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Office of Environment and Heritage

Resource Recovery Infrastructure Needs Analysis Draft Background Report

November 2011



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Contents

1.	Introduction	1
1.1	Background	1
1.2	Project Purpose	3
2.	Project Method	6
2.1	Data Gathering	6
2.2	Review of relevant documents	6
2.3	Data Provided by OEH	9
3.	Results by State Plan Region	2
3.1	Population Projections	2
3.2	Future Waste Projections	3
3.3	Northern Rivers	5
3.4	Mid-North Coast	9
3.5	New England-North West	13
3.6	Orana	19
3.7	Riverina Murray	23
3.8	Central West	29
3.9	South East	34
3.10	Hunter	39
3.11	Far West	44
3.12	South Western Sydney	45
3.13	Western Sydney	50
3.14	Sydney	55
3.15	Central Coast	60
3.16	Illawarra	62
3.17	OEH Recommended Diversion Rates	66
3.18	Summary	69
3.19	Domestic Recovery Targets	75
4.	Results by Regulatory Region	79
4.1	Regulatory Regions	79
4.2	SMA	80
4.3	ERA	82
4.4	RRA	84



4.5	C&I Recovery Targets	86
4.6	Current C&I Capacity	88
4.7	Estimated C&I Capacity Required	89
5.	Recommendations	94
5.1	Domestic	94
5.2	Commercial and Industrial	97
6.	References	98

Table Index

Table 1	State Plan Region Populations 2010 and Projected Populations for 2036	2
Table 2	Regulatory Region Populations 2010 and Projected Populations for 2036	3
Table 3	Municipal Waste Projections 2010 to 2036 by State Plan region	3
Table 4	Municipal Waste Projections 2010 to 2036 by Regulatory Region	4
Table 5	Existing Landfills – Northern Rivers	7
Table 6	Existing Transfer Stations – Northern Rivers	8
Table 7	MRFs – Northern Rivers	8
Table 8	Resource Recovery Facilities – Northern Rivers	8
Table 9	Existing Landfills – Mid-North Coast	10
Table 10	Existing Organics Processing Facilities – Mid-North Coast	11
Table 11	Transfer Stations – Mid-North Coast	12
Table 12	Licensed MRFs – Mid-North Coast	12
Table 13	Existing Landfills – New England-North West	15
Table 14	Existing Transfer Station – New England-North West	17
Table 15	MRFs – New England-North West	18
Table 16	Organics Processing – New England-North West	19
Table 17	Existing Landfills - Orana	20
Table 18	Known Transfer Stations – Orana	22
Table 19	MRFs – Orana	22
Table 20	Organics Processing Facilities – Orana	23
Table 21	Existing Landfills – Riverina Murray	24
Table 22	Known Transfer Stations – Riverina Murray	27
Table 23	MRFs – Riverina Murray	28



Table 24	Resource Recovery Facilities – Riverina Murray	28
Table 25	Existing Landfills – Central West	30
Table 26	Transfer Stations – Central West	32
Table 27	MRFs – Central West	33
Table 28	Resource Recovery Facilities – Central West	33
Table 29	Existing Landfills – South East	35
Table 30	Transfer Stations – South East	37
Table 31	MRFs – South East	38
Table 32	Organics Processing Facilities – South East	38
Table 33	Existing Landfills - Hunter	41
Table 34	Transfer Stations – Hunter	42
Table 35	Resource Recovery Facilities – Hunter	42
Table 36	Licensed Materials Recycling Facilities (MRF) – Hunter	43
Table 37	Existing Landfills – Far West	45
Table 38	Organics Processing Facilities – Far West	45
Table 39	Existing Landfills – South Western Sydney	46
Table 40	Existing Transfer Stations – South Western Sydney	47
Table 41	Licensed MRFs – South Western Sydney	48
Table 42	Resource Recovery Facilities – South Western Sydney	48
Table 43	Existing Landfills – Western Sydney	51
Table 44	Existing Transfer Stations – Western Sydney	52
Table 45	Resource Recovery Facilities – Western Sydney	53
Table 46	Licensed MRFs – Western Sydney	54
Table 47	Existing Landfills - Sydney	56
Table 48	Existing Transfer Stations - Sydney	57
Table 49	Licensed MRFs – Sydney	58
Table 50	Resource Recovery Facilities – Sydney	59
Table 51	Existing Landfills – Central Coast	61
Table 52	Licensed Materials Recycling Facilities (MRF) – Central Coast	61
Table 53	Resource Recovery Facilities – Central Coast	61
Table 54	Existing Landfills - Illawarra	63
Table 55	Licensed Transfer Stations – Illawarra	64
Table 56	Licensed MRFs – Illawarra	64
Table 57	Resource Recovery Facilities – Illawarra	65
Table 58	OEH Estimated Recovery Rates	66



Table 59	Identified Systems and Proportions of Councils and Feedstock	67
Table 60	Waste Potentially Recoverable Through Three-Bin System	68
Table 61	Infrastructure and Residential Quantities by State Plan Region	70
Table 62	Typical Domestic Waste Composition	75
Table 63	Estimated Diversion Rates by State Plan Region	76
Table 64	Processing Capacity Required by State Plan Region – Dry Recyclables, Organics and Residual Waste (t)	77
Table 65	State Plan Regions and Regulatory Region Members	79
Table 66	Typical C&I Landfilled Waste Composition	87
Table 67	Corresponding Diversion Rates by Regulatory Region	88
Table 68	C&I Processing Capacity Required by Regulatory Region – Dry Recyclables and Organics/Residual (t)	89
Table 69	Projected C&I Quantities and Possible Number of Processing Facilities by Sydney Sub-Region	91
Table 70	Projected C&I Quantities and Possible Number of Processing Facilities for ERA and NRA	93
Table 71	Assumed Residual Recovery Rates	94
Table 72	Recommended Processing Capacity for High Priority Regions	94
Table 73	Recommended Processing Capacity for Medium Priority Regions	95
Table 74	Recommended Processing Capacity for Low Priority Regions	95
Table 76	Population Projections for SMA – 2006-2036	2
Table 77	Population Projections for ERA – 2006-2036	4
Table 78	Population Projections for RRA – 2006-2036	4
Table 79	Population Projections for NRA – 2006-2036	5
Table 80	Population Projections by Region – 2006-2036	8
Table 81	Population Projections by State Plan Region– 2006-2036	9
Table 82	Population Projections by former Waste Board Region– 2006-2036	9
Table 83	Yearly Residual Quantity Projections by State Plan Region – 2010-2036 (t)	11
Table 84	Yearly Recyclable Quantity Projections by State Plan Region – 2010-2036 (t)	11



Table 85	Yearly Residual Quantity Projections by Regulatory Region – 2010-2036 (t)	12
Table 86	Yearly Recyclable Quantity Projections by Regulatory Region – 2010-2036 (t)	12
Table 87	Councils and Attributed Systems	14

Figure Index

Figure 1 - NSW Showing State Plan Regions	4
Figure 2 - Sydney State Plan Regions	5
Figure 3- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 - Northern Rivers	6
Figure 4- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Mid-North Coast	10
Figure 5- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – New England-North West	14
Figure 6- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Orana	20
Figure 7- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Riverina Murray	24
Figure 8- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Central West	30
Figure 9- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – South East	34
Figure 10- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Hunter	40
Figure 11- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Far West	44
Figure 12- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – South Western Sydney	46
Figure 13- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 –Western Sydney	50
Figure 14- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 –Sydney	56
Figure 15- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 –Central Cost	60
Figure 16- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 –Illawarra	63
Figure 17 - Waste Diversion Flow Example	77



Figure 18- Projected Quantities of Residual and Recoverable Residential Waste - 2010-2036 - SMA	80
Figure 19- Projected Quantities of Residual and Recoverable C&I Waste - 2010-2036 - SMA	81
Figure 20- Projected Quantities of Food, Timber and Plastic Landfilled - 2010-2036 - SMA	82
Figure 21- Projected Quantities of Residual and Recoverable Residential Waste - 2010-2036 - ERA	83
Figure 22- Projected Quantities of Residual and Recoverable C&I Waste - 2010-2036 - SMA	84
Figure 23- Projected Quantities of Residual and Recoverable Residential Waste - 2010-2036 - RRA	85
Figure 24- Projected Quantities of Residual and Recoverable C&I Waste - 2010-2036 - SMA	86

Appendices

NSW Local Government Population Projections
Waste Quantity Projections by Local Government Area
Councils and Attributed Systems



1. Introduction

1.1 Background

1.1.1 State Waste Targets

The *NSW Waste Avoidance and Resource Recovery Strategy 2007* set the following waste recovery targets to be achieved by 2014:

- ▶ Municipal Solid Waste (MSW) from 26% (2000) to 66%;
- ▶ Commercial and Industrial (C&I) from 28% to 63%; and
- ▶ Construction and Demolition (C&D) from 65% to 76%.

1.1.2 NSW Waste Systems Study

In 2008, the then Department of Environment and Climate Change NSW (DECC) appointed GHD to investigate waste quantities and flows in the Sydney Metropolitan Area (SMA) and the Extended Regulatory Area (ERA) of the Hunter and Illawarra regions.

The study also reviewed waste recovery progress to then and identified any additional requirements, barriers or issues that will need to be addressed. Special attention was paid to waste processing and resource recovery infrastructure that will be needed in the regions to ensure targets are met by 2014.

The resulting NSW Waste Systems Study report found that for municipal waste, the proposed targets would not be reached by relying on only those waste processing facilities that were then operational, being constructed or were being planned. The report concluded that DECC should encourage councils or groups of councils to commit to constructing or send their waste to a waste processing facility.

For the C&I sector, the report concluded that as many as 22 C&I MRFs would need to be constructed to process and separate the recoverable portion of the C&I stream. Similarly, a need for additional C&D processing capacity was apparent.

For all streams the report proposed that market-based instruments such as increasing the price of landfilling, combined with bans and restrictions on the landfilling of certain materials would be required. It also proposed that DECC directly commission organisations to construct and operate the required facilities under arrangement that would share the risk between the Government and the builder/operator.

The report also indicated that even if all the recommended facilities were operating by 2014-2015 and diversion targets achieved, significant quantities of inert residual waste would still require disposal and that DECC should investigate options for additional non putrescible waste disposal facilities outside Sydney.



1.1.3 Definition of AWT

It is acknowledged that there is more than one definition of the term 'AWT'. The expression itself is reported as Alternative Waste Technology, Advanced Waste Technology,¹ Alternate Waste Treatment Technologies² and Advanced Waste Treatment.³

AWT commonly refers to any technology that is applied to separated organics or mixed waste (waste without organics separated) other than traditional methods such as disposal to landfill. AWT is more specifically 'a combination of mechanical, biological and in some cases thermal processes to recover resource value from mixed municipal waste.'⁴

AWT covers a multitude of processes. Those known in Australia include:

- ▶ Mechanical biological treatment;
- ▶ Anaerobic digestion;
- ▶ Gasification;
- ▶ In-vessel composting;
- ▶ Pyrolysis; and
- ▶ Tunnel composting.

It also includes technologies used elsewhere or in development, such as:

- ▶ Plasma arc waste disposal;
- ▶ GasPlasma gasification;
- ▶ Alcohol/ethanol production;
- ▶ Bioconversion to alcohol fuels;
- ▶ Waste to energy;
- ▶ Biodrying; and
- ▶ Autoclaving.

Although OEH does not consider the collection and processing of food and garden organics together as a form of AWT, the consensus in the wider waste community is that this form of processing falls under the definition of AWT.

In this report the following terms have been used in place of 'AWT' to make it clear what types of processing are referred to:

- ▶ Mixed Waste Processing – processing of waste that includes a proportion of organic material such as food or garden organics;
- ▶ Separated Organics Processing – processing of separated food and/or garden organics; and

¹ Department of Sustainability and Environment (Victoria) - Specification for Victorian Advanced Resource Recovery Initiative (VARRI) Engineering Services Advisor and Australian Council of Recyclers Submission to Department of Climate Change on the Proposed Carbon Pollution Reduction Scheme

² Department of Environment and Climate Change (NSW) - <http://www.environment.nsw.gov.au/warr/AWT.htm>

³ SITA Environmental Solutions' 'SAWT' stands for Sita Advanced Waste Treatment (AWT)

⁴ Ritchie, Mike (President, Waste Management Association NSW Branch) 2008 Letter to Climate Change Group Department of Prime Minister and Cabinet dated 15 January



- ▶ Separated Organics or Mixed Waste Processing – where the precise system is not known and could be both or either of these systems.

1.2 Project Purpose

The purpose of this Resource Recovery Infrastructure Needs Analysis is to further develop the work done for the NSW Waste Systems Study. Its purpose is to provide more information for industry and government to make decisions about the future of waste management in NSW with a particular focus on facilitating infrastructure and therefore analysing infrastructure needs. The project hopefully answers the questions - What is required to push recovery into the next range? And how can the State Government use Section 88 levy funding to make this happen?

The need for a further review of waste issues in NSW is highlighted by recent developments in the industry, such as the sale of WSN to Sita Australia, the opening of the Kemps Creek SAWT facility and the extension of areas covered by the Section 88 levy.

The report also takes advantage of the availability of more up-to-date and more complete data. The availability of this data allows the project to expand its scope to regional areas and to that end analysis has been conducted by 14 areas outlined in the State Plan.⁵ State Plans Regions for NSW outside Sydney are shown in Figure 1. State Plan Regions in Sydney are shown in Figure 2. The councils which are included in each State Plan area are also shown at the top of each relevant section of the report.

⁵ NSW State Plan- <http://www.stateplan.nsw.gov.au>

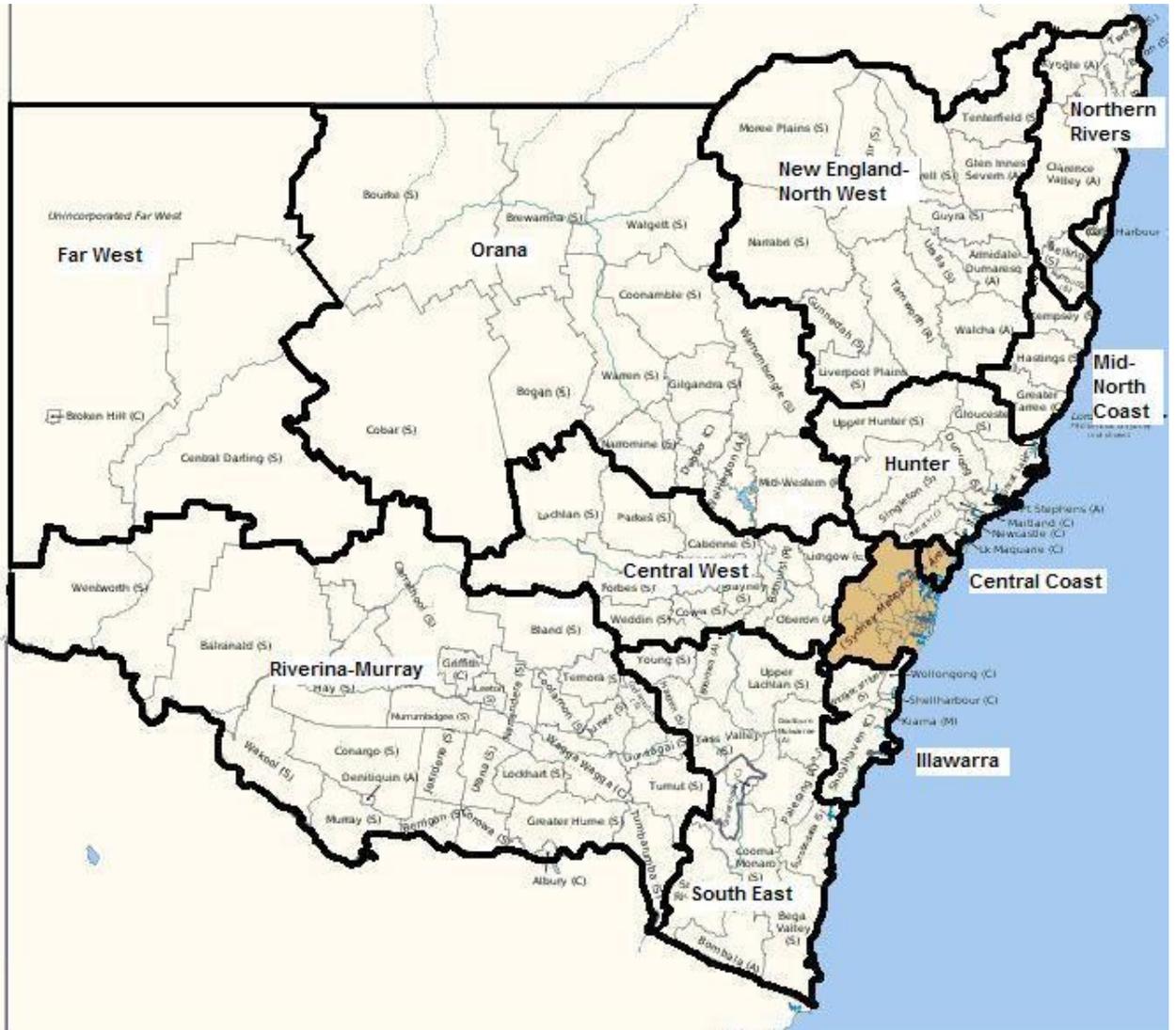


Figure 1 - NSW Showing State Plan Regions

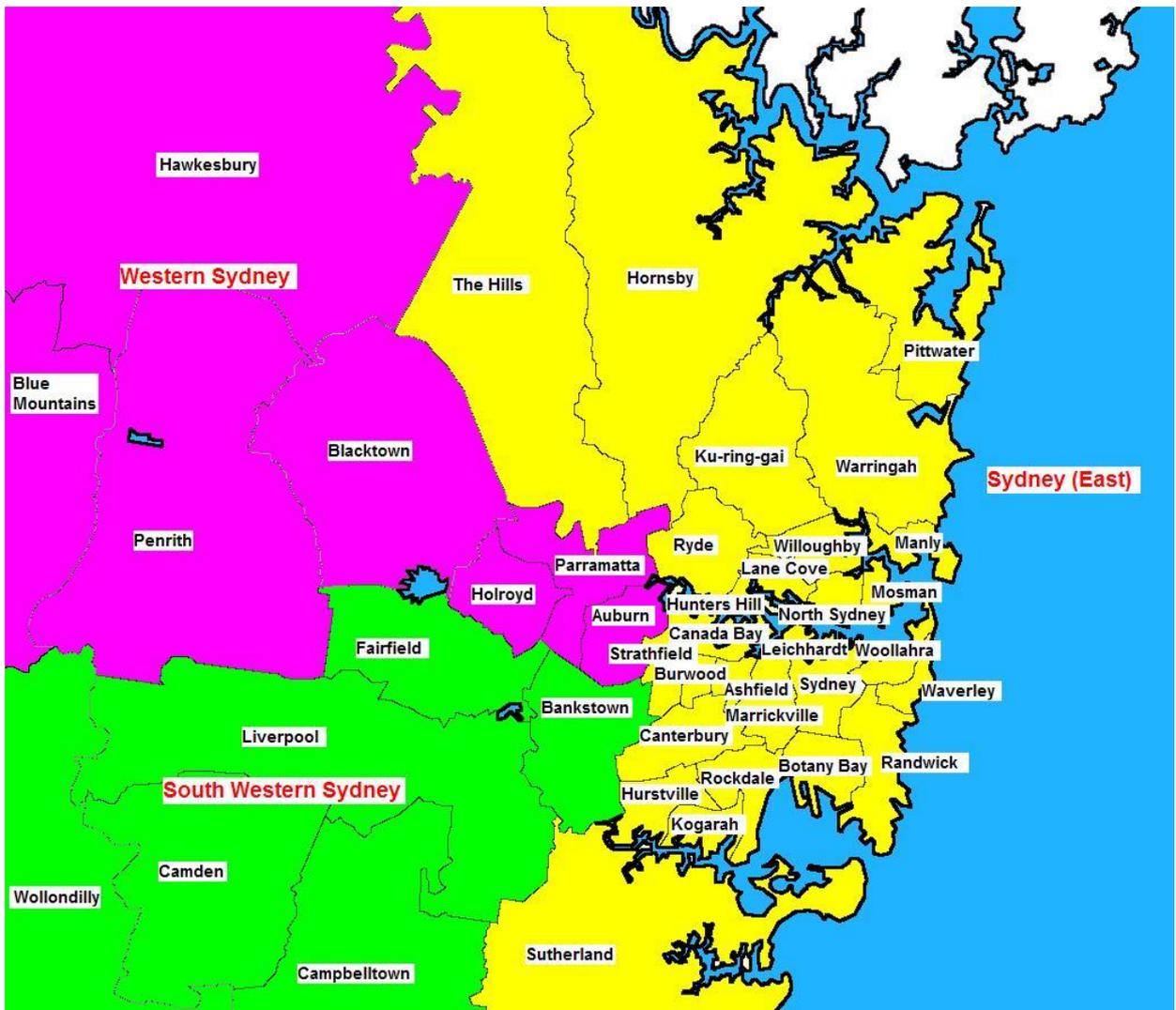


Figure 2 - Sydney State Plan Regions

Analysis was also conducted by areas subject to the Section 88 levy. These Regulatory Regions are:

- ▶ 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 reporting for the project is divided into two parts; a brief summary report and a background report (this report), which includes the underlying data and calculations. It also extends the scope of analysis to regional areas maintaining the emphasis on municipal and commercial waste but less so on construction waste.



2. Project Method

2.1 Data Gathering

GHD review a range of documentation including:

- ▶ GHD's previous NSW Waste Systems Study Report 2009 unpublished 2009;
- ▶ *Review of Waste Strategy and Policy in New South Wales – report by the Steering Committee (the Richmond Report) 2010;*
- ▶ *The Waste Avoidance and Resource Recovery Strategy Progress Report – Volumes 1 and 2 2011;*
- ▶ *Reducing Waste: Implementation Strategy 2011-2015 2011;*
- ▶ *Independent Public Assessment - Landfill Capacity and Demand (the Wright Report) 2009;* and
- ▶ *Disposal based survey of the commercial and industrial waste stream in Sydney 2008.*

Summaries of some of these documents are provided in Section 2.2 below. In each case, any data or information relevant to the outcomes of the project were incorporated where appropriate.

2.2 Review of relevant documents

2.2.1 Review of Waste Strategy and Policy in NSW (Richmond Report)

The purpose of this review was to ensure that the policies applied to the waste sector were optimised to achieve the Waste Avoidance and Resource Recovery (WARR) targets, and also to achieve greater community acceptance of the need for resource recovery.

The key findings of the review were as follows;

- ▶ The waste and environment levy is having an impact on waste accumulators such as councils (but not on individual households);
- ▶ The key issue in household waste is the need to remove more recyclables and food/organic waste through source separation or central sorting;
- ▶ The waste and environment levy is not impacting the C&I sectors as the levy is hidden within waste collection contracts, leading to minimal incentives for source separation;
- ▶ The biggest impact the levy has had is in the C&D sector, where it is effectively minimising waste going to landfill

From its research and stakeholder consultations, the Steering Committee developed 23 recommendations for the waste sector as a result of the report findings. These recommendations were based on four key themes;

1. Improve the adequacy of the WARR strategy and targets;
2. Improve the waste management sector performance;
3. Improve resource allocation and pricing signals; and
4. Improve government performance.



This report provides a comprehensive review of the current waste sector, particularly in terms of the impact of the waste levy and where future attention should be directed. It provides a good indication of how future waste flows may change if these measures are adopted.

2.2.2 Independent Public Assessment – Landfill Capacity and Demand (Wright Report)

This report presents the outcomes of an independent assessment into the landfill capacity and needs for the Sydney Region. The assessment first examines the demand for putrescible waste landfill space under a variety of scenarios. These scenarios are modelled based on a number of potential diversion targets and take-up schemes. From this analysis, the following recommendations were proposed:

- ▶ Early action to establish a satisfactory new landfill site should be undertaken;
- ▶ The government should take action to secure a suitable long haul landfill site in the near term;
- ▶ The flow of waste to landfills should be minimised by aggressive programs to minimise waste creation. These programs should include a measure of reward for effort that flows back to those who make the effort;
- ▶ The case for gradually phasing in market mechanisms to minimise waste should be tested;
- ▶ Waste avoidance must become part of mainstream waste minimisation initiatives;
- ▶ A service market for putrescible waste landfill should be created, and monitored closely for industry competitive positioning and pricing, possibly through licence regulations;
- ▶ Contract arrangements for waste disposal, reprocessing and collection should be organised such that the contractor bears continuity risk; and
- ▶ In the long term, waste should be treated or disposed of in the region which provides the best outcomes in terms of all economic, social and environmental factors.

These recommendations give a clear indication as to the direction of future waste infrastructure in NSW, in terms of need, location and required capacity.

2.2.3 Disposal based survey of the C&I waste stream in Sydney

The Department of Environment Climate Change and Water NSW (DECCW) undertook a comprehensive field survey in 2008 to determine the composition and source of C&I waste. The field survey covered six landfills and six transfer stations in Sydney between June and August 2008.

The key results were as follows:

- ▶ A total of 2,223,856 tonnes of C&I waste was sent to Sydney landfills, 78% from mixed loads and 22% from segregated single material loads;
- ▶ The consolidated C&I waste stream consisted mostly of food (13.6%), plastic (13.2%), wood (13%) and hazardous materials (13.9% - mainly contaminated soil);
 - The next largest contributors to the waste stream were paper (8%), C&D waste (7.7%), residues (6.6%) and cardboard (5.7%);
- ▶ Degradable organic materials constitute 60% of the mixed C&I waste stream, and packing materials constitute 18%; and



- ▶ Small to medium sized enterprises (SMEs) are the largest contributors to C&I waste at 45%, followed by manufacturing (18%), retail trade (7%), property and business services (6%) and construction (5%).

The Richmond Report (see Section 2.2.1) identified C&I as the sector in need of the most attention. This survey identifies the components of the C&I waste stream, allowing for projections of waste flows and for identification of key areas for resource recovery.

2.2.4 Waste Avoidance and Resource Recovery Strategy Progress Report 2010

This report reviews the progress made in NSW towards the *Waste Avoidance and Resource Recovery (WARR) Strategy* developed in 2007, which included a number of resource recovery goals. The report concludes that NSW is travelling well towards the targets and objectives outlined in the 2007 strategy.

The key findings were:

- ▶ Recycling increased across all NSW regions to 59% in 2008-09, up from 45% in 2002-03;
- ▶ Waste disposal has fallen as a proportion of total material flows and in absolute terms;
- ▶ There is a push for national action on product stewardship to reduce the amount of hazardous materials moving to landfill;
- ▶ The number of litter items and their volume, while still below the levels recorded five years ago, has trended upwards from 2008–09 to 2009–10. This trend needs to be addressed and reversed, particularly at sites with the greatest impact; and
- ▶ The National Litter Index shows reduced illegal dumping in NSW, reflecting increasing action to tackle illegal dumping.

This progress report gives a clear picture of the current resource recovery rates in NSW relative to the WARR targets, and where possible future attention should be placed to meet these targets.

2.2.5 Reducing Waste: Implementation Strategy 2011-2015

This report builds on the National Waste Policy initiatives and the results from the 2010 Progress Report. It identifies five new focus areas where the potential for improvement was identified:

- ▶ Making it easier for households to separate and recover their waste;
- ▶ Making it easier for businesses to separate and recover their waste;
- ▶ Reducing or removing problem wastes to improve resource recovery and produce environmentally safe recyclable materials;
- ▶ Facilitating investment in waste infrastructure; and
- ▶ Reducing litter and combating illegal dumping.

The implementation strategy outlines a further stage of initiatives that focus on the specific waste types, collection systems and infrastructure needs for these key areas. The five focus areas indicate where waste infrastructure is likely to be built in the near term.



2.2.6 Preferred Resource Recovery Practices by Local Councils Best Bin Systems

This draft brochure provides information to councils on kerbside waste collection and sets out the details of the OEH's preferred kerbside bin collection systems. It also provides guidance on bin systems for organics and mixed waste processing and estimates of diversion rates that may be expected using particular systems

2.2.7 Compost Australia - Organics Industry NSW Survey 2008/09 Financial Year

This document is the results of a survey of Compost Australia members and includes aggregated information on a range of aspects of the organics recycling industry including, among others:

- Raw materials received/processed
- Recycled organics product types and quantities sold
- Industry issues and priorities
- Product quality standards

Of most use was a list of responding organisations from which GHD was able to prepare a list of organics processing facilities.

2.3 Data Provided by OEH

GHD also reviewed and analysed data supplied by OEH. The data files provided by OEH were 2009-10 Council Data for GHD 31may2011.xls and GHD NSW Generation Summary 2008-09 - Fifth Cut Adj.xls.

2.3.1 2009-10 Council Data for GHD 31may2011.xls

This file provided data and information for each council in NSW. This information included:

- Populations;
- Number of Individual households;
- Residual waste bin size and collection frequency;
- Whether kerbside domestic waste is sent to a waste processing facility;
- Dry recycling bin size and collection frequency;
- Garden organics bin size and collection frequency;
- Whether a kerbside clean up service is provided;
- Whether a domestic drop off recycling facility is provided;
- Tonnes of domestic dry recycling collected;
- Tonnes of domestic dry recyclables deposited into a drop off facility;
- Tonnes of domestic dry recyclables collected from council clean-ups;
- Tonnes of domestic garden organics collected;
- Tonnes of domestic garden organics deposited at a drop off facility;
- Tonnes of domestic garden organics collected from council clean-ups;



- ▶ Tonnes of domestic waste processed through a waste processing facility;
- ▶ Tonnes of domestic residual waste sent to landfill;
- ▶ Tonnes of domestic clean up waste sent to landfill;
- ▶ Tonnes of domestic self haul and community waste sent to landfill;
- ▶ Resource recovery rates;
- ▶ Quantities of domestic dry recyclables – kilograms per household per week;
- ▶ Quantities of domestic dry recyclables – kilograms per household per week; and

It also provided waste and recycling audit composition data for NSW, the SMA and the ERA.

2.3.2 GHD NSW Generation Summary 2008-09 - Fifth Cut Adj.xls

This file provided data on municipal, C&I and C&D waste data disposed of and recycled in the SMA, ERA and NRA every two years from 2002-2002 to 2008-2009.

Overall, per capita and per household data was provided for:

- ▶ Paper and Cardboard;
- ▶ Plastic;
- ▶ Glass;
- ▶ Ferrous;
- ▶ Non-ferrous;
- ▶ Garden organics;
- ▶ Food;
- ▶ Timber;
- ▶ Other Organics;
- ▶ Concrete/Brick/Tiles;
- ▶ Asphalt;
- ▶ Sand/Soil/Rubble;
- ▶ Plasterboard;
- ▶ Rubber;
- ▶ Textiles;
- ▶ WEEE;
- ▶ Batteries;
- ▶ Other recyclables; and
- ▶ Waste processing.

GHD also visited almost web site of councils outside the Sydney area to obtain information about existing and planned waste infrastructure. As a result this report contains the most comprehensive list of waste infrastructure in NSW ever assembled.

It should be noted that although domestic data was provided by State Plan Region, C&I data was only available for the SMA, ERA and NRA. It should also be noted that available data for the NRA includes the RRA.

2.3.3 Metals, Rubber and Textiles Contact List 1.xls

This document was an Excel spreadsheet listing the names and addresses of metals, rubber and textiles recyclers.



3. Results by State Plan Region

3.1 Population Projections

Projections of future quantities of waste have been calculated based on population projections published by NSW Planning (2010) New South Wales Statistical Local Area Population Projections, 2006-2036⁶.

Tables showing population projections for each council and region can be found in Appendix A. A summary of populations by State Plan Region is shown in Table 1 below. A summary by Regulatory region can be found in Table 2.

Table 1 State Plan Region Populations 2010 and Projected Populations for 2036

Local Government Area	Population 2010 ⁷	Population Projection 2036	Percent Change
Northern Rivers	326,563	387,200	25.0%
Mid-North Coast	224,615	315,300	26.9%
New England-North West	184,822	168,500	-6.3%
Orana	122,100	108,400	-6.4%
Riverina Murray	277,133	286,000	4.2%
Central West	179,592	183,300	1.6%
South East	216,593	287,100	30.0%
Hunter	644,279	804,300	23.7%
Far West	21,979	14,500	-32.9%
South Western Sydney	813,540	1,260,200	60.6%
Western Sydney	1,146,303	1,600,400	38.6%
Sydney	2,228,618	2,697,300	17.6%
Central Coast	316,008	424,700	33.8%
Illawarra	431,160	529,200	21.7%
Total	7,133,305	9,066,400	26.1%

⁶ This can be found at <http://www.planning.nsw.gov.au/StrategicPlanning/Populationandhousingprojections/tabid/124/language/en-AU/Default.aspx>

⁷ Figures provided by OEH of ABS estimate of Census data at 30 June 2010



Table 2 Regulatory Region Populations 2010 and Projected Populations for 2036

Regulatory Region	Population 2010 ⁸	Population Projection 2036 ⁹	Percent Change
SMA	4,188,461	5,557,900	31.3%
ERA	1,391,447	1,758,200	25.4%
RRA	551,178	702,500	25.9%
NRA	1,002,219	1,047,800	5.5%
Total	7,133,305	9,066,400	26.1%

The tables show that the greatest growth is likely to be seen in the SMA, with the ERA and RRA only slightly behind. Growth in the NRA is projected to be only slight.

3.2 Future Waste Projections

GHD has prepared future municipal waste projections for each State Plan Region and Regulatory Region, based upon population projections, and historical waste generation rates, which are different for each Council, and provided in Appendix B. These are shown in Table 3 and Table 4.

Likely increases in recovered waste quantities and decreases in residual waste quantities (to be landfilled) have been taken into account in regions where processing facilities are planned. The projections shown below are all based on a 'business as usual' situation, assuming that overall waste generation increases with population growth.

While municipal waste data is available by State Plan Region, C&I waste data is only available by Regulatory Region.

Table 3 Municipal Waste Projections 2010 to 2036 by State Plan region

Region	Material	2010 Actual (t)	2036 Predicted (t)	Percent Change
Central Coast	Residual	86,609	119,570	38.1%
	Recovered	99,888	135,068	35.2%
Far West	Residual	17,390	12,088	-30.5%
	Recoverable	3,936	2,684	-31.8%
Hunter	Residual	229,581	314,911	37.2%
	Recoverable	108,237	146,573	35.4%
Illawarra	Residual	113,226	139,170	22.9%
	Recoverable	116,108	139,972	20.6%
Mid-North Coast	Residual	56,205	76,528	36.2%

⁸ Figures provided by OEH of ABS estimate of Census data at 30 June 2010

⁹ NSW Planning SLAs in New South Wales, 2006 to 2036



Region	Material	2010 Actual (t)	2036 Predicted (t)	Percent Change
New England-North West	Recoverable	79,521	109,920	38.2%
	Residual	65,660	59,349	-9.6%
Northern Rivers	Recoverable	40,786	37,577	-7.9%
	Residual	97,215	122,605	26.1%
Orana	Recoverable	86,241	91,307	5.9%
	Residual	40,055	36,520	-8.8%
Riverina Murray	Recoverable	11,541	10,173	-11.9%
	Residual	89,199	88,302	-1.0%
South East	Recoverable	44,396	47,044	6.0%
	Residual	70,624	93,081	31.8%
South Western Sydney	Recoverable	50,306	66,778	32.7%
	Residual	143,938	263,883	83.3%
Sydney	Recoverable	192,380	285,509	48.4%
	Residual	515,782	593,076	15.0%
Western Sydney	Recoverable	434,990	522,402	20.1%
	Residual	241,772	376,422	55.7%
Central West	Recoverable	209,665	268,785	28.2%
	Residual	75,660	69,368	-8.3%
Total	Residual	1,842,915	2,364,874	28.3%
	Recoverable	1,501,659	1,894,975	26.2%
	Total	3,344,574	4,259,849	27.4%

Table 4 Municipal Waste Projections 2010 to 2036 by Regulatory Region

Region	Material	2010 (t)	2036 (t)	Percent Change
SMA	Residual	871,739	1,185,672	36.0%
	Recoverable	814,944	1,045,059	28.2%
ERA	Residual	408,557	556,695	39.0%
	Recoverable	308,400	402,720	26.9%
RRA	Residual	204,031	263,799	31.4%



Region	Material	2010 (t)	2036 (t)	Percent Change
NRA	Recoverable	203,685	251,756	34.7%
	Residual	358,587	358,709	0.0%
	Recoverable	174,630	195,439	11.9%
Total	Residual	1,842,915	2,364,874	28.3%
	Recoverable	1,501,659	1,894,975	26.2%
	Total	3,344,574	4,259,849	27.4%

The table shows that the greatest rate of growth in residual waste will be in the ERA, with the SMA close behind. For recoverable waste, the greatest growth is expected in the RRA.

3.3 Northern Rivers

The Northern Rivers Region consists of the local government areas of Ballina, Bellingen, Byron, Clarence Valley, Kyogle, Lismore, Nambucca, Richmond Valley and Tweed. The area has a population of 326,500 and there are 123,500 households.

3.3.1 Municipal Waste

In 2010, 183,465 tonnes of kerbside waste was generated in this region. Of this 97,215 tonnes was residual waste and 86,241 tonnes was recovered providing a diversion rate of 47.0%.

Figure 3 below shows projected quantities to 2036 based on population growth in the region.

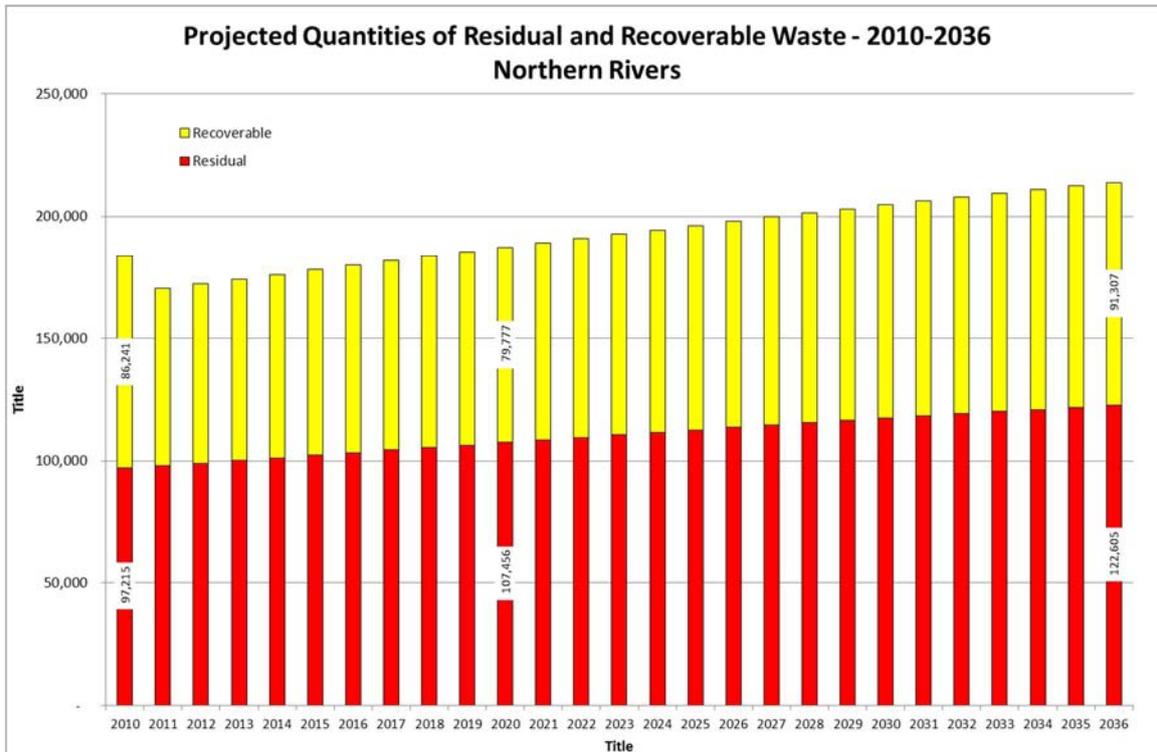


Figure 3- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 - Northern Rivers

The chart shows that by 2036 residual waste generated in the region will be approximately 122,605 tonnes and recoverable materials around 91,307 tonnes. This indicates a 6% growth in residual waste and 26% growth in potentially recoverable waste over the next 26 years giving an approximate increase of potential waste to landfill of 25,309 tonnes and 5,066 tonnes of potentially recoverable waste.

All councils provide a kerbside collection service for garbage. There are a combination of bin sizes and frequencies however, with some 240 litre bins collected weekly some fortnightly, one divided bin for garbage and recycling and a 140 litre bin fortnightly.

Only Richmond Valley does not provide a kerbside recycling service while all but one of the remaining provides a 240 litre bin collected fortnightly. Tweed provides one 240 litre bin divided for garbage and recycling.

Six of the nine councils provided a containerised garden organics collection, either weekly or fortnightly. The others provide no service.

According to the Richmond Report, two Northern Rivers Councils, Bellingen and Lismore, were among the five best performing councils, those with recycling rates above the WARR target of 66%. Both these councils collect and process dry recycling, food and/or organics and process the majority of their residual waste through an waste processing facility. Bellingen although in the Northern Rivers State Plan Region, send its waste to Coffs Harbour for processing, which is in the Mid-North Coast State Plan region.

3.3.2 Existing Infrastructure

Table 5 below shows the landfills in the Northern Rivers region.



Table 5 Existing Landfills – Northern Rivers¹⁰

Facility	Operator	Location	Council
Ballina Waste Management Centre	Ballina Shire Council	Southern Cross Drive, Ballina	Ballina
Coraki Landfill	Richmond Valley Council	Myall Creek Rd, Bora Ridge	Richmond Valley
Dorrigo Waste Management Centre	Bellingen Shire Council	Old Coramba Rd, Dorrigo	Bellingen
Evans Head Landfill Facility	Richmond Valley Council	Evans Head	Richmond Valley
Grafton Regional Landfill	Clarence Valley Council	704 Armidale Road, South Grafton	Clarence Valley
Copmanhurst Landfill	Clarence Valley Council	1868 Clarence Way, Copmanhurst	Clarence Valley
Glenreagh Landfill	Clarence Valley Council	Off George Street, Glenreagh	Clarence Valley
Hernani Landfill	Clarence Valley Council	Armidale Road, Hernani	Clarence Valley
Myocum Landfill	Byron Shire Council	Manse Road, Tyagarah	Byron
Nambucca Landfill	Nambucca Shire Council	Corner Wirrimbi Road And Old Coast Road, Nambucca Heads	Nambucca
Nammoonah Landfill Facility	Richmond Valley Council	Lot 2 Dargaville Drive, Casino	Richmond Valley
Raleigh Waste Management Centre	Bellingen Shire Council	Lot 86, Dp 630914, Shortcut Road, Urunga	Bellingen
Stotts Creek Landfill/Bartletts Quarry	Tweed Shire Council	Leeday's Creek Road, Eviron	Tweed
Walls Quarry	Tweed Shire Council	Terranora Road, Terranora	Tweed
Woodenbong Landfill	Kyogle Council	Mt Lindsay Hwy, Woodenbong	Kyogle
Wyrallah Road Waste Facility	Lismore City Council	313 Wyrallah Road, East Lismore	Lismore

The Walls Quarry landfill EPL indicates it is operated by Tweed Shire Council, however it does not appear to be operational.

The table shows that all the councils in this region operate their own landfills and some operate more than one.

Table 6 below shows the known transfer stations in the region.

¹⁰ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Table 6 Existing Transfer Stations – Northern Rivers

Facility	Operator	Location	Council
Tyringham Transfer Station	Clarence Valley Council	Armidale Road, Tyringham	Clarence Valley
Baryulgil Transfer Facility	Clarence Valley Council	7477 Clarence Way, Baryulgil	Clarence Valley
Grafton Waste Transfer and Recycling Facility	Clarence Valley Council	Cnr Duke and Kirchner Streets, Grafton	Clarence Valley
Mallanganee Transfer Station	Kyogle Council	Bruxner Highway, Mallanganee	Kyogle
Bonalbo Transfer Station	Kyogle Council	Woodenbong Road, Bonalbo	Kyogle
Kyogle Waste Management Facility	Kyogle Council	Anderson Road, Kyogle	Kyogle
Nimbin Waste Transfer Station	Lismore City Council	Nimbin	Lismore
Tyalgum Transfer Station	Tweed Shire Council	Tyalgum	Tweed
Rappville Transfer Station	Richmond Valley Shire Council	Rappville	Richmond Valley
Nambucca Waste Management Facility	Nambucca Shire Council	Nambucca	Nambucca
Bellingen Waste Transfer Station	Bellingen Shire Council	Bowraville Road, Bellingen	Bellingen

Table 7 below shows the operating MRFs in the region.

Table 7 MRFs – Northern Rivers¹¹

Facility	Operator	Location	Council
Grafton MRF	Clarence Valley Council	Grafton	Clarence Valley
Maclean MRF	Clarence Valley Council	Maclean	Clarence Valley
Lismore MRF	Lismore City Council	Lismore	Lismore

There are three MRFs in the region. A MRF used to operate at Ballina but this has been closed.

Table 8 shows other resource recovery facilities in the region.

Table 8 Resource Recovery Facilities – Northern Rivers

Facility	Operator	Material	Location	Council
Ballina Waste Management Centre	Ballina Shire Council	Various	Southern Cross Drive, Ballina	Ballina

¹¹ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Facility	Operator	Material	Location	Council
Nambucca Waste Management Facility	Nambucca Shire Council	Various	Old Coast Road, Nambucca Heads	Nambucca
Armidale Road Composting Facility	Jon Tait	Organics	704 Armidale Road, South Grafton	Clarence Valley
Myocum Resource Recovery	Byron Shire Council	Organics	Manse Road, Tyagarah	Ballina
Lismore Recycling And Recovery Centre	Lismore City Council	Organics	313 Wyrallah Road, East Lismore	Lismore
Polytrade Recycling		Plastics	35-37 Morton St, Chinderah	Tweed

The table shows that there are three licenced composting operations. The Lismore operation composts both food and garden organics in windrows.

3.3.3 New Infrastructure

Lismore City Council is planning to expand its composting facility as it will be accepting organics from Ballina Council in the future. In September 2010, Council asked for expressions of interest from interested parties to provide information on equipment, technology and associated services to build a fully integrated resource recovery, waste processing and co-generation plant. Council's aim was to develop infrastructure to sort, process and recycle mixed waste and co-mingled recyclables, and produce electricity from the residual waste.

Two new MRFs are planned for the region, one in Tweed and one in Grafton. Clarence Valley Council is planning a new MRF to replace the existing MRFs at Grafton and Maclean. The new MRF is expected to be built on the landfill site on Armidale Road, Grafton and have processing capacity for 6000 tonnes per year initially, increasing to 12,000 tonnes over its life.¹²

Tweed Shire Council is proposing to establish a new landfill within the void created by the completion of excavations at Quirk's Quarry (off Eviron Road, Eviron).

3.4 Mid-North Coast

The Mid-North Coast Region consists of the local government areas of Coffs Harbour, Greater Taree, Kempsey and Port Macquarie-Hastings. This region has a population of 224,600 living in 93,700 households.

In 2010, 56,205 tonnes of residual waste and 79,521 tonnes of recoverable materials were generated in the region, giving a 58.6% diversion rate. The high percentage of diversion can be attributed to the recovery of the organic waste fraction which is processed through two organics processing facilities in the region at Coffs Harbour and Port Macquarie.

Figure 4 below shows projected quantities of residual and potentially recoverable waste to 2036 based on population growth.

¹² Orams, Graham (2011) *Call for new recycling depot* [The Daily Examiner](#) 28 June

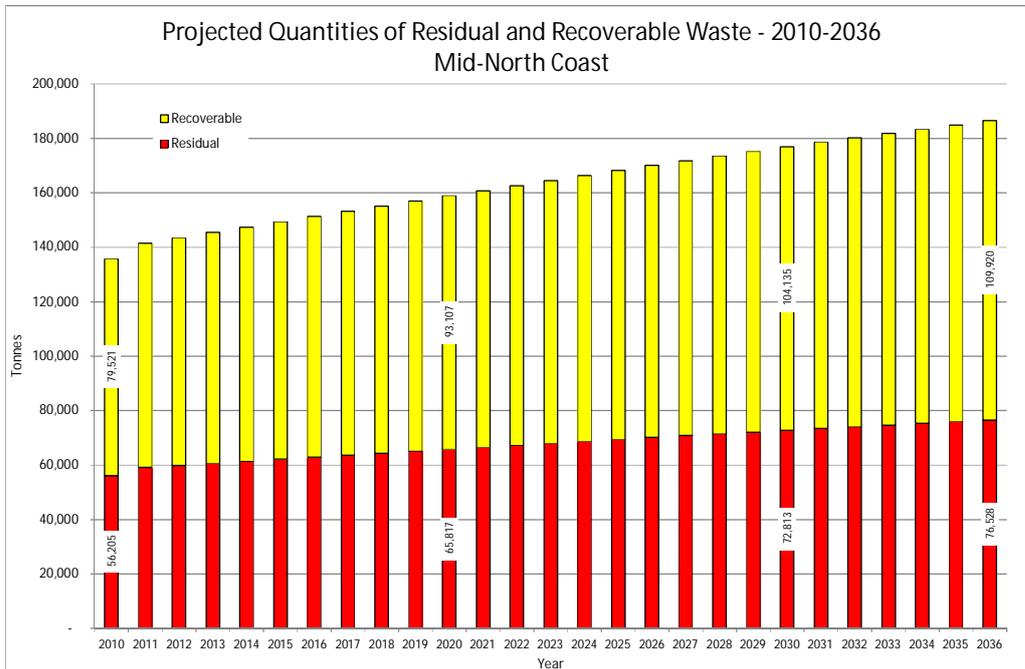


Figure 4- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Mid-North Coast

The chart shows that by 2036 residual waste generated in the Mid-North Coast region will be about 76,528 tonnes and recoverable material about 109,920 tonnes representing a 36.2% and 38.2% increase respectively.

In 2010, 56,205 tonnes of residual waste and 79,721 tonnes of recoverable materials were generated in the region, providing a diversion rate of 58.6%, the highest in the state.

All councils provide a kerbside collection service for garbage. Although each system is different, the equivalent of 120 litres per week of capacity is provided per household, except in the case of Kempsey which provides a mixture of service options.

All councils also provide a kerbside service for fully comingled recyclables using a 240 litre bin collected fortnightly. Two councils, Coffs Harbour and Port Macquarie-Hastings provide a weekly kerbside collection for garden organics. Food organics can also be placed in this bin for processing in each council's organics processing facility. Greater Taree and Kempsey do not provide any containerised kerbside service for garden organics.

3.4.1 Existing Infrastructure

Table 9 below shows the landfills in the Mid-North Coast region.

Table 9 Existing Landfills – Mid-North Coast¹³

Facility	Operator	Location	Council
Cairncross Waste	Port Macquarie Hastings	8395 Pacific Highway,	Port Macquarie-

¹³ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeapp/searchregister.aspx>



Facility	Operator	Location	Council
Management Facility	Council	Telegraph Point	Hastings
Crescent Head Road Landfill Site	Kempsey Shire Council	Crescent Head Road, Kempsey	Kempsey
Dunbogan Waste Management Depot	Port Macquarie Hastings Council	The Boulevarde, Dunbogan	Port Macquarie-Hastings
Englands Road Waste Management Facility	Coffs Harbour City Council	Englands Road, Coffs Harbour	Coffs Harbour
The Bucketts Way Landfill	Greater Taree City Council	The Bucketts Way, Tinonee	Greater Taree
Wauchope Waste Management Depot	Port Macquarie Hastings Council	Oxley Highway, Wauchope	Port Macquarie-Hastings

All councils operate their own landfills, with Port Macquarie-Hastings operating three sites.

3.4.2 Organics Processing

Table 10 shows the organics processing facilities in the region.

Table 10 Existing Organics Processing Facilities – Mid-North Coast¹⁴

Facility	Operator	Location	Council
Coffs Coast Resource Recovery Facility	Biomass Solutions (Coffs Harbour) Pty Ltd	Englands Road, Coffs Harbour	Coffs Harbour
Cairncross Waste Management Facility O.R.R.F.	Port Macquarie Hastings Council	8395 Pacific Hwy, Telegraph Point	Port Macquarie-Hastings
The Bucketts Way Resource Recovery Facility	Greater Taree City Council	The Bucketts Way, Tinonee	Greater Taree
Crescent Head Road Resource Recovery	Kempsey Shire Council	Crescent Head Road, West Kempsey	Kempsey

The Coffs Harbour facility is operated by Biomass Solutions (Coffs Harbour) Pty Ltd and processes organics (greenwaste and foodwaste) and residual waste (garbage) from Coffs Harbour, Bellingen and Nambucca Council areas. The operators claim a 70% reduction in waste to landfill from yearly throughput of 22,500 tonnes.

According to the Richmond Report, Coffs Harbour is one of the five best performing councils in NSW, those with recycling rates above the WARR target of 66%.

The ORRF (Organic Resource Recovery Facility) at Port Macquarie is operated by Remondis and processes domestic and commercial source separated organics, biosolids, residual municipal solid waste and C&I waste types. The facility has a throughput of 20,000 tonnes per year of source separated organics and 21,000 tonnes per year of municipal solid waste and C&I waste. The site is modular and

¹⁴ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



can be expanded in modules of 5,000 tonnes per year for source separated organics and 2,500 tonnes per year for MSW and C&I waste streams.

Table 11 shows known transfer stations in the region.

Table 11 Transfer Stations – Mid-North Coast¹⁵

Facility	Operator	Location	Council
Woolgoolga Transfer Station	Coffs Harbour City Council	Willis Road, Woolgoolga	Coffs Harbour
Coramba	Coffs Harbour City Council	East Bank Road, Coramba	Coffs Harbour
Lowanna	Coffs Harbour City Council	Lowanna Road, Lowanna	Coffs Harbour
South West Rocks Transfer Station	Greater Kempsey Council	Arakoon Road, South West Rocks	Greater Kempsey
Stuarts Point Transfer Station	Greater Kempsey Council	Fishermans Reach Rd, Stuarts Point	Greater Kempsey
Bellbrook Transfer Station	Greater Kempsey Council	Armidale Rd, Bellbrook	Greater Kempsey
Comboyne Transfer Station	Port Macquarie-Hastings Council	Wingham Road, Comboyne	Port Macquarie-Hastings
Wauchope Transfer Station	Port Macquarie-Hastings Council	31 Commerce St (off King Creek Rd)	Port Macquarie-Hastings
Port Macquarie Waste Management Facility	Port Macquarie-Hastings Council	Kingfisher Road (off Oxley Highway), Port Macquarie	Port Macquarie-Hastings
Dunbogan Waste Depot	Port Macquarie-Hastings Council	off The Boulevard, Dunbogan	Port Macquarie-Hastings

Table 12 shows the MRFs operating in the region.

Table 12 Licenced MRFs – Mid-North Coast¹⁶

Facility	Operator	Location	Council
Coffs Coast Resource Recovery Facility	Biomass Solutions (Coffs Harbour) Pty Ltd	Englands Road, Coffs Harbour	Coffs Harbour

Biomass Solutions operates a MRF as part of its organics processing facility at Coffs Harbour.

3.4.3 New Infrastructure

A number of new waste facilities are planned for the Mid-North Coast. Three new transfer stations are being built at;

- ▶ Bulahdelah (opposite current landfill);

¹⁵ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

¹⁶ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



- ▶ Tea Gardens (to replacing landfill there that is almost at capacity); and
- ▶ Tuncurry (next to Tuncurry landfill).

The transfer stations will be designed to maximise diversion of recoverable such as metals, garden organics and cardboard. This will be accomplished by primary sorting by customers and then secondary sorting by staff once waste is in the push pits. Relative quantities however, will be small with Bulahdelah accepting approximately 2000 tonnes per year of which 75% is expected to be recovered.¹⁷

None of the planned facilities will achieve any significant resource recovery.

3.5 New England-North West

Armidale Dumaresq, Glen Innes Severn, Gunnedah, Guyra, Gwydir, Inverell, Liverpool Plains, Moree Plains, Narrabri, Tamworth Regional, Tenterfield, Uralla and Walcha. This region has a population of 184,800 living in 71,600 households. The major centres are linked by the New England, Kamilaroi, Newell and Gwydir Highways.

In 2010, 65,660 tonnes of residual waste and 40,786 tonnes of recoverable materials were generated in the region, providing a diversion rate of 38.3%.

Figure 5 below shows projected quantities to 2036 based on population growth.

¹⁷ John Cavanagh – Mid-Waste – May 2011

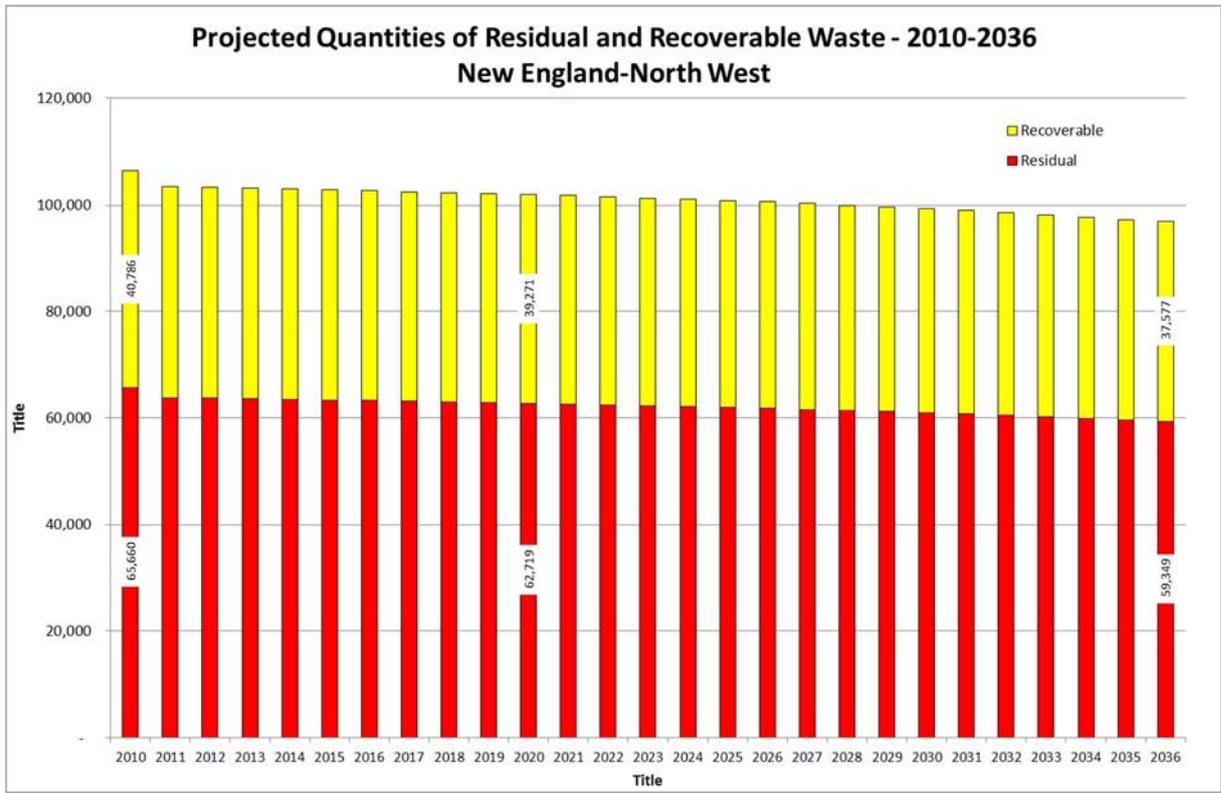


Figure 5- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – New England-North West

The charts shows that due to a slight projected decline in population in the region the amounts of residual waste are projected to fall by approximately 10% and potentially recoverable waste by 8% by 2036

All councils provided a kerbside service for garbage with six out of the 13 providing the equivalent of 120 or 140 litres per week capacity. The other councils provided either a 240 litre bin weekly or a mixture of bin sizes.

All councils except Tenterfield, provided a kerbside service for recyclables, although six used crates or 55 litre bins. The remaining six councils provided the equivalent of 120 litres capacity per week, either through one 240 litre bin per fortnight or one 120 litre bin per week.

Only three of the 13 councils provided a containerised service for garden organics, in each case one 240 litre bin per fortnight.

Use of a crate recycling collection systems and no garden organics service are both limiting factors to increasing recovery rates.

3.5.1 Existing Infrastructure

Table 13 below shows the known landfills in the region.



Table 13 Existing Landfills – New England-North West¹⁸

Facility	Operator	Location	Council
Armidale Solid Waste Landfill Facility	Armidale Dumaresq Council	Long Swamp Road, Armidale	Armidale Dumaresq
Urbenville	Tenterfield Shire Council	Urbenville	Tenterfield
Tamworth Waste Management Facility	Tamworth Regional Council	Forest Road, Tamworth	Tamworth Regional
Glen Innes Waste Management Depot	Glen Innes Severn Council	Rodgers Road, Glen Innes	Glen Innes Severn
Gunnedah Waste Management Facility	Gunnedah Shire Council	Lot 11 And Lot 12, Quia Road, Gunnedah	Gunnedah
Inverell Landfill	Inverell Shire Council	Burtenshaw Road, Inverell	Inverell
Moree Landfill	Moree Plains Shire Council	Newell Highway, Moree	Moree Plains
Narrabri Landfill	Narrabri Shire Council	Yarrie Lake Road, Narrabri	Narrabri
Uralla Landfill and Recycling Centre	Uralla Shire Council	Rowan Ave, Uralla	Uralla
Bundarra Landfill and Recycling Centre	Uralla Shire Council	Bundarra	Uralla
Unknown ¹⁹	Uralla Shire Council	Not known	Uralla
Walcha Waste Depot	Walcha Council	Aerodrome Road, Walcha	Walcha
Yarraman Landfill Controlled Waste Facility	Moree Plains Shire Council	Mungindi Road, Moree	Moree Plains
Red Range	Glen Innes Severn Council	Red Range	Glen Innes Severn
Emmaville	Glen Innes Severn Council	Emmaville	Glen Innes Severn
Deepwater	Glen Innes Severn Council	Deepwater	Glen Innes Severn
Tingha Landfill	Guyra Shire Council	Kempton Road, Tingha	Guyra
Ben Lomond Landfill	Guyra Shire Council	Wandsworth Road, Ben Lomond	Guyra
Bingara Waste Depot	Gwydir Shire Council	Narrabri Road, Bingara	Gwydir
Coolatai Waste Depot	Gwydir Shire Council	Yetman Road, Coolatai	Gwydir
Croppa Ck Waste Depot	Gwydir Shire Council	Buchie Road, Croppa Ck	Gwydir
Gravesend Waste Depot	Gwydir Shire Council	Reserve Road, Gravesend	Gwydir
Upper Horton Waste Depot	Gwydir Shire Council	Bereen Street, Upper Horton	Gwydir
Warialda Rail Waste Depot	Gwydir Shire Council	Main Rd 63, Warialda Rail	Gwydir

¹⁸ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

¹⁹ Unstaffed landfill



Facility	Operator	Location	Council
Warialda Waste Depot	Gwydir Shire Council	Rubbish Depot Road, Warialda	Gwydir
Ashford Landfill	Inverell Shire Council	Ashford	Inverell
Yetman Landfill	Inverell Shire Council	Yetman	Inverell
Delungra Landfill	Inverell Shire Council	Delungra	Inverell
Gum Flat Landfill ²⁰	Inverell Shire Council	Gum Flat	Inverell
Elsmore Landfill ²¹	Inverell Shire Council	Elsmore	Inverell
Nullamanna Landfill ²²	Inverell Shire Council	Nullamanna	Inverell
Bonshaw Landfill	Inverell Shire Council	Bonshaw	Inverell
Oakwood/Bannockburn Landfill ²³	Inverell Shire Council	Oakwood	Inverell
Bukkulla Landfill	Inverell Shire Council	Bukkulla	Inverell
Wallangra Landfill	Inverell Shire Council	Wallangra	Inverell
Cherry Tree Hill Landfill	Inverell Shire Council	Cherry Tree Hill	Inverell
Quirindi Landfill	Liverpool Plains Shire Council	Quirindi	Liverpool Plains
Werris Creek Landfill	Liverpool Plains Shire Council	Werris Creek	Liverpool Plains
Willow Tree Landfill	Liverpool Plains Shire Council	Willow Tree	Liverpool Plains
Spring Ridge Landfill	Liverpool Plains Shire Council	Spring Ridge	Liverpool Plains
Pine Ridge Landfill	Liverpool Plains Shire Council	Pine Ridge	Liverpool Plains
Caroona Landfill	Liverpool Plains Shire Council	Caroona	Liverpool Plains
Premer Landfill	Liverpool Plains Shire Council	Premer	Liverpool Plains
Pallamallawa Landfill	Moree Plains Shire Council	Mosquito Creek Road, Pallamallawa	Moree Plains
Biniguy Landfill	Moree Plains Shire Council	Gwydir Highway, Biniguy	Moree Plains

²⁰ Locked Site. Residents only permitted by key access

²¹ Locked Site. Residents only permitted by key access

²² Locked Site. Residents only permitted by key access

²³ Locked Site. Residents only permitted by key access



Facility	Operator	Location	Council
Boomi Landfill	Moree Plains Shire Council	Duff Street, Boomi	Moree Plains
Boggabilla Landfill	Moree Plains Shire Council	Newell Highway, Boggabilla	Moree Plains
Garah Landfill	Moree Plains Shire Council	Racecourse Road, Garah	Moree Plains
Gurley Landfill	Moree Plains Shire Council	Glenroy Road, Gurley	Moree Plains
Terry Hie Hie Landfill	Moree Plains Shire Council	Shire Road 111 Terry Hie Hie	Moree Plains
Mungindi Landfill	Moree Plains Shire Council	Boomi Road, Mungindi	Moree Plains
Weemeloh Landfill	Moree Plains Shire Council	Weemeloh	Moree Plains
Boggabri Garbage Tip	Narrabri Shire Council	Kamilaroi Hwy, Boggabri	Narrabri
Wee Waa Garbage Tip	Narrabri Shire Council	Old Pilliga Rd, Wee Waa	Narrabri
Baan Baa Tip	Narrabri Shire Council	Kamilaroi Hwy, Baan Baa	Narrabri
Bellata Tip	Narrabri Shire Council	Millie Road, Bellata	Narrabri
Edgeroi Tip	Narrabri Shire Council	Homestead Road, Edgeroi	Narrabri
Gwabegar Tip	Narrabri Shire Council	Shire Road 39, Gwabegar	Narrabri
Pilliga Tip	Narrabri Shire Council	Pilliga-Walgett Road, Pilliga	Narrabri
Barraba Landfill	Tamworth Regional Council	Barraba	Tamworth Regional
Duri Landfill	Tamworth Regional Council	Duri	Tamworth Regional
Manilla Landfill	Tamworth Regional Council	Manilla	Tamworth Regional
Niangala Landfill	Tamworth Regional Council	Niangala	Tamworth Regional
Nundle Landfill	Tamworth Regional Council	Nundle	Tamworth Regional
Somerton Landfill	Tamworth Regional Council	Somerton	Tamworth Regional
Ebor Landfill ²⁴	Armidale Dumaresq Council	Waterfall Way, Ebor	Armidale Dumaresq

Only Guyra, Gwydir and Liverpool Plains do not operate licenced landfills. Each of the remaining councils operates at least one landfill with Tamworth Regional operating four and Moree Plains operating two. Guyra send its waste to Armidale Landfill.

Table 14 below shows the known transfer stations in the region.

Table 14 Existing Transfer Station – New England-North West²⁵

Facility	Operator	Location	Council
Transfer Station	Gwydir Shire Council	Not known	Gwydir

²⁴ Open to residents from both Armidale-Dumaresq and Guyra Councils

²⁵ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Facility	Operator	Location	Council
Armidale Waste Transfer Station	Armidale City Council	Armidale	Armidale
Tilbuster Waste Transfer Station	Armidale City Council	Northern side of Tilbuster Bridge, Tilbuster	Armidale
Ebor Waste Transfer Station	Armidale City Council	Coast Road, Ebor	Armidale
Wollomombi Waste Transfer Station	Armidale City Council	Wollomombi	Armidale
Hillgrove Waste Transfer Station	Armidale City Council	Hillgrove Common, Hillgrove	Armidale
Guyra Recycling and Transfer Centre	Guyra Shire Council	Everette Street, Guyra	Guyra
Attunga transfer station	Tamworth Regional Council	Attunga	Tamworth Regional
Bendemeer transfer station	Tamworth Regional Council	Bendemeer	Tamworth Regional
Dungown transfer station	Tamworth Regional Council	Dungown	Tamworth Regional
Kootingal transfer station	Tamworth Regional Council	Kootingal	Tamworth Regional
Watsons Creek transfer station	Tamworth Regional Council	Watsons Creek	Tamworth Regional
Wallabadah Transfer Station	Liverpool Plains Shire Council	Wallabadah Transfer Station	Liverpool Plains
Tenterfield Transfer Station	Tenterfield Shire Council	Tenterfield	Tenterfield
Drake Transfer Station	Tenterfield Shire Council	Drake	Tenterfield

It is likely that there are also a number of other sites that operate as transfer stations or drop off-facilities in remote areas that are not listed here.

Table 15 below shows the MRFs in the region.

Table 15 MRFs – New England-North West²⁶

Facility	Operator	Location	Council
Armidale MRF	Contractor	Long Swamp Road, Armidale	Armidale Dumaresq
Inverell MRF	Inverell Shire Council	Burtenshaw Road, Inverell	Inverell
Tamworth MRF	Challenge Disability Services	Tamworth	Tamworth Regional
Guyra MRF	Guyra Council	Everett Street, Guyra	Guyra
Uralla MRF	Uralla Shire Council	Uralla	Uralla

²⁶ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Table 16 below shows the organics processing facilities in the region.

Table 16 Organics Processing – New England-North West²⁷

Facility	Operator	Location	Council
Bio Tech Recycling	Bio Tech Recycling	Moree	Moree Plains
Forest Road Landfill Composting Facility	Tamworth Regional Council	123a Forest Road, Tamworth	Tamworth Regional

3.5.2 New/Proposed Infrastructure

Construction and operation of a regional putrescible waste landfill facility is planned by Armidale-Dumaresq Council at a site off Waterfall Way, approximately 12 km east of Armidale. The proposed landfill would be designed to accept up to 15,000 tonnes per year of general solid waste, up to a total capacity of 750,000 tonnes over the landfill's proposed life of 50 years. The facility is intended to service the future waste disposal needs of the Armidale Dumaresq, Guyra Shire, Uralla Shire and Walcha Local Government Areas.

Council is also proposing to introduce a garden and food waste collection service in advance of establishing a composting facility that will sort organics waste and stabilise residual waste prior to landfilling. This is planned to be located at the Long Swamp Road site.

Council is also planning the development of a MRF for sorting non-putrescible mixed C&I waste similar the commercial MRF currently operating on Council's waste management facility.

In Tamworth, Challenge Disability Services is planning an e-waste processing facility.

3.6 Orana

Bourke, Bogan, Brewarrina, Cobar, Coonamble, Dubbo, Gilgandra, Narromine, Mid-Western Region, Walgett, Warren, Warrumbungle and Wellington. The region has a population of 122,100 living in 49,000 households.

In 2010, 40,055 tonnes of residual waste and 11,541 tonnes of recoverable materials were generated in the region equating to a 22.4% diversion rate. The region has the second lowest diversion rates of all the NSW State Plan areas with only Far West lower.

All 13 councils provide a kerbside garbage service of one 240 litre bin collected weekly. Only six provide a kerbside service for recyclables of which two are a bag service, two a crate service and two a bin service. None of the councils provide a containerised kerbside garden organics collection service although some may provide infrequent bulk garden organics collections.

Typically, kerbside services are provided in the towns while rural residents use transfer stations or landfills.

²⁷ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Figure 6 below shows projected quantities of residual and Potentially Recoverable Waste to 2036 based on population growth.

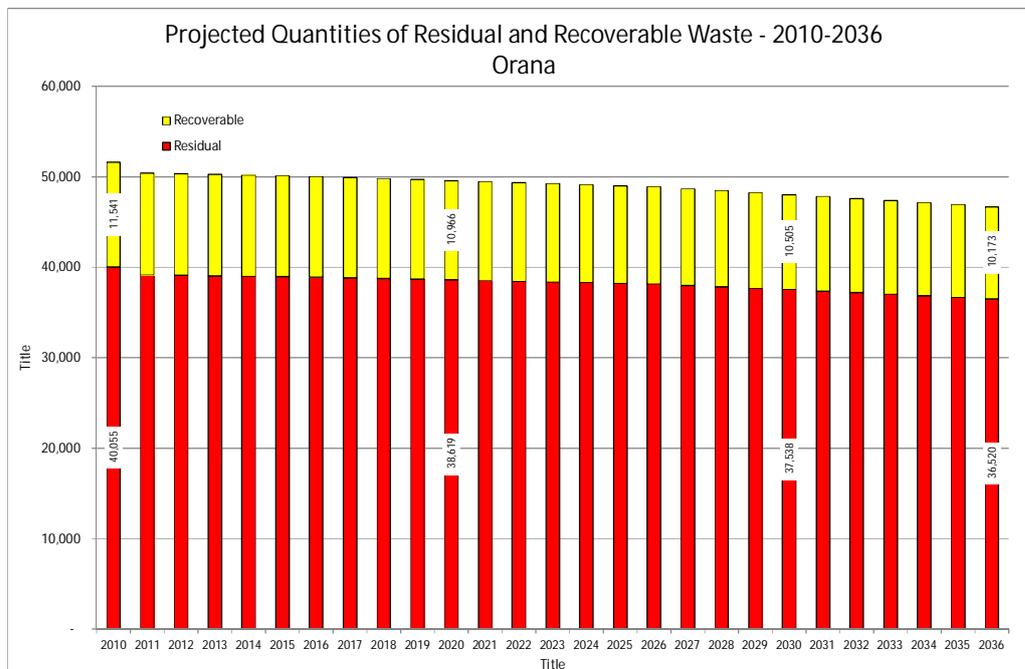


Figure 6- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Orana

With a projected decline in population the generation of residual and Potentially Recoverable Waste is also expected to reduce. Quantities are projected to fall between 8.8% and 11.9% for residual and recoverable streams respectively.

Existing Infrastructure

Table 17 below shows the known landfills in the region.

Table 17 Existing Landfills - Orana²⁸

Facility	Operator	Location	Council
Mudgee Waste Facility	Mid-Western Regional Council	Hill End Road, Mudgee	Mid - Western Regional
Narromine Waste Facility	Narromine Shire Council	Gainsborough Road, Narromine	Narromine
Trangie Waste Management Facility	Narromine Shire Council	Trangie	Narromine
Nyngan Waste Depot	Bogan Shire Council	Nyngan	Bogan
Walgett Waste Depot	Walgett Shire Council	Arthur Street, Walgett	Walgett
Wellington Waste Disposal	Wellington Council	Nanima Rd, Wellington	Wellington

²⁸ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Facility	Operator	Location	Council
Depot			
Whylandra Waste Disposal Depot	Dubbo City Council	Mitchell Highway, Dubbo	Dubbo
Cobar Waste Facility	Cobar Shire Council	Cobar	Cobar
Coonamble Waste Depot	Coonamble Shire Council	Coonamble	Coonamble
Quambone Landfill	Coonamble Shire Council	Quambone	Coonamble
Combara Landfill	Coonamble Shire Council	Combara	Coonamble
Bourke Waste and Recycling Depot	Bourke Shire Council	Cobar Road, Bourke	Bourke
Gilgandra Waste Management Facility	Gilgandra Shire Council	Gilgandra	Gilgandra
Tooraweenah Waste Depot	Gilgandra Shire Council	Tooraweenah	Gilgandra
Armatree Waste Depot	Gilgandra Shire Council	Armatree	Gilgandra
Cooborah Landfill	Coolah Shire Council	Cooborah	Coolah
Dunedoo Landfill	Coolah Shire Council	Dunedoo	Coolah
Coonabarabran Landfill	Coonabarabran Shire Council	Coonabarabran	Coonabarabran
Ulamambri Landfill	Coonabarabran Shire Council	Ulamambri	Coonabarabran
Ewenmar Landfill	Warren Shire Council	Ewenmar	Warren
Nevertire Landfill	Warren Shire Council	Nevertire	Warren
Geurie Landfill	Wellington Shire Council	Geurie	Wellington
Mumbil Landfill	Wellington Shire Council	Mumbil	Wellington
Brewarrina Waste Depot	Brewarrina Shire Council	Charlton Road, Brewarrina	Brewarrina
Goodooga Waste Depot	Brewarrina Shire Council	Queensland Street, Goodooga	Brewarrina
New Angledool Waste Depot	Brewarrina Shire Council	Chalmer Street, Angledool	Brewarrina

Only five of the 13 councils operate licenced landfills although there are a number of smaller unlicensed facilities in operation. The Gilgandra Waste Management Facility is reaching capacity and is on its last major cell.

Table 18 below shows the known transfer stations in the region.



Table 18 Known Transfer Stations – Orana²⁹

Facility	Operator	Location	Council
Mudgee	Mid - Western Regional Council	Mudgee	Mid - Western Regional
Gulgong	Mid - Western Regional Council	Gulgong	Mid - Western Regional
Kandos	Mid - Western Regional Council	Kandos	Mid - Western Regional
Gulargambone Transfer Station	Coonamble Shire Council	Gulargambone	Coonamble
Toongi Transfer Station	Dubbo City Council	Toongi	Dubbo
Ballimore Transfer Station	Dubbo City Council	Ballimore	Dubbo
Eumungerie Transfer Station	Dubbo City Council	Eumungerie	Dubbo
Curban Transfer Station	Gilgandra Shire Council	Curban	Gilgandra
Biddon Transfer Station	Gilgandra Shire Council	Biddon	Gilgandra
Tomingley Transfer Station	Narromine Shire Council	Tomingley	Narromine
Baradine Transfer Station	Coonabarabran Shire Council	Baradine	Coonabarabran
Binnaway Transfer Station	Coonabarabran Shire Council	Binnaway	Coonabarabran
Elong Elong Transfer Station	Wellington Shire Council	Elong Elong	Wellington
Euchareena Waste Transfer Station	Wellington Shire Council	Euchareena	Wellington
Wellington Resource Recovery and Transfer Station	Wellington Shire Council	Wellington	Wellington

In addition, Mid-Western Regional Council operates thirteen village and rural transfer stations from which accumulated waste and recycling is transported to the Mudgee Waste Facility for landfilling, sorting and processing. Wurrumbungle Shire Council operates seven waste transfer stations across the Wurrumbungle Shire.

Table 19 shows the known MRFs in the region.

Table 19 MRFs – Orana

Facility	Operator	Location	Council
Whylandra MRF	JJ Richards	Dubbo	Dubbo

²⁹ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Coonabarabran MRF	Coonabarabran Shire Council	Coonabarabran	Coonabarabran
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Table 20 shows the known MRFs in the region.

Table 20 Organics Processing Facilities – Orana

Facility	Operator	Location	Council
Windrow Composting	Private operator	20 km north of Dubbo	Dubbo
Gilgandra Waste Management Facility	Gilgandra Shire Council	Gilgandra	Gilgandra
Dubbo Abattior	Fletcher International Exports Pty Ltd	Lot 11 Yarrandale Rd, Dubbo	Dubbo

3.6.1 New/Planned Infrastructure

Dubbo City Council is seeking to set up the Whylandra Waste Disposal Depot as a regional resource recovery centre. Space has been set aside for an open air composting operation in the future. The Council is also exploring the feasibility of landfill gas extraction at the site.

Gilgandra Shire Council is planning to add recycling facilities to the Tooraweenah Waste Depot.

3.7 Riverina Murray

Albury, Balranald, Berrigan, Bland, Carrathool, Conargo, Coolamon, Cootamundra, Corowa, Deniliquin, Greater Hume, Griffith, Gundagai, Hay, Jerilderie, Junee, Leeton, Lockhart, Murray, Murrumbidgee, Narrandera, Temora, Tumbarumba, Tumut, Urana, Wagga Wagga, Wakool and Wentworth. This region has a population of 277, 000 living in 106,000 households.

In 2010, 89,199 tonnes of residual waste and 44,396 tonnes of recoverable materials was generated equating to a 33.2% diversion rate for the region. It should be noted that waste from Victoria is also disposed of at facilities close to the border in this region, notably waste from Mildura is disposed of at the Shire of Wentworth's Buronga Landfill. Figure 7 below shows projected quantities to 2036 based on population growth.

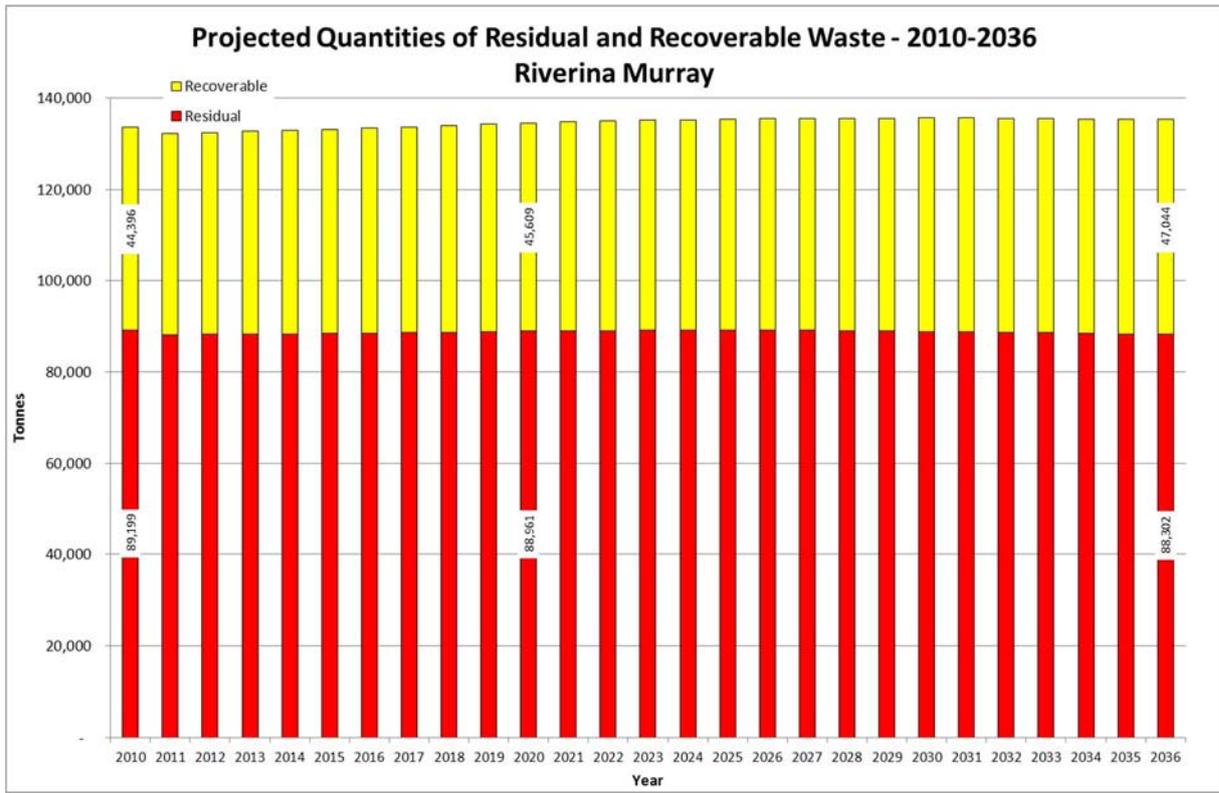


Figure 7- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Riverina Murray

Overall the generation of waste and recoverables in this region is not expected to change significantly over the next 26 years. The area is projected show a slight decrease in residual waste generation and a slight increase of Potentially Recoverable Waste.

All but two of the 28 councils in this region provide a kerbside service for garbage. Most provide a 240 litre bin collected weekly with the remainder providing a 120 litre or 140 litre bin collected weekly. Tumbarumba has a fortnightly collection.

Eleven of the 28 councils do not provide a kerbside service for recyclables. Those that do have a 240 litre bins collected fortnightly. Only Albury and Wagga Wagga provide containerised kerbside services for garden organics.

3.7.1 Existing Infrastructure

Table 21 below shows known landfills in the region.

Table 21 Existing Landfills – Riverina Murray³⁰

Facility	Operator	Location	Council
'Rockwood'	A P Delaney & Co Pty Ltd	Winchester Lane, Table Top	Albury
Albury Waste Management	Albury City Council	Centaur Road, Lavington	Albury

³⁰ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Facility	Operator	Location	Council
Centre			
Balranald Landfill	Balranald Shire Council	Balranald	Balranald Shire
Euston Landfill	Balranald Shire Council	Euston	Balranald Shire
Berrigan Landfill	Berrigan Shire Council	Berrigan	Berrigan
Tocumwal Landfill	Berrigan Shire Council	Tocumwal	Berrigan
West Wyalong Landfill	Bland Shire Council	Racecourse Road, West Wyalong	Bland
'Yeronga'	Burns; Craig William	Euroka Road, Quandialla	Bland
Benerembah Sand Pit	Garry Cullen Sand & Soil Pty Ltd	Barber Road, Benerembah	Carrathool
Carrathool Landfill	Carrathool Shire Council	Carrathool	Carrathool
Hillston Landfill	Carrathool Shire Council	Hillston	Carrathool
Blighty	Conargo Shire Council	Riverina Highway, Blighty	Conargo Shire
Booorooban	Conargo Shire Council	Cobb Highway, Booorooban	Conargo Shire
Conargo	Conargo Shire Council	McKenzie Street, Conargo	Conargo Shire
Pretty Pine	Conargo Shire Council	Gibbs Road, Pretty Pine	Conargo Shire
Wanganella	Conargo Shire Council	Cobb Highway, Wanganella	Conargo Shire
Ardelethan Landfill	Coolamon Shire Council	Ardelethan	Coolamon
Coolamon Landfill	Coolamon Shire Council	Coolamon	Coolamon
Ganmain Grave Landfill	Coolamon Shire Council	Ganmain Grave	Coolamon
Marrar Easticks Landfill	Coolamon Shire Council	Marrar	Coolamon
Cootamundra Landfill	Cootamundra Shire Council	Turners Lane, Cootamundra	Cootamundra
Stockinbingal Landfill	Cootamundra Shire Council	Stockinbingal	Cootamundra
Wallendbeen Landfill	Cootamundra Shire Council	Wallendbeen	Cootamundra
Corowa Garbage Depot	Corowa Shire Council	Albury Road, Corowa	Corowa
Howlong Landfill	Corowa Shire Council	Howlong	Corowa
Mulwala Landfill	Corowa Shire Council	Mulwala	Corowa
Deniliquin Waste Disposal Depot	Deniliquin Council	Hay Road, Deniliquin	Deniliquin
Brocklesby Landfill	Greater Hume Shire Council	Brocklesby	Greater Hume
Burrumbuttock Landfill	Greater Hume Shire Council	Burrumbuttock	Greater Hume
Culcairn Landfill	Greater Hume Shire Council	Culcairn	Greater Hume
Gerogery Landfill	Greater Hume Shire Council	Gerogery	Greater Hume



Facility	Operator	Location	Council
Henty Landfill	Greater Hume Shire Council	Henty	Greater Hume
Holbrook Landfill	Greater Hume Shire Council	Holbrook	Greater Hume
Jindera Landfill	Greater Hume Shire Council	Jindera	Greater Hume
Mullengandra Landfill	Greater Hume Shire Council	Mullengandra	Greater Hume
Walla Walla Landfill	Greater Hume Shire Council	Walla Walla	Greater Hume
Tharbogang Landfill	Griffith City Council	Tharbogang	Griffith
Tharbogang Recycling And Waste Disposal Facility	Griffith City Council	Hillside Drive, Tharbogang	Griffith
Yenda Recycling And Waste Disposal Facility	Griffith City Council	McManus Road, Yenda	Griffith
Gundagai Landfill and Recycling Centre	Gundagai Shire Council	Gundagai	Gundagai
Hay Waste Disposal Depot	Hay Shire Council	Hay	Hay
Jerilderie Waste Disposal Centre	Jerilderie Shire Council	Jerilderie	Jerilderie
Junee Waste Landfill Facility	Junee Shire Council	Kahmoo Road, Junee	Junee
Leeton Landfill And Recycling Depot	Leeton Shire Council	Corbie Hill Road, Leeton	Leeton
Lockhart Landfill	Lockhart Shire Council	Lockhart	Lockhart
Milbrulong Landfill	Lockhart Shire Council	Milbrulong	Lockhart
Pleasant Hills Landfill	Lockhart Shire Council	Pleasant Hills	Lockhart
The Rock Landfill	Lockhart Shire Council	The Rock	Lockhart
Yerong Creek Landfill	Lockhart Shire Council	Yerong	Lockhart
Cambrai Landfill	Murray Shire Council	Cambrai	Murray
Moama Solid Waste Depot	Murray Shire Council	Centre Road, Moama Moama	Murray
Coleambally Waste Depot	Murrumbidgee Shire Council	Coleambally	Murrumbidgee
Darlington Point Waste Depot	Murrumbidgee Shire Council	Darlington Point	Murrumbidgee
Barellan Waste Disposal Depot	Narrandera Shire Council	Barellan	Narrandera
Narrandera Waste Disposal Depot	Narrandera Shire Council	Narrandera	Narrandera
Teal Street Landfill Site	Temora Shire Council	Teal Street	Temora
Khancoban Landfill	Tumbarumba Shire Council	Khancoban	Tumbarumba
Adelong Waste Depot	Tumut Shire Council	Adelong	Tumut



Facility	Operator	Location	Council
Batlow Waste Depot	Tumut Shire Council	Forest Road, Batlow	Tumut
Bellettes Waste Depot	Bellettes Bulk Bins	Killarney Rd, Tumut	Tumut
Talbingo Waste Depot	Tumut Shire Council	Grove Street, Talbingo	Tumut
'Wilga'	Shale Search Pty Ltd	Coorabin, Oaklands	Urana
Oaklands Waste Disposal Centre	Urana Shire Council	Maxwelton Road, Oaklands	Urana
Urana Waste Disposal Centre	Urana Shire Council	Boree-Creek Road, Urana	Urana
Currawarna Landfill	Wagga Wagga Shire Council	Currawarna	Wagga Wagga
Galore Landfill	Wagga Wagga Shire Council	Galore	Wagga Wagga
Gregadoo Waste Management Centre	Wagga Wagga City Council	Ashfords Road, Wagga Wagga	Wagga Wagga
Humula Landfill	Wagga Wagga Shire Council	Humala	Wagga Wagga

The table shows that the larger towns all have licenced landfills but there are a large number of smaller unlicensed sites including those in Balranald and Conargo shown in the table. Waste from Tumut's Gilmore Transfer Station is transported to Jugiong.

Table 22 below shows the known transfer stations in the region.

Table 22 Known Transfer Stations – Riverina Murray

Facility	Operator	Location	Council
Mathoura Transfer Station	Murray Shire Council	Clifton Street, Mathoura	Murray
Goolgowi Transfer Station	Carrathool Shire Council	Goolgowi	Carrathool
Merriwagga Transfer Station	Carrathool Shire Council	Merriwagga	Carrathool
Rankins Springs Transfer Station	Carrathool Shire Council	Rankins	Carrathool
Tumbarumba Waste Transfer Station	Tumbarumba Shire Council	Tumbarumba	Tumbarumba
Bellettes Transfer Station	Bellettes Waste Services	Tumut	Tumut
Tarcutta Transfer Station	Wagga Wagga Shire Council	Tarcutta	Wagga Wagga
Mangoplah Transfer Station	Wagga Wagga Shire Council	Mangoplah	Wagga Wagga
Uranquinty Transfer Station	Wagga Wagga Shire Council	Uranquinty	Wagga Wagga
Collingullie Transfer Station	Wagga Wagga Shire Council	Collingullie	Wagga Wagga

Table 23 below shows the known MRFs in the region.



Table 23 MRFs – Riverina Murray

Facility	Operator	Location	Council
Wagga Wagga	Kurrajong Recyclers	Wagga Wagga	Wagga Wagga
Albury MRF	Transpacific	Albury	Albury
Cootamundra MRF	Cootamundra Shire Council	Cootamundra	Cootamundra
Gilmore Waste and Recycling Centre	Valmar	Gilmore	Tumut

The Kurrajong Recyclers MRF in Wagga Wagga accepts recyclables from residential and commercial sources.

Table 24 below shows the known waste processing facilities in the region.

Table 24 Resource Recovery Facilities – Riverina Murray

Facility	Operator	Material	Location	Council
Australian Native Landscapes		Organics	Snowy Mountain Highway, Gilmore	Tumut
Rivalea Australia Pty Ltd		Organics	Redlands Rd, Corowa	Corowa
Riverina Compost Mulching	Michelle Ann Reberger	Organics	132 Ashford Rd, Wagga Wagga	Wagga Wagga
Rivcow Environmental Pty Ltd		Organics	Yanco	Leeton
Rivcow Environmental Pty Ltd		Organics	2-6 Twynam St, Narrandera	Narrandera
Burra Garden Supplies	Adrian Kevin Hughes	Organics	Almond Lane, Corowa	Corowa
'Butlers'	Garrison Cattle Feeders Pty Ltd	Organics	Swan Hill Road, Murray Downs	Wakool
'Mackay's'	Garrison Cattle Feeders Pty Ltd	Organics	Wakool	Wakool
Drums Go Round		Plastics	Eddy Ave, Moama	Murray

The Rivalea Australia is a pig farming and pork processing operation. Riverina Compost Mulching , known locally as 'Yuck' is a composting facility operating adjacent to the Gregadoo Landfill at Wagga Wagga.



3.7.2 New Infrastructure

No major waste infrastructure is being planned for the region with the exception of an e-waste recycling facility in Wagga Wagga. This is due to open in June and will service the Wagga Wagga council area. It will be operated by Kurrajong Waratah.^{31,32}

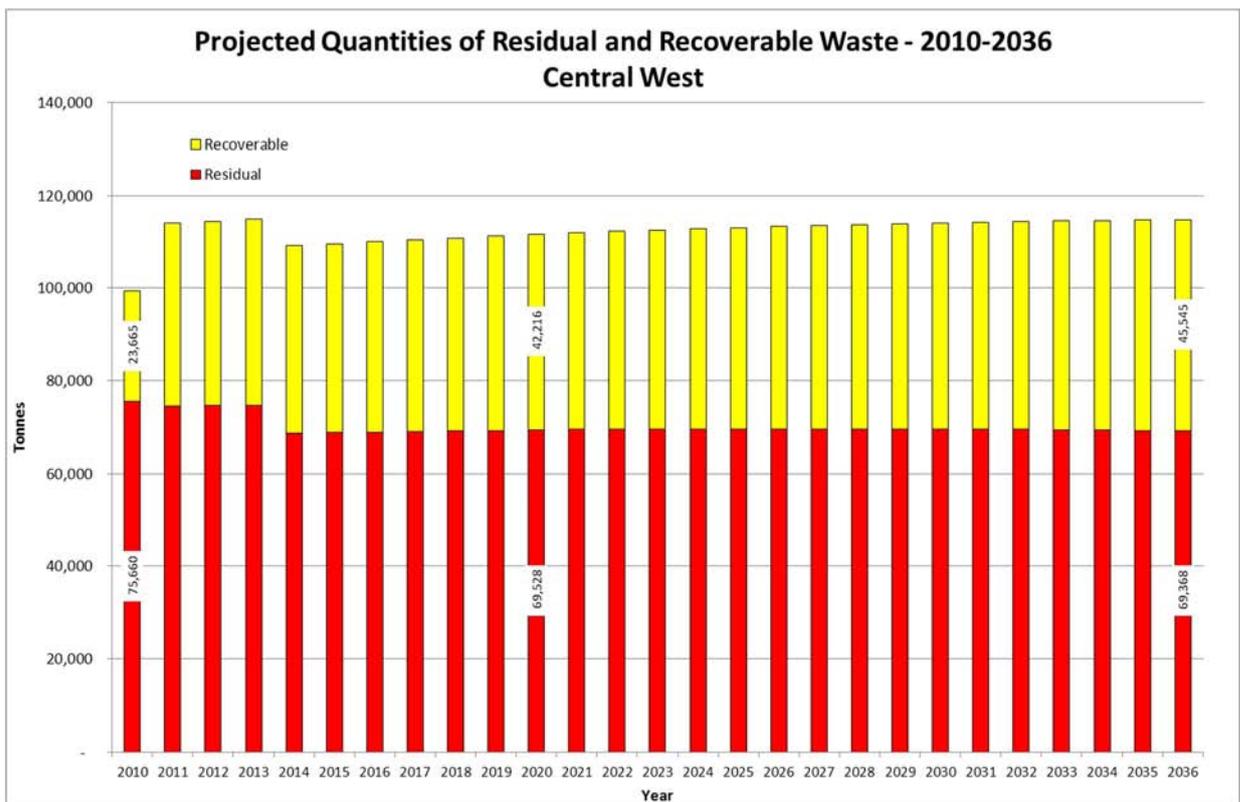
The existing MRF at Tumut was closed on 23 June 2011. A new regional recycling and waste transfer facility is being commissioned and the official opening is planned for 15 August 2011³³.

3.8 Central West

Bathurst, Blayney, Cabonne, Cowra, Forbes, Weddin, Lachlan, Lithgow, Oberon, Orange and Parkes. This region has a population of 179,600 living in 71,800 households.

In 2010, 75,660 tonnes of residual waste and 23,665 tonnes of recoverable materials was generated equating to a 23.8% diversion rate for the region. The region is heavily reliant on landfill as a means of waste disposal.

Figure 8 below shows projected quantities to 2036 based on population growth which remains fairly constant over the period.



³¹ Trevor Turner – Leeton Shire Council (RAMROC)– e-mail July 2011

³² Tracey Cornell – REROC – July 2011

³³ Valmar website - <http://www.valmar.com.au/regional-recycling-facility>



Figure 8- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Central West

The chart shows that quantities of waste and recoverable materials are not expected to change much in the next 26 years. A reduction in residual and corresponding increase in recoverable material is projected from around 2014 onwards. This is when the Orange Resource Recovery project becomes operational.

All the councils in the region provide a kerbside service for garbage. All but two provide a 240 litre bin collected weekly while the others have a mixture of bin sizes.

Four councils do not provide a kerbside collection for recyclables and another two provide a crate or 55 litre or 80 litre service weekly. The remainder provide 240 litre bins collected fortnightly. Lachlan is the only council providing a containerised garden organics collection with a 240 litre bin collected fortnightly.

3.8.1 Existing Infrastructure

Table 25 shows the known landfills in the region.

Table 25 Existing Landfills – Central West³⁴

Facility	Operator	Location	Council
Bathurst Waste Management Centre	Bathurst Regional Council	College Road, Bathurst	Bathurst Regional
Hill End Landfill	Bathurst Regional Council	Hill End	Bathurst Regional
Blayney Waste Disposal Depot	Blayney Shire Council	Mid Western Highway, Blayney	Blayney
Neville Landfill	Blayney Shire Council	Neville	Blayney
Canowindra Landfill	Cabonne Shire Council	Canowindra	Cabonne
Cargo Landfill	Cabonne Shire Council	Cargo	Cabonne
Cumnock Landfill	Cabonne Shire Council	Cumnock	Cabonne
Eugowra Landfill	Cabonne Shire Council	Eugowra	Cabonne
Manildra Landfill	Cabonne Shire Council	Manildra	Cabonne
Yeoval Landfill	Cabonne Shire Council	Yeoval	Cabonne
Glen Logan Road Material Recycling Facility & Landfill Site	Cowra Shire Council	Glen Logan Road, Cowra	Cowra
Gooloogong Waste Site	Cowra Shire Council	Gooloogong	Cowra
Woodstock Waste Site	Cowra Shire Council	Woodstock	Cowra
Bedgerebong Landfill	Forbes Shire Council	Bedgerebong	Forbes
Daroobalgie Waste Depot	Forbes Shire Council	Daroobalgie Road, Forbes	Forbes

³⁴ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Facility	Operator	Location	Council
Garema Landfill	Forbes Shire Council	Garema	Forbes
Ootha Landfill	Forbes Shire Council	Ootha	Forbes
Waroo Landfill	Forbes Shire Council	Waroo	Forbes
Wirrinya Landfill	Forbes Shire Council	Wirrinya	Forbes
Albert Landfill	Lachlan Shire Council	Albert	Lachlan
Burcher Landfill	Lachlan Shire Council	Burcher	Lachlan
Condobolin Landfill	Lachlan Shire Council	Condobolin	Lachlan
Derriwong Landfill	Lachlan Shire Council	Derriwong	Lachlan
Fifield Landfill	Lachlan Shire Council	Fifield	Lachlan
Lake Cargelligo landfill	Lachlan Shire Council	Lake Cargelligo	Lachlan
Tottenham Landfill	Lachlan Shire Council	Tottenham	Lachlan
Tullibigeal Landfill	Lachlan Shire Council	Tullibigeal	Lachlan
Angus Place Garbage Depot	Lithgow City Council	Angus Place	Lithgow
Capertree Garbage Depot	Lithgow City Council	Capertree	Lithgow
Cullen Bullen Garbage Depot	Lithgow City Council	Cullen Bullen	Lithgow
Lithgow Solid Waste Facility	Lithgow City Council	Geordie St, Lithgow	Lithgow
Portland Garbage Depot	Lithgow City Council	Cullen Bullen Rd, Portland	Lithgow
Wallerawang Garbage Depot	Lithgow City Council	Wallerawang	Lithgow
Black Springs Waste Depot	Oberon Shire Council	Black Springs	Oberon
Burruga Waste Depot	Oberon Shire Council	Burruga	Oberon
Oberon Council Waste Depot	Oberon Shire Council	Oberon	Oberon
Ophir Road Resource Recovery Centre	Orange City Council	261 Ophir Road, Orange	Orange
Alectown Landfill	Parkes Shire Council	Alectown	Parkes
Bogan Gate Landfill	Parkes Shire Council	Bogan Gate	Parkes
Gunningbland Landfill	Parkes Shire Council	Gunningbland	Parkes
Parkes Garbage Facility	Parkes Shire Council	Brolgan Road, Parkes	Parkes
Peak Hill Landfill	Parkes Shire Council	Peak Hill	Parkes
Trundle Landfill	Parkes Shire Council	Trundle	Parkes
Tullamore Landfill	Parkes Shire Council	Tullamore	Parkes
Yarrabandai Landfill	Parkes Shire Council	Yarrabandai	Parkes



Facility	Operator	Location	Council
Caragabal Landfill	Weddin Shire Council	Caragabal	Weddin
Quandialla Landfill	Weddin Shire Council	Quandialla	Weddin
Grenfell Waste Disposal Depot	Contractor under Council supervision	Grenfell	Weddin Shire

Six councils, generally the larger, have licenced sites. Lithgow operates two sites.

Table 28 shows known transfer stations in the region.

Table 26 Transfer Stations – Central West

Facility	Operator	Location	Council
Rockley Transfer Station	Bathurst Regional Council	Common Road, Rockley	Bathurst
Sofala Transfer Station	Bathurst Regional Council	Sofala Road, Village	Bathurst
Sunny Corner Transfer Station	Bathurst Regional Council	Off, sunny Corner Road, Bathurst	Bathurst
Trunkey Creek Transfer Station	Bathurst Regional Council	Goulburn Road, Village	Bathurst
Panuara Transfer Station	Blayney Shire Council	Panuara	Blayney
Molong Transfer Station	Cabonne Shire Council	Molong	Cabonne
Cargo Waste Depot and Transfer Station	Cabonne Shire Council	Cargo	Cabonne
Cumnock Waste Depot and Transfer Station	Cabonne Shire Council	Cumnock	Cabonne
Yeoval Waste Depot and Transfer Station	Cabonne Shire Council	Yeoval	Cabonne
Canowindra Waste Depot and Transfer Station	Cabonne Shire Council	Canowindra	Cabonne
Weddin Transfer Station	Wedding Shire Council	Weddin	Weddin
Hampton Transfer Station	Lithgow City Council	Hampton	Lithgow
Meadow Flat Transfer Station	Lithgow City Council	Meadow Flat	Lithgow
Tarana Transfer Station	Lithgow City Council	Tarana	Lithgow

Table 27 shows MRFs in the region.



Table 27 MRFs – Central West

Facility	Operator	Material	Location	Council
Ophir Road MRF	Orange City Council	Various	Ophir Road, Orange	Orange
Glen Logan Road Material Recycling Facility & Landfill Site	Cowra Shire Council	Various	Glen Logan Road, Cowra	Cowra
Lithgow Recycling Facility	Contractor	Various	Georgie Street, Lithgow	Lithgow

Table 28 shows resource recovery facilities in the region.

Table 28 Resource Recovery Facilities – Central West

Facility	Operator	Material	Location	Council
Browns Creek Horticultural Products Production Facility – ‘Long Hill’	Australian Native Landscapes	Organics	755 Browns Rd, Blayney	Blayney
Australian Native Landscapes	Australian Native Landscapes	Organics	7 Endeavour St, Oberon	Oberon
Wimbledon Worms	BMG Environmental Group Pty Ltd	Organics	Mid Western Highway, Kings Plains	Blayney
Polystrom Plastics	Polystrom Plastics	Plastics	10 Vale Road, Bathurst	Bathurst

3.8.2 New/Proposed Infrastructure

A major development underway in the region is the Orange Resource Recovery and Waste Management Project. In April 2010 approval was granted for the modification of Orange City Council’s Ophir Road Resource Recovery Centre and the development of a composting facility and baled waste landfill at Euchareena Road, Molong, about 20 km north of Orange City. The Ophir Road facility is expected to process up 26,000 tonnes per year while the Euchareena Road composting facility will process up to 20,000 tonnes per year.

Organics are planned to be separated at the Ophir Road site and transported to Euchareena Road for composting while any residual waste, whether residential or commercial, will be baled at Ophir Road and transported to the landfill at Molong.

Other developments planned include:

- ▶ Expansion of Blayney Landfill;
- ▶ New landfill or transfer station at Forbes; and
- ▶ Expansion of Parkes landfill and resource recovery facility.

Lithgow City Council is also proposing to establish a new Central Waste Facility on the site of the old Western main Colliery at Blackmans Flat. The Central Waste Facility will provide disposal capacity for waste generated within the Lithgow local government area.

3.9 South East

Bega Valley, Bombala, Boorowa, Cooma–Monaro, Eurobodalla, Goulburn Mulwaree, Harden, Palerang, Queanbeyan, Snowy River, Upper Lachlan, Yass Valley and Young. This region has a population of 216,600 living in 92,100 households.

In 2010, 70,624 tonnes of residual waste and 50,306 tonnes of recoverable materials was generated in the region. A diversion rate of 41.6% is currently being achieved.

Figure 9 below shows projected quantities to 2036 based on population.

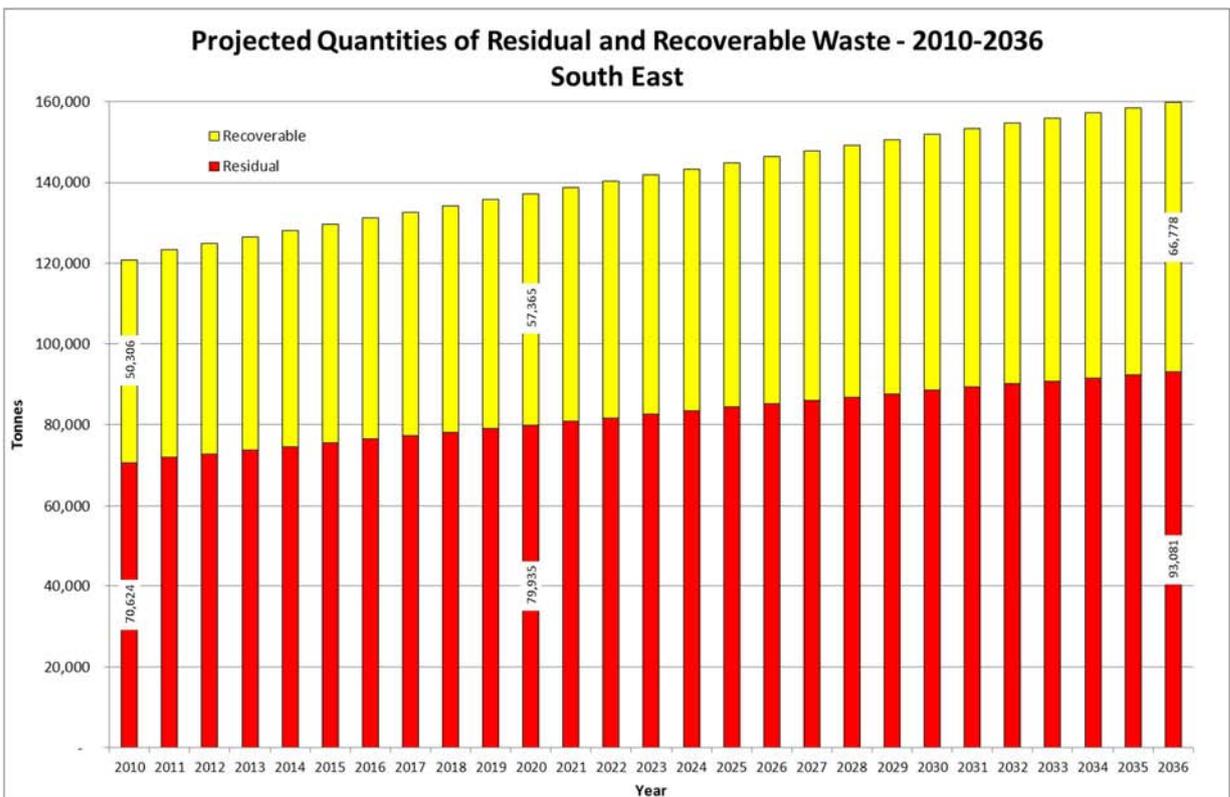


Figure 9- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – South East

The region is predicted to have a reasonable population growth over the next 26 years resulting in an increase to about 93,000 tonnes of waste and around 67,000 tonnes of recoverable material by 2036.

All councils provide a kerbside collection service for garbage. Most provide a 120 litre or 140 litre bin weekly while some provide a 240 litre bin. Eurobodalla provides an 80 litre bin and Bombala has a mixture of bin sizes.

All councils provide a kerbside service for recyclables. Most provide a 240 litre bin collected fortnightly, although Young collects weekly. The remaining councils have a mixture of 140 litre bins and crates collected weekly or fortnightly.

Only two councils provide a containerised kerbside collection for garden organics. Goulburn Mulwaree collects monthly and Queanbeyan fortnightly. Eurobodalla has an on-call service.



3.9.1 Existing Infrastructure

Table 29 shows the known landfills in the region.

Table 29 Existing Landfills – South East³⁵

Facility	Operator	Location	Council
Bermagui Waste Depot	Bega Valley Shire Council	Cnr Bermagui-Tathra Rd/ Strudwicks Rd, Bermagui	Bega Valley
Eden Waste Depot	Bega Valley Shire Council	Princes Highway, Eden	Bega Valley
Merimbula Waste Depot	Bega Valley Shire Council	Sapphire Coast Drive, Merimbula	Bega Valley
Bombala Waste Depot	Bombala Shire Council	Bombala	Bombala
Cooma Landfill	Cooma-Monaro Shire Council	8448 Monaro Highway, Cooma	Cooma Monaro
Brou Landfill Facility	Eurobodalla Shire Council	Brou Lake Road, Dalmeny	Eurobodalla
Surf Beach Waste Depot	Eurobodalla Shire Council	Off George Bass Drive, Surf Beach	Eurobodalla
Goulburn Mulwaree Council	Goulburn Mulwaree Council	100 Sinclair Street, Goulburn	Goulburn Mulwaree
Minda Landfill	Hi-Quality Waste Management Pty Ltd	Oallen Ford Road, Windellama	Goulburn Mulwaree
Marulan Waste Management Centre	Goulburn Mulwaree Council	Marulan	Goulburn- Mulwarree
Tarago Waste Management Centre	Goulburn Mulwaree Council	Tarago	Goulburn- Mulwarree
Woodlawn Landfill	Veolia Environmental Services (Australia) Pty Ltd/Goulburn Mulwaree Council	Collector Road, Tarago	Goulburn- Mulwarree
Benangaroo And North Ridge Quarries	Bald Hill Quarry Pty. Limited	Hume Highway, Jugiong	Harden
Ecofill Regional Landfill (Bald Hill Quarry Pty Ltd)/ Bald Hill Regional Garbage Facility	Harden Shire Council	Hume Highway, Jugiong	Harden
Galang Landfill	Harden Shire Council	Galang	Harden
Harden Murrumburrah Garbage Tip	Harden Shire Council	Murrumburrah	Harden
Jugiong Landfill	Harden Shire Council	Jugiong	Harden
Araluen Tip	Palerang Shire Council	Dirty Butter Creek Road, Araluen	Palerang

³⁵ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Braidwood Tip	Palerang Shire Council	Braidwood	Palerang
Bungendore Tip	Palerang Shire Council	Tarago Road, Bungendore	Palerang
Macs Reef Road Tip	Palerang Shire Council	Macs Reef Road	Palerang
Majors Creek Tip	Palerang Shire Council	Seymore St, Majors Creek	Palerang
Nerriga Tip	Palerang Shire Council	Endrick River Road, Nerriga	Palerang
Adaminaby Landfill	Snowy River Shire Council	Adaminaby	Snowy River
Dalgety Landfill	Snowy River Shire Council	Dalgety	Snowy River
Jindabyne Landfill	Snowy River Shire Council	Jindabyne	Snowy River
Bigga Waste and Recycling Centre	Upper Lachlan Shire Council	Bigga	Upper Lachlan
Collector Waste and Recycling Centre	Upper Lachlan Shire Council	Collector	Upper Lachlan
Crookwell Landfill Facility	Upper Lachlan Council	Grabben Gullen Road, Crookwell	Upper Lachlan
Gunning Waste and Recycling Centre	Upper Lachlan Shire Council	Gunning	Upper Lachlan
Taralga Waste and Recycling Centre	Upper Lachlan Shire Council	Taralga	Upper Lachlan
Tuena Waste and Recycling Centre	Upper Lachlan Shire Council	Tuena	Upper Lachlan
Gundaroo Tip	Yass Valley Shire Council	Gundaroo	Yass Valley
Murrumbateman Landfill	Yass Valley Council	Isabel Drive, Murrumbateman	Yass Valley
Wee Jasper Tip	Yass Valley Shire Council	Wee Jasper	Yass Valley
Red Hill Road Landfill Facility	Young Shire Council	Corner Red Hill Road & Jasprizza Ave, Young	Young
Victoria Landfill	Young Shire Council	Victoria Street, Young	Young

Most of the councils have their own licenced landfills. Smaller councils also probably operate unlicensed sites or deliver to the larger landfills. Cooma landfill also accepts waste from Snowy River Council. Queanbeyan Council sends its waste to Mugga Lane Landfill in the ACT.

Listed in this table is Veolia's Woodlawn Bioreactor Landfill. Although located in the region, this former mine site accepts waste by rail from Veolia's Clyde transfer Station in Sydney. Waste is transported in containers to the Crisps Creek intermodal facility near the site and transferred by road. Currently the Clyde Transfer Station is licenced to transfer 500,000 tonnes per year of waste.

Table 30 below shows the known transfer stations in the region.



Table 30 Transfer Stations – South East

Facility	Operator	Location	Council
Moruya Waste Management Facility	Eurobodalla Shire Council	Yarragee Road, Moruya	Eurobodalla
Bungendore Transfer Station	Palerang	Bungendore	Palerang
Bredbo	Cooma Council	3321 Monaro Highway	Cooma
Nimitabel	Cooma Council	52 Warrigal Corner Road	Cooma
Numeralla	Cooma Council	2086 Numeralla Rd, Numeralla	Cooma
Bemboka Waste Transfer Station	Bega Valley Shire Council	Adams St, Bemboka	Bega Valley
Candelo Waste Transfer Station Depot	Bega Valley Shire Council	Mogilla Road, Candelo	Bega Valley
Cobargo Waste Transfer Depot	Bega Valley Shire Council	Cobargo Tip Road, Cobargo	Bega Valley
Wallagoot Waste and Recycling Depot	Bega Valley Shire Council	Old Wallagoot Road, Wallagoot	Bega Valley
Pambula Asbestos Facility	Bega Valley Shire Council	McPherson Ct, Pambula	Bega Valley
Bibbenluke Transfer Station	Bombala Shire Council	Bibbenluke	Bombala
Cathcart Transfer Station	Bombala Shire Council	Cathcart	Bombala
Delegate Transfer Station	Bombala Shire Council	Delegate	Bombala
Captains Flat Waste Transfer Station	Palerang Shire Council	Captains Flat Road, Captains Flat	Palerang
Queanbeyan Waste Minimisation Centre	Queanbeyan Council	5 Lorn Road, Queanbeyan	Queanbeyan
Berridale Transfer Station	Snowy River Shire Council	Berridale	Snowy River
Yass Valley Transfer Station	Yass Valley Shire Council	Yass	Yass Valley
Bookham Transfer Station	Yass Valley Shire Council	Bookham	Yass Valley
Bowing Transfer Station	Yass Valley Shire Council	Bowing	Yass Valley
Binalong Transfer Station	Yass Valley Shire Council	Binalong	Yass Valley
Victoria Street Transfer Station	Young Shire Council	Young	Young

Table 31 shows the two MRFs operating in this region.



Table 31 MRFs – South East³⁶

Facility	Operator	Location	Council
Moruya MRF	Sita Environmental Solutions	Moruya	Eurobodalla
Cooma MRF	Burchalls Transport	Cooma	Cooma
Goulburn MRF	Endeavour Industries	Goulburn	Goulburn
Yass MRF	Yass Valley Council	Yass	Yass Valley
Elouera Recycling Centre	Young Shire Council	Young	Young

Although located in Eurobodalla, this MRF is shared by Eurobodalla and Bega Valley Councils, which deliver about half the throughput each. This facility was previously owned by WSN and was one of the assets bought by Sita.³⁷

The Cooma MRF processes dry recyclables from Cooma area. Queanbeyan Council sends its recyclables to Thiess' Hume MRF in the ACT.

Table 32 shows the only organics processing facility operating in this region.

Table 32 Organics Processing Facilities – South East³⁸

Facility	Operator	Location	Council
Amiterre Ag Solutions	Amiterre Ag Solutions	235 Calabash Lane, Murringo	Young
Landtasia - Kings Highway	Richard Graham	9006 Kings Highway, Mulloon	Palerang
Surf Beach Waste Depot	Eurobodalla Shire Council	Off George Bass Drive, Surf Beach	Eurobodalla

3.9.2 New/Proposed Infrastructure

Veolia is proposing to increase the maximum throughput rate of the Woodlawn Bioreactor from 500,000 to 1.13 million tonnes per year. This can partially be achieved by development of a new rail transfer station in Sydney. Simultaneously, Veolia is also seeking to increase the maximum throughput rate of the intermodal facility to 1.18 million tonnes per year.

This is in anticipation that Eastern Creek landfill in Sydney will close in approximately 2017, and that significant volumes of putrescible waste from Sydney will therefore need to be disposed of. There are no other landfills planned to accommodate this waste, and planning approval for new landfills or landfill extensions can take a significant amount of time (up to 10 years). Therefore it is reasonable to assume that the Woodlawn capacity will be needed.

³⁶ Discussion with Toby Browne – Bega Valley Council 28 June 2011

³⁷ Discussion with Toby Browne – Bega Valley Council 28 June 2011

³⁸ Discussion with Toby Browne – Bega Valley Council 28 June 2011



In addition, a proposal was granted in August 2010 to Veolia to modify existing development consent to be able to receive up to 50,000 tonnes per year of general solid waste (putrescible) by road from surrounding local Councils. The aim of this modification is to provide for the current and future disposal capacity of local councils including Goulburn-Mulwaree Council.

The Woodlawn site also has approval for a sorting and processing facility which will handle up to 240,000 tonnes of mixed waste per year and an organics and garden organics facility which will handle up to 40,000 tonnes of garden organics per year.

Cooma Council has also started the process of developing a new landfill on the site immediately adjacent to the existing landfill. Even though the current site has significant life potentially available, it is unlined and council believes that a new landfill facility would achieve higher environmental standards.

Bega Valley Council is in the process of obtaining planning approval for a new Central Waste landfill at Wolumla. The approvals process is nearing completion and the facility is expected to be formally approved soon. The new landfill is expected to accept around 30,000 tonnes per year.

An organic waste to energy facility is planned for the Native Forest Chip Mill at Eden. It is understood the process will include pelletisation off saw dust and fine organics. Initial discussions were held with Bega Valley Council about accepting some waste from the Bega Valley Shire, but Council did not progress this idea any further.³⁹

3.10 Hunter

Cessnock, Dungog, Gloucester, Great Lakes, Lake Macquarie, Maitland, Muswellbrook, Newcastle, Port Stephens, Singleton and the Upper Hunter. This region has a population of 644,300 living in 244,000 households. More than half the population live in Newcastle and Lake Macquarie Council areas.

In 2010, 229,581 tonnes of residual waste and 108,237 tonnes of recoverable materials were generated in the region equating to a 32.0% diversion rate. Projections for the amounts of waste likely to be generated to 2036 based on population growth are shown in Figure 10.

³⁹ Discussion with Toby Browne – Bega Valley Council 28 June 2011

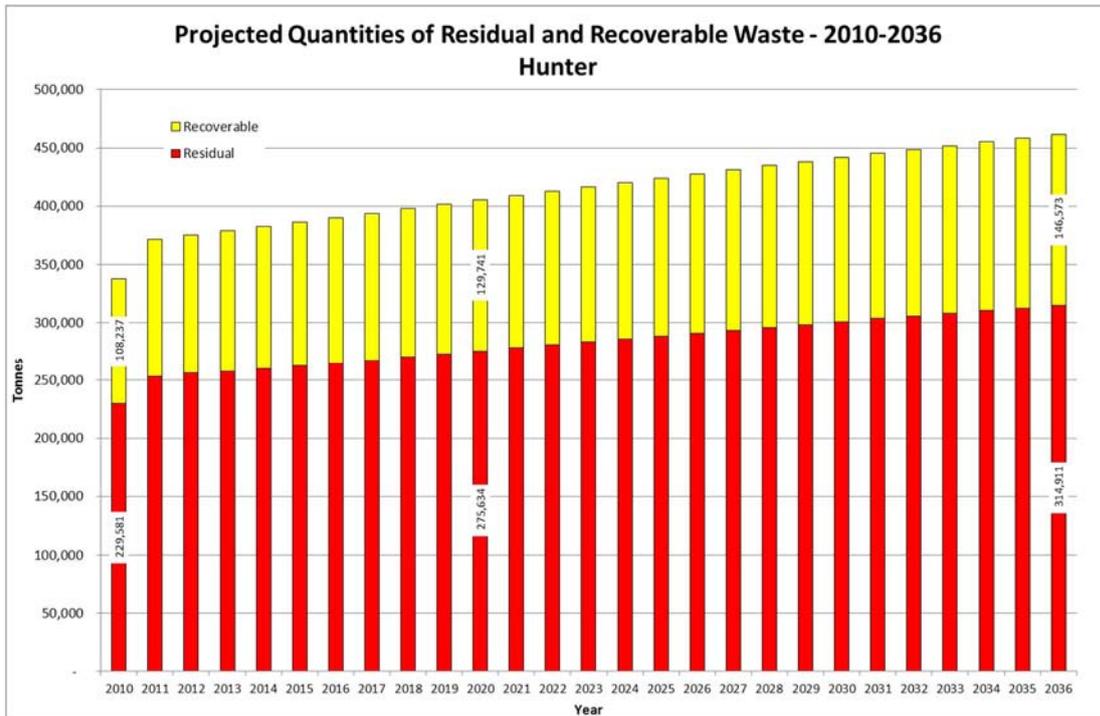


Figure 10- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Hunter

An additional 85,330 tonnes of residual waste is estimated to be generated per year in 2036, a 37.2% increase over current amounts. In addition an increase of 38,336 tonnes per year of recoverable materials is also forecast, an increase of 35.4%. The data takes into account the introduction of a kerbside garden organics collection service in Newcastle in July 2011.

All councils provide weekly kerbside collection services for garbage. All provide 240 litre bins except Great Lakes which has a 240 litre bin divided for garbage and recycling and Muswellbrook, which provides a 140 litre bin.

All councils also provide kerbside collections for recyclables, most in 240 litre bins for comingled material collected fortnightly. Three councils have 240 litre bin divided for paper and cardboard collected fortnightly and one has a 240 litre bin divided for garbage and recycling collected weekly.

Only Muswellbrook and Newcastle has a containerised kerbside service for garden organics collected fortnightly. Newcastle’s service was introduced in 1 July.

3.10.1 Existing Infrastructure

Table 33 below shows the known landfills in the region.



Table 33 Existing Landfills - Hunter⁴⁰

Facility	Operator	Location	Council
Cessnock Waste and Reuse Centre	Cessnock City Council	Old Maitland Rd, Cessnock	Cessnock
Dungog Shire Council Waste Facility	Dungog Shire Council	Short Street, Dungog	Dungog
Gloucester Landfill	Gloucester Shire Council	385 Thunderbolts Way, Gloucester	Gloucester
Bulahdelah Landfill	Great Lakes Council	Pacific Hwy, Bulahdelah	Great Lakes
Stroud Waste Facility	Great Lakes Council	Simmsville Rd, Stroud	Great Lakes
Tea Gardens Waste Facility	Great Lakes Council	25 Wanya Rd, Tea Gardens	Great Lakes
Tuncurry Waste Management Centre	Great Lakes Council	Tip Road, Tuncurry	Great Lakes
Awaba Waste Disposal Facility	Lake Macquarie City Council	60 Wilton Rd, Awaba	Lake Macquarie
Mount Vincent Rd Waste Management Facility	Maitland City Council	109 Mount Vincent Rd, East Maitland	Maitland
Muswellbrook Waste & Recycle Facility	Muswellbrook Shire Council	Coal Road, Muswellbrook	Muswellbrook
Summerhill Waste Management Facility	Newcastle City Council	141 Minmi Rd, Wallsend	Newcastle
Newline Road Landfill	Sita (Port Stephens) Pty Ltd	330 Newline Road, Raymond Terrace	Port Stephens
Port Stephens Waste Management Group	Port Stephens Waste Management Group	330 Newline Rd, Raymond Terrace	Port Stephens
Salamander Bay Waste Facility	Port Stephens Council	360 Soldiers Point Rd, Salamander Bay	Port Stephens
Wallaroo Waste Facility	Tomago Aluminium Company Pty Ltd	Old Swan Bay Road, Swan Bay	Port Stephens
C & M Edwards- 'Main Oak'	Applied Soil Technology Pty Limited	Elderslie Rd, Mitchells Flat	Singleton
Singleton Waste Depot	Singleton Council	Dyrring Road, Singleton	Singleton
Aberdeen Landfill	Upper Hunter Shire Council	Wells Gully Rd, Aberdeen	Upper Hunter
Cassilis Waste Depot	Upper Hunter Shire Council	Cassilis	Upper Hunter
Merriwa Waste Depot	Upper Hunter Shire Council	Depot Rd, Merriwa	Upper Hunter
Murrurundi Landfill	Upper Hunter Shire Council	Halls Rd, Murrurundi	Upper Hunter
Scone Waste Facility Area	Upper Hunter Shire Council	Noblet Road, Scone	Upper Hunter

⁴⁰ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



All the councils in the region operate at least one landfill, with some councils operating more than one. The two major landfills in the region are Summerhill, operated by Newcastle City Council and Awaba operated by Lake Macquarie City Council. Summerhill accepts around 200,000 tonnes of waste per year and significant garden organics and C&D recovery activities are currently taking place on site. No major resource recovery currently takes place at Awaba.

The landfills operated by the other two Lower Hunter councils, Maitland and Cessnock, do not have significant life left in either case. These councils were planning for the successful implementation of the Hunter Resource Recovery project to address their future waste disposal and processing needs. When, after protracted negotiations, agreement could not be met with the contractor Thiess Services to build and operate the facility, these councils had significantly less time than originally expected to make other plans.

Table 34 shows transfer stations in the region

Table 34 Transfer Stations – Hunter

Facility	Operator	Location	Council
Greta Transfer Station	Cessnock Council	Hollingshead, Greta	Cessnock
Tuncurry Waste Management Centre	Great Lakes Shire Council	Tip Road, Tuncurry	Great Lakes
Denman Transfer Station	Muswellbrook Shire Council	Rousemount Road, Denman	Muswellbrook

Table 35 shows resource recovery facilities in the region

Table 35 Resource Recovery Facilities – Hunter⁴¹

Facility	Operator	Material	Location	Council
Bedminster	Sita Environmental Solutions	Mixed waste	34 Newline Rd, Port Stephens	Port Stephens
Port Stephens Gardenland		Organics	13 Killaloe St, Eagleton	Port Stephens
Australian Native Landscapes		Organics	60 Crawford Rd, Cooranbong	Lake Macquarie
Beresford Park Nursery Supplies		Organics	80 Enterprise Dr, Beresfield	Newcastle
'Ravensworth'	Bio-Recycle Australia Proprietary Limited	Organics	New England Highway, Muswellbrook	Singleton
Mushroom Composters Pty Ltd		Organics	Broke Rd, Singleton	Singleton
Tuncurry Resource Recovery Facility	Great Lakes Council	Organics	Tip Road, Tuncurry	Great Lakes
Hunter Pods		Plastics	51 Glenwood Dr, Thornton	Maitland

⁴¹ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



The Bedminster facility at Port Stephens is the only waste processing facility in the Hunter and has an estimated throughput of 40,000 tonnes per year with diversion of between 65%⁴² and 80%⁴³

Table 36 shows licenced MRFs in the region.

Table 36 Licenced Materials Recycling Facilities (MRF) – Hunter⁴⁴

Facility	Operator	Location	Council
Thiess Services Pty Ltd	Thiess Material Recycling Facility	31 Waterloo Avenue, Thornton	Newcastle
Tuncurry MRF	Great Lakes Shire Council	Tip Road, Tuncurry	Great Lakes
Gateshead MRF	Solo Waste	Gateshead	Lake Macquarie

The Thornton MRF is the only MRF in the Hunter and processes comingled recyclables. It processes 15,000 tonnes of residential material and 11,000 tonnes of C&I.

Gateshead is not operating and is currently used to transfer materials to Somersby.

3.10.2 New/Proposed Infrastructure

An EIS to extend Summerhill landfill to provide another 25-30 years life has been submitted to Newcastle City Council for approval.

LMCC has also proposed an extension to its Awaba Landfill. The proposed development includes the excavation of two areas on-site to create additional air space for landfill and extend the landfill life by an estimated 24 years. The extension will provide approximately an overall additional capacity of 4 million tonnes and extend the lifespan of the landfill by approximately 24 years.

A C&D recycling facility is proposed by CiviLake, a business unit of Lake Macquarie City Council (LMCC), at Lake Macquarie. This facility is expected to crush, grind and separate dry bulk waste and construction and demolition materials including concrete, bricks, gravel and crushed rock road base, asphalt, soils, garden organics and tiles.

Materials would be generated from Council and CiviLake's own operations consolidated into one local recycling facility. It is expected to process up to 100,000 tonnes of material per year.

In addition two areas for garden organics processing have been proposed; one with an area of 3,500 m², the other being 8,000 m².

LMCC is also investigating the development of an enclosed compost facility for co-collected food and garden organics adjacent to its Awaba Landfill. In preparation Council is planning to switch to a three bin system of source separated organics⁴⁵ in late 2011, with food organics added after 3 years.

Newcastle City Council is introduced a third bin in July 2011 either for processing at Summerhill or elsewhere⁴⁶. Council is also investigating opportunities to increase recovery at its Summerhill Landfill,

⁴² <http://www.sita.com.au/our-services/post-collections/port-stephens-bedminster-composting-plant.aspx>

⁴³ <http://www.sita.com.au/our-services/post-collections/sita-cairns-bedminster-composting-plant.aspx>

⁴⁴ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

⁴⁵ Wallace, Paula (2011) *Lake Mac & Newcastle take charge of waste matters* *Inside Waste Weekly* 28 June



particularly C&D and dry C&I waste. Council’s main concern is the amount of available non filled space for development at the Summerhill site.

Newcastle and Lake Macquarie have also conducted negotiations about the possibility of a joint mixed waste and/or organics processing facility.

In addition a new landfill at Minimbah is planned to open in the next three years and accept approximately 20,000 tonnes per year.

3.11 Far West

Broken Hill, Central Darling and the unincorporated area. This region has a population of 22,000 living in 10,500 households.

In 2010, 17,390 tonnes of residual waste and 3,936 tonnes of recoverable materials were generated in the region equating to an 18.5% diversion rate, the lowest of all NSW State Plan Regions.

Projected waste and recovered quantities are shown in Figure 11 below.

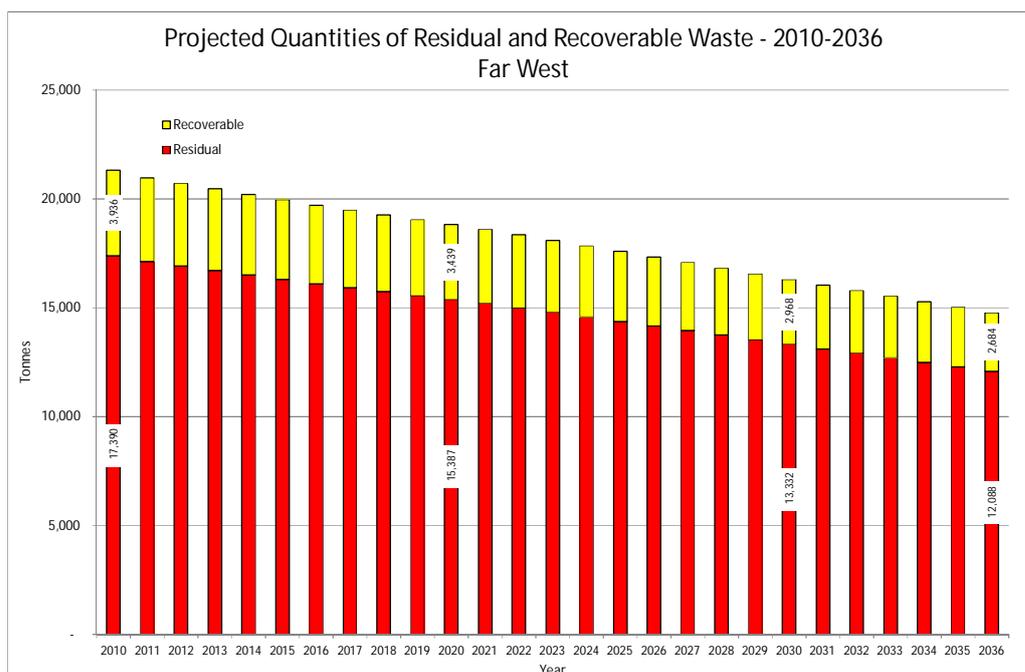


Figure 11- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Far West

The chart shows a decline in projected quantities of residual and Potentially Recoverable Waste to 2036 based on an expected decline in population. This would make it difficult to plan sufficiently for future waste infrastructure as spare capacity over time would be available, almost making any new facilities redundant in later years with excess capacity.

⁴⁶ Wallace, Paula (2011) *Lake Mac & Newcastle take charge of waste matters* [Inside Waste Weekly](#) 28 June



Overall the decline in residual waste generation in 2036 is equivalent to 5,301 tonnes per year less than 2010 figures. Potentially Recoverable Waste also declines to the equivalent of 1,251 tonnes per year.

Both councils in this region provide 240 litre bins for garbage collected kerbside each week. Neither provides a kerbside service for recyclables but Broken Hill provides a fortnightly garden organics collection using the Bio Insert system in a 240 litre bin.

3.11.1 Existing Infrastructure

Four landfills were identified in the Far West. These are shown in Table 37 below.

Table 37 Existing Landfills – Far West

Facility	Operator	Location	Council
Broken Hill Waste Depot	Broken Hill City Council	Wills Street, Broken Hill	Broken Hill
Wilcannia Landfill	Central Darling Shire Council	Wilcannia	Central Darling
Menindee Landfill	Central Darling Shire Council	Menindee	Central Darling
Ivanhoe Landfill	Central Darling Shire Council	Ivanhoe	Central Darling

Table 38 shows the only organics processing facility in this region.

Table 38 Organics Processing Facilities – Far West

Facility	Operator	Location	Council
Compost Facility At Broken Hill Landfill	Australian Vermiculture Pty Ltd	1 Wills Street, Broken Hill	Broken Hill

3.11.2 New Infrastructure

No new infrastructure is planned in this region.

3.12 South Western Sydney

Bankstown, Camden, Campbelltown, Fairfield, Liverpool and Wollondilly. This region has a population of 813,500 living in 256,000 households.

In 2010, 143,938 tonnes of residual waste and 192,380 tonnes of recoverable materials was generated in the region at 57.2% in 2010.

Figure 12 below shows projected quantities of waste arising's to 2036 based on population growth.

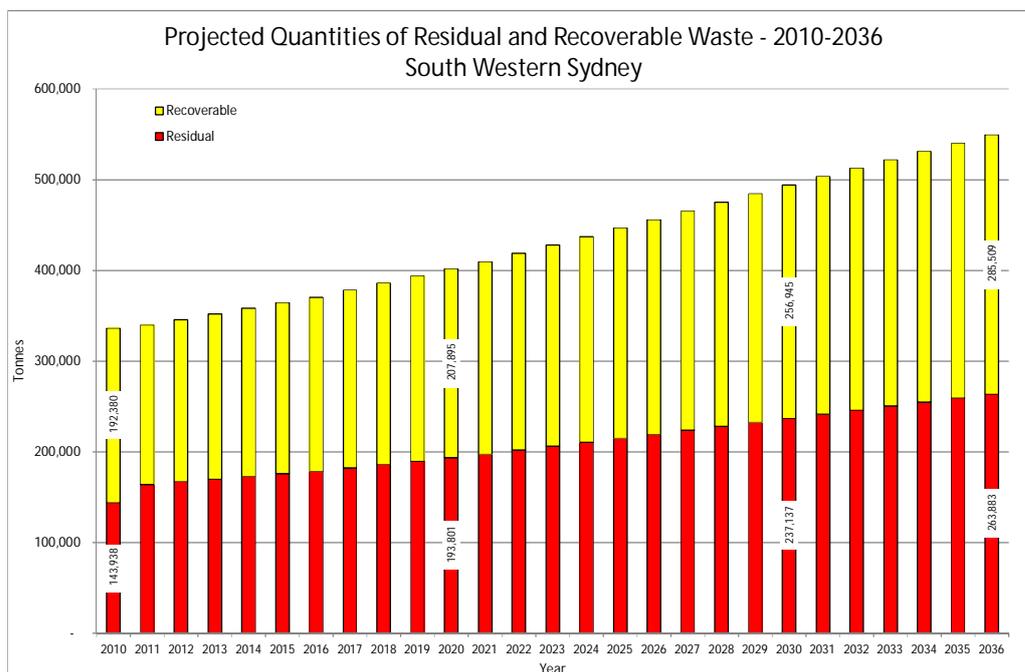


Figure 12- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – South Western Sydney

These projected increases have a significant effect on waste generation with an 83.3% increase in residual waste to landfill and 48.4% increase in Potentially Recoverable Waste. Overall an additional 213,075 tonnes of waste material will need to be handled in the region in the next 26 years.

All the councils in this region provide weekly kerbside services for garbage with a combination of 120 litre, 140 litre and 240 litre bins. They all also provide fortnightly collection for recyclables in 240 litre bins (except for Camden which collects weekly) and fortnightly collections for garden organics, except Fairfield which has no garden organics collection. All councils but Bankstown, currently send their waste to a waste processing facility.

Table 39 below shows the known landfills in this region.

3.12.1 Existing Infrastructure

Table 39 Existing Landfills – South Western Sydney⁴⁷

Facility	Operator	Location	Council
Bargo Waste Management Centre	Wollondilly Shire Council	Anthony Road, Bargo	Wollondilly
Blossom Lodge	L. V. Rawlinson & Associates Pty Ltd	364 Appin Road, Appin	Campbelltown
Brandown	Brandown Pty Ltd	Lot 9 Elizabeth Dr, Kemps Creek	Liverpool

⁴⁷ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Facility	Operator	Location	Council
Ferndale	L. V. Rawlinson & Associates Pty Ltd	364 Appin Road, Appin	Wollondilly
Glenfield Waste Disposal	L.A. Kennett Enterprises Pty Ltd	Cambridge Ave, Glenfield	Campbelltown
Horsley Park Waste Management Facility	Veolia	Wallgrove Rd, Horsley Park	Fairfield
Jacks Gully	Sita Environmental Services	Richardson Rd, Camden	Camden
Kelso Tip	Bankstown Council	Bransgrove Rd, Milperra	Bankstown
Rangers Road Tipping Facility	Campbelltown City Council	Cnr Rangers And Lynwood Roads, Wedderburn	Campbelltown
Warragamba Waste Management Centre	Wollondilly Shire Council	Production Ave, Warragamba	Wollondilly

Wollondilly's Warragamba site has been closed to disposal for some time but an official closure plan is now under development. The Bargo Landfill is still operating but only accepts self-haul inert waste only and has some small scale recovery.

Table 40 below shows known transfer stations in the region.

Table 40 Existing Transfer Stations – South Western Sydney⁴⁸

Facility	Operator	Location	Council
Benedict Reclamations	Benedict Industries Pty Limited	146 Newbridge Road, Moorebank	Liverpool
Widemere West, Prospect Quarry	Boral Recycling Pty Limited	38 Widemere Road, Wetherill Park	Fairfield
Eco Cycle Materials Pty Ltd	Eco Cycle Materials Pty Ltd	155 Newton Road, Wetherill Park	Fairfield
Hassall Street Recycling Centre	Fairfield City Council	Hassall Street, Wetherill Park	Fairfield
G.P.P Excavation & Demolition Contractors Pty Ltd	G.P.P Excavation & Demolition Contractors Pty Ltd	2 Ford Street, Chullora	Bankstown
Ballast Recycling Depot	Rail Corporation New South Wales	Worth Street, Gate1, Chullora	Bankstown
Davis Road Recycling and Waste Transfer Station	Sita Australia Pty Ltd	20 Davis Rd, Wetherill Park	Fairfield
Dumpex Waste Disposal	Transpacific Industries Pty. Ltd	76 Violet St, Revesby	Bankstown
Horsley Park Waste Management Facility	Veolia Environmental Services (Australia) Pty Ltd	Wallgrove Road, Horsley Park	Fairfield

⁴⁸ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Chullora Recycling Park ⁴⁹	Sita Australia Pty Ltd	Muir Road, Chullora	Bankstown
Ecolibrium Mixed Waste And Organics Facility	Sita Australia Pty Ltd	Richardson Road, Spring Farm	Camden
Gow St Recycling	Zandeira Holdings Pty Ltd	81 Gow Street, Padstow	Bankstown

Table 41 shows known MRFs in the region.

Table 41 Licenced MRFs – South Western Sydney⁵⁰

Facility	Operator	Location	Council
Ecolibrium Mixed Waste and Organics Facility	Sita Australia Pty Ltd	Richardson Road, Spring Farm	Camden
Chullora Recycling Park	Sita Australia Pty Ltd	Muir Road, Chullora	Bankstown
Picton MRF	PARR	Picton	Wollondilly
Wetherill Park Resource Recovery Facility	Sita Environmental Services	Wetherill Park	Fairfield
Chipping Norton Resource Recovery Facility	Benedict Recycling	33-35 Riverside Dr, Chipping Norton	Liverpool

The Chullora MRF processes comingled recyclables and has capacity to process between 50,000 and 100,000 tonnes per annum. The Picton MRF was previously owned by Thiess Services and was recently acquired by PARR along with two other of Thiess' MSW MRFs. The Wetherill Park MRF is one of only three dedicated C&I MRFs in Sydney.

Table 42 shows known waste processing facilities in the region.

Table 42 Resource Recovery Facilities – South Western Sydney

Facility	Operator	Materials	Location	Council
Spring Farm Resource Recovery Park	Sita Environmental Services	Organics	Narellan	Camden
Collins	M. Collins & Sons (Contractors) Pty Ltd	Organics	17 Fitzpatrick St, Revesby	Bankstown
Camden Soil Mix		Organics	1102 Glenlee Rd, Narellan	Camden
Hallinans Pty Ltd	Hi-Quality Waste Management Pty Ltd	Organics	761 The Northern Road, Bringelly	Camden
Volk Holdings Pty Ltd		Organics	765 - 769 The Northern Road, Bringelly	Camden
Pic Plastic Industrial Company Pty Ltd		Plastics	15 Everley Road, Chester Hill	Bankstown

⁴⁹ <http://www.wsn.com.au/>

⁵⁰ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Polymax Recycling	Plastics	9 Blaxland Place, Milperra	Bankstown
Foamex	Plastics	31 Mavis Street, Revesby	Bankstown
VisyPAK	Plastics	64 Biloela Street, Villawood	Bankstown
Astron Plastics	Plastics	6 Brooks Road, Ingleburn	Campbelltown
Martogg Group	Plastics	33-41 Airds Road, Minto	Campbelltown
RMAX Rigid Cellular Plastics	Plastics	27 Chifley Street, Smithfield	Fairfield
Dunlop Flooring	Plastics	183 Newton Rd, Wetherill Park	Fairfield
Australian Plastic Processing	Plastics	7 Bentley St, Wetherill Park	Fairfield
Polyfoam Australia	Plastics	Factory 3B, 1 Moorebank Avenue, Moorebank	Liverpool
All Products Recycling	Plastics	Unit 4 / 274-276 Hoxton Park Road, Prestons	Liverpool
Recycling Logistics	Plastics	Unit 1, 34-36 Whyalla PI, Prestons	Liverpool

The Spring Farm facility is located on-site at the former Jacks Gully Landfill. The facility was developed to enable the closure of the landfill. The four MACROC councils, Campbelltown, Camden, Wollondilly and Wingecarribee deliver kerbside domestic waste and the facility was also accepting organics from commercial sources while under WSN's management. The ArrowBio plant was designed to process up to 90,000 tonnes per year with a claimed diversion rate of 70%.

Technical issues at the facility resulted in it only infrequently working to full capacity and efficiency. This facility was one of the assets bought by Sita from WSN and it is understood that the mixed waste processing area is currently not operating, although the garden organics tunnel composting operations continue to process material from these councils. Municipal waste delivered to site is being transferred to Sita's existing SAWT facility at Kemps Creek, and to landfill sites

3.12.2 New/Proposed Infrastructure

WSN applied to upgrade the existing operations at the Chullora Recovery Park, including the construction and operation of an alternative waste technology facility for the treatment of 90,000 tonnes per year of mixed waste using the ArrowBio technology. Overall the Chullora proposal sought to increase the total site waste and resource quantities from 200,000 tonnes per year to 390,000 tonnes per year.

It seems unlikely that this will go ahead in the near future as the ArrowBio technology, that is used at Jacks Gully, has had technical difficulties (refer Section 3.12.1).

3.13 Western Sydney

Auburn, Blacktown, Blue Mountains, Hawkesbury, Holroyd, Parramatta, Penrith and the Hills. This region has a population of 1.15 million living in 390,000 households.

In 2010, 267,234 tonnes of residual waste and 227,070 tonnes of recoverable materials were generated in the region equating to a 46% diversion rate.

Figure 13 below shows projected quantities to 2036 based on population growth.

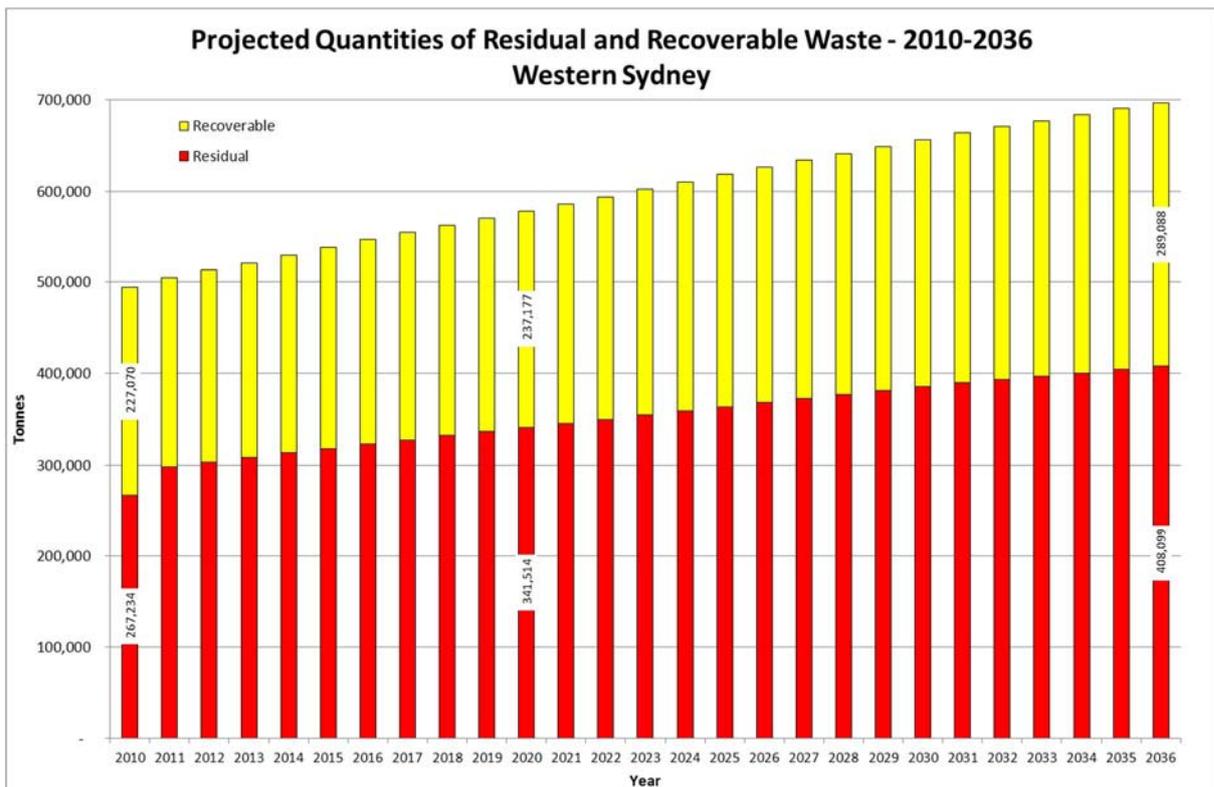


Figure 13- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Western Sydney

The chart shows that a combined increase in waste is expected in 2036 of 202,883 tonnes of which more than half is estimated to be residual waste. The total waste likely to be handled in 2036 for the region is approximately 697,000 tonnes. This is a significant increase from the current 494,304 tonnes.

All the councils in the region provide weekly kerbside collections for garbage using either 120 litre, 140 litre and 240 litre bins. All councils also provide fortnightly kerbside collections for recyclables in 240 litre bins with the exception of Blue Mountains which provides a 140 litre bin collected weekly. Only Auburn, The Hills and Parramatta provide a containerised kerbside garden organics service.

3.13.1 Existing Infrastructure

Table 43 below shows the landfills operating in this region.



Table 43 Existing Landfills – Western Sydney⁵¹

Facility	Operator	Location	Council
Blaxland Waste Management Facility	Thiess Services Pty Ltd/ Blue Mountains City Council	28-30 Attunga Road, Blaxland	Blue Mountains
Castlereagh Waste Management Centre	Sita	The Northern Rd, Berkshire Park	Penrith
Eastern Creek	Sita	Wallgrove Rd, Eastern Creek	Blacktown
Elizabeth Drive Landfill Facility	Sita	1725 Elizabeth Dr, Kemps Creek	Penrith
Erskine Park Landfill	Enviroguard	Quarry Rd, Erskine Park	Penrith
Hawkesbury City Waste Management Facility	Hawkesbury Council	The Driftway, South Windsor	Hawkesbury
Hlebar	Dravin Pty. Limited Vinko and Draga Hlebar	North Street, Schofields	Blacktown
Hyland Rd Depot	Holroyd City Council	Lot 11 Hyland Rd, Greystanes	Holroyd
Kari and Ghossayn	Kari and Ghossayn	Clifton Ave, Kemps Creek	Penrith
Katoomba Waste Management Facility	Blue Mountains City Council	49-89 Woodlands Road, Katoomba	Blue Mountains
Kemps Creek Landfill	NSW Investments Pty. Ltd.	16-23 Clifton Avenue, Kemps Creek	Penrith
Marsden Park Landfill	Blacktown Waste Services	Richmond Rd, Marsden Park	Blacktown
Penrith Waste Services	Penrith Waste Services	842 Mulgoa Rd, Mulgoa	Penrith
Riverstone	Riverstone Earthmoving Pty. Ltd	127 Burfitt Road, Schofields	Blacktown
South Windsor Resource Recovery Centre and Landfill	Keith Willoughby	723 - 727 George Street, South Windsor	Hawkesbury

The Elizabeth Drive Landfill Facility is a Solid Waste (non putrescible) landfill operated by Sita, which is licenced to accept between 300,000 and 335,000 tonnes of waste per year. The site also features Sita's SAWT facility which processes source separated waste from Penrith and Fairfield Councils.

Eastern Creek Landfill is a former WSN site which was not included in the assets bought by Sita in 2010. The Waste Asset Management Corporation (WAMC) owns the future airspace at the site, which is leased to Sita. The other non-operational landfill areas of the site are operated by Waste Asset Management Corporation. Approval has been granted to increase the capacity of the landfill and increase the annual waste disposal rate to 550,000 tonnes. This would provide an additional 1.6 million tonnes of landfill capacity and extend its life to June 2017. After this time, it would continue to be used for disposing of AWT residuals from the Global Renewables Facility at Eastern Creek, until 2022, or the capacity of the landfill is exhausted.

⁵¹ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Table 44 shows the known transfer stations in this region.

Table 44 Existing Transfer Stations – Western Sydney⁵²

Facility	Operator	Location	Council
Bettergrow Pty Ltd	Bettergrow Pty. Limited	48 Industry Road, Vineyard	Hawkesbury
Boral Asphalt	Bitupave Ltd	25a Powers Road, Seven Hills	Blacktown
Brandown Recycling Yard	Brandown Pty. Limited	Elizabeth Drive, Kemps Creek	Penrith
Penrith Quarry	Cemex Australia Pty Limited	Cnr Sheens Lane & Castlereagh Road, Castlereagh	Penrith
Concrete Recyclers (Group) Pty Limited	Concrete Recyclers (Group) Pty Limited	14 Thackeray Street, Camellia	Parramatta
Dinga Enterprises Pty Limited	Dinga Enterprises Pty Limited	Unit 4/29-31 Hobart Street, Riverstone	Blacktown
VIP Packaging	VIP Steel Packaging Pty Ltd	182-184 Andrews Road, Penrith	Penrith
Visy Paper Pty Ltd	Visy Paper Pty Ltd	6 Herbert Place, Smithfield	Holroyd
Visy Recycling	Visy Paper Pty Ltd	32 South Street, Rydalmere	Parramatta
Visy Recycling	Visy Paper Pty Ltd	9 Bessemer Street, Blacktown	Blacktown
Wanless Wastecorp – NSW	Wastecorp (NSW) Pty Ltd	13 Long Street, Smithfield	Holroyd
Homebush Bay Recycling Centre Pty Ltd	Homebush Bay Recycling Centre Pty Ltd	3 Burroway Road, Homebush Bay	Auburn
KLF Holdings Pty Ltd	KLF Holdings Pty Ltd	16 Grand Avenue, Camellia	Parramatta
Rock And Dirt Recycling	N. Moit & Sons (NSW) Pty Ltd	306 Racecourse Road, South Windsor	Hawkesbury
Knight's Syndicate Pty Ltd	Knight's Syndicate Pty Ltd	Lot 4, 105 Schofields Road, Rouse Hill	Blacktown
Sita Environmental Solutions	Sita Environmental Solutions	9 Devon Street, Rosehill	Parramatta
Bailey's Discount Recycling	Tekom Pty Ltd	6 Grand Ave, Camellia	Parramatta
Clyde Transfer Terminal ⁵³	Veolia Environmental Services (Australia) Pty Ltd	322 Parramatta Road, Clyde	Auburn
Auburn Waste & Recycling Centre ⁵⁴	Sita Environmental Solutions	Old Hill Link, Homebush Bay	Auburn
Seven Hills Waste & Recycling Centre ⁵⁵	Sita Environmental Solutions	29 Powers Road, Seven Hills	Blacktown

⁵² Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

⁵³ <http://www.veoliaes.com.au/>

⁵⁴ <http://www.wsn.com.au/>



Facility	Operator	Location	Council
Katoomba Waste Management Facility	Blue Mountains City Council	49-89 + 70-78 Woodlands Road, Katoomba	Blue Mountains

Table 45 shows the resource recovery facilities in this region

Table 45 Resource Recovery Facilities – Western Sydney

Facility	Operator	Material	Location	Council
EarthPower	Transpacific Industries/ Veolia	Commercial Food	Camellia	Parramatta
UR-3R	GRL	Mixed waste	Wallgrove Rd, Eastern Creek	Blacktown
Sita Advanced Waste Treatment Facility ⁵⁶	Sita Australia Pty Ltd	Separated organics and mixed waste	1725 Elizabeth Drive, Kemps Creek	Penrith
ANL Badgerys Creek	Australian Native Landscapes	Organics	210 Martin Rd, Badgerys Creek	Liverpool
Eastern Creek Waste and Recycling Centre	Sita Australia Pty Ltd	Organics	Wallgrove Rd, Eastern Creek	Blacktown
	Australian Native Landscapes	Organics		
ANL Riverstone	Australian Native Landscapes	Organics	132 Burfitt St, Riverstone	Blacktown
Rydalmere Recycling Facility	Benedict Recycling	Organics	32 South St, Rydalmere	Parramatta
Debco Berkshire Park	Debco Pty Ltd	Organics	60-62 Marys Rd, Berkshire Park	Penrith
Bettergrow Pty Ltd	Bettergrow Pty. Limited	Organics	48 Industry Road, Vineyard	Hawkesbury
Bio-Recycle	Bio-Recycle Australia Pty Ltd	Organics	302 Windsor Rd, Vineyard	Hawkesbury
Rivcow Environmental Pty Ltd	Rivcow Environmental Pty Ltd	Organics	182 Annangrove Rd, Annangrove	The Hills
Back to Earth the Mulch Makers	Peter Robert Holloway	Organics	132 Burfitt St, Riverstone	Blacktown
Hawkesbury City Waste Management Facility	Hawkesbury Council	Organics	The Driftway, South Windsor	Hawkesbury
Elf Farm Supplies Pty Ltd	Elf Farm Supplies Pty Ltd	Organics	108 Mulgrave Road, Mulgrave	Hawkesbury
MAG Recycling Services Pty Ltd		Plastics	5 - 7 Nicholas Street, Lidcombe	Auburn
Colossal Box Company		Plastics	Unit 20/28 Vore Street,	Auburn

⁵⁵ <http://www.wsn.com.au/>

⁵⁶ Sita Advanced Waste Treatment - <http://www.sita.com.au/our-services/post-collections/sawt---sita-advanced-waste-treatment.aspx>



Silverwater			
RBM Plastics	Plastics	32 - 40 Derby Street, Silverwater	Auburn
Australian Urethane Systems Pty Ltd	Plastics	25 Garling Road, Kings Park	Blacktown
Repeta	Plastics	46-50 Melbourne Road, Riverstone	Blacktown
Cromford Pty Ltd	Plastics	120 Ballandella Rd, Pendle Hill	Holroyd
IS Recycling	Plastics	4 Jumal Place, Smithfield	Holroyd

The Camellia EarthPower facility is NSW's only dedicated C&I organics processing facility. It processes about 30,000 tonnes per year. The UR-3R facility at Eastern Creek operated by Global Renewables Limited (GRL) has capacity to process up to 175,000 tonnes per year with a claimed recovery rate of 70%. Blacktown, Fairfield, Holroyd and other Councils deliver kerbside waste to this facility. GRL has plans to expand plant capacity up to its approved level of 220,000 tonnes per annum.

The SAWT facility at Kemps Creek has approved capacity to process up to 135,000⁵⁷ tonnes per year and currently accepts kerbside food and organics from Penrith Council and mixed domestic waste from Liverpool Council.

Table 46 shows the licensed MRFs and waste processing facilities in this region.

Table 46 Licenced MRFs – Western Sydney⁵⁸

Facility	Operator	Location	Council
Visy Blacktown MRF	Visy Recycling	9 Bessemer St, Blacktown	Blacktown
Visy Rydalmere MRF	Visy Recycling	32 South St, Rydalmere	Parramatta
Smithfield	Visy Recycling	158-160 McCredie St, Smithfield	Holroyd
Camellia Resource Recovery and Treatment Facility	Sita	Camellia	Parramatta
Galloway C&I MRF	Galloway Environmental Waste Management	Seven Hills	Blacktown

Visy Recycling operates three MRFs in Western Sydney. All process comingled recyclables. The Rydalmere and Smithfield MRFs have capacity of up to 100,000 tonnes while the Blacktown MRF can process up to 50,000 tonnes. The Camellia and Galloway facilities are two of only three dedicated C&I MRFs in Sydney. The Galloway facility is a 'dirty MRF' that processes mixed non-putrescible waste to recover recyclables.

⁵⁷ <http://www.sita.com.au/our-services/post-collections/landfill-management/elizabeth-drive-landfill.aspx>

⁵⁸ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



3.13.2 New/Proposed Infrastructure

The following information about proposed waste developments is sourced from NSW Planning. With the sale of WSN to Sita, details and plans for some of these projects may have changed.

Camelia Integrated Recycling Park

Remondis is proposing an integrated recycling park at Camelia which would feature the construction and operation of an alternative waste treatment facility. The facility would consist of:

- ▶ a commercial and industrial waste processing facility for 100,000 tonnes per year;
- ▶ an organic waste composting facility capable of processing up to 50,000 tonnes per year of source separated organic material from metropolitan kerbside collections; and
- ▶ mechanical and manual sorting of C&D waste including removal of putrescible fractions for tunnel composting.

Moorebank Waste Facility

Moorebank Recyclers proposed the construction and operation of a recycling facility at Moorebank that would handle approximately 500,000 tonnes of construction and demolition waste per year to be recycled back into local Sydney industries.

Smartskip Materials Recycling Facility Expansion

Approval was granted to Smartskip to increase the recycling of construction and demolition waste at its Silverwater facility, from 21,000 to 80,000 tonnes per year.

Light Horse Waste Facility

Approval was granted in November 2009 to Light Horse Business Centre to construct and operate a Materials Processing Centre and engineered landfill at Eastern Creek. The facility would involve the import, sorting, separating and crushing of recycled building and construction materials and the engineered landfill would involve filling an existing quarry with specified material to enable the land to be developed for future employment uses. The created void space from the existing quarry operations is approximately 15 million cubic metres. The capacity of the materials processing centre is not known.

Orchard Hills Waste Project

A proposal was submitted by Dellara Pty Ltd for the recycling and recovery of 350,000 tonnes per year of C&I and C&D waste, which would seek to recover up to 70% of the incoming material. The facility also includes a landfill with a proposed capacity of 4.5 million tonnes. The application was refused by the Planning Minister, but an appeal is currently being heard in the Land and Environment Court.

3.14 Sydney

City of Sydney, Inner West, Northern Beaches, North Shore, Eastern Suburbs, Southern Sydney and Sutherland Shire. This region has a population of 2.23 million people living in 885,000 households.

In 2010, 515,782 tonnes of residual waste and 434,990 tonnes of recoverable materials were generated in the region equating to a 46% diversion rate. In total over 950,000 tonnes of waste materials were handled in the Sydney region making the region the largest waste producer.

Figure 14 below shows projected quantities to 2036 based on population growth.

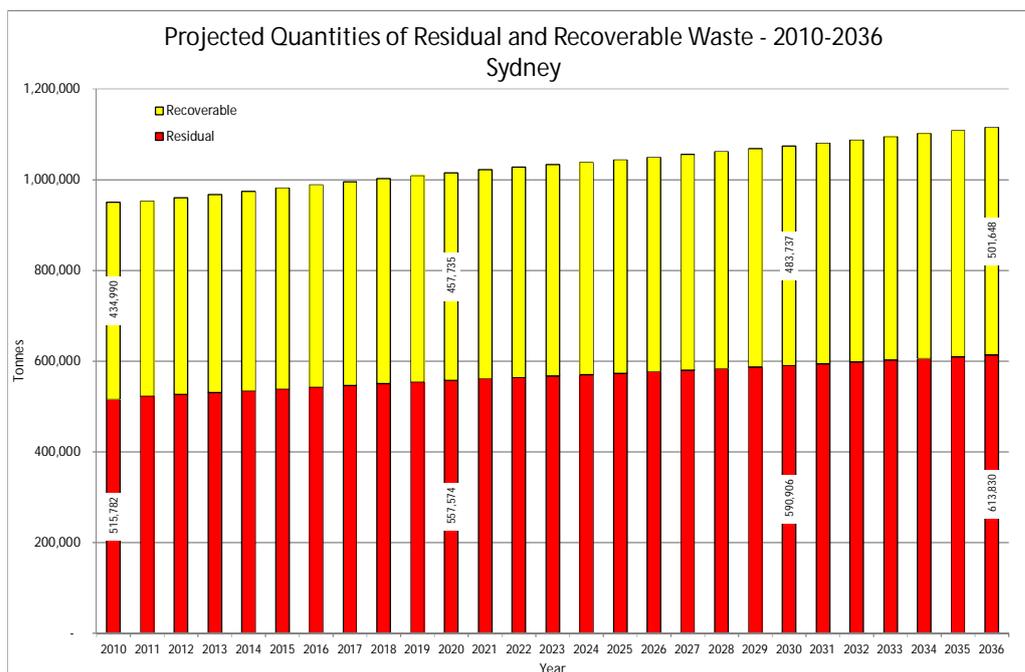


Figure 14- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Sydney

By 2036 an additional 164,706 tonnes of material is likely to be produced within the region that will require landfilling or recovery. Overall an expected increase of 19% in residual waste and 15.3% in recoverable materials are expected by 2036.

All 27 councils in this region provide a weekly kerbside collection for garbage using a variety of bin sizes from 55 litre to 240 litre. All councils also provide kerbside collection for recyclables using a variety of bins from crates to 240 litre bins either weekly or fortnightly. Only Rockdale does not provide a kerbside garden organics collection. About half provide bins for garden organics while the other half collect loose and bundled material or a combination of bins and bundled. Collection frequencies include weekly, fortnightly, monthly and on-call.

3.14.1 Existing Infrastructure

Table 47 below shows the known landfills in the Sydney region.

Table 47 Existing Landfills - Sydney⁵⁹

Facility	Operator	Location	Council
Alexandria Landfill	Alexandria Landfill Pty Ltd (Dial a Dump)	10 Albert St, St Peters	Marrickville
Belrose Waste And Recycling Centre	Waste Assets Management Corporation	Crozier Road, Belrose	Warringah
Greenwood Landfill	Breenwood, Robert Scott	451 Mona Vale Rd, St Ives	Warringah

⁵⁹ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Facility	Operator	Location	Council
Kimbriki Recycling And Waste Disposal Centre	Kimbriki Environmental Enterprises Pty Limited	Kimbriki Rd, Terrey Hills	Warringah
Kurnell Landfill Company	Breen Holdings Pty Ltd	Captain Cook Dr, Kurnell	Sutherland
Lucas Heights Waste & Recycling Centre	Sita Australia Pty Ltd	New Illawarra Rd, Lucas Heights	Sutherland
Salt Pan Creek Tip	Canterbury City Council	Kentucky Road, Riverwood	Canterbury

Veolia's Woodlawn Bioreactor landfill, which accepts up to 500,00 tonnes of waste annually from the Sydney region, through the Clyde Rail Transfer Station, is not included in this list. The Woodlawn site is discussed in Section 3.9.1.

Table 48 shows the known transfer stations in the Sydney region.

Table 48 Existing Transfer Stations - Sydney⁶⁰

Facility	Operator	Location	Council
Belrose Waste And Recycling Centre	Waste Assets Management Corporation	Crozier Rd, Belrose	Warringah
Alexandria Recycling Centre	Boiling Pty Ltd	10-16 Albert Street, St Peters	Marrickville
Boral Recycling Pty Ltd	Boral Recycling Pty Ltd	Via Burrows Road, South St Peters	Marrickville
Reefway Environmental Services	Cardinal Group Pty Ltd	3-5 Duck Street, Auburn	Auburn
Reefway Waste	Cardinal Group Pty Ltd	3-7 O'Riordan St, Alexandria	Sydney
Dial-A-Dump Waste Sort/Separate/Transfer Facility	Dial-A-Dump Pty. Limited	33 Burrows Road, (Also Known As 53-57 Campbell Road St Peters) St Peters	Marrickville
Materials Recycling Depot	City Of Sydney	25 Burrows Road, St Peters	Marrickville
Metropolitan Demolitions And Recycling	Metropolitan Demolitions And Recycling	396 Princes Highway St, Peters	Marrickville
Randwick City Council Recycling Facility	Randwick City Council	9 Bumborah Point Road, Matraville	Randwick
Port Botany Transfer Station ⁶¹	Veolia Environmental Services (Australia) Pty Ltd	Lot 21 Military Road, Matraville	Randwick
Visy Recycling	Visy Paper Pty Ltd	Corner Moore & Baker Streets, Botany	Botany Bay
Visy Recycling	Visy Paper Pty Ltd	43 Bay Road, Taren Point	Sutherland
Artarmon Waste & Recycling	Sita Australia Pty Ltd	Lanceley Place, Artarmon	Willoughby

⁶⁰ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

⁶¹ <http://www.veoliaes.com.au/>



Centre			
Greenacre Transfer Station ⁶²	Veolia Environmental Services (Australia) Pty Ltd	75 Anzac Street, Greenacre	Bankstown
Veolia Alexandria	Veolia Environmental Services (Australia) Pty Ltd	76-82 Burrows Road, Alexandria	Sydney
Tip Fast Pty Limited	Tip Fast Pty Limited	5a Canal Road, St Peters	Marrickville
Manly Warringah Recycling Centre	Numeve Pty Ltd	50 Meatworks Ave, Oxford Falls	Warringah
Lucas Heights Waste & Recycling Centre	Sita Australia Pty Ltd	New Illawarra Road, Lucas Heights	Sutherland
Rockdale Waste & Recycling Centre ⁶³	Sita Australia Pty Ltd	Lindsay Street, Rockdale	Rockdale
Ryde Waste & Recycling Centre ⁶⁴	Sita Australia Pty Ltd	Wicks Road, North Ryde	Ryde

Table 49 shows licenced MRFs in the Sydney region.

Table 49 Licenced MRFs – Sydney⁶⁵

Facility	Operator	Location	Council
Taren Point	Visy Recycling	43 Bay Rd, Taren Point	Sutherland
Belrose	URM	Crozier Rd, Belrose	Warringah
St Peters	Visy Recycling	6-10 Burrows Rd, St Peters (Marrickville)	Marrickville
Alexandria	Veolia	76-82 Burrows Rd, Alexandria	Sydney
Dial-A-Dump Waste Sort/Separate/Transfer	Dial-A-Dump Pty Ltd	33 Burrows Road, St Peters	Marrickville

The Taren Point MRF processes paper and comingled and has capacity for 50,000-100,000 tonnes per year. The MRF at Belrose was processing comingled recyclables from the SHOROC Councils but this material is not being delivered to Kimbriki. The St Peters and Alexandria MRFs also process comingled recyclables and both have capacity for 50,000 tonnes per year.

Table 50 shows licenced resource recovery facilities in the Sydney region.

⁶² <http://www.veoliaes.com.au/>

⁶³ <http://www.wsn.com.au/>

⁶⁴ <http://www.wsn.com.au/>

⁶⁵ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Table 50 Resource Recovery Facilities – Sydney⁶⁶

Facility	Materials	Location	Council
Visy Recycling ⁶⁷	Paper	Corner Moore & Baker Streets, Botany	Botany
AMCOR	Paper	2 Moore St, Botany	Botany Bay
Belrose Recycling Facility ⁶⁸	Organics and C&D	Crozier Rd, Belrose	Warringah
University of NSW	Organics	High St, Kensington	Randwick
Growmix	Organics	Menai	Sutherland
Lord Howe Island Tip	Organics	Airport Road, Lord Howe Island	N/a
Kimbriki Recycling and Waste Disposal Centre	Organics	Kimbriki Road, Terrey Hills	Warringah
Polytrade Recycling	Plastics	40 Madeline Street, Enfield	Burwood

3.14.2 New Infrastructure

Only one new waste processing facility is close to realisation in the Sydney region in the near future. This is to be built at the Kimbriki Waste Management Facility by Kimbriki Environmental Enterprises (KEE), an incorporated business owned by the four SHOROC Councils (Mosman, Manly, Warringah and Pittwater). The facility, which is currently undergoing the approvals process, is expected to process up to 100,000 tonnes per year of both mixed residual waste and source separated food and garden organics. Currently the SHOROC councils deliver waste to Belrose Landfill. The Kimbriki waste processing facility is expected to process municipal solid waste generated beyond 2013-2014 when the Belrose Landfill closes.

KEE also proposed to construct a Materials Recovery Facility (MRF) to receive and process recyclable materials which is currently sent to Chullora MRF and the Earthcare MRF at Somersby. The new MRF is expected to comprise a single enclosed building covering approximately 9,000m³ and have an annual throughput capacity of 60,000 tonnes.

KEE is also in the process of developing a new Masterplan for the Kimbriki site which will set out how landfilling and expanded resource recovery operations will operate at the site into the future.

In June 2010, before the sale of assets to Sita, WSN was granted approval to develop a waste processing facility at its Lucas Heights site. The facility was planned to use the ArrowBio technology to process 100,000 tonnes per year of municipal solid waste. The land on which the facility was to be built was owned by ANSTO, which operates the research nuclear reactor on the other side of New Illawarra Road, and leased to WSN.

⁶⁶ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

⁶⁷ Licence number 13089 - <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

⁶⁸ Includes organics and C&D recovery



It is unclear whether Sita will seek to develop a waste processing facility at Lucas Heights. Prior to the sale of WSN, there were discussions between WSN and ANSTO about using an alternative site for a waste processing facility.

The City of Sydney is currently investigating options for the development of a waste to energy facility which may include front-end separation and resource recovery.

Phoenix Solutions is proposing the development of a waste to energy facility at Kurnell that will process RDF, C&I waste, tyres and medical waste. Plasma arc processing is the technology proposed.⁶⁹

3.15 Central Coast

This region consists of two councils, Gosford and Wyong. It seems more likely than not that in the future these councils could merge to form one entity. This region has a population of 316,000 living in 126,000 households.

In 2010, 86,609 tonnes of residual waste and 99,888 tonnes of recoverable materials was generated in the region. Overall, 186,497 tonnes of waste materials were handled in the region, with a 53.6% diversion rate placing the region in the top three for waste recovery.

Figure 15 shows projected quantities to 2036 based on population growth.

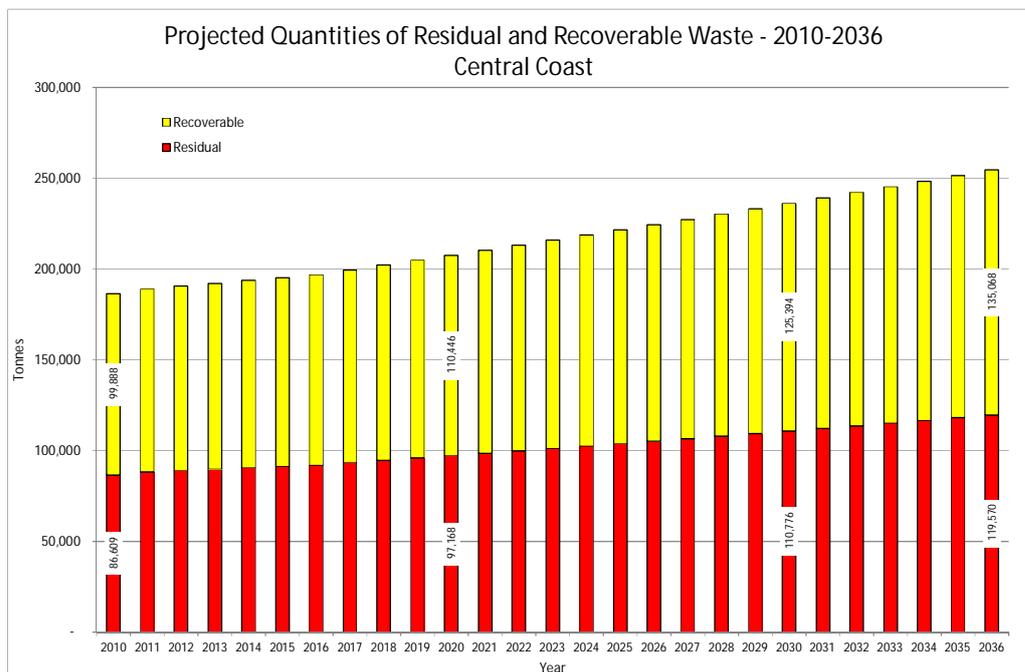


Figure 15- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Central Cost

The chart indicates that an estimated additional 68,140 tonnes of waste will be generated in 2036. This is expected to consist of 32,961 tonnes of residual waste and 35,179 tonnes of Potentially Recoverable Waste.

⁶⁹ Dyson, Peter (2011) New Mixed Waste Processing Technologies being introduced into Australia Presentation to Australasian Waste and Recycling Expo, Sydney, 11 November



Both councils provide a weekly kerbside collection for garbage with Gosford providing a 120 litre bin and Wyong a 140 litre bin. Both also provide a 240 litre bin for recyclables, but Gosford collects it fortnightly and Wyong collects weekly. Both provide a 240 litre bin fortnightly for garden organics.

3.15.1 Existing Infrastructure

Table 51 below shows known landfills in the region.

Table 51 Existing Landfills – Central Coast⁷⁰

Facility	Operator	Location	Council
Buttonderry Waste Management Facility	Wyong City Council	Hue Hue Rd, Warnervale	Wyong
Kincumber Landfill Facility	Gosford City Council	Cullens Rd, Kincumber	Gosford
Mangrove Mountain Memorial Golf Club	Verde Terra Pty Ltd	Hallards Road, Central Mangrove	Gosford
Woy Woy Landfill	Gosford City Council	Nagari Rd, Woy Woy	Gosford

Gosford's two landfills have limited life while Wyong's Buttonderry Landfill has considerable life.

Table 52 below shows the two licenced MRFs operating on the Central Coast.

Table 52 Licenced Materials Recycling Facilities (MRF) – Central Coast⁷¹

Facility	Operator	Location	Council
Earthcare Recyclers	ASD Paper Recyclers Pty. Limited	95 Wisemans Ferry Road, Somersby	Gosford
Thiess Services Pty Ltd	PARR	75 Pile Road	Gosford

Both MRFs process comingled recyclables. The Pile Road MRF was recently bought from Thiess Services by PARR with two other NSW MRFs. It processes 45,000⁷² tonnes of material per year.

Table 53 below shows the organics processing facilities operating on the Central Coast.

Table 53 Resource Recovery Facilities – Central Coast

Facility	Material	Location	Council
Australian Native Landscapes Pty Ltd	Organics	Hue Hue Road, Jilliby	Wyong
SULO	Plastics	123 Wisemans Ferry Road, Somersby	Gosford

⁷⁰ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

⁷¹ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

⁷² http://www.insidewaste.com.au/web_multimedia/16.17_IW_-_Thiess.pdf



3.15.2 New/Proposed Infrastructure

Lack of agreement between the Central Coast councils in relation to waste management has resulted in a lack of exploration of joint opportunities in the past.

With landfill space running out, Gosford has, for some time, been planning a waste processing facility at its Woy Woy site. In 2008, approval was granted for the development of an enclosed composting facility to process 30,000 tonnes per year of garden organics, and a waste processing facility for processing 70,000 tonnes per year of municipal solid wastes. The project did not go ahead.

In June 2010, Gosford went to tender for contractors to build, own, operate and transfer two waste processing facilities, one that could process mixed solid waste and the other that could compost organics. Both facilities were to be located at the Woy Woy site. The project has not progressed, as it also required waste from Wyong Council to make it commercially viable. Wyong Council has since indicated that it may build such a facility at Buttonderry, and has invited Gosford Council to be part of this project.

3.16 Illawarra

The Illawarra Region includes Kiama, Shellharbour, Shoalhaven, Wingecarribee and Wollongong Councils. This region has a population of 431,000, of which about half are in Wollongong. There are a total of 180,000 households in the region.

In 2010, 113,226 tonnes of residual waste and 116,108 tonnes of recoverable materials was generated in the region. In total 229,334 tonnes of waste materials were handled in the region with a diversion of recoverable materials of 51%.

Figure 16 below shows projected quantities to 2036 based on population growth.

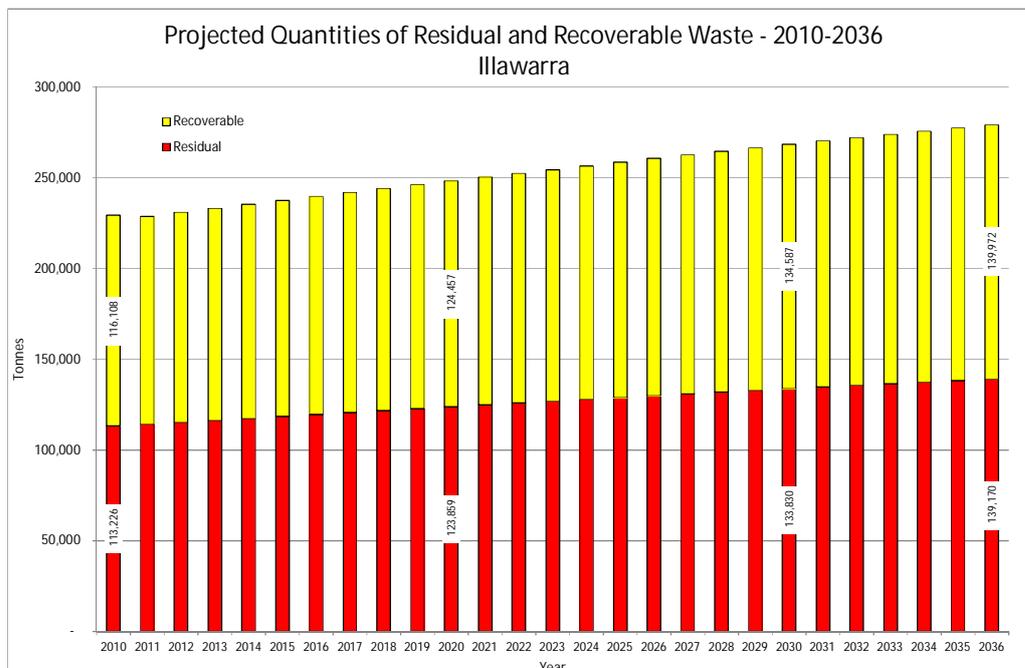




Figure 16- Projected Quantities of Residual and Potentially Recoverable Waste - 2010-2036 – Illawarra

By 2036 it is expected that residual waste volumes will increase by 22.9% and Potentially Recoverable Waste by 20.6% equating to an additional 49,808 tonnes of waste materials to be handled, in total 279,142 tonnes of waste will require recovery or disposal.

All councils provide a kerbside collection service for garbage providing between 80 litres and 140 litres of capacity per week. Shellharbour provides a fortnightly collection in a 240 litre bin. All provide a fortnightly collection for recyclables in a 240 litre bin. Three councils provide a fortnightly garden organics collection using a 240 litre bin while the other two have on-call collections.

3.16.1 Existing Infrastructure

Table 54 shows the known landfills in the region.

Table 54 Existing Landfills - Illawarra⁷³

Facility	Operator	Location	Council
Bowral Brickworks	The Austral Brick Co Pty Ltd	Kiama Street, Bowral	Wingecarribee
Dunmore Waste and Recycling Facility	Shellharbour City Council	Buckley's Rd, Blackbutt	Shellharbour
Helensburgh Waste Disposal Facility	Wollongong City Council	Nixon Pl, Helensburgh	Wollongong
Huskisson Recycling and Waste Facility	Shoalhaven City Council	Huskisson Rd, Huskisson	Shoalhaven
Minnamurra Waste Disposal and Recycling Facility	Kiama Municipal Council	Princes Highway, Minnamurra	Kiama
Port Kembla Builders Landfill & Recycling Centre	Cleary Bros (Bombo) Pty Ltd	33 Five Islands Road, Port Kembla	Wollongong
Sussex Inlet Recycling and Waste Facility	Shoalhaven City Council	Springs Rd, Sussex Inlet	Shoalhaven
West Nowra Recycling and Waste Facility	Shoalhaven City Council	Flat Rock Rd, Nowra	Shoalhaven
Whytes Gully Waste Disposal Facility	Wollongong City Council	Reddalls Rd, Kembla Grange	Wollongong

All councils except Wingecarribee operate their own landfills, although Kiama delivers its waste to Shellharbour's Dunmore facility and Wingecarribee delivers to the Jacks Gully site as one of the MACROC Councils.

Table 55 shows the licenced transfer stations in the region.

⁷³ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



Table 55 Licenced Transfer Stations – Illawarra⁷⁴

Facility	Operator	Location	Council
Wingecarribee Shire Council	Resource Recovery Centre	Berrima Road, Moss Vale	Wingecarribee
Dunmore Recycling And Waste Facility	Shellharbour City Council	Dunmore Waste Depot, Buckleys Road, Blackbutt	Shellharbour
Ulladulla Recycling & Waste Depot	Shoalhaven City Council	94 Pirralea Road, Ulladulla	Shoalhaven
West Nowra Recycling And Waste Facility ⁷⁵	Shoalhaven City Council	Flat Rock Road, Nowra	Shoalhaven
Huskisson Recycling And Waste Facility ⁷⁶	Shoalhaven City Council	Huskisson Road, Huskisson	Shoalhaven

Shoalhaven is probably the largest council in area and has a number of transfer stations at strategic locations.

Wollongong's Whytes Gully Landfill is to undergo a major expansion. Council has commissioned consultants to prepare an Environmental Assessment and detailed design for such an expansion, and the new airspace is expected to be available in 2013, before existing capacity runs out.

Through the Southern Councils Group, Wollongong, Shellharbour and Kiama had been exploring the possibility of joint waste projects with other councils further south, including Shoalhaven, Eurobodalla and Bega Valley. The geographic distances between the two groups however, made this difficult and the northern councils are likely to develop more local opportunities together.

Table 56 below shows that there are two operating MRFs in the region.

Table 56 Licenced MRFs – Illawarra⁷⁷

Facility	Operator	Location	Council
Transpacific Industries Pty. Ltd.	Transpacific Industries	10-12 Waynote Place, Unanderra	Wollongong
West Dapto ⁷⁸	Thiess Services	Lot 203 Reddalls Rd, West Dapto	Wollongong
Shoalhaven Recycling MRF	Shoalhaven Recycling	10 Victa Way, Shoalhaven	Shoalhaven
West Nowra Recycling & Waste Facility	Shoalhaven City Council	Flat Rock Road, West Nowra	Shoalhaven

The West Dapto MRF is adjacent to the Whytes Gully Landfill and former SWERF site. It processes comingled recyclables from Wollongong Council area.

⁷⁴ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

⁷⁵ Licence number 13089 - <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

⁷⁶ Licence number 13089 - <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

⁷⁷ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

⁷⁸ <http://www.thiess-services.com.au>



Table 57 below shows the resource recovery facilities in the region.

Table 57 Resource Recovery Facilities – Illawarra⁷⁹

Facility	Operator	Material	Location	Council
Resource Recovery Centre ⁸⁰	Wingecarribee Shire Council	Various	Berrima Road, Moss Vale	Wingecarribee
Soilco		Organics	Cnr Northcliffe Dr & Princes Hwy, Kembla Grange	Wollongong
Soilco		Organics	Wogamia Rd, West Nowra	Shoalhaven
Soilco		Organics	61 Reddalls Rd, Kembla Grange	Wollongong
Minnamurra Waste Disposal & Recycling Facility	Kiama Council	Various	Princes Highway, Minnamurra	Kiama
Dunmore Recycling And Waste Facility	Shellharbour City Council	Various	Dunmore Waste Depot, Buckleys Road, Blackbutt	Shellharbour
Polytrade Recycling		Plastics	15 Cumberland Ave, South Nowra	Shoalhaven
Cromford Pty Ltd		Plastics	Lot 1 Douglas Rd, Moss Vale	Wingecarribee

Wingecarribee's Moss Vale facility also includes a transfer station and vertical composting unit.

3.16.2 New/Proposed Infrastructure

Shoalhaven Resource Recovery Park

Shoalhaven Council submitted a proposal to construct a resource recovery park that was to include composting and materials recovery facilities for domestic and commercial waste, as well as a sorting and recovery facility for construction and demolition waste with a combined total capacity of 80,000 tonnes per year. The facility was to include:

- ▶ a composting facility (food and garden organics) to initially process approximately 26,000 tonnes per year from both domestic and commercial waste sources;
- ▶ a materials recovery facility for sorting approximately 30,000 tonnes of dry (non-putrescible) solid wastes per year from both domestic and commercial waste sources;
- ▶ a sorting and recovery facility for sorting approximately 15,000 tonnes per year of construction and demolition waste; and
- ▶ other stockpile areas for storing and processing approximately 10,000 tonnes per year of recyclable materials, such as garden organics, scrap steel and concrete.

⁷⁹ Copies of licences can be found at <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

⁸⁰ Licence number 13089 - <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>



This project has stalled, due to Council’s decision to not proceed with a source separated food and garden organics collection service.

The only other significant resource recovery initiative in this region is Shellharbour exploring options with its Dunmore facility by separating the resource recovery activities to another adjacent site to avoid paying the Section 88 levy on materials that are recovered and not landfilled.

3.17 OEH Recommended Diversion Rates

OEH provided to GHD a draft copy of its Preferred Resource Recovery Practices by Local Councils Best Bin Systems. This document sets out minimum service standards for kerbside systems and provides expected resource recovery performance for a number of kerbside collection and processing systems. These are shown Table 58 below. To the OEH’s systems GHD has added two more that some council’s currently use.

Table 58 OEH Estimated Recovery Rates

Number	System Description	Characteristics	Estimated Recovery Rates
1	Three bin system including commingled food and garden organics, with residual waste processed at AWT	<ul style="list-style-type: none"> – Council areas with high proportion of single dwellings – Community achieving high recovery rates and low contamination levels in dry recyclables and garden organics – Engaged, environmentally aware community – Community acceptance and willingness to participate – Access to AWT for the processing of residual waste – Access to commingled food and garden organics processing and markets 	70 - 85%
2	Three bin system including commingled food and garden organics, with residual waste disposed of to landfill	As per System 1 but also <ul style="list-style-type: none"> – No access to residual waste AWT facility 	55-70%
3	Three bin system, including garden organics, with residual waste processed at an AWT facility	<ul style="list-style-type: none"> - High proportion of single dwellings - Access to AWT for the processing of residual waste 	75-80%
4	Three bin system, including garden organics, with residual waste disposed of to landfill	<ul style="list-style-type: none"> - High proportion of single dwellings - • No access to residual waste AWT and garden/food processing facilities 	40-60%



Number	System Description	Characteristics	Estimated Recovery Rates
5	Two bin system with residual waste processed at an AWT facility	<ul style="list-style-type: none"> - High proportion of multi-unit dwellings where opportunity for three-bin system is not possible due to space constraints - • Access to AWT for the processing of residual waste 	50-55%
6	Two bin system with residual waste disposed of to landfill	<ul style="list-style-type: none"> - Rural and smaller regional towns where householders have ready access to alternative methods of organics disposal such as local drop off centres. - High proportion of multi-unit dwellings - No access to residual waste AWT and organics composting facilities 	20-40%
7	One bin system, no recycling or garden organics	Remote with no access to markets organics processing or AWT	0%
8	Two bin system residual and garden organics only		60%

The OEH's systems are those numbered 1 to 6 with systems 7 and 8 identified by GHD.

GHD examined each council in NSW and attributed one of these systems to each one. In the case of those councils that already have an organics or mixed/residual waste processing system or have known plans for such as system, the appropriate system was attributed to those councils. In the case of other councils, a system was attributed to each that broadly matched the criteria specified by OEH and shown in Table 58.

A list of councils and their attributed systems can be found in Table 87 in Appendix C.

Table 59 shows each of the identified systems with the number of councils each has been attributed to and the proportion that number is of all councils. The table also shows the quantity of waste landfilled from those councils to which each system has been attributed and the proportion.

Table 59 Identified Systems and Proportions of Councils and Feedstock

System	Description	Councils		Potentially Available Feedstock 2010	
		Number	Percent	Tonnes	Percent
1	Three bin system including commingled food and garden organics, with residual waste processed at AWT	44	29.7%	1,011,156	54%
2	Three bin system including commingled food and garden organics, with residual waste disposed of to landfill	3	2.0%	97,412	5%
3	Three bin system, including garden	7	4.7%	228,366	12%



System	Description	Councils		Potentially Available Feedstock 2010	
		Number	Percent	Tonnes	Percent
	organics, with residual waste processed at an AWT facility				
4	Three bin system, including garden organics, with residual waste disposed of to landfill	7	4.7%	95,828	5%
5	Two bin system with residual waste processed at an AWT facility	13	8.8%	198,764	11%
6	Two bin system with residual waste disposed of to landfill	43	29.1%	157,898	8%
7	One bin, no recycling or garden organics	28	18.9%	53,722	3%
8	Two bins residual and garden organics only	3	2.0%	25,230	1%
	Total	148	100.0%	1,868,376	100%

When this data is aggregated it shows that 41.1% of NSW councils are using, or have the criteria to use, a three bins system, while 39.9% are using, or have the criteria to use, a two bin system. Another 18.9% are using only one bin and are either too small or too remote to have any other system attributed to them.

The table also shows that when the data is aggregated, 76.7% of landfilled waste either is, or could be, collected with a three bin system and that 20.4% either is, or could be, collected with a two bin system. Only 2.9% of NSW waste is being collected using a one bin system.

Table 60 below shows quantities of waste there are or could be diverted through a three-bin system.

Table 60 Waste Potentially Recoverable Through Three-Bin System

	Minimum		Maximum	
	Tonnes	Percent	Tonnes	Percent
Currently landfilled through three-bin system	281,441	15%		
Could be recovered through three-bin system	764,675	41%	937,544	50%
Could be recovered through system other than a three-bin system	141,054	8%	187,618	10%

The chart shows that currently 15% of all waste landfilled in NSW has been collected and processed through a three-bin system. For those councils that do not currently use an AWT or organics processing



system of some kind, the maximum and minimum recovery rates estimated by OEH for each system type have been applied to the quantities of waste currently landfilled from each council according to the attributed systems shown in Table 87 in Appendix C. Table 60 shows that if those councils used system with those recovery rates, between 41% and 50% diversion of current landfilled amounts is possible. The table also shows that under the same conditions, between 8% and 10% of waste currently landfilled would be recovered from systems other than a three-bin system.

3.18 Summary

The known existing processing facilities and those planned in each State Plan Region were compared to the attributed systems for councils in those regions. From this it was possible to recommend in which councils, new organics processing facilities could be developed and which existing facilities could be upgraded. This information is shown in Table 61 along with the population in each State Plan Region, the known infrastructure, infrastructure believed to be planned, 2010 waste quantities and diversion rates and the estimated percent increases in waste quantities by 2036.

New facilities are proposed for councils that have suitable profiles and significant quantities of potential feedstock. No facilities are proposed where new facilities are already planned or where existing facilities are planned to be upgraded.

Where existing facilities are proposed to be upgraded it is expected that this would make them suitable for processing food (for example enclosing parts of the process) and for processing the potentially available quantities of feedstock. The capacity of existing facilities is often not known and many may be able to process the anticipated quantities. In these cases upgrading to be able to process food might be the approach required.

The table also ranks each region by priority for action taking into account their populations, expected growth, low current recovery and/or low existing infrastructure. It should be noted however, that in Sydney, South Western Sydney and Western Sydney councils often deliver waste to facilities in other regions and that facilities operating in a particular region do not necessarily service all or any councils in that region.

State Plan regions ranked high for priority action are Northern Rivers, Riverina Murray, South East, Hunter, Central Coast, Sydney and Illawarra. Regions ranked medium for priority action are Mid-North Coast, New England-North West, Central West and South Western Sydney. Regions ranked low for priority action are Orana, Far West and Western Sydney.



Table 61 Infrastructure and Residential Quantities by State Plan Region

State Plan Region	Population	Known Existing Infrastructure	Planned Infrastructure	Potential Additional Organics Infrastructure (showing estimated feedstock capacity by 2036)	2010 Quantities		2010 Diversion Rate	Estimated Percent Change in 2036		Priority for Waste Recovery Infrastructure
					Residential Residual (t)	Residential Recovered (t)		Residual (%)	Recovered (%)	
Northern Rivers	326,500	16 landfills 11 transfer stations 5 resource recovery facilities - 1 various materials, 3 organics, 1 plastics 3 MRFs	1 composting facility extension 2 new MRFs	New composting facility at Tweed Heads-35,000 t Upgrade existing composting facilities at Grafton-25,000 t and Byron Bay-10,000 t	97,215	86,241	47.0%	5.9%	26.1%	High
Mid-North Coast	224,600	6 landfills 2 separated organics or mixed waste processing facilities 4 organics processing facilities 10 transfer stations 1 MRF	1 new landfill 3 new transfer stations	Upgrade existing composting facilities at Taree-18,000 t and Kempsey-30,000 t	56,205	79,521	58.6%	36.2%	38.2%	Medium
New England-North West	184,800	64 landfills 15 transfer stations 2 MRFs 2 organics processing facilities	1 new landfill 1 new composting facility 1 new MRF	Upgrade existing composting facility at Tamworth-22,000 t	65,660	40,786	38.3%	-9.6%	-7.9%	Medium



State Plan Region	Population	Known Existing Infrastructure	Planned Infrastructure	Potential Additional Organics Infrastructure (showing estimated feedstock capacity by 2036)	2010 Quantities		2010 Diversion Rate	Estimated Percent Change in 2036		Priority for Waste Recovery Infrastructure
					Residential Residual (t)	Residential Recovered (t)		Residual (t)	Recovered (t)	
Orana	122,100	22 landfills ⁸¹ 28 transfer stations ⁸² 2 MRFs 3 organics processing facilities	1 upgrade to regional landfill 1 new composting facility	New composting facility at Mudgee-7,000 t	40,055	11,451	22.4%	-8.8%	-11.9%	Low
Riverina Murray	277,000	69 landfills 10 transfer stations ⁸³ 4 MRFs 9 resource recovery facilities – 8 organics, 1 plastics	1 e-waste facility	New composting facilities at Albury-14,000 t and Griffith-7,500 t Upgrade existing composting facilities at Wagga Wagga-18,000 t, Tumut-3,500 t, Corowa-6,000 t, Leeton-5,500 t	89,199	44,396	33.2%	-1.0%	6.0%	High
Central West	179,600	49 landfills 14 transfer stations 3 MRFs 4 resource recovery facilities – 3 organics, 1 plastics	1 new landfill 1 new landfill or transfer station 1 new composting facility 1 new disposal facility	New composting facilities at Bathurst-20,000 t and Lithgow-8,500 t. Upgrade existing composting facilities at Blayney-6,000 t, and Oberon-2,500 t	75,660	23,665	23.8%	-8.3%	31.8%	Medium
South East	216,600	38 landfills	1 landfill capacity	New composting facility at	70,624	50,306	41.6%	31.8%	32.7%	High

⁸¹ May be more

⁸² May be more

⁸³ May be more



State Plan Region	Population	Known Existing Infrastructure	Planned Infrastructure	Potential Additional Organics Infrastructure (showing estimated feedstock capacity by 2036)	2010 Quantities		2010 Diversion Rate	Estimated Percent Change in 2036		Priority for Waste Recovery Infrastructure
					Residential Residual (t)	Residential Recovered (t)		Residual (t)	Recovered (t)	
		21 transfer stations ⁸⁴ 5 MRFs 3 organics processing facilities	increase 2 new landfills	Bega-25,000 t. Upgrade existing composting facilities at Surf Beach (Eurobodalla)-16,000 t						
Hunter	644,300	22 landfills 3 transfer stations 8 resource recovery facilities – 1 mixed waste, 6 organics, 1 plastics 3 MRFs	1 new C&D facility 1 landfill extension 1 new garden organics processing facility 2 new organics processing facility 1 new C&I waste recovery facility	New composting facility at Cessnock/ Maitland/ Singleton-100,000 t Upgrade existing composting facility at Forster/Tuncurry-23,000 t	229,581	108,237	32.0%	37.2%	35.4%	High
Far West	22,000	4 landfills 1 organics processing facility	None	None proposed	17,390	3,936	18.5%	-30.5%	-31.8%	Low
South Western Sydney	813,500	10 landfills 12 transfer stations 17 resource recovery facilities – 5 organics, 12 plastics 3 MRFs	No firm plans	New composting facilities at Bankstown-50,000 t and Picton or Bargo-13,000 t.	143,938	192,380	57.2%	83.3%	48.4%	Medium

⁸⁴ May be more



State Plan Region	Population	Known Existing Infrastructure	Planned Infrastructure	Potential Additional Organics Infrastructure (showing estimated feedstock capacity by 2036)	2010 Quantities		2010 Diversion Rate	Estimated Percent Change in 2036		Priority for Waste Recovery Infrastructure
					Residential Residual (t)	Residential Recovered (t)		Residual (t)	Recovered (t)	
Western Sydney	1.15 million	15 landfills 21 transfer stations 21 resource recovery facilities – 1 commercial food, 1 mixed waste, 1 separated organics and mixed waste, 12 organics, 7 plastics 3 MRFs	1 new organic processing facility and MRF 1 new C&D facility 1 C&D facility expansion 2 new landfills and recovery facilities	Upgrade existing or develop new composting facilities to provide 140,000 t capacity for The Hills, Blue Mountains and Hawksbury Councils	267,234	227,070	45.9%	52.7%	27.3%	Low
Sydney	2.23 million	7 landfills 21 transfer stations 5 MRFs 3 resource recovery facilities – 2 paper, 1 organics and C&D, 4 organics, 1 plastics	1 new organics and mixed waste processing facility 1 new C&I mixed waste processing facility 1 new WtE facility 1 new MRF	New facility in Inner West for composting-45,000 t and mixed waste processing-26,000 t New composting facility in Northern Sydney -67,000 t. One or more new facilities in Southern Sydney with capacity for composting-170,000 t and mixed waste processing-115,000 t	515,782	434,990	45.8%	15.0%	20.1%	High
Central Coast	316,000	4 landfills 2 MRFs 2 resource recovery facilities – 1 organics, 1 plastics	No firm plans	New composting facility - 120,000 t.	86,609	99,888	53.6%	38.1%	35.2%	High



State Plan Region	Population	Known Existing Infrastructure	Planned Infrastructure	Potential Additional Organics Infrastructure (showing estimated feedstock capacity by 2036)	2010 Quantities		2010 Diversion Rate	Estimated Percent Change in 2036		Priority for Waste Recovery Infrastructure
					Residential Residual (t)	Residential Recovered (t)		Residual (t)	Recovered (t)	
Illawarra	431,000	9 landfills 5 transfer stations 4 MRFs 8 resource recovery facilities – 3 various, 3 organics, 2 plastics	1 new composting facility 1 new MRF 1 new C&D facility	New composting facility at Wollongong-90,000 t.	113,226	116,108	50.6%	22.9%	20.6%	High



3.19 Domestic Recovery Targets

Diversion targets for domestic waste by State Plan Area have been calculated by adding the current and projected recovered quantities each year (shown in Table 84) to an additional potentially recoverable proportion of the projected quantities of landfilled waste (shown in Table 83).

This additional potentially recoverable proportion of landfilled waste is based on the typical composition of the domestic waste stream. The typical compositions provided by the OEH are provided in Table 62 and show the additional proportions of potentially recoverable materials available.

Table 62 Typical Domestic Waste Composition

Material	Average for NSW	Average for SMA	Average for ERA
Recyclable Paper	8.8%	8.3%	10.0%
Recyclable Containers	9.9%	9.2%	11.5%
Compostable Organics	51.3%	51.9%	49.7%
Metals	1.0%	0.9%	1.3%
C&D	3.8%	3.8%	3.7%
Timber	1.3%	1.2%	1.7%
E-waste	0.9%	0.8%	1.1%
Total Recoverable	76.9%	76.1%	79.1%
Residual	23.1%	23.9%	20.9%
Total Waste Stream	100%	100%	100%

The table shows that the maximum additional potentially recoverable proportion of the landfilled stream available is around 76%-79%. Without the recovery of compostable organics, the maximum additional potentially recoverable proportion is around 24%-29%.

The additional potentially recoverable proportion has been assumed to be as follows:

- ▶ 2014 – 25%
- ▶ 2017 – 50%
- ▶ 2020 – 70%
- ▶ 2036 – 70%

Additional potentially recoverable proportions of the landfill stream that may be recovered in the future for each year listed have been calculated based on several criteria. The 2010 figure is assumed to be 0%, that is, apart from quantities of recovered waste reported, no additional landfilled waste is recovered. In 2014 the additional recovered proportion has been set at 25%. This assumes that most of the remaining paper and containers, in addition to most metals, timber, C&D waste and e-waste, are recovered. These materials can be recovered using simple technology such as a dirty MRF, even in regional areas.

In 2017, the additional potentially recoverable proportion is 50%, which assumes that systems have been established for the recovery of compostable organics, paper and cardboard, recyclable containers as well as metals, timber, C&D waste and e-waste. The system is assumed to include some form of separated organics or mixed waste processing.



Diversion provided by separated organics or mixed waste processing facilities known to be in advanced stages of planning has been taken into account, so this figure only applies to separated organics or mixed waste processing facilities conceived, planned and constructed after 2011. It is estimated to take in the order of 4-5 years to design, plan, obtain approval for and construct a separated organics or mixed waste processing facility, so 2016-17 is the earliest that any newly conceived facilities are likely to be constructed and operating.

In addition once constructed, separated organics or mixed waste processing facilities typically take several years to reach maximum operational efficiency, so recovery of the maximum additional potential proportion is not expected to be approached until 2020, which is why the 70% target is set at this time. Capping the maximum recovery rate at 70% assumes that not all of the available material will be recovered, for technological reasons.

The resulting potential diversion rates have been calculated and are shown in Table 63 below.

Table 63 Estimated Diversion Rates by State Plan Region

State Plan Region	2010	2014	2017	2020	2036
Northern Rivers	47%	57%	71%	83%	83%
Mid-North Coast	59%	69%	79%	88%	88%
New England-North West	38%	54%	69%	82%	82%
Orana	22%	42%	61%	77%	77%
Riverina Murray	33%	50%	67%	80%	80%
Central West	24%	48%	65%	79%	79%
South East	42%	56%	71%	83%	83%
Hunter	32%	49%	66%	80%	80%
Far West	18%	39%	59%	75%	75%
South Western Sydney	57%	64%	76%	86%	86%
Western Sydney	46%	56%	70%	82%	82%
Sydney (East)	46%	60%	74%	84%	84%
Central Coast	54%	65%	86%	86%	86%
Illawarra	51%	63%	75%	85%	85%
Overall	45%	58%	73%	83%	83%

The estimated diversion is shown for each State Plan Region based on the additional potential proportions stated. Current diversion is shown in the 2010 column. For the whole state, diversion could rise from the current 45% up to 83% by 2020 if all regions recovered their projected quantities (Table 84) and an additional 70% of waste currently landfilled (Table 83).

An example of how this works is shown in Figure 17.

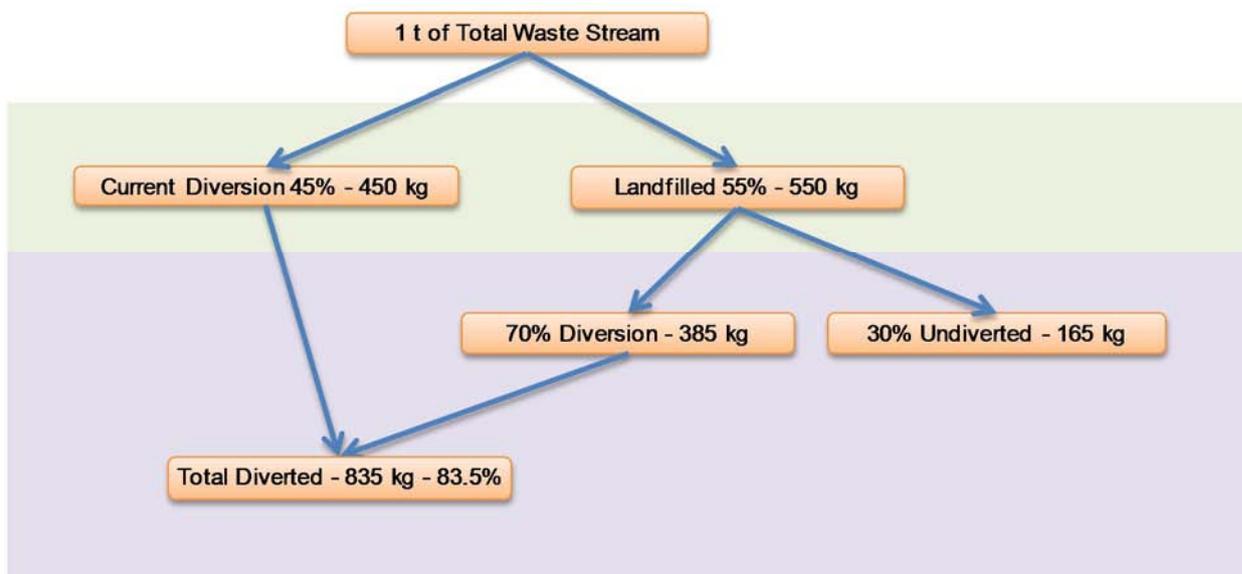


Figure 17 - Waste Diversion Flow Example

These figures can be used as ambitious targets for domestic waste diversion in the case of each State Plan Region.

Table 64 below shows the processing capacity required to handle the estimated amounts of both dry recyclables and organics produced in each of the State Plan Regions. These quantities include those amounts projected to be recovered as shown in Table 84 as well as the amounts estimated to be recoverable using the additional potential recoverable proportions shown in Table 63.

Table 64 Processing Capacity Required by State Plan Region – Dry Recyclables, Organics and Residual Waste (t)

State Plan Region	2014	2017	2020	2036	Current Capacity If Known		
					Organics/ Residual Waste	Recyclables	Total
Northern Rivers	100,173	129,535	154,996	177,131	N/k	6,000-12,000	6,000-12,000
Mid-North Coast	101,357	121,431	139,179	163,490	63,500	N/k	63,500
New England-North West	55,423	70,964	83,175	79,121	N/k	N/k	N/k
Orana	20,923	30,495	38,000	35,737	N/k	N/k	N/k
Riverina Murray	66,682	89,426	107,882	108,855	N/k	N/k	N/k
Central West	46,856	64,561	78,962	79,742	N/k	N/k	N/k



State Plan	2014	2017	2020	2036	Current Capacity If Known		
South East	72,163	94,107	113,319	131,934	N/k	N/k	N/k
Hunter	187,627	260,075	322,684	367,010	40,000	15,000	55,000
Far West	7,826	11,524	14,210	11,146	N/k	0	N/k
South Western Sydney	228,463	287,059	343,556	285,509	90,000	200,000	290,000
Western Sydney	295,222	391,296	476,236	574,757	310,000	450,000	760,000
Sydney	587,282	731,675	853,806	937,555	100,000	300,000	400,000
Central Coast	125,801	171,534	178,464	218,767	0	45,000	45,000
Illawarra	147,307	181,565	211,158	237,391	0	N/k	N/k
Total	2,045,119	2,637,264	3,117,647	3,410,181	603,500	1,022,000	1,625,500

It should be noted that the *Waste Avoidance and Resource Recovery Strategy Progress Report 2010 Volume 2* reported that about 1.86 million tonnes of municipal waste recycled in 2008-2009. This is about 235,000 more than the total capacity indicated in Table 64 above, however, as is clear in the table, the processing capacity in some areas is not known and this may account for the difference.



4. Results by Regulatory Region

4.1 Regulatory Regions

NSW is divided into regions in which different Section 88 landfill levies apply. Table 65 below shows how the State Plan regions and Regulatory regions match up and the member councils. Generally the State Plan Regions fit within the Regulatory regions. The only exceptions are councils in the Hunter State Plan region, some of which are in the ERA and some in the RRA, and Wollondilly on Sydney's south western fringe, which although in the South Western Sydney State Plan region, is in the RRA.

Table 65 State Plan Regions and Regulatory Region Members

Region Name	Short Version	State Plan Regions Included	Councils Included
Sydney Metropolitan Area	SMA	South Western Sydney, Western Sydney and Sydney	Bankstown, Camden, Campbelltown, Fairfield, Liverpool, , Auburn, Blacktown, Blue Mountains, Hawkesbury, Holroyd, Parramatta, Penrith, the Hills, City of Sydney, Inner West councils, Northern Beaches councils, North Shore councils, Eastern Suburbs councils, Southern Sydney councils and Sutherland Shire
Extended Regulated Area	ERA	Central Coast, Hunter (part) and Illawarra	Gosford, Wyong, Cessnock, Lake Macquarie, Maitland, Newcastle, Port Stephens, Kiama, Shellharbour, Shoalhaven, Wingecarribee and Wollongong
Regional Regulated Area	RRA	Northern Rivers, Mid-North Coast, Hunter (part)	Gloucester ⁸⁵ , Great Lakes ⁸⁶ , Dungog ⁸⁷ , Singleton ⁸⁸ , the Upper Hunter ⁸⁹ , Muswellbrook ⁹⁰ , Wollondilly ⁹¹ , Ballina, Bellingen, Byron, Clarence Valley, Kyogle, Lismore, Nambucca, Richmond Valley and Tweed, Coffs Harbour, Greater Taree, Kempsey, Port Macquarie-Hastings
Non-Regulated Area	NRA (GSR)	New England-North West, Orana, Riverina Murray, Central West, South East, Far West	Armidale Dumaresq, Glen Innes Severn, Gunnedah, Guyra, Gwydir, Inverell, Liverpool Plains, Moree Plains, Narrabri, Tamworth Regional, Tenterfield ,Uralla, Walcha, Bourke, Brewarrina, Cobar, Coonamble, Dubbo, Gilgandra, Narromine, Mid-Western Region, Walgett, Warren, Warrumbungle, Wellington, Albury, Balranald, Berrigan, Bland, Carrathool, Conargo, Coolamon, Cootamundra, Corowa, Deniliquin, Greater Hume, Griffith, Gundagai, Hay, Jerilderie, Junee, Leeton, Lockhart, Murray, Murrumbidgee, Narrandera, Temora, Tumbarumba, Tumut, Urana, Wagga Wagga, Wakool, Wentworth, Bathurst, Blayney, Bogan, Cabonne, Cowra, Forbes, Weddin, Lachlan, Lithgow, Oberon, Orange, Parkes, Bega Valley, Bombala, Boorowa, Cooma–Monaro, Eurobodalla, Goulburn Mulwaree, Harden, Palerang, Queanbeyan, Snowy River, Upper Lachlan, Yass Valley and Young, Broken Hill, Central Darling and unincorporated area

⁸⁵ Included in the Hunter State Plan Area

⁸⁶ Included in the Hunter State Plan Area

⁸⁷ Included in the Hunter State Plan Area

⁸⁸ Included in the Hunter State Plan Area

⁸⁹ Included in the Hunter State Plan Area

⁹⁰ Included in the Hunter State Plan Area

⁹¹ Included in the South Western Sydney State Plan Area



4.2 SMA

Table 65 shows the councils located in the SMA.

4.2.1 Residential Waste

In 2010, 1,730,000 tonnes of kerbside waste was generated in this region. Of this 897,000 tonnes was residual waste and 832,000 tonnes was recovered providing a diversion rate of 48%.

Figure 18 below shows projected quantities to 2036 based on population growth in the region.

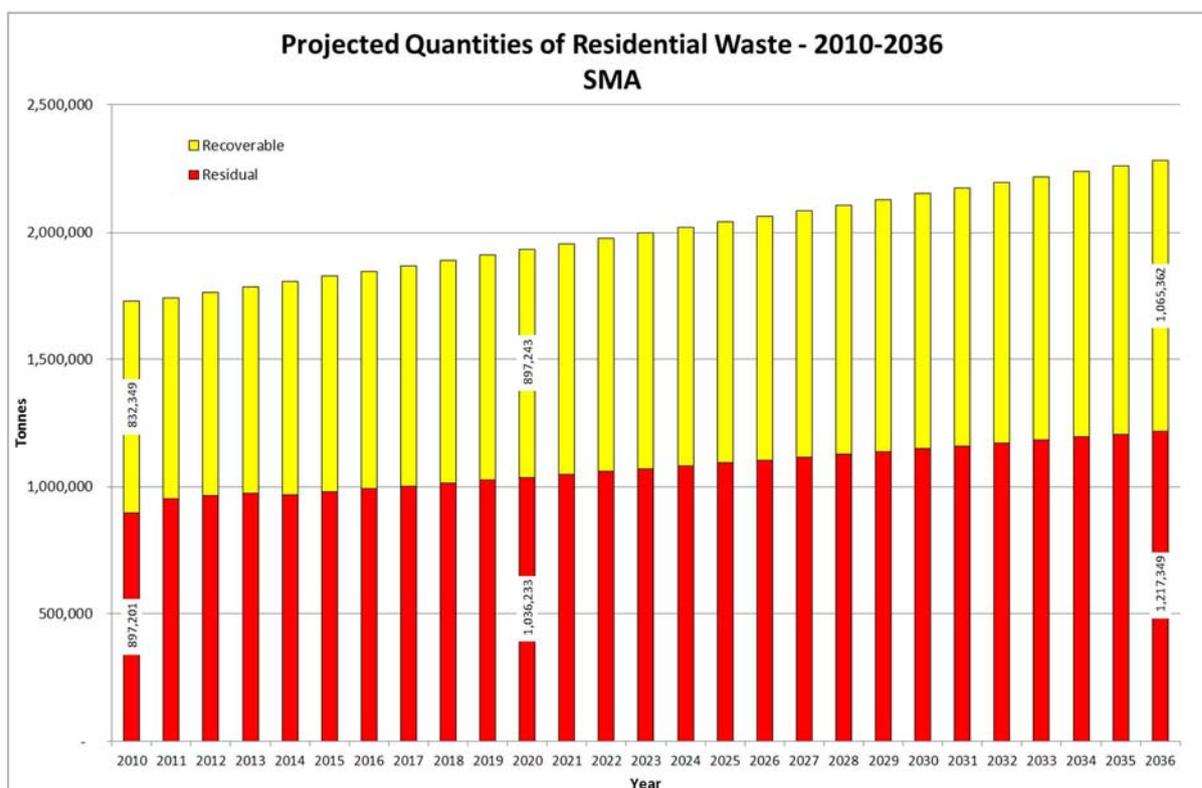


Figure 18- Projected Quantities of Residual and Recoverable Residential Waste - 2010-2036 - SMA

The chart shows that by 2036 residual waste generated in the region will be over 1.2 million tonnes and recoverable materials over 1 million tonnes. This is an increase of over 320,000 tonnes of residual waste (a 36% increase over 2010 quantities) and 230,000 tonnes of Potentially Recoverable Waste (a 28% increase over 2010 quantities) over the next 26 years.

4.2.2 C&I Waste

In 2010-2011, more than 3.7 million tonnes of C&I waste was generated in the SMA. Of this, 1.9 million tonnes was recovered and 1.8 million tonnes was residual waste disposed to landfill, providing a overall diversion rate of 54%. This is up from 33% in 2002-2003. This is projected to rise to 68% by 2020, on the basis of current trends..

Figure 19 below shows projected quantities to 2020. The projections in the chart are based on the trends in C&I waste disposal and recovery shown in data provided by the OEH. The figures for 2002-2003, 2004-2005, 2006-2007 and 2008-2009 are actual data while others are estimates based on the evident

trends. Data to 2008 has been provided voluntarily and is recognised as lacking consistency. The projections are therefore an indication of the order of magnitude rather than particularly accurate.

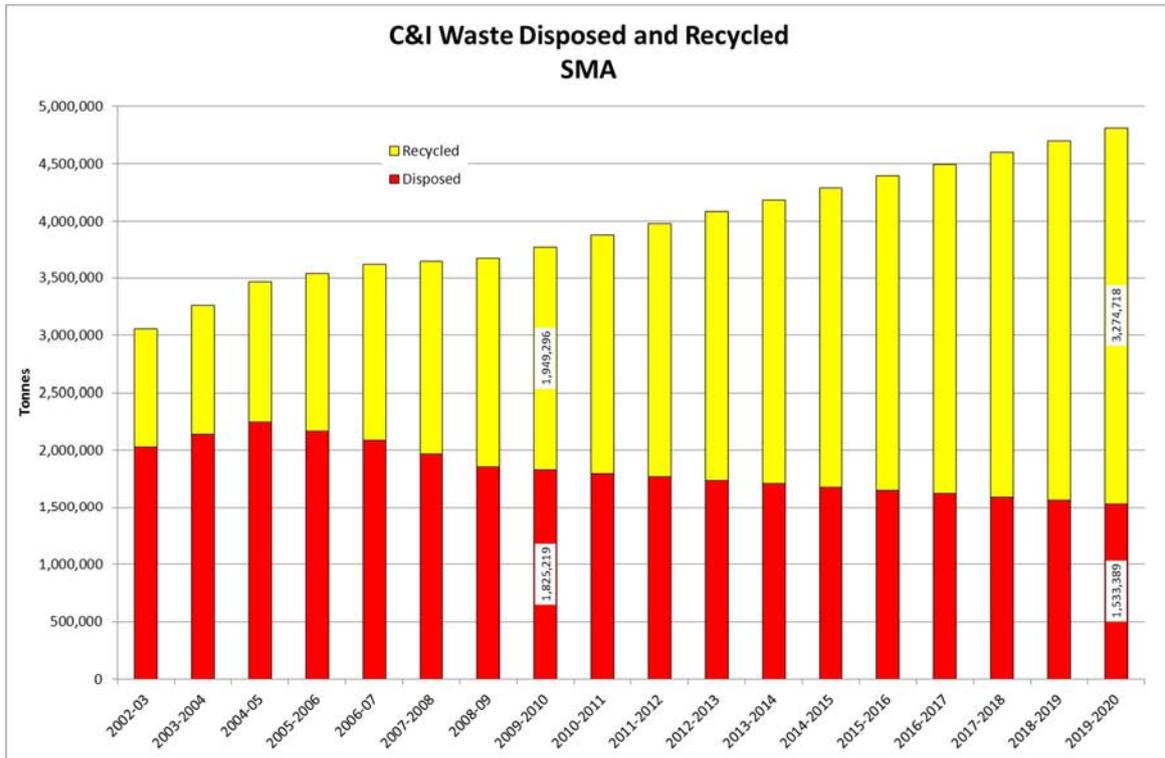


Figure 19- Projected Quantities of Residual and Recoverable C&I Waste - 2010-2036 - SMA

The chart shows that by 2020, the predicted residual C&I waste generated in the SMA will be 1.5 million tonnes and recoverable materials could be over 3 million tonnes, if current trends continue. This is a decrease of almost 300,000 tonnes of residual waste and an increase of more than 2 million tonnes of Potentially Recoverable Waste. Since overall C&I waste generation rates are predicted to increase throughout this period, achieving annual increases in C&I waste recovery/diversion from landfill (and decreases in landfill disposal) would require significant effort, and may not be achievable if source separation alone is relied upon. Therefore additional infrastructure such as dry C&I MRFs, will be required to enable such targets to be achieved.

Although the chart shows small incremental annual changes, there may well be significant fluctuations each year caused by a variety of unforeseeable forces such as legislative changes and economic and market conditions.

Figure 20 shows the projected quantities of food, timber and plastics in the C&I stream landfilled to 2036.

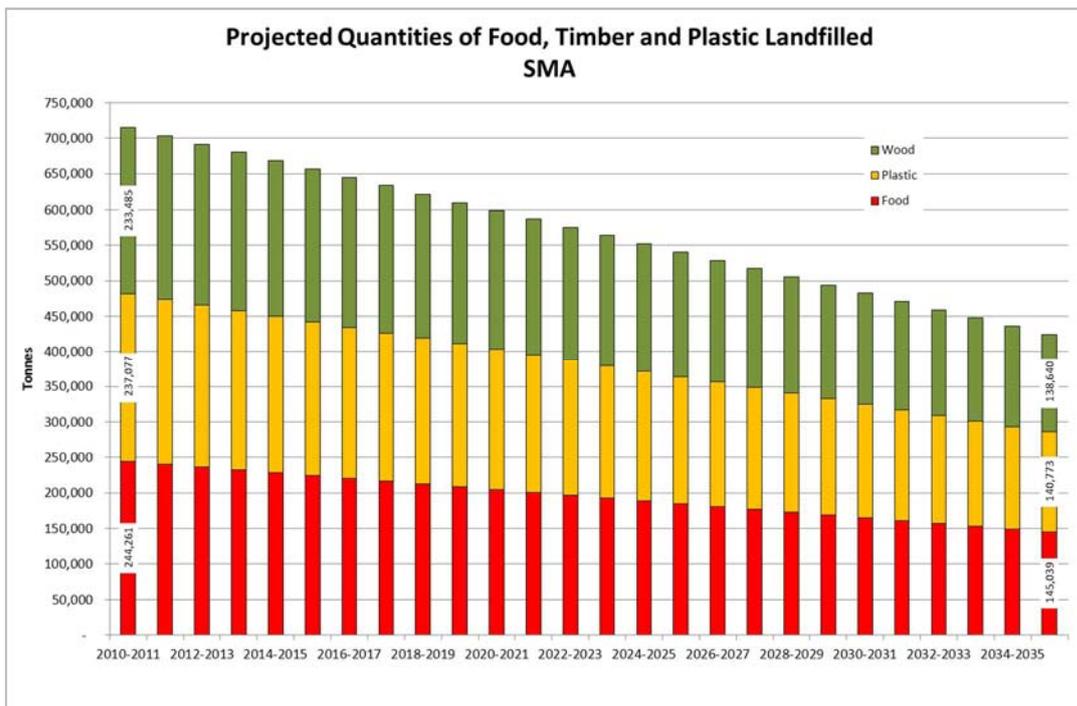


Figure 20- Projected Quantities of Food, Timber and Plastic Landfilled - 2010-2036 - SMA

Quantities are projected to fall so that by 2036 around 140,000 tonnes of each material is estimated to be landfilled per annum.

4.2.3 Existing Infrastructure

The SMA appears to be well served by a variety of waste infrastructure and the tables in Sections 3.12, 3.13 and 3.14 list the landfills, transfer stations and processing facilities that are operating in this area. Of concern however, is the lack of large putrescible landfills and C&I processing facilities. Those putrescible landfills currently operating are expected to close in the next five years and locations will need to be found for the disposal of unprocessed residential and commercial putrescible waste.

4.2.4 New Infrastructure

C&I processing facilities are planned for the SMA, including Remondis' Camelia Integrated Recycling Park, the Light Horse Waste Facility, the Orchard Hills Waste Project and Phoenix Solutions WtE facility at Kurnell. Several C&D processing facilities are also planned. The proposed development of these facilities will not be enough to process the expected increase in recoverable material in the SMA in the next nine years.

4.3 ERA

Table 65 shows the councils located in the ERA.

4.3.1 Residential Waste

In 2010, 717,000 tonnes of kerbside waste was generated in this region. Of this 409,000 tonnes was residual waste and 308,000 tonnes was recovered providing a diversion rate of 43%.

Figure 21 below shows projected quantities to 2036 based on population growth in the region.

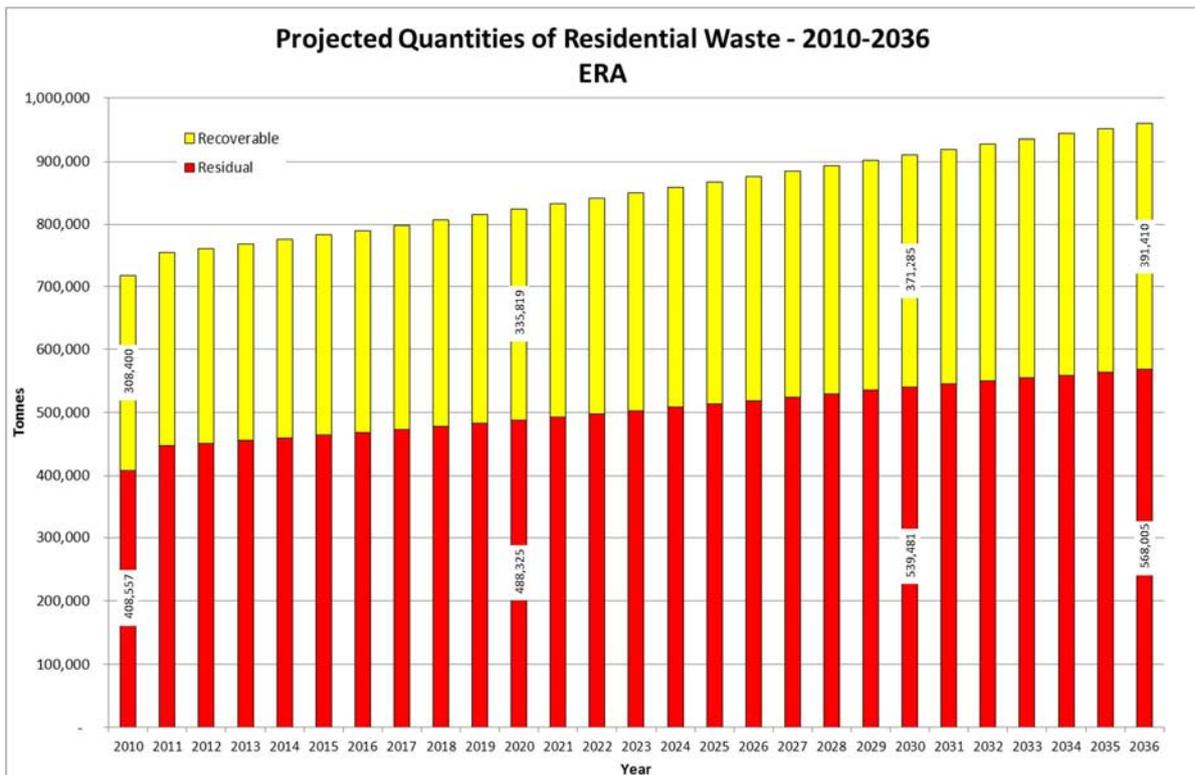


Figure 21- Projected Quantities of Residual and Recoverable Residential Waste - 2010-2036 - ERA

The chart shows that by 2036 residual waste generated in the region will be almost 400,000 tonnes and recoverable materials over 550,000 tonnes. This is an increase of about 60,000 tonnes of residual waste over 2010 quantities and 80,000 tonnes of potentially recoverable waste over the next 26 years.

4.3.2 C&I Waste

In 2010-2011, more than 1 million tonnes of C&I was generated in the ERA. Of this 370,000 tonnes was residual waste and 639,000 tonnes was recovered providing a diversion rate of 63%. This is up from 45% in 2002-2003 and is projected to rise to 72% by 2020.

Figure 22 below shows projected quantities to 2020. The projections in the chart are based on the trends in C&I waste disposal and recovery shown in data provided by the OEH. The figures for 2002-2003, 2004-2005, 2006-2007 and 2008-2009 are actual data while others are estimates based on the evident trends.

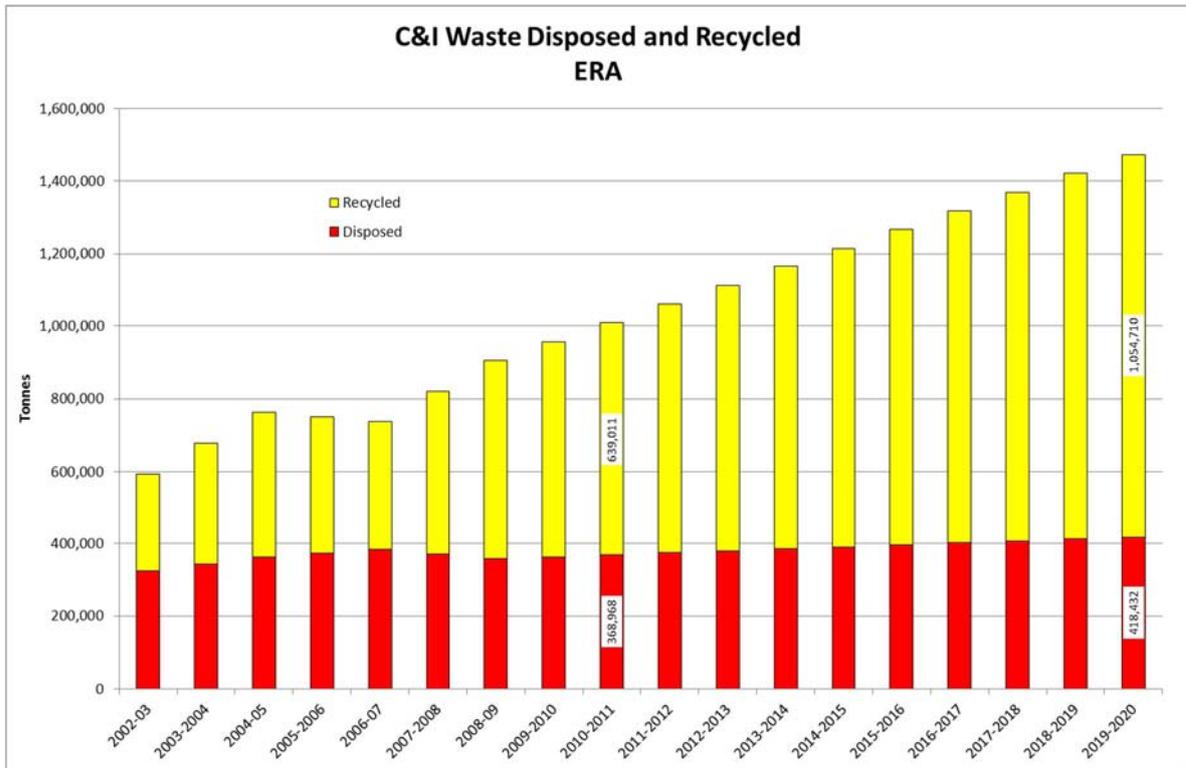


Figure 22- Projected Quantities of Residual and Recoverable C&I Waste - 2010-2036 - SMA

The chart shows that by 2020 residual C&I waste generated in the ERA will be 418,000 tonnes and recoverable materials over 1 million tonnes. This is only a slight increase of 50,000 tonnes of residual waste but an increase of more than 300,000 tonnes of recoverable waste.

4.3.3 Existing Infrastructure

The ERA appears to be well served by a variety of waste infrastructure and the tables in sections 3.10, 3.15 and 3.16 list the landfills, transfer stations and processing facilities that are operating in this area.

4.3.4 New Infrastructure

A new residential organics waste processing facility is proposed in the Hunter by Lake Macquarie and Newcastle City Council is considering expansion of recovery operations at the Summerhill Landfill. On the Central Coast, Gosford Council has also been exploring waste processing options for residential waste. In the Illawarra, only Shoalhaven has proposed any new recovery facilities. Only the Shoalhaven and Newcastle facilities are taking C&I waste into account.

4.4 RRA

Table 65 shows the councils located in the RRA.

4.4.1 Residential Waste

In 2010, 407,000 tonnes of kerbside waste was generated in this region. Of this 204,000 tonnes was residual waste and 204,000 tonnes was recovered providing a diversion rate of 50%.

Figure 23 below shows projected quantities to 2036 based on population growth in the region.

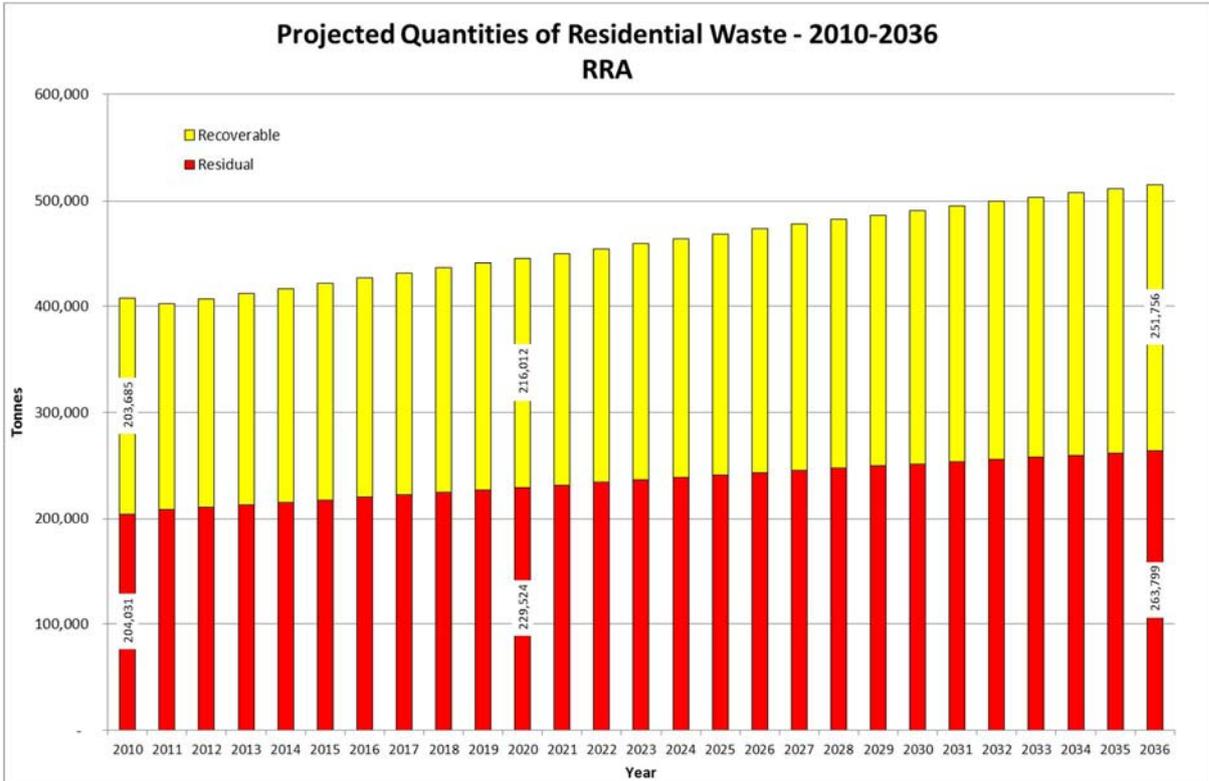


Figure 23- Projected Quantities of Residual and Recoverable Residential Waste - 2010-2036 - RRA

The chart shows that by 2036 residual waste generated in the region will be more than 260,000 tonnes and recoverable materials more than 250,000 tonnes. This is an increase of about 50,000 tonnes of residual waste and 50,000 tonnes of recoverable waste, over 2010 quantities, over the next 26 years.

4.4.2 C&I Waste

Historic C&I waste data is not available for the RRA and NRA individually. The available data includes both areas and is labelled NRA. In 2010-2011, more than 1.1 million tonnes of C&I was generated in the NRA (including the RRA). Of this 405,000 tonnes was residual waste and 604,000 tonnes was recovered providing a diversion rate of 60%. This is up from 22% in 2002-2003 and is projected to rise to 69% by 2020.

Figure 24 below shows projected quantities to 2020. The projections in the chart are based on the trends in C&I waste disposal and recovery shown in data provided by the OEH. The figures for 2002-2003, 2004-2005, 2006-2007 and 2008-2009 are actual data while others are estimates based on the evident trends.

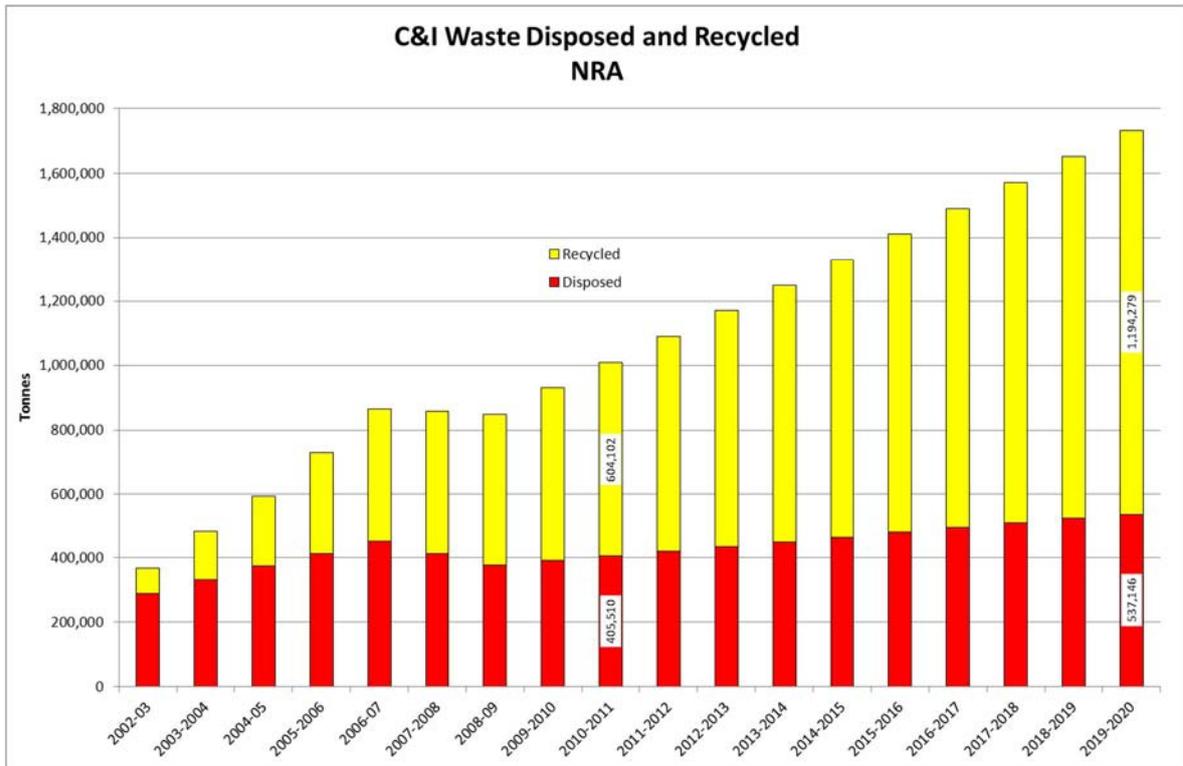


Figure 24- Projected Quantities of Residual and Recoverable C&I Waste - 2010-2036 - SMA

The chart shows that by 2020 residual C&I waste generated in the NRA will be 537,000 tonnes and recoverable materials almost 1.2 million tonnes. This is only a slight increase of about 30,000 tonnes of residual waste but an increase of around 700,000 tonnes of recoverable waste.

4.4.3 Existing Infrastructure

The NRA appears to be well served by landfills with many councils operating their own facilities. Only on the North Coast are there any operating waste processing facilities, although some councils are running simple outdoor composting operations and a variety of waste infrastructure for simple resource recovery. The tables in sections 3.10, 3.15 and 3.16 list the landfills, transfer stations and processing facilities that are operating in this area.

4.4.4 New Infrastructure

The new resource recovery facility approaching construction in the Central West, will handle both residential and C&I waste. Apart from this however, the only new waste recovery infrastructure of any significance planned is on the North Coast. A new landfill is planned in the New England and Veolia's Woodlawn facility is also expected to be expanded to accept waste from local councils.

4.5 C&I Recovery Targets

Diversion targets for C&I waste by Regulatory Region have been calculated by adding the current and projected recovered quantities each year (shown in Table 84) to an additional potentially recoverable proportion of the projected quantities of landfilled waste (shown in Table 83).



This additional potentially recoverable proportion of landfilled waste is based on the typical composition of the C&I waste stream. The typical composition published by the former Department of Environment Climate Change and Water are provided in Table 66 and show the additional proportions of potentially recoverable materials available.

Table 66 Typical C&I Landfilled Waste Composition⁹²

Material	Average Composition
Food	13.6%
Plastic	13.2%
Wood	13.0%
Paper	8.0%
C&D	7.7%
Cardboard	5.7%
Vegetation	3.4%
Glass	1.8%
Metal	1.5%
E-waste	0.6%
Total Recoverable	68.5%
Residual	31.5%
Total	100%

The table shows that the maximum additional potentially recoverable proportion of the landfilled stream available is around 68%. This does not include proportions of the whole C&I waste stream that are already recovered.

This additional potentially recoverable proportion of landfilled waste is based on the typical composition of the C&I waste stream.

For the purposes of modelling future C&I waste recovery, the proportion of this landfilled material that could potentially be recovered has been selected as follows:

- ▶ 2014 – 3%
- ▶ 2017 – 25%
- ▶ 2020 – 50%
- ▶ 2036 – 50%

The proportions shown for each of the years listed here have been calculated based on several criteria. The 2010 figure is assumed to be 0%, that is, apart from quantities of recovered waste reported, no

⁹² Department of Environment, Climate Change and Water (2009) [Commercial and industrial waste in Sydney - Overview](#)



additional landfilled waste is recovered. In 2014 the additional recovered proportion has been set at 3%. This assumes that most vegetation could be recovered. This material is easily identified and can be processed using simple technology such as windrow composting, even in regional areas.

In 2017, the additional potentially recoverable proportion is 25% based on the European experience with dirty MRFs and assumes that dirty MRFs will have been established for the recovery of plastics, paper and cardboard, metals, timber, C&D waste, glass and e-waste.

The 2020 figure of 50% for the additional potentially recoverable proportion assumes improved recovery of all materials and the additional recovery of food. This could be done in a short time frame using windrow composting and small quantities of food, although this technique requires considerable skills to operate effectively. It is assumed that an enclosed waste processing facility of some form would process separated food and garden organics.

No C&I waste processing facilities are known to be in an advanced stage of planning so this figure only applies to waste processing facilities conceived, planned and constructed after 2011. It is estimated to take in the order of six years to design, plan, obtain approval for and construct a waste processing facility so 2017 is the earliest that any are likely to be constructed. In addition once constructed, waste processing facilities typically take several years to reach maximum operational efficiency, so recovery of the maximum additional potential proportion is not expected to be approached until 2020, which is when the 50% is set.

Capping the maximum at 50% assumes that only about half of what is landfilled will be recovered.

The diversion rates that correspond to the proposed estimated recovery rates are shown in Table 67 below. No separate data is available for the RRA and NRA. In the table, this data is all classified under NRA.

Table 67 Corresponding Diversion Rates by Regulatory Region

State Plan Region	2010-2011	2014-2015	2017-2018	2020-2021	2035-2036
SMA	54%	62%	71%	81%	89%
ERA	63%	68%	75%	82%	86%
NRA	60%	66%	73%	80%	83%
Total	56%	64%	72%	80%	87%

The table shows the additional potentially recoverable proportion of the landfill stream that may be recovered in the future.

The estimated diversion is shown for each regulatory region based on the additional potential proportions stated. Current diversion is shown in the 2010 column. For the whole state, diversion could rise from the current 56% up to 80% by 2020 if all regions recovered their projected quantities and an additional 50% of waste currently landfilled.

4.6 Current C&I Capacity

Estimates from data provided by OEH put the amount of C&I waste being recovered in NSW at about 3.3 million tonnes or 56% of all C&I waste generated. Of the balance of 2.5 million tonnes, about 52% (1.3



million tonnes) is paper, cardboard and other dry recyclables and 17.0% (437,000 tonnes) is food and other organics.

4.7 Estimated C&I Capacity Required

Table 68 below shows the C&I processing capacity required to handle the estimated amounts of both dry recyclables and organics produced in each of the Regulatory Regions. These quantities include those amounts projected to be recovered as shown in Table 84 as well as the amounts estimated to be recoverable using the additional potential recoverable proportions shown in Table 67.

Table 68 C&I Processing Capacity Required by Regulatory Region – Dry Recyclables and Organics/Residual (t)

Regulatory Region	Measure	2014-15	2016-17	2020-21	2035-36	Current Capacity If Known
SMA	Dry recyclables	1,371,129	1,959,838	2,258,272	3,135,626	100,000
	Organics	452,606	646,937	745,449	1,035,061	100,000
ERA	Dry recyclables	430,280	600,517	708,873	1,093,278	10,000
	Organics	142,034	198,229	233,997	360,888	N/k
NRA	Dry recyclables	453,367	678,294	833,531	1,413,542	N/k
	Organics	149,655	223,903	275,146	466,606	N/k
Total	Dry recyclables	2,254,775	3,238,649	3,800,676	5,642,446	
	Organics	744,295	1,069,069	1,254,592	1,862,555	

The total processing capacity is not known in each case. Operators often consider information about the capacity of their facilities as confidential. C&I material is also often processed in the same facilities as domestic waste, with even the operators unsure of the exact proportions. In addition, facilities are mostly run for one or two shifts per day which provides their current operating capacity. This can be increased by running facilities 24 hours per day or more days per week.

4.7.1 Facilities Required for Sydney

Data used in the 2009 NSW Waste Systems Study identified the main sources of C&I waste in the Sydney region. Nothing found in the research for this report indicates this has changed. Based on these proportions and the updated quantities of C&I waste for the SMA provided by OEH, the table below shows the quantities estimated to be generated in the future and some possible combinations of processing facilities that may be required.

Table 69 on the following page shows estimates of the quantities of C&I waste that may require processing in the future and the number and capacity of facilities that may be required.

The table shows that most C&I waste generated in the Sydney area comes from the North West followed by West Central. Up to 27 C&I waste processing facilities would be required by 2014-2015 to process the projected amounts of C&I waste generated. The projections assume that existing facilities could be



upgraded to increase capacity. In 2016-2017, nine facilities are estimated to require upgrading and three new facilities would need to be built. In 2020-2021, eight are estimated to require upgrading and three more would need to be built. By 2035-2036, three would require upgrading and an additional 11 would need to be constructed.

In addition, 31% of the C&I stream is not recoverable. Even if the estimated diversion was achieved, an estimated 538,000 tonnes of C&I waste would require disposal in 2014-2015. This is estimated to fall to 336,000 tonnes by 2035-2036.

4.7.2 Facilities Required for the ERA and NRA

Table 70 on page 93 shows estimates of the quantities of C&I waste that may require processing in the future and the number and capacity of facilities that may be required.

The table shows that the amount of C&I waste generated in the NRA is likely to be significantly more than that generated in the ERA in the future. Up to 12 C&I waste processing facilities (five in the ERA and seven in the NRA) would be required in 2014-2015 to process the projected amounts of C&I waste generated.

The projections assume that existing facilities could be upgraded to increase capacity. In 2016-2017, 11 facilities are estimated to require upgrading (3 in the ERA and 3 in the NRA). In 2020-2021, all 12 are estimated to require upgrading. By 2035-2036, 9 would require upgrading (2 in the ERA and all 7 again in the NRA) and an additional 6 would need to be constructed (3 in the ERA and 3 in the NRA).

The greater area of the NRA would require a larger number of smaller facilities compared to the ERA where a smaller number of larger facilities could be located in the Hunter, Illawarra and Central Coast. Facilities in the NRA would need to be located in major centres such as Wagga Wagga, Tweed Heads, Coffs Harbour, Albury, Port Macquarie, Dubbo, Armidale, Lismore, Tamworth and Nowra.

In addition, 31% of the C&I stream is not recoverable. Even if the estimated diversion was achieved an estimated 123,000 tonnes of C&I waste would require disposal in the ERA and 146,000 in the NRA in 2014-2015. This is estimated to rise to 159,500 tonnes in the ERA and 243,000 tonnes in the NRA by 2035-2036.



Table 69 Projected C&I Quantities and Possible Number of Processing Facilities by Sydney Sub-Region

Sub Region	Percent Generated	2014-2015		2016-2017		2020-2021		2035-2036	
		Estimated Tonnes	Number and Capacity of Facilities	Estimated Tonnes	Number and Capacity of Facilities	Estimated Tonnes	Number and Capacity of Facilities	Estimated Tonnes	Number and Capacity of Facilities
Inner North	1.90%	81,535	1 x 85,000 t	87,981	1 x 90,000 t	93,318	1 x 95,000 t	122,775	1 x 130,000 t
North	3.30%	141,613	1 x 150,000 t	152,809	1 x 155,000 t	162,078	1 x 165,000 t	213,241	1 x 165,000 t 1 x 50,000 t
North East	2.30%	98,700	1 x 100,000 t	106,503	1 x 110,000 t	112,964	1 x 115,000 t	148,623	1 x 150,000 t
North West	33.40%	1,433,298	6 x 200,000 t 1 x 150,000 t 1 x 100,000 t	1,546,611	6 x 200,000 t 1 x 150,000 t 2 x 100,000 t	1,640,430	6 x 200,000 t 1 x 150,000 t 3 x 100,000 t	2,158,260	8 x 200,000 t 2 x 150,000 t 3 x 100,000 t
South West	8.10%	347,596	1 x 200,000 t 1 x 150,000 t	375,076	1 x 200,000 t 1 x 175,000 t	397,829	2 x 200,000 t	523,410	2 x 200,000 t 1 x 150,000 t
Inner West	4.70%	201,692	1 x 110,000 t 1 x 100,000 t	217,637	1 x 120,000 t 1 x 100,000	230,839	1 x 120,000 t 1 x 110,000 t	303,707	1 x 120,000 t 1 x 110,000 t 1 x 75,000 t
West Central	27.00%	1,158,654	6 x 200,000 t	1,250,254	6 x 200,000 t 1 x 50,000 t	1,326,096	7 x 200,000 t 1 x 100,000 t 1 x 50,000 t	1,744,701	9 x 200,000 t 1 x 100,000 t 1 x 50,000 t
East	5.60%	240,313	1 x 150,000 t 1 x 100,000 t	259,312	1 x 160,000 t 1 x 100,000 t	275,042	1 x 180,000 t 1 x 100,000 t	361,864	1 x 180,000 t 2 x 100,000 t



Sub Region	Percent Generated	2014-2015		2016-2017		2020-2021		2035-2036	
		Estimated Tonnes	Number and Capacity of Facilities	Estimated Tonnes	Number and Capacity of Facilities	Estimated Tonnes	Number and Capacity of Facilities	Estimated Tonnes	Number and Capacity of Facilities
South	6.80%	291,809	2 x 150,000 t	314,879	1 x 170,000 t	333,980	1 x 170,000 t	439,406	1 x 170,000 t
					1 x 150,000 t		1 x 170,000 t		
							1 x 100,000 t		
Sydney City	5.60%	240,313	1 x 150,000 t	259,312	1 x 160,000 t	275,042	1 x 175,000 t	361,864	1 x 175,000 t
			1 x 100,000 t		1 x 100,000 t		1 x 100,000 t		2 x 100,000 t
Mixed	1.20%	51,496	1 x 55,000 t	55,567	1 x 56,000 t	58,938	1 x 60,000 t	77,542	1 x 80,000 t
Total	100%	4,291,311	27 facilities	4,630,572	29 facilities	4,911,467	33 facilities	6,461,856	46 facilities



Table 70 Projected C&I Quantities and Possible Number of Processing Facilities for ERA and NRA

Sub Region	2014-2015		2016-2017		2020-2021		2035-2036	
	Estimated Tonnes	Number and Capacity of Facilities	Estimated Tonnes	Number and Capacity of Facilities	Estimated Tonnes	Number and Capacity of Facilities	Estimated Tonnes	Number and Capacity of Facilities
ERA	1,214,718	5 x 200,000 t 1 x 120,000 t 1 x 100,000 t	1,318,087	5 x 200,000 t 1 x 120,000 t 2 x 100,000 t	1,524,827	6 x 200,000 t 1 x 125,000 t 2 x 100,000 t	2,300,099	9 x 200,000 t 2 x 125,000 t 2 x 100,000 t 1 x 50,000 t
NRA	1,330,418	6 x 200,000 t 1 x 150,000 t	1,490,821	6 x 200,000 t 1 x 150,000 t 1 x 100,000 t 1 x 50,000 t	1,811,627	6 x 200,000 t 2 x 150,000 t 2 x 100,000 t 1 x 60,000 t	3,014,649	9 x 200,000 t 4 x 150,000 t 1 x 120,000 t 5 x 100,000 t
Total	2,545,135	14 facilities	2,808,908	17 facilities	3,336,453	20 facilities	5,314,747	33 facilities



5. Recommendations

5.1 Domestic

5.1.1 Infrastructure required

Infrastructure required for domestic waste processing takes the form of MRFs for dry recyclables and organics and mixed waste processing facilities. Many existing domestic waste processing facilities also process some commercial waste and some organics and mixed waste processing facilities also use mechanical separation systems as part of the operation. It is expected that any new facilities may follow similar practice. Therefore, processing capacities incorporating both materials streams have been estimated.

The following tables show the known current capacity and approximate capacity required into the future for each State Plan Region. The approximate capacity required has been calculated by adding the quantities projected to be recovered to a proportion of the residual. These proportions are shown in Table 71.

Table 71 Assumed Residual Recovery Rates

Year Range	Proportion of Residual Assumed to be Recovered	Materials assumed to be recovered
2014-2016	25%	Paper, containers, metals, C&D, timber, e-waste
2017-2019	50%	Paper, containers, metals, C&D, timber, e-waste
2020-2036	70%	Organics, food, metals, paper and cardboard, containers, C&D, e-waste, timber

Each State Plan Region has been ranked by priority for action taking into account their populations, expected growth, low current recovery and/or low existing infrastructure. It should be noted however, that in Sydney, South Western Sydney and Western Sydney, councils often deliver waste to facilities in other regions and that facilities operating in a particular region do not necessarily service all or any councils in that region.

Northern Rivers, Riverina Murray, South East, Hunter, Sydney, Central Coast and Illawarra ranked highest and these can be found in Table 72 below.

Table 72 Recommended Processing Capacity for High Priority Regions

Region	Current Capacity ⁹³	Approximate Capacity Required			
		2014	2017	2020	2036
Northern Rivers	6,000-12,000	100,173	129,535	154,996	177,131

⁹³ Capacities are estimates based on available information Actual capacities are probably higher



Region	Current Capacity ⁹³	Approximate Capacity Required			
		2014	2017	2020	2036
Riverina Murray	Not known	66,682	89,426	107,882	108,855
South East	Not known	72,163	94,107	113,319	131,934
Hunter	55,000	187,627	260,075	322,684	367,010
Sydney	400,000	587,282	731,675	853,806	937,555
Central Coast	45,000	125,801	171,534	178,464	218,767
Illawarra	Not known	147,307	181,565	211,158	237,391

Mid-North Coast, New England-North West, Central West and South Western Sydney were ranked medium and these can be found in Table 73.

Table 73 Recommended Processing Capacity for Medium Priority Regions

Region	Current Capacity ⁹⁴	Approximate Capacity Required			
		2014	2017	2020	2036
Mid-North Coast	63,500	101,357	121,431	139,179	163,490
New England-North West	Not known	55,423	70,964	83,175	79,121
Central West	Not known	46,856	64,561	78,962	79,742
South Western Sydney	290,000	228,463	287,059	343,556	285,509

Orana, Far West and Western Sydney were ranked low and these can be found in Table 74 below.

Table 74 Recommended Processing Capacity for Low Priority Regions

Region	Current Capacity ⁹⁵	Approximate Capacity Required			
		2014	2017	2020	2036
Orana	Not known	20,923	30,495	38,000	35,737
Far West	Not known	7,826	11,524	14,210	11,146
Western Sydney	760,000	295,222	391,296	476,236	574,757

5.1.2 Infrastructure required

Approximately 21 new separated organics and mixed waste processing facilities would be needed, based on 2010-11 data, if it is assumed that the nominal capacity of each facility must be approximately 100,000 to 200,000 tonnes per year for it to be economically viable. Over time, these facilities would

⁹⁴ Capacities are estimates based on available information Actual capacities are probably higher

⁹⁵ Capacities are estimates based on available information Actual capacities are probably higher



need to be upgraded to cope with extra capacity arising from population growth, and that new facilities would need to be built when an excess capacity situation was reached.

The number of mixed waste processing facilities that need to be built could be reduced if food organics are removed from the domestic waste stream through separate collections, in which case a number of organics only processing facilities would be needed, as well as the mixed waste processing facilities to deal with the residuals.

Table 75 shows the number of separated organics and mixed waste processing facilities required and the priority for establishing them for each State Plan Region.

Table 75 Infrastructure and Residential Quantities by State Plan Region

State Plan Region	Separated organics and mixed waste processing facilities needed		Priority
	New	Upgraded	
Northern Rivers	1	2	High
Mid-North Coast		2	Medium
New England-North West		1	Medium
Orana	1		Low
Riverina Murray	2	4	High
Central West	2	2	Medium
South East	1	1	High
Hunter	1	1	High
Far West			Low
South Western Sydney	2		Medium
Western Sydney	1 or...	1	Low
Sydney	3	2	High
Central Coast	1		High
Illawarra	1		High
Total	18	13	



5.2 Commercial and Industrial

5.2.1 Infrastructure required

Like the domestic waste sector, infrastructure required for C&I waste processing takes the form of MRFs and waste processing facilities for dry recyclables and organics.

Table 68 in Section 4.7 shows the estimated processing capacity required for the Regulatory Regions.

The recommendations are therefore:

- ▶ Establish new C&I waste processing capacity in the SMA as indicated in Table 69;
- ▶ Establish new C&I waste processing capacity in the ERA as indicated in Table 70;
 - Larger capacity processing facilities should be established in:
 - The Lower Hunter
 - Wollongong
 - Smaller capacity processing facilities should be established in:
 - The Upper Hunter
 - Shoalhaven
 - Central Coast
- ▶ Ensure the establishment of C&I waste processing facilities in the NRA as outlined in Table 70
 - Larger capacity processing facilities should be established in:
 - Wagga Wagga
 - Tweed Heads
 - Coffs Harbour
 - Tamworth
 - Albury
 - Smaller capacity processing facilities should be established in:
 - Port Macquarie
 - Dubbo
 - Nowra
 - Bathurst
 - Lismore



6. References

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- ▶ <http://www.conargo.nsw.gov.au>
- ▶ <http://www.alburycity.nsw.gov.au>



Appendix A

NSW Local Government Population Projections



Table 76 Population Projections for SMA – 2006-2036

Council	State Plan Region	SHI Region ⁹⁶	2006	2011	2016	2021	2026	2031	2036
Ashfield	Sydney	Inner Sydney	41,500	43,300	45,400	46,400	47,100	47,900	48,900
Auburn	Western Sydney	Inner Sydney	68,200	83,100	95,500	100,100	104,600	109,900	115,600
Bankstown	South Western Sydney	Western Sydney	176,800	185,200	192,000	199,600	206,600	215,500	225,100
The Hills	Western Sydney	Western Sydney	165,100	177,200	199,500	219,700	239,400	251,000	258,900
Blacktown	Western Sydney	Western Sydney	280,600	299,500	330,600	366,600	409,300	446,400	481,400
Botany Bay	Sydney	Southern Sydney	37,700	41,900	42,900	44,800	46,400	48,200	50,100
Burwood	Sydney	Inner Sydney	32,400	34,100	37,200	41,900	46,500	51,200	56,200
Camden	South Western Sydney	Macarthur	50,900	67,200	96,300	124,800	172,300	219,700	249,800
Campbelltown	South Western Sydney	Macarthur	147,500	154,400	167,500	184,500	201,600	218,100	233,800
Canada Bay	Sydney	Inner Sydney	68,800	79,400	86,900	89,400	90,700	92,200	94,000
Canterbury	Sydney	Southern Sydney	135,600	139,900	144,000	146,600	149,400	152,600	156,200
Fairfield	South Western Sydney	Western Sydney	187,200	191,600	196,200	202,500	207,300	216,800	227,000
Holroyd	Western Sydney	Western Sydney	93,300	104,400	112,900	116,900	120,100	123,700	127,600
Hornsby	Sydney	Northern Sydney	156,800	163,000	167,000	172,000	175,900	181,300	187,300
Hunters Hill	Sydney	Northern Sydney	13,700	14,400	15,000	15,700	16,400	17,100	17,900
Hurstville	Sydney	Southern Sydney	76,500	80,300	83,200	84,800	85,800	87,000	88,400
Kogarah	Sydney	Southern Sydney	54,900	56,900	58,700	59,900	60,700	61,700	62,700
Ku-ring-gai	Sydney	Northern Sydney	105,100	110,400	118,000	122,500	125,900	129,700	133,800
Lane Cove	Sydney	Northern Sydney	31,700	32,300	33,200	34,400	35,400	36,500	37,800

⁹⁶ Sydney, Hunter, Illawarra



Council	State Plan Region	SHI Region96	2006	2011	2016	2021	2026	2031	2036
Leichhardt	Sydney	Inner Sydney	51,600	52,700	53,800	54,900	55,700	56,700	57,800
Liverpool	South Western Sydney	Western Sydney	171,000	186,400	201,900	230,900	259,300	284,600	324,500
Manly	Sydney	Northern Sydney	39,300	41,200	42,400	43,600	44,500	45,500	46,600
Marrickville	Sydney	Southern Sydney	75,500	79,000	81,700	83,500	84,800	86,300	88,000
Mosman	Sydney	Northern Sydney	27,700	28,300	28,700	29,400	29,900	30,500	31,100
North Sydney	Sydney	Northern Sydney	61,900	65,300	68,500	70,700	72,500	74,500	76,600
Parramatta	Western Sydney	Western Sydney	154,000	166,100	176,500	183,100	188,700	194,700	201,400
Penrith	Western Sydney	Western Sydney	177,200	182,100	196,500	206,400	215,200	224,300	234,300
Pittwater	Sydney	Northern Sydney	56,600	60,000	62,000	63,800	65,100	66,600	68,400
Randwick	Sydney	Southern Sydney	126,100	132,600	138,200	141,100	143,100	146,500	150,300
Rockdale	Sydney	Southern Sydney	96,300	102,300	105,900	107,700	109,400	111,400	113,800
Ryde	Sydney	Northern Sydney	101,000	107,700	111,300	117,200	122,400	128,000	133,900
Strathfield	Sydney	Inner Sydney	33,200	36,200	38,900	41,600	44,200	47,100	50,100
Sutherland	Sydney	Southern Sydney	212,600	218,800	222,300	226,200	229,700	233,800	238,500
Sydney	Sydney	Inner Sydney	165,500	192,900	204,500	219,800	233,800	248,800	264,900
Warringah	Sydney	Northern Sydney	139,200	143,900	145,900	150,300	153,800	157,700	162,000
Waverley	Sydney	Southern Sydney	64,700	66,800	68,300	69,300	69,700	70,400	71,200
Willoughby	Sydney	Northern Sydney	66,900	70,700	73,700	75,900	77,600	79,400	81,500
Woollahra	Sydney	Southern Sydney	41,200	45,000	48,300	53,000	57,500	62,100	66,900



Table 77 Population Projections for ERA – 2006-2036

Council	State Plan Region	SHI Region ⁹⁷	2006	2011	2016	2021	2026	2031	2036
Cessnock	Hunter	Hunter	48,300	50,500	53,100	56,500	60,100	64,000	67,500
Gosford	Central Coast	Central Coast	162,000	167,000	170,500	176,200	182,400	189,200	196,400
Hawkesbury	Western Sydney	Western Sydney	62,100	64,600	67,200	71,800	77,900	86,100	90,100
Kiama	Illawarra	Illawarra	20,000	20,600	21,100	22,100	23,300	24,100	24,800
Lake Macquarie	Hunter	Hunter	192,000	197,000	202,300	210,100	218,200	226,000	232,600
Maitland	Hunter	Hunter	64,700	73,300	82,000	89,600	96,600	103,200	110,300
Newcastle	Hunter	Hunter	149,300	155,500	161,300	165,600	170,000	174,200	177,600
Port Stephens	Hunter	Hunter	63,300	69,400	74,500	78,700	82,300	85,400	87,900
Shellharbour	Illawarra	Illawarra	63,400	67,100	70,100	72,300	74,200	76,400	78,400
Shoalhaven	Illawarra	Illawarra	92,400	98,500	105,200	111,700	117,800	123,700	129,000
Wingecarribee	Illawarra	Macarthur	44,400	47,300	50,400	53,400	56,200	58,800	61,100
Wollongong	Illawarra	Illawarra	194,500	201,200	208,300	215,700	223,000	229,700	235,900
Wyong	Central Coast	Central Coast	142,700	150,400	159,700	176,000	192,800	210,100	228,300

Table 78 Population Projections for RRA – 2006-2036

Council	State Plan Region	SHI Region ⁹⁸	2006	2011	2016	2021	2026	2031	2036
Coffs Harbour	Mid-North Coast		67,900	73,900	80,000	85,900	91,500	96,900	101,700
Dungog	Hunter		8,400	8,600	8,900	9,200	9,400	9,700	9,900
Gloucester	Hunter		5,000	5,000	5,000	5,100	5,100	5,100	5,100
Greater Taree	Mid-North Coast		47,000	48,300	49,700	50,800	51,900	52,700	53,300
Great Lakes	Hunter		34,200	37,100	40,000	42,900	45,600	48,100	50,400
Port Macquarie - Hastings	Mid-North Coast		71,300	77,900	84,500	90,800	96,900	102,500	107,600
Kempsey	Northern Rivers		30,700	32,900	35,100	37,400	39,800	42,100	44,300
Kyogle	Northern Rivers		9,700	9,500	9,400	9,200	9,100	8,900	8,800
Lismore	Northern		42,900	45,500	48,300	50,900	53,600	56,000	58,300

⁹⁷ Sydney, Hunter, Illawarra

⁹⁸ Sydney, Hunter, Illawarra



Council	State Plan Region	SHI Region ⁹⁸	2006	2011	2016	2021	2026	2031	2036
Rivers									
Muswellbrook	Hunter		15,900	16,300	16,700	17,100	17,500	17,900	18,300
Nambucca	Northern Rivers		18,600	19,100	19,500	19,900	20,300	20,600	20,800
Richmond Valley	Northern Rivers		22,100	22,700	23,300	23,900	24,400	24,900	25,200
Singleton	Hunter		22,900	24,200	25,700	27,200	28,800	30,300	31,800
Tweed	Northern Rivers		83,100	91,800	100,300	108,700	116,900	124,800	132,000
Upper Hunter	Hunter		13,600	13,500	13,400	13,300	13,200	13,000	12,900
Wollondilly	South Western Sydney	Macarthur	41,200	45,000	48,300	53,000	57,500	62,100	66,900

Table 79 Population Projections for NRA – 2006-2036

Council	State Plan Region	SHI Region ⁹⁹	2006	2011	2016	2021	2026	2031	2036
Albury	Riverina Murray		48,500	50,500	52,100	53,700	55,000	56,000	56,600
Armidale Dumaresq	New England-North West		11,300	11,300	11,300	11,300	11,300	11,300	11,300
Balranald	New England-North West		2,600	2,500	2,500	2,400	2,300	2,200	2,100
Bathurst	Orana		37,600	39,000	40,400	41,800	43,000	44,000	44,900
Bega Valley	South East		32,500	34,800	37,200	39,400	41,600	43,500	45,300
Berrigan	Riverina Murray		8,300	8,400	8,400	8,400	8,300	8,200	8,100
Bland	Riverina Murray		6,300	6,100	5,800	5,600	5,400	5,200	5,000
Blayney	Orana		6,900	7,000	7,100	7,200	7,200	7,300	7,300
Bogan	Orana		3,000	2,800	2,600	2,500	2,300	2,100	2,000
Bombala	South East		2,600	2,500	2,400	2,300	2,200	2,100	2,000
Boorowa	South East		2,400	2,300	2,300	2,200	2,100	2,100	2,000
Bourke	Orana		3,200	3,100	2,900	2,800	2,700	2,500	2,400
Brewarrina	Orana		2,000	1,900	1,800	1,700	1,600	1,500	1,300

⁹⁹ Sydney, Hunter, Illawarra



Council	State Plan Region	SHI Region⁹⁹	2006	2011	2016	2021	2026	2031	2036
Broken Hill	Far West		20,100	19,000	17,800	16,700	15,500	14,200	13,000
Cabonne	Orana		30,700	32,900	35,100	37,400	39,800	42,100	44,300
Carrathool	Riverina Murray		2,900	2,900	2,800	2,800	2,700	2,700	2,600
Central Darling	Far West		2,900	2,900	2,800	2,800	2,700	2,700	2,600
Cobar	Orana		5,100	4,900	4,700	4,500	4,300	4,000	3,800
Conargo	Riverina Murray		1,700	1,600	1,500	1,400	1,300	1,200	1,100
Coolamon	Riverina Murray		4,200	4,200	4,200	4,200	4,200	4,200	4,200
Cooma-Monaro	South East		10,200	10,300	10,300	10,400	10,400	10,500	10,500
Coonamble	Orana		4,400	4,100	3,800	3,500	3,300	3,000	2,700
Cootamundra	Riverina Murray		7,600	7,500	7,400	7,200	7,000	6,700	6,500
Corowa	Riverina Murray		11,400	12,000	12,300	12,700	13,000	13,200	13,300
Cowra	Orana		13,000	13,100	13,100	13,200	13,200	13,100	12,900
Deniliquin	Riverina Murray		7,700	7,800	7,700	7,600	7,500	7,400	7,200
Dubbo	Orana		39,600	41,000	42,500	43,700	44,700	45,300	45,500
Eurobodalla	South East		36,600	39,900	43,300	46,500	49,600	52,400	54,900
Forbes	Orana		9,700	9,400	9,100	8,900	8,500	8,200	7,900
Gilgandra	Orana		4,700	4,500	4,400	4,200	4,000	3,800	3,600
Glen Innes Severn	New England-North West		9,200	9,000	8,700	8,500	8,200	7,900	7,600
Goulburn Mulwarree	South East		27,200	27,500	27,600	27,900	28,100	28,200	28,200
Greater Hume	Riverina Murray		10,100	10,000	9,600	9,400	9,100	8,800	8,400
Griffith City	Riverina Murray		24,900	25,900	26,800	27,700	28,400	29,000	29,500
Gundagai	Riverina Murray		3,800	3,800	3,700	3,600	3,500	3,400	3,200
Gunnedah	New England-North West		12,000	11,700	11,300	10,900	10,400	9,900	9,400
Guyra	New England-North West		4,400	4,400	4,300	4,200	4,100	4,000	3,900
Gwydir	New England-North West		5,500	5,300	5,100	4,900	4,700	4,500	4,300



Council	State Plan Region	SHI Region ⁹⁹	2006	2011	2016	2021	2026	2031	2036
Harden	South East		3,700	3,600	3,500	3,400	3,300	3,100	3,000
Hay	Riverina Murray		3,500	3,400	3,300	3,200	3,100	2,900	2,800
Inverell	New England-North West		16,200	16,100	16,000	15,900	15,700	15,500	15,200
Jerilderie	Riverina Murray		1,700	1,600	1,500	1,300	1,200	1,100	1,000
Junee	Riverina Murray		6,100	6,000	6,000	5,900	5,800	5,800	5,700
Lachlan	Orana		7,000	6,700	6,500	6,100	5,800	5,400	5,100
Leeton	Riverina Murray		11,800	11,900	11,900	12,000	12,000	11,900	11,900
Lithgow	Orana		20,600	20,600	20,600	20,500	20,300	19,900	19,500
Liverpool Plains	New England-North West		7,900	7,800	7,600	7,400	7,200	7,000	6,800
Lockhart	Riverina Murray		3,300	3,200	3,100	3,000	2,900	2,700	2,600
Mid-Western	Orana		22,000	22,200	22,300	22,300	22,200	22,000	21,600
Moree Plains	New England-North West		14,700	14,200	13,600	13,000	12,400	11,700	10,900
Murray	Riverina Murray		6,700	7,300	7,800	8,200	8,600	9,000	9,300
Murrumbidgee	Riverina Murray		2,600	2,700	2,700	2,800	2,800	2,900	2,900
Narrabri	New England-North West		13,700	13,200	12,600	12,000	11,400	10,700	9,900
Narrandera	Riverina Murray		6,300	6,000	5,800	5,600	5,300	5,000	4,700
Narromine	Orana		6,800	6,700	6,600	6,400	6,300	6,100	5,900
Oberon	Orana		5,300	5,400	5,500	5,500	5,600	5,600	5,500
Orange	Orana		37,100	38,200	39,200	40,200	41,000	41,600	42,000
Palerang	South East		13,000	14,300	15,800	17,200	18,800	20,300	21,900
Parkes	Orana		14,900	14,800	14,700	14,600	14,500	14,300	14,000
Queanbeyan	South East		38,100	42,400	46,900	51,600	56,300	60,900	65,400
Snowy River	South East		7,600	8,200	8,900	9,500	10,200	10,800	11,300
Tamworth Regional	New England-North West		55,900	57,600	59,200	60,600	61,900	62,900	63,400
Temora	Riverina		6,100	6,000	5,900	5,800	5,700	5,500	5,300



Council	State Plan Region	SHI Region ⁹⁹	2006	2011	2016	2021	2026	2031	2036
Murray									
Tenterfield	New England-North West		6,800	6,800	6,800	6,700	6,700	6,600	6,500
Tumbarumba	Riverina Murray		3,700	3,600	3,500	3,400	3,300	3,100	3,000
Tumut	Riverina Murray		11,300	11,100	10,900	10,700	10,500	10,200	9,800
Upper Lachlan	South East		7,300	7,300	7,300	7,300	7,200	7,200	7,100
Uralla	New England-North West		6,000	6,000	5,900	5,900	5,800	5,700	5,600
Urana Shire	Riverina Murray		1,300	1,200	1,100	1,100	1,000	900	800
Wagga Wagga	Riverina Murray		59,600	61,900	64,200	66,600	68,900	71,000	72,800
Wakool	Riverina Murray		4,600	4,500	4,400	4,300	4,200	4,100	4,000
Walcha	New England-North West		3,300	3,300	3,200	3,100	3,000	2,800	2,700
Walgett	Orana		7,300	7,000	6,700	6,500	6,300	6,000	5,800
Warren Shire	Orana		2,900	2,700	2,500	2,300	2,100	2,000	1,800
Warrumbungle	Orana		10,200	9,800	9,500	9,100	8,700	8,300	7,900
Weddin	Orana		3,800	3,700	3,500	3,400	3,200	3,100	2,900
Wellington	Orana		8,500	8,600	8,300	8,000	7,700	7,400	7,100
Wentworth	Riverina Murray		7,100	7,100	7,000	6,900	6,800	6,700	6,600
Yass	South East		13,800	15,000	16,200	17,500	18,800	20,000	21,100
Young	South East		12,400	12,800	13,200	13,500	13,900	14,200	14,400

Table 80 Population Projections by Region – 2006-2036

Region	2006	2011	2016	2021	2026	2031	2036
SMA	3,785,800	4,036,500	4,291,300	4,541,500	4,798,300	5,055,400	5,314,300
ERA	1,299,100	1,362,400	1,425,700	1,499,700	1,574,800	1,650,900	1,719,900
RRA	534,500	571,300	608,100	645,300	681,500	715,600	747,300
NRA	979,300	1,000,300	1,018,400	1,036,400	1,051,600	1,062,300	1,068,900
Total	6,598,700	6,970,500	7,343,500	7,722,900	8,106,200	8,484,200	8,850,400



Table 81 Population Projections by State Plan Region– 2006-2036

Region	2006	2011	2016	2021	2026	2031	2036
Central Coast	304,700	317,400	330,200	352,200	375,200	399,300	424,700
Far West	23,000	21,900	20,600	19,500	18,200	16,900	15,600
Hunter	617,600	650,400	682,900	715,300	746,800	776,900	804,300
Illawarra	414,700	434,700	455,100	475,200	494,500	512,700	529,200
Mid-North Coast	186,200	200,100	214,200	227,500	240,300	252,100	262,600
New England-North West	169,500	169,200	168,100	166,800	165,100	162,700	159,600
Northern Rivers	207,100	221,500	235,900	250,000	264,100	277,300	289,400
Orana	306,300	310,100	313,400	316,300	318,300	318,600	317,700
Riverina Murray	273,100	278,200	281,400	285,100	287,500	288,800	288,900
South East	207,400	220,900	234,900	248,700	262,500	275,300	287,100
South Western Sydney	774,600	829,800	902,200	995,300	1,104,600	1,216,800	1,327,100
Sydney	2,114,000	2,239,300	2,325,900	2,406,400	2,473,900	2,550,700	2,634,900
Western Sydney	1,000,500	1,077,000	1,178,700	1,264,600	1,355,200	1,436,100	1,509,300
Total	6,598,700	6,970,500	7,343,500	7,722,900	8,106,200	8,484,200	8,850,400

Table 82 Population Projections by former Waste Board Region– 2006-2036

Region	2006	2011	2016	2021	2026	2031	2036
Central Coast	304,700	317,400	330,200	352,200	375,200	399,300	424,700
Hunter	517,600	545,700	573,200	600,500	627,200	652,800	675,900
Illawarra	370,300	387,400	404,700	421,800	438,300	453,900	468,100
Inner Sydney	461,200	521,700	562,200	594,100	622,600	653,800	687,500
Macarthur	284,000	313,900	362,500	415,700	487,600	558,700	611,600
Northern Sydney	799,900	837,200	865,700	895,500	919,400	946,800	976,900
Southern Sydney	921,100	963,500	993,500	1,016,900	1,036,500	1,060,000	1,086,100
Western Sydney	1,467,300	1,557,100	1,673,300	1,797,500	1,923,800	2,043,100	2,170,300
Total	5,126,100	5,443,900	5,765,300	6,094,200	6,430,600	6,768,400	7,101,100



Appendix B
Waste Quantity Projections by Local
Government Area



Table 83 Yearly Residual Quantity Projections by State Plan Region – 2010-2036 (t)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Central Coast	86,609	88,293	89,039	89,785	90,531	91,278	92,024	93,310	94,596	95,882	97,168	98,454	99,796	101,138	102,480	103,822	105,164	106,567	107,970	109,373	110,776	112,179	113,657	115,135	116,613	118,092	119,570
Far West	17,390	17,134	16,927	16,721	16,514	16,307	16,101	15,922	15,744	15,565	15,387	15,209	15,002	14,795	14,589	14,382	14,176	13,965	13,754	13,543	13,332	13,121	12,915	12,708	12,502	12,295	12,088
Hunter	229,581	253,506	256,085	257,612	260,116	262,621	265,125	267,752	270,379	273,006	275,634	278,261	280,831	283,402	285,972	288,543	291,113	293,585	296,056	298,527	300,999	303,470	305,758	308,046	310,335	312,623	314,911
Illawarra	113,226	114,168	115,258	116,349	117,440	118,531	119,622	120,681	121,740	122,800	123,859	124,918	125,929	126,940	127,950	128,961	129,972	130,937	131,901	132,866	133,830	134,795	135,670	136,545	137,420	138,295	139,170
Mid-North Coast	56,205	59,212	59,955	60,699	61,442	62,186	62,930	63,652	64,373	65,095	65,817	66,539	67,261	67,982	68,704	69,426	70,148	70,814	71,480	72,147	72,813	73,479	74,089	74,699	75,309	75,918	76,528
New England-North West	65,660	63,799	63,684	63,570	63,456	63,341	63,227	63,100	62,973	62,846	62,719	62,592	62,437	62,282	62,127	61,972	61,817	61,599	61,381	61,162	60,944	60,726	60,450	60,175	59,899	59,624	59,349
Northern Rivers	97,215	97,935	99,013	100,091	101,169	102,246	103,324	104,357	105,390	106,423	107,456	108,488	109,519	110,549	111,579	112,609	113,639	114,577	115,515	116,453	117,391	118,329	119,184	120,039	120,894	121,750	122,605
Orana	40,055	39,159	39,111	39,063	39,015	38,967	38,919	38,844	38,769	38,694	38,619	38,544	38,469	38,394	38,319	38,244	38,169	38,011	37,854	37,696	37,538	37,380	37,208	37,036	36,864	36,692	36,520
Riverina Murray	89,199	88,190	88,264	88,339	88,414	88,489	88,564	88,663	88,763	88,862	88,961	89,060	89,086	89,112	89,138	89,163	89,189	89,122	89,056	88,989	88,922	88,855	88,744	88,634	88,523	88,413	88,302
South East	70,624	71,922	72,826	73,729	74,633	75,536	76,440	77,314	78,187	79,061	79,935	80,808	81,688	82,567	83,446	84,326	85,205	86,020	86,835	87,650	88,466	89,281	90,041	90,801	91,561	92,321	93,081
South Western Sydney	143,938	164,374	167,254	170,135	173,015	175,896	178,776	182,533	186,289	190,045	193,801	197,558	201,926	206,294	210,662	215,030	219,398	223,833	228,268	232,702	237,137	241,571	246,034	250,496	254,958	259,421	263,883
Sydney	515,782	522,841	526,832	530,823	516,171	520,086	524,001	527,586	531,172	534,757	538,342	541,928	544,947	547,967	550,986	554,005	557,025	560,462	563,898	567,335	570,772	574,208	577,982	581,755	585,529	589,302	593,076
Western Sydney	267,234	298,498	303,568	308,639	313,710	318,780	323,851	328,267	332,683	337,098	341,514	345,930	350,499	355,069	359,638	364,207	368,777	372,944	377,111	381,279	385,446	389,613	393,310	397,008	400,705	404,402	408,099
Central West	75,660	74,491	74,633	74,776	68,861	68,973	69,084	69,195	69,306	69,417	69,528	69,639	69,666	69,693	69,720	69,748	69,775	69,760	69,746	69,731	69,717	69,702	69,636	69,569	69,502	69,435	69,368
Total	1,868,376	1,953,519	1,972,451	1,990,331	1,984,488	2,003,238	2,021,988	2,041,176	2,060,364	2,079,552	2,098,740	2,117,928	2,137,056	2,156,184	2,175,312	2,194,440	2,213,568	2,232,196	2,250,824	2,269,453	2,288,081	2,306,709	2,324,678	2,342,646	2,360,614	2,378,583	2,396,551

Table 84 Yearly Recyclable Quantity Projections by State Plan Region – 2010-2036 (t)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Central Coast	99,888	100,708	101,528	102,348	103,168	103,988	104,807	106,217	107,627	109,036	110,446	111,856	113,329	114,802	116,276	117,749	119,222	120,765	122,308	123,851	125,394	126,937	128,563	130,189	131,815	133,442	135,068
Far West	3,936	3,838	3,791	3,745	3,698	3,651	3,604	3,563	3,521	3,480	3,439	3,397	3,350	3,304	3,257	3,210	3,163	3,114	3,065	3,016	2,968	2,919	2,872	2,825	2,778	2,731	2,684
Hunter	108,237	118,066	119,201	121,388	122,598	123,808	125,017	126,198	127,379	128,560	129,741	130,922	132,048	133,173	134,299	135,424	136,550	137,608	138,666	139,723	140,781	141,839	142,786	143,732	144,679	145,626	146,573
Illawarra	116,108	114,647	115,747	116,847	117,947	119,047	120,147	121,224	122,302	123,379	124,457	125,534	126,565	127,596	128,627	129,658	130,689	131,663	132,638	133,612	134,587	135,561	136,443	137,325	138,208	139,090	139,972
Mid-North Coast	79,521	82,336	83,556	84,776	85,997	87,217	88,437	89,605	90,772	91,940	93,107	94,274	95,405	96,536	97,667	98,798	99,929	100,981	102,032	103,084	104,135	105,187	106,134	107,080	108,027	108,974	109,920
New England-North West	40,786	39,705	39,656	39,608	39,559	39,511	39,462	39,414	39,367	39,319	39,271	39,224	39,147	39,071	38,995	38,919	38,843	38,735	38,627	38,519	38,412	38,304	38,159	38,013	37,868	37,722	37,577
Northern Rivers	86,241	72,378	73,212	74,047	74,881	75,716	76,550	77,357	78,164	78,970	79,777	80,583	81,364	82,145	82,926	83,707	84,487	85,205	85,923	86,641	87,358	88,076	88,722	89,369	90,015	90,661	91,307



Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Orana	11,541	11,262	11,231	11,201	11,170	11,139	11,108	11,073	11,037	11,002	10,966	10,931	10,891	10,852	10,812	10,773	10,733	10,676	10,619	10,562	10,505	10,448	10,393	10,338	10,283	10,228	10,173
Riverina Murray	44,396	44,061	44,233	44,406	44,578	44,750	44,923	45,094	45,266	45,437	45,609	45,780	45,911	46,041	46,172	46,302	46,433	46,512	46,592	46,671	46,750	46,830	46,873	46,915	46,958	47,001	47,044
South East	50,306	51,542	52,196	52,850	53,504	54,158	54,813	55,451	56,089	56,727	57,365	58,003	58,644	59,284	59,924	60,565	61,205	61,783	62,361	62,939	63,517	64,095	64,631	65,168	65,704	66,241	66,778
South Western Sydney	192,380	175,385	178,660	181,934	185,209	188,483	191,758	195,792	199,827	203,861	207,895	211,929	216,855	221,782	226,708	231,634	236,560	241,656	246,752	251,849	256,945	262,041	266,735	271,428	276,122	280,815	285,509
Sydney	434,990	429,903	433,134	436,365	458,239	461,547	464,854	467,882	470,910	473,938	476,967	479,995	482,491	484,988	487,484	489,981	492,477	495,326	498,174	501,023	503,871	506,720	509,856	512,993	516,129	519,266	522,402
Western Sydney	227,070	206,248	209,763	213,279	216,794	220,310	223,825	227,163	230,501	233,839	237,177	240,515	244,090	247,666	251,241	254,817	258,392	261,619	264,845	268,072	271,298	274,525	277,437	280,350	283,263	286,175	289,088
Central West	23,665	23,357	23,433	23,508	29,641	29,747	29,854	29,963	30,073	30,183	30,292	30,402	30,479	30,556	30,634	30,711	30,788	30,841	30,893	30,946	30,998	31,051	31,077	31,104	31,131	31,157	31,184
Total	1,519,064	1,473,436	1,489,343	1,506,301	1,546,983	1,563,071	1,579,159	1,595,997	1,612,834	1,629,671	1,646,509	1,663,346	1,680,571	1,697,796	1,715,021	1,732,247	1,749,472	1,766,484	1,783,496	1,800,508	1,817,520	1,834,532	1,850,681	1,866,830	1,882,979	1,899,128	1,915,277

Table 85 Yearly Residual Quantity Projections by Regulatory Region – 2010-2036 (t)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
SMA	897,201	952,065	963,680	975,296	968,268	979,807	991,346	1,002,568	1,013,790	1,025,012	1,036,233	1,047,455	1,058,767	1,070,079	1,081,391	1,092,703	1,104,015	1,115,242	1,126,468	1,137,694	1,148,920	1,160,147	1,171,587	1,183,028	1,194,468	1,205,908	1,217,349
ERA	408,557	438,243	442,474	445,653	449,810	453,967	458,124	463,051	467,979	472,906	477,833	482,761	487,786	492,811	497,837	502,862	507,887	513,026	518,164	523,302	528,441	533,579	538,202	542,825	547,448	552,071	556,695
RRA	204,031	208,518	210,851	213,184	215,517	217,850	220,183	222,518	224,854	227,189	229,524	231,859	234,154	236,449	238,744	241,039	243,333	245,451	247,568	249,685	251,802	253,919	255,895	257,871	259,847	261,823	263,799
NRA	358,587	354,694	355,446	356,198	350,893	351,614	352,335	353,038	353,742	354,445	355,149	355,852	356,348	356,844	357,340	357,836	358,332	358,478	358,625	358,771	358,918	359,065	358,994	358,922	358,851	358,780	358,709
Total	1,868,376	1,953,519	1,972,451	1,990,331	1,984,488	2,003,238	2,021,988	2,041,176	2,060,364	2,079,552	2,098,740	2,117,928	2,137,056	2,156,184	2,175,312	2,194,440	2,213,568	2,232,196	2,250,824	2,269,453	2,288,081	2,306,709	2,324,678	2,342,646	2,360,614	2,378,583	2,396,551

Table 86 Yearly Recyclable Quantity Projections by Regulatory Region – 2010-2036 (t)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
SMA	832,349	789,338	799,132	808,926	837,363	847,233	857,102	867,138	877,173	887,208	897,243	907,279	917,849	928,420	938,991	949,562	960,132	970,776	981,421	992,065	1,002,709	1,013,353	1,023,755	1,034,157	1,044,559	1,054,960	1,065,362
ERA	308,400	316,787	319,618	323,500	326,404	329,309	332,214	335,738	339,262	342,787	346,311	349,835	353,416	356,998	360,579	364,161	367,742	371,388	375,034	378,680	382,326	385,972	389,321	392,671	396,021	399,371	402,720
RRA	203,685	193,545	196,052	198,559	201,066	203,573	206,080	208,563	211,046	213,529	216,012	218,495	220,882	223,270	225,658	228,045	230,433	232,659	234,884	237,110	239,336	241,561	243,600	245,639	247,678	249,717	251,756
NRA	174,630	173,766	174,541	175,317	182,150	182,956	183,763	184,558	185,353	186,148	186,943	187,738	188,423	189,108	189,794	190,479	191,165	191,661	192,157	192,653	193,150	193,646	194,004	194,363	194,722	195,080	195,439
Total	1,519,064	1,473,436	1,489,343	1,506,301	1,546,983	1,563,071	1,579,159	1,595,997	1,612,834	1,629,671	1,646,509	1,663,346	1,680,571	1,697,796	1,715,021	1,732,247	1,749,472	1,766,484	1,783,496	1,800,508	1,817,520	1,834,532	1,850,681	1,866,830	1,882,979	1,899,128	1,915,277



Appendix C
Councils and Attributed Systems



Table 87 Councils and Attributed Systems

Council	State Plan Region	System Number	Existing or Planned Organics or Mixed Waste Processing Facility (if known)	OEH Estimated Diversion		Comments	System Description
				Min	Max		
Albury	Riverina Murray	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Armidale Dumaresq	New England-North West	1	Own facility	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Ashfield	Sydney	5		50%	55%		Two bin system with residual waste processed at an AWT facility
Auburn	Western Sydney	5		50%	55%		Two bin system with residual waste processed at an AWT facility
Ballina	Northern Rivers	2	Lismore facility	55%	70%		Three bin system including commingled food and garden organics, with residual waste disposed of to landfill
Balranald	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Bankstown	South Western Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Bathurst	Central West	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Baulkham Hills	Western Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Bega Valley	South East	2		55%	70%		Three bin system including commingled food and garden organics, with residual waste disposed of to landfill
Bellingen	Northern Rivers	1	Biomass	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Berrigan	Riverina Murray	6		20%	40%		Two bin system with residual waste disposed of to landfill
Blacktown	Western Sydney	3	UR-3R	75%	80%		Three bin system, including garden organics, with residual waste processed at an AWT facility
Bland	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Blayney	Central West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Blue Mountains	Western Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Bogan	Orana	6		20%	40%		Two bin system with residual waste disposed of to landfill
Bombala	South East	6		20%	40%		Two bin system with residual waste disposed of to landfill
Boorowa	South East	6		20%	40%		Two bin system with residual waste disposed of to landfill
Botany Bay	Sydney	5		50%	55%		Two bin system with residual waste processed at an AWT facility
Bourke	Orana	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Brewarrina	Orana	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Broken Hill	Far West	8		40%	60%	Currently no kerbside recycling	Two bins residual and garden organics only
Burwood	Sydney	4		40%	60%		Three bin system, including garden organics, with residual waste disposed of to landfill
Byron	Northern Rivers	2		55%	70%		Three bin system including commingled food and garden organics, with residual waste disposed of to landfill
Cabonne	Central West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Camden	South Western Sydney	3	Macarthur Resource Recvery	75%	80%		Three bin system, including garden organics, with residual waste processed at an AWT facility
Campbelltown	South Western Sydney	3	Macarthur Resource Recvery	75%	80%		Three bin system, including garden organics, with residual waste processed at an AWT facility
Canada Bay	Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT



Council	State Plan Region	System Number	Existing or Planned Organics or Mixed Waste Processing Facility (if known)	OEH Estimated Diversion		Comments	System Description
				Min	Max		
Canterbury	Sydney	3		75%	80%		Three bin system, including garden organics, with residual waste processed at an AWT facility
Carrathool	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Central Darling	Far West	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Cessnock	Hunter	4		40%	60%		Three bin system, including garden organics, with residual waste disposed of to landfill
Clarence Valley	Northern Rivers	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Cobar	Orana	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Coffs Harbour	Mid-North Coast	1	Biomass	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Conargo	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Coolamon	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Cooma-Monaro	South East	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Coonamble	Orana	6		20%	40%		Two bin system with residual waste disposed of to landfill
Cootamundra	Riverina Murray	6		20%	40%		Two bin system with residual waste disposed of to landfill
Corowa	Riverina Murray	6		20%	40%		Two bin system with residual waste disposed of to landfill
Cowra	Central West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Deniliquin	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Dubbo	Orana	2		55%	70%	Currently no kerbside recycling	Three bin system including commingled food and garden organics, with residual waste disposed of to landfill
Dungog	Hunter	6		20%	40%		Two bin system with residual waste disposed of to landfill
Eurobodalla	South East	4		40%	60%		Three bin system, including garden organics, with residual waste disposed of to landfill
Fairfield	South Western Sydney	3	UR-3R	75%	80%		Three bin system, including garden organics, with residual waste processed at an AWT facility
Forbes	Central West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Gilgandra	Orana	6		20%	40%		Two bin system with residual waste disposed of to landfill
Glen Innes Severn	New England-North West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Gloucester	Hunter	6		20%	40%		Two bin system with residual waste disposed of to landfill
Gosford	Central Coast	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Goulburn Mulwarree	South East	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Great Lakes	Hunter	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Greater Hume	Riverina Murray	6		20%	40%		Two bin system with residual waste disposed of to landfill
Greater Taree	Mid-North Coast	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Griffith City	Riverina Murray	4		40%	60%	Currently no kerbside recycling	Three bin system, including garden organics, with residual waste disposed of to landfill



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Gundagai	Riverina Murray	6		20%	40%		Two bin system with residual waste disposed of to landfill
Gunnedah	New England-North West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Guyra	New England-North West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Gwydir	New England-North West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Harden	South East	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Hawkesbury	Western Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Hay	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Holroyd	Western Sydney	3	UR-3R	75%	80%		Three bin system, including garden organics, with residual waste processed at an AWT facility
Hornsby	Sydney	1	Possibly Kimbriki	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Hunters Hill	Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Hurstville	Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Inverell	New England-North West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Jerilderie	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Junee	Riverina Murray	6		20%	40%		Two bin system with residual waste disposed of to landfill
Kempsey	Mid-North Coast	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Kiama	Illawarra	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Kogarah	Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Ku-ring-gai	Sydney	1	Possibly Kimbriki	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Kyogle	Northern Rivers	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Lachlan	Central West	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Lake Macquarie	Hunter	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Lane Cove	Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Leeton	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Leichhardt	Sydney	5		50%	55%		Two bin system with residual waste processed at an AWT facility
Lismore	Northern Rivers	2	Static pile facility	55%	70%		Three bin system including commingled food and garden organics, with residual waste disposed of to landfill
Lithgow	Central West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Liverpool	South Western Sydney	3	SAWT	75%	80%		Three bin system, including garden organics, with residual waste processed at an AWT facility
Liverpool Plains	New England-North West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Lockhart	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Maitland	Hunter	4		40%	60%		Three bin system, including garden organics, with residual waste disposed of to landfill



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Manly	Sydney	1	Kimbriki	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Marrickville	Sydney	5		50%	55%		Two bin system with residual waste processed at an AWT facility
Mid-Western	Orana	4		40%	60%		Three bin system, including garden organics, with residual waste disposed of to landfill
Moree Plains	New England-North West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Mosman	Sydney	5	Kimbriki	50%	55%		Two bin system with residual waste processed at an AWT facility
Murray	Riverina Murray	6		20%	40%		Two bin system with residual waste disposed of to landfill
Murrumbidgee	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Muswellbrook	Hunter	6		20%	40%		Two bin system with residual waste disposed of to landfill
Nambucca	Northern Rivers	6		20%	40%		Two bin system with residual waste disposed of to landfill
Narrabri	New England-North West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Narrandera	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Narromine	Orana	6		20%	40%		Two bin system with residual waste disposed of to landfill
Newcastle	Hunter	1	Own facility	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
North Sydney	Sydney	5		50%	55%		Two bin system with residual waste processed at an AWT facility
Oberon	Central West	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Orange	Central West	2	Orange Resource Recovery Project	70%	85%		Three bin system including commingled food and garden organics, with residual waste disposed of to landfill
Palerang	South East	6		20%	40%		Two bin system with residual waste disposed of to landfill
Parkes	Central West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Parramatta	Western Sydney	1	Possibly Remondis Camelia	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Penrith	Western Sydney	1	SAWT	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Pittwater	Sydney	1	Kimbriki	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Port Macquarie - Hastings	Mid-North Coast	3	ORRF	70%	85%		Three bin system, including garden organics, with residual waste processed at an AWT facility
Port Stephens	Hunter	5	Bedminster	50%	55%		Two bin system with residual waste processed at an AWT facility
Queanbeyan	South East	6		20%	40%		Two bin system with residual waste disposed of to landfill
Randwick	Sydney	5		50%	55%		Two bin system with residual waste processed at an AWT facility
Richmond Valley	Northern Rivers	8		40%	60%	Currently no kerbside recycling	Two bins residual and garden organics only
Rockdale	Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Ryde	Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Shellharbour	Illawarra	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Shoalhaven	Illawarra	1	Own facility	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Singleton	Hunter	4		40%	60%		Three bin system, including garden organics, with residual waste disposed of to landfill



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Snowy River	South East	6		20%	40%		Two bin system with residual waste disposed of to landfill
Strathfield	Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Sutherland	Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Sydney	Sydney	5	Own EFW facility	50%	55%		Two bin system with residual waste processed at an AWT facility
Tamworth Regional	New England-North West	2		55%	70%		Three bin system including commingled food and garden organics, with residual waste disposed of to landfill
Temora	Riverina Murray	6		20%	40%		Two bin system with residual waste disposed of to landfill
Tenterfield	New England-North West	5		50%	55%	Currently no kerbside recycling	Two bin system with residual waste processed at an AWT facility
Tumbarumba	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Tumut	Riverina Murray	6		20%	40%		Two bin system with residual waste disposed of to landfill
Tweed	Northern Rivers	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Upper Hunter	Hunter	6		20%	40%		Two bin system with residual waste disposed of to landfill
Upper Lachlan	South East	6		20%	40%		Two bin system with residual waste disposed of to landfill
Uralla	New England-North West	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Urana Shire	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Wagga Wagga	Riverina Murray	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Wakool	Riverina Murray	6		20%	40%		Two bin system with residual waste disposed of to landfill
Walcha	New England-North West	6		20%	40%		Two bin system with residual waste disposed of to landfill
Walgett	Orana	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Warren Shire	Orana	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Warringah	Sydney	1	Kimbriki	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Warrumbungle	Orana	6		20%	40%		Two bin system with residual waste disposed of to landfill
Waverley	Sydney	5		50%	55%		Two bin system with residual waste processed at an AWT facility
Weddin	Central West	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Wellington	Orana	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Wentworth	Riverina Murray	7		0%	0%	Currently no kerbside recycling	One bin, no recycling or garden organics
Willoughby	Sydney	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Wingecarribee	Illawarra	1	Macarthur Resource Recovery	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Wollondilly	South Western Sydney	1	Macarthur Resource Recovery	70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Wollongong	Illawarra	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT



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Woollahra	Sydney	5		50%	55%		Two bin system with residual waste processed at an AWT facility
Wyong	Central Coast	1		70%	85%		Three bin system including commingled food and garden organics, with residual waste processed at AWT
Yass	South East	6		20%	40%		Two bin system with residual waste disposed of to landfill
Young	South East	6		20%	40%		Two bin system with residual waste disposed of to landfill