

Eurobodalla Waste Strategy 2011-2018



**Document History:**

Version Number	Date
Draft Strategy (Version 3)	20 th October 2011

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Mike Ritchie & Associates

ABN: 58 428 736 838
27 Barton Avenue
HABERFIELD NSW 2045
Australia
Tel: +61 408 663942

MIKE RITCHIE & ASSOCIATES

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1. Executive Summary



Waste is becoming an increasing issue for the Eurobodalla Shire Council (ESC). Landfills are running out of space and the cost of managing waste continues to rise. This added to a steady population growth and an increasing tourism industry, means that ESC must come up with sustainable waste management systems for the future.

The purpose of this strategy is to identify key actions for waste management and minimisation in the Eurobodalla Shire region, and map out a plan of implementation for these actions. Actions identified in this strategy take into account ESC's current waste management circumstances.

The way forward for waste management, as detailed in ESC's community strategic plan (ESC, 2011b) is:

'To increase capacity to recover and recycle waste to improve sustainability and reduce impacts on the environment and landfill sites while establishing a means to address future demands'

ESC's Waste Strategy supports the *NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2007*. In line with the WARR targets, ESC's waste reduction targets for all major waste streams are:

- Municipal Solid Waste (MSW) - 66% recovery by 2014.
- Commercial & Industrial (C&I) - 63% recovery by 2014.
- Construction & Demolition (C&D) - 76% recovery by 2014.

The objectives of this strategy are to:

- Progress towards waste reduction targets by increasing the recovery and use of materials in the three major waste streams;
- Reduce waste to the Council's waste management facilities;
- Increase the useful life of Council's existing landfills;
- Reduce greenhouse gas emissions from Council's waste management facilities;
- Ensure that Council's waste services are cost effective and equitable;
- Improve data collection of solid waste disposal and recycling volumes to inform management decisions;
- Be accountable and transparent in the management of the Shire's waste;
- Educate the community on solid waste minimisation and resource recovery to motivate behavioural change;
- Identify any remaining gaps in waste minimisation education, management and practice, enabling planning for further improvements in future years; and
- Inform and develop future ESC waste initiatives.

Options were modelled for key areas of waste management in ESC. As a result of this modelling a number of strategies and specific actions have been developed to assist Council in meeting its objectives. These strategies and actions will be implemented and completed within the time periods assigned to them.

This plan will be reviewed and updated annually in line with Council's strategic reporting requirements.

Strategy	Action	Timeframe
Municipal Waste Services		
Provide the community with an acceptable waste management service that works to divert materials from landfill.	Investigate the provision of a new green organics bin and a kitchen tidy bin.	By 2012
	Investigate collection of food waste and garden organics in the green-lidded household bin and increase the frequency of these collections to weekly with a new composting facility.	By 2012
	Provide a new waste recycling guide to all households in the region explaining the new services and collection times.	By 2012
	Implement a behavior change program to support changes to the household 3 bin service.	By 2012
Commercial and Industrial Waste		
Assist the Commercial and Industrial sector to decrease waste generation and increase diversion.	Investigate the potential to provide a fee for service waste service to the C&I sector.	By 2012
	Review C&I price drivers to promote further resource recovery and recycling.	By 2013
	Provide information to the C&I sector to help them to divert waste materials.	By 2013
	Consider the provision of a food waste collection service to the commercial sector on the basis that a composting facility is established at the Brou and Surf Beach landfills.	By 2014
	Promote those companies who offer recycling to the C&I sector.	By 2014
Construction and Demolition Waste		
Assist the Construction and Demolition sector to decrease waste generation and increase diversion.	Review C&D price drivers to promote further resource recovery and recycling.	By 2013
	Make it a mandatory condition of all building permits issued to comply with ESC's 'code of waste management and minimisation practices for building sites' and investigate resourcing to enforce this.	By 2014
	Promote those companies who offer recycling for building materials to the C&D sector.	By 2014
	Design an education program for the building industry to teach them to source separate on site.	By 2014
	Ensure that all C&D materials generated from Council operations, such as roadworks, are managed appropriately and recycled where possible.	Ongoing
Infrastructure		
Ensure waste infrastructure in ESC drives and facilitates resource recovery.	Organics Infrastructure	
	Work with the EPA to develop a plan for the construction of a composting facility at the Brou landfill and Surf Beach landfills.	By 2012
	MRF and Recyclables Infrastructure	
	Investigate site options for a MRF before a new waste contract is formed and begin any planning approval processes that are required.	By 2012
	Community Recycling Points	
	Remove bins from unmanned recycling points.	By 2014
	Implement an education and enforcement program to ensure that illegal dumping does not occur at these sites after the bins have been removed.	By 2014

Strategy	Action	Timeframe
Pricing		
Ensure fees and charges for waste services drive waste minimisation and resource recovery.	Review domestic waste management service charges and ensure they provide enough of an incentive to drive resource recovery and waste minimisation.	Annually
	Ensure pricing encourages customers to source separate their materials.	Annually
	Consider imposing gradual increases in landfill prices to encourage resource recovery.	By 2013
	Investigate using the funds collected from any increases in landfill pricing to further improve waste management infrastructure, services and education programs in the ESC region and implement the actions outlined in this strategy.	By 2013
Data Collection		
Maintain sound data collection practices that provide accurate data to base waste management decisions around.	Continue to undertake 2 yearly domestic waste bin audits.	Every 2 years
	Work ESC's contracted recycling company to obtain sound data on contamination rates of recyclables and total materials recovered.	Ongoing
	Undertake 2 yearly green waste bin audits.	Every 2 years
	Undertake landfill audits at both the Brou and Surf Beach landfills to obtain information on the types of C&I and C&D materials entering the facilities.	By 2014
Home Composting		
Promote, encourage and facilitate home composting in the community.	Change old household green bins into home composting bins and provide to the community for use.	By 2013
	Provide information to the community on home composting practices and run user training workshops for all those who receive a composting bin from Council.	By 2013
Illegal Dumping		
Reduce illegal dumping in the Eurobodalla region.	Undertake an investigation into illegal dumping in the shire to determine whether or not it is an issue.	By 2013
	Implement an illegal dumping education program, particularly targeting tourists.	By 2013
Tourism		
Encourage and promote local waste management services to tourists.	Develop an education program to promote waste management facilities during the peak tourist periods in ESC.	By 2012
Public Place Recycling		
Demonstrate that ESC is committed to resource recovery by providing recycling infrastructure in public places.	Install reverse vending machines in key public areas in ESC.	2016
	Investigate potential grant opportunities to assist in funding PPR initiatives.	2016

Strategy	Action	Timeframe
Internal Council Operations		
Ensure that all policy and planning decisions lead by example and aid in providing more effective waste management practices.	Ensure all Council activities (including events) follow the objectives outlined in this strategy.	Ongoing
	Ensure Council implements an internal purchasing policy and recycling program.	By 2012
	Investigate the provision of recycling at all Council facilities.	By 2016
Waste Education		
Provide education to the community to encourage increased diversion of materials.	Continue to work with local schools to promote waste avoidance and resource recovery.	Ongoing
	Develop a waste education strategy.	2013



2. Introduction



2.1 Background

The *NSW Waste Avoidance and Resource Recovery Strategy 2007*; the possibility of the landfill levy being imposed by the NSW government; the impending cost increases as a result of the newly introduced Carbon Pricing Mechanism (CPM) and the limited available space at Council's Brou and Surf Beach landfills; are all compelling reasons for Council to take significant actions to increase their resource recovery rates and reduce reliance on landfill (ESC, 2009).

This added to a steady population growth and an increasing tourism industry means that the Eurobodalla Shire Council (ESC) also needs to come up with long term sustainable waste management systems.



ESC has undertaken a range of analyses, both externally and internally, on their waste needs for the short to medium term future. This analysis has identified the need to introduce improved services designed to recover more materials from the waste stream and thereby substantially decrease the quantity of waste requiring landfilling (ESC, 2009).

The purpose of this strategy is to provide a coordinated approach to these issues and identify key actions for waste management and minimisation in the Eurobodalla Shire region.

These actions will provide a framework for new waste management techniques, creating a seamless transition from current waste management practices to desirable waste management solutions that afford long-term flexibility, environmental sustainability and sound economic rationale.

The strategy also establishes processes for setting and tracking project scope, objectives, tasks, deliverables, milestones and governance for activities required to ensure effective implementation of waste related actions for the Eurobodalla region.

2.2 Waste Strategy Structure

The structure and contents of this strategy are summarized in Table 1.

Chapter	Description
1 - Introduction	Background to the development of the strategy and Council's vision for waste, targets and objectives.
2 – Current Position	An overview of the Council profile and current waste infrastructure.
3 – Waste Framework	Overview of the statutory and administrative frameworks for waste management at a National, State and Local level.
4 – Waste Trends	The current trends of waste management at a National, State and Local level.
5 – Municipal Waste	Identifies issues for the management of municipal waste and considers options for improving resource recovery from this stream.
6 – Commercial & Industrial (C&I) waste	Identifies issues for the management of C&I waste and considers options for improving resource recovery from this stream.
7 – Construction & Demolition (C&D) waste	Identifies issues for the management of C&D waste and considers options for improving resource recovery from this stream.
8 - Infrastructure	Identifies issues with ESC's current infrastructure and considers options for improving resource recovery and increasing landfill life spans.
5 – Other Strategic Considerations	Identifies other issues for ESC that will need to be addressed to progress waste management as well as potential options for Council to consider.
6 – Strategies and Implementation Plan	The strategies and actions that will be implemented as a part of this strategy.
7 - References	List of documents used in the preparation of the strategy document.

Table 1 The structure and contents of the Eurobodalla Shire Council Waste Strategy.



2.3 Objectives and Targets

2.3.1 Targets

The way forward for waste management, as detailed in Eurobodalla Shire Council's community strategic plan (ESC, 2011b) is:

'To increase capacity to recover and recycle waste to improve sustainability and reduce impacts on the environment and landfill sites while establishing a means to address future demands'

ESC's Waste Strategy supports the *NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2007*. In line with the WARR targets, ESC's waste reduction targets for all major waste streams are:

- Municipal Solid Waste (MSW) - 66% recovery by 2014.
- Commercial & Industrial (C&I) - 63% recovery by 2014.
- Construction & Demolition (C&D) - 76% recovery by 2014.

The means by which these targets are to be met are addressed in later sections of this strategy.

2.3.2 Objectives

The objectives of this strategy are to:

- Progress towards waste reduction targets by increasing the recovery and use of materials in the three major waste streams;
- Reduce waste to the Council's waste management facilities;
- Increase the useful life of Council's existing landfills;
- Reduce greenhouse gas emissions from Council's waste management facilities;
- Ensure that Council's waste services are cost effective and equitable;
- Improve data collection of solid waste disposal and recycling volumes to inform management decisions;
- Be accountable and transparent in the management of the Shire's waste;
- Educate the community on solid waste minimisation and resource recovery to motivate behavioural change;
- Identify any remaining gaps in waste minimisation education, management and practice, enabling planning for further improvements in future years; and
- Inform and develop future ESC waste initiatives.

3. Current Position



3.1 Eurobodalla Shire Council Profile

The Eurobodalla Shire Council is situated on the far south coast of NSW and covers an area of 342,900 hectares of which the dominant land uses are conservation (42%), timber production (30%), agriculture (12%), bush land (12%) and waterways (2%).

There are 12 towns and villages that make up 2% of the shire, comprising most of the urban land; they include Batemans Bay, Narooma, Moruya, Tuross Head, Broulee, Nelligen, South Durras, Mogo, Bodalla, Montague Island, Central Tilba and Tilba Tilba.

There is diversity in each of these urban settlements that generally occurs along the coast. Towns and villages in the Shire are relatively scattered therefore there is a need for a de-centralised approach to the provision community facilities and services.

The current population of the Eurobodalla Shire Council is over 37,000 people. This is projected to increase to over 52,000 by 2031 (DoP, 2006). The area is also a popular tourist destination and Council estimates indicate that the community swells by an additional 100,000 people during peak holiday periods. Managing waste from tourism presents a significant challenge to Council.

In 2006, Census revealed that when compared with NSW, the Eurobodalla population is older with a median age of 47 compared to 37 and with 58% of people aged 16-64 years of age compared to 65%.

The main employment industries in the Shire are tourism, retail, accommodation and food services, health care and social assistance and construction. The current dependence on construction and tourism makes the Shire vulnerable to economic and seasonal fluctuations. There are about 3,100 businesses that employ four people or less and just over 100 that employ over 20 (ESC, 2011b).

With an increase in population and the projected affects of climate change there is a need to reduce waste to landfill through raising awareness, incentives and restrictions.

Council provides a range of waste services in the region. It is also an active member in a number of waste and resource recovery regional groups including the Southern Councils Resource Recovery Group (SCRRG), Southern Councils Educators Network (SECN) and the South East Regional Organisation of Councils Resource Recovery Network (ESC, 2011a).



3.2 Current Waste Services

3.2.1 Municipal Kerbside Collection services

Much of the waste produced by residents is recyclable and doesn't need to go to landfill. Therefore ESC provides systems that allow residents to separate potentially recyclable wastes that can be collected and reprocessed into new items.

ESC levies rates from approximately 21,000 domestic waste services from 19,151 households in the Local Government Area (LGA) (ESC, 2011a). Table 2 summarises ESC's current domestic kerbside waste collection services.

Material	Bin Size (Litres)	Collection Frequency
General Solid Waste	80	Weekly
Recyclables	240	Fortnightly
Garden Organics	140 or 240 + bundles up to 2m ³	Monthly
Hard Waste	N/A	Annual

Table 2 ESC domestic kerbside waste collection services (ESC, 2011a).

Currently, food waste (a compostable product) is not diverted from landfill through this service. It is still disposed of through the general solid waste bin.

The composting of food waste requires a more specialized process than that of green and garden waste. Council is currently investigating the establishment of a food and green waste composting facility at their Brou and Surf Beach Landfills. Thus there may be potential for this service to be upgraded in the future to also capture and divert food waste from landfill.

Potential kerbside organic collection and processing systems are modeled later in this strategy.



3.2.2 C&I Collection Services

ESC does not currently provide waste collection services for commercial premises, however it does set the price at the landfill gate, which has the ability to influence how waste from the C&I sector is managed.

There are also a few private companies that offer recycling services for the commercial sector in the Eurobodalla region and there is scope for these to be more widely advertised to business. The opportunity to increase diversion from the C&I sector is modelled later in this strategy.

3.2.3 Other Waste Services

Table 3 outlines other waste services available in ESC that provide opportunities for recovery of various recyclables.

Material	Service Provider	Service
Mobile Phones	Mobile Muster	Specially marked Mobile Muster bags can be placed in the domestic recycling bin and are collected through the MRF. Drop off at ESC administration building and waste facilities also available.
Empty agricultural and chemical containers	Drum Muster	Empty drums are recycled for free. Requires drop off at designated receival sites.
Empty oil drums/containers	Visy	Picked up and recycled.
Mattresses	Service provider varies	Picked up and recycled for a fee.
Tyres	Service provider varies	Tyres picked up and recycled for approx \$2/passenger tyre. More for 4x4, truck and tractor tyres.
Steel	Sell & Parker	Picked up and recycled.
Non-ferrous Metals	Sell & Parker	Picked up and recycled.
Vehicle batteries	Service provider varies	Picked up and recycled.
Motor Oil	Service provider varies	Picked up and recycled.
Cooking Oil	Service provider varies	Picked up and recycled.
E-waste	Service provider varies	Self haul/drop off at Council waste management facility for recycling. Location for drop off may vary. Standard waste charges apply.
Household Batteries	Service provider varies	Various drop off points provided in key businesses.
CFL tubes and globes	Service provider varies	Various drop off points provided in key businesses.

Table 3 Other waste services available in Eurobodalla Shire (ESC, 2011a).

3.3 Current Infrastructure

3.3.1 Overview

In addition to kerbside collection services Council also provides waste and recycling drop-off at the transfer station and landfills. ESC manages two landfills and one transfer station in the region:

- Surf Beach Waste Management Facility
- Brou Waste Management Facility
- Moruya Waste Transfer Station

Unmanned Community Recycling Points are also provided to the community for the drop off of recyclable materials at specific sites in Batemans Bay and Narooma.

MSW can be taken to the landfills and transfer station and C&I and C&D materials can be taken to the landfill. Dependent on the type of waste, it is either disposed of to landfill or separated for recycling.

In 2009, Council introduced an E-waste recycling program at its waste facilities. Customers are charged standard waste fees for drop off but E-waste is sent to a recycler by Council.

Green garden waste is shredded, processed into mulch and offered for sale to the public from Council's waste facilities. Price for this product varies depending on demand (currently up to \$15.50/m³).

The total combined inputs to the landfills are 39,500m³/year, while the available void space is 399,000 m³. Therefore the total combined life expectancy of all landfill assets in ESC is 10.1 years.

Clearly a concerted effort to reduce waste inputs is required to conserve landfill space, combined with an accelerated program to secure further void space.

ESC is currently investigating the possibility of setting up composting facilities at their landfill sites. If permission is granted for this it may be possible for ESC to provide a food waste collection service for households (and potentially even business) to divert food waste from landfill. This is discussed and modeled in more detail later in this strategy (ESC, 2011a).

3.3.2 Surf Beach Waste Management Facility

The Surf Beach Waste Management Facility is located near Batemans Bay in the northern part of the Local Government Area (LGA). This facility has been operational since 1986, providing a range of waste recovery and disposal services for the Council and community (Quadro Australia, 2008b).

Surf Beach receives all of the green waste from ESC's kerbside collection. Kerbside collected residual waste is delivered to the Shire's two landfills according to the collection location: waste from Moruya and the southern area of the Shire is delivered to Brou Waste Management Facility, and waste from the northern area of the Shire is delivered to Surf Beach.

The Surf Beach landfill has limited available filling space. The volume of waste (and cover material) deposited in the active cell between February 2009 and February 2010 was 28,000 m³.

The remaining capacity of Surf Beach is 207,000 m³. This means at the current fill rate it has 7.4 years remaining life, if all available space including some operational areas, is used.

Concept designs are currently being prepared for further development at the Surf Beach site (ESC, 2011a).

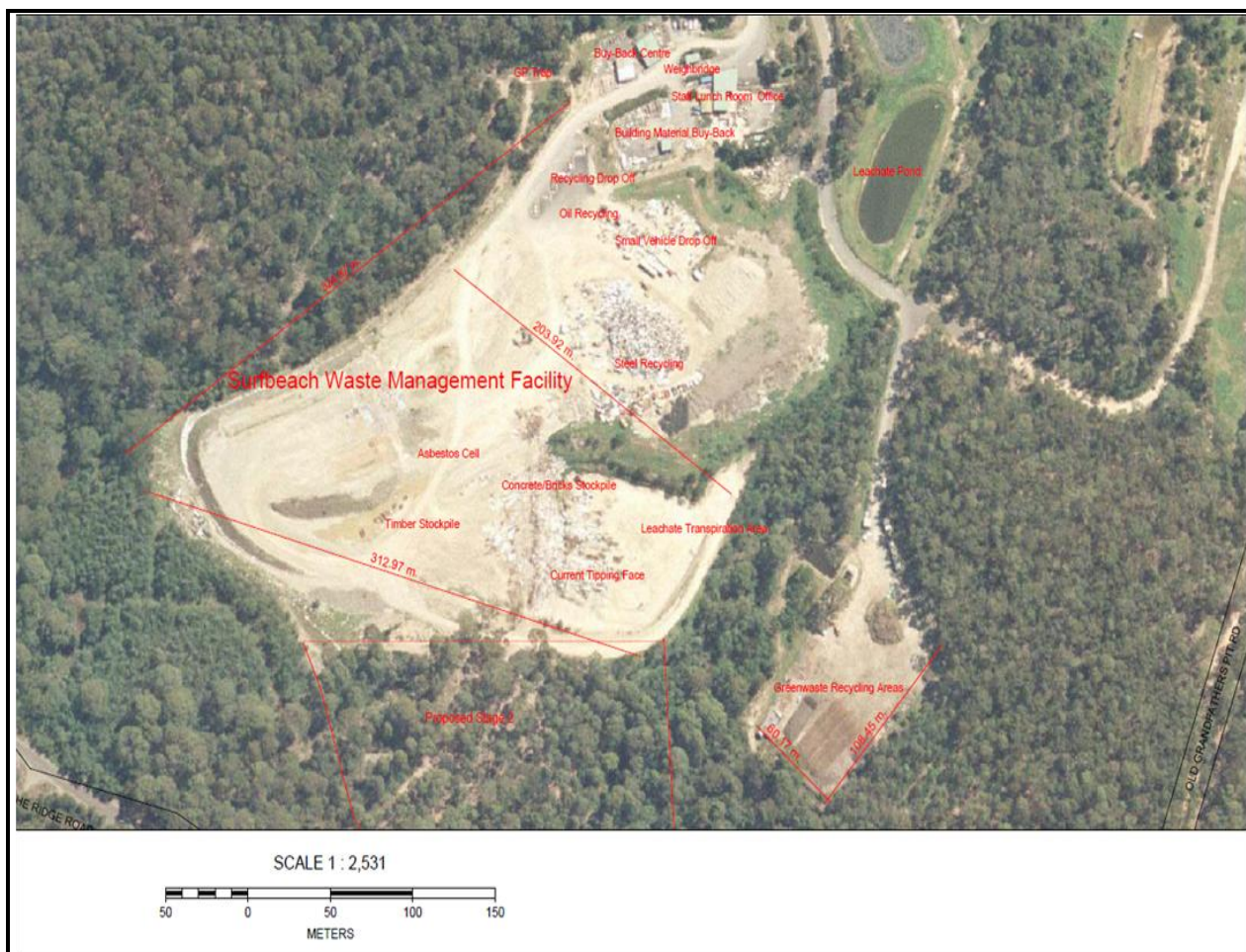


Figure 1 Map of Surf Beach Waste Management Facility (ESC, 2011a)

3.3.3 Brou Waste Management Facility

Brou Waste Management Facility is located at Brou Lake near Dalmeny in the south of the LGA. This Facility has been operational since 1979, providing a range of waste recovery and disposal services for the Council and community (Quadro Australia, 2008a).

The Brou Facility site is 8.5 hectares in size and is leased from NSW State Forests.

The volume of waste (and cover material) deposited in the active cell between December 2008 and November 2009 was approximately 11,500 m³.

Brou has an existing capacity of approximately 92,000 m³, plus another 100,000 m³ that is about to be cut for landfilling. Thus, at the current filling rate the Brou landfill is estimated to have 16.7 years remaining life (Quadro Australia, 2008a and ESC, 2011a).

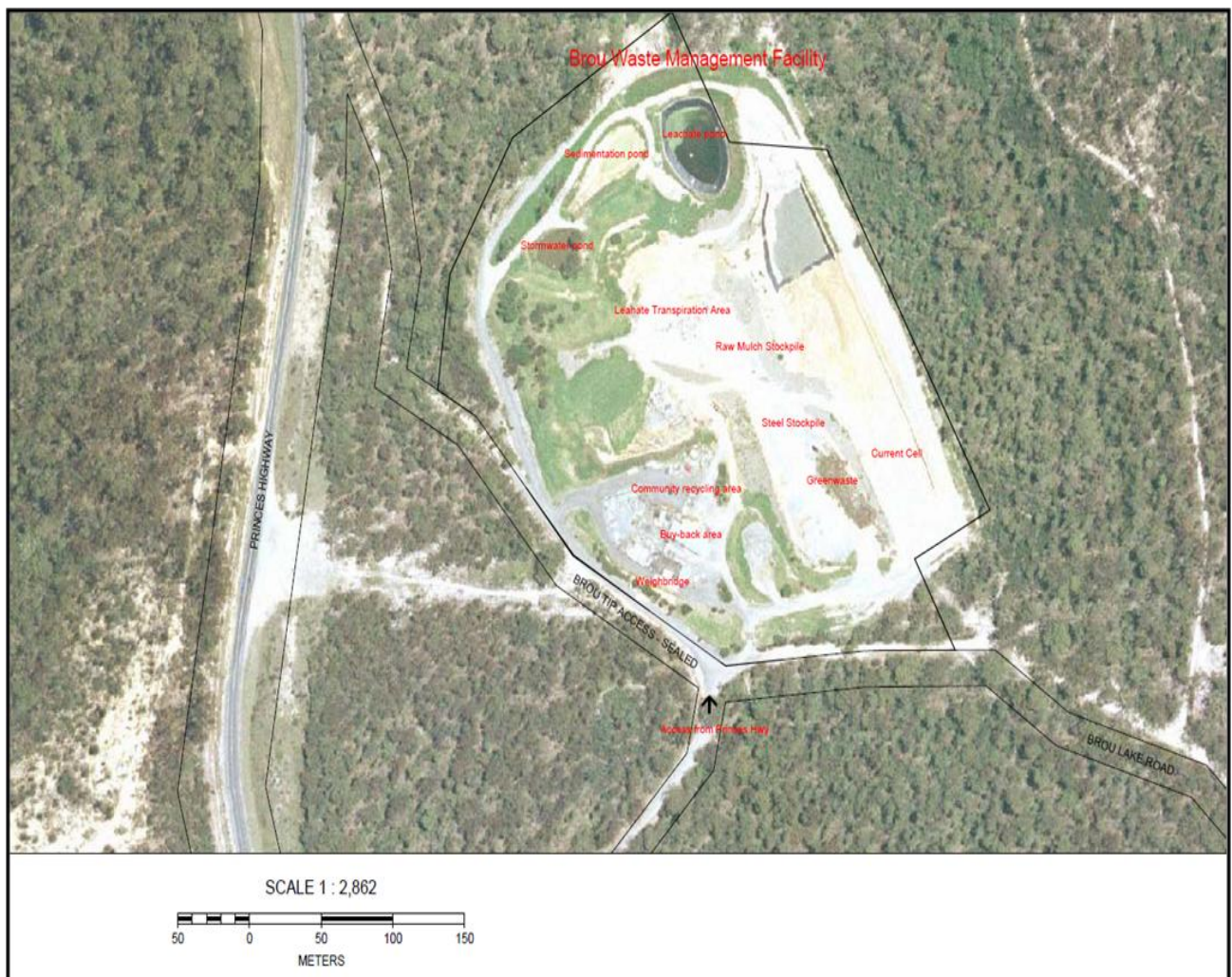


Figure 2 Map of Brou Waste Management Facility (ESC, 2011a)

3.3.4 Moruya Waste Transfer Station

ESC's transfer station is located on Yarragee Road in Moruya.

Residual waste from the transfer station is transported to Surf Beach Waste Management Facility for landfilling. Recyclables are transported to the Materials Recycling Facility (ESC, 2011a).

Approximately 550 tonnes of waste is taken to the Moruya Transfer Station annually. 48% of the green waste collected here is recycled and the rest is transported to the Brou or Surf Beach landfills.



Figure 3 Map of Moruya Transfer Station (ESC, 2011a)

3.3.5 Community Recycling Points

ESC provides Community Recycling Points for drop off of recyclable materials only. Community Recycling Points are located at:

- The Surf Beach Waste Management Facility;
- The Brou Waste Management Facility;
- The Moruya Waste Transfer Station; and
- At specific unmanned recycling point sites at Mackay Park Batemans Bay, and Glasshouse Rocks Road, Narooma.

Currently, the two unmanned community recycling points do not provide a solid waste bin. This can cause issues with the contamination of the recycling bins provided. Options to overcome this issue are considered later in the infrastructure section of this document (ESC, 2011a).

3.3.6 Materials Recycling Facility

The MRF is located in the Moruya Industrial area and separates kerbside recyclables collected in the Eurobodalla and Bega Shires. It is currently run by Sita Environmental Solutions. The MRF started operating in December 2005.

The MRF does not currently have the infrastructure in place to process glass fines, and thus Council is charged extra for this material. Additionally Bega Council does not own or operate a MRF and transports its recyclables to Eurobodalla. There is a large percentage of glass and with it a large percentage of glass fines. These glass fines are disposed of at the Surf Beach and Brou landfills as engineering material (ESC, 2011a).





3.4 Waste Management Fees and Charges

3.4.1 Overview

Since the adoption of the 2001 Solid Waste Minimisation Strategy, ESC's waste fees have been increasing to achieve waste management goals and a balanced budget. Through the fee amendments, waste separation for recycling has been encouraged (ESC, 2011a).

3.4.2 Domestic Waste Management Charge

The domestic waste management charge applies to each service provided and is tied back to the real cost of collection and disposal. All single unit dwellings (SUDs) and multi-unit dwellings (MUDs) are provided with the same full service, waste management charge and availability charge (for those in the collection area with no dwelling) (ESC, 2010). The current full service includes:

- 80 litre residual bin collected weekly.
- 240 litre recycling bin collected fortnightly.
- 2 cubic metres of bundled green waste (green waste only) collected monthly (including a 240 litre or 140 litre green bin).
- Annual hard waste collection.

Residents can also request additional 240 litre recycling bins for a fee. However, if an additional rubbish bin is required then they must pay for an additional full service.

Rural residents not on the collection run do not pay for the service but are still required to pay the waste management charge (to assist in the management of community recycling points, the landfills and the transfer station) (ESC, 2011a).

Figure 4 shows the increases in the domestic waste management charge from 2005-2006 to 2011-2012.

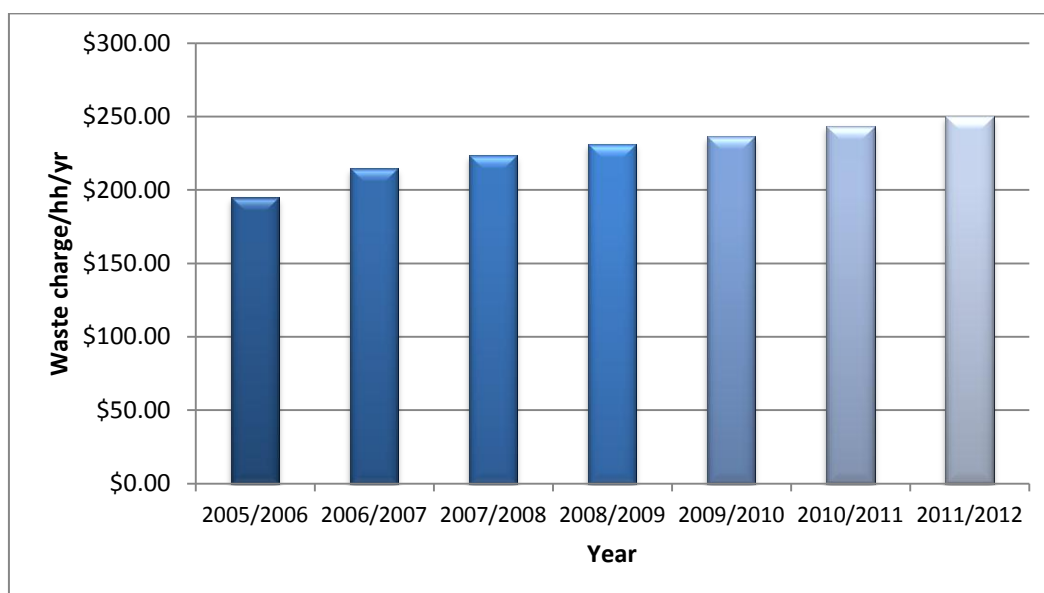


Figure 4 ESC's domestic waste management charge 2005-2006 to 2011-2012 (ESC, 2011a)

While there has been some growth in the domestic waste management charge (3% per annum average since 2007), ESC's current domestic waste charges remain well in line with the 2009/2010 average charge for the NRA (Non-Regulated Area) of regional NSW (\$241.2/hh/yr).

However, there is room for growth in fees where new and improved systems are introduced. Neighbouring Council Bega Valley had a waste charge of \$323.36 in 2009/2010. This is well above Eurobodalla's \$236.40 /hh/yr waste charge for the same period. Others such as Cowra, Gwydir, Palerang and Snowy River had waste management charges well above the \$400/hh/yr mark as shown in Figure 5 (OEH, 2011b).



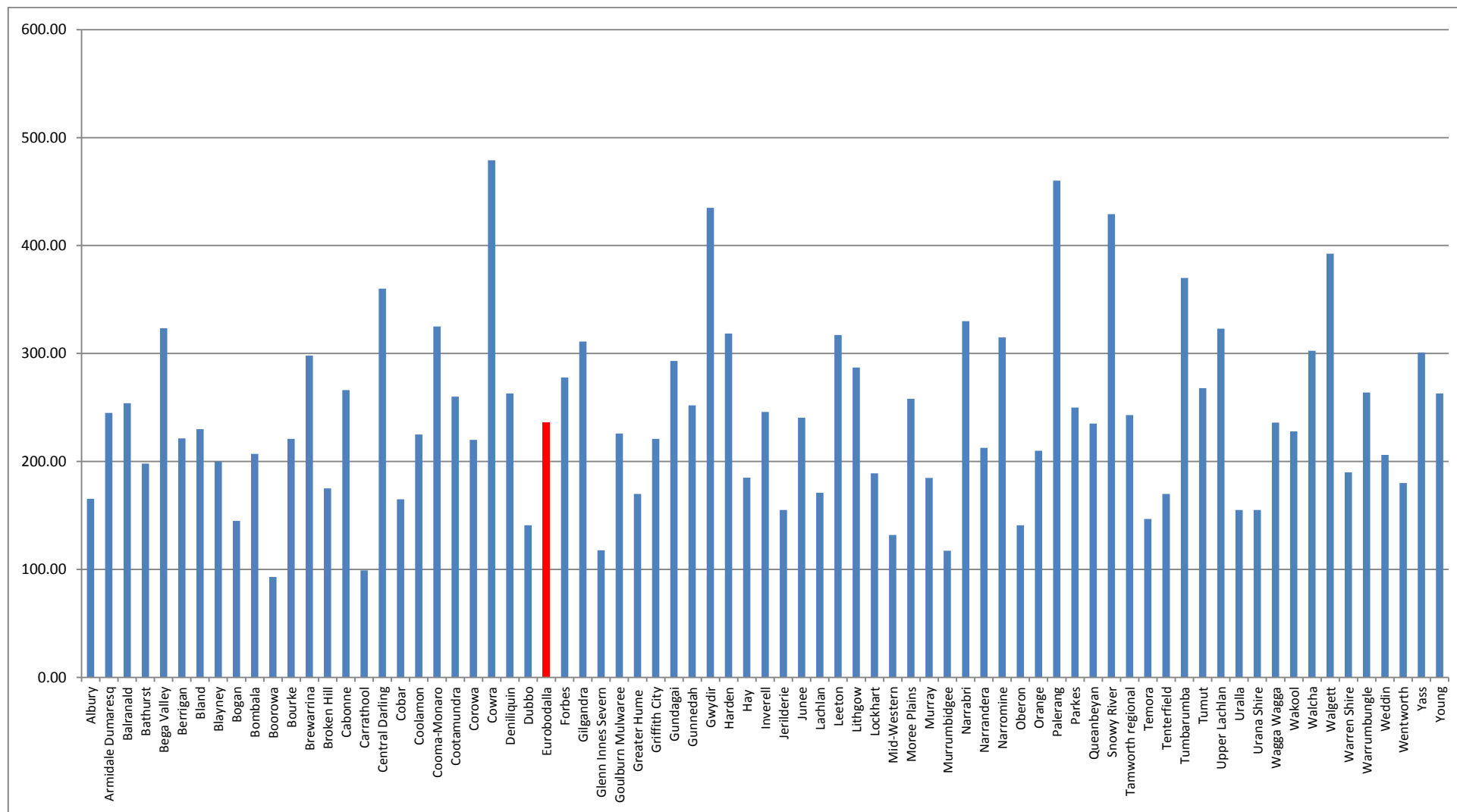


Figure 5 2009-10 Waste Charges\$/hh/yr for the NRA Councils in NSW (OEH, 2011b).

3.4.3 Tipping fees

At-the-gate tipping fees have increased in line with inflation and the rising costs of operating the landfills resulting from ever more rigorous safety and environmental requirements by the EPA. Other waste charges have also been increased (ESC, 2011a).

Table 4 shows the tipping fees at ESC landfills and the transfer station for the current (2011-2012) year.

Landfills (Brou and Surf Beach)							
Load	Commercial Recycling	Recoverable Material		Operational Material		Waste material	
Minimum charge (Up to ½ a small load)	N/A	N/A		N/A		\$4.00	
Small load	No Charge	\$4.00		\$7.00		\$9.50	
Medium load	\$11.50	\$11.50		\$17.50		\$24.00	
Large load	\$16.50	\$16.50		\$27.00		\$36.00	
Loads by weight (min. charges apply)	Not accepted	\$36.00 per tonne		\$76.00 per tonne		\$120.00 per tonne	
Asbestos – no booking	\$185.00 per tonne						
Asbestos – pre booked	\$120.00 per tonne						
Dead Animal - Small	\$7.50 each						
Dead Animal - Large	\$185.00 per tonne						
E-waste – Up to 51cm TV	\$10.00 each						
E-waste – Computer set up or TV greater than 51cm	\$20.00 each						
Large quantities palm fronds & palm trees	\$76.00 per tonne						
Mattresses	\$23.00 each						
Mattress base	\$12.50 each						
Offensive waste	\$185.00 per tonne						
Tyres - Car	\$4.50 each						
Tyres – 4x4 and light truck	\$6.50 each						
Tyres – Truck and tractor	Market rate plus \$2.00						
Vehicle weighing	\$16.50 each						
Transfer Station (Moruya)							
Load	Commercial Recycling	Recoverable Material				Waste material	
Minimum charge (Up to ½ a small load)	N/A	N/A				\$4.00	
Small load	No Charge	\$4.00				\$9.50	
Medium load	\$11.50	\$11.50				\$24.00	
Large load	\$16.50	\$16.50				\$36.00	
Extra Large Load	Not accepted	\$22.00 per load				\$47.50 per load	
E-waste – Up to 51cm TV	\$10.00 each						
E-waste – Computer set up or TV greater than 51cm	\$20.00 each						

Table 4 Tipping Fees – ESC Facilities 2011/2012 (ESC, 2011a).

It comparison to Bega Shire Council's tipping fees (Appendix 2) the general waste charges for small to medium loads in the Eurobodalla Shire Council are a little bit higher. However larger loads are far more expensive to dispose of in Bega compared with Eurobodalla's charges, as is the case for dead animals and asbestos.

Additionally, Bega charges at a per metre basis rather than by the tonne. This can in fact make waste fees far more expensive than they would normally be, dependent on the makeup of the waste stream being disposed of (Appendix 3).

4. Waste Framework



4.1 National

4.1.1 Overview

The Commonwealth Government has limited constitutional powers to engage directly in domestic waste management issues. This responsibility rests largely with state, territory and local governments. However, the Commonwealth Government does have a leading role in waste policy where it relates to Australia's international commitments for the movement of hazardous waste and in recent years it has taken on a strategic involvement in waste policy development, releasing the National Waste Policy.

The Commonwealth Government also has a particular focus on developing consistent national approaches for key product sectors. The National Packaging Covenant is an example of this. It is a co-regulatory agreement for the management of packaging waste in Australia. The Covenant is administered by the National Packaging Covenant Council (NPCC), which consists of representatives from government, environmental agencies, industry groups, and local government.

The Department of Environment, Water, Heritage and Arts (DEWHA) also administers a product stewardship program for oil recycling, under which the Oil Stewardship Advisory Council (OSAC), which provides advice to the Government on general operation of the stewardship arrangements and possible future directions.

The primary forum for interaction between the Commonwealth and other jurisdictions on waste matters is the Environment Protection and Heritage Council (EPHC). In addition, DEWHA is responsible for overseeing national programs.

Specific waste management legislation in place at the National level is limited to the *Hazardous Waste (Regulation of Imports and Exports) Act 1989* which aims to regulate the export, import and transit of hazardous waste both within and outside Australia and the *Product Stewardship (Oil) Act 2000* (SCC, 2010 and DECCW, 2010).



4.1.2 National Waste Policy

The Australian Government released a *National Waste Policy* Statement in November 2009, entitled *National Waste Policy: Less Waste, More Resources*.

The aims of the *National Waste Policy* are to:

- Avoid the generation of waste and reduce the amount of waste (including hazardous waste) for disposal;
- Manage waste as a resource;
- Ensure that waste treatment, disposal, recovery and re-use is undertaken in a safe, scientific and environmentally sound manner; and
- Contribute to the reduction in greenhouse gas emissions, energy conservation and production, water efficiency and the productivity of the land.

A number of strategies have been identified within the Policy which are to be pursued through a multi-jurisdictional approach. These include a national framework for product stewardship and extended producer responsibility.

More recently, the Environment Protection and Heritage Council (EPHC) established six key areas of reform for the *National Waste Policy*. These include:

1. **Taking responsibility** - Shared responsibility for reducing the environmental, health and safety footprint of products and materials across the manufacture-supply-consumption chain and at end-of-life.
2. **Improving the market** - Efficient and effective Australian markets operate for waste and recovered resources, with local technology and innovation being sought after internationally.
3. **Pursuing sustainability** - Less waste and improved use of waste to achieve broader environmental, social and economic benefits.
4. **Reducing hazard and risk** - Reduction of potentially hazardous content of wastes with consistent, safe and accountable waste recovery, handling and disposal.
5. **Tailoring solutions** - Increased capacity in regional, remote and Indigenous communities to manage waste and recover and re-use resources.
6. **Providing the evidence** - Access by decision makers to meaningful, accurate and current national waste and resource recovery data and information to measure progress and educate and inform the behaviour and the choices of the community.

There are 16 strategies under which activities include working to remove market impediments to the development of effective markets for recovered resources, improving certainty, reducing costs for governments and business, and facilitating investment in necessary infrastructure.

Strategies have also been developed for organic waste that compliment the Australian Government climate change and sustainability agendas and options developed for enhancing the capacity of regional and remote communities to more effectively manage their waste. Efforts will continue to reduce the potentially hazardous content of e-wastes and ensure that these wastes are recovered.

A product stewardship framework provides support through voluntary accreditation of community and industry run recycling schemes. Key areas of effort will include mercury containing lights, tyres, packaging, workplace recycling, public place recycling, televisions and computers recycling.

The process by which the *Policy* has an effect is through a range of collective multilateral processes (e.g. Council of Australian Governments (COAG), EPHC and related Commonwealth-state working parties), and then via state policy intent and regulation.

The EPHC has promised a rapid progression of initiatives which will affect the collection and recycling of a range of minor streams (EPHC, 2010).

All policy and strategic directions taken by ESC in relation to the management of solid waste should align with the objectives of the *National Waste Policy*.

4.1.3 Carbon Pricing Mechanism (CPM)

The Australian Federal government announced the details of its proposed carbon pricing mechanism on the 10th of July 2011. This policy is perhaps the largest economic and environmental reform in a generation. Under the carbon price, around 500 of the biggest polluters in Australia (190 of them landfills) will need to buy and surrender to the Government a permit for every tonne of carbon pollution they produce.

For the first three years, the carbon price will be fixed like a tax, before moving to an emissions trading scheme in 2015. In the fixed price stage, starting on 1 July 2012, the carbon price will start at \$23 a tonne, rising at 2.5 per cent a year in real terms. From 1 July 2015, the carbon price will be set by the market. A total of \$9.2 billion will be allocated over the first three years for industry assistance (COA, 2011).

The plan covers landfills emitting more than 25,000 tonnes per annum of Carbon Dioxide equivalent (CO₂e) (of both legacy and new waste). The reporting requirements are based on the National Greenhouse Reporting Framework. Organisations are required to report for 2012-13 in October 2013 and make a provisional tax payment for sites generating more than 25,000 tonnes per annum of CO₂e in June 2013 (Inside Waste Weekly, 2011).

Landfills between 10,000t/annum CO₂e and 25,000t/annum CO₂e and within a “prescribed distance” of a covered landfill (over 25,000t CO₂e) would not be included in the first tranche of the emissions trading scheme. Previously these landfills were proposed to be included in the ETS in order to ensure that waste did not flow from large covered landfills to small uncovered landfills. With the Government’s announcement these smaller landfills will be kept out of the scheme and a review will take place in 2015 regarding their possible future inclusion.

At this stage ESC’s landfill’s will not be affected by the CPM as both of ESC’s landfills emit less than 10,000 tonnes of CO₂e per year.

However, legacy emissions will be included after 2018, and so Council will need to further examine the possibility of inclusion under the scheme. Liability for emissions from landfill facilities that close after 1 July 2008 will remain with the entity that had operational control at the time of closure (ESC, 2009).

4.1.4 National Greenhouse and Energy Reporting (NGER) Act 2007

The *National Greenhouse and Energy Reporting (NGER) Act 2007* establishes a national system for reporting greenhouse gas emissions, energy consumption and production by corporations. Its development was initiated through the Council of Australian Governments (COAG) in 2006.

The *NGER Act 2007* establishes the Greenhouse and Energy Data Officer (GEDO) as the regulatory and administrative decision-maker. It is currently administered by the Department of Climate Change and Energy Efficiency.

Data reported under the *NGER Act 2007* underpins the carbon pricing mechanism. Monitoring, reporting and auditing of Council's greenhouse gas emissions data will be essential to maintain the environmental and financial integrity of the CPM (DCCEE, 2011).

Key features of the *NGER Act 2007* are:

- Reporting of greenhouse gas emissions, energy consumption and production by large corporations;
- Public disclosure of company level greenhouse gas emissions and energy information;
- Consistent and comparable data available for decision making, in particular, the development of the CPM; and
- A reduction in the number of greenhouse and energy reports required across State, Territory and Australian Government programs.

Council's total emissions are currently below the 25,000 tonne of CO₂e/year threshold required for reporting under the act.

4.1.5 The National Greenhouse and Energy Reporting (Measurement) Determination Act 2008

The *National Greenhouse and Energy Reporting (Measurement) Determination Act 2008* provides methods and criteria for calculating greenhouse gas emissions and energy data under the *National Greenhouse and Energy Reporting (NGER) Act 2007*.

The initial instrument, *National Greenhouse and Energy Reporting (Measurement) Determination 2008* has been updated annually, in 2009 and 2010, reflecting improvements in estimation methods and responding to feedback from industry. The *National Greenhouse and Energy Reporting (Measurement) Amendment Determination 2011* continues this process and is applicable to reporting required for the *National Greenhouse and Energy Reporting Act*, in the 2011-12 reporting year. The range of emission sources covered in the *Determination* includes:

- Waste management;
- The combustion of fuels for energy;
- Fugitive emissions from the extraction of coal;
- Oil and gas; and
- Industrial processes (such as producing cement and steel).

The methods used within the *NGER (Measurement) Determination* are based on those used for the National Greenhouse Accounts (DCCEE, 2011).

4.1.6 Extended Producer Responsibility Schemes

Extended Producer Responsibility (EPR) policies aim to minimise waste generation and toxicity and maximise recycling. EPR policies engage producers and others involved in the supply chain of a product to take responsibility for the environmental, health and safety footprint of those products. This includes the design and manufacture of a product, as well as how the product is managed at the end of its life (including resource recovery and proper disposal).

The Organisation for Economic Co-operation and Development (OECD) defines EPR as: 'an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of the product's life cycle.'

The *National Waste Policy (2009)* commits the Australian Government, with the support of state and territory governments to establish a national waste framework underpinned by legislation to support voluntary, co-regulatory and regulatory product stewardship and extended producer responsibility schemes to provide for the impacts of a product being responsibly managed during and at end of life (DECC, 2010c). Current existing EPR schemes in Australia are shown in Table 5.

Waste Type	Is it a National Priority Waste?	Is the waste dealt with by an existing EPR Scheme?	Description of the EPR Scheme
Packaging	Yes	Yes	National Packaging Covenant 2010 is a co-regulatory extended producer responsibility scheme. It applies to any 'brand owner' of a product, including the first importer of a product. As at the 30 June 2010, NSW had 326 signatories of the covenant of a total of 788 nationally (41%).
Mobile Phones	Yes	Yes	MobileMuster is a voluntary extended producer responsibility scheme funded by telecommunications carriers and handset brand owners through a 42c levy on each handset sold. Consumers can drop off old mobile phones to particular MobileMuster points for recycling.
Agvet Chemicals & Drums	Yes	Yes	The agricultural and veterinary (agvet) chemical industry established 'Chemclear' which provides free collection and disposal of agvet chemicals nationally. DrumMUSTER was established to collect agvet chemical containers for recycling.
PVC	No	Yes	The PVC Product Stewardship Program is a voluntary, industry led scheme with ongoing commitments to addressing the environmental impacts of PVC.
Used Oil and Lubricants	Yes	Yes	The Product Stewardship for Oil program is a fully regulated product stewardship scheme run by the Australian Government.
Tyres	Yes	Under Development	An industry/government implementation working group was established in May 2010 to revise the approach needed to develop a product stewardship program for tyres.

Plastic Bags	Yes	No	Plastic bag waste will be part of a national regulatory impact statement on the impacts of packaging waste due to be released in 2011. Australian Environment Ministers are also developing standards for compostable plastic bags.
Batteries	No	No	NSW has proposed the inclusions of batteries in a work plan for expanded national product stewardship priorities. Australian Environment Ministers will consider the work plan in 2011.
Paint	No	No	NSW has proposed the inclusions of paint in a work plan for expanded national product stewardship priorities. Australian Environment Ministers will consider the work plan in 2011.
Newspapers	No	Yes	The Publishers National Bureau has run an EPR scheme since 1990.
Mercury Containing Lamps	Yes	Yes – Commercial and public lighting. No – household.	The FluoroCycle program is a government and industry initiative to increase recycling of mercury-containing lamps from the commercial and public lighting sector. The program is funded by the Commonwealth, which has engaged Lighting Council Australia (LCA) to manage the program from 2010 for a three year period.
Computers and Televisions	Yes	Impending	<p>The Product Stewardship Bill was passed through parliament on the 22nd June 2011. The <i>Product Stewardship Act 2011</i> and subordinate regulations will enable a national collection and recycling scheme for end-of-life (EoL) television and computer e-waste.</p> <p>Under the National Television and Computer Stewardship Scheme, importers, manufacturers and suppliers of new TVs and computers will meet their product stewardship obligations by either becoming a member of an approved 'Product Stewardship Organisation' (PSO) arrangement or seek approved arrangement administrator status as an individual company.</p>

Table 5 EPR and product stewardship schemes currently in Australia (DECCW, 2010c).

ESC is required to support any EPR programs implemented by the Commonwealth and/or NSW state Government and assist to implement them at a local level. This is particularly necessary for computers and televisions under the new *Product Stewardship Act 2011*.

4.2 State

4.2.1 Overview

The New South Wales State Framework consists of legislation, development plans and strategies, and guidelines, as summarised in Table 6.

Legislation	Plans and Strategies	Guidelines
<ul style="list-style-type: none"> • <i>Environmental Planning and Assessment (EP&A) Act 1979</i> • <i>Protection of Environment Operations (POEO) Act 1997</i> • <i>Waste Avoidance and Resource Recovery (WARR) Act 2001</i> • <i>Protection of the Environment Operations (Waste) Regulation 2005</i> • <i>Protection of Environment Operations (Waste) Amendment (Residue Wastes) Regulation 2005</i> 	<ul style="list-style-type: none"> • Waste Avoidance and Resource Recovery (WARR) Strategy 2007 • Extended Producer Responsibility Priority Statement 2007 • Waste Reduction and Purchasing Policy (WRAPP) 	<ul style="list-style-type: none"> • Crackdown on Illegal Dumping: Handbook for Local Government • Waste Classification Guidelines • Environmental Guidelines: Solid Waste Landfills • Draft Environmental Guidelines: Composting and Related organics Processing Facilities • Guidelines for Conducting Household Kerbside Residual Waste, Recycling and Garden Organics Audits in NSW Local Government Areas 2007 • Reducing Contamination of Dry Recyclables and Garden organics at Kerbside • Preferred Resource Recovery Practices by Local Councils • Getting More from Our Recycling Systems Good Practice Performance Measures for Kerbside Recycling Programs

Table 6 State legislation, plans and strategies, and guidelines (OEH, 2011c and SCC, 2010).

The State environmental legislation listed in Table 6, is administered by the NSW Office of Environment and Heritage (OEH). Their aims in managing waste are to provide a clear and consistent regulatory and policy framework that minimises harm to the environment and encourages waste avoidance and resource recovery. This framework uses a mix of legislative, policy, educative and economic tools.

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

Regulatory mechanisms set out in the legislation such as the waste and environment levy help drive waste avoidance and resource recovery by providing an economic incentive to reduce waste disposal and stimulate investment and innovation in resource recovery technologies.

To facilitate the beneficial reuse of waste materials, OEH is able to exempt from certain regulatory requirements the use of waste as fuel or its application to land. These exemptions are known as resource

recovery exemptions and are only issued where the proposed use of the waste material is beneficial and does not cause harm to the environment or human health.

Reducing the generation of waste and turning it into recoverable resources are priorities for NSW. To meet this challenge, a number of programs have been established under the *Waste Avoidance and Resource Recovery (WARR) Strategy 2007* (SCC, 2010 and OEH, 2011c).

4.2.2 The Waste Avoidance and Resource Recovery (WARR) Strategy 2007

In 2003 the government released the NSW *Waste Avoidance Resource Recovery (WARR) Strategy 2007* which sets the strategic agenda for recycling and waste avoidance in NSW. It is designed to provide a continuing framework that will guide actions to achieve the NSW Government's policy objectives of minimising environmental harm from waste generation through to disposal, and conserving and maximising resource use.

The *Waste Strategy 2007* identified waste avoidance and resource recovery goals and targets in four key result areas:

1. Preventing and avoiding waste;
2. Increasing recovery and use of secondary materials;
3. Reducing toxicity in products and materials; and
4. Reducing litter and illegal dumping.

The *Waste Strategy 2007* sets specific targets for waste reduction by 2014:

- Municipal waste – 66% to be recycled in 2014;
- Commercial and Industrial waste – 63% to be recycled in 2014; and
- Construction and demolition waste – 76% to be recycled in 2014.

The *Waste Strategy 2007* proposes priority areas and actions to guide the work of all key groups in NSW in contributing to the minimisation of environmental harm from waste disposal and through the conservation and efficient use of our resources. It continues to recognise the importance of the waste hierarchy to guide effective resource management.

However, it realizes that different materials require different approaches. The choice of approach, including re-use, recycling and energy from waste, will depend on a balance of factors including economic and environmental considerations. Other factors that will influence the approach adopted for specific materials include: availability of supply, markets for recyclate, economic, environmental and social impacts, community responses to different collection, reprocessing and disposal options, and emergence of new technologies (OEH, 2011c).

4.2.3 The s.88 Landfill Levy

Since 2005, the government has increasingly used market based pricing and particularly the Waste and Environment Levy (also known as the s.88 landfill levy) to drive waste reform in NSW.

The levy is designed to encourage resource recovery and recycling of waste and is incorporated into the landfill gate price and is a component of the price paid by waste generators to dispose of waste at landfills. Operators of landfills are then required to pass on the value of the levy to the state government. The levy is also paid on the residual waste deriving from Advanced Waste Treatment (AWT) processes that is sent to landfill.

The s.88 levy now applies to all waste generated or sourced from the Sydney Metropolitan Area (SMA), the Extended Regulated Area (ERA), which includes the Hunter and Illawarra regions, and the Regional Regulated Area (RRA), which includes outer Sydney and the north east coast of NSW. The waste levy must also be paid on any waste sourced from outside a regulated area but disposed of at a scheduled waste facility in the SMA, ERA or RRA. Eurobodalla Council remains in the Non Regulated Area (NRA) and does not pay a S.88 levy.

Table 7 shows the landfill charges and trends for each area of NSW.

Region	SMA Sydney metro area \$/t	ERA Extended area \$/t	regulated	RRA Regional area \$/t	regulated	NRA Non Area \$/t	Regulated
2005/06	22.70	15.00		0		0	
2006	30.40	23.10		0		0	
2007	38.60	31.60		0		0	
2008	46.70	40.00		0		0	
2009	58.80	52.40		10		0	
2010	70.30	65.30		20.40		0	
2011	80.30	79.10		31.31		0	
2012	93.01	93.32		42.55		0	
2013	106.09	106.09		54.12		0	
2014	119.58	119.58		66.05		0	
2015/16	133.46	133.46		78.33		0	

Table 7 Section 88 landfill levy charges and trends in NSW – CPI assumed 3% (OEH, 2011c).

Currently, the Waste and Sustainability Improvements Payments (WaSIP) program is funded from the levy and directs \$256 million over seven years to eligible councils to invest in actions and on programs to improve waste avoidance, resource recovery, the use of secondary resources and waste management outcomes (OEH, 2011c).

Currently ESC is not regulated by the s.88 Landfill Levy and as such does not receive WASIP funding. However there is potential for the State Government to amend this and to include the area from Wollongong to the Victorian border in a Southern Regulated Area. At this stage the Government has made no undertakings in this direction.

4.2.4 The Environmental Planning and Assessment (EP&A) Act 1979

The *Environmental Planning and Assessment Act (EP&A) 1979* is the principal statutory NSW State Government act that covers environmental planning and assessment. Planning and assessment for new waste infrastructure projects and developments is governed by this Act.

Planning for waste activities and facilities is relatively ad-hoc in NSW. The NSW State Government does not play an active role in forward or strategic planning for waste infrastructure, leaving it almost entirely to local government and the market (OEH, 2011c).

4.2.5 Protection of the Environment Operations (POEO) Act 1997

The *Protection of the Environment Operations (POEO) Act 1997* aims to reduce risks to human health and prevent the degradation of the environment by the use of mechanisms that promote pollution prevention, the elimination of harmful wastes, the reduction in the use of materials, and the re-use, recovery or recycling of materials. Regulatory mechanisms such as the waste and environment levy help drive waste avoidance and resource recovery by providing an economic incentive to reduce waste disposal and stimulate alternative waste technologies (OEH, 2011c).

4.2.6 Protection of the Environment Operations (Waste) Regulation 2005

The *Protection of the Environment Operations (Waste) Regulation 2005* introduced a mechanism on the 28th April 2008 for recognising genuine resource recovery in NSW. Exemptions allowing land application and thermal application of waste-derived material were introduced under section 51 of the *Regulation*.

The *Regulation* also sets out provisions covering the way waste is managed in terms of storage and transportation as well as reporting and record keeping requirements for waste facilities.

The *Regulation*:

- Provides for contributions to be paid by the occupiers of licensed waste facilities for each tonne of waste received at the facility or generated in a particular area;
- Exempts certain occupiers or types of waste from these contributions; and
- Allows deductions to be claimed in relation to certain types of waste.

The *Regulation* also makes special requirements relating to asbestos and clinical waste (OEH, 2011c).

4.3 Local

4.3.1 Local Government Act 1993

The *Local Government Act 1993* requires all councils in NSW to provide a residential waste collection service. In addition, councils also promote a more responsible, sustainable and integrated approach to waste management including the provision of education to residents, businesses and developers, other waste management services, waste and related policy and law enforcement (SCC, 2010).

Council owns and operates the Moruya Transfer Station and two putrescible waste landfills – Brou and Surf Beach. To this end, Council must also meet the legislative requirements and responsibilities under the *POEO Act 1997* in operating this facility.

Local government's responsibilities in Australia generally extend no further than municipal waste. Local government has little or no regulatory control over waste generated from C&I sources. Councils cannot compel businesses to recycle or direct them to take their waste to a particular location or dispose of it in a particular way. Businesses are not required to report any waste information to governments at any level (SCC, 2010).

However, local governments do set the price of landfill. In Eurobodalla's case, even though Council operates its own landfills, not all waste generated from the commercial sector in Eurobodalla is disposed of at these and most recycling collected from commercial premises does not pass through Council's waste system at any stage.

Eurobodalla will need to investigate how they can improve commercial services as well as provide a clear C&I price signal at the landfill to have the effect of improving recycling rates and diverting material from landfill. This applies equally to the C&D sector which is particularly sensitive to landfill price signals.



5. Waste Trends



5.1 National

There have been major changes to the way society manages waste in the last two decades and the recycling and waste sector in Australia is now valued at between \$7 and \$11.5 billion.

In 2006-07, Australia generated 43,777,000 tonnes of waste in the municipal solid waste (MSW), commercial and industrial waste (C&I) and construction and demolition (C&D) waste streams. Of that waste, 22,707,000 tonnes (52%) were recycled and 21,069,000 (48%) were sent to landfill (

Figure 6).

Nationally waste generation has grown at an average 4.3% over the past 20 years driven by population growth and increasing per capita consumption. The trend has increased over the last 8 years, to 7% per annum. At this rate of growth waste to landfill will double over the next 10 years (EPHC, 2010).

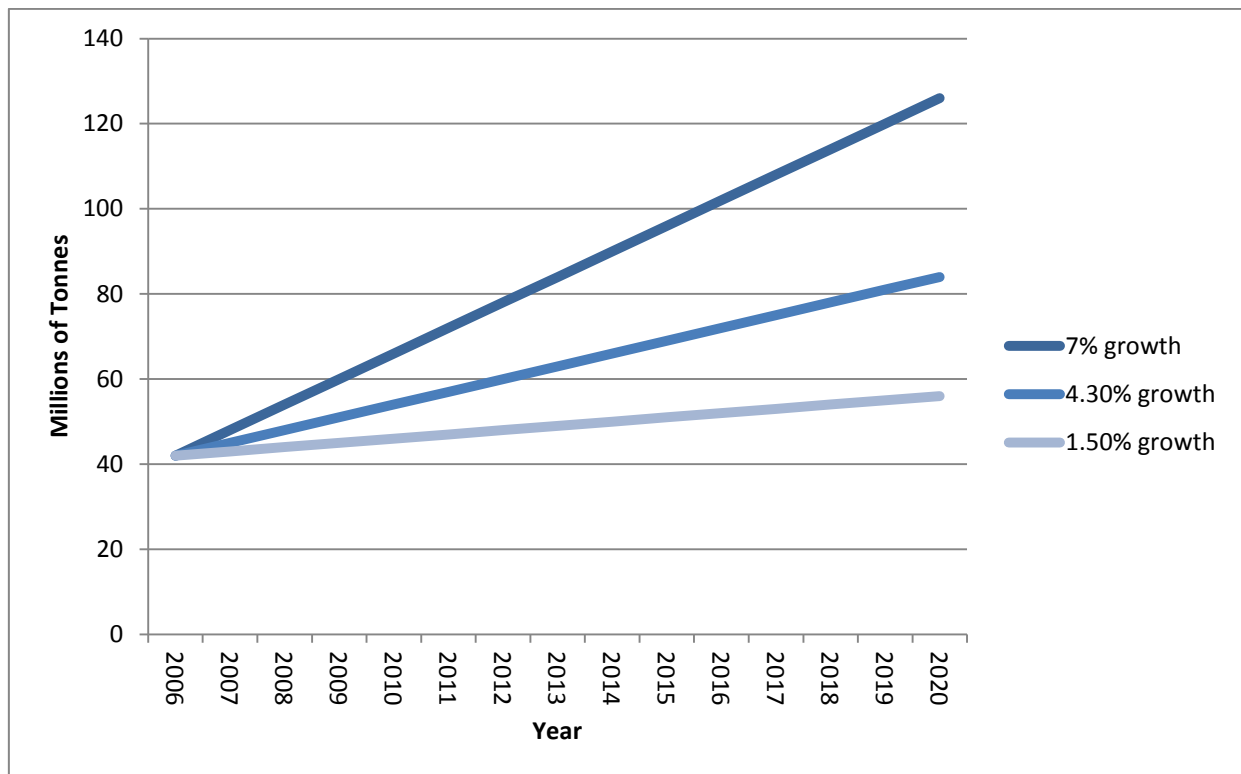


Figure 6 Projected waste growth until 2020 (EPHC, 2010).

Waste generation is expected to rise to 80 million tonnes, by 2020, from the current 40 million tonnes.

Figure 7 shows waste generation in 2010 based on National Waste Policy data and Figure 8 shows that this figure will double by 2020 if waste continues to grow at 7% per year (EPHC, 2010).

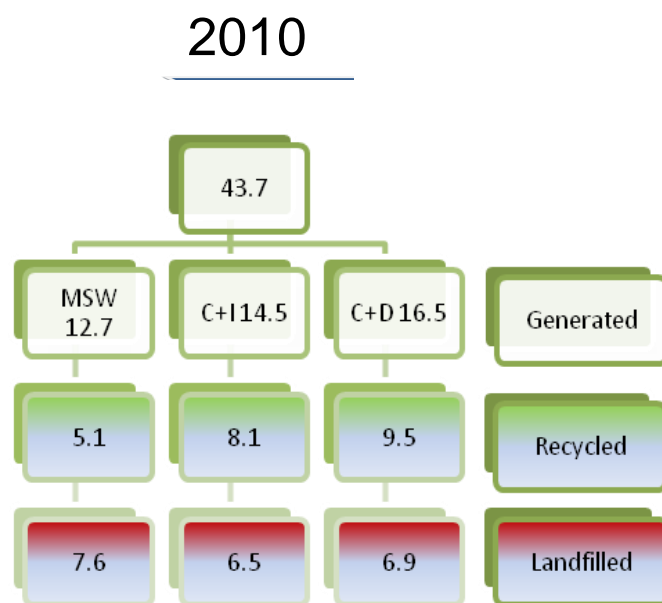


Figure 7 Waste generation in 2010 based on National Waste Policy forecasts (EPHC, 2010).

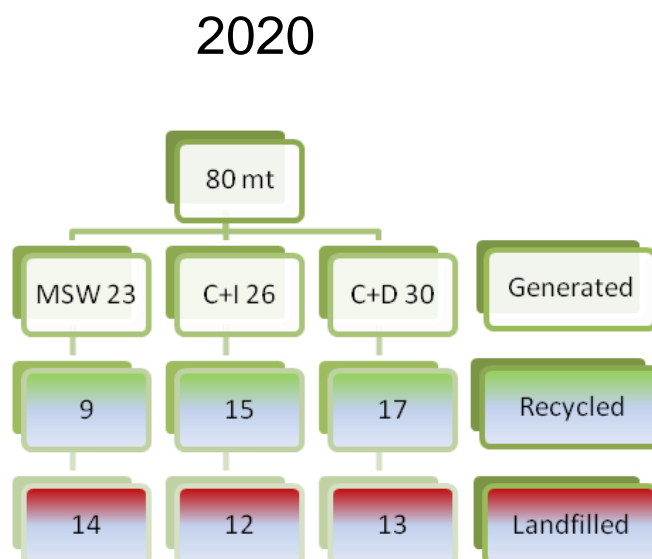


Figure 8 Waste generation in 2020 based on National Waste Policy forecasts (EPHC, 2010)

State/Territory	Total Generated	Recycled	Disposed	Diversion Rate
NSW	15 360 000	7 995 000	7 365 000	52%
Vic	10 285 000	6 360 000	3 925 000	62%
Qld	8 081 000	3 779 000	4 302 000	47%
WA	5 247 000	1 708 000	3 539 000	33%
SA	3 318 000	2 173 000	1 144 000	66%
Tas	521 000	75 000	446 000	Unknown
ACT	784 000	587 000	197 000	75%
NT	181 000	30 000	151 000	Unknown
Total	43 777 000	22 707 000	21 069 000	52%

Table 8 State/territory waste generation and diversion rates, 2006–07 (EPHC, 2010).

These expanding volumes of waste will increase the demand for new recycling and landfill infrastructure, and put pressure on states to adopt more innovative approaches to waste management. Table 8 shows that the diversion rates for individual states and territories vary considerably, from 33% in WA to 75% in the ACT (EPHC, 2010).

Of the 52% of materials recycled in Australia in 2006/07, 42% was from the C&D waste stream, 36% was from the C&I waste stream, and 22% was from the MSW stream. Recycling rates for each stream within individual jurisdictions can also differ markedly from each other and the national average, as shown in Figure 9.

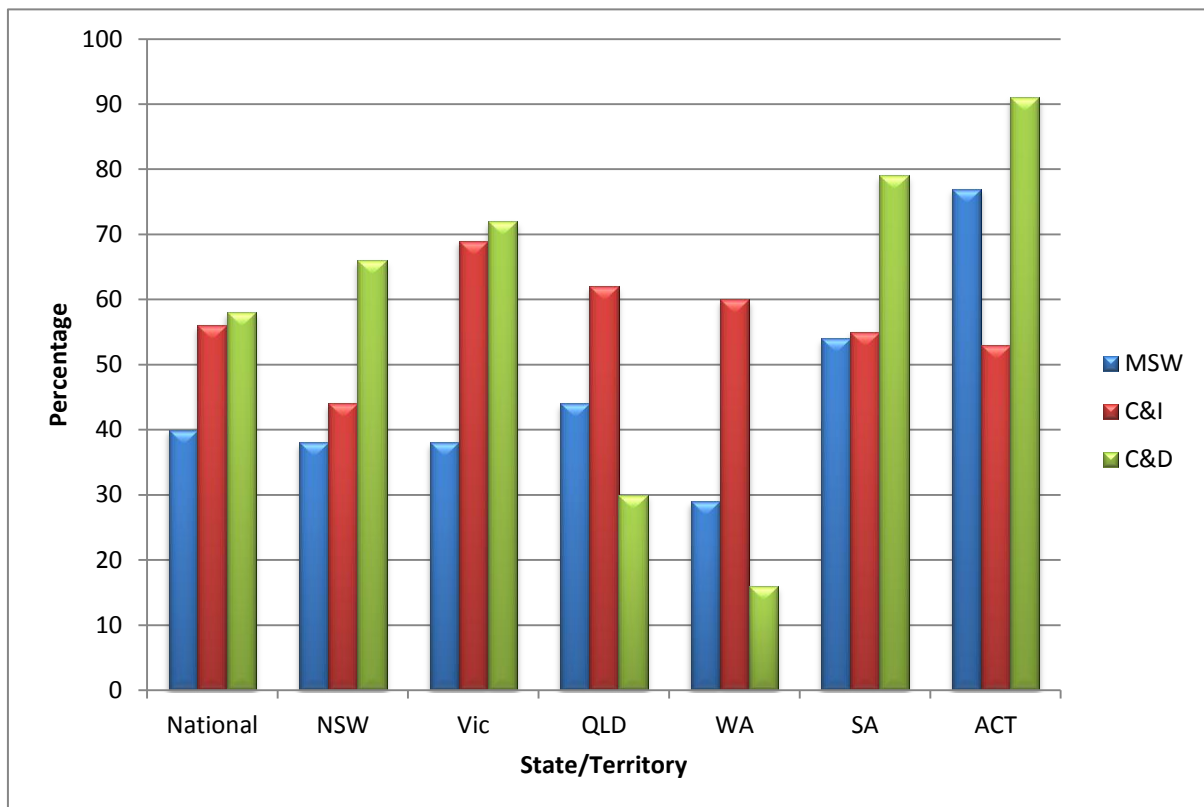


Figure 9 Percentage of waste stream recycled in 2006-07 (EPHC, 2010).

An examination of the data in Table 9 and Table 10 reveal that C&D activities tend to contribute the greatest overall amount of waste at a national level (38% of national total), but not amongst jurisdictions. With Queensland, the ACT, Tasmania and the NT each generating more MSW than C&D waste. The C&D stream also makes the greatest contribution (42%) to the total amount of waste recycled, as is the case for NSW, Victoria and SA. However Queensland and WA obtain their highest recycling rates from the C&I sector and ACT from the MSW stream.

By contrast, in 2006-07, Australia disposed of more waste to landfill from the MSW stream than C&I and C&D, as was the case for Victoria, Queensland and Tasmania. While NSW, SA, the ACT and NT had the highest disposal rates from the C&I sector. For WA the greatest amount of disposed material was from the C&D stream.

This variability in data between states is a result of many factors including the presence or absence of appropriate infrastructure, the viability of markets, transport distances, education, social and cultural factors, price drivers and policy settings (EPHC, 2010).

Recycled (Tonnes)				
State/Territory	MSW	C&I	C&D	Total
NSW	1,483,000	2,297,000	4,216,000	7,995,000
Vic	1,056,000	2,357,000	2,946,000	6,360,000
Qld	1,365,000	1,797,000	617,000	3,779,000

WA	408,000	891,000	409,000	1,708,000
SA	408,000	610,000	1,155,000	2,173,000
ACT	278,000	102,000	206,000	587,000
Tas	53,000	22,000	Unknown	75,000
NT	30,000	Unknown	Unknown	30,000
Australia	5,082,000	8,076,000	9,549,000	22,707,000

Table 9 Waste recycled by stream - state and territory 2006-07 (EPHC, 2010).

Landfilled (Tonnes)				
State/Territory	MSW	C&I	C&D	Total
NSW	2,408,000	2,921,000	2,036,000	7,365,000
Vic	1,727,000	1,060,000	1,138,000	3,925,000
Qld	1,735,000	1,101,000	1,466,000	4,302,000
WA	1,015,000	585,000	1,939,000	3,539,000
SA	344,000	496,000	304,000	1,144,000
ACT	85,000	91,000	21,000	197,000
Tas	287,000	145,000	14,000	446,000
NT	44,000	57,000	51,000	151,000
Australia	7,645,000	6,456,000	6,968,000	21,069,000

Table 10 Waste landfilled by stream - state and territory 2006-07 (EPHC, 2010).

Table 11 shows the target diversion rates for each state. Waste targets range from no target to 100% diversion across the States. However the modal target range is 60-75% for each waste stream.

State	Target Year	Target Diversion Rate
WA	2016	70% MSW Perth
		50% C&D
		The recovery rate for C&I waste will continually increase to 2020.
ACT	2010	100% MSW
		100% C&D
		100% C&I
NSW	2014	66% MSW
		76% C&D
		63% C&I
VIC	2013	65% MSW
		80% C&D
		80% C&I
SA	2015	75% MSW
		90% C&D
		75% C&I

QLD	2020	65% MSW
		75% C&D
		60% C&I
NT	No Target	
TAS	In Development	

Table 11 State targets for C&I, C&D and MSW (EPHC, 2010).

5.2 State NSW

NSW generates the most amount of waste compared with other states in Australia. In 2008/2009 the Department of Environment, Climate Change and Water (DECCW), now the Office of Environment and Heritage (OEH) estimated that approximately 16.3 million tonnes of waste were generated in NSW (or 2,329 kilograms per capita per year). Of that, 9.5 million tonnes were recycled (58%) and 6.7 million tonnes (42%) went to landfill (DECCW, 2010).

The *WARR Strategy 2007* has been effective in signaling an increase in resource recovery in NSW. The amount of materials recycled has increased by 80% since 2002-03, which represents an additional 4.2 million tonnes of materials collected in 2008-09 for recycling (DECCW, 2010b).

However, the NSW Government has set ambitious targets for resource recovery to be achieved by 2014 (EPHC, 2010). The strategy nominates 66% recovery for the municipal sector, 63% recovery for the C&I sector and 76% for the C&D sector.

Being responsible for the MSW sector, and having the capacity to influence the C&I and C&D sectors through landfilling price structures, Councils across NSW are looking for ways to increase recovery and reach these targets.

Waste stream	Target by 2014	Actual Recovery 2002-03	Actual Recovery 2004-05	Actual Recovery 2006-07	Actual Recovery (provisional) 2008-09
MSW	66%	30%	33%	43%	44%
C&I	63%	34%	38%	44%	52%
C&D	76%	64%	62%	67%	73%

Table 12 Targets and resource recovery rates - waste stream in NSW (DECCW, 2010b).

Table 12 demonstrates that resource recovery in NSW is showing a steady increase across all three waste streams, but there still needs to be significant annual increases to reach these targets by 2014. This is further depicted in Figure 10.

Construction and demolition (C&D) waste is the greatest contributor to the overall amount of waste generated in NSW. However, in 2006/2007 over 4,216,000 tonnes were recovered for recycling, which equates to a 68% recovery rate. Conversely, only 44% (2,297,000 tonnes) of C&I Waste and 43% (1,483,000 tonnes) of MSW were recycled during the same period (EPHC, 2010).

Around NSW, households are offered different kerbside recycling services, covering particular configurations of materials, depending on which local government area they are in. Data on the recycling rate of the MSW sector is collected through the Local Government Waste and Resource Recovery (WARR) Report.

The 2009-2010 Local Government WARR report demonstrated that a total of 1,641,018 tonnes of residual waste were collected at the kerbside in NSW in 2009-2010 (Figure 11). This is equivalent to an average of 12.13 kg of residual waste per household and equates to a 352 tonne increase in residual waste between 2005-2006 and 2009-2010. A further 109,028 tonnes of residual waste were collected during Council cleanups and 295,303 tonnes collected at Council drop off facilities.

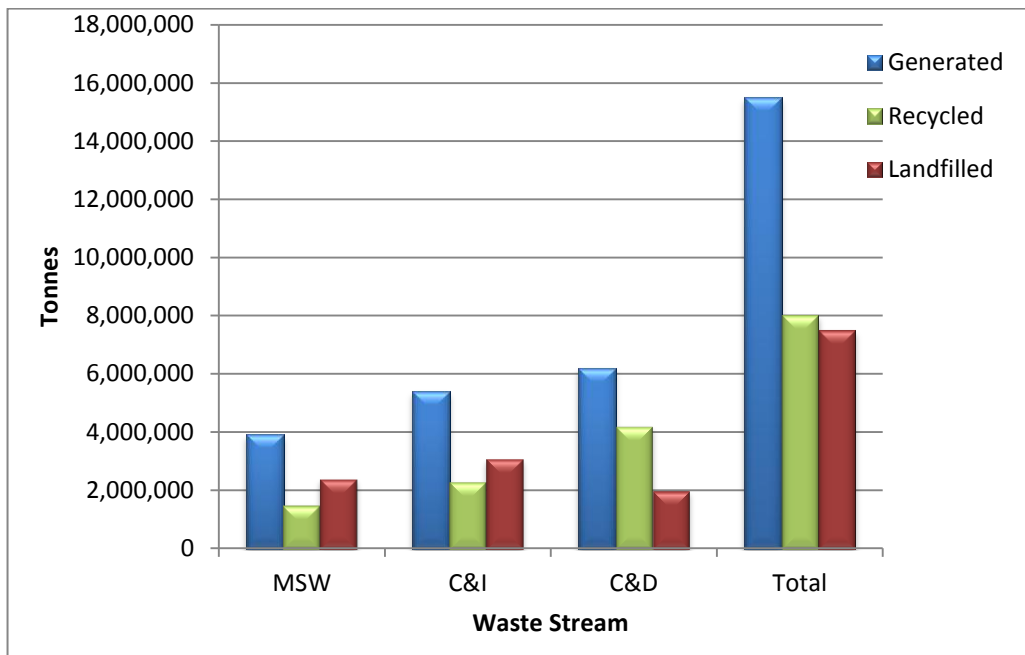


Figure 10 Waste generated, recycled and landfilled in NSW by waste stream in 2006-07 (EPHC, 2010).

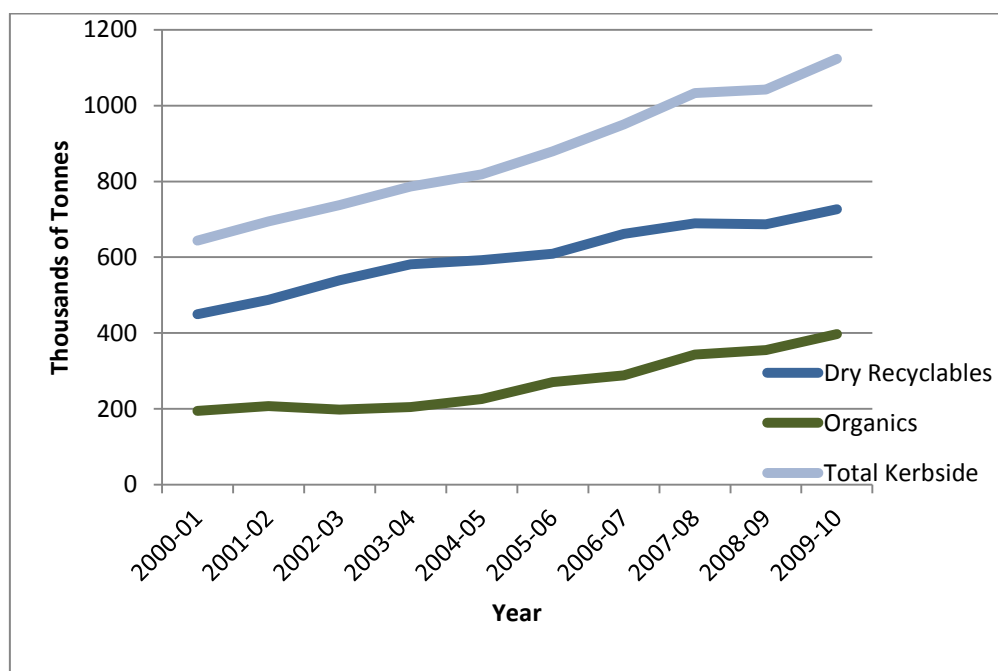


Figure 11 Annual NSW reported tonnages of recyclables collected at kerbside (OEH, 2011b).

Dry recyclables and garden organics collected from kerbside in NSW increased from 644,021 tonnes in 2000-2001 to 1.12 million tonnes in 2009-2010. This equates to a 1.6% increase from 2000-2001 to 2009-2010 in the collection of dry recyclables and a 104.2% increase in the collection of kerbside organics (OEH, 2011b).

Increases in recovery rates in NSW are being driven by a range of policies, regulations and programs, with the most influential of these being the Waste and Environment Levy. As the levy increases, it encourages waste generators to review their practices and makes recycling more economically viable in comparison to landfill (EPHC, 2010).

The levy also drives investment in recycling infrastructure and this is shown by the high number of Alternative Waste Technology (AWT) facilities in NSW compared with other states (EPHC, 2010). Currently six facilities are operating with 500,000 tonnes of processing capacity. In 2011 some 470,000 tonnes of residual waste was processed through these facilities.

The levy is only effective in certain parts of the state, which includes the Sydney Metropolitan Area (SMA), the Extended Regulated Area (ERA) and the Regional Regulated Area (RRA). The rest of the state is not subject to the landfill levy and is considered to be the Non-Regulated Area (NRA). Thus of the 148,415 tonnes of materials recovered through AWT treatment 80% was in the SMA and 10% was in the ERA (OEH, 2011b) and 10% in the RRA (Coffs Harbour and Port Macquarie).

In short, while recycling has continued to grow and improve, it has not done so at a rate fast enough to reduce waste to landfill. Reducing pressure on the landfill requires substantial improvements in recycling.



5.3 Local Landfills and Transfer Station Data

The total amount of solid waste from all waste streams collected at the Brou and Surf Beach landfills and Moruya Transfer Station in ESC in 2009-2010 was 40,245.5 tonnes. Recycling made up 18,507 tonnes of this, which equates to a 46% recovery rate overall.

Over the period from 2000/2001 to 2009/2010 the recovery rate has increased by 27%. The total quantity of waste generated increased by an average 4.1% annually in line with the 3% increase in the resident population.

Overall waste generation has increased by 40% between 2000/01 and 2009/10.

Year	Total Material landfilled (t)	Total material recycled (t)	Total Waste (t)	% Landfilled	% Recovery Rate	% Annual increase in total waste	% Annual increase total to landfill	% "Total waste" increase from 2000/01
2000/01	23,267	5,483	28,750	81%	19.1%	N/A	N/A	N/A
2001/02	24,355	4,569	28,924	84%	15.8%	0.6%	4.7%	0.6%
2002/03	23,824	6,111	29,935	80%	20.4%	3.5%	-2.2%	4.1%
2003/04	22,560	9,621	32,181	70%	29.9%	7.5%	-5.3%	11.9%
2004/05	25,987	12,781	38,768	67%	33.0%	20.5%	15.2%	34.8%
2005/06	22,384	12,346	34,730	64%	35.5%	-10.4%	-13.9%	20.8%
2006/07	20,561	14,491	35,052	59%	41.3%	0.9%	-8.1%	21.9%
2007/08	20,438	17,188	37,625	54%	45.7%	7.3%	-0.6%	30.9%
2008/09	20,943	18,207	39,150	53%	46.5%	4.1%	2.5%	36.2%
2009/10	21,738	18,507	40,245	54%	46.0%	2.8%	3.8%	40.0%
Average	22,606	11,930	34,536	66.7%	33.3%	4.1%	-0.44%	N/A

Table 13 Total solid waste, landfill and recycling collected in ESC - July 2000 to June 2010 (ESC, 2011a).

Note: Figures are inclusive of all MSW, C&I, and C&D solid waste as reported at weighbridges at the Brou and Surf Beach landfills and Moruya Transfer Station

Table 13 and Figure 12 indicate that Council has had significant improvements in recycling rates. However this has not been matched by significant reductions in waste to landfill. In 2005/2006 there was a drop in waste to landfill, and in 2008/2009 landfilling rates once again increased.

Growth in recovery rates over recent years can be attributed to Council initiatives such as the introduction of kerbside recycling, strong pricing structures modifying behavior at the waste management facilities by encouraging source separation of recoverable materials, and community engagement with recycling.

Additionally Council only provides residents with an 80 litre kerbside bin, which aids in reduced waste produced from households and yields greater recycling rates.

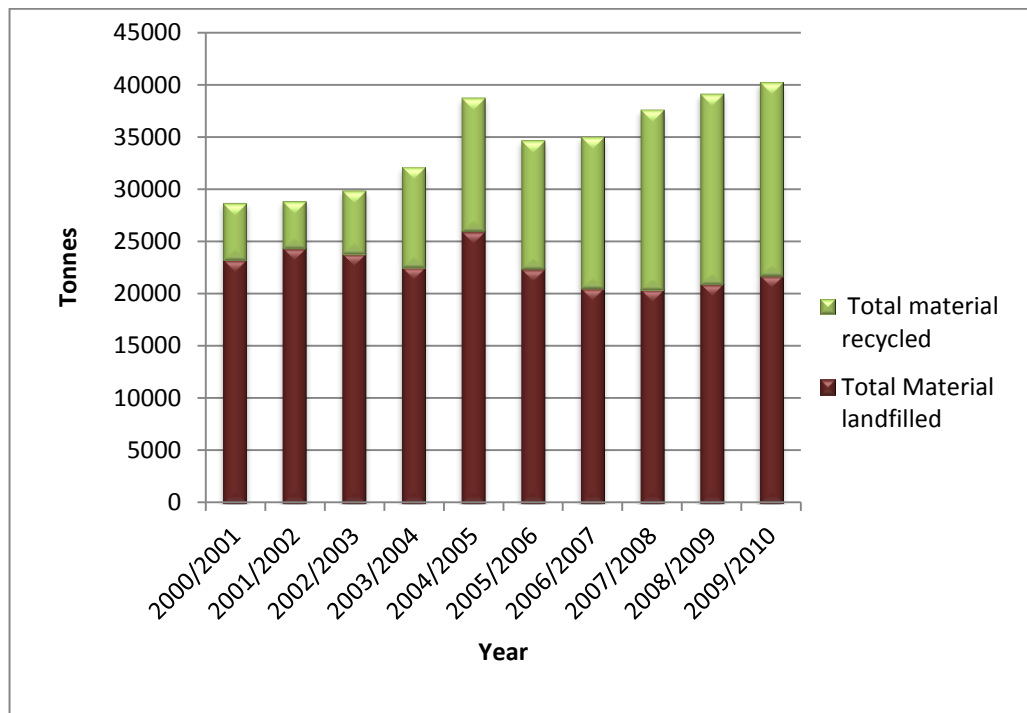


Figure 12 Total recycled and landfilled wastes (MSW, C&I and C&D) in ESC - 2000 to 2010 (ESC, 2011a).

Note: Figures are inclusive of all MSW, C&I, and C&D solid waste as reported at weighbridges at the Brou and Surf Beach landfills and Moruya Transfer Station

Figure 13 shows that of the total solid waste collected at the landfills and transfer station, municipal solid waste currently makes up the greatest amount (53.5%). This is followed by C&I and then the C&D sector which contributed the least to the overall waste generated in Eurobodalla Shire in the 2009/2010 period.

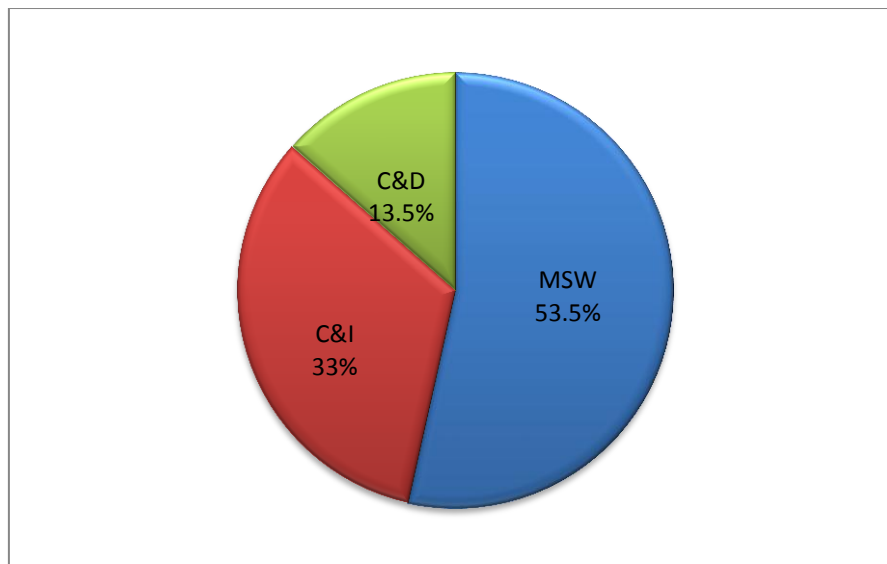


Figure 13 Percentage of the waste stream by material type of the total waste collected at the landfills and transfer station in ESC in 2009/2010 (ESC, 2011a).

Comparing the Eurobodalla 2009/2010 recovery rates for each waste stream to the most recent data on recovery rates for NSW by waste stream (Figure 14) demonstrates that despite the recent increases in recovery rates, Eurobodalla is still falling short of NSW WARR Recovery Targets across all three waste streams, but most significantly for the C&I waste stream.

MSW is below the target but at 51% is still considerably closer than that of many other Councils in NSW.

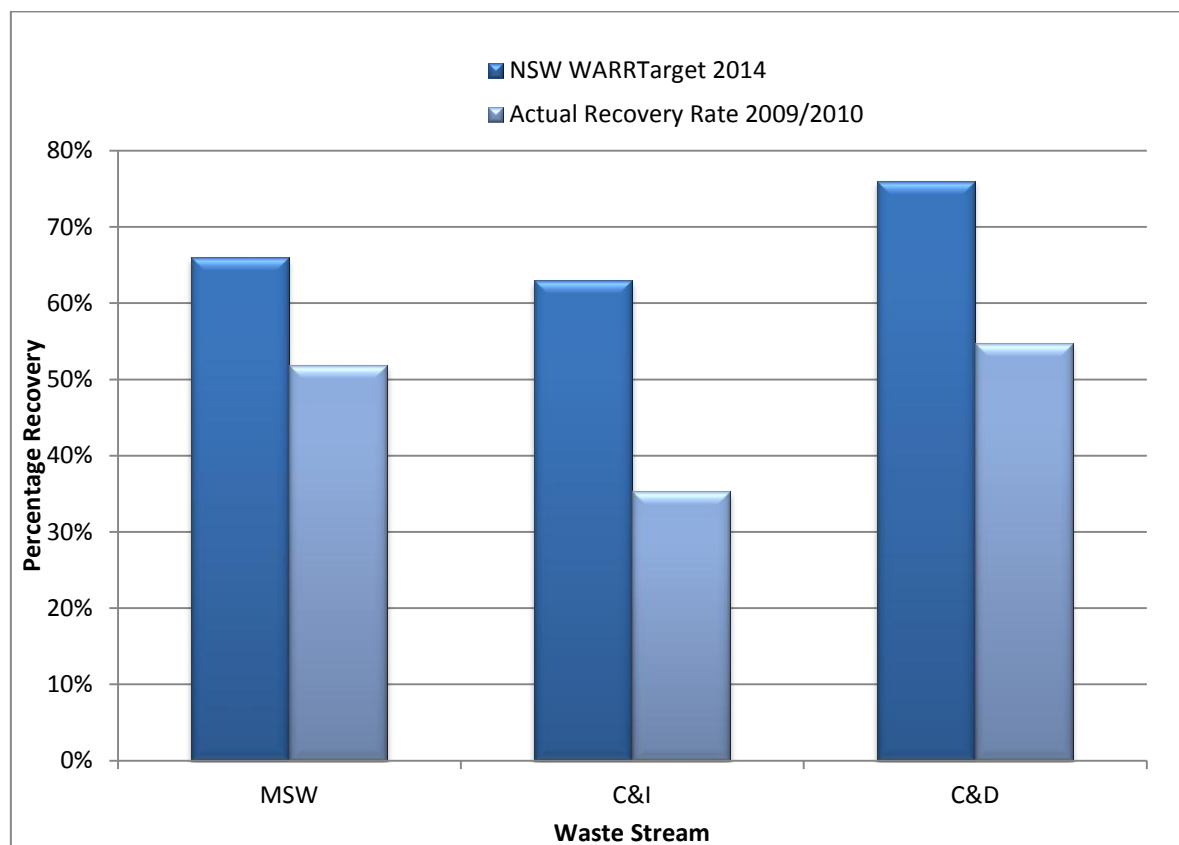


Figure 14 Waste recovery rates of the total waste collected at the landfills and transfer station in ESC in 2009-2010 compared to NSW WARR Targets for 2014 (ESC, 2011a).

6. Municipal Waste



6.1 Overview

6.1.1 Total domestic waste

It is Eurobodalla Shire Council's responsibility to provide waste services to its 37,000 plus residents. Currently, each household is entitled to a full waste service which includes:

- 80 litre residual bin collected weekly;
- 240 litre recycling bin collected fortnightly;
- 240 litre green waste bin plus bundled green waste up to a total of 2m³, collected from kerbside monthly;
- Annual kerbside hard waste collection;
- Drop off facilities at the Brou or Surf beach Landfills and the Moruya transfer station; and
- Unmanned recycling drop off facilities provided at Narooma and Batemans Bay.

Nevertheless, as more people move to the Eurobodalla Shire and waste generation continues a steady pattern of growth, the current collection system is becoming less effective in diverting waste from landfill.

From 2006-2007 to 2007-2008 there was a 49.44% increase in the total amount of domestic waste produced by residents in the Eurobodalla Shire. Since the year 2007-2008 this has stabilized to an average growth rate of 7.6% (Figure 15).

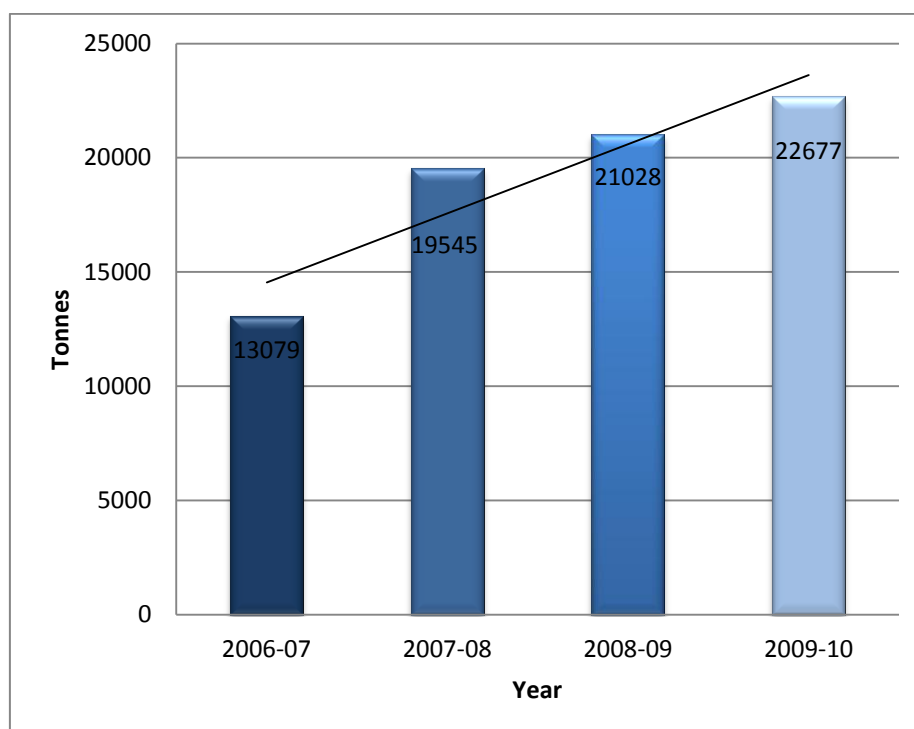


Figure 15 Total domestic waste (t) 2006/07 - 2009/10 (DECCW, 2011b, 2011c, OEH 2011a and 2011b).

Note: Figures are inclusive of all domestic solid waste collected at the kerbside from households, from annual hard waste collections, self hauled waste as reported at weighbridges at the Brou and Surf Beach landfills and Moruya Transfer Station, from the 2 unmanned recycling drop off points, Council works/parks/litter/street sweeper waste and biosolids.

Of the 22,677 tonnes of domestic waste generated in ESC in 2009-10. 13,048 tonnes (or 57.5%) was collected from the household kerbside service (the household green waste, recycling and residual bins) and the two unmanned recycling points, 810 tonnes (or 3.6%) was from the hard waste collection service, and the other 8,819 tonnes (or 38.9%) was from other domestic waste services, such as, domestic waste self-hauled to the Brou and Surf Beach landfills and transfer station, Council works/parks/litter/street sweeper waste and biosolids.

Figure 16 shows, of the total domestic waste s, how much was landfilled and how much was recovered for recycling during the period between 2006-2007 and 2009-2010.

In line with ESC's targets to increase resource recovery in the LGA, the quantity of total domestic waste recycled per year increased by 48.9% (3,867 tonnes) during this period. In the 2009/2010 period recycling has reached 51.9%, which although a significant improvement, is still well below the NSW State target diversion rate of 66% for MSW. Furthermore improvements are required over the next 3 years if ESC is to achieve 66% by 2014.

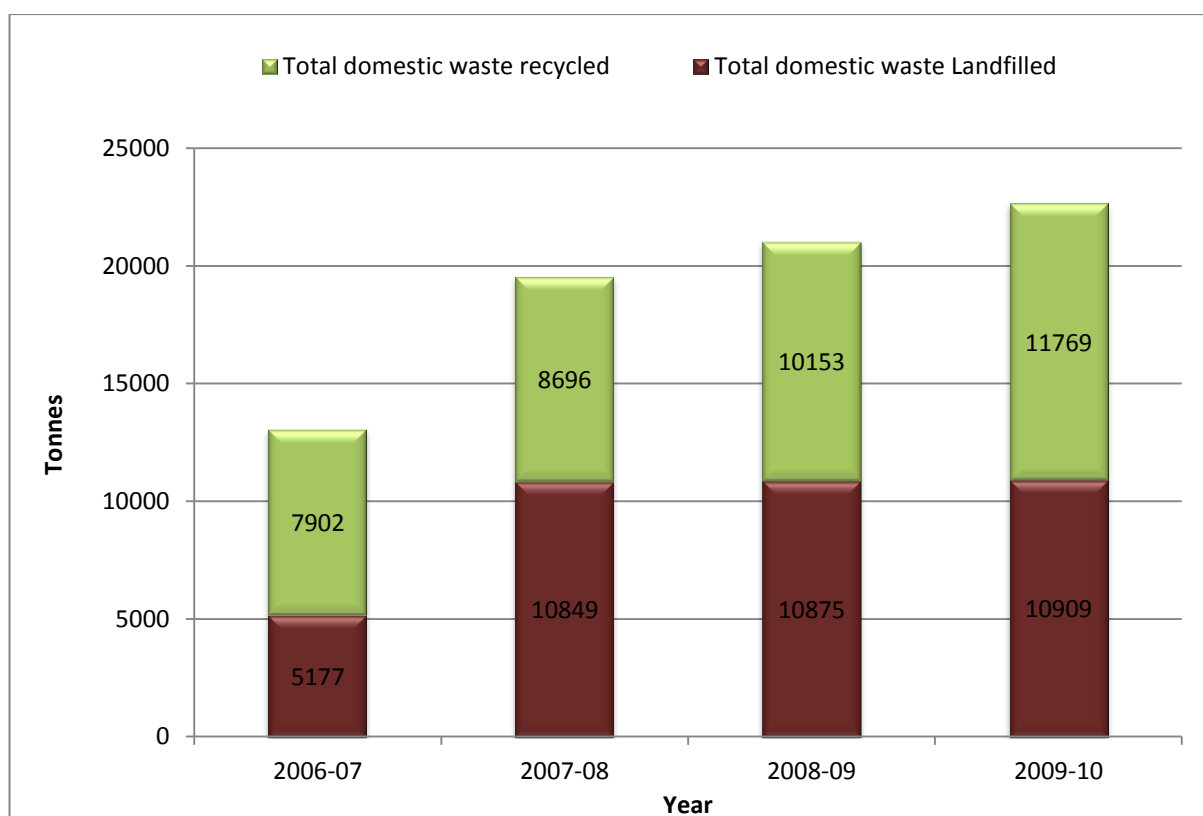


Figure 16 Total domestic waste landfill & recovery 2006/07 - 2008/09 (DECCW, 2011b,c OEH 2011a,b).

Note: Figures are inclusive of all domestic solid waste collected at the kerbside from households, from annual hard waste collections, self hauled waste as reported at weighbridges at the Brou and Surf Beach landfills and Moruya Transfer Station, from the 2 unmanned recycling drop off points, Council works/parks/litter/street sweeper waste and biosolids.

6.1.2 Total domestic waste collected from households at the kerbside

Figure 17 demonstrates that the total quantity of landfill materials collected from the household kerbside waste collection service per year is still growing but at a decreased rate. Concurrently, recovery rates have increased by 2,620 tonnes or 49%.

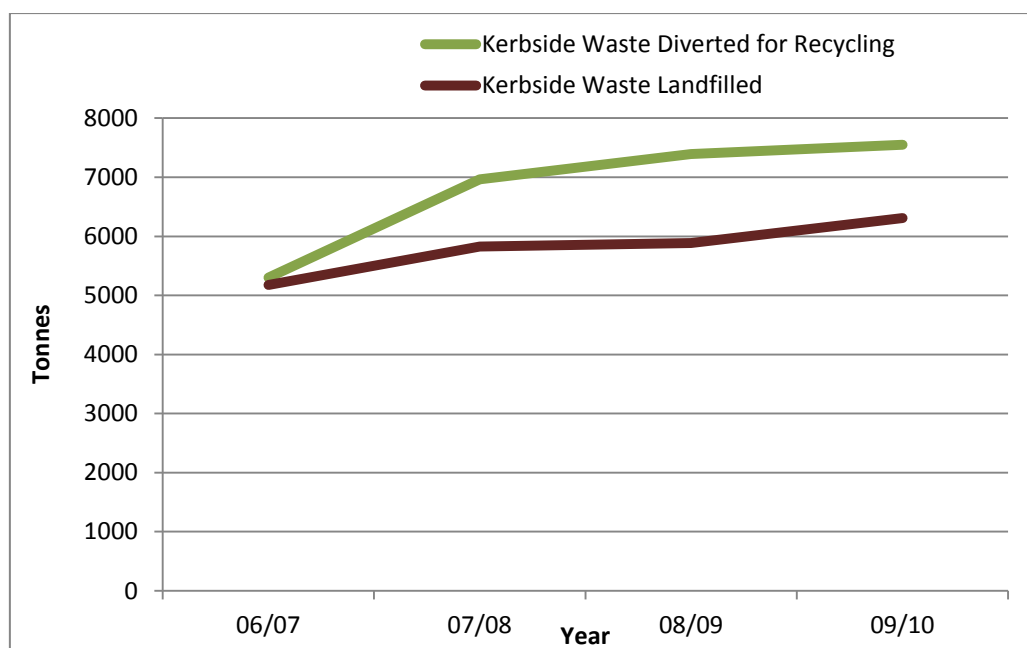


Figure 17 Tonnes of landfilled waste and recycled waste collected from households via the kerbside waste collection service in ESC and the unmanned recycling points 2006/07 to 2009/10 (ESC, 2011a).

Note: Figures are only waste collected from the kerbside waste service and annual hard waste collection. It does not include waste delivered to the landfills or transfer station, Council operations or biosolids.

Table 14 shows a more detailed breakdown of the fate of waste from the kerbside collection service. Recycling to processing and materials collected from the annual hard waste collection service have been steadily increasing in growth from 2006-2007 to 2009-2010.

Domestic Kerbside Collection	Year			
	06/07	07/08	08/09	09/10
Recycling to processing	3,113	4,428	4,935	4,937
Garden Organics	2,039	2,370	2,270	2,275
Residual to Landfill	4,918	5,490	5,534	5,836
Hard waste Collection to landfill	259	336	353	471
Hard waste Collection recycled (steel)	149	168	185	339
Total	10478	12792	13277	13858

Table 14 Total waste collected by type from the kerbside in the ESC 2006/07 to 2009/10 (ESC, 2011a).

Note: Figures are only waste collected from the kerbside waste service, unmanned recycling points and annual hard waste collection. It does not include waste delivered to the landfills or transfer station, Council operations or biosolids.

The collection of garden organics was on the rise but decreased during the 2008/09 to 2009/2010 period. However, this could have been due to the severe drought faced by ESC during this timeframe.

The current ESC kerbside collected waste recovery rate is significantly higher than the current NSW average kerbside recovery rate and one of the highest among Council's in the NSW NRA (Figure 18) (OEH, 2011b).

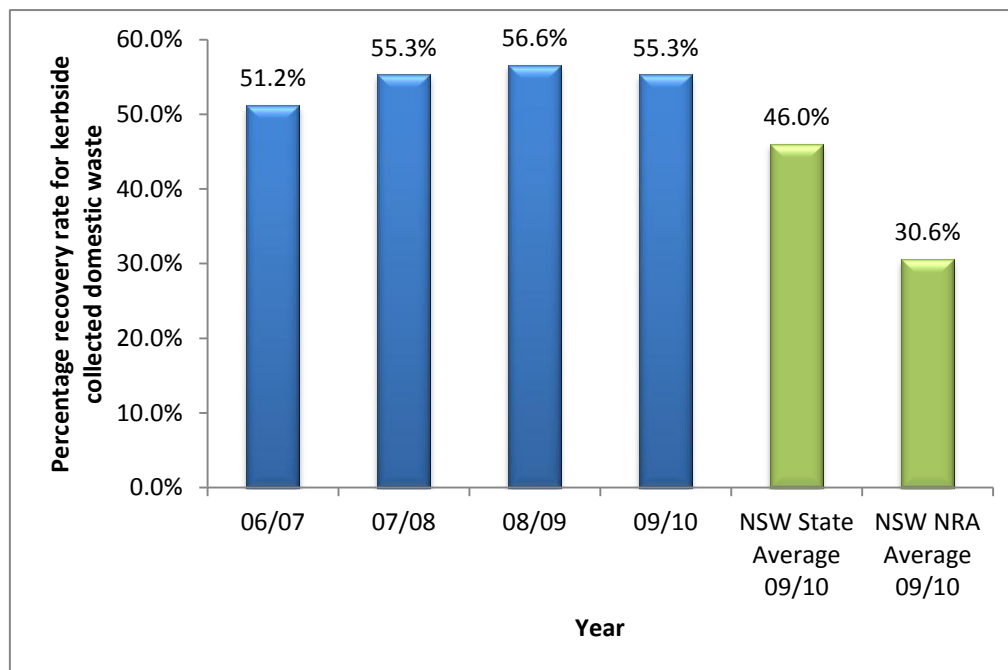


Figure 18 Kerbside collected waste recovery rates 2006/07 to 2009/10 vs NSW average 2009/10 (ESC, 2011a and OEH, 2011b).

Note: Figures are only waste collected from the kerbside waste service. They do not include waste from the unmanned recycling points, hard waste collections, waste delivered to the landfills or transfer station, Council operations or biosolids.

This high rate of recycling from residents is most likely due to the fact that Council provide their residents with an 80 litre garbage bin, whereas most other Councils provide a 120 litre garbage bin. Thus there is less room for rubbish, and residents have to take greater care to recycle.

Figure 18 shows that ESC's kerbside recycling rate is well above the NSW state average. This is further demonstrated in Figure 19 and Figure 20.

This is a progressive approach to waste management, particularly the provision of a smaller rubbish bin and partnerships with residents to support its operation and function. This augurs well for further innovation.

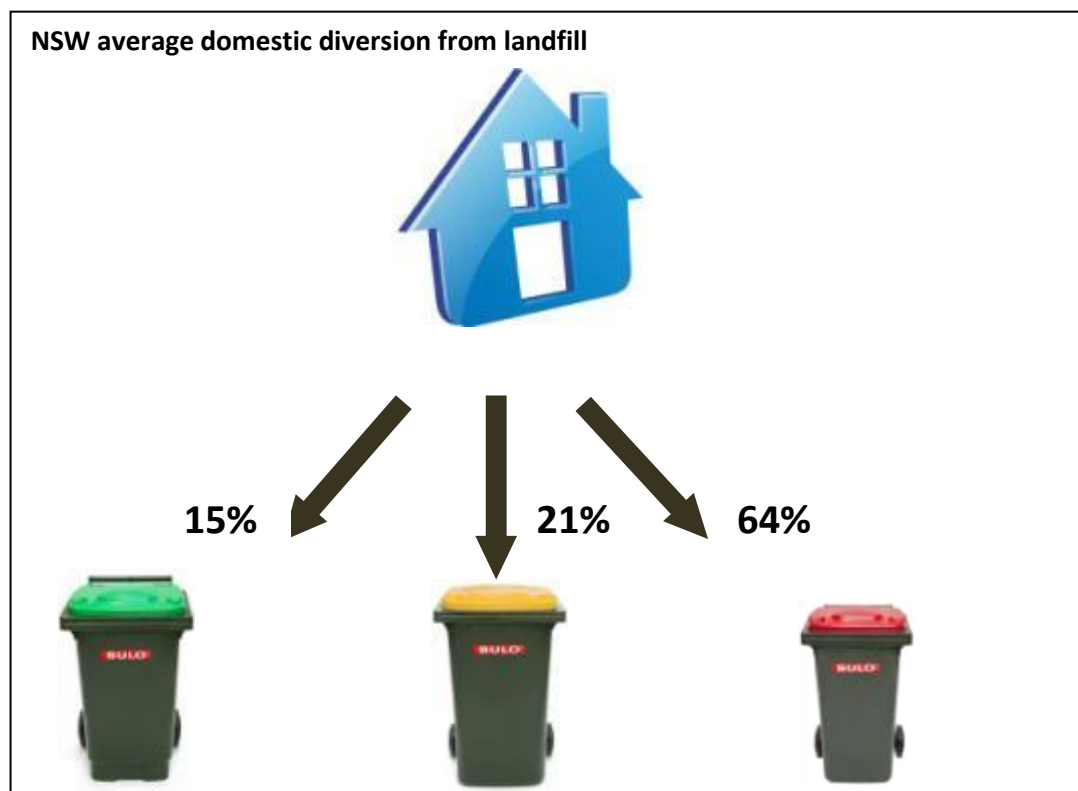


Figure 19 Average percent of green, recycling and rubbish generated by households in NSW (OEH, 2011).

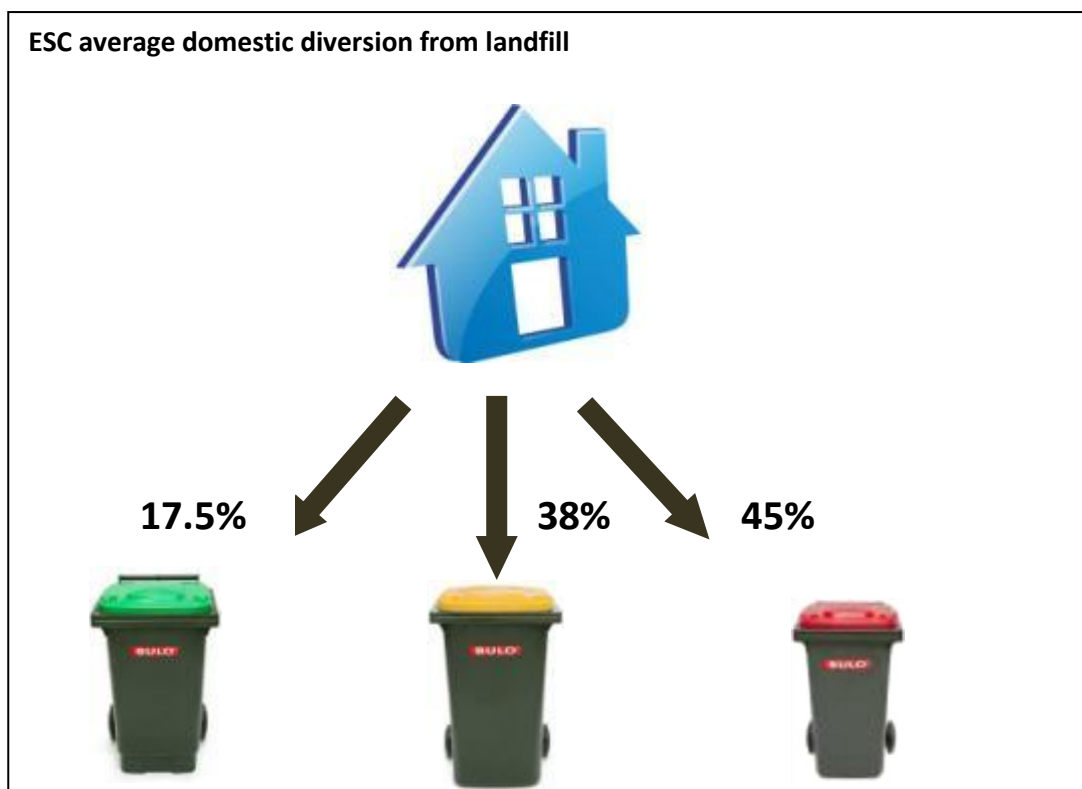


Figure 20 Average percent of green, recycling and rubbish generated by households in ESC (ESC, 2011a).

6.1.3 Loss of Recyclables

Despite these increases in the recovery of recyclables from the kerbside waste stream, there is still some room for improvement. Figure 21 shows the breakup of the waste by weight in the kerbside rubbish bin. This information was gathered from a recent domestic residual audit undertaken by the Eurobodalla Shire Council in November 2010.

The residual kerbside bin is still made up of 16% recyclable materials that could potentially be diverted into the recycling bin. The recycling system has been in place in ESC for five years and in that time many new landholders have moved into the region. An education program could be rolled out by Council to try and stop the leakage of recyclable materials into the rubbish stream.

The audit further demonstrated that many of the containers placed in the rubbish still had a significant portion of food waste contained within them. There could be potential for increased diversion if the education program was designed to directly target this issue (ESC, 2010).

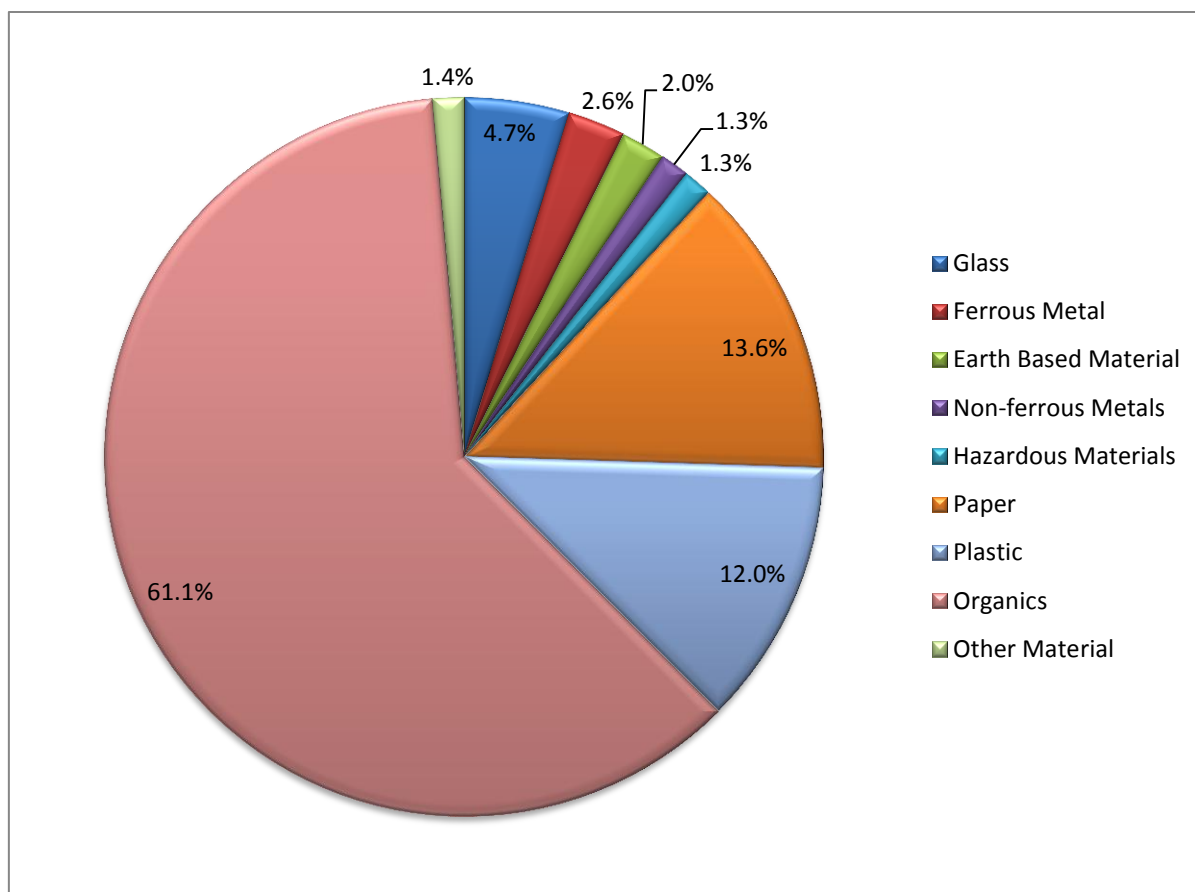


Figure 21 Make up of the kerbside residual waste stream by weight (ESC, 2010a).

Note: Figures are only from waste collected in the domestic kerbside residual (rubbish) bin.

6.1.4 Organics

Organic material makes up more than half (61.1%) of the weight of the residual waste bin (Figure 21). Most of this is potentially compostable organics that can be diverted. Food waste, garden, wood and other putrescibles are readily compostable and constitute over 56% of the total weight of the residual bin.

Therefore, to further increase recovery rates and progress towards the target diversion rate of 66% for MSW by 2014, food waste and other compostables need to be removed from this waste stream and recycled (ESC, 2010a).

This is also important because organic material in landfill biodegrades anaerobically and as a result produces methane and carbon dioxide. Methane is a highly potent greenhouse gas (21 times as potent as Carbon Dioxide). If food waste was removed from landfill it would significantly reduce ESC's overall greenhouse gas emissions and decrease landfill maintenance costs.

The most appropriate way to reduce this waste stream would be by converting the current kersbide green waste bin into a green and food waste bin. A composting facility would also need to be constructed to take the collected waste.

In 2009, Council commissioned Impact Environmental Consulting (IEC) to examine numerous waste collection and processing options for organic waste collected from households. IEC developed a Preliminary Business Case in accordance with the *NSW Treasury Guidelines for Capital Business Cases 2000* and *NSW Premier's Department's Business Case Guidelines 2008*.

The results of the final business case indicated a clear value to Council to improve the diversion of organic materials. The report found that the threat of extra costs or levies and the lack of available landfill space all compelled Council to consider alternatives to current practices.

In order to advance the discussion in ESC on how to best and most cost effectively divert materials from landfill MRA modelled a range of bin options and frequency of collections.

Processing options are discussed later in this report. The model options are summarised below.

6.2 Options

To reach state targets of 66% recovery from the municipal sector by 2014, significant changes need to be made to how municipal waste is managed, including the waste collected at the kerbside.

Based on the results of the Business Case prepared by IEC in 2009, and Council's stated preferred options for future collection services, MRA modeled four options for this strategy.

In all of these options it is assumed that the annual hard waste collection would still occur and a 240 litre recycling bin would be part of the standard service with the option to purchase another if needed.

Additionally, Council intends to replace all of their green waste recycling bins with brand new 240 litre green bins. The green waste service is provided as part of the entire waste service package and covers the whole of ESC.

It is also assumed that each model would be complemented by an education program aimed at increasing recycling and organics diversion rates.

Option 1: "Current 3 bin system: green only + bundles"

- 80 litre residual bin (residual and food waste) collected weekly
- 240 litre recycling bin (recyclable waste only) collected fortnightly
- 2 cubic metres of bundled green waste (green waste only) collected monthly (including a 240 litre or 140 litre green bin)

Option 2: "Future 3 bin system: green + food, no bundles, weekly rubbish"

- 80 litre residual bin (residual waste only) collected weekly
- 240 litre recycling bin (recyclable waste only) collected fortnightly
- 240 litre green bin (green and food waste) collected weekly
- No bundled green waste service

Option 3: "Future 3 bin system: green + food, no bundles, fortnightly rubbish"

- 80 litre residual bin (residual waste only) collected fortnightly
- 240 litre recycling bin (recyclable waste only) collected fortnightly
- 240 litre green bin (green and food waste) collected weekly
- No bundled green waste service

Option 4: "Future 3 bin system: green only, no bundles"

- 80 litre residual bin (residual and food waste) collected weekly
- 240 litre recycling bin (recyclable waste only) collected fortnightly
- 240 litre green bin (green waste only) collected fortnightly
- No bundled green waste service

6.3 Environmental Modelling

To determine which will be the most appropriate option to increase domestic recovery rates all options were modelled based on potential diversion and landfilling rates for the year of 2011 and then for the proposed 7 year duration of a standard collection contract.

Detailed and intricate financial modelling was also undertaken for these four options in an independent report to Council.

All modelled options rely on landfilling data obtained in 2009/2010 and therefore values modelled are identical over this timeframe.

Figure 22 summarises the frequency of collection of bins for each option.

Bin collection frequency	Options															
	1 current Weekly garbage, monthly green + bundles				2 New Organics bin + weekly garbage				3 New Organics bin + fortnightly garbage				4 Current + fortnightly green bin + no bundles			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Garbage	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓
Green only				✓										✓		✓
Organics					✓	✓	✓	✓	✓	✓	✓	✓				
Recycling	✓		✓		✓		✓		✓		✓		✓		✓	

Note: "✓" indicates that a service is provided for that bin on that week.

Figure 22 Bin collection frequency under each option for the 4 weeks of the month.



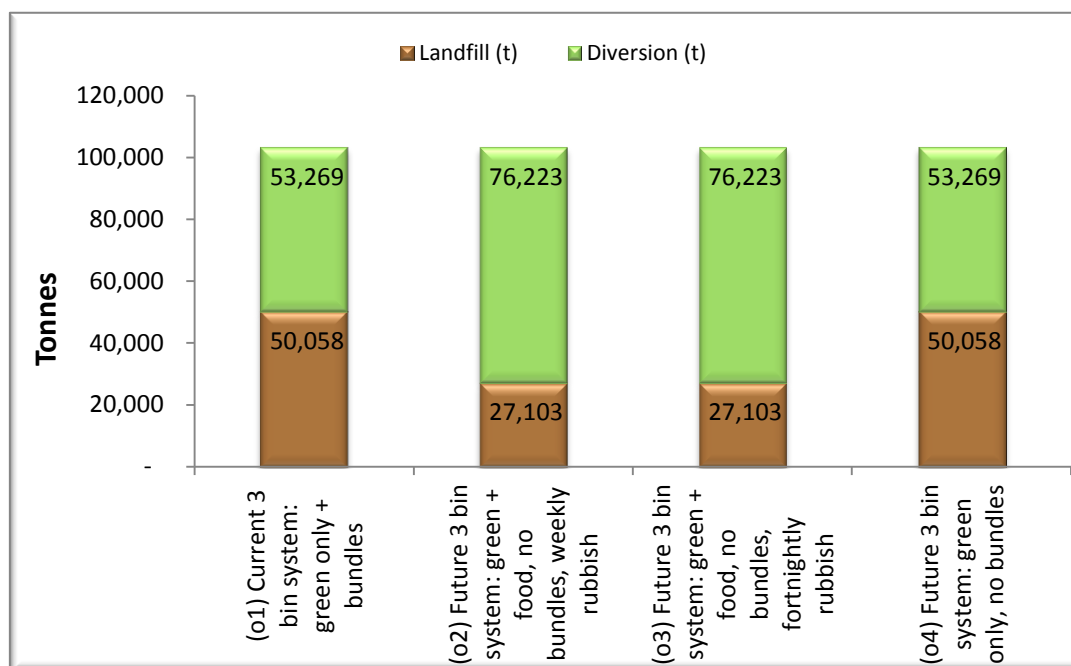


Figure 23 Fate of waste for each option - 7 year period 2011-2018 (MRA, 2011).

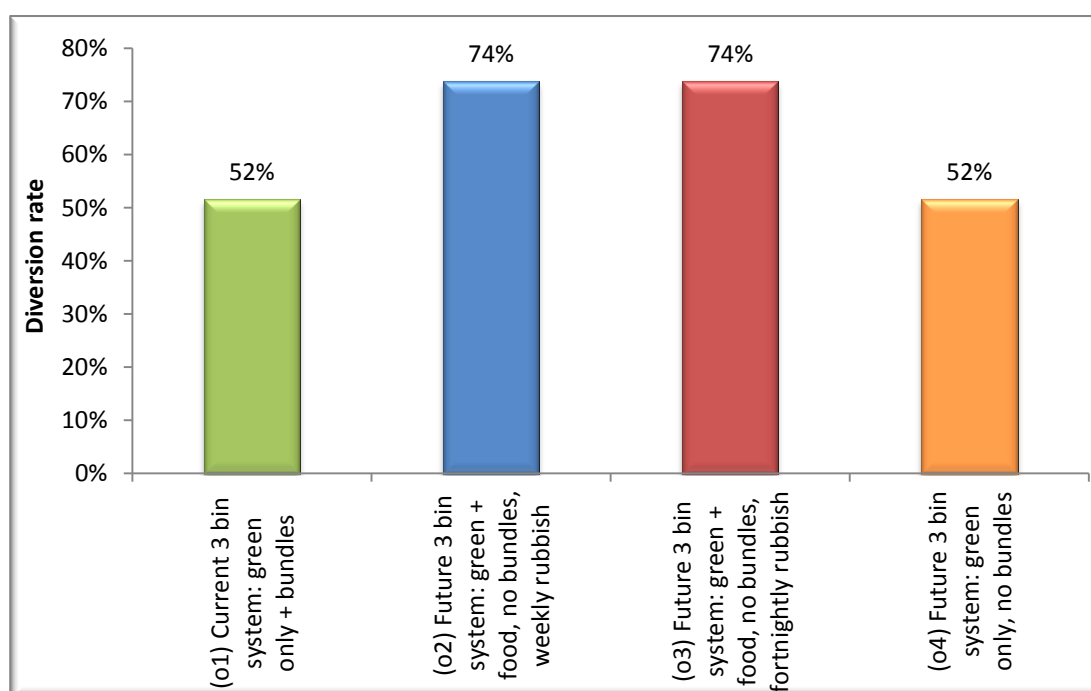


Figure 24 Diversion rate (%) for each option - 7 year period 2011-2018 (MRA, 2011).

Figure 23 shows the amount of material that will be landfill compared with recycled for each option. It demonstrates that options 2 and 3 (the food/green recycling bin options) divert the greater amount from landfill over the 7 year contract period.

This compares to Option 1 and 4 (the green waste only options) which indicate a relatively poor performance for diversion from landfill.

Figure 24 demonstrates the percentage diversion rate. Both of these graphs demonstrate that options 2 and 3 will have the greatest effect at diverting waste materials from landfill. Options 1 and 2 on the other hand, despite being cheaper option have much lower diversion rates.

Almost 23,000 more tonnes of waste would be recovered via options 2 or 3 (including food in organics weekly services). This equates to an additional 3,200 tonnes per year or more than half of all residual waste collected in each year.

This is important to consider when the currently total life expectancy of ESC's landfills is only a minimal 10.1 years. Selecting option 2 or 3 would have the effect of extending the combined life of the Surf Beach and Brou landfills by 4.6 years.

Figure 25 depicts the greenhouse gas emissions avoided for each option over the 7 year timeframe. It shows that options 2 and 3, save emissions of almost 84,000 tonnes of Carbon Dioxide Equivalent (CO²-e) over 7 years. Option 1 and 4 result in higher degradation of organic material in landfill and thus generate 55,000 tonnes of CO²-e each. This compares to 30,000 tCO²-e for options 2 and 3.

The modelling assumes that the ESC landfills are below the NGERS emissions thresholds and are therefore not liable for Carbon Price Permit Obligations that would further increase the cost of landfilling. If in the future the government imposed limits on emissions are revised downward, ESC might become liable for emissions.

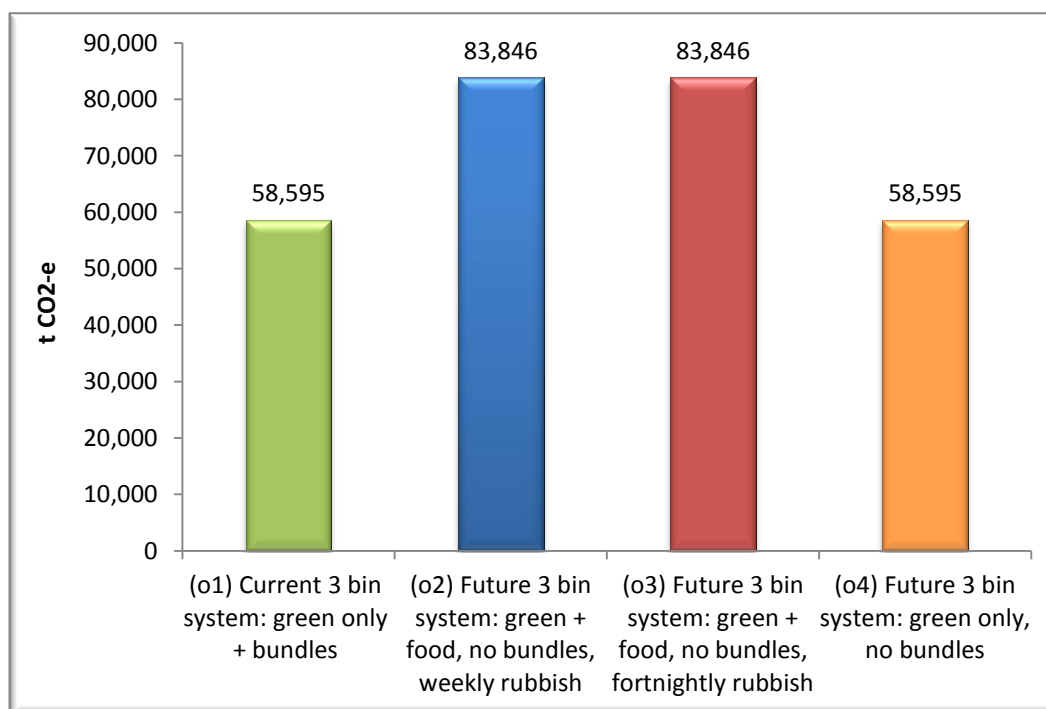


Figure 25 Indicative greenhouse gas emissions avoided due to landfill diversion for each option - 2011-2018 (MRA, 2011).

6.4 Preferred Option and SWOT analysis

The preferred option for Council in the management of municipal waste would be Option 2. This is where an 80 litre residual bin (residual waste only) is collected weekly; a 240 litre recycling bin (recyclable waste only) is collected fortnightly; a 240 litre green bin (green and food waste) is collected weekly; and, no bundled green waste service is provided.

This would need to be complemented by the provision of a kitchen tidy bin and an education program showing residents how to use their food and green waste bin and encouraging greater diversion of recyclables into the yellow-lidded bin. The SWOT is shown in Table 15.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Greatly improved resource recovery and reduced emissions from landfill. • No bundled service means reduced OH&S issues for Council. • The residual waste bin is still being collected weekly, which means those with large families (particularly small children and subsequently nappies) will be more accepting of the change. • Is replacing loss of bundled green waste service with more frequent collections of green waste. • This system is in line with the recommended bin standards developed by the Department of Environment and Conservation NSW (DEC 2006). 	<ul style="list-style-type: none"> • Recyclables may still flow into residual bin during peak periods, such as Christmas. • Despite more frequent collections of green waste, there is still reduced capacity of collection compared with bundled service. • Will need to be coupled with an education program to ensure the food waste stream is not contaminated. • Nappies will need to remain in the rubbish bin for now as there is no other way method for disposal at this current time.
Opportunities	Threats
<ul style="list-style-type: none"> • Council could provide a kitchen tidy bin to residents to improve the capture of food wastes. • A complementary education program could reduce contamination of food wastes and provide a cleaner end stream. • Could be potential to reduce the frequency of the collection of the residual bin to fortnightly in the future once the community is accepting of the change. • Council could commit to providing a percentage of the approved compost generated per year at markets rates and utilising it in parks and gardens and also providing it as free give-aways to residents. 	<ul style="list-style-type: none"> • ESC do not get approval to compost green and food waste at the Brou or Surf beach landfills, thus there is nowhere for the collected organic waste to be sent. • Potential for high contamination rates of the food and green waste stream without appropriate education tools. • Community backlash to loss of bundled green waste service. • Each fortnight there will be three bins being put out on kerbside for emptying. This may cause issues with the pick-up of waste with three different trucks needing to access these houses.

Table 15 SWOT analysis of preferred bin option for the management of municipal waste.

This modeling demonstrates option 2, the future green bin system with food waste in the green bin and no bundles is overall the most appropriate option. Option 2 outscores Option 3 which involves the same services but reduces the garbage services from weekly to fortnightly. Given that ESC offers a relatively small garbage bin at present (80 litres) a fortnightly collection is regarded as impractical and too much of an impost on residents.

Option 2 is also the most likely to achieve the outcomes as described in the Organics Business Case developed by IEC (ESC, 2009):

- Maximise diversion of organic waste from waste disposal;
- Process organic waste into a valuable and marketable product;
- Achieve high community satisfaction and participation;
- Minimise environmental emissions and pollution; and
- Fits well with the overall objectives of ESC's waste management plan (ESC, 2009).

7. Commercial & Industrial Waste



7.1 Overview

This waste stream is generated by a range of businesses including industry, SME's, government agencies, strip shopping areas, shopping malls, manufacturing, institutions such as hospitals and universities, schools and recreational facilities.

In most Australian landfills C&I waste is rising rapidly as an input stream. In NSW, 45% of C&I is generated by small to medium enterprises (SMEs), 18% by manufacturers and 7% by retailers.

The C&I stream in NSW is mainly made up of organics (78%), hazardous or special wastes (14%), plastic (13%), wood (13%) and smaller components of paper, cardboard and textiles. The best recovery rates (i.e. > 50%) for this sector in 2008-09 in NSW were for ferrous metals (steel) (94% recovery), non-ferrous metals (aluminium and copper) (92%), garden organics (78%), paper and cardboard (53%) and glass (53%) (DECCW, 2010b).

In Eurobodalla, C&I material makes up 33% of the total waste stream. This reflects the relatively low industrial and manufacturing base of Eurobodalla and the preponderance of tourism (and therefore, MSW) waste streams. Figure 26 demonstrates that the diversion rate for the C&I sector is currently quite low. In 2007-2008 only 6.5% of material was recovered for recycling. This increased to 32% in 2008-2009 and then further growth was seen in 2009-2010 when it reached 35.3%.

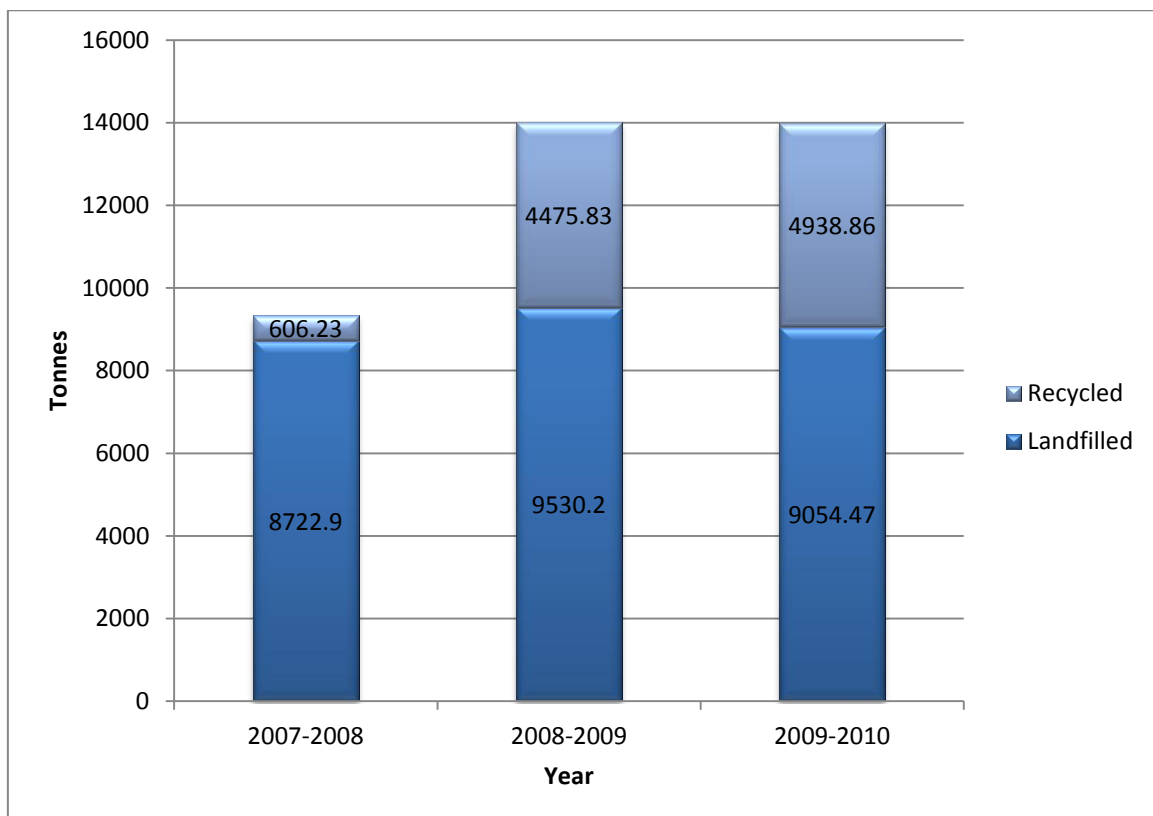


Figure 26 Total C&I materials landfilled and recycled between 2007-2008 and 2009-2010 (ESC, 2011a).

This increase may be a result of better management and thus diversion of materials at the landfill and transfer station sites and increased education to the C&I sector of recycling opportunities.

ESC is currently implementing a trial on the collection of organics from 15 commercial businesses. They are collecting up to 2m³ per week of mixed food waste and this is being composted at the Brou landfill. So far the trial has been very successful.

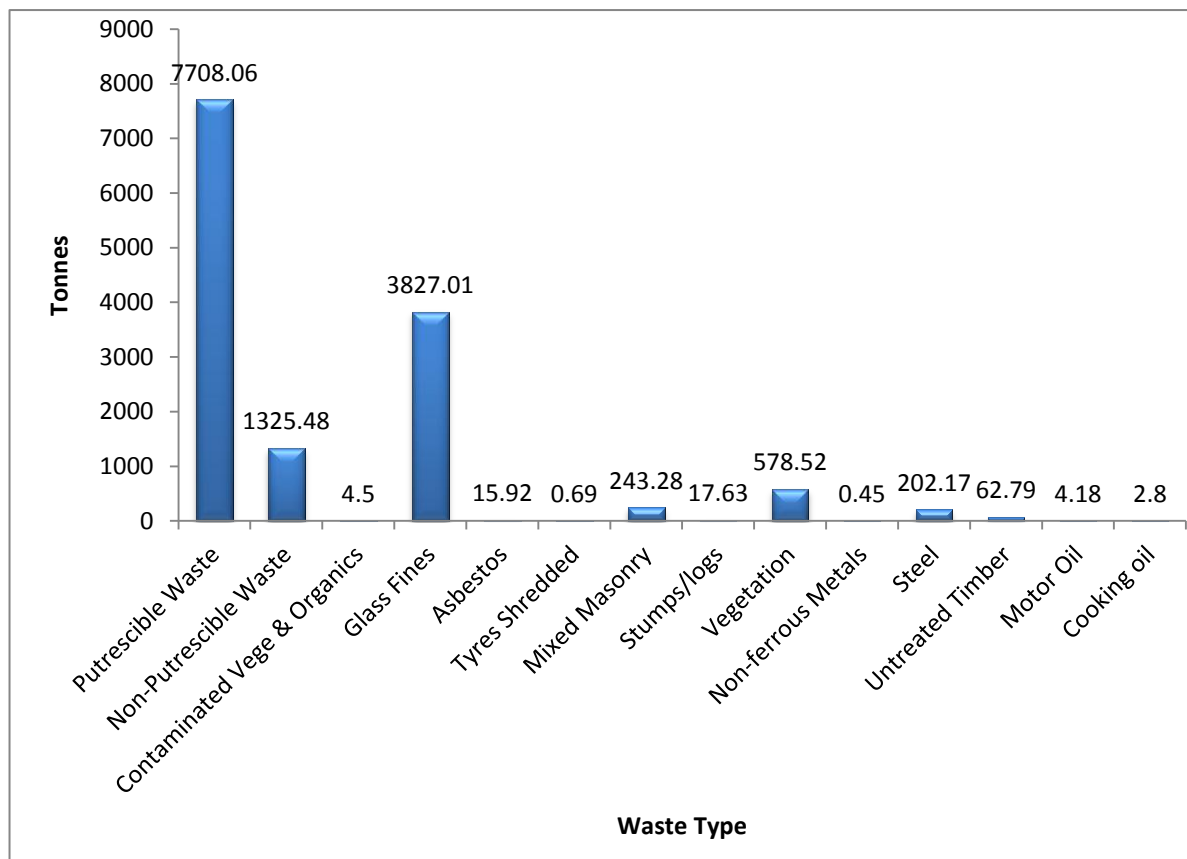


Figure 27 The breakup of the C&I waste stream by waste type for the year 2009-2010 (ESC, 2011a).

The breakup of the C&I waste stream is shown in Figure 27. The highest component of this stream is in fact putrescible waste (7708.06 tonnes). However, there has never been a waste audit conducted of the C&I stream in ESC and this data is simply obtained via an observation when it comes in through the landfill gate.

Thus if the C&I waste comes into the landfill in mixed loads (i.e. in bags or contained within a truck), rather than clean single loads (i.e. a load of wood) the actual components of the waste stream cannot be observed.

A field survey of the C&I waste stream was undertaken by DECCW across 6 landfills and 6 transfer stations in the Sydney area in 2008. The survey found that putrescible waste only made up 8.4% of the contents of the rubbish bags taken from mixed loads of C&I waste. The rest were potentially recyclable materials including: 29.2% paper, 27.7% food, 15.1% plastic, 4.5% textiles, 4.1% cardboard, 3.8% glass, 2.4% metal, 1.6% vegetation, 1.5% C&D material, 0.7% rubber, 0.7% whitegoods/electrical and 0.3% wood (DECCW, 2009).

If this were also the case for the C&I waste collected from the Eurobodalla region, then there is potential for major increases in diversion from the C&I sector.

This is demonstrated further by Figure 27 which also shows there to be a large amount of observable non-putrescible waste (and thus potentially recyclable materials), glass fines and vegetation currently being landfilled in Eurobodalla (ESC, 2011a).

Virgin Excavated Natural Material (VENM) has not been included in these figures but in fact only about 60 tonnes of VENM are taken to ESC landfills from the C&I sector annually. All of this material is used for operational use at the landfill including daily cover.

Currently there are a few drivers in the Eurobodalla Shire Council that work to decrease C&I waste from entering the landfills. The price to landfill these wastes is still relatively low and Council has no control over the service provided to businesses as this is all managed via private companies.

There are a number of options that ESC could explore to encourage greater recycling from the C&I sector.

7.1.1 Pricing

C&I waste streams contain wastes which are relatively easily recycled with the right pricing or regulatory signals. The recovery of food waste, single use pallets and cardboard being disposed of to landfill, are particular areas that could be improved.

Waste contractors and transporters tend to be very price sensitive and will seek out the lowest costs of disposal from any landfill operator. Where a competitor landfill operator lowers their gate fee below that of Brou or Surf Beach (inclusive of any additional transport costs) then the tonnes will flow in large part to the lowest cost provider.

Assessing the impact of price on supply of C&I requires assessment of the price sensitivity of supply. That is what reduction in waste would say a 5%, 10%, 50% increase in price deliver. This requires specific pricing and waste data from Eurobodalla to determine the sensitivity of the C&I sector to price shocks. This data is not available and can only be derived from realistic and actual comparisons of landfill audit data with the past price increases.

To explain this, C&I waste tends to be highly price sensitive and elastic. Thus if Eurobodalla puts up its gate fee by 20% and there was a 1% drop in tonnage the price sensitivity is low and the demand for landfill is largely not affected by price. The demand is inelastic.

If, on the other hand, Eurobodalla increased its landfill price by 20% and the tonnage delivered dropped by 20% or 40% then there is a high price sensitivity and delivery of waste is strongly affected by price. The demand is highly elastic.

It is, however, standard industry knowledge that C&I and C&D waste is highly price sensitive and that where there are alternative waste disposal options the demand for void space is highly elastic (DECCW, 2010b). In other words, it is likely that any increase in Eurobodalla's gate fees would have a direct and immediate effect in driving more tonnes away from Brou and Surf Beach landfills to the competitors (taking into account any transport costs).

7.1.2 Banning Organics from Landfill

Placing a ban at the landfill on particular waste materials, such as cardboard and organic waste may be an effective method for increasing recovery rates. This would force contractors to look for other alternative methods of disposal and could drive investment in organics processing facilities. This method has not yet been trialed in NSW but has been successful for some Councils in South Australia.

7.1.3 Provision of Waste Services to the C&I Sector

ESC could also take a role in providing a waste service to the C&I sector by offering a waste collection to small business using their existing 240 litre bin service on a fee for service basis. This would be on a lift rate basis equal to the lift rate for residential 240 litre bins.

Bins would need to be registered with Council and invoiced annually in advance. Regular audits would need to be conducted to ensure that commercial properties do not take advantage of the system without paying. Such commercial services are recommended in by the Commonwealth government (DECCW, 2010b).

Many councils offer similar commercial garbage services. The single biggest drawback is the risk of non payment by commercial property owners and of drivers undertaking work for properties which are not paying for the service. This risk is best addressed via regular bin audits of commercial properties.

ESC could also offer kerbside recycling services to commercial properties again using the domestic waste truck. This service would be either free (and subsidised by the residents through general rates) or priced on a fee for service basis.

Council is currently investigating the set up of a composting facilities at the Brou and Surf Beach landfills, if this proceeds there may be potential in the future to provide an organics collection service for the C&I sector to divert the large quantity of food organics from the stream on a fee per service basis.

7.1.4 C&I Sorting Facility

A C&I sorting facility would be an ideal way to ensure that recyclables are diverted from the C&I sector. However, such a facility would be costly to develop. Also in reality Council would only be able to provide one facility (at either the Brou or Surf Beach landfill) which would mean that there would still be the leakage of C&I waste into the alternative landfill. If this were an angle that Council were willing to look at, they would need to plan it very carefully to ensure that all C&I wastes were diverted to the facility that housed the sorting facility.

7.1.5 Promotion of Companies Offering Recycling Service

Many Councils in NSW have developed educational resources to promote those companies that offer C&I recycling services in their area. Albury City Council is a good example of this. They have developed a comprehensive A-Z waste guide that details all the recycling services in and around their shire. This is

provided in hard copy to all businesses and also provided for download from the Albury City's Halve Waste website.

There is no actual data to show how effective these tools have been in driving resource recovery from the sector, however anecdotal evidence and feedback from businesses visited by Albury Council as part of a wider education program, indicate that it has been very helpful for business to find recycling avenues for many different types of waste.

7.2 Options

- Option 1: Business as usual (BAU) (default to landfill).
- Option 2: Increase the price for disposal of C&I materials at the landfill.
- Option 3: ESC offer a waste collection service to small business using their existing 240 litre bin domestic service on a fee for service basis. A food waste collection service could be added to this once the composting facilities at Brou and Surf Beach landfills have been established.
- Option 4: ESC offer kerbside recycling services to commercial properties using the domestic waste truck.
- Option 5: Run an education program to promote companies in the area that offer a C&I recycling service.
- Option 6: Provide a C&I sorting facility at the landfill(s).
- Option 7: Ban C&I waste streams such as cardboard and organics from the landfill.

7.3 Sustainability Index Modelling

Options were also ranked on a sustainability assessment index which includes factors of cost, risk, environmental improvement, acceptability and integrity with existing systems. The 7 options are evaluated using this method below (Table 16). All options are scored out of 10, where 10 is the best and 1 is the worst.

Factors for consideration	Options						
	1	2	3	4	5	6	7
Cost	8	10	8	2	8	1	10
Resource recovery potential	1	8	8	9	2	10	7
Environmental improvement	1	8	8	9	2	10	7
Acceptability	10	2	8	7	10	4	2
Transport impacts	10	10	5	2	10	5	8
Integrity with existing systems	10	10	10	9	10	2	10
TOTAL SCORE	40	48	47	38	42	32	44

Table 16 C&I systems Sustainability Assessment Index (MRA, 2011).

This modeling demonstrates that option 2 is the best option from an economic and environmental perspective. This is followed closely by options 3, 5 and 7.



7.4 Preferred Option and SWOT Analysis

The preferred option for the management of C&I waste would be a combination of options 2, 3, 5 and 7 where ESC offer a waste collection to small business using their existing 240 litre bin service on a fee for service basis. This would be on a lift rate basis equal to the lift rate for residential 240 litre bins. Bins would need to be registered with Council and invoiced. The collection of food wastes could also be added to this service once composting facilities have been established at the Brou and Surf Beach landfills.

This could further be complimented by a general increase in the price for disposal of C&I materials at the landfill and a future ban on all cardboard and organics from entering the landfill. The C&I sector would also benefit from an education program promoting those companies that offer C&I recycling service to business. The SWOT analysis of this option is undertaken in Table 17 below.

Strengths	Weaknesses
<ul style="list-style-type: none"> Increased recovery of recyclables from the C&I sector. It gives Council more control over wastes generated from the businesses. Food waste could potentially be diverted from landfill to be converted into compost. It is no extra cost for Council due to the fee for service arrangement and existing trucks already used for household arrangements. 	<ul style="list-style-type: none"> The Council would have to charge a fee for service which may not be taken up by all businesses. It is more difficult to manage administratively for Council. Council becomes a competitor with other waste contractors in the region offering recycling services to business. Potential for high contamination rates of recycling stream.
Opportunities	Threats
<ul style="list-style-type: none"> To offer a food waste collection service via the green bin to business once composting facilities have been established. To provide a complimentary education program to the C&I sector to increase diversion of recyclables. To increase the price of landfill and/or ban it completely from landfill to further divert waste from this stream. 	<ul style="list-style-type: none"> If ESC does not get approval to compost green and food waste at the Brou and Surf Beach landfills, then there is no ability for them to collect food waste. The service is not taken up by business. ESC would be the first Council in NSW to attempt to ban organics from landfill.

Table 17 SWOT analysis of preferred option for the management of C&I waste in ESC.

The sustainability index model and SWOT analysis demonstrate that a combination of options 2, 3, 5 and 7 would work to have the greatest impact on reducing waste generation and increasing waste diversion rates from the C&I sector.

8. Construction & Demolition Waste



8.1 Overview

In the Eurobodalla Shire Council, C&D material makes up 13.5% of the total waste stream. Even though it is a relatively minor waste stream compared with MSW and C&I waste, it is becoming ever more significant in the shire due to the increased growth in housing developments. Council has noted a significant expansion in development applications in the last few years (ESC, 2011).

Figure 28 demonstrates that the diversion rate for the C&D sector has remained steady for the last three years. In 2007-2008 53.4% of material was recovered for recycling. In 2008-2009 it increased to 59.3% recovery and then decreased again to 54.7% in 2009-2010.

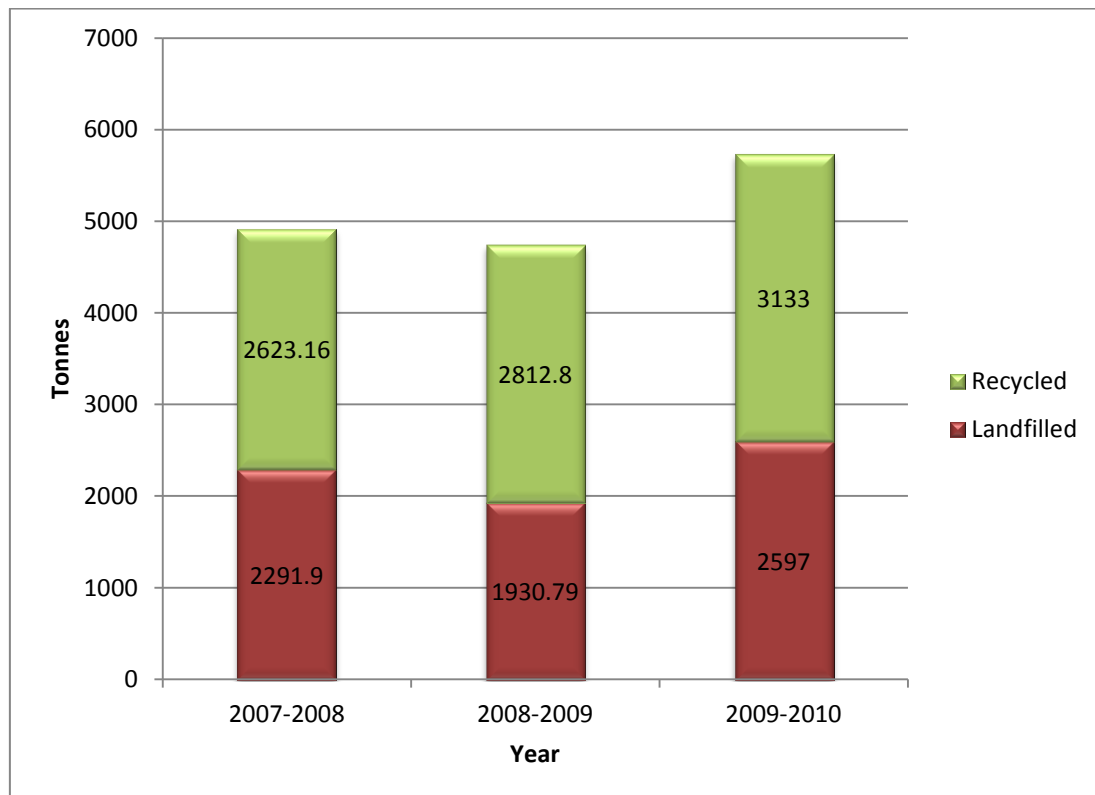


Figure 28 Total C&D materials landfilled and recycled between 2007/08 and 2009/10 (ESC, 2011a).

Figure 29 shows that the main material received from the C&D sector is non-putrescible waste, followed closely by mixed masonry. Much of the masonry material collected is used for Council operations on site. However, the non-putrescible waste, which is potentially made up of recyclable materials is still currently being landfilled.

Putrescible waste is only a very small component of the C&D waste stream and there is also a small amount of asbestos being taken to the landfills. Stumps and logs, vegetation, steel and untreated timber makes up the rest of this stream. All of which are recycled.

Virgin Excavated Natural Material (VENM) has not been included in these figures. In 2009/2010 8936.5 tonnes of VENM were taken to ESC landfills from the C&D sector and all of this material was used for operational use at the landfill including daily cover.

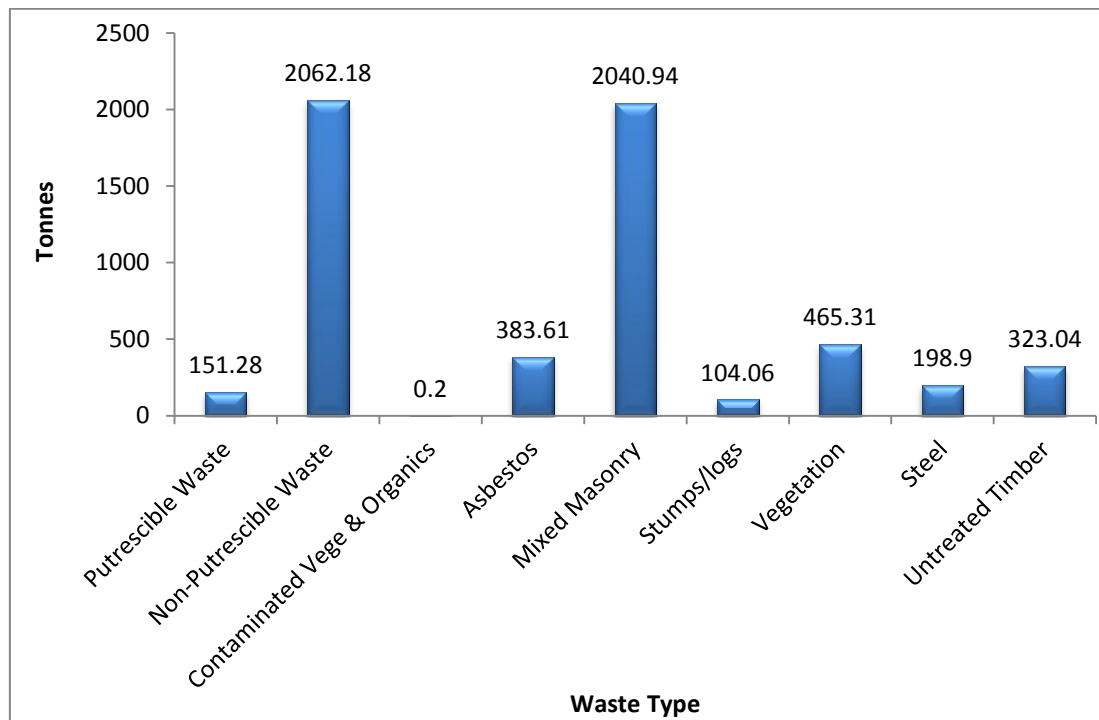


Figure 29 Tonnes of C&D waste by waste type for the year 2009-2010 (ESC, 2011a).

Being heavy, C&D waste is very responsive to weight based market signals such as landfill levies and rises in landfill gate fees. However, some waste companies simply pass on the costs, as long as the clients don't look like migrating to another service provider.

Assessing the impact of price on supply of C&D requires assessment of the price sensitivity of supply. That is what reduction in waste would say a 5%, 10%, 50% increase in price deliver. This requires specific price and waste data from Eurobodalla to determine the sensitivity of the C&D sector to price shocks. This data is not available and can only be derived from realistic and actual comparisons of landfill audit data with the past price increases.

Industry experience shows that C&D waste is the most sensitive stream to price signals for three reasons: there are many C&D reprocessors; there are strong markets for the recovered materials; and C&D waste is heavy and therefore, attracts the full burden price increases and landfill levies (DECCW, 2010b).

Immediate improvements to resource recovery in this area can be made through increased education to the building industry and waste contractors to ensure that they are aware of recycling opportunities and on site separation techniques.

Additionally, many Councils also make separation of waste materials on site a condition of a building permit. ESC has developed a code for waste management and minimisation practices on building sites to go in conjunction with standard development control plans. ESC could consider freeing up resources to ensure this code is enforced as a method to drive greater recovery of C&D materials.

A lot of C&D waste is also produced as a result of Council operations, such as roadworks. It is important that this waste product is managed appropriately and recycled where possible.

8.2 Options

- Option 1: Business as usual.
- Option 2: Increase the price for disposal of C&D materials at the landfill.
- Option 3: Develop an education program to promote waste contractors that offer a C&D recycling service and teach builders about source separation.
- Option 4: Make it mandatory, as part of obtaining a building permit, for all builders to source separate on site.

8.3 Sustainability Index Modelling

Options were also ranked on a Sustainability Assessment Index which includes factors of cost, risk, environmental improvement, acceptability and integrity with existing systems. The 4 options are evaluated using this method below (Table 18). All options are scored out of 10, where 10 is the best and 1 is the worst.

Factors for consideration	Options			
	1	2	3	4
Cost	9	10	8	6
Resource recovery potential	2	8	2	9
Environmental improvement	2	8	2	9
Acceptability	9	2	10	2
Transport impacts	9	5	10	7
Integrity with existing systems	9	10	10	8
TOTAL SCORE	40	42	42	41

Table 18 C&D options sustainability assessment index (MRA, 2011).

This modeling demonstrates that options 2 and 3 would be the best way to increase resource recovery rates from the C&D sector. However, there may be potential for Council to investigate implementing option 4 as well in the future to further improve recovery from the C&D sector.

8.4 Preferred Option and SWOT Analysis

The preferred option for the management of C&D waste would be a combination of options 2, 3 and 4 where the price demand (for landfill space) is reviewed and the appropriate price settings for mixed and clean stream C&D waste to Surf Beach and Brou Landfills is considered.

This could be complimented by the provision of an education campaign promoting those organisations already offering a recycling service for the C&D sector and source separation on building sites, as well as, the incorporation of waste separation into the conditions of obtaining a building permit.

The SWOT of a review of a price increase for C&D materials with a complementary education program promoting local recyclers option, with conditional building permit is summarised in Table 19.

Strengths	Weaknesses
<ul style="list-style-type: none"> Will force contractors collecting C&D waste to use existing recycling options or cheaper landfills. Will promote recycling of a greater range of materials through businesses offering such a service and subsequently create greater diversion of materials. It puts responsibility on the builders to separate as many materials as they can from the waste stream. 	<ul style="list-style-type: none"> May decrease cash flow at landfills. Does not necessarily address the need for greater diversion of materials from the C&D sector. Education program would have a direct cost on Council. Policing waste separation as part of a building permit is difficult and requires additional resources.
Opportunities	Threats
<ul style="list-style-type: none"> May provide more money for ESC to look at providing a greater range of services to the C&D sector, such as a sorting facility or a building waste education program. May provide more incentives for ESC to look at improving already operational recycling sites. 	<ul style="list-style-type: none"> May decrease recycling opportunities, as contractors just take the waste to cheaper landfills. May cause contractors to increase their prices to the C&D sector, causing less recycling or increased illegal dumping.

Table 19 SWOT analysis of preferred option for the management of C&D waste in ESC.

The sustainability index modelling and the SWOT analysis both point to a combination of options 2, 3 and 4 for the greatest improvement of waste diversion from the C&D sector.

9. Infrastructure



9.1 Overview

ESC provides waste management facilities at the Brou Waste Management Facility, the Surf Beach Waste Management Facility and a Moruya Transfer Station on Yarragee Road (ESC, 2009).

The total combined inputs to the landfills are 39,500m³/year, while the available void space is 399,000 m³. Therefore the total combined life expectancy of all landfill assets in ESC is 10.1 years.

Concept designs are currently being prepared for two further development stages at the Surf Beach site (EPA) (Quadro Australia, 2008b and ESC, 2011a).

However, even with this potential further development, the landfill still only has a limited lifespan and Council currently has no firm plans for the future disposal needs of the community. The onerous task of identifying a potential site, gaining approval, securing a license and establishing a new landfill will require substantial amounts of both time and money.

Council needs to move urgently to address this issue. The lack of disposal facility within a decade presents significant risks to Council's overall management. Council may risk having to seek disposal options outside of the municipality at great cost (ESC, 2009).

As landfill management costs increase and the void space continues to decrease it is essential that Council consider further options for diverting materials.



9.2 Organics Infrastructure

61.1% of the residual kerside waste stream alone is organic waste. There is currently no exact figure for the amount of organic waste being generated from the C&I sector but it is expected to be high as the NSW average is greater than 70%. When organic material decomposes in landfill it produces methane. Methane is a potent greenhouse gas that contributes to climate change.

There is room for composting facilities to be constructed at both the Brou and Surf Beach landfills. If this were the case, the potential diversion of organic material from Surf Beach and Brou landfills could offer to significantly extend their limited lifespan.

Additionally, the development of a composting facility would allow Council to compost all food and green waste collected from households and potentially offer a green and food waste collection service to the C&I sector.

In 2009, Council commissioned Impact Environmental Consulting (IEC) to examine numerous waste collection and processing options for organic waste collected from households. IEC developed a Preliminary Business Case in accordance with the *NSW Treasury Guidelines for Capital Business Cases 2000* and *NSW Premier's Department's Business Case Guidelines 2008*.

The business case found that:

- The processing of organic material results in a product of a certain value which can create an income stream for Council;
- The introduction of organics collection and processing will capture further material from commercial waste producers which results in less waste to landfill;
- Undertaking the capital investment in infrastructure has a flow-on effect multiplied throughout the local economy; and
- Reduced environmental and social impacts can be valued in terms of the decline in negative external effects of the current waste services.

The business case also examined three processing options for organic waste including groundswell technology, aerobic cover and tunnel composting.

The groundswell system is a relatively new system for the processing of organic material and is partly funded by the NSW Environment Trust Urban Sustainability Program. In this system, food scraps and garden waste are being composted in an open windrow process using a composting solution starter culture and seedling agent specifically selected to meet the feedstock requirements of a combined food and garden waste collection.

The aerobic cover system uses semi-permeable membrane technology to provide a breathable barrier which prevents the passage of odours and moisture during the composting process. Typically this consists of a multi layer laminate that allows air and carbon dioxide to pass through but prevent moisture from escaping or penetrating the composting organics. The compost is kept aerated by a blower fan installed at the end of the composting cell.

Finally, the tunnel composting process uses food waste and bulk green organics which is shredded. This is then placed in climate controlled tunnel to hasten the decomposition process. The system is enhanced if bio-solids are available to be added. Processed air and fresh air is forced into the material at the base of the tunnel and recycled water is added via sprays when required. Exhaust air is passed through a biofilter to remove odours and particulates. Compost is removed after four to six weeks and placed in open windrows to dry out.

The study found pros and cons for all three of these systems, and it was inconclusive as to which would be the best option. Additionally, since the IEC report several additional organics processing technologies have come onto the market.

Two options were modelled using sustainability index modelling and a SWOT analysis (Appendix 3):

- Option 1: Business as Usual
- Option 2: Seek planning approval from the EPA for composting facilities to be constructed at the Brou and Surf Beach landfills.

The results from the SWOT analysis and sustainability index modelling (Appendix 3) found that option 2 is the most viable, where ESC would seek planning approval from the EPA to develop a composting facility at the Brou and Surf Beach landfills.



9.3 MRF and Recyclables Infrastructure

The MRF is located in the Moruya Industrial area and separates kerbside recyclables collected in the Eurobodalla and Bega Shires. It is run by Sita Environmental Solutions (ESC, 2011a).

In 2009/2010 the MRF processed a total of 4937.01 tonnes of materials collected from Eurobodalla households (ESC, 2011a). The breakup of these recyclables and waste (contaminated products) is shown in Figure 30.

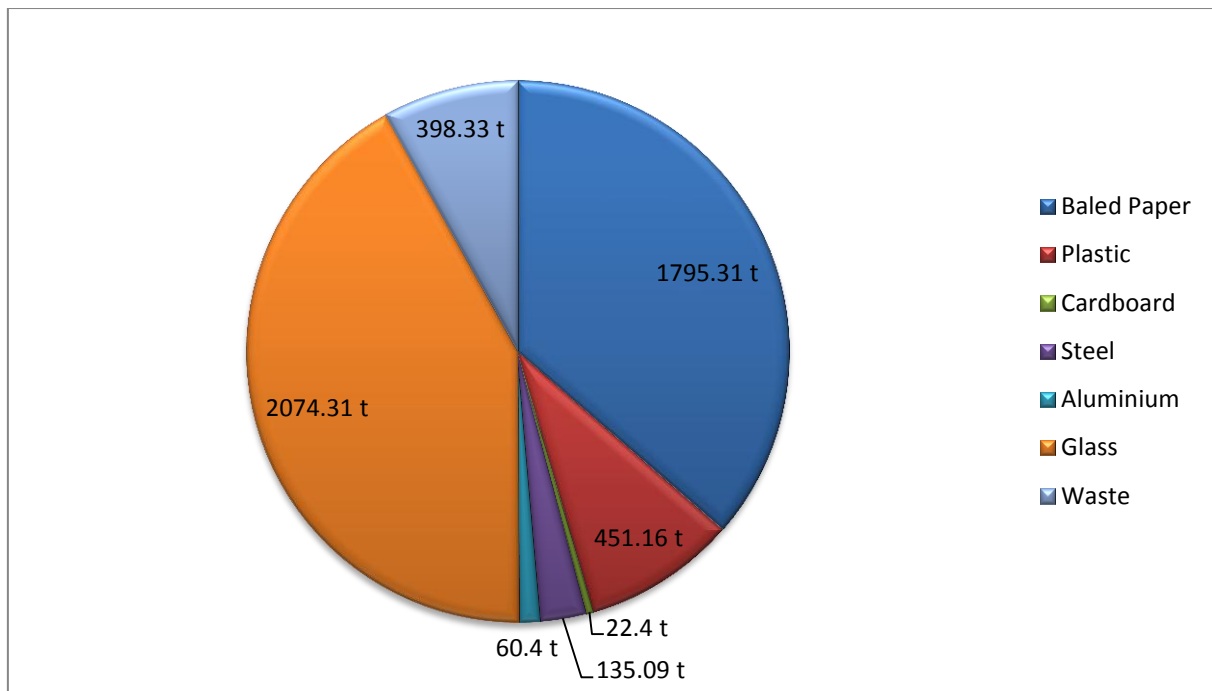


Figure 30 Materials collected from households and MRF processed 2009/2010 (ESC, 2011a).

The majority of materials collected for recycling are paper (1795.31 tonnes) and plastic (451.16 tonnes). Glass (2074.31) is used by ESC as operational material. However, there is also a large amount of waste material (398.22 tonnes) that ends up being sent to landfill.

Bega Council does not own or operate a MRF and transports its recyclables to Eurobodalla. All glass fines collected from the Bega region are disposed to the Surf Beach and Brou landfills as engineering material.

Another consideration is that Council is currently renewing their recycling contract and under the new contract there will be no obligation for tender applicants to use the current MRF. Based on the successful applicant and contract specifications, ESC may need to provide a transfer station for the waste transport agent or processor at the Surf Beach landfill or alternatively provide room for them to construct a MRF onsite.

This is an option that will need to be explored further with the successful contractor, however in the meantime ESC could begin the application process with the EPA to have the site approved for potential

works to take place so that if there is a need for such a facility its development is not delayed by the planning approval process.

Four options were modelled for the management of MRF and Recycling infrastructure in this strategy:

- Option 1: Business as usual.
- Option 2: Investigate MRF site options before a new waste contract is formed and obtain any relevant planning approvals from the EPA.

The sustainability index modelling and SWOT analysis (Appendix 3) point to option 2 as being the most appropriate option. This would be where ESC would investigate MRF site options before a new waste contract is formed and obtain any relevant planning approvals from the EPA.



9.4 Community Recycling Points

Council currently operates five community recycling points in the shire area. They are designed for use by rural residents who do not have access to the kerbside collection service. There are two unmanned community recycling points, located in Narooma and Batemans bay. The rest are provided at the Surf Beach and Brou landfills and at the Moruya Transfer Station.

At the two unmanned stations, recycling skips are provided but no rubbish or green waste bin. Residents are instead requested to take whatever rubbish they may accumulate to the landfills, or to the transfer station. There is no actual data on the contamination rates of the recyclables collected from these sites or the amount of illegal dumping of rubbish as a consequence.

Council is currently reviewing their recycling contract and high contamination rates may come at a large expense to Council under a new contract.

There are a number of options that were considered that could be taken to improve the system:

- Option 1: Business as usual
- Option 2: Remove unmanned community recycling points and encourage residents to visit the landfill sites and transfer station instead.
- Option 3: Install specific reverse vending machines at high yield locations.

The sustainability index modeling and the SWOT analysis (Appendix 3) both point to option 2 as being the most appropriate option. The removal of the recycling points would significantly improve resource recovery and decrease contamination. It would also rid of illegal dumping issues at the sites.

Option 3 can and should be implemented on a case by case basis.



10. Other Strategic Considerations



10.1 Pricing

ESC is currently situated in the non-regulated area (NRA) of NSW. This means they are not currently subject to a landfill levy enforced by state government. However, should the government decide to widen the area to which the levy applies, ESC would be required to pay the levy of each tonne of waste disposed of in a landfill.

For areas close to Eurobodalla, such as Shoalhaven City Council, the levy has been increasing annually by \$11.50 per tonne, plus CPI, from 2009/2010. From 2013/2014 it will continue to increase by \$10.00 per tonne, plus CPI (ESC, 2009).

ESC could avoid having a landfill levy imposed on them by state government by implementing their own levy. This would be a key instrument of policy for driving resource recovery and allow for funds collected to be spent on local waste initiatives, rather than relying on state hypothecation of funds to local government waste activities.

In general, the waste industry and WMAA in particular, supports the introduction of economic/market instruments to encourage diversion of waste from landfill and to encourage the establishment of economically viable and profitable resource recovery businesses.

One of the biggest benefits of an increase in landfill pricing is that it drives investment in recycling infrastructure. Where landfill levies are in force a very clear price signal is being sent to the market and encouraging examination of landfill alternatives such as composting or AWT residual processing.

The hypothecation of levy funds back to the waste sector in ESC could be used for:

1. Funding support for waste education and C&I and C&D engagement programs;
2. Infrastructure grants to build recycling and alternative waste systems;
3. Funding for public place recycling infrastructure;
4. Seed funding for new resource recovery and AWT infrastructure;
5. Infrastructure support for recycling from the C&I sector;
6. EPR related schemes; and
7. Transportation subsidies.

There are a number of options that were considered in this strategy:

- Option 1: Business as usual.
- Option 2: Impose a gradual increase in landfill pricing via a levy and use funds collected to improve waste management in the ESC region.
- Option 3: Impose one standard landfill levy on waste with no staged increases and use funds collected to improve waste management in the ESC region.

The sustainability index modelling and SWOT analysis (Appendix 3) both point to option 2 as being the best way to increase overall diversion in the ESC moving forward. The increase in price could cease when either the regional average price was reached or when diversion targets are achieved or both.

In line with this, it is important that ESC regularly review waste management service charges, based on any landfill price changes, and ensure that they provide enough of an incentive to drive waste minimisation.

10.2 Data Collection

Currently in the Eurobodalla Shire Council an AWS weighbridge system is primarily used to collect data at the landfill and transfer station sites. The landfills have computers directly linked to the weighbridge, whereas the transfer Station only has the computer system. Thus the transfer station only has the capacity to estimate waste weights.

Net totals from the weighbridges are used by ESC as the basis for estimates of the quantities of incoming wastes and outgoing recyclables. MRF totals are also used to calculate quantities of paper/cardboard, container recycling, glass recycling, etc (ESC, 2011a).

ESC recently undertook an audit of the municipal waste stream to determine the makeup of waste in the kerbside rubbish bin and define materials for greater diversion. Although this audit did need staff and financial resources put towards it to occur, the information it provided has helped to form a good basis for many of the strategic actions outlined in this strategy and is an excellent example of how obtaining reliable data is the key to developing a cost effective and robust waste strategy (ESC, 2010).

There is potential for ESC to further improve their data collection methods which would make them better equipped to make strategic and long term decisions. To obtain the data needed to guide decisions ESC could undertake a range of waste audits including:

- Municipal recycling contamination of bins;
- Municipal waste bin characterisation;
- Green waste contamination rates; and
- C&I and C&D waste types entering the landfills.

The audits should follow the DECCW preferred methodology. They recommend that kerbside audits be undertaken at least every two years and at about the same time every year (DEC, 2006). This data should form the basis of any future policy development and be critical to decisions around waste infrastructure and services.

Data from the waste management facilities weighbridges will be the ultimate determinant of the success of the strategy and associated actions. The systematic consideration of data, policy options, technology and service options, provides the best basis for minimising future costs to Eurobodalla Shire ratepayers whilst delivering the most sustainable long term waste management program.

Options considered for better management of data collection included:

- Option 1: Business as usual.
- Option 2: Undertake landfill audits to determine the types of C&I and C&D entering the landfills.
- Option 3: Continue audits of the municipal rubbish bin every 2 years, and complement with 2 yearly audits of the recycling and green waste bins.

The sustainability index modelling and SWOT analysis (Appendix 3) point to options 2 and 3 as being the best way to obtain data to improve strategic development for the management of waste in the ESC region.

10.3 Home Composting

An average Australian household generates 1000kg of mixed waste per year. Approximately 470kg of this is compostable organic waste. A random sample audit of Eurobodalla's domestic waste in November 2010 showed that 61.1% of the weight of the bins is made up of organic materials (ESC, 2011c).

As discussed earlier in this document, Council is considering plans to offer the community a food waste collection service via the current kerbside green waste bin. This however, could be complimented by the provision of a home composting education program, which would help to decrease the volume of organics collected via the kerbside service.

There is potential for Council to use the old green bins, collected on the roll out of the new green bin service, and convert them into compost bins. They could be provided to the community free of charge.

A recent home composting trial undertaken by ESC showed the benefits of home composting, with an overall 33.87% reduction in food waste in the bins of those 68 households who participated in the trial. Feedback from the trial was that participants felt composting was very easy once they were shown how via workshops and support material.

Home composting programs have been used by many local governments in Australia and have proven to be a cost effective, "no regrets" option to assist in the diversion of organic waste from landfill.

Four options were modelled for home composting using a SWOT analysis and sustainability index modelling (Appendix 3):

- Option 1: Business as Usual.
- Option 2: Provide the community with subsidized new home composting bins and complement with an education program.
- Option 3: Provide the community with free home composting bins (the old green waste bins with bottoms cut off) and complement with an education program.

The sustainability index modeling and the SWOT analysis (Appendix 3) both pointed towards option 3 as being the most appropriate type of home composting program that could be provided by Council moving forward. The roll out of a home composting program would need to include an education program.



10.4 Illegal Dumping

Councils play a crucial part in managing and preventing illegal dumping in their local areas. They are most familiar with local conditions and bear significant illegal dumping clean up costs. Data on illegally dumped material compiled by Council's Regional Illegal Dumping squad between 2006-2007 and 2008-2009 (Table 20) shows wide variation in the volumes and types of illegally dumped materials within the Shire.

Material Dumped	2006-07 (Tonnes)	2007-08 (Tonnes)	2008-09 (Tonnes)
Household Waste	44	61	23
Commercial	100	39	7
C&D	1	10	5
Hazardous	1	4	1
Litter	21	21	10
Vegetation	206	21	17
Vehicle	4	9	0
Asbestos	1.5	2	1
TOTAL	378.5	167	64

Table 20 Estimated illegally dumped materials in the ESC 2006/07 to 2008/09 (ESC, 2011a).

The data does indicate overall that illegal dumping has been significantly decreasing in recent years. However, illegal dumping is costly for Councils to clean up. Council also currently employs a full time illegal dumping enforcement officer.

It is expected that illegal dumping would rise during the Christmas period when there are high numbers of tourists visiting the area and the kerbside waste systems are reaching full capacity. A social research study into illegal dumping on Multi Unit Dwellings (MUDs) by the Department of Environment and Conservation NSW found that short term renters are more likely to illegally dump due to a disconnection with the area, in which they are visiting (DEC, 2003).

The Illegal Dumping Handbook for Local Government developed by DECC in 2008, suggests that if Councils believe they have an illegal dumping problem then they should conduct further investigations into when the peak periods for illegal dumping actually are and where they are. If in fact it is determined that illegal dumping is a major issue, then a specific education program to target this issue can be developed and implemented (DECC, 2008).

DECCW further suggests that to reduce illegal dumping residents need to be made aware of disposal options through the distribution of education kits and targeted enforcement programs (DECCW, 2008).

Three options were considered:

- Option 1: Business as usual and accept illegal dumping.
- Option 2: Investigate when the peak periods for illegal dumping are and implement a targeted illegal dumping enforcement and education program.
- Option 3: Introduce a city-wide illegal dumping program funded from a waste levy.

The sustainability index modeling and the SWOT analysis (Appendix 3) both point to option 2 as being the most appropriate way to combat illegal dumping in ESC. Option 3 could also be implemented, but the question of Council raising its own levy would need to be considered in the context of revenues and expenditures from the waste fund.



10.5 Tourism

Eurobodalla is one of the most popular holiday destinations in NSW and consumption and waste generation in the LGA are significantly influenced by tourist influxes at different times during each year.

Council estimates that the population swells by an additional 100,000 people during peak holiday periods such as Christmas/New Year and Easter. Over 25% of the houses in Eurobodalla are in fact owned by ratepayers in Canberra.

Managing and minimising waste from tourism presents a significant challenge to ESC. Some of the issues associated with tourism and waste include visitors having different waste services and behaviours at home, and local businesses not being geared to manage the additional waste generated over peak holiday seasons.

At Christmas the presentation of kerbside red-lidded rubbish bins swells from the usual mean of 73.39% (ESC, 2010) to 100%. There is also a large overflow of recyclables into the rubbish bin during this time due to increased generation of materials (rubbish bins are often overflowing). There are also different types of waste produced during this period, including a high percentage of prawn heads and oyster shells which of course, contribute to odour issues.

Furthermore, contamination of the recycling stream increases significantly over the peak summer period (and particularly Christmas time).

One way to combat this would be for ESC to design a targeted education program to tourists in the peak summer period to teach them how to appropriately use the waste management systems provided in the ESC area.

Three options were considered for managing waste from tourists in this strategy:

- Option 1: Business as Usual
- Option 2: Design and implement a targeted education program to tourists in the peak summer period to teach them to appropriately use ESC's waste management systems.
- Option 3: Increase the frequency of kerbside recycling and rubbish collections in the peak summer period.

The sustainability index modeling and the SWOT analysis (Appendix 3) both point to option 2 as being the most appropriate option, where an education program would be designed and implemented in the peak summer period to teach visitors how to use and access ESC's waste management services.

10.6 Public Place Recycling

Ever-increasing waste generation in public places is highlighting the urgent need to develop waste management systems that keep pace with changing demands and increased tourism in the Eurobodalla Shire. Patterns clearly indicate that more people are eating and drinking away from home and in public places.

There is also a much greater expectation in the community that there will be access to recycling facilities, particularly if they are visiting from shires that provide these systems.

Public Place Recycling (PPR) is a materials recovery system designed to collect materials from the waste stream for recycling in high-use public areas such as retail, recreational, sporting, tourist and transport sites.

Even though it is unusual to obtain large tonnages through the collection of recyclables from the public waste stream, PPR plays an important role in demonstrating local governments commitment to resource recovery, as well as, extending recycling away from home through behaviour change and community engagement (Sustainability Victoria, 2007).

The NSW state government developed guidelines for PPR systems in 2005 (DEC, 2005) and the Victorian state government similarly developed some in 2007 (Sustainability Victoria, 2007). These guidelines have been widely used by local governments across Australia.

For those councils, the implementation of PPR systems has proven to be highly beneficial in demonstrating leadership in waste management to their communities (Sustainability Victoria, 2007).

The latest innovation in public place recycling is the Reverse Vending Machine (RVM). A RVM is a device that accepts used empty beverage containers and returns money to the user (the reverse of the typical vending cycle). They have proven to be very effective tools for increasing recycling in public areas and are not subject to the contamination that other PPR systems face.

ESC currently has no PPR systems in place. For the reasons stated above it would be worth ESC exploring the provision of RVMs in some key areas within their municipality.

The National Packaging Covenant provides grants for innovative public place recycling schemes and this could be worth further investigation.

Thus two options have been considered in this strategy:

- Option 1: Business as Usual
- Option 2: Install reverse vending machines in key public areas in the shire.

The sustainability index modelling and the SWOT analysis (Appendix 3) point to option 2 as being the most appropriate option, where Council installs reverse vending machines in key areas of the shire.

10.7 Internal Council Operations

Local governments need to lead by example. It is thus integral that Council initiate an internal recycling and waste minimisation review to ensure that the Council is “walking the talk” of recycling and waste reduction. While small tonnages are involved it will assist in creating a momentum toward further reform.

Council should also be seen to be implementing the objectives of this strategy in all of their activities, including Council events and via an environmental purchasing policy.

Council currently does not provide recycling at many of its facilities. It would be beneficial for Council to investigate doing this in the future.

Options considered for the management of Council operations included:

- Option 1: Business as usual.
- Option 2: Develop an environmental purchasing policy and waste management policy for all Council operations including events.
- Option 3: Investigate the potential to provide recycling at Council facilities.

The sustainability index modelling and SWOT analysis (Appendix 3) both point to options 2 and 3, where Council develops an environmental purchasing policy and waste management policy and investigates providing recycling at all of their facilities, as the best way by which Council can show they are a leader in waste management to the Eurobodalla community.



10.8 Waste Education

Governments have a range of policy tools to drive reform. These can be simplified to three key approaches:

1. Economic – for example levies, taxes, subsidies and grants.
2. Regulation – for example bans enforcement activities and EPR Schemes.
3. Education – motivating individuals and companies to take specific actions.

As discussed in many areas of this document, education is a key element to the future management of waste in the region and is used at almost every level to support existing systems and services and to promote new ones.

ESC also currently provides education to a number of schools within the region and issues an annual waste and recycling guide. It is integral that Council maintains an up to date waste section on its website and keeps the media involved in waste management initiatives.



Currently however, resources and staffing within the Council to implement these waste strategies are limited. It is for this reason it may be worth ESC developing a separate waste education strategy and investigating opportunities for the implementation of this (such as grant opportunities). The cost of this could be supplemented by any landfill price increases as discussed earlier in this document.

Two options were considered for waste education:

- Option 1: Business as Usual
- Option 2: Develop and implement a waste education strategy

The sustainability index modelling and SWOT analysis (Appendix 3) both point to option 2 as being the most effective way to strategically implement waste education programs in the ESC region.

11.Strategies and Implementation Plan



Strategies and specific actions have been developed to assist Council in meeting the objectives of the Waste Management Plan (Table 21).

These strategies and actions will be implemented and completed within the time periods assigned to them.

This plan will be reviewed and updated annually in line with Council's strategic reporting requirements.

Strategy	Action	Timeframe
Municipal Waste Services		
Provide the community with an acceptable waste management service that works to divert materials from landfill.	Investigate the provision of a new green organics bin and a kitchen tidy bin.	By 2012
	Investigate collection of food waste and garden organics in the green-lidded household bin and increase the frequency of these collections to weekly with a new composting facility.	By 2012
	Provide a new waste recycling guide to all households in the region explaining the new services and collection times.	By 2012
	Implement a behavior change program to support changes to the household 3 bin service.	By 2012
Commercial and Industrial Waste		
Assist the Commercial and Industrial sector to decrease waste generation and increase diversion.	Investigate the potential to provide a fee for service waste service to the C&I sector.	By 2012
	Review C&I price drivers to promote further resource recovery and recycling.	By 2013
	Provide information to the C&I sector to help them to divert waste materials.	By 2013
	Consider the provision of a food waste collection service to the commercial sector on the basis that a composting facility is established at the Brou and Surf Beach landfills.	By 2014
	Promote those companies who offer recycling to the C&I sector.	By 2014
Construction and Demolition Waste		
Assist the Construction and Demolition sector to decrease waste generation and increase diversion.	Review C&D price drivers to promote further resource recovery and recycling.	By 2013
	Make it a mandatory condition of all building permits issued to comply with ESC's 'code of waste management and minimisation practices for building sites' and investigate resourcing to enforce this.	By 2014
	Promote those companies who offer recycling for building materials to the C&D sector.	By 2014
	Design an education program for the building industry to teach them to source separate on site.	By 2014
	Ensure that all C&D materials generated from Council operations, such as roadworks, are managed appropriately and recycled where possible.	Ongoing

Strategy	Action	Timeframe
Infrastructure		
Ensure waste infrastructure in ESC drives and facilitates resource recovery.	Organics Infrastructure	
	Work with the EPA to develop a plan for the construction of a composting facility at the Brou landfill and Surf Beach landfills.	By 2012
	MRF and Recyclables Infrastructure	
	Investigate site options for a MRF before a new waste contract is formed and begin any planning approval processes that are required.	By 2012
	Community Recycling Points	
	Remove bins from unmanned recycling points.	By 2014
	Implement an education and enforcement program to ensure that illegal dumping does not occur at these sites after the bins have been removed.	By 2014
Pricing		
Ensure fees and charges for waste services drive waste minimisation and resource recovery.	Review domestic waste management service charges and ensure they provide enough of an incentive to drive resource recovery and waste minimisation.	Annually
	Ensure pricing encourages customers to source separate their materials.	Annually
	Consider imposing gradual increases in landfill prices to encourage resource recovery.	By 2013
	Investigate using the funds collected from any increases in landfill pricing to further improve waste management infrastructure, services and education programs in the ESC region and implement the actions outlined in this strategy.	By 2013
Data Collection		
Maintain sound data collection practices that provide accurate data to base waste management decisions around.	Continue to undertake 2 yearly domestic waste bin audits.	Every 2 years
	Work with ESC's contracted recycling company to obtain sound data on contamination rates of recyclables and total materials recovered.	Ongoing
	Undertake 2 yearly green waste bin audits.	Every 2 years
	Undertake landfill audits at both the Brou and Surf Beach landfills to obtain information on the types of C&I and C&D materials entering the facilities.	By 2014
Home Composting		
Promote, encourage and facilitate home composting in the community.	Change old household green bins into home composting bins and provide to the community for use.	By 2013
	Provide information to the community on home composting practices and run user training workshops for all those who receive a composting bin from Council.	By 2013

Strategy	Action	Timeframe
Illegal Dumping		
Reduce illegal dumping in the Eurobodalla region.	Undertake an investigation into illegal dumping in the shire to determine whether or not it is an issue	By 2013
	Implement an illegal dumping education program, particularly targeting tourists.	By 2013
Tourism		
Encourage and promote local waste management services to tourists.	Develop an education program to promote waste management facilities during the peak tourist periods in ESC.	By 2012
Public Place Recycling		
Demonstrate that ESC is committed to resource recovery by providing recycling infrastructure in public places.	Install reverse vending machines in key public areas in ESC.	2016
	Investigate potential grant opportunities to assist in funding PPR initiatives.	2016
Internal Council Operations		
Ensure that all policy and planning decisions lead by example and aid in providing more effective waste management practices.	Ensure all Council activities (including events) follow the objectives outlined in this strategy.	Ongoing
	Ensure Council implements an internal purchasing policy and recycling program.	By 2012
	Investigate the provision of recycling at all Council facilities.	By 2016
Waste Education		
Provide education to the community to encourage increased diversion of materials.	Continue to work with local schools to promote waste avoidance and resource recovery	Ongoing
	Develop a waste education strategy.	2013

Table 21 Strategies and implementation plan for ESC.

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13. Appendix 1: List of Acronyms

ALOA	Australian Landfill Owners Association
AWT	Advanced Waste Treatment
C&I	Commercial and Industrial waste
C&D	Construction and Demolition waste
CFI	Carbon Farming Initiative
COAG	Council of Australian Governments
CO2e	Carbon dioxide equivalent
CPI	Consumer Price Index
CPM	Carbon Pricing Mechanism
DCCEE	Department of Climate Change and Energy Efficiency (Commonwealth)
DECC	Department of Climate Change (NSW)
DECCW	Department of Environment Climate Change and Water (NSW)
DEWHA	Department of Environment, Water, Heritage and Arts (Commonwealth)
EoC	End of Life
EPHC	Environment Protection and Heritage Council
ERA	Extended Regulated Area as defined by DECCW
ESC	Eurobodalla Shire Council
GEDO	Greenhouse and Energy Data Officer
IEC	Impact Environmental Consulting
LCA	Lighting Council of Australia
LGA	Local Government Area
MSW	Municipal Solid Waste
MRA	Mike Ritchie and Associates Pty Ltd
MUDs	Multi Unit Dwellings (e.g. flats and townhouses)
NGER	National Greenhouse and Energy Reporting
NPC	National Packaging Covenant
NPCC	National Packaging Covenant Council
NRA	Non Regulated Area as defined by DECCW
NWP	National Waste Policy 2010
OECD	Organisation for Economic Cooperation and Development
OEH	Office of Environment and Heritage (NSW)
OSAC	Oil Stewardship Advisory Council
PPR	Public Place Recycling
PSO	Product Stewardship Organisation
RRA	Regional Regulated Area as defined by DECCW
RVM	Reverse Vending Machine
SMA	Sydney Metropolitan Area as defined by DECCW
SUD's	Single Unit Dwellings
SWOT	Strengths, Weaknesses, Opportunities and Threats
WARR	Waste and Resource Recovery
WaSIP	Waste and Sustainability Improvements Payments

14. Appendix 2: Bega Valley Council's Tipping Fees 2011/2012

Mixed Waste to Landfill - Domestic	
Particulars	Charge
All utilities, vans, trailers and trucks: (Minimum charge)	
240L (MGB) or equivalent (Excludes commercial waste)	\$5.00
Small load:	
Recycling (Commercial)	\$8.00
Garden Organics (Bermagui, Eden, Merimbula, Wallagoot only)	\$5.00
Waste Material	\$10.00
Medium Load:	
Recycling (Commercial)	\$12.00
Garden Organics (Bermagui, Eden, Merimbula, Wallagoot only)	\$8.00
Waste Material	\$20.00
Large Load:	
Recycling (Commercial)	\$25.00
Garden Organics (Bermagui, Eden, Merimbula, Wallagoot only)	\$15.00
Waste Material	\$40.00
Extra Large Load:	
Recycling (Commercial)	\$38.00
Garden Organics	\$25.00
Waste Material	\$60.00
Mixed Waste to Landfill - Commercial	
Loose cubic metres - per cubic metre	\$40.00
Compacted cubic metres - per cubic metre	\$46.00
Garden organics - commercial loads	\$25.00
Mixed Waste to Landfill - Building and Demolition	
Loose cubic metres - per cubic metre (Bermagui, Merimbula, Eden only)	\$46.00
Scrap Metal	
Scrap steel including whitegoods - per cubic metre	
Innerspring double mattress	\$25.00
Innerspring single mattress	\$25.00
Car, trailer and caravan bodies	No Charge
Truck bodies	No Charge
Gas bottles spiked and debunged - charged per kg gas capacity	No Charge
Separated Wastes for Recycling - Domestic Recyclable	
Co-mingled recycling - paper, cardboard, glass, aluminium cans, steel cans, liquid paper boards and plastics - No. 1, 2, 3 and 5	No Charge
< 1 cubic metre (Excludes commercial recycling)	No Charge
> 1 cubic metre (Excludes commercial recycling)	\$5.00
Clean fill - only at Bermagui, Eden and Merimbula landfills	No Charge
Car batteries	No Charge
Truck batteries - larger than 6 cells	No Charge
Solar batteries	No Charge

Special Waste	
Asbestos waste (only at Pambula landfill) - per cubic metre	\$220.00
Offensive waste (fish waste etc) per cubic metre	\$220.00
Clinical waste (at approved disposal times) per cubic metre	POA
Quarantine waste plus plant hire - per cubic metre	POA
Household hazardous waste collection prices for commercial users	POA
Tyres (note: limit of 5 tyres per customer)	
Car/trailer tyres - less than 16" internal - rim removed/motor bike tyres - each	\$4.00
Truck tyre - Less than 16" internal - rim removed - each	\$6.00
Truck tyre - greater than 16" internal - rim removed - each	\$15.00
Tractor earthmoving equipment tyre - each	\$50.00
Grease/Oily Liquids	
Grease trap waste per litre - Bulk	\$0.35
Oily water waste (less than 20% oil) per litre - Bulk	\$0.35
<i>These fees are based on delivery to the appropriate facility. Only available to approved transporters who have entered into a Trade Waste agreement with Bega Valley Shire Council for the handling of this material.</i>	
Dead Animals	
Small size - dog/cat	\$10.00
Medium size - goat/sheep	\$20.00
Large size - cattle/horse	\$40.00
Other - Waste Management Fees	
Sale of mulch - per cubic metre	\$12.00
Sale of compost and soil conditioners	\$30.00
Sale of firewood - per cubic metre	\$35.00
Mulch loading fee	\$3.00
Minimum transaction for account customers (Bermagui, Eden, Merimbula depots only)	\$25.00

15. Appendix 3: SWOT Analysis and Sustainability Index Modelling

All options for each of the strategic considerations were ranked on a sustainability assessment index which includes factors of cost, risk, environmental improvement, acceptability and integrity with existing systems.

In the sustainability index modelling the options are scored out of 10, where 10 is the best and 1 is the worst.

The preferred options were then put through a SWOT analysis.

1. Infrastructure

1.1 Organics Infrastructure

a) Options:

- Option 1: Business as usual.
- Option 2: Seek planning approval from the EPA for a composting facility at the Brou landfill and Surf Beach landfills.

b) Sustainability Index Modelling:

Factors for consideration	Options	
	1	2
Cost	10	4
Resource recovery potential	1	10
Environmental improvement	1	10
Acceptability	5	5
Transport impacts	10	8
Integrity with existing systems	10	9
TOTAL SCORE	37	46

Table A4- 1 Organics Infrastructure sustainability assessment Index - (MRA, 2011).

The sustainability index modeling demonstrates that option 2 is the most sensible option from an economic, environmental and social perspective.

c) Preferred Option and SWOT Analysis:

The preferred option would be to implement option 2 to improve the lifespan of the Brou and Surf Beach landfills. These options are modelled further in the SWOT in Table A4- 2.

Strengths	Weaknesses
<ul style="list-style-type: none">• Increased diversion of organics from landfill.• Reduced greenhouse gas emissions from the landfill.• Extend the life of both the Surf Beach and Brou landfills.	<ul style="list-style-type: none">• Will be costly to set up the composting facility.
Opportunities	Threats
<ul style="list-style-type: none">• To develop markets in the region for organic waste.• Revenue raised from end-product compost could be used to offset home composting programs and other waste programs in the shire.• Compost could be provided back to the community for free or at a subsidized price.	<ul style="list-style-type: none">• EPA does not allow ESC to expand current composting facilities at Brou and Surf Beach landfills to include category 3 & 3 organics (food).

Table A4- 2 SWOT analysis of preferred option for managing organics infrastructure in ESC.

1.2 MRF and Recyclables Infrastructure

a) Options:

- Option 1: Business as usual.
- Option 2: Investigate MRF site options before a new waste contract is formed and obtain any relevant planning approvals from the EPA.

b) Sustainability Index Modelling:

Factors for consideration	Options	
	1	2
Cost	9	9
Resource recovery potential	3	5
Environmental improvement	3	5
Acceptability	10	10
Transport impacts	10	10
Integrity with existing systems	10	9
TOTAL SCORE	45	48

Table A4- 3 MRF sustainability assessment Index (MRA, 2011).

The sustainability index modeling demonstrates that option 2 is the most sensible option from an economic, environmental and social perspective.

c) Preferred Option and SWOT Analysis:

The preferred option is option 2, where ESC investigate MRF site options before a new waste contract is formed and obtain any relevant planning approvals from the EPA. The SWOT analysis for this option is shown below in Table A4- 4.

Strengths	Weaknesses
<ul style="list-style-type: none">• Starting the planning processes for a MRF or Transfer Station at the landfill will make it quicker to implement once a contract has been established.	<ul style="list-style-type: none">• If ESC goes through the planning process, and the new contract still uses the existing MRF, it will potentially be a waste of staff time.• Limited in the detail that can be discussed for the site until an agreement on what is needed is made with winning contractor.
Opportunities	Threats
<ul style="list-style-type: none">• Will allow Council to have more control over how their recyclables are managed. Opportunity to work closely with recycling contractor.	<ul style="list-style-type: none">• EPA does not give ESC planning permission for a MRF or transfer station site at the Surf Beach landfill.

Table A4- 4 SWOT analysis MRF and Recycling infrastructure in ESC.

1.3 Community Recycling Points

a) Options:

- Option 1: Business as usual.
- Option 2: Remove unmanned community recycling points and encourage residents to visit the landfill sites and transfer station instead.
- Option 3: Install specific reverse vending machines at high yield locations.

a) Sustainability Index Modelling:

Factors for consideration	Options		
	1	2	3
Cost	5	10	2
Resource recovery potential	2	9	6
Environmental improvement	2	9	6
Acceptability	9	1	10
Transport impacts	9	8	5
Integrity with existing systems	9	10	8
TOTAL SCORE	36	47	37

Table A4- 5 Community recycling points sustainability assessment Index (MRA, 2011).

This modelling demonstrates that option 2 is the most appropriate from an environmental, social and economic perspective.

b) Preferred Option and SWOT Analysis:

The preferred option is option 2, which would be to remove all community recycling points and direct rural residents to the transfer station and landfills instead. The SWOT analysis for this option is depicted below in Table A4- 6.

Strengths	Weaknesses
<ul style="list-style-type: none">• Will reduce contamination of the recycling stream.• Will rid of illegal dumping at current recycling points.• Will decrease management costs for Council.	<ul style="list-style-type: none">• Residents may not be happy with decision to remove bins.
Opportunities	Threats
	<ul style="list-style-type: none">• Increased illegal dumping in other areas as people protest to the change or do not want to drive further to the landfills or transfer station.

Table A4- 6 SWOT analysis for the management of community recycling points in ESC.

2. Pricing

a) Options:

- Option 1: Business as usual.
- Option 2: Impose gradual increases in landfill prices via a levy and use funds collected to improve waste management in the ESC region.
- Option 3: Impose one standard landfill levy on waste with no staged increases and use funds collected to improve waste management in the ESC region.

b) Sustainability Index Modelling:

Factors for consideration	Options		
	1	2	3
Cost	5	9	10
Resource recovery potential	5	9	9
Environmental improvement	5	9	9
Acceptability	9	3	1
Transport impacts	9	9	9
Integrity with existing systems	9	9	9
TOTAL SCORE	42	48	47

Table A4- 7 Pricing sustainability assessment Index (MRA, 2011).

The sustainability index modelling demonstrates that option 2 is the most sensible option from an economic, environmental and social perspective.

c) Preferred Option and SWOT Analysis:

The preferred option for Council would be option 2, which is to impose a landfill levy along with an annual staged increase and use funds to improve waste management in the ESC region.

ESC should also regularly review domestic waste management service charges, based on any changes to landfilling prices and ensure they provide enough of an incentive to drive resource recovery and waste minimisation. The SWOT analysis for this preferred option is shown below in Table A4- 8.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Would send a signal to the market and improve resource recovery from all sectors, but particularly the C&I and C&D sectors. • May drive investment by others in waste infrastructure and create a market for recyclables in the region. • Ultimately will create an increase in resource recovery. • Decreased landfill emissions from greater diversion of organic materials. • Increase the capacity of the landfills and extend their lifetime. 	<ul style="list-style-type: none"> • May just force contractors and residents to use cheaper landfills nearby – thus decreasing waste to the Eurobodalla landfills, but still not addressing resource recovery.
Opportunities	Threats
<ul style="list-style-type: none"> • Levy could be used for improvements to waste infrastructure, education programs and Council waste services. 	<ul style="list-style-type: none"> • Community anger at the associated increase in gate fees. • Although unlikely, there is a very small chance the state government could impose a levy on top of ESC's levy.

Table A4- 8 SWOT analysis of preferred option for pricing structure at landfills in ESC

3. Data Collection

a) Options:

- Option 1: Business as usual.
- Option 2: Undertake landfill audits to determine the types of C&I and C&D entering the landfills.
- Option 3: Continue audits of the municipal rubbish bin every 2 years, and complement with 2 yearly audits of the recycling and green waste bins.

b) Sustainability Index Modelling:

Factors for consideration	Options		
	1	2	3
Cost	9	4	4
Resource recovery potential	3	9	9
Environmental improvement	3	9	9
Acceptability	9	9	7
Transport impacts	9	9	7
Integrity with existing systems	9	9	9
TOTAL SCORE	42	49	45

Table A4- 9 Data sustainability assessment Index (MRA, 2011).

The sustainability index modeling demonstrates that options 2 and 3 are the most sensible option from an economic, environmental and social perspective.

c) Preferred Option and SWOT Analysis:

The preferred option for would be to implement option 2 to obtain a greater understanding of what is entering the landfills, and to consider implementing option 3, as this would give an better interpretation overall of the contamination rates of the different waste streams from the municipal sector. Table A4- 10 Shows the SWOT analysis of these options below.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Better data will result in the design of more effective waste management programs for ESC. • Will help to divert waste from the C&I, C&D and municipal sectors. • Will help to determine any contamination issues of these waste streams. 	<ul style="list-style-type: none"> • It will result in a significant cost for Council. • Also requires significant staffing resources to oversee the project.
Opportunities	Threats
<ul style="list-style-type: none"> • To do more detailed audits of waste management facilities in the future. • Data will help to develop strategies for the future or determine whether there is a need for further investment in infrastructure (such as a C&I sorting facility). 	<ul style="list-style-type: none"> • Poor data collection methods used during auditing process. It is important that this is well managed.

Table A4- 10 SWOT analysis of preferred option for data collection in ESC.

3. Home Composting

a) Options:

- Option 1: Business as usual.
- Option 2: Provide the community with subsidized new home composting bins and complement with an education program.
- Option 3: Provide the community with free home composting bins (the old Council green waste bins with bottoms cut off) and complement with an education program.

b) Sustainability Index Modelling:

Factors for consideration	Options		
	1	2	3
Cost	10	1	5
Resource recovery potential	5	8	8
Environmental improvement	5	8	8
Acceptability	3	10	10
Transport impacts	10	10	10
Integrity with existing systems	10	10	10
TOTAL SCORE	43	47	51

Table A4- 11 Home Composting sustainability assessment Index (MRA, 2011).

The sustainability index modeling demonstrates that option 3 is the by far the most sensible option from an economic, environmental and social perspective.

c) Preferred Option and SWOT Analysis:

The preferred option is option 3, where old green waste bins would have their bottoms cut off and be provided to the community free of charge to use as home composting bins. This could be complemented by an education campaign helping them to better understand how to manage their composting system. The SWOT analysis for this option is shown below in Table A4- 12.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Low cost to Council. • May decrease the amount of green and food waste disposed of through kerbside service which reduces operating costs for Council. 	<ul style="list-style-type: none"> • Would need to be followed up to ensure that compost bins are being used correctly. • Education program would have some cost for Council and would need to include user training workshops as well as a media campaign.
Opportunities	Threats
<ul style="list-style-type: none"> • If successful, other home composting programs could be run in the future using similar bin systems. 	<ul style="list-style-type: none"> • Compost bins are not used correctly and cause problems for householders.

Table A4- 12 SWOT analysis of preferred option for home composting in ESC.

4. Illegal Dumping

a) Options:

- Option 1: Business as usual.
- Option 2: Investigate when the peak periods for illegal dumping are and implement a targeted illegal dumping enforcement and education program.
- Introduce a city-wide illegal dumping program funded from a waste levy.

b) Sustainability Index Modelling:

Factors for consideration	Options		
	1	2	3
Cost	6	8	8
Resource recovery potential	1	3	4
Environmental improvement	3	9	10
Acceptability	5	5	4
Transport impacts	7	9	9
Integrity with existing systems	10	9	9
TOTAL SCORE	40	45	43

Table A4- 13 Illegal dumping sustainability assessment Index (MRA, 2011).

The sustainability index modeling demonstrates that option 2 is the most viable option from an economic, environmental and social perspective, if illegal dumping were found to be a major issue in ESC.

c) Preferred Option and SWOT Analysis:

The preferred option for would be to implement option 2 to find out whether or not illegal dumping is an issue and then design an education and enforcement program to combat it if it is. Option 3 should be implemented if ESC decides to introduce a landfill levy.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Education program is a low cost to Council. • It has the potential to significantly decrease illegal dumping problems in ESC. • It can be coupled with the promotion of the waste facilities. 	<ul style="list-style-type: none"> • Enforcement of the issue can be expensive and requires staff resources and commitment. • Research of illegal dumping (i.e. who is doing it? Where? How? Etc) can be costly but important for the design of any education or enforcement program.
Opportunities	Threats
<ul style="list-style-type: none"> • There are grant opportunities provided by state government for the implementation of innovative illegal dumping programs. • There are many other Councils that have similar illegal dumping issues (particularly from tourists), and a lot could be learned from what they have done. 	<ul style="list-style-type: none"> • Council may spend money and assign resources to research the issue, only to discover that is not actually a problem at all.

Table A4- 14 SWOT analysis of preferred option for the management of illegal dumping in ESC.

5. Tourism

a) Options:

- Option 1: Business as usual.
- Option 2: Design and implement a targeted education program to tourists in the peak summer period to teach them to appropriately use ESC's waste management systems.
- Option 3: Increase the frequency of kerbside recycling and rubbish collections in the peak summer period.

b) Sustainability Index Modelling:

Factors for consideration	Options		
	1	2	3
Cost	10	8	1
Resource recovery potential	2	3	9
Environmental improvement	2	3	9
Acceptability	5	10	9
Transport impacts	10	10	1
Integrity with existing systems	10	10	10
TOTAL SCORE	39	44	39

Table A4- 15 Tourism sustainability assessment Index (MRA, 2011).

The sustainability index modeling demonstrates that option 2 is the most sensible option from an economic, environmental and social perspective.

c) Preferred Option and SWOT Analysis:

The preferred option is option 2 where an education program would be designed and implemented in the peak summer period to teach visitors how to use and access ESC's waste management services appropriately. The SWOT analysis for this option is undertaken below in Table A4- 16.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Low cost to Council. • No regrets option. 	<ul style="list-style-type: none"> • Would need to be implemented annually. • Still does not address the problem of excess recyclables being generated and not being captured (still overflowing into rubbish bin).
Opportunities	Threats
<ul style="list-style-type: none"> • To encourage visitors to make better use of the transfer station for excess wastes. • Increase of revenue through the waste management facilities. • Could complement the education program with information on illegal dumping. 	<ul style="list-style-type: none"> • There is little or no change to tourist behavior.

Table A4- 16 SWOT analysis of preferred option for the management of tourism waste in ESC.

6. Public Place Recycling

a) Options:

- Option 1: Business as usual.
- Option 2: Install Reverse Vending Machines in key public areas in the shire.

b) Sustainability Index Modelling:

Factors for consideration	Options	
	1	2
Cost	10	5
Resource recovery potential	1	8
Environmental improvement	1	8
Acceptability	5	10
Transport impacts	10	8
Integrity with existing systems	10	10
TOTAL SCORE	37	46

Table A4- 17 Public Place Recycling sustainability assessment Index (MRA, 2011).

The sustainability index modeling demonstrates that option 2 is the most sensible option from an economic, environmental and social perspective.

c) Preferred Option and SWOT Analysis:

The preferred option is option 2 where ESC would be to install reverse vending machines in key public areas. The SWOT analysis for this option is shown below in Table A4- 18.

Strengths	Weaknesses
<ul style="list-style-type: none">• It would show Council as a leader in waste management.• Demonstrates to the community that Council is serious about resource recovery.• Meets community expectations.	<ul style="list-style-type: none">• Is expensive to implement without funding assistance and can potentially be expensive to manage.
Opportunities	Threats
<ul style="list-style-type: none">• There are funding opportunities out there that are provided to innovative public place recycling programs.	<ul style="list-style-type: none">• Vandalism of machines.

Table A4- 18 SWOT analysis of preferred option for the management of PPR in ESC.

7. Internal Council Operations

a) Options:

- Option 1: Business as Usual.
- Option 2: Develop an environmental purchasing policy and waste management policy for all Council operations including events.
- Option 3: Investigate the potential to provide recycling at Council facilities.

b) Sustainability Index Modelling:

Factors for consideration	Options		
	1	2	3
Cost	8	1	1
Resource recovery potential	3	6	6
Environmental improvement	3	6	6
Acceptability	4	9	7
Transport impacts	10	9	9
Integrity with existing systems	8	9	9
TOTAL SCORE	36	40	38

Table A4- 19 Council operations sustainability assessment Index (MRA, 2011).

The sustainability index modeling demonstrates that options 2 and 3 are the most sensible option from an economic, environmental and social perspective.

c) Preferred Option and SWOT Analysis:

The preferred option would be to implement option 2, where Council develops a waste management policy and purchasing policy to guide Council operations, as well as implement a recycling system in all Council facilities.

This option demonstrates Council as a leader. There is also potential for Council to start investigating how they might introduce recycling into all of their facilities as detailed in option 3. The SWOT analysis for this option is undertaken below in Table A4- 20.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Demonstrates Council to be a leader and walking the talk with reference to waste management initiatives. • Further reduces waste to landfill and increases diversion rates. • Is an important way to get Council staff involved in waste management, which they then further promote to the community that they work so closely with. • It may help to reduce the cost of waste management for Council directly. 	<ul style="list-style-type: none"> • Initially there may be some resistance internally to the change. • The initial development of these policies will require significant staff resources. • May have a small associated cost with the set up of such programs and policies.
Opportunities	Threats
<ul style="list-style-type: none"> • To become one of the greenest Councils in the region. • To look for grant opportunities to subsidise recycling programs. I.e. through the National Packaging Covenant. 	

Table A4- 20 SWOT analysis of preferred option for the internal management

8. Waste Education

a) Options:

- Option 1: Business as Usual
- Option 2: Develop and implement a waste education strategy

b) Sustainability Index Modelling:

Factors for consideration	Options	
	1	2
Cost	10	8
Resource recovery potential	3	5
Environmental improvement	3	5
Acceptability	5	5
Transport impacts	10	10
Integrity with existing systems	9	9
TOTAL SCORE	40	42

Table A4- 21 Education sustainability assessment index (MRA, 2011).

The sustainability index modeling demonstrates that option 2 is the most sensible option from an economic, environmental and social perspective.

c) Preferred Option and SWOT Analysis:

The preferred option would be to implement option 2 where a waste education strategy would be developed and implemented. The implementation of this strategy could later be covered or supplemented by any potential increase to landfilling costs. The SWOT analysis for this option is shown in Table A4- 22.

Strengths	Weaknesses
<ul style="list-style-type: none"> • It would provide a strategic delivery of waste education in the region. 	<ul style="list-style-type: none"> • Costs are high if not supplemented by a landfill levy or equivalent. • Education programs need to complement infrastructure or economic changes to create lasting change.
Opportunities	Threats
<ul style="list-style-type: none"> • To use any increases in landfilling costs to supplement the implementation of the waste education strategy. 	<ul style="list-style-type: none"> • Education programs may not contribute or contribute very little to reduced waste diversion.

Table A4- 22 SWOT analysis of preferred option for implementing waste education in ESC.