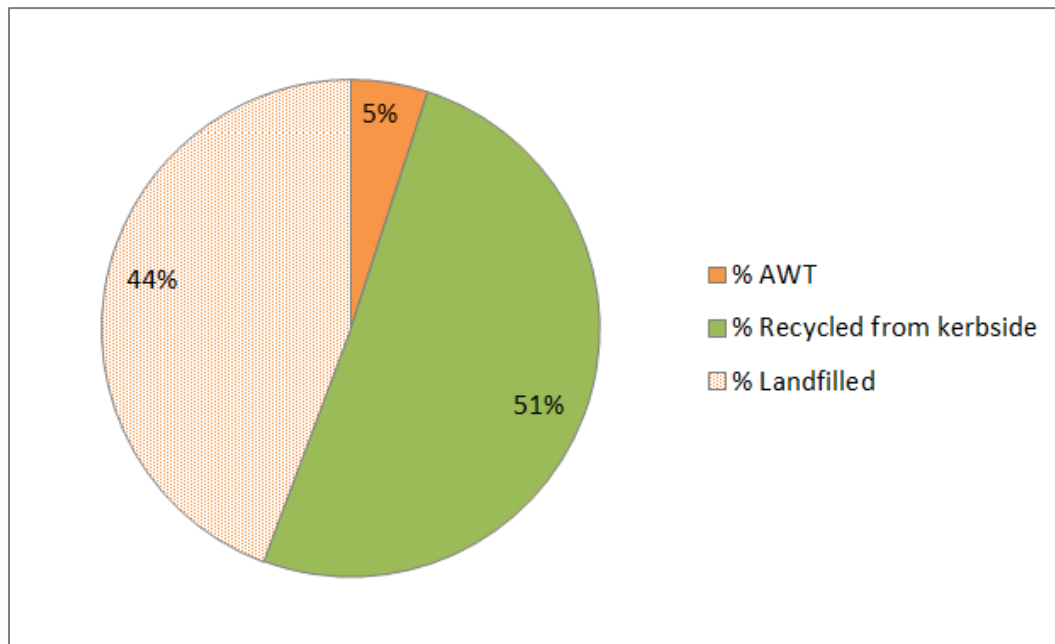
**Table Key:**

	Federal Government		Regional/ Council Partnership
	State Government		Private Industry
	Local Government		Not-for-Profit Organisation

### 3.2 Current waste recovery performance

More than 50% of all household waste produced in the NSROC region is recycled from waste separated by residents at the kerbside. An additional 5% of waste is recovered for recycling at an alternative waste treatment (AWT) facility, which means that approximately 56% of waste generated within the NSROC region is currently diverted from landfill. This means approximately 44% of total household waste is disposed of at a landfill facility (refer to **Figure 5**).

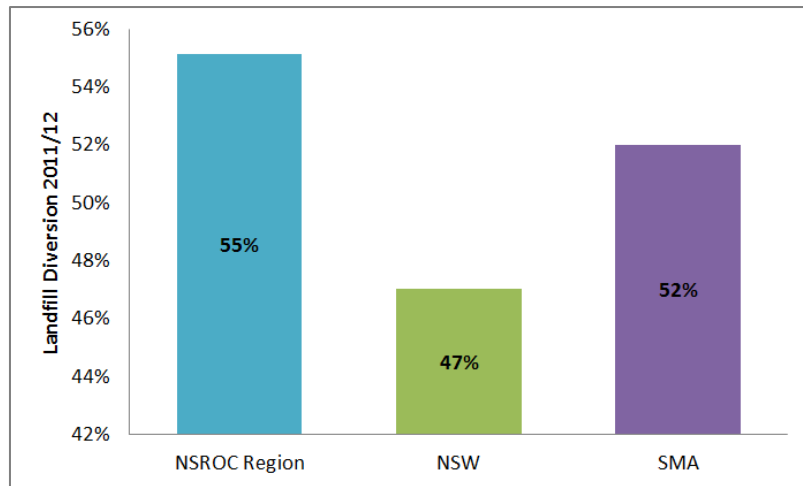
**Figure 5 Current Destinations for the Region’s Waste**



The landfill diversion performance of the NSROC councils in 2011-12 was above the average for the SMA and NSW, as shown in **Figure 6**.



Figure 6 Current Landfill Diversion Performance Comparison



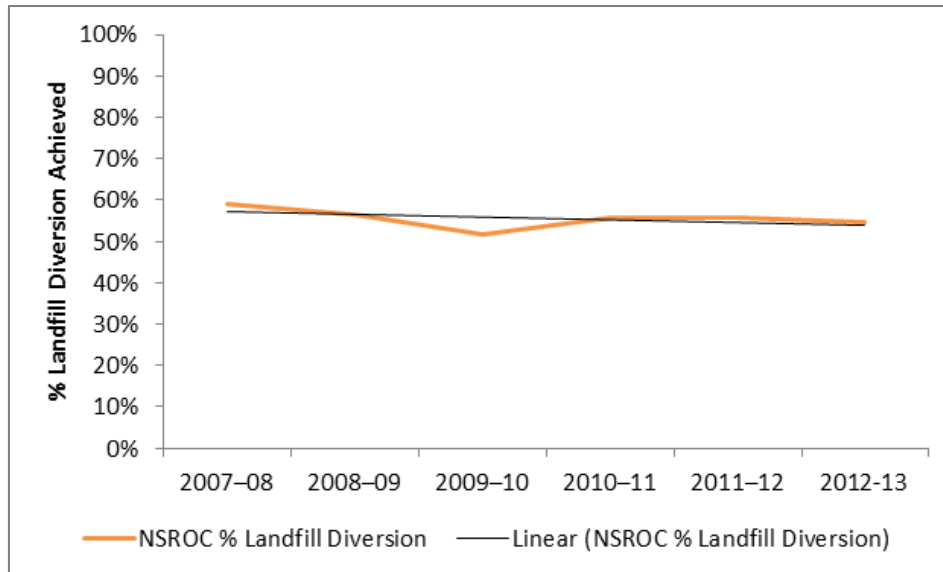
Despite the good performance of the region, more work by all levels of Government and the local community is required over the coming years to encourage greater landfill diversion and to meet the State target of 70% recycling of MSW.

Trends revealed in data<sup>3</sup> compiled for the NSROC region from the last five years suggests that further increases in recycling by kerbside collections alone are unlikely to result in major uplift in landfill diversion. While the total diversion figure has been consistently higher than 50% the trend line suggests that this performance has plateaued and is decreasing very slightly.

This means additional options for increasing waste reduction, re-using, recycling and recovering waste currently going to landfill need to be investigated and implemented. **Figure 7** below shows the landfill diversion performance of the NSROC councils since 2007-08.

<sup>3</sup> NSW EPA Regional Waste Data

**Figure 7 NSROC Historical Landfill Diversion Performance**



### 3.3 Landfill and alternative waste management treatment capacity

Landfill is the current method of disposal for more than 40% of the region's waste. A study published by NSW Planning in 2009<sup>4</sup> predicted that Sydney's landfills would reach capacity by 2016 based on waste forecast assumptions.

Whether additional capacity becomes available or not, reliance on landfill to manage residual wastes is contrary to the intent of the *Waste Avoidance and Resource Recovery Act 2001* and the philosophy of the Waste Hierarchy. As such, NSROC councils support the view that landfill should not be seen as a long-term sustainable solution for the management of residual wastes that could be otherwise treated or processed for beneficial use, including the production of energy.

Available capacity for the management of residual waste has been highlighted in the Draft WARR Strategy 2013-21 as a key issue due to the diminishing supply of approved landfill capacity in the Sydney Metropolitan Area. In order to address this capacity shortfall, NSROC councils recognise that critical to meeting this demand is the availability of waste treatment capacity.



<sup>4</sup> Public Review Landfill Capacity and Demand, Wright Corporate Strategy Pty Ltd for State Government of New South Wales, March 2009



In 2011, the Office of Environment and Heritage (OEH) produced a Resource Recovery Infrastructure Needs Analysis report<sup>5</sup>. The report states that existing waste treatment capacity (separated organics and mixed waste processing facilities plus kerbside recyclables material recovery facilities) is in the region of 400,000 tonnes per annum (tpa) (based on 2011 data) and identifies the need for a further 300,000 tpa by 2017 and increasing to 500,000 tpa by 2036. The report recommends three new waste facilities for the Sydney area.

The recently introduced *Waste Less, Recycle More* initiative is offering new incentives and the landfill levy continues as a means to stimulate the waste management market to develop new waste infrastructure, the risks (and significant costs) associated with obtaining sites and planning approvals for new waste facilities has proven to be a significant blockage to private-sector investment in waste management facilities for Sydney.

### 3.4 Regional collaboration for better waste management

In March 2012, NSROC released the NSROC Regional Priorities. The document outlines seven priority actions for the region. Priority six is focused on developing a sustainable way to manage waste which is also consistent with the Draft WARR Strategy. In May of that year NSROC commenced a three-stage strategic process for a regional waste project. The three stages are:

- 1 Identify the procurement goal and participating councils;
- 2 Agree on the procurement strategy; and
- 3 Approach the market.

It was agreed to pursue the regional procurement of processing and disposal of residual waste. That process has involved considerable effort and expense by NSROC and its member councils and is now nearing completion. It is anticipated that a tender involving five NSROC councils will be called in mid-2014. The tender has been framed to assist the region to meet the recycling target identified in the Draft WARR Strategy. The regional contract and the governance arrangements that underpin it are integral components of the region's strategic waste management.



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<sup>5</sup> GHD, Resource Recovery Infrastructure Needs Analysis, Background Report, November 2011

## 4 WHERE DO WE WANT TO GET TO?

### 4.1 Strategy vision and objectives

The purpose of this Strategy is to prepare a plan for the NSROC region to work together to manage its MSW over the period 2014 to 2022. In developing the Strategy the NSROC councils used their comprehensive understanding of the existing challenges and opportunities in the region to inform the future vision and objectives for waste management in the region.

The vision for this Strategy was developed to capture the overarching aspiration shared by the councils.

**NSROC VISION:** *A community actively engaged in waste reduction, recycling and resource recovery, to protect the environment and enhance community well-being.*

This vision will be given life by pursuing regional objectives to provide specific improvement goals and assist with identifying those projects suited to the region. The regional objectives developed by the NSROC councils for realisation of the vision are provided in **Table 4**.



**Table 2 NSROC Regional Waste Strategy Objectives**

Concept	Regional Objective
<b>Service Quality</b>	To continuously improve waste management services for the community.
<b>Responsibility</b>	To better integrate waste management into council policies, plans and processes. To contribute to an improved policy framework with appropriate allocation of roles and responsibilities consistent with statutory powers.
<b>Amenity and Public Health</b>	To improve public amenity and maintain public health and safety through effective waste management.
<b>Community Engagement</b>	To increase the regional community's understanding of and participation in waste reduction, recycling and resource recovery.
<b>Innovation and Sustainability</b>	To increase access to improved waste management services and facilities for the region.
<b>Value for money</b>	To increase the cost effectiveness of waste management services.

A detailed description of the elements addressed by each of these objectives as discussed and agreed by the WAG members is provided in the following sections.

#### 4.1.1 Service quality

The quality of services provided by councils is fundamental to ensuring the satisfaction of the local community. In delivering their waste management services, councils will manage both the needs and expectations of the local residents and the demands for new and better service arising from the legislative and policy aspirations of other jurisdictions.

Councils are committed to enhancing services to increase performance against the high standards they set themselves. Meeting this objective requires that waste management services are part of a continuous improvement approach to:

- sustainability;
- cost effectiveness;
- compliance with applicable regulations and industry best management practices;
- consistent service standards within each LGA and, ideally, throughout the region.



#### 4.1.2 Responsibility

'Responsibility' refers to the provision of a comprehensive waste management service that meets the needs of the community which appropriately reflects both State and local government roles and responsibilities. The level of service is dependent on the resources available to councils and, at the local level, requires integration of waste management policies into a coherent, whole-of-council approach.

However, the region's councils do not operate independently of the State government framework and rely on the State Government to address legislative, urban planning and strategic issues affecting waste management.

Fulfilment of this objective will require:

- acceptance by State level agencies of their overarching role in providing an effective legislative and policy framework within which local government can deliver on its waste management objectives;
- clear lines of responsibility within councils for waste management outcomes and recognition of waste management goals in land use and strategic planning;
- adoption of clear and concise minimum waste management standards for new construction and site re-use development state-wide strategic planning for waste management integrated across planning, environmental, health and transport portfolios; and

- the provision of both State and local government support and funding for long-term maintenance of new sustainable waste management programs.

#### 4.1.3 Amenity and public health

The protection of public health & safety and the environment will underpin all tasks undertaken in implementing the Strategy. Meeting the objective requires employing waste management practices which reduce (or eliminate) adverse risks to public health & safety and the environment.

Specifically:

- amenity objectives include the maintenance of attractive streets and buildings and access to green space;
- protection of public health and safety will include prevention of exposure to harmful materials and reduction of the risks of water pollution; and
- minimising increased levels of noise, dust, and litter.



#### 4.1.4 Community engagement

Public participation is at the heart of sustainable waste management and underpins both regional objectives and State objectives. Successful community engagement includes targeted public education campaigns (such as surveys, workshops and advisory committees) as well as on-going consultation with stakeholders and the local community as new challenges emerge and to keep residents informed and motivated to maintain new behaviours that support sustainable waste management.

A wide range of communication tools are available to facilitate community participation and can include letter mail-outs and flyers to residences and businesses, public space advertising, online content and mobile phone applications.

Local governments acting individually or as a regional group can foster public awareness of new services and encourage take-up of new approaches to waste separation and collection through its existing channels of communication with residents and its role as a trusted provider of waste services.

While local government can reinforce messages delivered through mass media, social media and other levels of government, large scale behavioural change must be part of a more sophisticated and city-wide communications strategy.

Meeting this objective will require that governments at NSW and local level adopt programs that are part of long-term, consistent communication strategies aligned between levels of government and providing on-going education to reinforce behaviour change in new generations of consumers.



#### 4.1.5 Innovation and sustainability

In delivering waste management services, local councils will strive to maintain an awareness and understanding of industry and policy changes and to keep abreast of innovative and sustainable waste management practices and/or technologies offering potential social, environmental and/or economic benefits to their local community.

This objective can be met through:

- on-going engagement and collaboration with the EPA and local waste industry and business groups such as the Waste Management Association of Australia (WMAA);
- information and knowledge sharing between staff from the region's councils and with staff from neighbouring regions;
- supporting the on-going professional education of waste officers through such measures as attendance at waste management industry conferences and workshops, access to current research and case studies and subscriptions to annual waste treatment technology reviews; and

#### 4.1.6 Value for money

The community, through the domestic waste charge included in council rates, provides funding for councils to procure appropriate waste management services. Councils seek practical, reliable options with good environmental outcomes while at the same time assessing opportunities for cost efficiencies associated with providing different and innovative waste and recycling services to the community.

Measures that will be part of work on this objective may include:

- seeking appropriate State Government direction and support for the provision of waste infrastructure servicing Sydney;
- benchmarking of councils' waste management services;
- identifying and monitoring waste management service key performance indicators (KPIs);
- robust contract management to ensure that adequate resources are provided by waste management contractors to deliver outsourced services
- undertaking periodic and regular audits of waste management services;
- maintaining a summation of findings and recommendations; and
- implementing and monitoring a plan of action.

## 4.2 Regional targets

Regional targets are informed by the State-wide Draft NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2013-21, which sets a number of objectives and targets, as follows:

- Avoid and reduce waste generation (per capita);
- Increase recycling (70% MSW by 2021-22);
- Divert more waste from landfill (75% by 2021-22);
- Manage problem wastes better (establish or upgrade 86 drop-off facilities for managing household problem wastes);
- Reduce litter (reduce by 40% compared with 2011-12 rates); and
- Reduce incidences of large-scale illegal dumping (by 30% by 2016 compared with 2010-11 rates).

The State targets aim to drive the efficient use of resources, reduce the environmental impact of waste and improve the well-being of the NSW environment, community and economy. In recognition of the NSW State targets, the Strategy has adopted a number of regional targets which will contribute to the State objectives while also reflecting the existing circumstances and challenges of the region. The regional targets were developed during workshops with the NSROC councils and have been used to identify the key areas of focus for the Strategy's Action Plan. The targets are presented below in **Table 3**.

**Table 3 NSROC Regional Waste Strategy Targets**

Regional Target	Relevance to WARR Themes
70% landfill diversion by 2021-22 (based on regional 2010-11 data)	✓ Increase recycling
	✓ Divert more waste from landfill
1% per capita reduction in waste generation by 2021-22 (based on regional 2013-14 data)	✓ Avoid and reduce waste generation
Access to waste drop-off centre for all NSROC LGA residents on the basis of 1 per 50,000 households by 2021-22 OR within 11 km <sup>1</sup> of home	✓ Divert more waste from landfill
	✓ Manage problem wastes better
	✓ Reduce illegal dumping
20% reduction in reported illegal dumping incidents by 2021-22 (based on regional 2012-13 data) <sup>2</sup>	✓ Reduce illegal dumping
	✓ Manage problem wastes better
Increased promotion of active community participation in litter control through targeted programs	✓ Litter

Table notes:

1. Distance inferred from Program Grant guidelines 2013.
2. Measurement of WARR target only includes incidents where more than 200m<sup>3</sup> of illegal dumped waste is detected.

The successful implementation of the Strategy through the Action Plan will be measured against the regional objectives through monitoring of the regional projects and targets. An on-going assessment of these Key Performance Indicators (KPIs) will inform modifications to existing services and future proposals for new waste services and infrastructure.

During the development of the Strategy NSROC councils' waste management operations and data were analysed to ensure that the regional targets and objectives are achievable and realistic. A summary of this analysis is presented in **Table 4**.

Achievement of the targets will be heavily influenced by external economic and social impacts such as the commercial sector's response to increased service demand and success in influencing behaviour of local residents and businesses. In addition, changes to legislation and State waste management policies and objectives will impact local council waste management services and policies. Project specific targets will be determined as appropriate data is collected and analysed. In response to these external influences the tools for achieving the Strategy targets and objectives the Action Plan will need to incorporate some flexibility.

**Table 4 Regional Targets**

Regional Target	Basis of target	Achieving Regional Targets
<b>70% landfill diversion by 2021-22 (based on regional 2010-11 data)</b>	<p>NSROC councils are currently achieving greater than 50% landfill diversion. Of the remaining waste currently going to landfill, compositional data suggests that 22% can be recycled through better segregation of dry recyclables under existing collection services.</p> <p>The waste which cannot be recycled through existing services (up to 40% of the red bin) can be managed through mechanical biological treatment (MBT) process similar to composting to produce a soil improver for land application and rehabilitation. The regional waste tender for disposal and recovery will set this goal.</p> <p>A further 16,000 tonnes of clean-up waste is currently managed in the region. Much of this waste stream can be re-used or recycled.</p> <p>Problem waste services could be increased, as demand is strong.</p>	<ul style="list-style-type: none"> <li>• Joint residual waste treatment contract</li> <li>• Regional drop-off centres for managing problem wastes</li> <li>• Regional education programs to improve the performance of existing recycling schemes</li> <li>• Increased recycling from clean up waste</li> </ul>
<b>1% per capita reduction in waste generation by 2021-22 (based on regional 2013-14 data)</b>	<p>Achieving a per capita waste reduction target relies predominantly on external factors such as:</p> <ul style="list-style-type: none"> <li>• changes in individual behaviour in respect of waste management ;</li> <li>• economic conditions (e.g. reduction in consumer spending will reduce waste generation); and</li> <li>• changes in technology and manufacturing (e.g. changes to packaging and increased use of electronic equipment can change the overall composition and quantity of waste generated).</li> </ul> <p>Based on the future waste growth forecasts outlined in the Regional Profile report the waste generation per person in 2021-22 will be 509 kilograms.</p> <p>To achieve the 1% reduction in waste generation per person would require a reduction of 5.09 kilograms per year or 100 grams per week.</p>	<ul style="list-style-type: none"> <li>• Regional education programs for minimising waste</li> </ul>
<b>20% reduction in reported illegal dumping incidents by 2021-22 (based on regional 2012-13 data)</b>	<p>Baseline data for regional illegal dumping incidents is not available. At a Strategy workshop one of the councils reported a reduction in illegal dumping incidents of more than 20% in one year following a targeted illegal dumping campaign.</p>	<ul style="list-style-type: none"> <li>• Regional waste management for MUDs education program and planning policy</li> <li>• Regional illegal dumping program</li> </ul>
<b>Increased promotion of active community participation in litter control through targeted programs</b>	<p>Baseline data for litter is not available at the regional level. NSROC councils manage litter collection and collaborate on litter management issues which can be built upon under the Strategy.</p>	<ul style="list-style-type: none"> <li>• Regional education and behaviour change programs complementing state wide litter programs.</li> </ul>

## 5 WHAT IS THE REGION'S ACTION PLAN FOR IMPLEMENTING CHANGE?

The development of the Strategy has included review of existing waste services across the NSROC region to identify opportunities for possible collaboration. In consultation with each of the councils, a number of options were identified and assessed against a range of indicators, including:

- Maximising regional access to new services or programs;
- Alignment with regional targets and objectives;
- Alignment with State targets and objectives;
- Prioritising improved management of harmful and problem waste streams;
- Maximising landfill diversion; and
- Maximising value for money.

The top five performing options assessed using the above indicators have resulted in identifying five key Focus Areas for the Action Plan. The five key Focus Areas are:

- Managing Problem Wastes;
- Illegal Dumping Program;
- Improved Waste Management in MUDs;
- Community Education Programs; and
- Joint Waste Management Contracts.

In each Focus Area, the top performing option has become the priority project and typically consists of a number of individual actions. Further information and research may be required to progress the projects.

The Focus Areas are summarised in pages 29 to 33. Included in this summary is the relevance of each Focus Area to State and regional objectives, an overview of project aims, associated actions, and details of how each project will be monitored and evaluated (e.g. through identification of suitable KPIs).



## 6 HOW WILL WE MEASURE SUCCESS?

A detailed Action Plan has been produced as part of this Strategy. The Action Plan for the Strategy includes a number of regular reporting requirements which can be used to track the overall progress of the Strategy against timelines and to evaluate whether key targets are being met. **Table 5** below provides details of each Strategy document and its proposed reporting requirements.

**Table 5 Reporting Schedule**

Waste Strategy Document	Reporting Schedule
Regional Profile Report (reporting tables)	Annual submission to EPA
Project Options Assessment Report (assessment assumptions and gap analysis to inform Business Case Submissions)	Update gap analysis and options assessment assumptions to enable compliance with Waste Less Recycle More Funding Stream Application
Directions Report	Every 5 years (except where changes in policy, legislation or regulatory framework requires revisions to the document to maintain relevance)
Action Plan (whole of document)	Annual submission to EPA (from mid-2015) and quarterly submission to councils.

During the options assessment process each project was assessed against the following criteria:

- Number of NSROC councils for which the project or initiative is appropriate;
- The anticipated percentage of waste minimised, recycled or diverted from landfill;
- The anticipated cost per tonne of waste managed, minimised, recycled or diverted from landfill;
- Deliverability of objectives and targets within specified timescales;
- Alignment with State targets and objectives;
- Contribution to Regional Strategy objectives;
- Percentage of the region (based on population) anticipated to benefit from the project initiative; and
- Percentage of target waste streams which include priority or problem wastes anticipated to be managed through the project initiative.

The criteria listed above can be used to develop project specific KPIs against which the progress and ultimately the success of the project can be measured. Where the baseline data is not considered to be reliable, part of the Action Plan is to review and update the baseline so that improvements can be measured.

The Action Plan will also enable progress of the Strategy in contributing to both the State and regional targets to be monitored on an annual basis.

## FOCUS AREA 1:

# Managing Problem Wastes

### Project: Regional Drop-Off Centres

**Aim:** To provide accessible and affordable problem waste disposal options to the region.

Core problem wastes to be targeted by councils are:

- paints (oils and water based);
- motor oils;
- cooking, hydraulic and transmission oils;
- household single use batteries;
- car batteries (lead acid);
- fluorescent and compact fluorescent lighting (mercury containing lamps);
- gas cylinders (including fire extinguishers); and
- smoke detectors.



Additional problem wastes include e-waste, household chemicals, mattresses, tyres, and packaging wastes such as polystyrene.

Access to suitable recycling drop-off centres will provide residents with the opportunity to recycle and dispose of difficult waste streams at their convenience.

Actions	
	Establish baseline data on problem wastes in region (collected via clean-up and/or drop-off events)
	Investigate potential community recycling centre locations for the region and seek council support
	Consult with relevant stakeholders such as potential business partners and social enterprises
	Develop business case and apply for <i>Waste Less, Recycle More</i> funding
Alignment with Regional Objectives	
✓	Service quality
✓	Amenity and public health
✓	Community engagement
✓	Innovation and sustainability
✓	Value for money
Alignment with Regional Targets and WARR Themes	
✓	70% landfill diversion by 2021-22 (based on regional 2010-11 data)
✓	Access to waste drop-off centre for all NSROC LGA residents on the basis of 1 per 50,000 households by 2021-22 OR within 11 km of home
✓	20% reduction in reported illegal dumping incidences by 2021-22 (based on regional 2012-13 data)

## FOCUS AREA 2:

# Illegal Dumping Program

### Project: Regional Illegal Dumping Program

**Aim: To develop and implement a regional illegal dumping program for the proactive prevention and management of illegally dumped wastes.**

Illegal dumping of waste is an on-going problem in NSW that presents unwanted health and safety, and amenity impacts on the community.

Illegally dumped wastes in the region often include:

- large domestic items such as mattresses, furniture, white goods and e-waste;
- construction and demolition waste including excavation waste and asbestos;
- garden organic material;
- chemicals and other hazardous waste; and



- abandoned vehicles, car parts and shopping trolleys.

Councils play a crucial role in managing and preventing illegal dumping. A regional program will help to ensure that illegally dumped wastes are managed and reported on in a consistent manner across the region.

Actions	
	Establish baseline on illegally dumped waste incidents
	Research and evaluate other regional dumping programs
	Apply best practice to developing a regional dumping program for northern Sydney
	Develop business case and apply for <i>Waste Less, Recycle More</i> funding for a NSROC solution
Alignment with Regional Objectives	
✓	Service quality
✓	Responsibility
✓	Amenity and public health
✓	Community engagement
Alignment with Regional Targets and WARR Themes	
✓	70% landfill diversion by 2021-22 (based on regional 2010-11 data)
✓	20% reduction in reported illegal dumping incidences by 2021-22 (based on regional 2012-13 data)

## FOCUS AREA 3:

# Improved Waste Management in Multi-Unit Dwellings

**Project: Improved waste management in MUDs**

**Aim: To manage waste generated in MUDs through regional planning policies, and to develop a supporting education program.**

Residential dumping of household goods and wastes around multi-unit dwellings is a growing problem in the region given increasing population densities.

Recycling rates are also impacted by the transient nature of the occupancy of MUDs and the smaller average household size.



The effective management of waste in MUDs relies on early consultation by developers with council planners and waste managers regarding specific requirements for waste management systems and collection methods and on shared goals between regulators within Councils.

Actions	
	Establish baseline data on waste management in MUDs
	Undertake research on best practice planning tools for integrating waste management into MUD development requirements
	Develop regional approaches to waste management planning for MUD developments
	Conduct workshops to identify pathways for improved planning and communications with strata managers
	Allocate resources and develop educational materials
Alignment with Regional Objectives	
✓	Service quality
✓	Responsibility
✓	Amenity and public health
✓	Community engagement
✓	Value for money
Alignment with Regional Targets and WARR Themes	
✓	70% landfill diversion by 2021-22 (based on regional 2010-11 data)
✓	1% per capita reduction in waste generation by 2021-22 (based on regional 2013-14 data)
✓	20% reduction in reported illegal dumping incidences by 2021-22 (based on regional 2012-13 data)
✓	Increased promotion of active community participation in litter control through targeted programs



## FOCUS AREA 4:

# Community Education Programs

**Project:** Regional community education programs

**Aim:** To develop a regional education campaign that provides consistent and relevant messaging to the public and promotes active community participation and behaviour change in waste management.

Education is essential to raising awareness of the importance of social responsibility and changing behaviours in a community.

Targeted waste management campaigns help to educate the community on waste minimisation, litter prevention and environmental sustainability and are necessary to achieve greater participation in recycling and changing behaviours across the region.



Joint educational programs ensure the efficient use of resources by Councils across the region.

Actions	
	Establish information on problem areas to identify target waste streams such as litter and hazardous wastes
	Evaluate best practice models
	Develop business case and apply for <i>Waste Less, Recycle More</i> funding
	Allocate resources and develop educational materials
Alignment with Regional Objectives	
✓	Service quality
✓	Amenity and public health
✓	Community engagement
✓	Value for money
Alignment with Regional Targets and WARR Themes	
✓	70% landfill diversion by 2021-22 (based on regional 2010-11 data)
✓	20% reduction in reported illegal dumping incidences by 2021-22 (based on regional 2012-13 data)
✓	1% per capita reduction in waste generation by 2021-22 (based on regional 2013-14 data)
✓	Increased promotion of active community participation in litter control through targeted programs

## FOCUS AREA 5:

# Joint Waste Management Contracts

**Project: Regional waste processing and disposal contract**

**Aim: To achieve council participation in a regional tender for the processing and disposal of waste to stimulate development of increased recycling processing and residual treatment capacity for the region.**

The drivers for a regional approach to joint waste services procurement identified by the NSROC councils include:

- an opportunity for better waste outcomes such as increased recycling and diversion of waste from landfill;
- an opportunity to encourage innovation and influence commercial activity by providing sufficient volume and duration of supply to the market; and
- the uncertainty about landfill capacity and the security of longer term disposal arrangement/ options.



The NSROC councils are currently pursuing the regional procurement of processing and disposal of residual waste. A tender is anticipated to be called by mid-2014 and has been framed to assist the region meet with the recycling target for landfill diversion.

Actions	
	Establish delivery mechanism for managing the contract payment and reporting requirements for the regional disposal and processing and other shared waste management services.)
	Issue tender and execute contract for regional waste service for disposal and processing
	Evaluate actions and learnings for application to future contracts
	Identify further regional procurement opportunities and develop business case for councils
	Develop business case and apply for <i>Waste Less, Recycle More</i> funding
Alignment with Regional Objectives	
✓	Service quality
✓	Innovation and sustainability
✓	Value for money
Alignment with Regional Targets and WARR Themes	
✓	70% landfill diversion by 2021-22 (based on regional 2010-11 data)

### SUPPORTING DOCUMENTATION

- GHD, Resource Recovery Infrastructure Needs Analysis, Background Report, November 2011
- Maddocks, Northern Sydney Regional Organisation of Councils: Waste Project – Report on Governance Model Options, March 2013
- NSROC Regional Priorities – Key actions for Northern Sydney’s Future, March 2012
- NSROC State of the Environment Report 2011-2012
- NSW Environment Protection Authority, Regional waste avoidance and resource recovery strategy guidance, May 2014
- Wright Corporate Strategy Pty Ltd, Northern Sydney Regional Organisation of Councils, Waste Forum Briefing Paper, July 2011

Also:

- Member Council Waste Strategy Documents (as available)
- Member Council Community Strategic Plans
- EPA Data Tables (5-Year Historical 2007-08 – 2011-12 and 2011-12) for Northern Sydney Councils



**NORTHERN SYDNEY**  
**REGIONAL WASTE STRATEGY 2014 – 2021**  
**Regional Profile Report**

**AUGUST 2014**



# NORTHERN SYDNEY

## REGIONAL WASTE STRATEGY 2014 - 2021

### Regional Profile Report

Prepared for and in consultation with the Northern Sydney Regional Organisation of Councils and its member Councils by:

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This Strategy has been supported by the NSW Environment Protection Authority (EPA) with funding from the waste levy.

This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with the Client. Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Northern Sydney Regional Organisation of Councils, the member councils and the New South Wales Environment Protection Authority.

No warranties or guarantees are expressed or should be inferred by any third parties.

This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

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## 1 INTRODUCTION

The Northern Sydney Regional Organisation of Councils (NSROC) is comprised of seven councils in the northern part of Sydney. The seven member councils are Hornsby, Hunter's Hill, Ku-ring-gai, Lane Cove, North Sydney, Ryde and Willoughby.

In March 2012, NSROC released the NSROC Regional Priorities. The document outlines seven priority actions for the region. Priority six is focused on developing a sustainable way to manage waste which is also consistent with the Draft *NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2013-2021*.

The creation of regional waste strategies is being supported by the NSW Environment Protection Agency (EPA) with funding from the waste levy, to deliver regional initiatives addressing common priorities and shared services amongst groups of councils, with the goal of improving efficiency and performance over time.

This report provides an overview of waste management in NSW and a regional waste profile which includes a review of current services, performance and contractual commitments for waste in Northern Sydney. The information gathered as part of this report will help to inform decisions regarding future targets and identify options for achieving the targets. This report also provides the basis for the assumptions used in the development of the Region's waste strategy.

### 1.1 Report structure

To ensure consistency and allow comparison with other regions, the structure of this report follows the recommended EPA's 'Regional waste avoidance and resource recovery strategy guidance' (May 2014) document (the Guidance document)<sup>1</sup>.

The information presented in this report first considers the NSW State targets and drivers for context and then presents the Northern Sydney regional performance. The overall structure of the report is as follows:

- **Section 2:** NSW State waste targets;
- **Section 3:** Drivers for change in NSW;
- **Section 4:** Northern Sydney Regional Profile including;
  - Geographic, population and demographic information including forecasts for population growth;
  - Regional waste and resource recovery collection and processing systems;
  - Regional waste and resource recovery collection, processing and disposal contracts;
  - Regional historical waste tonnage and composition data;
  - Existing regional programs and initiatives;
  - Key assumptions and references used for preparation of Regional Profile;
- **Section 5:** Conclusion.

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<sup>1</sup> Regional waste avoidance and resource recovery strategy, NSW EPA, Final Draft, March 2014



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## 2 NSW STATE WASTE TARGETS

The State-wide Draft NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2013-21 sets a number of objectives and targets, as follows:

- Avoid and reduce waste generation (per capita);
- Increase recycling (70% MSW by 2021-22);
- Divert more waste from landfill (75% by 2021-22);
- Manage problem wastes better (establish or upgrade 86 drop-off facilities for managing household problem wastes);
- Reduce litter (reduce by 40% compared with 2011-12 rates by 2016-17); and
- Reduce incidences of large-scale illegal dumping (by 30% by 2016 compared with 2010-11 rates).

The State targets aim to drive the efficient use of resources, reduce the environmental impact of waste and improve the well-being of the NSW environment, community and economy.

The State targets have been informed and driven by the Waste Hierarchy which outlines, in order of preference, the approaches for efficient resource use. The steps in the Waste Hierarchy are commonly presented as follows (in order of preference):

- Waste minimisation and re-use;
- Recycling and composting;
- Recovery; and
- Disposal.

A brief discussion of each step is provided in **Section 3.4**.

### 3 DRIVERS FOR CHANGE IN NSW

The way in which waste is managed is changing. There are a number of different drivers influencing these changes. The most important drivers considered by the NSROC councils in the development of the Regional Waste Strategy are discussed below.

#### 3.1 Waste composition is changing

The composition of MSW in urban areas such as the NSROC region changes continuously, albeit generally slowly, as a result of dynamic settlement patterns, new forms of product packaging, and changes in consumer demand, behaviour and attitudes.

Changes in waste composition affect the methods by which waste can be collected, transported and treated. Advances in design, manufacturing and delivery have resulted in the use of more complex products and packaging materials which can impact on the local availability of opportunities for re-use, recycling and recovery.

Examples include:

- **E-waste** - Electrical and electronic products often contain valuable finite resources such as copper, zinc and gold which are lost when these items are sent for disposal at a landfill facility. E-waste can also contain harmful or hazardous materials such as lead, cadmium and mercury, which if not managed safely can cause harm to people and the environment.

E-waste is one of the fastest growing types of waste in Australia<sup>2</sup>. The time, cost, and changes to waste treatment technology required to establish suitable facilities to recycle and recover these materials can often fail to match the rate at which consumers purchase and discard e-waste.

- **Household chemicals and other hazardous waste streams** - The MSW we produce may contain hazardous substances in the form of liquid paints, batteries, pesticides, pool chemicals, motor oils, fluorescent lights and some household cleaners. Many of these waste streams are not suitable for landfill disposal due to their harmful properties and need to be treated at EPA-licensed processing facilities prior to recycling or disposal.
- **Food packaging** – Changes to and advances in food packaging design and materials are constantly evolving and have been identified as helping to reduce food waste by extending the shelf life of fresh produce<sup>3</sup> and protecting food from damage. Modern food packaging is also tailored to meet with the increasing reliance on takeaway food products and varying serving sizes. Reprocessing technologies need to adapt to reflect these changes to avoid packaging ending up as waste materials in the red bin.

There is often a lag time between the release of significant volumes of new waste materials into the market and the ability of the recycling and recovery industry to respond with treatment technologies and suitable markets for these products. As a result, existing waste infrastructure can become obsolete prior to reaching its design life and new waste infrastructure is needed to meet new demands in advance of expected capital investment cycles.

Waste composition also changes in terms of the relative proportion of the total volume contributed by different waste materials. For example, the proportion of dry recyclables accounted for by newspapers is reducing as news is increasingly consumed through electronic devices.

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<sup>2</sup> Australian Bureau of Statistics  
(<http://www.abs.gov.au/ausstats/abs@.nsf/Products/4602.0.55.005~2013~Main+Features~Electronic+and+Electrical+Waste?OpenDocument>)

<sup>3</sup> K. Verghese et al, RMIT University Melbourne; *The role of packaging in minimising food waste in the supply chain of the future* (2013)

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Waste management practices under the Strategy must allow for the currently observed trends in waste composition change, and be sufficiently flexible to deal with emerging waste streams.

### 3.2 Population and housing mix is changing

The total population for the NSROC region is expected to grow to 700,000 people by 2031. Adding to this challenge is the fact that waste generation has historically grown faster than population, which is increasing at around 1.3% per annum.

In the absence of a major reduction in waste generation per capita or per household, increases in the population and concomitant number of dwellings in the NSROC region will have a direct impact on the demand for waste collection and disposal services, particularly in areas where the increased number of dwellings are coming from housing stock being converted into multi-unit dwellings (MUDs).

The EPA has reported<sup>4</sup> that while resource recovery from single-unit dwelling (SUD) domestic households can divert more than 50% of domestic waste from landfill, the current recovery level in MUDs is often significantly less than 50%. An increasing proportion of MUDs to SUDs will result in additional challenges in achieving and maintaining high recycling rates due to reduced space for recycling and storage of waste.

Key waste management issues identified as specific to MUDs include:

- Safe and easy access for residents to waste and recycling services;
- Availability of storage space for waste and recycling receptacles both within units and at collection points;
- Access to waste collection point by waste service contractors;
- Increased odour, noise and vermin risks in communal collection areas; and
- Increased illegal dumping due to lack of bulky waste storage and higher tenancy turnover.

Initiatives to press down on growth in waste generation per household must form part of the national and State-wide response to the region's vision for waste management in the future. Local councils alone or acting in groups are not resourced or enabled by legislation to tackle such major social changes.

### 3.3 Key legislative and policy drivers

The way in which NSW local councils manage waste is affected by a number of pieces of NSW legislation and their associated regulations:

- The *Local Government Act 1993* requires local councils to make and levy an annual charge for providing domestic waste management services on all rateable land for which the service is available. The basis of the domestic waste services charge is that property owners should cover the cost of the provision of the waste services they receive.
- The *Protection of the Environment Operations (POEO) Act 1997* defines 'waste' for regulatory purposes and establishes management and licensing requirements as well as offence provisions. The *POEO (Waste) Regulation* was introduced in 2005 and is the principal tool for the NSW Government to regulate the way waste is managed. It contains details relating to the waste and environment levy (imposed on the basis of tonnage sent to landfill), waste tracking, management requirements for certain waste types, payment schemes for councils, consumer packaging recycling and other miscellaneous provisions.

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<sup>4</sup> Better Practice Guide for Waste Management in Multi-Unit Dwellings, Department of Environment and Climate Change (now NSW EPA), June 2008

- *Protection of the Environment Administration Act 1991* establishes the EPA and provides integrated administration for environment protection. The EPA coordinates the activities of all public authorities in regard to the best practicable measures for environmental protection. The Act authorises the Authority's compliance activities and allows it to provide grants to fund projects which assist or advance environmental protection.
- The *NSW Waste and Environment levy* (the levy) is a key policy tool used in NSW to drive waste avoidance and resource recovery. Under the POEO Act, licensed waste management facilities in NSW are required to pay a levy for each tonne of waste received for disposal at a landfill.
- The *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) provides the framework for waste management in NSW. It contains a requirement for a State Waste Strategy with targets for waste reduction, resource recovery and diversion of waste from landfill.

Relevant Commonwealth legislation includes the *Product Stewardship Act 2011* which provides the framework to effectively manage the environmental, health and safety impacts of products, and in particular those impacts associated with the disposal of products to landfill. The framework includes voluntary, co-regulatory and mandatory product stewardship. It acknowledges that all levels of government along with industry and the community have a shared responsibility for the impact of products we use and consume, and it aims to provide consumer confidence in product stewardship claims made by companies. A list is published each year of products being considered for coverage by the legislation. Products currently on the National Waste Policy implementation plan for product stewardship action include televisions and computers, packaging, tyres and mercury containing lights.

Other important policy elements impacting regional waste management are:

The *National Waste Policy: Less Waste, More Resources Implementation Plan* was developed jointly by all Australian governments, with input from the waste and resource recovery industry, businesses and local communities. It was approved by the Environment Protection and Heritage Council in July 2010 and presents the aims, key directions, priority strategies and roles and responsibilities of governments as outlined in the *National Waste Policy*.

The EPA's new *Energy from Waste (EfW) Policy Statement* was released in March 2014 and outlines a framework and technical criteria that will apply to facilities proposing to recover energy from waste in NSW. The principal statutory control of EfW processes is through the POEO Act. A two-tiered framework will be used to separate the requirements for low-risk wastes from all other wastes. Low-risk wastes include biomass from agriculture, uncontaminated wood waste, recovered waste oil, landfill gas and biogas. Facilities proposing to treat any waste or waste-derived materials that are not listed as an eligible waste must meet the requirements of an energy recovery facility. These facilities must demonstrate that they will be using current international best practices for process design and control, emission control equipment, emission monitoring, arrangements for the receipt of waste, and management of residues for the energy recovery process.

In addition, the EfW policy statement sets resource recovery criteria for energy recovery facilities by prescribing the percentages of wastes that can be claimed as eligible feedstock. For the treatment of MSW, the percentage of residual waste allowed for energy recovery is set according to the number of recycling collection services provided. This is determined in consideration of the following:

- Where a council has a separate collection system for dry recyclables and food and garden waste there is no limit by weight;
- Where a council has a separate collection system for dry recyclables and garden waste, up to 40% by weight of the waste stream can be recovered at an energy from waste facility; and
- Where a council has a separate collection system for dry recyclables only, up to 25% by weight of the waste stream can be recovered at an EfW facility.

The management of waste through the use of energy recovery technologies is consistent with the NSW landfill diversion target of 75%. However, in accordance with the NSW *EfW Policy Statement*, the recycling target of 70% cannot include any contributions from thermal recovery facilities. This has



been introduced by the EPA in the belief that there is a risk of a reduced focus on recycling and composting in accordance with the waste hierarchy if these contributions were able to be recognised.

The *NSW Waste Avoidance and Resource Recovery Strategy 2007* (Waste Strategy 2007) re-established a framework for maximising conservation of natural resources and minimising environmental harm from waste management and disposal of waste. Waste Strategy 2007 focused on waste avoidance and resource recovery goals and targets in the following key areas:

- Preventing and avoiding waste;
- Increasing recovery and use of secondary materials;
- Reducing toxicity in products and materials; and
- Reducing litter and illegal dumping.

Waste Strategy 2007 recognised that waste avoidance principles must be considered in the context of the whole life cycle of goods and materials (i.e. across stages of extraction, manufacturing, distribution, consumption and recovery for reprocessing or disposal). The 2007 State strategy continued recognition of the waste hierarchy to guide effective resource management and acknowledged that different materials can require different approaches.

To update the targets as required by the legislation, the NSW Government recently released the Draft WARR Strategy for public consultation which, when adopted, will serve as the principal waste management policy document for NSW. The Draft WARR Strategy establishes an approach to collaborative waste management, by proposing that each NSW local council works collaboratively with neighbouring LGAs to develop and implement regional waste and resource recovery strategic plans that provide a clear pathway for delivering the outcomes presented in the Strategy. Long-term targets are provided for the following six key areas:

**Table 1 NSW Draft WARR Strategy Targets for 2013 - 2021**

Key Result Areas	Themes	Targets
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: <ul style="list-style-type: none"> <li>- municipal solid waste from 52% (in 2010–11) to 70%</li> <li>- commercial and industrial waste from 57% (in 2010–11) to 70%</li> <li>- construction and demolition waste from 75% (in 2010–11) to 80%</li> </ul>
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 Strategy to Combat Illegal Dumping to reduce the incidence of illegal dumping State-wide As part of this strategy, by 2016–17: <ul style="list-style-type: none"> <li>- reduce the incidence of illegal dumping of waste detected in Sydney and the Illawarra, Hunter and Central Coast regions by 30% compared with 2010–11</li> <li>- establish baseline data to allow target setting in other parts of the state</li> </ul>

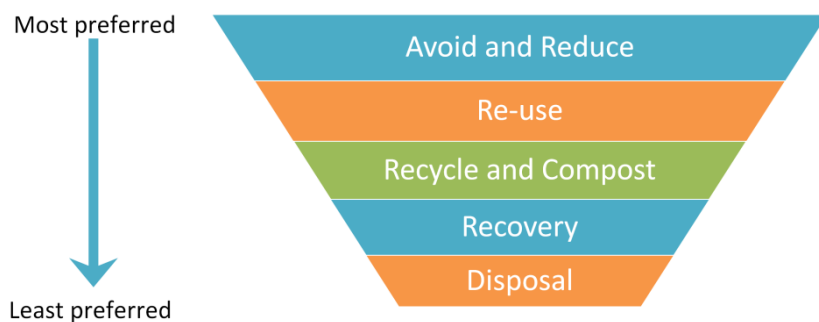
To coincide with the recently released Draft WARR Strategy and to assist in achieving these State waste strategy targets, the NSW Government has introduced the *Waste Less, Recycle More* Initiative. The *Waste Less, Recycle More* initiative is comprised of a \$465.7 million five year program to assist with development of new and upgraded waste infrastructure, community recycling centres, business recycling, market development and tackling illegal dumping and litter.

### 3.4 Waste Hierarchy

The Waste Hierarchy is an internationally recognised guideline for prioritising the management of waste to deliver the best overall environmental option. It is generally accepted as the basis for the development of best practice waste management policy in Australia. NSROC councils have all adopted the Waste Hierarchy as the underlying principle for their waste management practices.

The benefits of applying the Waste Hierarchy can include: prevention or reduction of greenhouse gas emissions, reduction of pollutants into the environment, reduced energy consumption, resource conservation and job creation. The five key steps in the hierarchy are shown in **Figure 1**.

**Figure 1 Waste Hierarchy**



Source: *Environmental Protection Act 1970*

#### 3.4.1 Waste minimisation and re-use

Traditionally, many waste strategies contained little mention of waste minimisation and re-use despite their inclusion at the very top of the Waste Hierarchy; however, in recent years there has been an increasing emphasis on breaking the link between economic growth and the amount of waste generated.

Waste minimisation and re-use has the potential to:

- Reduce costs associated with waste management;
- Reduce the size and/or number of waste management facilities needed in the future;
- Avoid environmental impacts of materials extraction and use; and
- Assist in generating significant social and economic benefits.

Much of the success of waste minimisation and re-use initiatives can be achieved through increased awareness of available local re-use schemes and sustainable purchasing behaviour and policies<sup>5</sup>.

<sup>5</sup> NSW Waste Avoidance and Resource Recovery Strategy 2013-21, NSW EPA

### 3.4.2 Recycling and composting

Recycling and composting sit below waste minimisation and re-use as preferred management practices in the Waste Hierarchy. The key aims of improving recycling and composting rates is to divert potential resources which have a market value from disposal to landfills; thus recovering revenue from a potential waste, reducing the need for virgin resources, and in many cases reducing the energy requirements to process materials (the latter two representing an environmentally beneficial practice).

The EPA landfill levy provides the fiscal driver for improving recycling and composting rates through imposing a price disadvantage on landfill disposal, compared to recycling, and the provision of government funds and education programs.

The diminishing availability of landfill and residual treatment capacity in metropolitan NSW is also a key driver for increased recycling and composting.

### 3.4.3 Recovery of waste

Following the upfront source-segregated recycling and composting of waste from kerbside schemes, there is a significant share of the residual waste stream remaining which requires treatment and/or disposal. The Waste Hierarchy states that the treatment and recovery of waste (to recover value, generate useful materials, heat and/or power) is preferred to the disposal (the lowest level of the Waste Hierarchy) of residual waste, except in the case of some inert wastes.

Waste treatment options can be non-thermal and thermal and are presented in **Table 2**.

**Table 2 Alternative Waste Treatment Options**

Waste Treatment Option	Description	Typical Recycling or Recovery % <sup>1</sup>
<b>Non-thermal</b>		
Mechanical Biological Treatment (MBT)	The mechanical separation of recyclable/ reusable fractions comprised in mixed municipal waste followed by the biological treatment of the organic-rich fraction to produce compost like material.	50-60%
Mechanical Heat Treatment (Autoclave)	The mechanical heat treatment of mixed municipal waste using steam followed by mechanical separation for the recovery of recyclable/ reusable fractions (fibre).	60-70%
<b>Thermal</b>		
Incineration with energy recovery	Incineration is a thermal technology that involves complete combustion of waste under excess oxygen conditions.	75-95% (dependent on recycling of bottom ash)
Gasification and pyrolysis	Gasification and Pyrolysis are thermal technologies that involve partial combustion of waste under reduced or no oxygen conditions.  Both technologies produce combustible gas containing very high quantities of CO, CH <sub>4</sub> , and H <sub>2</sub> .	80-95% (dependent on recycling of ash)

1. SLR

#### 3.4.4 Disposal

Landfill is the current method of disposal for more than 40% of the region's waste. A study published by NSW Planning in 2009<sup>6</sup> (now the Department of Planning and Environment [DP&E]) predicted that Sydney's landfills would reach capacity by 2016 based on waste forecast assumptions. It is likely that factors such as increased recycling and resource recovery and waste diverted to other states have impacted the rate of landfill inputs and that the anticipated capacity date may be delayed by a short time.

Whether additional capacity is made available or not, the use of landfill to manage residual wastes is contrary to the requirements of the Waste Avoidance and Resource Recovery Act 2001 and the philosophy of the Waste Hierarchy. As such, landfill should not be seen as a long-term sustainable solution for the management of residual wastes that could be otherwise treated or processed for beneficial use<sup>7</sup>.

### 3.5 Life cycle considerations

Life cycle analysis considers the range of impacts throughout the life of a product and quantifies these impacts through assessment of emissions, resources consumed and pressures on health and the environment that can be attributed to a product. The whole of life cycle is considered from the extraction of natural resources, material processing, manufacturing, distribution and use to the eventual re-use, recycling, energy recovery and/or disposal. The aim of life cycle analysis is to identify ways to reduce overall environmental impacts; however, care must be taken to avoid shifting problems from one stage of the life cycle to another (i.e. the apparent benefit of a waste management option can be cancelled out by added system disbenefits at another stage in the life cycle of a product). For example, the recycling of a product into a lesser quality material may lead to worse environmental impacts than the process involved to recovery energy by thermal treatment of that product. In situations like these, departing from the Waste Hierarchy may realise a better overall environmental outcome.

The State Government currently uses weight-based reporting to track progress against waste targets. This method of environmental reporting creates the potential risk that there will be incentive for recycling heavier fractions of the waste stream in order to meet with weight-based targets, even though this may not provide for the greatest environmental outcome<sup>8</sup>. It is becomingly increasingly recognised both internationally and locally that waste targets differentiated by material type or by environmental impact, rather than simply by weight, could lead to greater environmental (also social and economic) benefits.

### 3.6 Lack of waste infrastructure for the northern Sydney region

Constrained capacity for the management of residual waste has been highlighted in the Draft WARR Strategy as a key issue due to the diminishing supply of approved landfill capacity in the Sydney Metropolitan Area and the low likelihood of new and expanded landfills. In order to address this capacity shortfall, the Draft WARR Strategy identifies the need for increased recycling and recovery of waste to meet growing demands. Critical to meeting this demand is the availability of waste treatment capacity.

In 2011, the then Office of Environment and Heritage (OEH) commissioned GHD Pty Ltd (GHD) to prepare a Resource Recovery Infrastructure Needs Analysis report. The assessment was conducted on the basis of the Sydney State Plan Regions which comprised:

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<sup>6</sup> Public Review Landfill Capacity and Demand, Wright Corporate Strategy Pty Ltd for State Government of New South Wales, March 2009

<sup>7</sup> Waste Avoidance and Resource Recovery Act 2001

<sup>8</sup> Public Review Landfill Capacity and Demand, Wright Corporate Strategy Pty Ltd for State Government of New South Wales, March 2009

- 
- the Sydney Metropolitan Area – SMA – which includes all the councils in the Sydney area;
  - the Extended Regulated Area – ERA – which includes councils in the Central Coast, Hunter and Illawarra regions;
  - the Regional Regulated Area – RRA – which includes coastal councils between the Hunter and the Queensland border and some councils on Sydney’s fringe; and
  - the Non-Regulated Area – NRA – which includes the rest of the State.

The GHD report states that existing waste treatment capacity (separated organics and mixed waste processing facilities plus kerbside recyclables material recovery facilities) is in the region of 400,000 tonnes per annum (tpa) (based on 2011 data) and identifies the need for a further 300,000 tpa by 2017 and increasing to 500,000 tpa by 2036. The report recommends three new waste facilities for the Sydney area.

Absent from the existing published reports is an assessment on the availability and identification of suitable sites for the development of local waste treatment infrastructure. The majority of the NSROC councils do not have ownership or control over waste sites in their LGA and those that do, do not own, manage or control waste transfer, processing or disposal sites for MSW. Following the sale of the State-owned waste business WSN Environmental Solutions (WSN) in 2011, there is, as a consequence, a complete dependence on privately-owned waste service contractors.

Anecdotal evidence suggests that the lack of regional waste planning guidance for the development of waste facilities coupled with the high value of land within the Sydney Metropolitan Area has constrained the development of waste infrastructure in recent years. In 2010 the NSW Government commissioned a review of Waste Strategy and Policy in NSW, commonly known as the ‘Richmond Review’. The review identified the need for a more proactive State Government role in strategic waste planning and encouraged the “*development of a whole-of-government Waste Infrastructure Strategy led by DECCW (now EPA) in consultation with the NSW Department of Planning (now the DP&E)*”.

Recent portfolio changes of State Government Ministers have brought both the EPA and the DP&E into a single portfolio which could create an increased opportunity for whole of government strategic action.

While the recently introduced EPA *Waste Less, Recycle More* initiative is using the landfill levy to stimulate the waste management market to develop new waste infrastructure, the risks (and significant costs) associated with obtaining planning approvals for new waste facilities remains a significant challenge to public and private-sector investment in the local waste market.

This reality has informed the Strategy’s directions and it is expected that the projects under the Strategy will support increased recycling achievements.

However, the Strategy cannot solve the fundamental challenge of inadequate waste infrastructure for northern Sydney. Advocating for action by other players to make decisions that result in change to this situation will continue to be a policy advocacy position of NSROC and its member councils.



## 4 NORTHERN SYDNEY REGIONAL PROFILE

### 4.1 Geographic, population and demographic information

The geographic, population and demographic profile of Northern Sydney impacts on the quantities and types of waste produced in the region and, along with other factors, the way in which the waste and resources can be managed.

Waste and resource management infrastructure requirements will vary due to a number of factors, including:

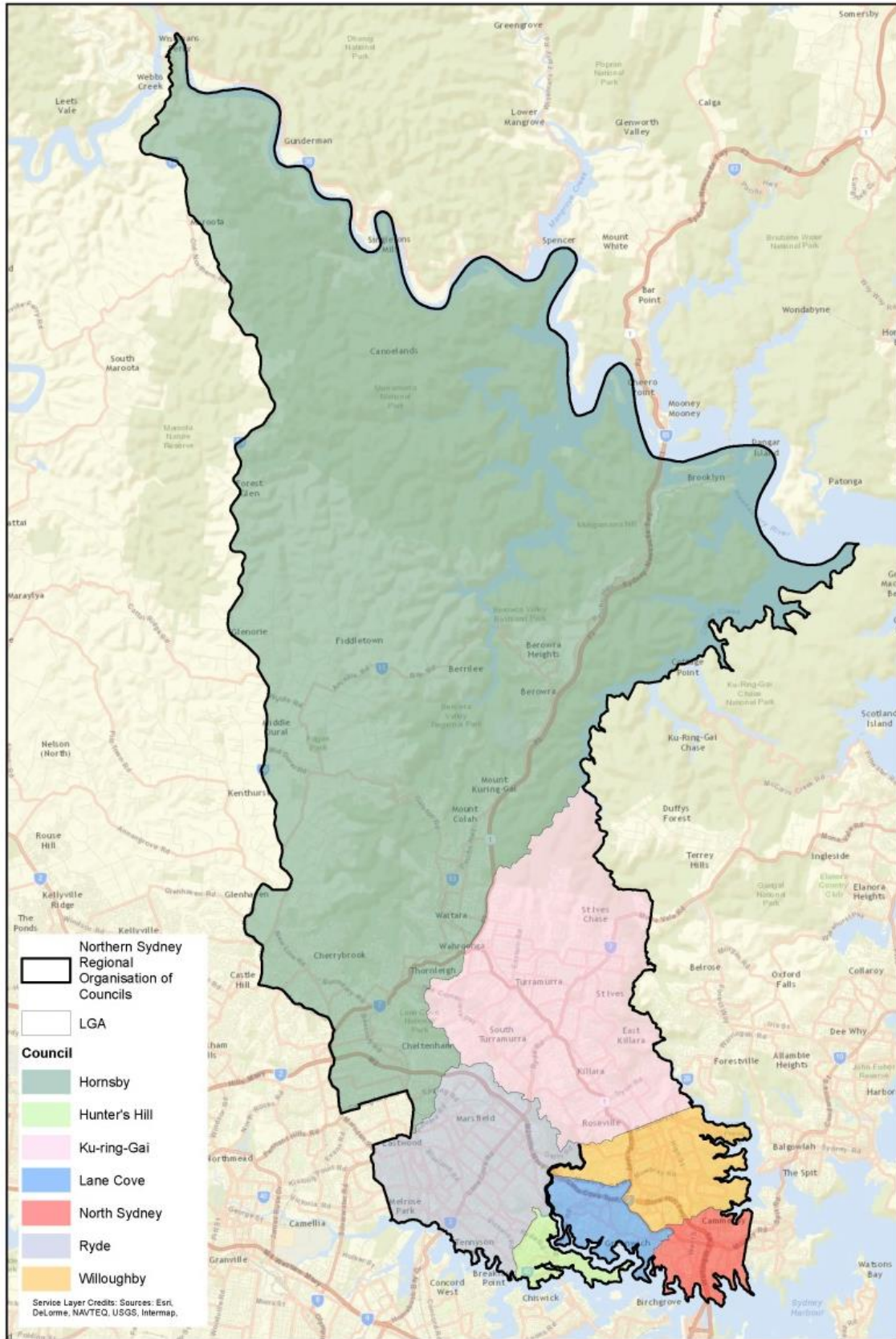
- population distribution;
- housing mix;
- transport infrastructure;
- availability of suitable sites for waste plants;
- waste segregation practices;
- waste generation trends; and
- potential ecological or conservation constraints.

The different characteristics of an LGA are likely to influence the type of waste infrastructure it needs to be able to access.

#### 4.1.1 Geographic makeup

NSROC is one of six regional organisational of councils in the Sydney Metropolitan Area (SMA). The region covers an area of more than 700 square kilometres from the Hawkesbury River to the North Shore of Sydney Harbour and is strategically positioned as the corridor connecting Sydney and the north of the state (see **Figure 2**).

Figure 2 Northern Sydney Regional Organisation of Councils

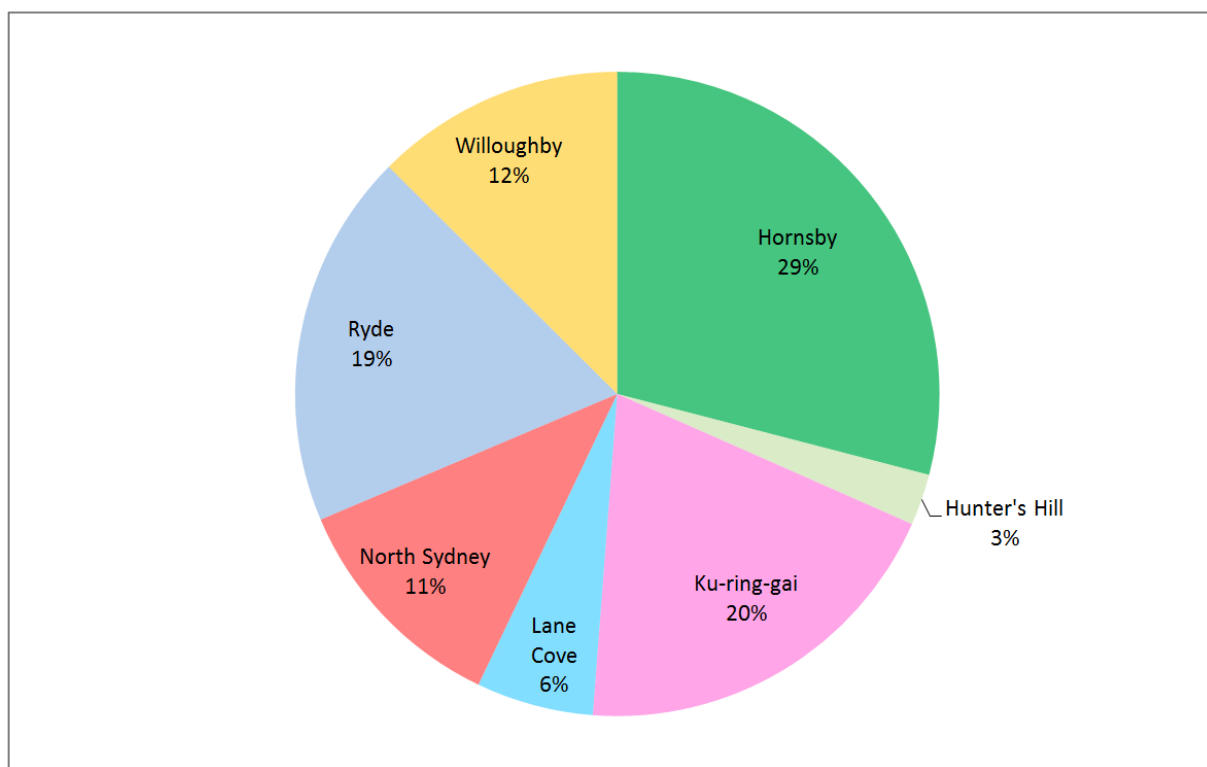


The region has good proximity to national parks and bushland reserves although land availability for residential and organised recreation is limited and will come under increasing pressure as the population continues to increase. This projected increase in population will also have a direct impact on the requirement for additional public services and facilities to support the region, including for waste management.

#### 4.1.2 Population forecast

In June 2012, the population of the NSROC region was approximately 580,000 people<sup>9</sup>. Hornsby Council has the greatest number of residents at just over 158,000 which is approximately 30% of the total Northern Sydney region's population. Hunter's Hill is the smallest LGA in the region with approximately 14,000 residents or 3% of the region's population. **Figure 3** below shows the population split across the region.

**Figure 3 Percentage of Total NSROC Population within each LGA**



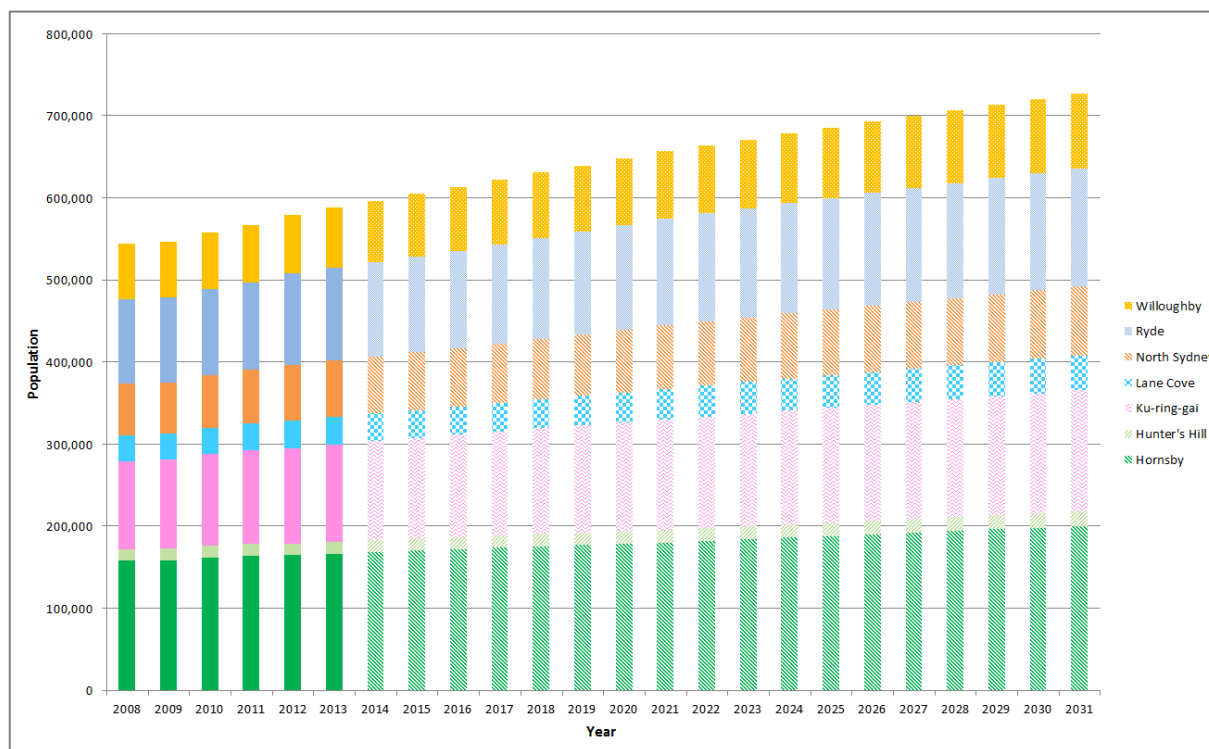
The total population for the region is expected to grow to 700,000 by 2031 (see **Figure 4**) and the NSROC Regional Priorities identifies the region's growing population as a key driver of future infrastructure planning. Infrastructure planning will need to include provision for maintaining and expanding the availability of facilities to manage waste and recovered resources across the region.

In August 2013 the NSW Government released State and local government population projections<sup>10</sup> for 2016, 2021, 2026, and 2031. The relevant LGA projections have been used as a basis for waste generation projections in this report and are presented in **Figure 4**.

<sup>9</sup> Northern Sydney Region Vital Statistics, NSROC June 2013

<sup>10</sup> New South Wales in the future: Preliminary 2013 Population Projections – Special release of NSW state and local government area population projections, NSW Government Planning and Infrastructure, August 2013.

**Figure 4 NSROC Estimated Population Growth to 2031**



The population estimates for the Northern Sydney LGAs equate to a 24% growth in population from 2012 to 2031 or 1.3% growth per annum. This is consistent with the NSROC Regional Priorities which estimates a 25% growth in population in the next 20 years. Given the robust evidence base for the projections it has not been considered necessary to undertake a sensitivity analysis on population change.

**4.1.3 Dwelling targets**

In the same way that there are projections for increases in population, the NSW Government has also set each LGA dwelling targets for the same time period, based on 2013 housing data. **Table 3** provides a breakdown of the dwelling targets for each Northern Sydney LGA. These figures, along with population growth estimates, have been used to inform the anticipated increase in dwelling numbers in the NSROC region.

**Table 3 NSW Dwelling Targets for Northern Sydney LGAs**

Local Government Area	Dwelling Forecasts 2031
Hornsby	72,200
Hunter's Hill	6,550
Lane Cove	17,550
Ku-ring-gai	50,900
North Sydney	43,000
Ryde	59,100
Willoughby	35,000
<b>Total</b>	<b>284,300</b>

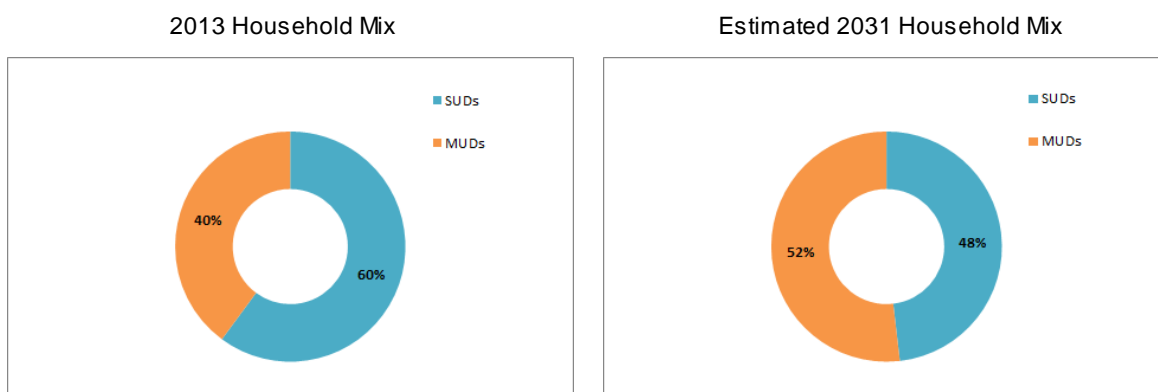
Source: NSW Planning and Environment Population and Housing Projections 2013

The proposed increased dwelling numbers in the region will have a direct impact on waste collection services and waste volumes managed by each Council, particularly in cases where the increased dwellings are delivered in the form of multi-unit dwellings (MUDs).

The Department of Planning and Environment (DP&E) has provided percentage splits for each Council area depicting the proportion of single-unit dwellings (SUDs) and multi-unit dwellings (MUDs). In 2012, the Northern Sydney region was comprised of approximately 60% SUDs and 40% MUDs, and the North Sydney LGA identified as the only Council to have a higher proportion of MUDs (70%) to SUDs (30%).

It is anticipated that in the future the majority of proposed new dwellings in the NSROC region will be comprised of MUDs (between 80% and 95%, depending on the LGA). This is likely to result in a shift in the region's housing mix, so that by 2031, MUDs will make more than 50% of the household mix (see **Figure 4**).

**Figure 5 Likely Impact on Housing Mix from Additional Dwellings in Northern Sydney Region**



An increased proportion of MUDs will impact on the overall composition of the region's waste. Related to this, the area of garden per property will reduce within the region, with the result that the proportion of green waste in the region's waste will also decline.

As discussed in more detail in **Section 4.4** of this report, many of the Northern Sydney LGAs achieve a considerable proportion of total recovery through the collection of green waste for recycling. A reduction in availability of green waste in the overall waste composition is a risk factor in forecasts for future recovery rates.

## 4.2 Waste and resource recovery collection and processing

The seven NSROC councils each offer their residents kerbside collection services for the following waste streams:

- residual waste (garbage);
- recyclables (co-mingled or separated paper/cardboard in blue bin plus comingled yellow bin);
- garden organics (for an additional charge in some LGAs); and
- bulky waste (as a clean-up service).

All NSROC Councils contract private sector companies for the core residential waste collection and disposal services. Council waste management staff are responsible for setting policies, managing certain in-house services and assuring performance under contracts for residential services.



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All NSROC councils have employed the Australian Standard colour coded bin lid system (i.e. red lid for residual waste, yellow lid for co-mingled recycling, blue lid for paper/cardboard recycling, and green lid for garden organics).

The exact configuration of the waste and recycling services offered within each LGA is influenced by a number of factors, many of which also serve to distinguish them from the other councils in the Sydney region. Some notable differences include:

- The proportion of MUDs and SUDs within each LGA (For example, Hornsby, Hunter's Hill and Lane Cove have less than 35% MUDs as a proportion of total residence types compared to North Sydney with 70% MUDs); and
- The wide ranges in population density (For example, Hornsby has 357 residents per square kilometre whereas North Sydney has nearly 6,500 residents per square kilometre).

These differences mean that some residents in the region with larger properties have a higher demand for garden waste collections, while residents living in MUDs have a much lower requirement for green waste collection but a higher demand for bulky waste collection due to restrictions on waste storage space and the propensity for higher churn in occupancy.

A breakdown of the specific services offered by each Council including waste receptacle provisions and collection frequencies are presented in **Table 4**. Operator details are presented in **Table 5**. Clean-up and drop off tonnages are also included within the residual and recycling figures but are shown separately below for information purposes.

**Table 4 Waste and Resource Recovery Collection and Processing Systems**

Council Name	Service	Tonnes Collected (2011-12) <sup>1</sup>	Bin / Clean-Up Size <sup>2</sup>	Collection Frequency	Potential Recycling <sup>3</sup>
<b>Hornsby</b>	Residual	32,258	140L	W (2/week)	24.9%
	Recycling	17,291	240L	F (W)	N/A
	Garden Organics	22,110	240L	F (on request, optional)	N/A
	Food Organic	-	N/A	N/A	N/A
	Clean-Up	5,959	3m <sup>3</sup>	2/year (M)	NR
	Drop-Off	307	N/A	N/A	NR
	<b>Total</b>	<b>77,925</b>	-	-	-
<b>Hunter's Hill</b>	Residual	2,953	120L (240L)	W	20.5%
	Recycling	1,419	240L paper 240L other	F	N/A
	Garden Organics	777	240L	F optional	N/A
	Food Organic	-	N/A	N/A	N/A
	Clean-Up	272	NR	2/year on call	NR
	Drop-Off	-	N/A	N/A	NR
	<b>Total</b>	<b>5,421</b>	-	-	-
<b>Ku-ring-gai</b>	Residual	21,235	120L	W	26.3%
	Recycling	14,897	240L paper (50L) 240L other (50L)	F same day	N/A
	Garden Organics	21,975	360L	F	N/A
	Food Organic	-	N/A	N/A	N/A
	Clean-Up	2,809	3m <sup>3</sup>	M on call	NR
	Drop-Off	-	N/A	N/A	NR
	<b>Total</b>	<b>60,917</b>	-	-	-
<b>Lane Cove</b>	Residual	7,249	80L (240L)	W	20.2%
	Recycling	3,684	120L paper (240L) 120L other (240L)	F	N/A
	Garden Organics	2,288	B 3m <sup>3</sup>	M	N/A
	Food Organic	-	N/A	N/A	N/A
	Clean-Up	1,009	3m <sup>3</sup>	4/year on call	NR
	Drop-Off	-	N/A	N/A	NR
	<b>Total</b>	<b>14,230</b>	-	-	-
<b>North Sydney</b>	Residual	12,584	60L or 240L	W	19.2%
	Recycling	7,631	140L (240L)	W	N/A
	Garden Organics	1,510	B 2m <sup>3</sup> or 60L/240L optional (B 0.5m <sup>3</sup> )	F + on call	N/A
	Food Organic	-	N/A	N/A	N/A
	Clean-Up	1,526	2m <sup>3</sup>	F + on call	NR
	Drop-Off	14	N/A	N/A	NR
	<b>Total</b>	<b>23,266</b>	-	-	-

Council Name	Service	Tonnes Collected (2011-12) <sup>1</sup>	Bin / Clean-Up Size <sup>2</sup>	Collection Frequency	Potential Recycling <sup>3</sup>
Ryde	Residual	21,475	140L or 240L (240L)	W	21.7%
	Recycling	10,342	240L	F	N/A
	Garden Organics	10,599	240L	F	N/A
	Food Organic	-	N/A	N/A	N/A
	Clean-Up	5,449	Trailer size	5/year	NR
	Drop-Off	19	N/A	N/A	NR
	<b>Total</b>	<b>47,884</b>	-	-	-
Willoughby	Residual	15,812	140L (240L)	W	23.3%
	Recycling	7,903	240L	W	N/A
	Garden Organics	7,048	240L	W	N/A
	Food Organic	-	N/A	N/A	N/A
	Clean-Up	1,169	2m <sup>3</sup>	3/year + 1/year on call	NR
	Drop-Off	40	N/A	N/A	NR
	<b>Total</b>	<b>31,972</b>	-	-	-

## Table Notes:

- 1 Figures may not add up due to rounding.
- 2 Bins for MUDs generally shared by a number of units.
- 3 Potential from dry recycling only.

Abbreviations: W = Weekly, F = Fortnightly, M = Monthly, NR = not reported, (text) = applicable to MUDs, N/A = Not Applicable, B = bundle, m<sup>3</sup> = cubic metres, L = litres

The more recent changes to collection services are largely focused on clean-up or bulky waste, specifically where a number of councils have changed from a scheduled service to an on-demand (call-up) based service. Other changes include increased frequency of garden organic collections in some areas. Specific changes to collection, processing and disposal contracts are discussed in **Section 4.3** of this report.

During discussions with each of the Northern Sydney councils it was established that there was currently no intention to expand their existing collection services to include separate food waste collection. While many of the Councils had at some point investigated the feasibility of introducing a food waste collection service, the decision in each case was not to implement such a scheme. The decisions for this, based on early consultation, were based on the following reasons:

- lack of available treatment capacity for food waste in the market;
- the cost of implementing an additional or more frequent collection service;
- the perceived difficulty in implementing the service (e.g. high contamination rates and lack of space for an additional bin) based on other similar collection systems in other parts of Sydney; and
- changes to the composition of the residual waste bin may have direct impacts on the residual treatment processes currently used or likely to be implemented as a result of the regional waste processing and disposal project.

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### 4.3 Waste and resource recovery contracts

Understanding the details of existing waste and recycling service contracts for each LGA can help to identify possible timings for new initiatives and any implications for existing contracts. Identifying service contract alignments should assist with the planning of future procurement processes for regional waste contracts.

It was the understanding that the end dates of existing individual council contracts for residual waste (red bin) aligned in 2014 or 2015 which created the opportunity for a joint regional processing and disposal contract. A substantial body work by NSROC on behalf of the member councils has been underway since 2012 to develop the governance framework and tender documentation for that contract. In May of that year, NSROC commenced a three-stage strategic process for a regional waste project. The three stages were to:

- 1 Identify the procurement goal and participating councils;
- 2 Agree on the procurement strategy; and
- 3 Approach the market.

That process is now nearing completion and it is anticipated that a tender involving five NSROC councils will be called in mid-2014. The tender has been framed to assist the region to meet the recycling target identified in the Draft WARR Strategy. The regional contract and the governance arrangements that underpin it are integral components of the region's strategic waste management.

As part of the regional project, NSROC and its member Councils identified that the benefits of joint service procurement for the region include:

- incentive for new investment in processing by the market in the medium term to meet the need for higher diversion from landfill than is currently available for total regional waste volumes;
- better price outcomes in the immediate term through a secure and high volume supply requirement; and
- demonstration to the market that the NSROC Councils are serious about an efficient approach to shared services procurement.

Details of existing contracts for collection, processing and disposal including contract expiry dates for each Council are presented in **Table 5** below.

**Table 5 Waste and Resource Recovery Collection, Processing and Disposal Contracts**

Contract Type	Council	Contract End Date	Extension Period (Year)	Contractor <sup>1</sup>
<b>Kerbside Collection</b>	Hornsby	Jun-17	3	TPI
	Hunter's Hill	Jun-15	-	URM
	Ku-ring-gai	Sep-16	-	VEOLIA
	Lane Cove	Dec-15	2	URM
	North Sydney	Jun-17	1	URM
	Ryde	Apr-15	-	SITA
	Willoughby	Jul-20	-	JJRichards
<b>Clean-Up Collection</b>	Hornsby	Jun-17	3	TPI
	Hunter's Hill	Jun-15	-	URM
	Ku-ring-gai	Sep-16	-	VEOLIA
	Lane Cove	Dec-15	2	URM
	North Sydney	Jun-17	1	URM
	Ryde	Apr-15	-	SITA
	Willoughby	Jul-20	-	JJRichards
<b>Clean-Up Disposal</b>	Hornsby	Jun-13	2	KIMBRIKI
	Hunter's Hill	Jun-15	-	SITA
	Ku-ring-gai	Sep-16	-	VEOLIA
	Lane Cove	Dec-15	-	SITA
	North Sydney	Jan-15	3	SITA
	Ryde	Apr-15	-	SITA
	Willoughby	Sep-20	-	SITA
<b>Garden Organics Processing</b>	Hornsby	Jun-13	2	KIMBRIKI
	Hunter's Hill	Jun-15	-	SITA
	Ku-ring-gai	Sep-16	-	SITA
	Lane Cove	Dec-15	-	SITA
	North Sydney	Jan-15	3	SITA
	Ryde	Apr-15	-	SITA
	Willoughby	Sep-20	-	SITA
<b>Recycling Processing</b>	Hornsby	Dec-15	2	VISY
	Hunter's Hill	Jun-15	-	URM
	Ku-ring-gai	Sep-14	-	SITA
	Lane Cove	Dec-15	-	SITA
	North Sydney	Jun-15	1	URM
	Ryde	Apr-15	-	SITA
	Willoughby	Sep-20	-	SITA



Contract Type	Council	Contract End Date	Extension Period (Year)	Contractor <sup>1</sup>
Residual Treatment and Disposal	Hornsby	Jun-13	2	VEOLIA
	Hunter's Hill	Jun-15	-	URM
	Ku-ring-gai	Sep-16	-	VEOLIA
	Lane Cove	Dec-15	-	SITA
	North Sydney	Jan-15	3	SITA
	Ryde	Apr-15	-	SITA
	Willoughby	Sep-20	-	SITA

Notes:

1 Contractor responsible for the collected materials.

**Figure 6** compares the existing contracts, including extension periods for each LGA. Contract details have been obtained from previous regional reports and during discussions with each Council as part of the development of the waste strategy.

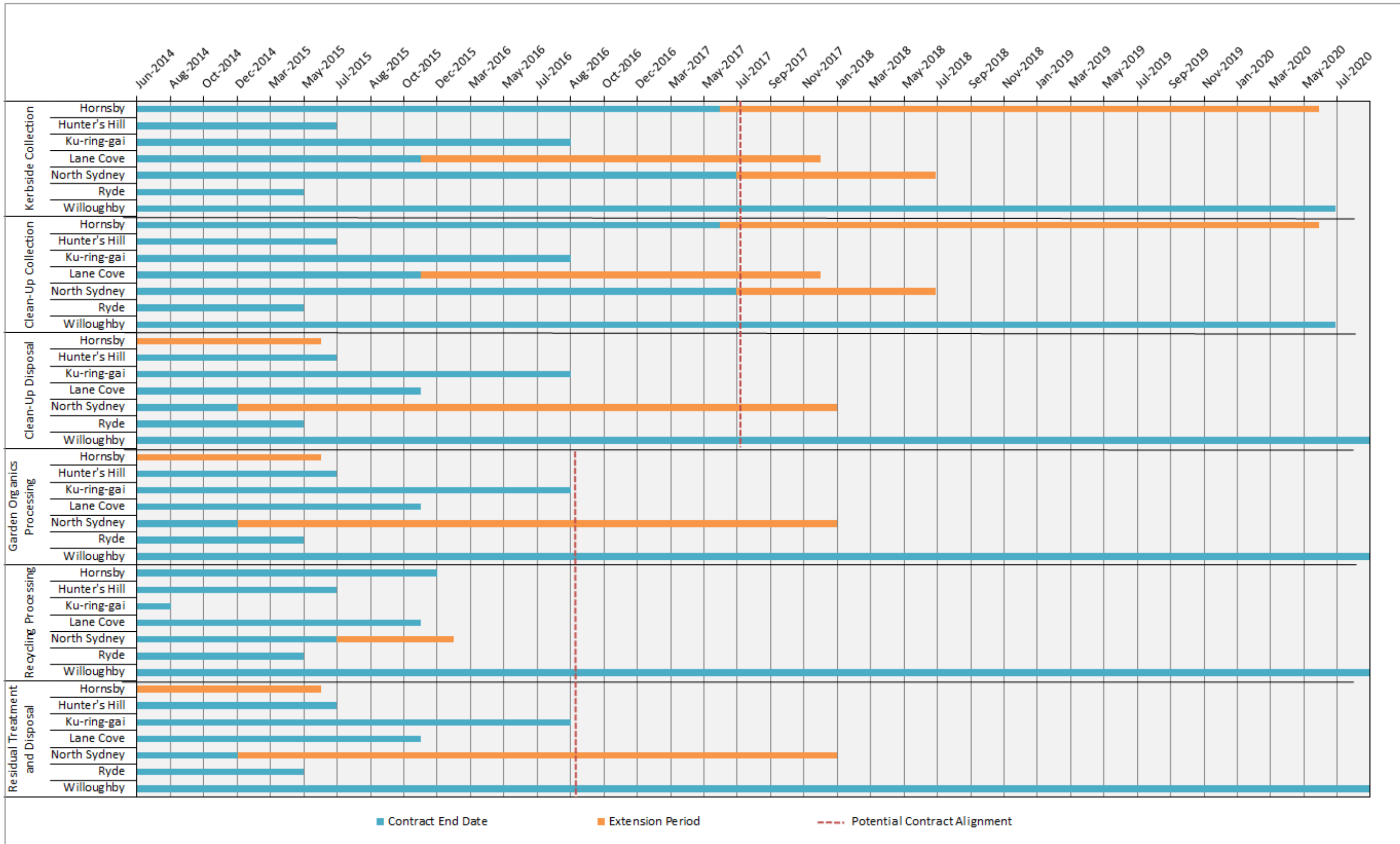
With the exception of Willoughby<sup>11</sup> LGA, the chart below shows alignment between councils for waste and recycling treatment and/or disposal. The majority of processing contracts for recycling, green and residual waste will expire by the end of 2015. A joint procurement initiative is already underway for the residual treatment and disposal contract.

Investigations to jointly procure a contract for recyclables and green processing could be explored further as part of the strategy options assessment process.

As a result of existing contractual arrangements (particularly contracts servicing Hornsby, North Sydney and Willoughby Councils) and given an immediate need for contract procurement (i.e. for Ryde Council) the earliest opportunity to jointly procure a collection contract across a large group is likely to be mid-2017.

<sup>11</sup> SLR was informed during discussions with Willoughby Council that there is a break clause within the current collection and treatment contract with SITA

Figure 6 Northern Sydney Councils Waste Collection and Processing Contract Expiry Dates

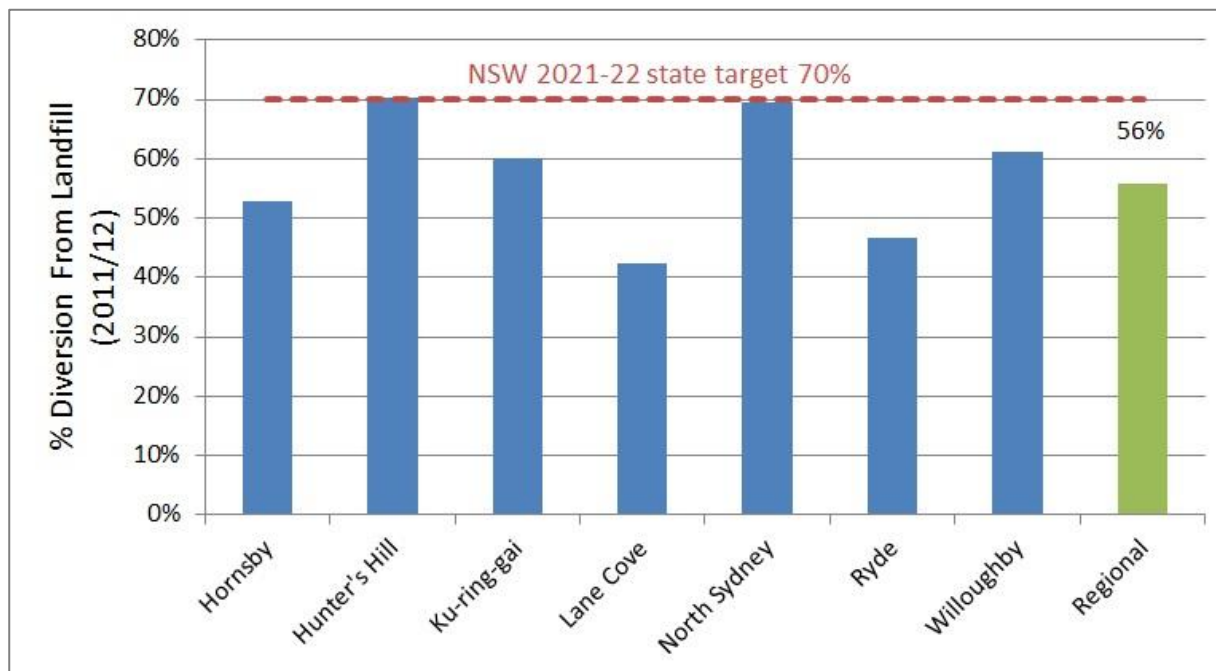


4.4 Waste data

4.4.1 Historic waste trends and performance

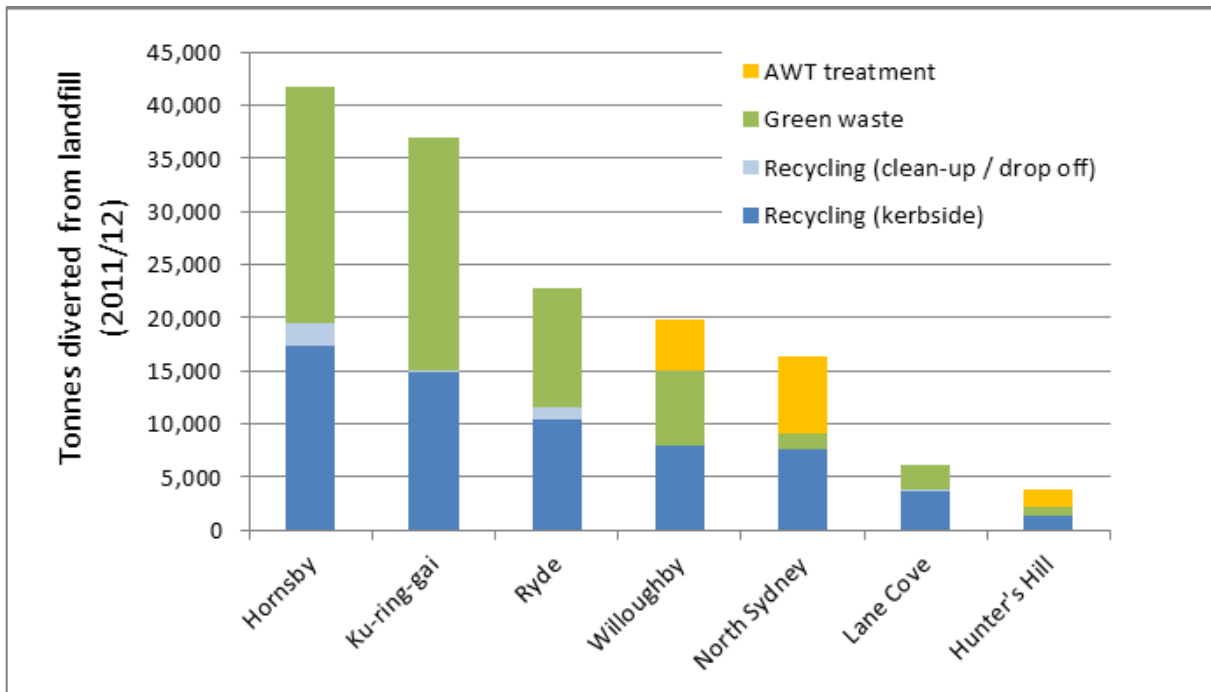
In 2011/12 the Northern Sydney LGAs collectively diverted more than 50% of waste from landfill. A chart showing the individual LGA and the regional performance as a percentage of total waste produced is below in **Figure 7**. The Draft WARR Strategy target 70% recovery of waste from landfill by 2021/22 is also shown on the graph. Both North Sydney and Hunter’s Hill achieved the 70% recovery target in 2011/12.

**Figure 7 Northern Sydney LGA Recovery Performance 2011/12**



**Figure 8** shows the total tonnage of waste diverted from landfill by each Council in the Northern Sydney region in 2011/12 and the types of recycling or recovery methods used to achieve the diversion. Only three of the Councils; Willoughby, North Sydney and Hunter’s Hill, had a contract which included treatment of the residual bin. Hornsby and Ku-ring-gai Councils achieved more than half their recycling tonnages through their green waste collection services.

**Figure 8 Northern Sydney LGA Landfill Diversion Methods**



**Table 6** overleaf displays the five year historic waste trends for each Council within the Northern Sydney region from 2007/08 to 2011/12 as provided by the EPA and is reported on a State-wide consistent basis.

While data for 2012/13 is available at the LGA level and is reported in the following table, this data has not yet been released by the EPA and therefore may contain some discrepancy in comparison with the EPA reported data expected to be released later in 2014. For this reason the 2012/13 data has not been used to inform any trend analysis undertaken as part of developing the Regional Waste Strategy.

**Table 6** also presents the waste per capita (kilograms per week), waste per household (kilograms per week) and current recycling and landfill diversion performance.

**Table 6 Historic Waste Trends and Performance**

LGA	Year	Population	Number of households	Total tonnes domestic waste generated	Domestic waste (kg/ca/wk)	Domestic waste (kg/hh/wk)	Tonnes collected dry recycling (kerbside)	Tonnes collected recycling (other)	Tonnes collected organics (kerbside)	Total tonnes recycled	Tonnes recovered AWT treatment	Tonnes disposed to landfill	% change from previous year	% recycled at the kerbside	% diverted from landfill	% landfilled
Hornsby	2007-08	158,285	53,892	71,539	8.69	25.53	18,195	2,218	17,757	38,170	-	33,369	N/A	53%	53%	47%
	2008-09	159,211	53,904	71,420	8.63	25.48	18,094	2,175	17,971	38,240	-	33,180	0%	54%	54%	46%
	2009-10	162,216	57,820	71,269	8.45	23.70	17,835	2,005	17,724	37,564	-	33,705	0%	53%	53%	47%
	2010-11	164,034	54,456	73,715	8.64	26.03	17,352	1,658	18,839	37,849	-	35,866	3%	51%	51%	49%
	2011-12 <sup>1</sup>	165,090	55,612	78,998	9.20	27.32	17,291	2,190	22,278	41,759	-	37,238	7%	53%	53%	47%
	2012-13 <sup>1,2</sup>	167,093	56,485	72,553	8.35	24.70	16,079	N/A	19,238	35,317	-	37,236	-8%	49%	49%	51%
Hunter's Hill	2007-08	14,031	4,711	4,760	6.52	19.43	1,584	-	-	1,584	2,613	563	N/A	33%	88%	12%
	2008-09	14,092	4,626	4,858	6.63	20.19	1,499	-	583	2,082	1,331	1,445	2%	43%	70%	30%
	2009-10	14,467	4,975	5,054	6.72	19.53	1,401	-	538	1,939	824	2,291	4%	38%	55%	45%
	2010-11	14,591	4,820	5,388	7.10	21.50	1,431	20	551	2,002	1,548	1,838	7%	37%	66%	34%
	2011-12 <sup>1,2</sup>	14,139	4,752	5,491	7.47	22.22	1,419	-	768	2,187	1,671	1,625	2%	40%	70%	30%
	2012-13 <sup>1</sup>	14,254	4,847	5,308	7.16	21.06	1,329	N/A	768	2,097	1,633	1,578	-3%	40%	70%	30%
Ku-ring-gai	2007-08	106,807	36,752	55,933	10.07	29.27	16,715	137	17,511	34,364	-	21,569	N/A	61%	61%	39%
	2008-09	108,135	37,401	57,025	10.14	29.32	15,170	105	18,076	33,351	-	23,674	2%	58%	58%	42%
	2009-10	111,400	38,627	55,986	9.66	27.87	15,470	188	17,830	33,488	-	22,498	-2%	60%	60%	40%
	2010-11	114,142	39,879	58,221	9.81	28.08	15,470	64	19,004	34,537	-	23,684	4%	59%	59%	41%
	2011-12 <sup>1,2</sup>	116,527	40,844	61,529	10.15	27.23	14,897	176	21,975	37,048	-	24,481	6%	60%	60%	40%
	2012-13 <sup>1</sup>	118,645	40,844	57,837	9.37	27.23	14,178	N/A	20,023	34,201	-	23,636	-6%	59%	59%	41%



LGA	Year	Population	Number of households	Total tonnes domestic waste generated	Domestic waste (kg/ca/wk)	Domestic waste (kg/hh/wk)	Tonnes collected dry recycling (kerbside)	Tonnes collected recycling (other)	Tonnes collected organics (kerbside)	Total tonnes recycled	Tonnes recovered AWT treatment	Tonnes disposed to landfill	% change from previous year	% recycled at the kerbside	% diverted from landfill	% landfilled
Lane Cove	2007-08	32,047	12,517	12,770	7.66	19.62	3,787	-	1,685	5,472	612	6,686	N/A	43%	48%	52%
	2008-09	31,638	13,316	12,824	7.79	18.52	4,019	46	1,910	5,975	813	6,036	0%	47%	53%	47%
	2009-10	32,501	12,568	12,154	7.19	18.60	3,625	48	1,716	5,389	-	6,765	-5%	44%	44%	56%
	2010-11	33,335	12,622	12,279	7.08	18.71	3,924	96	1,938	5,959	-	6,320	1%	49%	49%	51%
	2011-12 <sup>1,2</sup>	33,726	12,086	14,389	8.20	22.90	3,684	122	2,288	6,094	-	8,295	17%	42%	42%	58%
	2012-13 <sup>1</sup>	33,770	12,374	12,002	6.83	18.65	3,283	N/A	2,131	5,414	-	6,589	-17%	45%	45%	55%
North Sydney	2007-08	62,842	32,255	16,988	5.20	10.13	8,282	18	1,266	9,566	5,287	2,135	N/A	56%	87%	13%
	2008-09	62,668	32,457	23,283	7.14	13.80	8,198	32	1,322	9,552	6,659	7,072	37%	41%	70%	30%
	2009-10	63,914	35,596	22,123	6.66	11.95	7,677	25	2,848	10,550	2,879	8,694	-5%	48%	61%	39%
	2010-11	64,795	36,028	24,955	7.41	13.32	8,108	40	1,389	9,537	7,141	8,277	13%	38%	67%	33%
	2011-12 <sup>1,2</sup>	67,722	33,000	23,564	6.69	13.73	7,631	33	1,510	9,175	7,194	7,195	-6%	39%	69%	31%
	2012-13 <sup>1</sup>	68,617	33,526	23,479	6.58	13.47	6,830	N/A	1,506	8,336	7,194	7,949	0%	36%	66%	34%
Ryde	2007-08	102,609	39,806	46,416	8.70	22.42	11,374	284	9,961	21,619	-	24,797	N/A	47%	47%	53%
	2008-09	103,597	40,520	45,245	8.40	21.47	11,073	1,003	9,761	21,838	-	23,407	-3%	48%	48%	52%
	2009-10	104,955	38,233	45,089	8.26	22.68	10,866	938	8,971	20,775	-	24,314	0%	46%	46%	54%
	2010-11	106,289	38,570	45,821	8.29	22.85	10,714	1,260	9,490	21,464	-	24,357	2%	47%	47%	53%
	2011-12 <sup>1,2</sup>	110,791	39,682	48,701	8.45	23.60	10,342	1,159	11,220	22,721	-	24,742	6%	47%	47%	51%
	2012-13 <sup>1</sup>	112,643	40,704	44,215	7.55	20.89	9,901	N/A	9,572	19,473	-	24,742	-9%	44%	44%	56%

LGA	Year	Population	Number of households	Total tonnes domestic waste generated	Domestic waste (kg/ca/wk)	Domestic waste (kg/hh/wk)	Tonnes collected dry recycling (kerbside)	Tonnes collected recycling (other)	Tonnes collected organics (kerbside)	Total tonnes recycled	Tonnes recovered AWT treatment	Tonnes disposed to landfill	% change from previous year	% recycled at the kerbside	% diverted from landfill	% landfilled
Willoughby	2007-08	68,387	27,650	29,523	8.30	20.53	7,965	-	6,109	14,074	7,103	8,347	N/A	48%	72%	28%
	2008-09	68,008	26,304	30,309	8.57	22.16	8,484	67	6,253	14,805	3,639	11,865	3%	49%	61%	39%
	2009-10	69,269	26,948	41,595	11.55	29.68	8,295	165	5,880	14,340	3,429	23,827	37%	34%	43%	57%
	2010-11	70,008	27,038	31,441	8.64	22.36	8,301	146	6,287	14,733	5,263	11,445	-24%	47%	64%	36%
	2011-12 <sup>1,2</sup>	71,933	28,183	32,374	8.65	22.09	7,903	48	7,098	15,049	4,734	12,590	3%	46%	61%	39%
	2012-13 <sup>1</sup>	73,400	28,542	36,664	9.61	24.70	7,662	N/A	6,161	13,823	10,053	12,788	13%	38%	65%	35%
Regional	2007-08	545,008	207,583	237,931	8.40	22.04	67,903	2,657	54,290	124,850	15,615	97,465	N/A	52%	59%	41%
	2008-09	547,349	208,528	244,963	8.61	22.59	66,538	3,428	55,877	125,843	12,442	106,678	3%	51%	56%	44%
	2009-10	558,722	214,767	253,270	8.72	22.68	65,169	3,369	55,507	124,045	7,131	122,093	3%	49%	52%	48%
	2010-11	567,194	213,413	251,819	8.54	22.69	65,299	3,283	57,499	126,081	13,952	111,786	-1%	50%	56%	44%
	2011-12 <sup>1,2</sup>	579,928	213,600	265,046	8.79	23.86	63,167	3,727	67,147	134,042	13,599	117,404	5%	51%	56%	44%
	2012-13 <sup>1</sup>	588,421	217,321	252,058	8.24	22.30	59,262	N/A	59,399	118,661	18,880	114,518	-5%	47%	55%	45%

## Notes:

- 'Population' and 'Number of households' data sourced from Australian Bureau of Statistics Regional Population Growth (2012) and EPA Councils Groups Data 2011/12 (2013) as five yearly intervals (SLR applied linear interpretation).
- Data provided for 2012/13 were supplied directly from the Councils and not the EPA.

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Regional waste volumes are showing continued growth, and the percentage diverted from landfill has levelled off and, in recent years, gone backwards. Reasons provided by councils for a possible slowing of landfill diversion performance include:

- Increasing proportion of the MUDs in the region (MUDs traditionally have a lower recycling participation rate and higher contamination);
- Changing composition of waste affecting tonnage of recycling reported (e.g. shift from paper based reading to electronic devices has reduced the volume of recycled newspapers in the waste stream);
- Insufficient local waste infrastructure to manage growing problem waste streams (e.g. increases in electronic wastes have increased demand for e-waste drop off centres); and
- Increasing competition for available capacity in the market for recycling and residual alternative waste treatment.

## 4.5 Waste growth projections and infrastructure needs

### 4.5.1 Waste growth projections

Forecasting can be used to determine the likely amount of waste needing to be managed in the future and in turn inform the waste and recycling collection, processing and disposal contracts. Future waste generation can be impacted by a number of different factors, including;

- Changing population and household numbers;
- Levels of waste generated on a per household and per capita basis;
- The impact of changes to waste collection contracts (e.g. introduction of an additional bin);
- Educational and promotional campaigns encouraging behaviour change in waste management;
- External influences such as changes to product designs and packaging; and
- Legislative or regulatory changes to treatment and disposal of waste.

Throughout the year other events can impact the waste generation and composition, these include:

- Seasonal impacts or disaster events (e.g. drought or flooding); and
- Public holiday periods (e.g. Christmas).

There are some uncertainties in forecasting future waste generation, such as determining how behaviour change may impact overall waste tonnages and composition. Other influences may include changes in the economy and attitudes towards segregating waste for recycling. There are also limitations in some of the data available; for example, the 2011 waste composition data may not be representative of the current waste stream and its use may distort waste treatment capacity requirement forecasts.

The industry standard approach to measuring future municipal waste growth is to use a per capita calculation (total average<sup>12</sup> generation by waste type divided by the total population plus percentage growth).

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<sup>12</sup> The NSW EPA recommend using a five year average

The EPA reported data provides per capita waste generation as kilograms per person per week. In 2011/12 the average waste generated per person per week in the region was 8.9 kilograms, this represented an increase of 6% since 2007/08 and a year-on-year increase of 1.2% per annum over five years. In understanding how this per person rate influences waste volumes, it is also necessary to appreciate that the regional population is growing at about 1.3% per annum on average.

In order to estimate the likely expected growth in total waste generated across the region based on population and reported increases in waste per capita the following scenarios have been considered (as presented in **Table 7** below):

- **Scenario (a)** No increase (assumes 8.9kg per capita per person per week until 2031);
- **Scenario (b)** Constant increase (assumes overall 1.2% increase per annum until 2020 and then 0% growth until 2031); and
- **Scenario (c)** High increase (assumes overall 1.6% increase per annum until 2020 and then 1% growth until 2031).

**Table 7 Scenarios for Waste Growth Forecast**

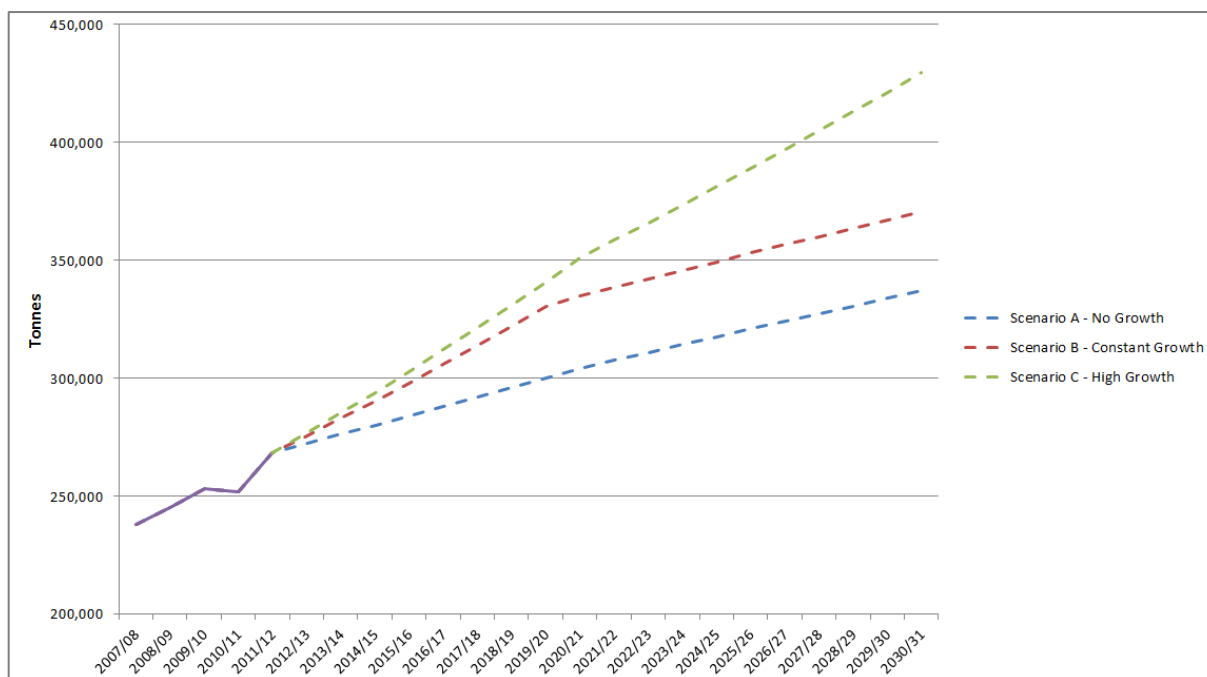
Scenario	Total waste (kg / person / week)		
Year	2014/15	2019/20	2030/31
a) No increase	8.9	8.9	8.9
b) Constant increase	9.3	9.8	9.8
c) High increase	9.5	10.1	11.3

A brief explanation of each scenario is provided below:

- Scenario (a) has been selected as a reasonable lower boundary for waste growth and assumes that waste per capita ceases to rise in the future and any overall waste generation increases are attributed to increases in population only. Possible reasons for waste per capita stabilising could be behaviour change through waste minimisation education programs or improvements in product design to reduce packaging.
- Scenario (b) represents the business as usual scenario. This assumes that waste per capita will continue to increase at the same rate for the next five years until 2020. It is assumed that by 2020 the waste generated per capita will have peaked and will stabilise in response to waste minimisation and product stewardship initiatives.
- Scenario (c) represents a high growth scenario. This assumes that the waste generated per capita increases at a higher rate per annum of 1.6% until 2020 when it reduces slightly to 1% per capita growth per annum. A continued increase in waste generated per capita could be attributed to changes in dwelling type and occupancy e.g. a more transient population and increased reliance on disposable products and convenience foods.

**Figure 9** below shows the outcomes of the three scenarios on the total anticipated waste generation in the Northern Sydney region up to 2031 based on population increase and per capita waste production.

**Figure 9 Waste Growth Scenarios Based on Population and Per Capita Increase**



The total expected waste generation for the region are also presented below in **Table 6** for key years.

**Table 8 Anticipated Waste Generation Scenarios for the Northern Sydney Region**

Scenario	Total anticipated waste generation for NSROC (tonnes per annum)		
	2014/15	2019/20	2030/31
a) No increase	280,189	300,262	337,065
b) Constant increase	290,397	330,328	370,816
c) High increase	293,854	340,919	429,508

Depending on which scenario is most likely, the total anticipated increase in waste generation ranges from 57,000 tonnes for Scenario (a) to 136,000 tonnes per annum for Scenario (c) from 2014/15 until 2030/31.

Increases in waste generation will directly impact the demand for waste collection and treatment services across the region. If waste per capita continues to increase at similar or higher rates (e.g. Scenarios (b) or (c) then the total capacity requirements for treatment and disposal are likely to exceed availability and the cost of managing waste per resident will increase. This is further exacerbated by the time taken to develop additional waste treatment capacity which can take a number of years from initial design and development approval to commissioning and operation.

**4.5.2 Waste infrastructure capacity**

The availability of waste processing and treatment capacity has been highlighted as a key concern for future waste management by each LGA in the Northern Sydney region.



Currently there is no waste treatment or reprocessing capacity within the Northern Sydney region (see **Figure 10**) nor any Council-owned waste transfer facilities (SITA Australia Pty Ltd own and operate two resource recovery centres and transfer stations). Hornsby Council operates a waste management centre but this is not a commercial transfer station.

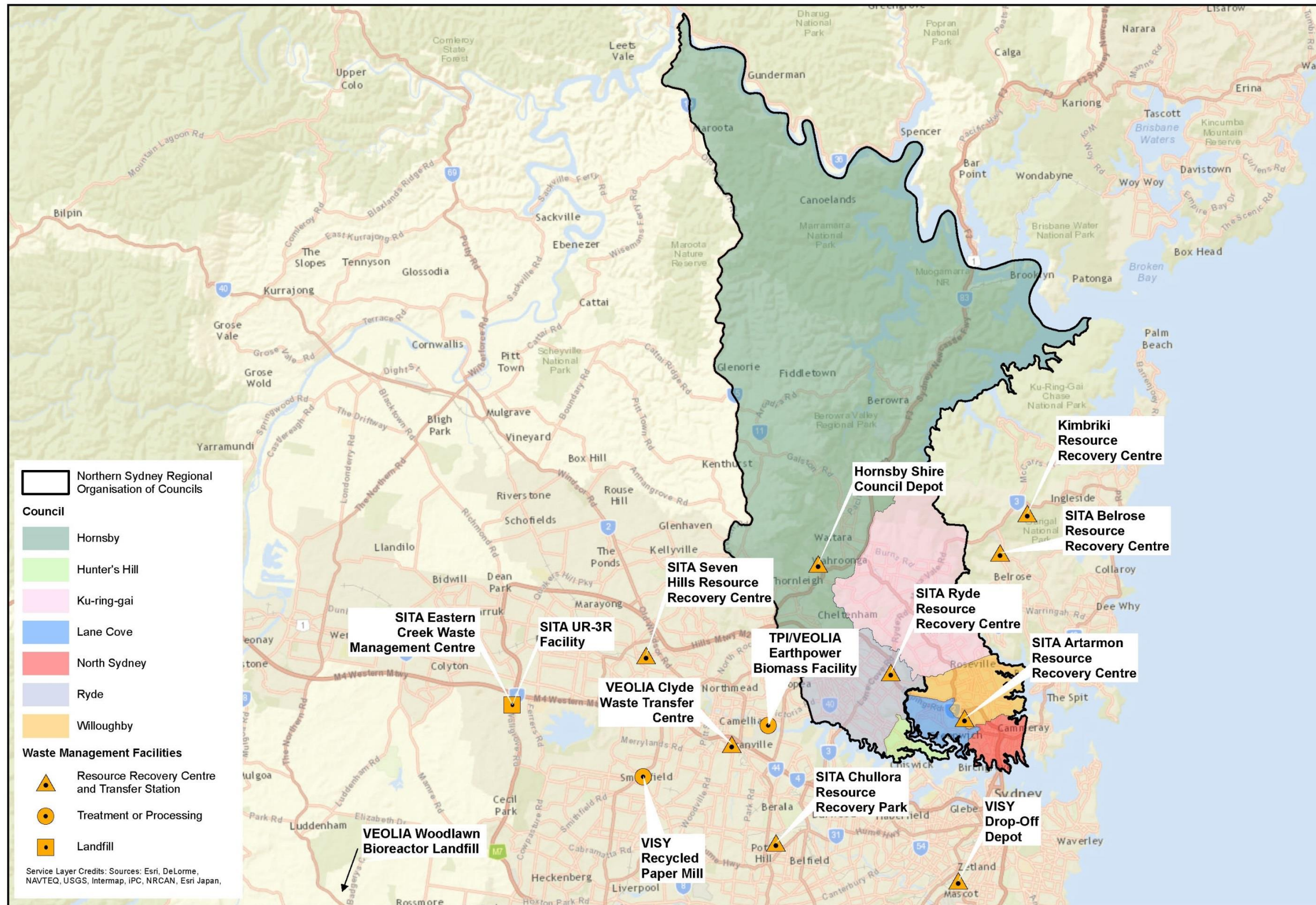
There are two putrescible waste landfill facilities outside the northern Sydney region able to accept municipal waste and two residual waste treatment facilities represented in **Figure 10**. These facilities are understood<sup>13</sup> to be at or close to reaching capacity for treatment and / or disposal, as they also accept waste from LGAs throughout the SMA.

Securing waste recovery, treatment and disposal capacity for future years will need to be addressed not only as a Northern Sydney regional priority but as a priority for the entire SMA.

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<sup>13</sup> Anecdotal evidence

Figure 10 Existing Municipal Waste Transfer and Treatment Facilities Utilised by the Region's Contractors





#### 4.6 Waste composition

Understanding the composition of different waste streams is a vital part of developing a future waste strategy for many reasons:

- Understanding how existing schemes are performing by identifying where additional efforts can be made to increase recycling performance in existing service areas;
- Planning for future recycling or organic treatment capacity requirements based on what materials remain in the residual waste bin and which ones can be targeted for future recycling; and
- Planning for future residual treatment capacity requirements (the amount of waste remaining to be treated or disposed will be determined by what materials can already be diverted through recycling and composting services).

Waste composition data is also provided by the EPA for each Council and for the Northern Sydney region. **Table 9** and **Table 10** provide a breakdown of the residual (red lid bin) and recyclables waste composition respectively.

The average residual waste generation per capita for the Northern Sydney region is 3.8 kilograms per week, which is lower than both the SMA and the state of NSW average. Similarly, the amount of potential dry recycling remaining in the residual waste stream is also slightly lower for the Northern Sydney region (2.0 kilograms per household per week) than for the SMA as a whole (2.2 kilograms per household per week).

The Northern Sydney region has a greater proportion (43%) of food organics in the residual bin compared to the SMA average (38%), however, the garden and other organics proportion (11%) is lower than that of the SMA average (15%).

**Table 9 Residual Waste Bin Data**

Year: 2011	Council							Region	SMA	NSW
	Hornsby	Hunters Hill	Ku-ring-gai	Lane Cove	North Sydney	Ryde	Willoughby			
Yield per household (kg per household per week)	11.4	12.6	10.1	11.5	7.3	10.4	10.8	10.3	11.9	11.3
Per capita (kg per capita per week)	3.8	4.1	3.6	4.2	3.6	3.8	4.2	3.8	4.3	4.3
<b>Waste Composition</b>										
Total paper and paper	21%	20%	22%	24%	20%	22%	23%	22%	21%	
Food organics	49%	41%	46%	40%	44%	40%	40%	43%	38%	
Garden and other organics	10%	11%	11%	13%	12%	9%	9%	11%	15%	
Total glass	5%	2%	3%	3%	2%	3%	3%	3%	3%	
Total plastics	9%	10%	10%	11%	11%	11%	12%	11%	10%	
Percentage of potential dry recycling	25%	21%	26%	20%	19%	22%	23%	22%	22%	
Potential dry recycling (kg per household per week)	2.5	2.0	2.3	1.7	1.3	2.0	2.1	2.0	2.2	

**Table 10 Recycling Bin Data**

Year: 2011	Council							Region	SMA	NSW
	Hornsby	Hunters Hill	Ku-ring-gai	Lane Cove	North Sydney	Ryde	Willoughby			
Yield per household (kg per household per	6.1	6.0	7.1	5.9	4.4	5.0	5.4	5.7	5.2	4.8
Per capita (kg per capita per week)	2.0	2.0	2.5	2.1	2.2	1.8	2.1	2.1	1.9	1.9
Waste Composition										
Total paper and paper	59%	56%	59%	57%	57%	60%	60%	58%	57%	
Total organics	3%	1%	1%	1%	1%	2%	1%	1%	2%	
Total glass	28%	34%	29%	34%	34%	26%	29%	7%	8%	
Total plastics	7%	6%	6%	6%	6%	8%	7%	7%	8%	
Percentage of dry recycling	94%	97%	96%	96%	97%	92%	96%	95%	92%	
Contamination (kg per household per week)	0.4	0.2	0.4	0.2	0.2	0.4	0.3	0.3	0.5	

The average waste composition of the recycling bins within the Northern Sydney region is very similar to the SMA, however, the Northern Sydney region performs slightly better in terms of contamination rates (kilogram per household per week).

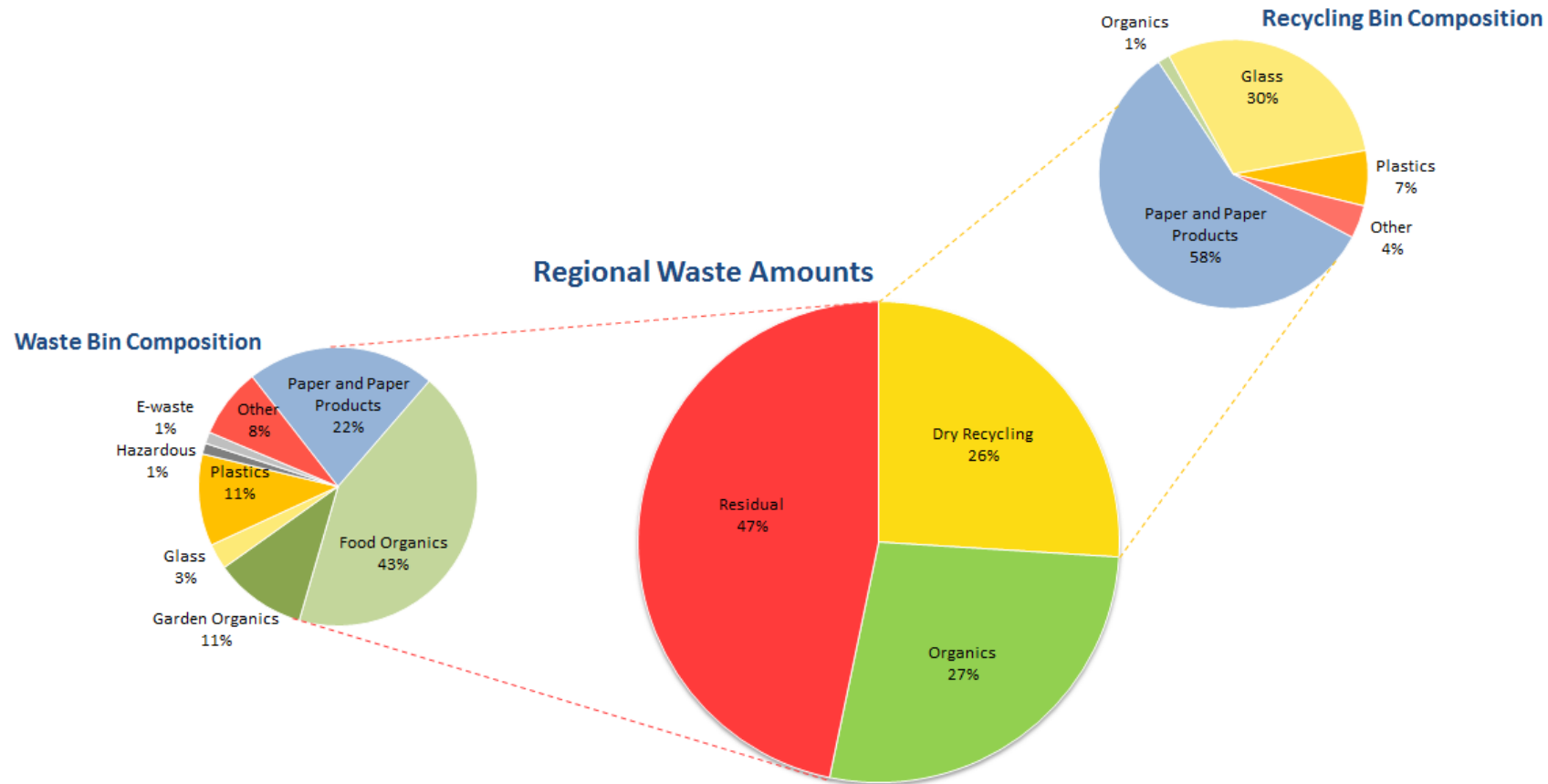
**Figure 11** below presents the aggregated regional composition data for Northern Sydney. Dry recycling and garden organics represent more than 50% of the waste stream currently being diverted from landfill. In the recycled waste stream 58% of this material is paper and cardboard.

During discussions with councils as part of the strategy development, a number of comments were made regarding waste composition changes which are not immediately obvious from the above data set. The most recent waste composition audit was completed in 2011 and only included a single sample of 200 residents from each LGA. An action for the strategy will be to undertake a more current waste composition analysis which is statistically significant (i.e. using representative sampling) and which may also include additional samples to account for any seasonal impacts on waste composition and increase the robustness of the results.

The following anecdotal evidence regarding waste composition was captured as part of the baseline data collection:

- Increased availability of electronic media is having an impact on the volumes of paper and cardboard and are likely to decrease in future;
- LGAs with a higher proportion of MUDs have less garden waste in the waste stream which reduces the maximum recycling rate achievable with current collection services; and
- Purchasing behaviours impact the recycling rates in some LGAs due to a weight based reporting system (e.g. beverages bought in glass containers are heavier than aluminium cans) which also supports the transition to life cycle assessment as a measure of environmental improvement.

Figure 11 Waste Compositions – Northern Sydney Region, 2011/12





## 4.7 Baseline assumptions

The creation of a baseline for the Northern Sydney region uses a variety of data sources and in determining the projections for possible future waste generation a number of assumptions have been applied to the historical data. A summary of the key population and waste data sources are presented below in **Table 11**.

**Table 11 Data Sources and Assumptions used in preparation of Baseline Report**

Report Section	Waste Data / Assumption	Source
<b>Section 4.1: Geographic, Population and Demographic Information</b>	2012 NSROC Population Figures	Australian Bureau of Statistics. 3218.0 Regional Population Growth, Australia, 2012
	2013 – 2031 NSROC Population Forecast	New South Wales in the Future, Preliminary Population Projections 2013, NSW Planning and Infrastructure
	2012 NSROC Dwelling Numbers	EPA Data 2011/2012
	2031 NSROC Dwelling Targets	NSROC Regional Sustainability Plan 2009/2014
	2012 Household Mix (SUDs/MUDs)	NSW EPA Data 2011/2012
	2031 Household Mix (SUDs/MUDs) – 80-95% of all new dwellings in Northern Sydney to be MUDs.	SLR assumption
<b>Section 4.2: Waste and resource recovery collection and processing</b>	Waste services provided	SLR interviews with councils
	Waste tonnage data	EPA Data 2011/2012
	Bin Sizes	Wright Corporate Strategy, Northern Sydney Regional Organisation of Councils, Waste Forum Briefing Paper July 2011 (and confirmed during interviews)
	Recycling rates and composition data	EPA Data 2011/2012
	Waste collection and processing operators	Maddocks Report on Governance Model Options (and confirmed during interviews)
<b>Section 4.3: Waste and resource recovery</b>	Waste contract data	Maddocks Report on Governance Model Options (and confirmed during interviews)
<b>Section 4.5: Waste data</b>	Waste resource and recovery data	EPA Data 2011/2012 EPA 5 Year Historic Data
	Historical waste generation per capita (kg/person/week)	EPA Data 2011/2012 EPA 5 Year Historic Data
<b>Section 4.6: Waste growth projections and infrastructure needs</b>	Forecast waste generation per capita (kg/person/week)	SLR assumptions EPA 5 Year Historic Data
<b>Section 4.7: Waste composition</b>	Waste Composition Data	EPA Data 2011/2012

## 5 CONCLUSION

This report has presented an overview of the State's waste targets and drivers for improved waste management in NSW. A regional profile for the Northern Sydney region has also been provided including a review of current waste services, performance and contractual commitments. Three scenarios for waste growth were developed as input to developing targets for the Regional Waste Strategy.

The information outlined in this report will be used to inform the project options analysis process and the overall directions for the Regional Waste Strategy for the period 2014 to 2021. Please see the Project Options Assessment Report and the Directions Report for further details.



**NORTHERN SYDNEY**  
**REGIONAL WASTE STRATEGY 2014 – 2021**  
**Project Options Assessment Report**

**JUNE 2014**

# NORTHERN SYDNEY REGIONAL WASTE STRATEGY 2014 - 2021 Project Options Assessment Report

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This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with the Client. Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Northern Sydney Regional Organisation of Councils, the member councils and the New South Wales Environment Protection Authority.

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### APPENDICES

Appendix A	Assumptions for Project Options
Appendix B	Assessment Criteria Summary



## 1 INTRODUCTION

The Northern Sydney Regional Organisation of Councils (NSROC) comprises seven member councils that have come together to address regional issues, to work cooperatively for the benefit of the region and to advocate on regional positions and priorities. The member councils are Hornsby, Hunter's Hill, Ku-ring-gai, Lane Cove, North Sydney, Ryde and Willoughby. SLR Consulting Australia Pty Ltd (SLR) was commissioned by NSROC to prepare a Regional Waste Strategy (the Strategy) for the management of municipal solid waste (MSW) generated in the NSROC region.

Effective waste management is a crucial responsibility of the Councils in the NSROC region. Collectively, the NSROC councils generate over 250,000 tonnes of domestic waste per annum. NSROC facilitates several cross-council professional officer groups (POGs) and advisory groups which meet on a regular basis to exchange information on relevant technical issues. The NSROC Waste Advisory Group (WAG) was established in 2013. Its members are waste managers from each member Council and it was established to develop a shared service approach to regional waste management, commencing with a joint contract for disposal and processing for residual (red bin) waste. The Chair of the group is Barry Smith, the General Manager of Hunter's Hill Council. The WAG, in collaboration with other waste officers from the seven councils, was instrumental in the development of the Strategy.

This Strategy has been supported by the NSW Environment Protection Authority (EPA) with funding from the waste levy. The Strategy development process was informed by the EPA's *Regional Waste Avoidance and Recovery Strategy Guidance* document (the Guidance document)<sup>1</sup>.

### 1.1 Options assessment methodology

A detailed methodology for the options assessment process is described below and follows the Guidance document's recommended structure. The options assessment incorporates social, economic, policy and environmental objectives and indicators and provides a transparent process which was informed through consultation with each Council through the WAG members.

The following steps comprise the options assessment process and describe the general format applied to this report:

- Step 1 – Identifies all viable options.
- Step 2 – Presents the criteria against which all options will be measured.
- Step 3 – Assesses the performance of these options against the criteria identified within Step 3.
- Step 4 – Applies values to the performance scores for each option.
- Step 5 – Applies Council weightings to the different objectives or criteria against one another.
- Step 6 – Evaluates and ranks the different options.
- Step 7 – Presents a sensitivity analysis. Analyses how sensitive the results are to variations in the assumptions made or the data used.

The aim of the Strategy options assessment process is to enable an appraisal of potential waste management options for the NSROC region on the basis of sustainability indicators or criteria. The assessment process is designed to be clear and consistent to assist in the identification of preferred waste management options for wastes generated in the region for the term of this Strategy and to lay the groundwork for the period beyond.

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<sup>1</sup> Regional waste avoidance and resource recovery strategy, NSW EPA, Final Draft, March 2014

The options assessment process summarised in this report focuses on the implementation of options up to 30 June 2017, as this is consistent with the funding opportunities in the EPA's *Waste Less, Recycle More* timeframe. The Strategy itself however, reflects longer term goals for waste management in the region. In subsequent reviews and updates to this Strategy, the Action Plan may be extended to reflect new State and local policy and legislative drivers as well as any increased certainty with respect to data inputs and MSW treatment technology developments.

## 2 IDENTIFYING OPTIONS

Waste management options or specific projects considered for this Strategy were identified through discussions with each of the WAG members at individual consultation meetings and during Workshop 1.

In the follow up workshop (Workshop 2), the WAG members were presented with a long list of identified project options and asked to select their ten most preferred projects. This process helped to discern the demand for individual projects at the regional level and to identify those projects that would be evaluated as part of the options assessment.

The long list of project options considered suitable for regional focus and alignment with the NSROC objectives are presented below in **Table 1**.

**Table 1 Long List of Project Options**

Project Options			
1	Investigate Improved Planning Guidance for Waste Management in Mixed Use Developments and MUDs	10	Identification of Suitable Sites for Waste Infrastructure Development in the Region
2	Regional Illegal Dumping Program	11	Regional Mattress Collection <sup>1</sup>
3	Regional Waste Compositional Audit	12	Expanded Plastic Foam Recycling (for commercial operations)
4	Regional Drop-Off Centres for Problem Wastes	13	In-kitchen Organic Disposal Unit Feasibility Study
5	Regional Processing and Disposal Contract	14	Regional Chipping and Mulching Service
6	Regional Schools Education Programs	15	Regional Asbestos Management and 'Make Safe' Policies / Procedures
7	Regional Education Program for Improved Waste Management in MUDs	16	Regional Online Resource Exchange (e.g. re-use scheme)
8	Regional Community Education Programs	17	Council Wastes Management (i.e. review of operations etc) <sup>2</sup>
9	Other Regional Procurement Contracts (e.g. recyclables processing, organics, problem wastes, collections)		

Table Notes:

- 1 During Workshop 2, it was agreed by WAG members that the Regional Mattress Collection project option should be included under the Other Regional Procurement Contracts project option.
- 2 During Workshop 2, it was agreed that Council Wastes Management should be added to the long list of project options.
- 3 Project names were revised following review by General Managers. The Directions report records the final form of the projects, which are not materially altered from the assessed options.

The top ten projects selected by the WAG are presented in **Table 2**. These projects have been prioritised using the appraisal methodology described in the **Section 3** of this report. The number of votes received from NSROC council waste managers for each project option was incorporated into the options assessment evaluation.

**Table 2 Short List of Project Options**

Selected Projects	
1	Investigate Improved Planning Guidance for Waste Management in Mixed Use Developments and MUDs
2	Regional Drop-Off Centres for Problem Wastes
3	Regional Processing and Disposal Contract
4	Regional Education Program for Improved Waste Management in MUDs
5	Identification of Suitable Sites for Waste Infrastructure Development in the Region
6	Regional Community Education Programs
7	Other Regional Procurement Contracts (e.g. recyclables processing, organics, problem wastes, collections)
8	Regional Illegal Dumping Program
9	Council Wastes Management (i.e. review of operations etc)
10	Regional Waste Compositional Audit

The options assessment prioritises the top five projects for inclusion within the Strategy's Action Plan for the next three years. The remaining five options plus those included in the original long list, will remain part of the Strategy and will be reviewed for potential inclusion as the strategy implementation process progresses.

### 3 APPRAISAL METHODOLOGY

To ensure a consistent approach in assessing which projects to prioritise for the NSROC region, an appraisal methodology was used which was informed by the Guidance document. The five principal stages of this methodology are summarised as follows:

- Establishing objectives and assessment criteria (indicators);
- Identifying overall performance scores for each indicator;
- Establishing a valued performance score for each indicator;
- Applying a weighting to each indicator (regional average informed by each of the Councils) to generate a final score; and
- Undertaking a sensitivity analysis of the results.

Performance scores for each regional waste strategy implementation option were allocated in the workshop setting and associated processes and were based on:

- Existing NSROC baseline data including EPA reported data for the period (2008-09 to 2011-12) and NSROC councils reported data for 2012-13 period);
- Existing published data;
- NSROC Strategy Workshop outcomes;
- Additional consultation with individual WAG members;
- Consultation with local waste management service providers; and
- SLR's professional judgement based on experience with similar projects.

Details of assumptions applied to each option are presented in **Appendix A**.

### 3.1 Evaluation criteria

The following criteria were reviewed and endorsed by the WAG at Workshop 2 and have been applied in assessing each of the regional waste strategy implementation options:

- Number of Councils for which the project or initiative is appropriate;
- The likely percentage of waste minimised, recycled or diverted from landfill;
- The likely cost per tonne of waste managed, minimised, recycled or diverted from landfill;
- Deliverability of objectives and targets within appropriate timescales (by 2021);
- Alignment with State targets and objectives;
- Contribution to Regional Strategy objectives;
- Percentage of the region (based on population) who can benefit from the project initiative; and
- Percentage of target waste streams which include priority or problem wastes.

A summary of the assessment criteria and associated scoring is presented below in **Table 3**.

The criteria incorporate both the regional and State strategic objectives and are intended to ensure that the proposed Regional Waste Strategy implementation options are assessed in a way which prioritises those projects with the greatest potential to meet the desired outcomes and vision for the Strategy.

**Table 3 Evaluation Criteria and Scoring**

Criteria	Scoring		
1 Number of Councils for which the project / initiative is appropriate	<2	≤5	>5
	0	5	10
2 Likely % waste minimised / recycled / diverted (compared with base)	<2.5%	2.5-5%	>5%
	0	5	10
3 Likely \$/tonne of waste managed or diverted	>\$300	\$100-300	<\$100
	0	5	10
4 Deliverability of (interim) targets within appropriate timescales	>24m	18-24m	<18m
	0	5	10
5 Alignment with State targets and objectives	<2	≤5	>5
	0	5	10
6 Contribution to Regional Strategy objectives	<2	≤5	>5
	0	5	10
7 Percentage of region who can benefit from the initiative	<20%	21-50%	>50%
	0	5	10
8 Percentage of target waste that includes priority waste or problem waste	<25%	25-50%	>50%
	0	5	10

A more detailed explanation of the meaning ascribed by the assessing group to each of the criteria is provided in **Appendix B** of this report.

## 4 GAP ANALYSIS

A gap analysis was undertaken during the options assessment to identify where additional research and data would be helpful to assist with the evaluation of the project options. Such evidence will allow the social, economic, and environmental opportunities and constraints associated with each of the chosen projects to be assessed with greater confidence.

The project information gap analysis is shown in **Table 4** below along with suggested methods for improved data collection. Depending on the level of resourcing available, additional data may be sought during the initial stages of implementing the Strategy to guide and inform future business case studies and EPA grant funding applications through the *Waste Less, Recycle More* or other initiatives.

**Table 4 Gap Analysis Outcomes**

Missing data	Recommended Method of Data Collection
<b>Tonnage and composition of waste from MUDs for the region (excluding Hornsby)</b>	Commission external consultant to conduct a compositional audit for each Council.
<b>Waste minimisation and increased recycling attributable to education programs</b>	Monitoring and evaluation reports before and following the roll out of a campaign to quantify the impact of educational and engagement programs.
<b>Tonnages, composition and incidences of illegally dumped waste including observations noting likely source (i.e. builders/renovators, domestic MUDs, other)</b>	Survey, photograph and make observations of waste types found and record any evidence of owner. Report number of all incidences including those managed through Council clean-up or via other means. Due to the resource intensity of this data collection, it could be incorporated into the first year of the project.
<b>Predicted tonnes and composition of wastes taken to a regional drop-off centre</b>	Undertake audit of general clean up waste collected. Request tonnage and composition data from existing Council waste drop off sites. Survey residents to determine likely demand for regional drop-off centre.
<b>Tonnages and composition of Council-owned wastes</b>	Survey, photograph and make observations of waste types to be managed. Report tonnages of bulk waste types recycled / disposed.
<b>An understanding of Councils' appetite for infrastructure development</b>	Identify the interest for infrastructure development (other than for drop-off centres which is addressed elsewhere) in the region through workshops with Councils.
<b>Suitable site availability for regional Drop-Off Centre/s</b>	Conduct investigation to determine if suitable sites are available in the region.
<b>Evidence of economies of scale through regional procurement</b>	Determine procurement options to be investigated, approach service providers for quotes for joint procurement contract option/s. Savings made through the regional waste processing and disposal tender will be a useful guide.



## 5 PERFORMANCE OF OPTIONS

The assessment criteria discussed in the previous sections represents an informed sustainability appraisal framework for assessment of the proposed project options. Wherever possible, the performance of each proposed option listed in **Table 2** against the above criteria was quantified, for example through the use of EPA, NSROC council and/or published data. Where this is not possible, a qualitative assessment of performance was undertaken.

### 5.1 Overall performance scores

The purpose of appraising the performance of implementation of the project options against the criteria discussed in **Section 0** was to show decision makers their relative advantages and disadvantages. The appraisal undertaken in this report systematically scores each option against all of the criteria. The overall performance scores for the top ten project options are presented in **Table 5** (refer to **Table 2** for a list of these options).

**Table 5 Overall Performance Score**

Assessment	Project Options - Scores									
	1	2	3	4	5	6	7	8	9	10
Number of Councils for which the project / initiative is appropriate	7	7	5	6	6	6	6	4	4	3
Likely % waste minimised / recycled / diverted	3	5	29	3	0	3	0	6	3	0
Likely \$/tonne of waste managed or diverted	10	118	99	75	500	134	900	300	12	250
Deliverability of (interim) targets within appropriate timescales	11	24	18	12	48	9	6	12	12	7
Alignment with State targets and objectives	2	3	2	4	2	3	2	3	1	2
Contribution to Regional Strategy objectives	5	5	3	5	2	4	3	4	4	4
Percentage of region who can benefit from the initiative	13	69	72	31	70	72	72	79	69	27
Percentage of target waste that includes priority waste or problem waste	1	25	2	1	5	25	0	20	5	2
<b>Totals</b>	<b>51</b>	<b>256</b>	<b>230</b>	<b>136</b>	<b>633</b>	<b>256</b>	<b>989</b>	<b>428</b>	<b>110</b>	<b>295</b>

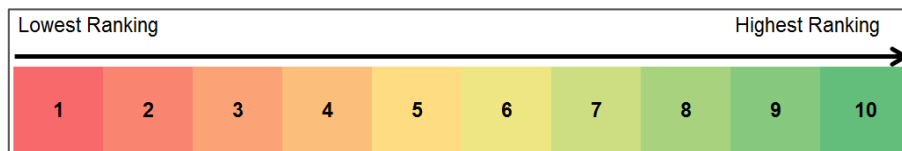
However, analysis of **Table 5** was difficult because of the use of different units for each criterion limited its benefit as a decision-making tool. Establishing 'valued' performance scores provides a possible solution to this problem by allowing ranking and is further discussed in the following section.

## 5.2 Valued performance scores

'Valued' performance scores interpret overall performance scores on a scale of 0 to 10, where 0 is the worst performance, and 10 the best. This enables the discrepancy between scores to be retained, while also allowing the performance of proposed regional waste strategy implementation options against all criteria to be placed on a common scale. In this report it is assumed that a linear relationship exists between the best and worst 'value' scores. This approach was used to apply a linear relationship to the performance scores and the resulting 'valued' performance scores for each option are summarised in **Table 6**. The relationship is expressed in the scoring values for each criteria agreed by WAG members at Workshop 2.

**Table 6** has an implicit assumption that all evaluation criteria have an equal weighting. With this assumption, the higher scoring project options scored 8 out of 10. The top three options were Option 2 Regional Drop-Off Centres for Problem Wastes, Option 6 Regional Community Education Programs and Option 8 Regional Illegal Dumping Program. The lowest scoring option was Option 5 (Identification of Suitable Sites for Waste Infrastructure Development in the Region).

**Table 6 Valued Performance Score of Project Options**



Assessment	Project Options - Scores									
	1	2	3	4	5	6	7	8	9	10
Number of Councils for which the project / initiative is appropriate	10	10	5	10	10	10	10	5	5	5
Likely % waste minimized / recycled / diverted	5	10	10	5	0	5	0	10	5	0
Likely \$/tonne of waste managed or diverted	5	5	5	5	0	5	0	5	5	5
Deliverability of (interim) targets within appropriate timescales	10	5	5	10	0	10	10	10	10	10
Alignment with State targets and objectives	5	5	5	5	5	5	5	5	0	5
Contribution to Regional Strategy objectives	5	5	5	5	5	5	5	5	5	5
Percentage of region who can benefit from the initiative	0	10	10	5	10	10	10	10	10	5
Percentage of target waste that includes priority waste or problem waste	0	10	0	0	0	10	0	10	0	0
<b>Totals</b>	<b>40</b>	<b>60</b>	<b>45</b>	<b>45</b>	<b>30</b>	<b>60</b>	<b>40</b>	<b>60</b>	<b>40</b>	<b>35</b>
<b>Ranking</b>	<b>3</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>1</b>	<b>8</b>	<b>3</b>	<b>8</b>	<b>3</b>	<b>2</b>

### 5.3 Weighting of assessment criteria

It is unlikely that each assessment criterion will be of equal significance to decision makers. For the Northern Sydney region it was agreed to apply additional weight to those criteria which were judged by the professional waste managers to be likely to be of greater importance to councils.

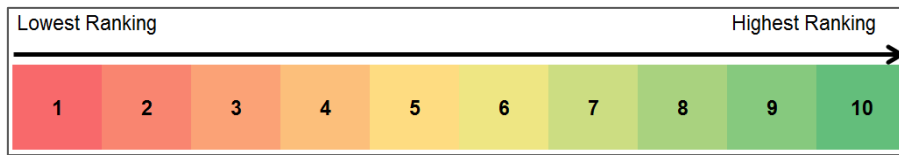
As part of the development of this Strategy, a weightings consultation exercise was undertaken during Workshop 2. Each Council was asked to apply a percentage weighting to each assessment criteria ensuring that the total weighting for all eight criteria equalled 100%. The weightings given by each Council were then averaged to provide a regional weighting and are provided in **Table 7**.

**Table 7 Regional Council Weightings for Options Assessment Criteria**

Criteria	Regional Council Weightings <sup>1</sup>
1 Number of Councils for which the project / initiative is appropriate	12%
2 Likely % waste minimised / recycled / diverted (compared with base)	21%
3 Likely \$/tonne of waste managed or diverted	14%
4 Deliverability of (interim) targets within appropriate timescales	10%
5 Alignment with State targets and objectives	7%
6 Contribution to Regional Strategy objectives	9%
7 Percentage of region who can benefit from the initiative	13%
8 Percentage of target waste that includes priority waste or problem waste	15%

1: Percentages do not add up to 100% due to rounding.

**Table 8** overleaf shows the impact of the weightings exercise on the assessment process.

**Table 8 Weighted Performance Score of Project Options**

Assessment	Project Options - Scores									
	1	2	3	4	5	6	7	8	9	10
Number of Councils for which the project / initiative is appropriate	118	118	59	118	118	118	118	59	59	59
Likely % waste minimized / recycled / diverted	107	214	214	107	0	107	0	214	107	0
Likely \$/tonne of waste managed or diverted	68	68	68	68	0	68	0	68	68	68
Deliverability of (interim) targets within appropriate timescales	96	48	48	96	0	96	96	96	96	96
Alignment with State targets and objectives	34	34	34	34	34	34	34	34	0	34
Contribution to Regional Strategy objectives	45	45	45	45	45	45	45	45	45	45
Percentage of region who can benefit from the initiative	0	131	131	66	131	131	131	131	131	66
Percentage of target waste that includes priority waste or problem waste	0	131	0	0	0	131	0	131	0	0
<b>Totals</b>	<b>468</b>	<b>790</b>	<b>600</b>	<b>534</b>	<b>328</b>	<b>731</b>	<b>425</b>	<b>779</b>	<b>507</b>	<b>368</b>
<b>Ranking</b>	<b>4</b>	<b>10</b>	<b>7</b>	<b>6</b>	<b>1</b>	<b>8</b>	<b>3</b>	<b>9</b>	<b>5</b>	<b>2</b>

Following the weightings exercise, the highest scoring project option was Option 2 Regional Drop-Off Centres for Problem Wastes and the remaining top five options were Option 8 Regional Illegal Dumping Program, Option 6 Regional Community Education Programs, Option 3 (Regional Processing and Disposal Contract and Option 4 Regional Education Program for Improved Waste Management in MUDs. The lowest scoring option was Option 5 (Identification of Suitable Sites for Waste Infrastructure Development in the Region). In this instance, the weightings did not make significant changes to the highest and lowest scoring project options; however, it did serve to differentiate between those options which were equal using only the valued performance scores.

## 6 SENSITIVITY ANALYSIS

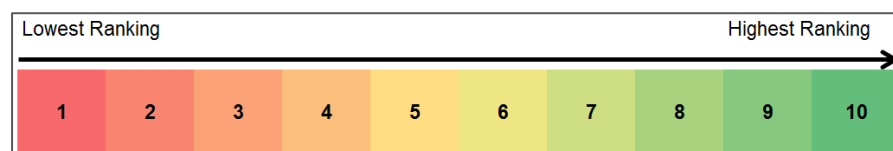
The adopted approach for identifying the preferred project options ensured that a number of significant criteria were addressed explicitly in the selection process. However, the process has inherent uncertainties associated with the choice of options, the chosen criteria and the weightings derived for the criterion. To examine the robustness of the overall results, an examination of their general sensitivity to these uncertainties was undertaken.

Sensitivity analysis was carried out for two different cases by:

- ***Inverted weightings***

This was carried out by inverting the weightings, such that the highest weighted indicator became the lowest weighted indicator and vice versa. This analysis was undertaken and the results are shown in **Table 9**.

**Table 9 Performance Scores of Options with Inverse Weightings**



Assessment	Project Options - Scores									
	1	2	3	4	5	6	7	8	9	10
Number of Councils for which the project / initiative is appropriate	131	131	66	131	131	131	131	66	66	66
Likely % waste minimized / recycled / diverted	34	68	68	34	0	34	0	68	34	0
Likely \$/tonne of waste managed or diverted	48	48	48	48	0	48	0	48	48	48
Deliverability of (interim) targets within appropriate timescales	136	68	68	136	0	136	136	136	136	136
Alignment with State targets and objectives	107	107	107	107	107	107	107	107	0	107
Contribution to Regional Strategy objectives	73	73	73	73	73	73	73	73	73	73
Percentage of region who can benefit from the initiative	0	118	118	59	118	118	118	118	118	59
Percentage of target waste that includes priority waste or problem waste	0	118	0	0	0	118	0	118	0	0
<b>Totals</b>	<b>529</b>	<b>731</b>	<b>548</b>	<b>588</b>	<b>429</b>	<b>765</b>	<b>565</b>	<b>734</b>	<b>475</b>	<b>489</b>
<b>Ranking</b>	<b>4</b>	<b>8</b>	<b>5</b>	<b>7</b>	<b>1</b>	<b>10</b>	<b>6</b>	<b>9</b>	<b>2</b>	<b>3</b>

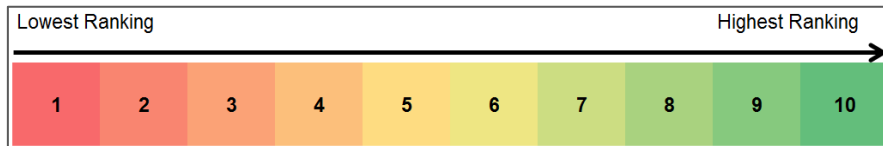


Inverting the weightings provided by each of the Councils altered the top five project options, but only by one option. Option 3 Regional Processing and Disposal Contract dropped out and Option 7 Other Regional Procurement Contracts was included in the top five options. The most preferred option during the assessment, Option 2 Regional Drop-Off Centres for Problem Wastes switched with the third ranked Option 6 Regional Community Education Programs. The lowest performing option remained the same. This suggests that while the weightings did have an impact on the performance of the options, no one weighting fundamentally changed the result of the process.

- **Removal of quantitative assessment**

As the methodologies for quantifying landfill diversion and cost were based on professional assumptions and best estimates, the second sensitivity analysis was carried out by removing these two criteria from the options assessment. The weighted performance score of the project options (qualitative only) is provided in **Table 10**.

**Table 10 Weighted Performance Score of Project Options (Qualitative Only)**



Assessment	Project Options - Scores									
	1	2	3	4	5	6	7	8	9	10
Number of Councils for which the project / initiative is appropriate	118	118	59	118	118	118	118	59	59	59
Likely % waste minimized / recycled / diverted	0	0	0	0	0	0	0	0	0	0
Likely \$/tonne of waste managed or diverted	0	0	0	0	0	0	0	0	0	0
Deliverability of (interim) targets within appropriate timescales	96	48	48	96	0	96	96	96	96	96
Alignment with State targets and objectives	34	34	34	34	34	34	34	34	0	34
Contribution to Regional Strategy objectives	45	45	45	45	45	45	45	45	45	45
Percentage of region who can benefit from the initiative	0	131	131	66	131	131	131	131	131	66
Percentage of target waste that includes priority waste or problem waste	0	131	0	0	0	131	0	131	0	0
<b>Totals</b>	<b>293</b>	<b>508</b>	<b>318</b>	<b>359</b>	<b>328</b>	<b>556</b>	<b>425</b>	<b>497</b>	<b>332</b>	<b>300</b>
<b>Ranking</b>	<b>1</b>	<b>9</b>	<b>3</b>	<b>6</b>	<b>4</b>	<b>10</b>	<b>7</b>	<b>8</b>	<b>5</b>	<b>2</b>

Following the revised weightings exercise, without inclusion of quantitative scores, the highest scoring option was Option 6 Regional Community Education Programs and the lowest scoring option was Option 1 Investigate Improved Planning Guidance for Waste Management in MUDs. Without the impact of tonnage diversion and cost, the preferred options did change, but four of the previous projects remained in the top five. Within the overall rankings the projects only moved one or two places.

The sensitivity analysis suggested that there was consistency across the higher ranking project options and provided more confidence in the robustness of the assessment process. The results also confirmed that the application of weightings, while representative of council preferences, did not significantly change the assessment.

## 7 CONCLUSIONS

As part of the development of the Strategy, senior professional staff from each council and NSROC guided the identification of the regional objectives and targets as well as prospective projects assessed as being better implemented on a broader regional basis rather than by and for an individual council. The regional objectives and targets informed the development of the appraisal methodology which led to assessment criteria with a scoring mechanism. The criteria were then weighted to reflect local priorities and averaged across the region. The methodology can be used to assess future project options to ensure there is a consistent approach utilised for the anticipated life of the Strategy.

Through the application of the methodology as described in this report, it was possible to compare different project options against a number of different assessment criteria. For the Northern Sydney region the following project options consistently remained at the top of the rankings:

- Option 2 – Regional Drop-Off Centres for Problem Wastes;
- Option 8 – Regional Illegal Dumping Program;
- Option 6 – Regional Community Education Programs;
- Option 4 – Regional Education Program for Improved Waste Management in MUDs; and
- Option 3 – Regional Processing and Disposal Contract.

These outcomes generally reflect the projects that are priority waste issues for the NSROC region. However, the waste managers agreed that the policy and planning guidance for MUDs was also an important issue which could be merged with the MUDs education Program and recommended that approval be sought for that adjustment. These projects have been considered by the senior decision makers in the NSROC councils, the General Managers, (the General Managers' Advisory Group) who agreed to incorporate both MUD projects because of the strategic importance of waste policy and planning guidance in new developments.

The consequent element of the Strategy is the Action Plan which captures how the preferred options can be delivered and monitored. The Action Plan includes a list of specific activities which will contribute to meeting the Strategy's objectives. Annual reviews of the Action Plan will allow emerging projects or those culled during this initial assessment to be reconsidered for inclusion.

## APPENDICES

**Option 1**

Investigate Improved Planning Guidance for Waste Management in Mixed Use Developments and MUDs

Scores		Data Source:	Assumptions:
1	Number of Councils for which the project / initiative is appropriate	7	
2	Likely % waste minimised / recycled / diverted (compared with base)	3.2%	
3	Likely \$/tonne of waste managed or diverted	9	
4	Deliverability of (interim) targets within appropriate timescales	11	
5	Alignment with State targets and objectives	2	
6	Contribution to Regional Strategy objectives	5	
7	Percentage of region who can benefit from the initiative	14%	
8	Target waste that includes priority waste or problem waste	1%	
		Council workshop (14 May) and additional feedback (15 May to 20 May)	All councils included
		Discussions with Hornsby Council (20 - 21 May)	Improved recycling of kerbside materials and paper and card and lower incident of illegal dumping
		SLR estimate	35,000 AUD\$ \$20,000 for best practice review and DCP draft, plus \$15,000 for undertaking 3 workshops with Councils
		Discussions with Ku-ring-gai and Ryde Councils (20 - 21 May)	Timescale required to update or revise DCP (assuming completion of LEP), including regional workshops, and using information collated from successful case studies at other councils. Less than 12 months
			Excludes b), c) and e)
			Excludes Innovation and Sustainability
		Based on projected household mix up to 2017-18	Assumes relevant to new MUDs development only
		MUDs compositional data for Hornsby Council (2011)	Assumes MUDs compositional data for Hornsby Council (2011) is representative of the region

**Option 2**

Regional Drop-Off Centres for Problem Wastes

Scores		Data Source:	Assumptions:
1	Number of Councils for which the project / initiative is appropriate	7	
2	Likely % waste minimised / recycled / diverted (compared with base)	5%	
3	Likely \$/tonne of waste managed or diverted	118	
4	Deliverability of (interim) targets within appropriate timescales	24	
5	Alignment with State targets and objectives	3	
6	Contribution to Regional Strategy objectives	5	
7	Percentage of region who can benefit from the initiative	69%	
8	Target waste that includes priority waste or problem waste	25%	
		Council workshop (14 May) and additional feedback (15 May to 20 May)	All councils included
		Previous experience on other projects, consultation with Hornsby Council (May 2014), <a href="http://www.realcommercial.com.au/for-lease">http://www.realcommercial.com.au/for-lease</a>	Assumes approx. land size of Hornsby Council's waste collection site and operational costs. Capex based on valuations for small waste transfer stations scaled by m2. Tonnages based on current drop-off amounts, chemical clean up amounts for 1 year in Hornsby used by 50% of the population, and SUDs / MUDs compositional audit data for hazardous, e-waste and misc.
		EPA funding rounds	Drop off centre not operational until 2016/17 given one year to build and alignment with EPA funding allocations, recycling capacity and waste types accepted to evolve over time for risk management purposes (primarily financial, but also logistical, environmental)
			Excludes b) and e)
			Excludes responsibility
		SLR GIS plots. Based on population projections for 2017-18	Refer to plot provided below - coverage of existing facilities assumed to be 50% Hornsby, 50% Ku-ring-gai, 70% Ryde, 100% North Sydney, 80% Hunter's Hill, 100% Lane Cove and 95% Willoughby.
		EPA Waste Classification Guidelines (Part 1). SLR estimate	Project focus deals with hazardous wastes, e-waste and other problem wastes. Hazardous waste includes lead acid or nickel cadmium batteries, containers previously containing dangerous goods (i.e. cleaning products, pesticides, automotive products and paint), coal tar or coal tar pitch waste.

Option 3

Regional Processing and Disposal Contract

Scores			Data Source:	Assumptions:
1	Number of Councils for which the project / initiative is appropriate	5	Council workshop (14 May) and additional feedback (15 May to 20 May)	Excludes Hornsby and North Sydney as informed Friday 23rd May
2	Likely % waste minimised / recycled / diverted (compared with base)	7%	H:\Projects-SLR\610-SrvSYD\610-SYD\610.13808 NSROC Waste Strategy\Correspondence\RFI & Documentation\Diversion target table.pdf	Based on increase in diversion across the region (for 6 Councils) from 11.7% to 40% by 2021/21
3	Likely \$/tonne of waste managed or diverted	99	SITA presentation	Assumes contract will be just less than \$100 per tonne (ex levy). Based on current contract prices and likely benefits of joint procurement
4	Deliverability of (interim) targets within appropriate timescales	18	NSROC	Assumes contract start will be June 2015
5	Alignment with State targets and objectives	2		Excludes c), d) and e)
6	Contribution to Regional Strategy objectives	3		Excludes Responsibility, Amenity and Public Health and Community Engagement
7	Percentage of region who can benefit from the initiative	60%	Based on population projections for 2017-18	Excludes Hornsby Council and North Sydney
8	Target waste that includes priority waste or problem waste	2%	EPA compositional data (2011)	Assumes hazardous waste composition of residual for SUDs and MUDs excl Hornsby [link]

Option 4

Regional Education Program for Improved Waste Management in MUDs

Scores			Data Source:	Assumptions:
1	Number of Councils for which the project / initiative is appropriate	6	Council workshop (14 May) and additional feedback (15 May to 20 May)	Excluding Ryde
2	Likely % waste minimised / recycled / diverted (compared with base)	3%	Discussions with Hornsby Council (20 May) (awaiting response from Ryde)	Improved recycling of kerbside materials and paper and card, lower incidence of illegal dumping
3	Likely \$/tonne of waste managed or diverted	75	Discussions with Council	3 part-time staff, full-time across the region at \$80,000 pa incl salary, materials and disbursements + \$5,000 per workshops at 4 workshops
4	Deliverability of (interim) targets within appropriate timescales	12	Discussions with Hornsby and Ku-ring-gai Councils (20 May)	Given at least 2 Councils have already employed MUD educational programmes, assumes this information will be available to NSROC to assist in scoping. Minimum time requirement approx 6 - 7 months but anywhere from 6 - 12 months.
5	Alignment with State targets and objectives	4		Excludes c)
6	Contribution to Regional Strategy objectives	5		Excludes Innovation and Sustainability excluded and potential value for money given future savings
7	Percentage of region who can benefit from the initiative	32%	Based on population forecasts for 2017-18	Applicable to all MUDs existing and new, excluding Ryde Council
8	Target waste that includes priority waste or problem waste	1%	MUDs compositional data for Hornsby Council (2011)	Assumes MUDs compositional data for Hornsby Council (2011) is representative of the region



Option 5

Identification of Suitable Sites for Waste Infrastructure Development in the Region

Scores			Data Source:	Assumptions:
1	Number of Councils for which the project / initiative is appropriate	6	Council workshop (14 May) and additional feedback (15 May to 20 May)	Excluding Hunter's Hill
2	Likely % waste minimised / recycled / diverted (compared with base)	0%	Unknown	Insufficient data at this point to provide tonnage diversion data
3	Likely \$/tonne of waste managed or diverted	500	Nominal figure. SLR estimate	Insufficient data at this point to provide cost data
4	Deliverability of (interim) targets within appropriate timescales	48	SLR estimate	
5	Alignment with State targets and objectives	2		Excludes b) and e)
6	Contribution to Regional Strategy objectives	2		Excludes Community Engagement
7	Percentage of region who can benefit from the initiative	98%	Based on population projections for 2017-18	Based on 6 Councils
8	Target waste that includes priority waste or problem waste	5%	EPA Regional Composition Data 2011	Based on regional waste composition

Option 6

Regional Community Education Programs

Scores			Data Source:	Assumptions:
1	Number of Councils for which the project / initiative is appropriate	6	Council workshop (14 May) and additional feedback (15 May to 20 May)	Excluding Hornsby
2	Likely % waste minimised / recycled / diverted (compared with base)	3%	Discussions with Councils (20 and 21 May)	Based on observations of weekly tonnages following promotional campaign where 2% improvement in recycling noted
3	Likely \$/tonne of waste managed or diverted	134	Discussions with Councils (20 and 21 May)	Based on best estimate c. \$75,000 consultancy and media costs, plus 300,000 staff costs (including disbursements)
4	Deliverability of (interim) targets within appropriate timescales	9	Discussions with Councils (20 and 21 May)	Best estimate between 6 - 12 months
5	Alignment with State targets and objectives	3		Excludes b) and c). Assumes campaign focussed on asbestos / other hazardous wastes
6	Contribution to Regional Strategy objectives	4		Excludes Responsibility, Innovation and Sustainability
7	Percentage of region who can benefit from the initiative	72%	Based on population projections for 2017-18	Excludes Hornsby
8	Target waste that includes priority waste or problem waste	25%	Discussions with Hornsby Council (20 May)	Assumes proportion of education programme to contain advice on hazardous waste materials

**Option 7**

Other Regional Procurement Contracts (e.g. recyclables processing, organics, problem wastes, collections) – mattress collection used as an example

Scores			Data Source:	Assumptions:
1	Number of Councils for which the project / initiative is appropriate	6	Council workshop (14 May) and additional feedback (15 May to 20 May)	Excluding Hornsby
2	Likely % waste minimised / recycled / diverted (compared with base)	0.4%	Landsavers	Based on mattress collection only
3	Likely \$/tonne of waste managed or diverted	900	Landsavers and Mission Australia	900 :AUD\$
4	Deliverability of (interim) targets within appropriate timescales	6	SLR assumption	
5	Alignment with State targets and objectives	2		Excludes b), c) and e)
6	Contribution to Regional Strategy objectives	3		Excludes Responsibility, Community Engagement, Innovation and Sustainability
7	Percentage of region who can benefit from the initiative	72%	Based on population projections for 2017-18	Excludes Hornsby
8	Target waste that includes priority waste or problem waste	0%		Assumes mattress collections included, textiles, wood, metals and polystyrene

**Option 8**

Regional Illegal Dumping Program

Scores			Data Source:	Assumptions:
1	Number of Councils for which the project / initiative is appropriate	4	Council workshop (14 May) and additional feedback (15 May to 20 May)	Excluding Hunter's Hill, Lane Cove and Willoughby
2	Likely % waste minimised / recycled / diverted (compared with base)	6%		Calculated as a proportion of the 4 Councils
3	Likely \$/tonne of waste managed or diverted	300	<a href="http://www.bankstown.nsw.gov.au/CivicAlerts.aspx?AID=83">http://www.bankstown.nsw.gov.au/CivicAlerts.aspx?AID=83</a> Discussions with Ku-ring-gai and Ryde Councils (20-21 May)	240,000 :AUD\$ 2 members of staff @ \$120k per annum (includes disbursements and vehicles)
4	Deliverability of (interim) targets within appropriate timescales	12	SLR estimate	
5	Alignment with State targets and objectives	3		Excludes b), c) and e)
6	Contribution to Regional Strategy objectives	4		Excludes Innovation and Sustainability and Value for Money
7	Percentage of region who can benefit from the initiative	79%	Based on population projections for 2017-18	Excludes Hunter's Hill, Lane Cove and Willoughby
8	Target waste that includes priority waste or problem waste	20%	Annual Sustainability Report 2012-13 for Hornsby and North Sydney Councils	Adopts % hazardous waste composition reported for Hornsby for 2012-13

**Option 9**

Council Wastes Management (i.e. operations review etc)

Scores			Data Source:	Assumptions:
1	Number of Councils for which the project / initiative is appropriate	4	Council workshop (14 May) and additional feedback (15 May to 20 May)	Excluding North Sydney and Ryde
2	Likely % waste minimised / recycled / diverted (compared with base)	3%	Discussions with Council (21 May)	Tonnage composition and data approximate
3	Likely \$/tonne of waste managed or diverted	12	Discussions with Council (21 May)	45,000 AUD\$ Includes cost for operational review plus additional annual reporting requirements. Does not include aggregate management as already being recycled.
4	Deliverability of (interim) targets within appropriate timescales	12		Link to Joint Council procurement
5	Alignment with State targets and objectives	1		Excludes b), c), d), e)
6	Contribution to Regional Strategy objectives	4		Excludes Innovation and Sustainability and Community Engagement
7	Percentage of region who can benefit from the initiative	69%	Based on population projections for 2017-18	Excludes North Sydney and Ryde
8	Target waste that includes priority waste or problem waste	5%	SLR estimate	

**Option 10**

Regional Waste Compositional Audit

Scores			Data Source:	Assumptions:
1	Number of Councils for which the project / initiative is appropriate	3	Council workshop (14 May) and additional feedback (15 May to 20 May)	Excluding Hornsby, Ku-ring-gai, Lane Cove, and Ryde
2	Likely % waste minimised / recycled / diverted (compared with base)	0%	Unknown	
3	Likely \$/tonne of waste managed or diverted	250	Council meeting with Hornsby (25 May)	160,000 AUD\$ \$40K per audit, 2 audits per Council (SUDs and MUDs) and 3 Councils, adjusted to account for economies of scale and EPA auditing requirements
4	Deliverability of (interim) targets within appropriate timescales	7	Council Audit Report (2011) and consultation Councils (20 May)	Allows for contingency
5	Alignment with State targets and objectives	2		Excludes c), d) and e)
6	Contribution to Regional Strategy objectives	4		Excludes Responsibility and Innovation and Sustainability
7	Percentage of region who can benefit from the initiative	27%	Based on population projections for 2017-18	Excludes Hornsby, Ku-ring-gai, Lane Cove and Ryde
8	Target waste that includes priority waste or problem waste	2%	Based on 2011 compositional audit	

## Appendix B

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## Assessment Criteria Summary

**PROJECT OPTIONS ASSESSMENT CRITERIA**

Set out below are the criteria and the general understanding of the group of their meaning and influence.

**1. Number of councils for which the project or initiative is appropriate**

This criterion identifies the number of councils for whom the project is considered appropriate and who are therefore likely to collaborate as part of a regional initiative. A score of zero applies to those project options for which less than two NSROC councils selected as part of the prioritisation of options. A score of 10 is applied to those projects for which at least five NSROC councils selected as appropriate.

Measurement of this indicator is based on which WAG members identified the project in their top ten project initiatives.

**2. The likely percentage of waste minimised, recycled or diverted from landfill**

As a key State and regional target, the likely percentage of waste diverted from landfill through minimisation, recycling or recovery will need to influence the assessment process. The EPA Guidance document states that for each of the *'program initiatives identified, the strategy should show the potential waste-diversion and resource-recovery rates. The potential diversion rate can be used to identify the effectiveness of the infrastructure in meeting stated targets and how it will impact on resource-recovery rates for the region'*. Many of the State-funded grants under the *Waste Less, Recycle More* initiative will prioritise landfill diversion as part of the grant application evaluation process.

For the purposes of this options assessment, the project options which are likely to divert less than 2.5% of the total waste currently sent to landfill will receive a score of zero. A score of 10 is applied to projects which are expected to divert greater than 5% of the total residual waste currently sent to landfill.

Estimates of this indicator are made using assumptions based on EPA historical waste data returns and waste composition analysis. There is considerable uncertainty due to a lack of reliable or available data in these estimates for many of the options. Section 0 of this report provides further details on the identified data gaps. As part of the Strategy's Action Plan, one of the first tasks identified will be to undertake further assessment to confirm data assumptions and eliminate existing data gaps.

**3. The likely cost per tonne of waste managed, minimised, recycled or diverted**

As discussed previously, waste management services are funded by the public and so councils must balance the service level expectations of the public and the environmental benefits offered by certain technologies and waste management strategies against other impacts of the services. They must also consider the possible cost efficiencies associated with providing different and innovative services to the local community. This indicator allows councils to compare the cost of a specific project or initiative against existing landfill disposal costs<sup>2</sup>.

Assessment of this indicator was made using best estimates derived from consultation with the WAG members and applying industry data where available. Estimates generated within this report should be reviewed and updated as more detailed cost information is collected and confirmed.

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<sup>2</sup> No assumptions have been made at this stage for indexation of costs.

**Appendix B**

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## Assessment Criteria Summary

**4. Deliverability of objectives and targets**

Although a waste management project option may perform well against a range of indicators, it may not be possible to implement the project or deliver it within the required timeframes to meet the Strategy targets and objectives due to practical constraints or funding limitations. Such constraints may include:

- Availability or accessibility to financial resources (e.g. EPA *Waste Less, Recycle More* funding);
- Availability of capacity at the appropriate waste treatment facilities; and
- Difficulties in identifying and securing appropriate sites and obtaining planning consents and regulatory licences by the private sector service providers.

The timelines associated with these constraints are difficult to predict at this time. Nonetheless, measurement of this indicator in this report is made using a qualitative assessment based on available information and consultation with WAG members.

**5. Alignment with State targets and objectives**

The State targets aim to drive the efficient use of resources, reduce the environmental impact of waste and improve the well-being of the NSW environment, community and economy. In recognition of these targets and to measure regional performance, each project option is scored against the State targets. Projects which align with less than 2 of the State targets are allocated a score of 0 and projects which align with more than 5 of the targets are allocated a score of 10. Achievement of State targets does not require every region to perform equally, but that the overall outcome is balanced to achieve the targets. Where realistic, the Regional Waste Strategy has adopted the State targets, in some cases the target is not appropriate due to constraints as set out above.

**6. Contribution to regional strategy objectives**

The regional objectives for this Strategy were identified to capture the specific actions and directions for improvement that the NSROC councils deem to be of most importance to the region. The Strategy objectives have been discussed in detail in the Directions report. The assessment of project options needs to include the alignment of the projects against the regional objectives. As with the previous evaluation criteria, projects which align with less than two of the regional objectives are allocated a score of 0 and projects which align with more than five of the objectives are allocated a score of 10.

**7. Percentage of the region (based on population) who can benefit from the project initiative**

Maintaining service quality and the desire to improve waste services for the whole community is a key objective underpinning the Strategy. Not every project will have the same impact on the regional community in terms of availability or relevance of services and it is therefore sensible to compare project options by the amount of reach within the community that a scheme can be anticipated to achieve. The greater the potential reach of the scheme the higher the score applied to the project.

Measurement of this indicator was assessed based on population data and NSROC council consultation.

**8. Percentage of the project target waste streams which include priority or problem wastes**

A key Strategy objective is to improve public amenity and maintain public health through effective waste management. The management of certain hazardous or priority waste streams may not be significant in terms of quantity, however, their impact on public health and the environment may be considerable. To capture the importance of these waste streams, those projects which have a focus on hazardous materials such as asbestos or chemical wastes were allocated a higher score.

Measurement of this indicator is made using existing EPA waste data returns and NSROC council waste composition analyses.