



**MIDCOAST**  
council



## **DRAFT WASTE MANAGEMENT STRATEGY 2030**

Reduce, reuse, recycle... re-imagine waste

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## Waste Management Strategy

A Submission to MidCoast Council (ABN 44 961 208 161)  
Job No. 222-1012633

+61 2 6591 7222

[council@midcoast.nsw.gov.au](mailto:council@midcoast.nsw.gov.au)

[www.midcoast.nsw.gov.au](http://www.midcoast.nsw.gov.au)

## Prepared by

MRA Consulting Group (MRA)  
Registered as Mike Ritchie & Associates Pty Ltd  
ABN 13 143 273 812

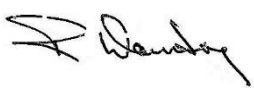
Suite 408 Henry Lawson Building  
19 Roseby Street  
Drummoyne NSW 2047

+61 2 8541 6169

[info@mraconsulting.com.au](mailto:info@mraconsulting.com.au)

[mraconsulting.com.au](http://mraconsulting.com.au)

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# Glossary

Terminology	Definition
ABS	Australian Bureau of Statistics
ACCU	Australian Carbon Credit Units
AWT	Alternative Waste Treatment
BW	Builder's waste
CDS	Container Deposit Scheme
CRC	Community Recycling Centre
EfW	Energy from Waste
EPA	NSW Environment Protection Authority
EPR	Extended Producer Responsibility
FOGO	Food Organics and Garden Organics
FY	Financial Year
kg/HH/wk	Kilograms per household per week
LGA	Local Government Area
MCC	MidCoast Council
MRF	Materials Recycling Facility
MSW	Municipal Solid Waste
MUD	Multi-Unit Dwelling
NSW	New South Wales
RW	Mixed residual waste
SM	Scrap Metal
SUD	Single Unit Dwelling
tpa	Tonnes per annum
WARR Act	Waste Avoidance and Resource Recovery Act 2001 (NSW)
WTS	Waste Transfer Station

# Strategy at a glance

## Where we are today

- MidCoast Council (MCC) was formed through the merger of the former Great Lakes, Greater Taree and Gloucester Shire Councils in 2016. It covers a geographical region of approximately 10,000 square kilometres in the mid north coast of New South Wales.
- The region has an estimated population of 95,600 residents occupying 42,500 households. MCC provides a range of residential waste services that include kerbside waste collection, bulky waste collection, community recycling centres and tip shops.
- MCC waste infrastructure includes three operational landfills (Stroud, Taree and Gloucester) and six waste transfer stations.
- MCC residents generate approximately 39,970 tonnes of domestic waste (consisting of general waste, comingled recycling, and green waste), of which 44% is recycled.

## Where do we want to get to?

- MCC has set ambitious targets for waste management that aligns with the visions and themes of the community. These include the secure delivery of service and infrastructure needs, a reduction of waste sent to landfill and the promoting of a sustainable and healthy environment.
- MCC targets are aligned with the guiding principles established by the NSW Waste and Sustainable Material Strategy and waste hierarchy which encourage circular economy practices.
- The Strategy targets aim to address projected increases in domestic waste tonnages due to population growth, recycling contamination rates, littering and illegal dumping and landfill gas emissions.

## How will we get there?

- Actions that align with the vision to improve MCC waste services and achieve strategy targets have been identified.
- Each action was assessed for its financial, environmental, social and performance considerations.
- The estimated impacts to Strategy targets have been presented for each proposed action.

## How will the strategy be implemented?

- A recommended action plan has been developed to provide detailed steps for each identified action.
- Action timeframes and a staged roll-out of tasks will help ensure sufficient personnel and funding resources to achieve the proposed initiatives.

## How will progress be measured?

- A range of monitoring and analysis measures for each focus area will measure progress towards achieving MCC targets.
- Annual reporting will utilize on-going MCC waste data monitoring and provide regular updates on the roll-out of the action plan.

# 1 Where we are today

Communities worldwide are leading the way in imagining a future which is less wasteful of resources, and which protects the natural environment from harm. Concern about the crisis of plastic waste in our oceans and waterways is one example of the global impact of waste.

These concerns are shared by the residents of MidCoast Council (MCC). The guiding document *MidCoast 2030 Shared Vision, Shared Responsibility*<sup>1</sup> states:

*“Our natural environment is protected and enhanced, while we maintain our growing urban centres and manage our resources wisely. This value is to be realised by:*

- *Sustainably managing our waste through reduction, reuse, recycling and repurposing*
- *Proactively managing our resource consumption.”*

This Waste Management Strategy for MidCoast Council (MCC Strategy) focuses on the sustainable management of waste until 2030. This document builds off the original MCC Strategy produced by Council in 2019, which has been updated to better reflect state-wide waste management initiatives.

The MCC Strategy establishes priority areas for Council to better manage waste as a valuable resource and reduce the environmental impacts of waste disposal. The targets for waste avoidance and reduction will require change in practices by all sections of the community.

Targets in this Strategy align with the *NSW Waste and Sustainable Materials Strategy 2041* (NSW Strategy). As a member of the Midwaste Regional Waste Forum<sup>2</sup>, MCC contributes to the *Midwaste Regional Waste Avoidance and Resource Recovery Strategy 2014-21*. See Appendix A for more details of the legislative and policy context which informs this Strategy.

The MCC Strategy sets the strategic direction for waste service planning to 2030 and beyond. This requires a clear understanding of current baseline characteristics of population growth and waste generation rates. Once the trends are understood, MCC can effectively plan future waste delivery services such as new waste facilities and the development of waste contract agreements.

## 1.1 Population and Demographics

MCC was formed by NSW Government Proclamation on Thursday 12 May 2016 through the merger of the former Great Lakes, Greater Taree and Gloucester Shire Councils. The geographical region of 10,052 square kilometres extends from the mid north coast of New South Wales west to the escarpment of the Great Dividing Range. The area spans from coastal beaches to mountains in the hinterland and numerous national parks and green spaces in between.

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<sup>1</sup> *MidCoast 2030 Shared Vision, Shared Responsibility* Community Strategic Plan, p. 9

<sup>2</sup> Midwaste comprises Coffs Harbour City Council, Port Macquarie-Hastings and MidCoast Councils and Bellingen, Nambucca and Kempsey Shire Councils



Figure 1 Map of MCC area

The population of 95,600 occupies 42,500 households and is spread across 196 towns, villages and localities<sup>3</sup>. The MCC area is one of NSW's most popular tourist destinations, receiving more than 1.8 million visitors annually, resulting in high population fluctuations between peak (summer holidays) and off seasons<sup>4</sup>. An average household size of 2.2 persons per dwelling equates to an average population density of 9.4 persons per square kilometre. The region's population growth rate is slightly below the average for Regional NSW, with the total population expected to reach approximately 105,000 people by 2030 (Figure 2).

<sup>3</sup> Source: 2021 Estimated population and household forecasts (<https://forecast.id.com.au/midcoast/population-households-dwellings>)

<sup>4</sup> Source: *A Baseline Analysis of Tourism in MidCoast New South Wales* (2iis Consulting, 2016)

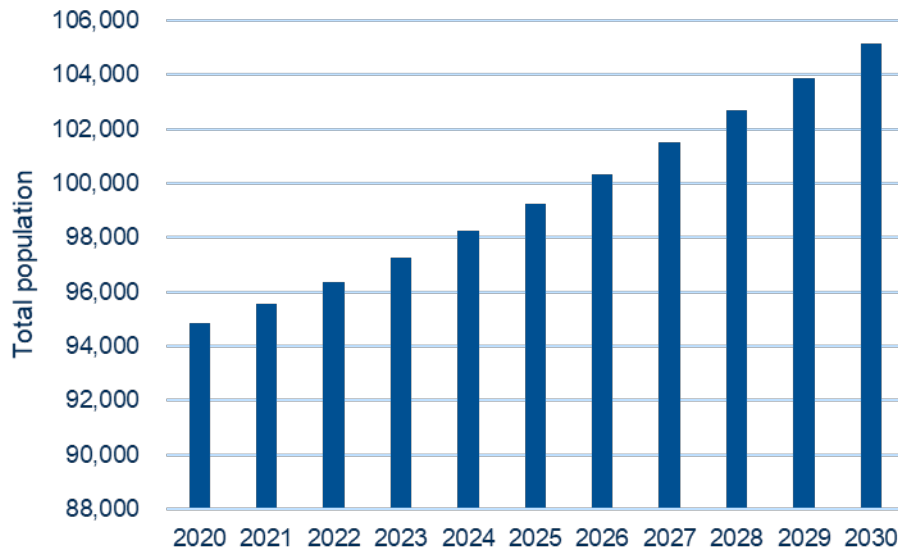


Figure 2 MCC projected resident population 2020-2030<sup>5</sup>

Similarly, the number of households is projected to grow to 47,100 by 2030, an increase of over 6,500 since the 2016 census (Figure 3).

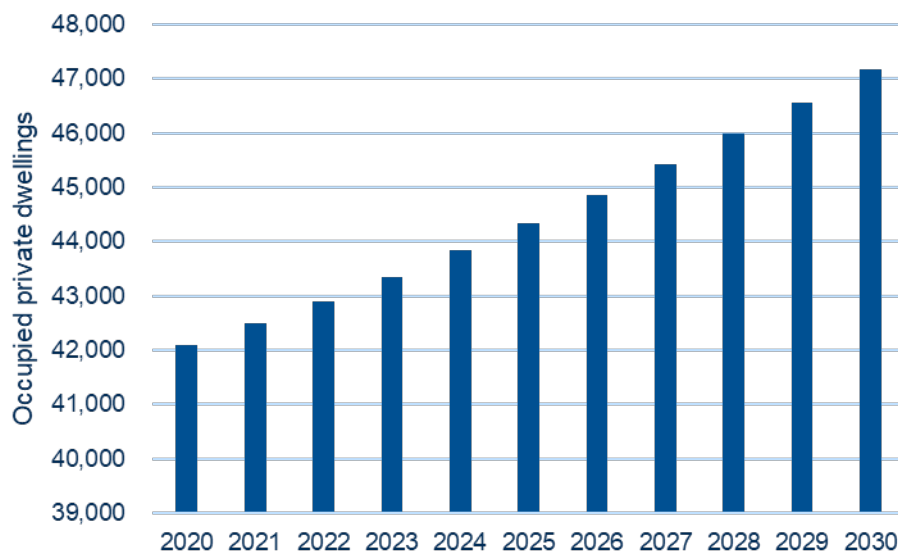


Figure 3 MCC projected occupied private dwellings 2020-2030<sup>6</sup>

Taree and Forster/Tuncurry will continue to be the focus of population and economic growth. The trend for above average growth in coastal centres is expected to continue, subject to land releases. Slower growth is anticipated in rural centres. The average vacancy rate of dwellings is approximately 15% (indicating holiday homes), which requires consideration in the planning of waste services. The largest vacancy rate is in Pacific Palms at 64% and the lowest is in Nabic at 3%. The breakdown of private dwelling types from the 2016 census is provided in Table 1.

<sup>5</sup> Source: Population and household forecasts, 2016 to 2036, prepared by .id (informed decisions), January 2018.

<sup>6</sup> Source: Population and household forecasts, 2016 to 2036, prepared by .id (informed decisions), January 2018.

Table 1 Breakdown of proportions of private dwelling types in MCC (ABS, 2016)

Dwelling Type	Proportion of occupied private dwellings
Separate house	77.9%
Semi-detached	14.8%
Multi-unit	3.8%
Other/ Not stated	3.5%

The median age of the MCC population is 52 years, significantly higher than the NSW average of 38 years. The region has high English proficiency with 93% of residents being fluent<sup>7</sup>.

## 1.2 Current residential waste services

Most households in the region receive a weekly waste collection service and a fortnightly recycling and green waste service (Table 2). Due to the rural nature of much of the region, 500 properties use common collection points (150 located throughout the Council area) or drop their waste and recycling off at landfill facilities and transfer stations.

MCC currently operates a contract with a waste industry partner to provide kerbside collection services.

General waste from the whole local government area is delivered to one of the MCC licenced landfills, either the Taree Landfill, Tuncurry Landfill or the Gloucester Landfill. Recyclables are delivered to the Material Recovery Facility (MRF) at Tuncurry Waste Management Centre.

Green garden waste is delivered to a licensed processing facility for the recovery of valuable organic nutrients. Processing can include mulching, windrow composting or Material Aerated Floor processing. Recovered nutrient are either used as EPA-approved cover material on capped landfill or sold to the public as compost.

Table 2 details the MCC data for current residential kerbside collection services, including total tonnes collected during 2020-21 (FY21). The relative proportions of the tonnages for each kerbside waste stream have stayed relatively constant in recent years (Figure 4).

Table 2 Summary of kerbside waste services provided by MCC

Service	Bin Size	Frequency	Tonnes collected (FY21)	Disposal /Processing
General waste	140 L	Weekly	22,609	Taree Tuncurry Gloucester
Recycling	240 L	Fortnightly	8,726	Tuncurry
Garden organics	240 L	Fortnightly	11,554	ANL

<sup>7</sup> Australian Bureau of Statistics (2016) Census Data

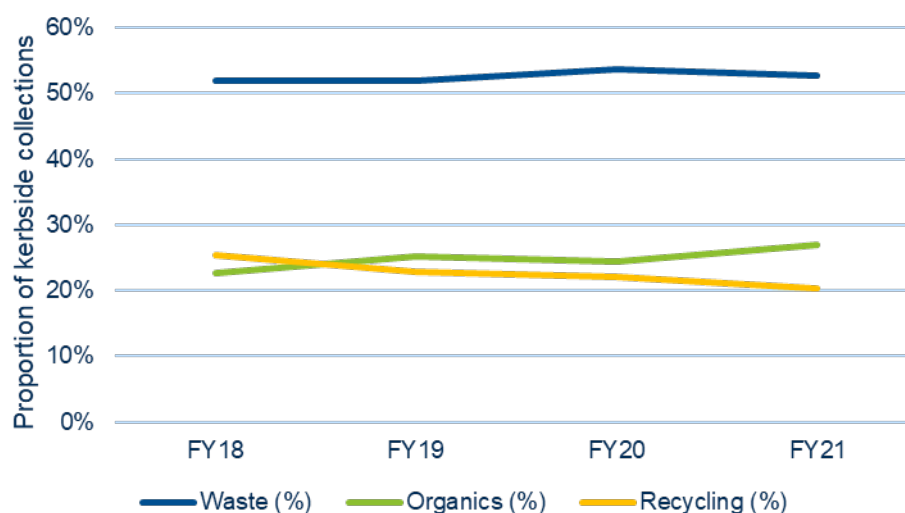


Figure 4 Changes in the proportions of kerbside waste collection in MCC

In addition to kerbside collections, MCC provides collection services for residential bulky waste (Table 3). Residents segregate bulky waste and scrap metal for separate collection and recovery.

Residents can also take recyclables, mattresses and problem wastes to Community Recycling Centres (CRCs) at the Taree, Gloucester and Tuncurry Waste Management Centres for free disposal. Problem waste items collected include paints, lead acid batteries, household batteries, fluorescent tubes, gas bottles, smoke detectors and used oils.

Table 3 Additional residential waste disposal options

Waste Category	Presentation	Frequency	Tonnes collected (FY21)
Residential bulky waste	2 m <sup>3</sup> pile	Annually	1,569
Residential scrap metal	2 m <sup>3</sup> pile	Annually	939
Mattresses	Drop-off	During operating hours	169
CRC problem wastes	Drop-off	During operating hours	129

## 1.3 Waste and resource recovery data

### 1.3.1 Generation and disposal – all waste sources

The waste and recycling data underpinning the MCC Strategy is based on information collated from weighbridge records at MCC waste facilities and the Midwaste Kerbside Waste Audit report (2021). This data is the most up to date regarding the total tonnes of material collected, recycled and disposed by Council waste services. Due to the time required to produce the annual NSW EPA Waste Data Survey results, some data presented in the MCC Strategy may be inconsistent with EPA records.

The data below displays how much waste has been generated, recovered, and disposed in the MCC region since FY19 (Table 4 and Figure 5). These figures include waste from all Municipal Solid Waste (MSW), Commercial and Industrial (C&I) and Construction and Demolition (C&D) sources. The data exclude cleanfill material used as capping material for open landfills.

The diversion rate is calculated as the percentage of the total waste generated that is recovered, either through comingled recycling, garden organic recovery or other Council operations. A baseline diversion rate of 37.4% has been calculated from the three-year average.

Table 4 Summary of overall MCC collection, recycling and disposal data

Year	Waste generated (tpa)	Waste recycled (tpa)	Waste to landfill (tpa)	Diversion rate (%)
<b>FY19</b>	90,420	29,705	60,715	32.9%
<b>FY20</b>	94,848	35,416	59,432	37.3%
<b>FY21</b>	117,991	49,528	68,463	42.0%
<b>Avg</b>	<b>101,086</b>	<b>38,216</b>	<b>62,870</b>	<b>37.4%</b>

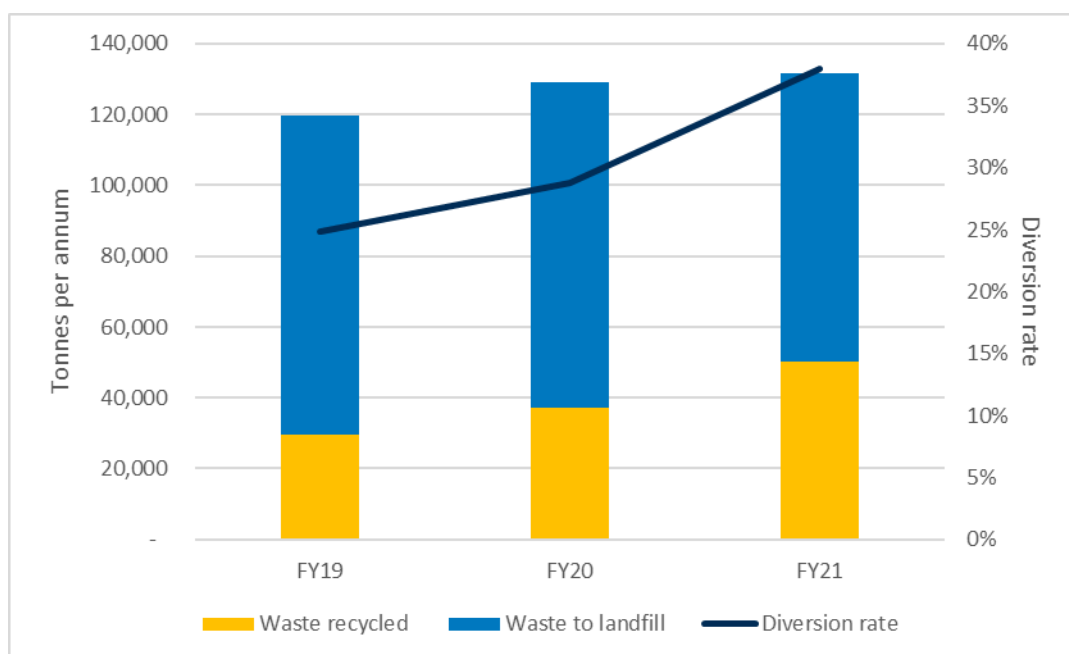


Figure 5 Changes in overall MCC tonnes and diversion rate over time

The total waste generated within the MCC region has steadily increased over the years, although a growing diversion rate means a greater proportion of this material is being returned to the economy as recycled products. This increase is evidence of the joint efforts being led by Council, business and the community to improve recycling practices in all sectors of society.

### 1.3.2 Generation and disposal – kerbside services

For kerbside collection services only, a recycling rate has been calculated as the percentage of the total waste presented for kerbside collection that is recycled. This calculation uses an average MCC comingled recycling contamination rate of 12.0% and an average garden organics contamination rate of 2.3%, assuming these contamination fractions are disposed to landfill<sup>8</sup>. The kerbside waste tonnages form a subsection of the total waste discussed in Section 1.3.1.

<sup>8</sup> Figures calculated for the MCC region in the 2021 Midwaste Kerbside Waste Audit

Table 5 summarises the MCC kerbside data and sets a baseline recycling rate of 43.2% calculated from the three-year average.

Table 5 Summary of MCC kerbside collection, recycling and disposal data

Year	Waste collected (tpa)	Waste recycled (tpa)	Waste to landfill (tpa)	Recycling Rate (%)
<b>FY19</b>	38,490	17,210	21,280	44.7%
<b>FY20</b>	38,530	16,650	21,880	43.2%
<b>FY21</b>	42,890	18,970	23,920	44.2%
<b>Avg</b>	<b>39,970</b>	<b>17,610</b>	<b>22,360</b>	<b>44.1%</b>

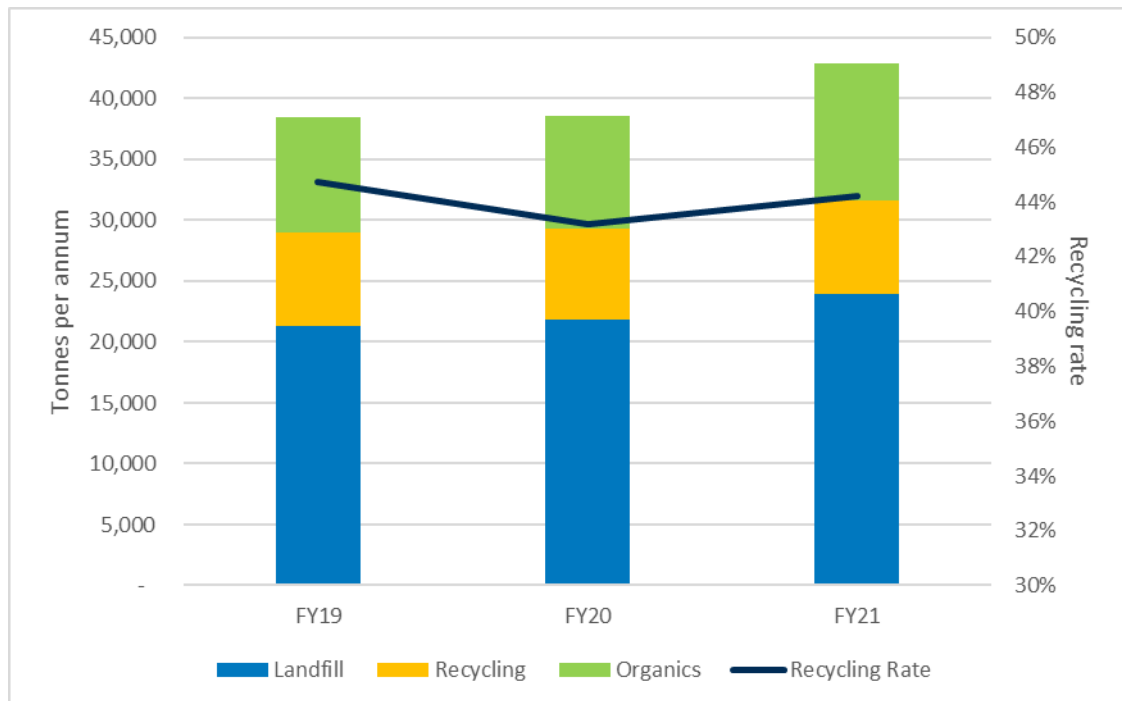


Figure 6 Changes to MCC kerbside collection tonnes and recycling rate over time

Data shows that recycling rates of kerbside material have remained consistent in recent years. The greater use of the garden waste kerbside service has counteracted a minor decrease in tonnages recovered through kerbside recycling. There exist opportunities to improve both comingled and organic recovery in the kerbside service discussed in the following Sections.

### 1.3.3 Waste composition – kerbside services

At regular intervals, the Midwaste Regional Waste Forum conducts independent waste audits of residential kerbside collections on behalf of its members. The purpose of audits is to assess the quantities of potentially recyclable material in the waste bins and the quantities of non-recyclable material in the recycling and organics bins. Table 6 shows the results from the 2021 audit of each kerbside collection services.

Table 6 MCC kerbside waste composition audit results (2021)

Category	General waste	Recycling	Garden organics
Recyclable	9.0%	88.0%	-
Potentially recyclable	10.8%	1.4%	-
Food organics	28.4%	-	1.4%
Garden and other organics	21.7%	3.7%	97.6%
Landfill	30.1%	6.9%	0.9%

The results highlight the potential to recover material currently being disposed to MCC landfills. Currently, 9.0% of the general waste (red) bin could be recycled through the existing kerbside comingled collection service. If the Tuncurry MRF accepts potentially recyclable materials (such as non-container aluminium, steel and rigid plastics), a further 10.8% of material could be recycled.

If MCC were to introduce a Food Organics and Garden Organics (FOGO) service, up to 50.1% of the residual waste stream could be captured and diverted from landfill. If all recycling and organic material was sorted by residents, the residual waste stream could decrease by 69.9% by weight.

#### 1.3.4 Waste composition – non-residential

MCC facilities accept waste from non-residential sectors, which are broadly classified as C&I and C&D wastes. Businesses are responsible for arranging their waste collections; however, Council seeks to influence the recycling performance of the commercial sector in partnership with the State government and industry.

The term C&I waste is given to all non-residential waste streams produced by businesses and institutions including schools and hospitals. C&D waste represent materials from the construction industry that when segregated can include high value resources for new construction<sup>9</sup>. Materials include concrete and bricks, asphalt, metals, timber, plasterboard, plastics, and excavated earth.

The total amount of commercial waste generated is not known, however most of this waste stream is taken to Council facilities. Figure 7 shows the composition of non-residential waste received at MCC facilities.

<sup>9</sup> Australian Government (2012) *Construction and Demolition Waste Guide – Recycling and reuse across the supply chain*

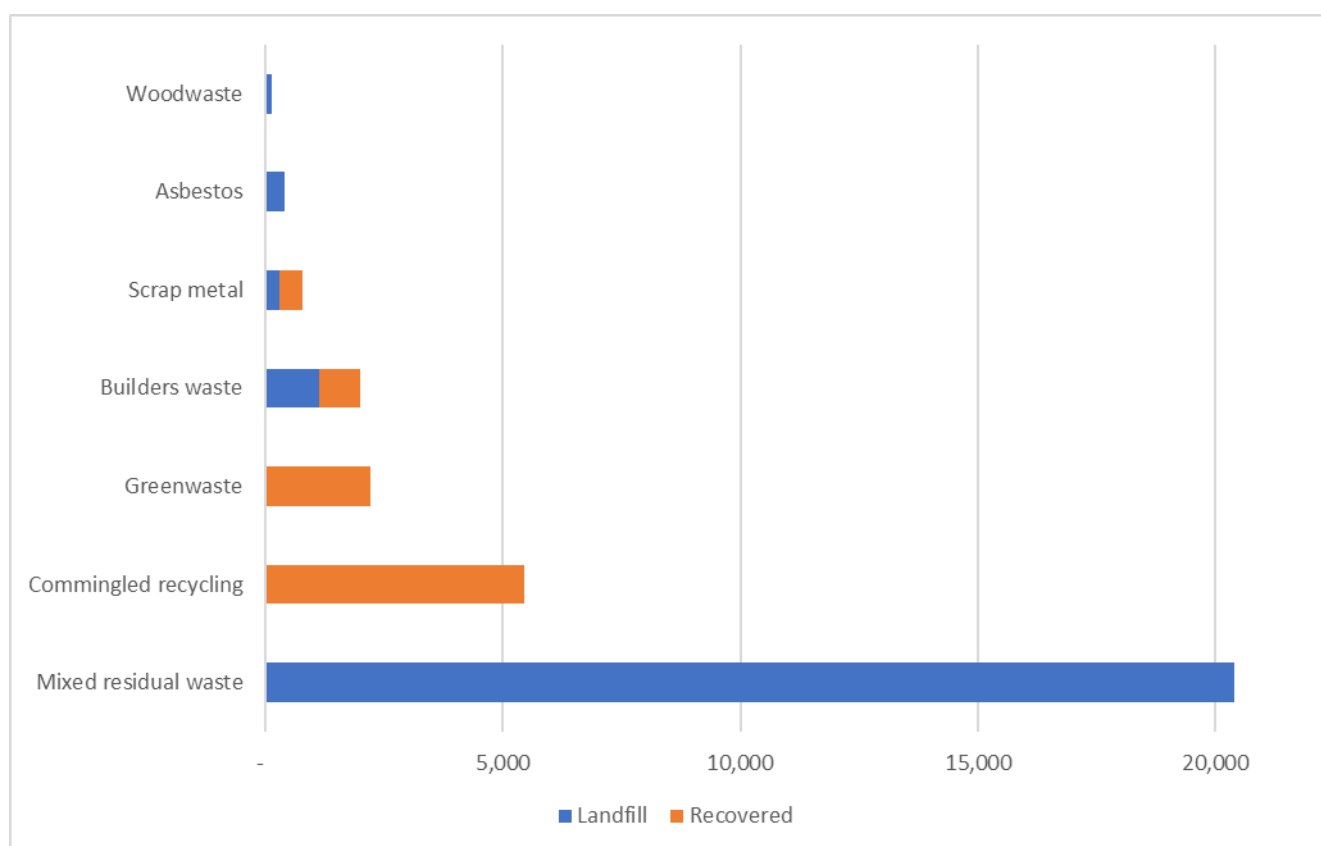


Figure 7 Major non-residential waste streams received at MCC facilities in FY21<sup>10</sup>

### 1.3.5 Waste generation rate

Waste generation rates can be linked to a range of complex influences, such as variations in economic activity or the impacted disposal characteristics following extreme climactic events (such as flood, bushfires, or droughts). Although many of these complexities are outside of Council's control, MCC can still influence the waste generation behaviours and encourage waste avoidance. These efforts in waste prevention support the pinnacle of the waste hierarchy<sup>11</sup> and should not be excluded from strategic efforts.

The average MCC waste generation rate has been calculated based on kerbside collection tonnages and internal Council records of the number of households serviced by each type of waste collection (Table 7). These are presented as the total kilograms of waste produced by each household per week (kg/HH/wk).

A base-line value of 18.3 kg/HH/wk has been calculated from the three-year average. MCC will focus is strategic efforts on decreasing the overall waste generation rate, with an emphasis on decreasing general waste destined for landfill.

<sup>10</sup> MCC weighbridge data has been used to determine the overall tonnages of arriving material. Estimated diversion rates of 43.4% and 62.7% has been applied to 'Builder's waste' and 'Scrap metal' respectively, based on the average recovery rates of these materials at MCC facilities.

<sup>11</sup> Waste hierarchy established by the NSW EPA <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/the-waste-hierarchy>

Table 7 Average household waste generation rate

Year	General waste (kg/HH/wk)	Recycling (kg/HH/wk)	Garden organics (kg/HH/wk)	Total (kg/HH/wk)
FY19	9.2	4.5	4.1	17.8
FY20	9.5	4.3	3.9	17.6
FY21	10.2	5.2	3.9	19.4
<b>Avg</b>	<b>9.6</b>	<b>4.7</b>	<b>4.0</b>	<b>18.3</b>

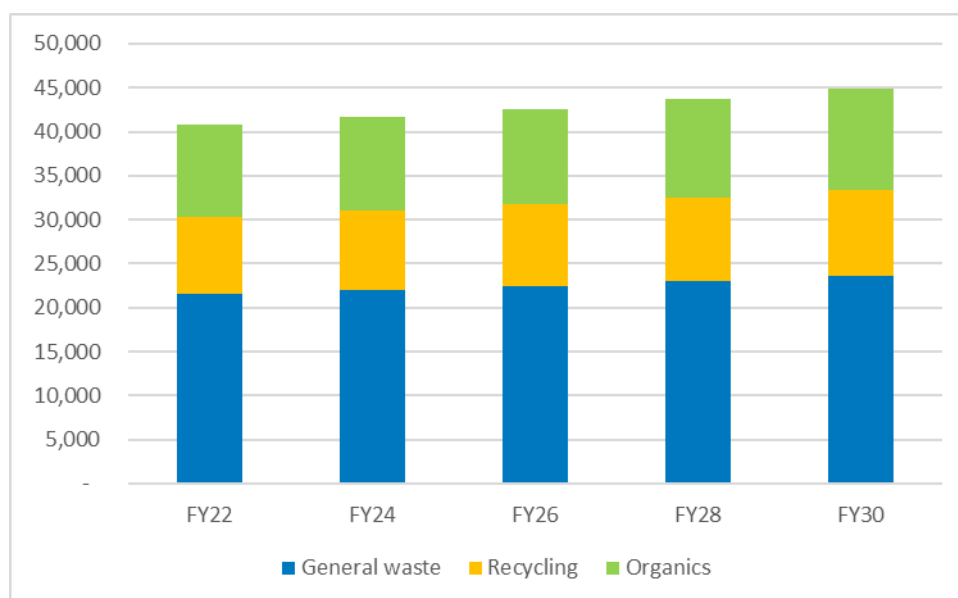
#### 1.4 Projected waste and recycling generation

Future waste generation of general waste, comingled recycling and garden organic streams have been projected for MCC to 2030 using:

- The population growth rate in MCC<sup>12</sup>; and
- The calculate baseline generation rates (kg/HH/wk) discussed in Section 1.3.5.

The projections displayed in Figure 8 provide the following estimates for kerbside waste collected from MCC residents:

- The number of occupied houses in the MCC region will grow from approximately 42,900 in FY22 to 47,200 in FY30;
- General waste - grows from 21,500 tonnes in FY22 to 23,600 tonnes in FY30;
- Comingled recycling - grows from 8,800 tonnes in FY22 to 9,700 tonnes in FY30; and
- Garden organics – grows from 10,400 tonnes in FY20 to 11,500 tonnes in FY30.



<sup>12</sup> Source: Population and household forecasts, 2016 to 2036, prepared by .id (informed decisions), January 2018

Figure 8 MCC kerbside waste generation projections FY22-FY30 (tpa)

The projections assume business as usual operations (based on baseline averages) continue to FY30 with the current three bin system (general waste, comingled recycling, and garden organics) and community drop off at MCC facilities.

## 1.5 Current and planned waste and recycling infrastructure

MCC waste and recycling facilities and infrastructure, which are managed through a combination of Council run operations (day labour) and contracted services are briefly outlined below. See Appendix B for more detail.

Waste facilities that include landfill for waste disposal are based at Taree, Stroud and Gloucester. The former Tuncurry landfill reopened in July 2019 on a temporary basis. The planned new landfill at Minimbah has been put on hold since the formation of MCC.

Waste Transfer Stations (WTS) are located at Taree, Tuncurry, Bulahdelah and Tea Gardens. WTS are drop off centres designed to encourage the sorting, reuse and recycling of as much waste as possible. Only non-recyclable waste is sent to the Taree landfill for disposal.

The Material Recovery Facility (MRF), which takes kerbside recyclable materials, is based at the Tuncurry Waste Management Centre.

The following materials are separated and sold for reprocessing into new products:

- Steel & Aluminium
- Rigid plastics
- Paper & Cardboard
- Glass

Recyclable materials from all waste facilities are taken to the MRF for processing. In partnership with the NSW EPA, CRCs operating at Taree, Tuncurry and Gloucester waste facilities accept problem wastes for recycling.



Figure 9 Map of current MCC waste facilities and disposal locations

Council waste assets include 734 public place waste and 161 recycling bins located throughout the MidCoast local government area:

- Taree: 354 waste & 81 recycling bins
- Forster: 351 waste & 57 recycling bins
- Gloucester: 29 waste & 23 recycling bins

Reuse shops (Tip shops) operate at Taree, Tuncurry, Gloucester, Tea Gardens, Bulahdelah and Stroud waste facilities.

## 1.6 Container Deposit Scheme

Since the introduction of the Container Deposit Scheme (CDS) in 2018 a number of facilities have been established within the local government area (LGA) to allow residents to participate in the Return and Earn program. An automated depot is located at the Tuncurry Waste Management Centre which collects eligible containers in exchange for refunds to residents. Additionally, a number of Reverse Vending Machines are located in the area, including:

- Stockland Forster – Forster
- Old Bar Tavern – Old Bar
- Taree Leagues Club – Taree
- Taree Club – Taree

- Wingham Services Club – Wingham
- Gloucester Bowling Club – Gloucester

## 1.7 Programs and initiatives

“Reimagine Waste” is the over-arching theme for activities designed to encourage and inspire change in attitudes and behaviour amongst MidCoast residents, schools, visitors, and businesses. Current programs focus on providing information to residents and Council staff about ways they can “recycle right” and “put the right thing in the right bin” and continuing to support food waste composting. Council ‘Walk the Talk’ initiatives designed to reduce internal waste production are also ongoing. The Waste and Resource Recovery Education Plan which accompanies this Strategy will guide the development of future programs aimed at encouraging avoidance, repair and reuse. Initiatives aimed at reducing specific waste streams such as plastics, building waste, textiles, electronic waste and organics will be included.

Updated information is available from MCC website (<https://www.midcoast.nsw.gov.au/Home>) and from Council’s Engagement, Communication and Education team.

## 2 Where do we want to get to?

### 2.1 Vision and themes

The MCC vision guiding this Strategy is to sustainably manage wastes through reduction, reuse, recycling and repurposing and to proactively manage resource consumption.

The decision-making process informing the proposed actions is also guided by the following principles adapted from the Charter for Councils<sup>13</sup>:

- *Provide, after due consultation, adequate, equitable and appropriate services and facilities for the community;*
- *Properly manage the environment of the areas for which Council is responsible, in a manner that is consistent with and promotes the principles of ecologically sustainable development;*
- *Have regard to the long term and cumulative effects of Council decisions;*
- *Bear in mind that Council is the custodian and trustee of public assets and effectively plan for, account for and manage the assets for which Council is responsible; and*
- *Engage in long term strategic planning on behalf of the local community.*

The key outcomes that MCC is aiming to achieve through the development of this long-term MCC Strategy are to:

- Ensure all MCC service and infrastructure needs are met now and into the future;
- Provide community education on best practice waste management;
- Align with Net Zero principles to decrease emissions from MCC waste facilities;
- Improve and increase current services for household recycling and organics diversion; and
- Provide a sustainable and healthy environment through reducing the incidences of litter and illegal dumping.

### 2.2 Gap analysis

MCC is committed to making significant contributions towards the achievement of the NSW Strategy targets and objectives. A gap analysis has been conducted to understand MCC's current position against the NSW Strategy objectives.

#### 2.2.1 Improved kerbside recycling rate

The major gap between current MCC operations and NSW Strategy targets is the lack of food organic collections and specific instruments to decrease landfill emissions from organic waste. Based on kerbside composition audit results (refer Section 1.3.3), half of the 22,360 tonnes of kerbside general waste disposed to landfill was organic material that could have been recovered.

Other initiatives, such as improved recycling education programs to encourage correct sorting and the expansion of Council's MRF processing to accept all 'potentially recyclable' materials<sup>14</sup> will also contribute to the MCC vision of improve recycling rates.

Potential waste recovery actions identified as part of this Strategy have been modelled for their impacts on the MCC recycling rate. The baseline recycling rate was calculated to be 44.1% (refer Section 1.3.2). The analysis has assumed that 60% of the available FOGO material in general waste bins can be diverted through the addition of a kerbside FOGO collection service. It is also assumed that improved education about correct recycling can capture 80% of the material currently being incorrectly disposed in the general waste bin.

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<sup>13</sup> New South Wales Local Government Act, Section 8, MidCoast Council Charter

<sup>14</sup> Including non-container aluminium, steel and rigid plastics

Figure 10 displays the results of the analysis, which reach a combined recycling rate of 70.4% of generated kerbside waste. The NSW Strategy aims to achieve an average State MSW recycling rate of 70%. Therefore, the consideration of these Strategy actions can improve MCC standing towards State targets.

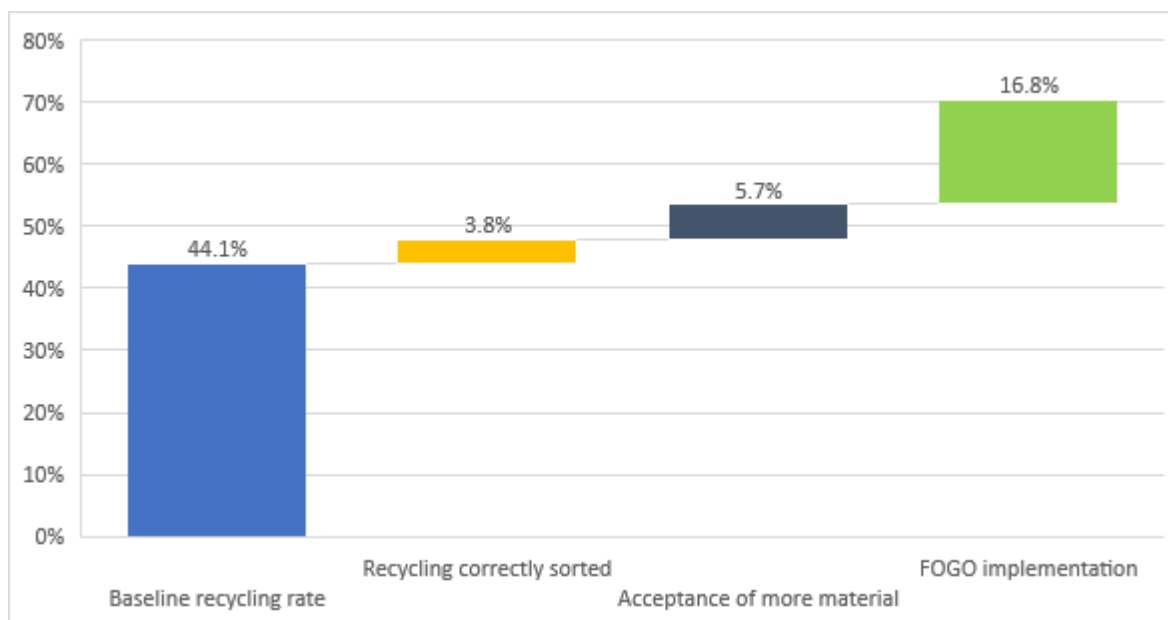


Figure 10 Waterfall diagram of proposed Strategy actions to increase MCC kerbside recycling rate

### 2.2.2 Improved overall waste diversion rate

Data of all waste sources arriving at MCC facilities determined a baseline diversion rate of 37.4% (refer Section 1.3.1). Material arriving at MCC facilities from non-residential sources often have certain easily recoverable waste streams (i.e., organics, scrap metals and tyres) already separated, hence the true MCC diversion rate is likely higher than the calculated baseline. Additionally, it is difficult for Council to directly influence the waste characteristics and disposal practices of business (both in the C&I and C&D sectors).

MCC still has the capacity to improve diversion rates through improvements to facility operation, separation efficiencies and service offerings. For example, Section 1.3.4 identified 'Builder's waste', 'Scrap metal' and 'Mixed residual waste' as major material streams currently being disposed to landfill. If the capture rate 'Builder's waste' is improved from 43.4% to 50%, the overall waste diversion rate improves by 2.6%. Similarly, if the capture rate of 'Scrap metal' improves from 62.7% to 70%, another 2.4% increase occurs.

There is also the potential to divert organic material from non-kerbside waste. This include dedicated FOGO waste drop-off at MCC facilities, implementation of a commercial FOGO collection service, and other collaborative actions across the public and private sector. If 15% of the remaining 'Mixed residual waste' is diverted to organics recovery<sup>15</sup>, the overall waste diversion rate increases by 8.0%.

Figure 11 shows how these measures can work in parallel to improve the MCC diversion rate to over 50%. This achievement would fall short of the NSW Strategy target of an overall diversion rate of 80% and will require further collaboration with external regional and state players to reach higher diversion.

<sup>15</sup> This estimate is based on the expected tonnages of organic material from non-kerbside waste source. The NSW EPA *Disposal-based audit of C&I waste stream* determined a FOGO composition of C&I waste to be 51%. Additional organic material will be captured from self-hauled residential waste to MCC collection facilities.

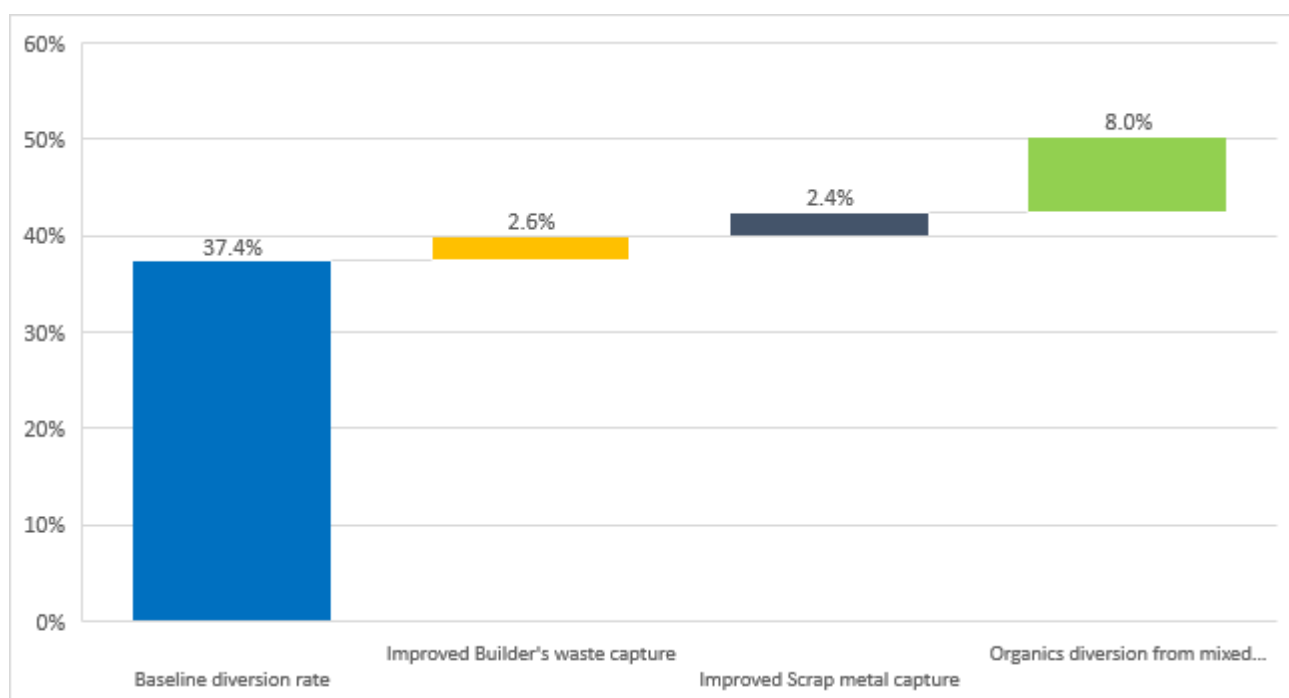


Figure 11 Waterfall diagram of proposed Strategy actions to increase MCC overall waste diversion rate

### 2.2.3 Decreased waste generation

Figure 12 displays the baseline average of 18.3 kg/HH/wk of waste generated through kerbside services (refer Section 1.3.5). The NSW Strategy aims to decrease waste generation rates by 10% per capita by 2030, although this target includes waste from all streams (MSW, C&I and C&D). It is difficult for Council to influence waste generation from non-residential sources; hence the current Strategy targets will focus on residential behaviour. A 10% decrease in the current baseline value corresponds to a 16.4 kg/HH/wk kerbside waste generation rate.

Targeted programs and initiatives can be implemented to encourage avoidance, repair, reuse or diversion of certain waste streams. For example, if residents choose products with minimal plastic packaging and avoid single-use products, the weekly generation rate of plastic in general waste bins will decrease. The design of buildings and renovations can utilize more durable materials or reuse existing materials on site. Programs can encourage the repair or reuse of unwanted clothing or electronics. Support to second-hand retailers such as charities can also decrease material disposed to landfill. Residents can also be encouraged to implement home composting or worm farming programs to keep organics out of kerbside collection.

Additional focus on kerbside recycling and organics bins could close the remaining gap to reach the NSW Strategy target value, although further collaboration across the private and public sector will be required to achieve reductions across all waste streams

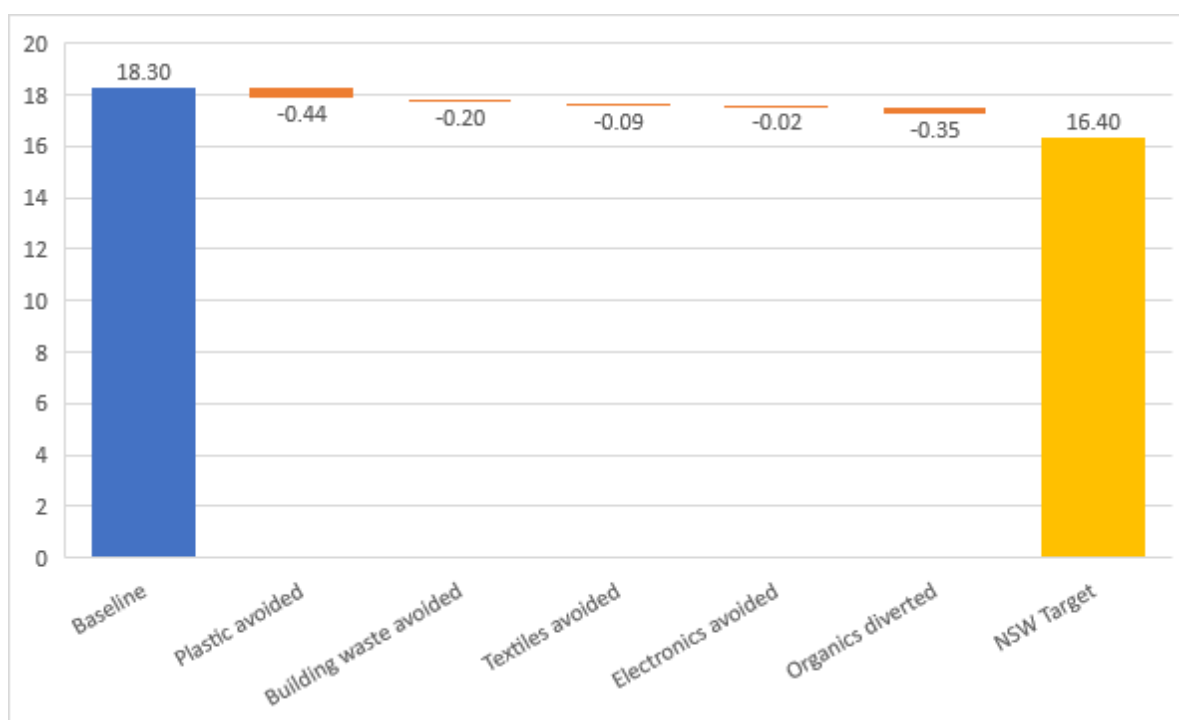


Figure 12 Comparison of baseline MCC waste generation rates and the NSW Strategy target (kg/HH/wk)<sup>16</sup>

#### 2.2.4 Decrease greenhouse gas emission from waste services

Waste management has impacts on climate change through emissions generated while providing waste related services (e.g., trucks used for kerbside collection) and landfill gas resulting from the decomposition of organic material. Based on MCC current disposal rates to landfill, it is estimated that 20,485 tonnes of CO<sub>2-eq</sub> emissions are generated annually from kerbside general waste collection.

This Strategy seeks to complement the *MidCoast Council Climate Change Action Strategy* which sets the target of net zero emissions by 2040. The primary contributor to landfill gas emissions is the decomposition of organic waste. The implementation of a FOGO collection service will result in less organic material being sent to landfill. Based on baseline data and targets outlined in this strategy, the implementation of a FOGO collection service is estimated to reduce landfill emissions by 40%. These actions will support other MCC initiatives to implement lower emission activities at its waste centres, such as the utilisation of renewable energy.

The waste sector also represents many opportunities to decrease Council's climate footprint. The utilisation of recycled products significantly decreases carbon emissions that would result from the use of virgin resource. For example, using recycled aluminium scrap in the production of new cans saves 95% the amount of energy that would be needed to make the same cans from virgin materials. It is estimated that for every tonne of recycled material recovered, 3.45 tonnes of CO<sub>2-eq</sub> emissions are offset.

If targets are reached for improved sorting of recycled material out of general waste and improved recovery of key waste streams (builders waste and scrap metal), this will equate to over 30,000 tonnes per year of CO<sub>2-eq</sub> emissions being offset.

<sup>16</sup> Assumptions used in the modelling for decreased waste generation focus only on the general waste stream. It is assumed that initiatives could feasibly result in a 20% decrease in plastic generation, a 10% decrease in building waste, textiles and electronics, while home organics diversion could recover 5% of organics. The combination of these assumptions results in a 6.0% decrease in waste generation rates. Calculations were based on results from the 2021 Midwaste Kerbside Waste Audit Report.

## 2.3 Strategic targets

To ensure that MCC is contributing towards achieving State-wide waste objectives, it has chosen to develop strategic targets that are in line with the NSW Strategy. These targets are intended to be specific measurable goals to track progress towards MCC's vision for responsible waste management.

The targets are grouped under three focus areas which are broadly aligned with the waste hierarchy<sup>17</sup> set of priorities:

1. **Avoidance** including action to reduce the amount of waste and litter generated by individuals, households, industry and all levels of government;
2. **Resource recovery** including re-use, recycling, reprocessing and energy recovery, consistent with the most efficiency use of the recovered resources; and
3. **Disposal** including management of all disposal options in the most environmentally responsible manner.

Strategy targets also aim to support circular economy benefits that reduce demands for virgin resources while improving local sustainable employment opportunities. The circular economy principles for NSW are outlined in the NSW EPA *Circular Economy Policy* (2019):

1. Sustainable management of all resources.
2. Valuing resource productivity.
3. Design out waste and pollution.
4. Maintain the value of products and materials.
5. Innovate new solutions for resource efficiency.
6. Create new circular economy jobs.
7. Foster behaviour change through education and engagement

This thematic focus will increase the availability of resources for future generations, extend the lifespan of existing MCC landfills and generate local markets and jobs centred around responsible waste management. The promoting of circular economy throughout the region will also increase the market demand for recovered resources.

Council recognises that some of the necessary changes to the way waste is managed cannot be directly controlled but must be influenced or allowed to develop along with Council encouragement. Collaboration with the State government, community groups and industry partnerships will allow the visions of the MCC Strategy to reach a wider sphere of influence. The Waste and Resource Recovery Education Plan provides further details of MCC efforts to encourage beneficial behaviour change in areas such as littering and the generation of plastic waste.

Table 8 outlines the targets set by Council and the intended methods to measure progress until 2030.

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<sup>17</sup> Waste hierarchy established by the NSW EPA <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/the-waste-hierarchy>

Table 8 MCC strategic targets for waste and resource management

Ref	2030 Target	Baseline	Measure of progress
<b>Focus 1</b>	<b>Waste and litter avoidance</b>		
1.1	Decrease waste generated per household by 10%	18.3 kg/HH/wk	Annual kerbside tonnages plus audits of kerbside bins
1.2	Decrease incidents of illegal dumping by 60% in three pilot areas	TBC*	Annual review of incident numbers
<b>Focus 2</b>	<b>Resource recovery and their re-use</b>		
2.1	Achieve a 70% kerbside recycling rate by 2030	44.1%	Annual kerbside tonnages plus audits of kerbside bins
2.2	Achieve a 50% diversion rate from all waste sources (MSW, C&I and C&D)	37.4%	Measure based on Council facilities weighbridge records
2.3	Halve the amount of organic waste sent to landfill from kerbside collections	10,600 tpa	Annual tonnages plus audits of kerbside bins
2.4	Increase the use of recycled materials in Council operations	TBC*	Percentage of relevant contracts that specify recycled content
<b>Focus 3</b>	<b>Improvements to MCC waste disposal facilities</b>		
3.1	Implement landfill gas capture to achieve net zero emissions from organic materials in landfill	0%	Carbon modelling of future landfill gas capture system
3.2	Optimize the resource recovery performance at MCC waste disposal facilities of specific waste streams	Builders waste (43.4%) Scrap metal (62.7%) Residual waste (0%)	Measure based on Council facilities weighbridge records

*\*Note (To Be Confirmed): Baseline estimates for Targets 1.2 and 2.4 were unknown during the Draft development stage of the MCC Strategy. Waste data and internal Council records will be reviewed prior to publication of the Final Strategy to determine accurate strategy targets.*

## 3 How will we get there?

### 3.1 Action identification

The MCC Strategy sets out the proposed actions designed to meet operational and strategic objectives. Options have developed for each target identified in Section 2.2.4, informed by community survey results<sup>18</sup> and their alignment to the MCC vision to achieve the desired objectives.

Table 9 lists the potential actions to be implemented under the MCC Strategy to achieve its objectives.

Table 9 Potential MCC Strategy actions

Ref	Potential Action	Description	Target (Table 8)
i.	Trial small scale FOGO service in SUDs	Review the feasibility of conducting a trial FOGO implementation program, including education material, expected timeframes and post-trial outcomes assessment.	2.1 2.3
ii.	Plan and tender MCC FOGO collection service.	Develop a FOGO implementation plan, considering transition arrangements, new bin configurations, collection frequencies and education and communication plans.	2.1 2.3 3.1
iii.	Plan and tender a regional Commercial Food collection service	Collaborate with external partners to develop a Commercial Food collection service to maximise the diversion of organics from landfill.	2.2 2.3 3.1
iv.	Develop a recycling management procedure	Undertake internal workshops to identify, assess and formalise the potential contamination management measures such as a 3-strike policy, bin inspection procedures and bin stickering.  Develop management plans to improve the source separation of recyclable material from the public and private sectors. Messaging will focus on materials that can be diverted from residual waste streams, especially builders waste and scrap metal.	2.1 2.2 3.2
v.	Continue to develop and update the 'Waste and Resource Recovery Education Plan 2022 – 2026' with a focus on waste avoidance and correct recycling	Implement a comprehensive suite of actions tailored to the needs of households, schools, businesses, visitors and MCC staff, and will target specific waste streams.  Address community concerns including problem waste recycling locations, material pathways and	1.1 2.1 2.2

<sup>18</sup> Midwaste Regional Waste Forum 2018 Waste Survey, conducted by Jetty Research

Ref	Potential Action	Description	Target (Table 8)
		lifecycles, correct recycling practices and waste avoidance strategies.	
vi.	Implement landfill methane gas capture systems	Assess the costs and benefits of implementing landfill gas capture systems at Taree and Tuncurry landfills considering NSW Strategy targets, Emission Reduction Fund benefits and the MCC Climate Change Strategy.	3.1
vii.	Conduct an illegal dumping baseline review	<p>Identify illegal dumping hotspots and the feasibility of monitoring activities to detect offenders. Calculate a baseline value for illegal dumping in MCC and model the impact of strategies to reach the target.</p> <p>Review illegal dumping penalty rates in line with best practice recommendations.</p> <p>Determine capacity to elect illegal dumping enforcement officers and opportunities to collaborate with charities and community groups to accept resaleable items.</p>	1.2
viii.	Prepare long term development for MCC waste facilities	<p>Plans to include:</p> <ul style="list-style-type: none"> <li>- Developments to allow MCC recycling facilities to accept a wider range of 'potentially recyclable' material;</li> <li>- Ensure sufficient capacity to accept additional recoverable masonry and metal waste;</li> <li>- Assess inhouse organics processing options;</li> <li>- Future site use options for Stroud and Gloucester landfills; and</li> <li>- Feasibility study for a northern MCC WTS to improve accessibility for growing coastal communities.</li> </ul>	2.1 2.2 3.2
ix.	Review waste facility gate fee structure and user-pays financing systems to maximise resident recycling practices	<p>Address community concerns around high tip fees for recyclables and green waste. Include considerations to improve the capture of separated organics, BSW and SM.</p> <p>Investigate option for tip vouchers, book-and-collect bulky waste services, C&amp;I collection fees or discounts for nominated decreased resident bin size.</p>	2.2 3.2
x.	Research alternate waste disposal options	Monitor industry developments in Energy from Waste (EfW) and Alternative Waste Treatment (AWT) to determine opportunities for alternate waste disposal options to divert material from landfill.	2.1 2.2 2.3

Ref	Potential Action	Description	Target (Table 8)
		Once opportunities are identified, a feasibility study should be undertaken to determine their impacts on service costs and local recovery rates.	
xi.	Expand Council 'Walk the Talk' program	<p>Update of MCC purchasing policies to favour waste avoidance and purchase of recycling products. Establish baseline values and metric to track MCC circular economy performance.</p> <p>Detail specific targets for MCC departments, such as the use of recovered glass in road infrastructure applications, recovered organic material in MCC parks and gardens or recycled paper and plastic products in Council offices.</p>	2.4

### 3.2 Strategic actions option assessment

Once potential options for each action have been identified, each must be assessed before recommendations are made regarding their implementation.

An assessment of financial, environmental, social and performance considerations for each proposed action is provided in Table 10. Information is also provided on the funding source, whether from the Council waste budget, waste service reserves or opportunities for grant funding.

Following the conclusion of the NSW Government Better Waste & Recycling Fund, new contestable funding programs are planned for release in 2022 and onwards under the NSW EPA *Waste Delivery Plan* (2021). This includes funding specially reserved for transitions to organics collection services, landfill gas capture systems and Council circular economy practices.

Some actions, advocacy to other levels of government, are best undertaken jointly with other councils through shared membership of regional organisations.

Each action has associated disadvantages and risks that need to be accounted for during strategic planning. Only high-level risks have been identified thus far. A detailed risk evaluation should be conducted prior to implementing each of the recommended actions.

Table 10 MCC Strategy options assessment

Ref	Potential Action	Benefits & Opportunities	Disadvantages & Risks	Funding Source	Impact
i.	FOGO trial	<ul style="list-style-type: none"> <li>Determine barriers and challenges to FOGO collection service during a trial phase to improve the success of full-scale roll-out.</li> </ul>	<ul style="list-style-type: none"> <li>FOGO trial doesn't accurately characterise the response of MCC residents prior to the full-scale roll-out (i.e., a non-representative sample size).</li> </ul>	<ul style="list-style-type: none"> <li><i>Organics Collections Grant</i></li> <li><i>Love Food Hate Waste</i> to support the diversion of food waste from households, businesses and communities.</li> </ul>	Estimated 16.8% improvement to kerbside recycling rates.
ii.	FOGO collection service	<ul style="list-style-type: none"> <li>Opportunities to decrease food waste in residual waste, decreasing overall tonnages and landfill disposal fees.</li> <li>Increase MCC recovery rates and encourage circular economy principles.</li> <li>Generate high quality composts and soil conditions in the local area to be used in land rehabilitation and soil improvement.</li> </ul>	<ul style="list-style-type: none"> <li>Low community engagement or high contamination rates can decrease the FOGO recyclability.</li> <li>Higher service costs to residents and source separation requirements can result in a lack of community support.</li> <li>High transitory population (e.g., holiday residents) present a risk of increased contamination.</li> </ul>	See FOGO trial above	A full-scale FOGO service is estimated to capture approximately 6,300 tpa of organic material currently being disposed via general waste collection.
iii.	Commercial Food collection service	<ul style="list-style-type: none"> <li>Existing communication and collaboration resources will improve the scope and outcomes of the service.</li> <li>Ability to integrate commercial food collection contracts with MCC residential FOGO collection.</li> <li>Maximise contributions towards targets to divert food waste from landfill and increase C&amp;I resource recovery rates.</li> </ul>	<ul style="list-style-type: none"> <li>Low industry support can lead to high service costs or contamination rates.</li> <li>On-going system costs to manage industry partners, contracts, education and audits.</li> </ul>	<ul style="list-style-type: none"> <li>Encourage private business Bin Trim grants to fund waste management actions</li> </ul>	Estimated 8.0% improvement to overall waste diversion rates.

Ref	Potential Action	Benefits & Opportunities	Disadvantages & Risks	Funding Source	Impact
		<ul style="list-style-type: none"> <li>Reduce general waste service costs for commercial operators.</li> <li>Improve business environmental reputation.</li> </ul>			
iv.	Recycling management procedure	<ul style="list-style-type: none"> <li>Opportunities to target education programs toward identified 'problem' areas in the community (i.e., MUD contamination rates).</li> <li>Improved recycling rates will increase local recovery rates and circular economy opportunities.</li> <li>Ability to complement existing education campaigns</li> </ul>	<ul style="list-style-type: none"> <li>Targeting information campaigns have a lower overall community impact.</li> <li>Cost-benefits are difficult to quantify, hence financial risks are associated.</li> </ul>	<ul style="list-style-type: none"> <li>MCC Waste Budget</li> <li>Funding support announced under <i>Waste Delivery Plan</i></li> </ul>	Estimated 3.8% improvement to kerbside recycling rates through improved sorting of recyclable material.
v.	'Waste and Resource Recovery Education Plan' development	<ul style="list-style-type: none"> <li>Expansion of existing programme will ensure a continuity of education themes and lower implementation.</li> <li>Opportunity to improve performance across a range of MCC Strategy targets.</li> </ul>	<ul style="list-style-type: none"> <li>Risk of education messaging not aligning with changes to MCC priorities or services.</li> <li>Will require additional funding resources for the enforcement of litter and illegal dumping reduction actions.</li> </ul>	<ul style="list-style-type: none"> <li>MCC Waste Budget</li> <li>Funding support announced under <i>Waste Delivery Plan</i></li> <li><i>Litter Prevention and Enforcement Fund</i>.</li> </ul>	Ability to support the achievement of all strategic objectives, including an estimated 6.0% decrease in waste generation rates.
vi.	Landfill methane gas capture	<ul style="list-style-type: none"> <li>Align with NSW Strategy targets to decrease landfill gas emissions.</li> <li>Earn Carbon Credits to offset other waste related operations (e.g., road transportation).</li> <li>Minimize odour and environmental harm caused by current and closed landfills.</li> </ul>	<ul style="list-style-type: none"> <li>High capital investment needs to be balanced with methane generation rates to determine financial viability.</li> <li>Costs associated with on-going operation and maintenance</li> </ul>	<ul style="list-style-type: none"> <li><i>Landfill Consolidation and Environmental Improvement Grant</i> to support the improvement of landfill facilities.</li> <li><i>Strategic Infrastructure Investment Fund</i></li> <li><i>Emission Reduction Fund</i></li> </ul>	The implementation of landfill gas capture can result in capture rates of 50-90% <sup>19</sup> .

<sup>19</sup> Source: *Performance of landfill gas method against the offsets integrity standards* (Department of the Environment and Energy, 2017)

Ref	Potential Action	Benefits & Opportunities	Disadvantages & Risks	Funding Source	Impact
vii.	Illegal dumping baseline review	<ul style="list-style-type: none"> <li>Decrease cost to MCC to clean up incidents of illegal dumping.</li> <li>Avoid damage to the environment and human health, avoidable fire hazards and impacts to amenities and aesthetics.</li> <li>Improved resource recovery outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Potential higher system costs to administer illegal dumping programs and monitoring</li> </ul>	<ul style="list-style-type: none"> <li>MCC Waste Budget</li> <li><i>Waste Less, Recycle More Illegal Dumping Prevention and Enforcement Fund</i></li> </ul>	The baseline review will include an assessment of strategy impacts.
viii.	Long-term infrastructure plan	<ul style="list-style-type: none"> <li>Identify opportunities to increase accessibility, efficiency, and cost value of MCC operated facilities over extended timeframes.</li> <li>Ensure waste infrastructure capacities align with changes to populations, legislation requirements and waste disposal rates.</li> <li>Maximise diversion rates by providing improved resource recovery infrastructure.</li> <li>Opportunities to coordinate the plan with community expectations.</li> </ul>	<ul style="list-style-type: none"> <li>Long-term plans cannot account for all future changes to legislation that may impact MCC infrastructure obligations.</li> <li>Long-term plans rely on waste forecasts which may not accurately reflect actual generation rates.</li> </ul>	<ul style="list-style-type: none"> <li>MCC Waste Budget</li> <li><i>Strategic Infrastructure Investment Fund</i></li> </ul>	Potential to increase current diversion rate to over 50% as shown by modelling.
ix.	Review gate fees and financing options	<ul style="list-style-type: none"> <li>Ability to incentivise better community recycling and waste avoidance practices.</li> <li>Potential to decrease overall MCC waste service costs by aligning individual waste generation rates with service fees.</li> <li>Opportunity to align fee structures with community consultation.</li> </ul>	<ul style="list-style-type: none"> <li>Risk of harming Council reputation if changes are met with resistance from the community.</li> <li>Potential to increase illegal dumping rates.</li> </ul>	<ul style="list-style-type: none"> <li>MCC Waste Budget</li> </ul>	Ability to support the achievement strategic objectives to improve recycling and waste diversion

Ref	Potential Action	Benefits & Opportunities	Disadvantages & Risks	Funding Source	Impact
x.	Alternate waste disposal options	<ul style="list-style-type: none"> <li>Ability to increase diversion rates through the processing of residual waste by methods higher up the waste hierarchy (e.g., recovery of energy or nutrients).</li> <li>Avoidance of landfill levy.</li> <li>Increase the lifespan of MCC landfill facilities.</li> </ul>	<ul style="list-style-type: none"> <li>Will likely require longer transport requirements for facilities outside of the MCC region.</li> <li>High gate fees could exceed the waste levy and disposal costs of MCC facilities.</li> <li>Treatment outputs (e.g., ash from incineration) can be hazardous and difficult to dispose.</li> </ul>	<ul style="list-style-type: none"> <li>Waste service reserves</li> </ul>	Potential to increase diversion rates by an additional 10-50%. <sup>20</sup>
xi.	'Walk the Talk' program	<ul style="list-style-type: none"> <li>Ability to create local circular economy opportunities (e.g., application of recovered glass in road-base aggregate).</li> <li>Engage with better practice waste management to guide and inspire individuals and private industry.</li> <li>Decrease landfill waste disposal costs.</li> </ul>	<ul style="list-style-type: none"> <li>Potential risk of higher system costs during the implementation and expansion of the program.</li> <li>Lack of quality recycled material can impact the ability to maintain recycled content levels.</li> </ul>	<ul style="list-style-type: none"> <li><i>Circular Innovation Fund</i></li> <li><i>Carbon Recycling and Abatement Fund</i></li> </ul>	New metric to be established with baseline values and tracking for MCC departments

<sup>20</sup> Source: *Municipal waste treatment in 2019* (Confederation of European Waste-to-Energy Plants, 2021)

## 4 How will the strategy be implemented?

### 4.1 Action plan

Table 11 presents the action plan for implementing the MCC Strategy visions and strategic objectives. Further details regarding the rollout of waste management initiatives are included in the MCC Business Plan and Waste and Resource Recovery Education Plan.

The recommended actions identified in Section 3 are assigned details of the steps required, the intended action commencement date and an indication of the timeframe. Commencement dates are given as the year and quarter in which the action steps will begin. Timeframes are the estimated length needed to complete the action steps and are classified as short term (1-2 years), medium term (3-5 years) or long term (greater than 5 years).

Table 11 MCC Waste Strategy Action Plan

Ref	Action	Steps Required	Commencement Date	Timeframe
i.	FOGO trial	<ol style="list-style-type: none"> <li>1. Assess financial and operational requirements and benefits from conducting a FOGO trial.</li> <li>2. Trial small scale FOGO service in SUDs.</li> <li>3. Assess outcomes of trial FOGO service.</li> <li>4. Develop FOGO implementation plan based on trial learnings.</li> </ol>	Q3 2022	Short
ii.	FOGO collection service	<ol style="list-style-type: none"> <li>1. Develop FOGO collection and processing contracts and tender services.</li> <li>2. Roll-out FOGO bins and education material to MCC residents.</li> <li>3. Implement scheduled collection service.</li> <li>4. Conduct regular composition and contamination audits.</li> </ol>	Q1 2024	Long
iii.	Commercial Food collection service	<ol style="list-style-type: none"> <li>1. Conduct industry surveys to determine service structure and specifications.</li> <li>2. Draft flexible waste contracts for use by private industry.</li> <li>3. Include commercial collection services in kerbside FOGO collection contracts.</li> <li>4. Conduct regular monitoring of industry participation, opportunities to expand the service and levels of contamination.</li> </ol>	Q3 2022	Medium
iv.	Recycling management procedure	<ol style="list-style-type: none"> <li>1. Undertake internal workshops to identify, assess and formalise the potential contamination management measures. Specific strategies should be developed to target recycling contamination in MUDs and learnings from the FOGO trial.</li> </ol>	Q3 2023	Short

Ref	Action	Steps Required	Commencement Date	Timeframe
		<ol style="list-style-type: none"> <li>Identify areas of concern for high contamination rates in the MCC region.</li> <li>Develop enforcement protocols such as a 3-strike policy, bin inspection procedures and bin stickering to be implemented in areas of concern.</li> <li>Expand communication to include the improved source separation of recyclable material to divert material from residual waste streams,</li> </ol>		
v.	'Waste and Resource Recovery Education Plan' development	<ol style="list-style-type: none"> <li>Develop and update the education campaign to move recyclables from the general waste bin into the recycling bin and reduce contamination rates in the recycling bin.</li> <li>Develop and implement messaging to encourage the responsible disposal of problem wastes and inform residents about the lifecycle of materials post-recycling.</li> <li>Develop and implement an education campaign to reduce local incidents of illegal dumping.</li> </ol>	Q4 2022	Short
vi.	Landfill methane gas capture	<ol style="list-style-type: none"> <li>Engage consultancy services to assess feasibility and design of landfill methane gas capture system.</li> <li>Apply for Emissions Reduction Fund.</li> <li>Tender gas capture construction works and award contract.</li> <li>Begin site construction.</li> <li>Conduct ongoing system monitoring and maintenance.</li> </ol>	Q1 2023	Long
vii.	Illegal dumping baseline review	<ol style="list-style-type: none"> <li>Calculate baseline metric for illegal dumping incidents in MCC area through a review of internal reports and dumping hotspots.</li> <li>Develop reduction strategies such as a review of penalty rates against best-practice recommendations or the election of an illegal dumping enforcement officer.</li> <li>Conduct ongoing monitoring of illegal dumping incidents and the impacts of actions</li> </ol>	Q4 2022	Medium
viii.	Long-term infrastructure plan	<ol style="list-style-type: none"> <li>Engage consultancy service to assess different infrastructure planning options, including provisions to increase the application of renewable energy in MCC waste facilities.</li> <li>Conduct competitive tendering for the construction of identified infrastructure development opportunities.</li> <li>Construct and commission new or upgraded facilities.</li> </ol>	Q2 2024	Long

Ref	Action	Steps Required	Commencement Date	Timeframe
ix.	Review gate fees and financing options	<ol style="list-style-type: none"> <li>1. Coordinate resident surveys to determine expectations and preferences for waste service costs. Include questioning to determine the acceptance of tip vouchers, book-and-collect bulky waste services, discounts for nominated decreased residential bin sizes and other user-pay financing options.</li> <li>2. Conduct a cost-benefit analysis to determine the potential improvement to MCC waste service fees and their alignment with community feedback.</li> <li>3. Implement new financing system at waste facilities.</li> <li>4. Update MCC website and signage to reflect changes to fee structure.</li> </ol>	Q3 2024	Short
x.	Alternate waste disposal options	<ol style="list-style-type: none"> <li>1. Continually monitor changes in NSW legislation and infrastructure developments related to alternate waste disposal options. Assessments should favour developments close to the MCC region.</li> <li>2. Once an opportunity has been identified, conduct a cost-benefit analysis to analyse impacts to system costs and progress toward MCC targets.</li> <li>3. If alternate disposal is chosen as advantageous over business-as-usual landfilling, restructure MCC waste contracts and the long-term planning of landfill facilities.</li> </ol>	Q2 2022	Long
xi.	'Walk the Talk' program	<ol style="list-style-type: none"> <li>1. Revise MCC purchasing policy to reflect targets for avoiding waste and increasing the use of recycled materials.</li> <li>2. Review in-house recycling and waste avoidance strategies to identify areas for improvement.</li> <li>3. Provide public education resources for private industry to learn from the good example set by MCC.</li> </ol>	Q2 2023	Medium

## 5 How will progress be measured?

### 5.1 Calculation of baseline assumptions

#### 5.1.1 Waste generation rates

The average MCC waste generation rate is calculated by dividing the total weight collected via kerbside collection services (measured as kg per week arriving at MCC waste facilities) by the number of households serviced within the MCC region (Equation 1). Separate calculations can be made for each type of waste stream (residual waste, kerbside recycling or organics), although a total generation rate has been used to monitor strategy progress to align with the NSW Strategy targets.

$$\frac{\text{Residual waste collected} + \text{recycling collected} + \text{organics collected}}{\text{Number of households serviced by kerbside collection}} = \text{Weekly generation rate (kg per HH per week)}$$

Equation 1 Calculation of average waste generation rate

The base-line value of 18.3 kg/HH/wk has been calculated from the three-year average. Ongoing monitoring of the impacts of strategic actions will determine the annual waste generation rate each year.

#### 5.1.2 Kerbside recycling rate

The kerbside recycling rate has been calculated as the percentage of the total waste presented for kerbside collection that is recycled (Equation 2). These figures are determined by weighbridge records at MCC waste facilities. This calculation uses an average MCC comingled recycling contamination rate of 12.0% and an average garden organics contamination rate of 2.3%, assuming these contamination fractions are disposed to landfill.

$$\frac{\text{Recycling collected} + \text{organics collected} - \text{kerbside bin contamination}}{\text{Total kerbside waste collected}} = \text{Kerbside recycling rate (\%)}$$

Equation 2 Calculation of kerbside recycling rate

The base-line value of 44.1% has been calculated from the three-year average. Ongoing monitoring will use updated figures for kerbside bin contamination rates (determined through kerbside bin audits) and will include additional tonnes recovered by a future FOGO service.

#### 5.1.3 Diversion rate

The waste diversion rate is determined by total waste received at MCC waste facilities from all sources (MSW, C&I and C&D) divided by the total amount of material recovered, either through comingled recycling, garden organic recovery or other Council operations. Council landfill levy reporting determines the quantity of material disposed to landfill, which can also be used in the calculation of material received to waste facilities which is diverted for recycling (

$$\frac{\text{Total waste recieved from all source} - \text{total waste landfilled}}{\text{Total waste recieved from all sources}} = \text{Diversion rate (\%)}$$

Equation 3 Calculation of waste diversion rate

The base-line value of 37.4% has been calculated from the three-year average. Calculation exclude cleanfill material that is received and used as capping material for open landfills.

#### 5.1.4 Organic waste recovery

MCC Strategy targets aim to decrease the amount of organic waste disposed to landfill. A garden waste collection service is already established in the region, although food and other compostable material disposed through the residual waste collection service could be diverted through a FOGO collection. The tonnes of organic waste disposed to landfill (through the kerbside collection service) has been estimated using the total tonnes of residual disposed to landfill multiplied by the proportion of that material that is compostable/ could be diverted through a FOGO collection (Equation 4).

$$\begin{aligned} & \text{Total residual waste disposed to landfill} \times \text{proportion of compostable waste} \\ & = \text{organic waste disposed to landfill (tonnes per year)} \end{aligned}$$

#### Equation 4 Calculation of the tonnes of organic waste sent to landfill

The baseline value of 10,600 tpa has been calculated from the three-year average and uses a 50.1% proportion of compostable waste determined by kerbside audit results. Future audits will be used to determine the impact of diversion strategies to decrease the proportion of compostable waste sent to landfill.

### 5.2 Key Performance Measures

Progress against MCC Strategy targets will be measured using a range of monitoring techniques. The establishment of a consistent and reliable source of information will underpin the assessment of waste performance over time. Decisions and future actions will be informed by evidence-based consideration of the effectiveness of the actions being undertaken.

Progress reports developed by MCC will monitor the success of the Action Plan implementation (Table 11). This will include analysis of the action timeframes, the allocated budget vs actual expenditure and reviews of project outputs. Progress reports will also illustrate MCC progress towards achieving its Strategy targets by 2030.

The following monitoring and analyses are proposed for each of the focus areas outlined in Section 2.2.4. The compilation of this data will inform the annual progress reporting.

#### 5.2.1 Focus 1: Waste and litter avoidance

- Participate in regular kerbside bin audits to measure bin presentation (%), bin fullness (%) and waste generation rates (kg/person/annum).
- Use audit data and annual tonnages received at MCC facilities to calculate overall changes to waste generation rates (%) and total domestic waste collected (t).
- Monitor and report illegal dumping metrics (t or number of offenses).

#### 5.2.2 Focus 2: Resource recovery and their re-use

- Participate in regular kerbside bin audits to measure rate of recycling (%) and rate of contamination (%).
- Use annual tonnages received at MCC facilities to monitor different waste streams, including:
  - Residual waste (tpa)
  - Comingled recycling (tpa)
  - FOGO once implemented (tpa)

- C&I and C&D (tpa)
- Use landfill disposal records and recycling centre data to calculate resource recovery for each sector (%).
- Calculate proportion of FOGO recovery (%) based on annual tonnages and audit data.
- Calculate the quantity of material reused in Council operations (t) or the proportion of Council contracts specifying the reuse of recycled materials.

### **5.2.3 Focus 3: Improvements to MCC waste disposal facilities**

- Maintain local landfill capacity records by measuring and quantifying landfill void availability (m<sup>3</sup> or t). Measurements should inform long-term infrastructure planning and alternate disposal considerations.
- Monitor the number and progress of MCC projects against timeframes.
- Calculate landfill gas emissions (t of CO<sub>2</sub>-e) from waste composition audit data and annual tonnages using standard NGER methodology.

## Appendix A Strategy legislation and policy context

Legislation/ Policy	Short Description/ Relevance to MidCoast Council
<b>Australian Government (Cwth)</b>	
<b>Product Stewardship Act 2011</b>	<p>Mandatory, co-regulatory and voluntary schemes where businesses take responsibility for the full lifecycle of their products and materials.</p> <p>MCC accepts problem wastes, chemicals, e-waste and mobile phones at Waste Management Centres. Many of these hazardous wastes are captured under the extended producer responsibility (EPR) schemes such as the nationwide MobileMuster program.</p>
<b>Recycling and Waste Reduction Act 2020</b>	<p>The Commonwealth Government have outlined a timeline to ban the export of waste plastic, paper, glass and tyres, which have not been processed into value added materials:</p> <ul style="list-style-type: none"> <li>• All waste glass by January 2021;</li> <li>• Mixed waste plastics by July 2021 and unprocessed single plastic polymers by July 2022;</li> <li>• All whole tyres including baled tyres by December 2021; and</li> <li>• Remaining waste products, including mixed paper and cardboard, by no later than June 2024.</li> </ul> <p>The waste export bans have the potential to impact on MCC's comingled recycling in the short term in areas such as processing costs and material off-take.</p>
<b>Emissions Reduction Fund</b>	<p>The Commonwealth Government purchases lowest cost abatement (in the form of Australian Carbon Credit Units (ACCUs)) from a wide range of sources through the \$2.5 billion Emissions Reduction Fund (ERF).</p> <p>Approved methods to obtain ACCUs for the waste and recycling sectors include:</p> <ul style="list-style-type: none"> <li>• Landfill gas capture and destruction;</li> <li>• Alternative Waste Treatment (AWT); and</li> <li>• Source separated organics.</li> </ul> <p>If MCC was to implement a source separated organics program such as commercial food waste or residential food organics and garden organics (FOGO) or garden organics (GO), Council may be able to negotiate a share of the potential benefits received from the Emission Reduction Fund with the waste services provider.</p>
<b>New South Wales</b>	
<b>Protection of the Environment Operations (POEO) Act 1997</b>	<p>Regulation of pollution control, waste disposal and waste management and licensing requirements in NSW. Waste is categorised into MSW, C&amp;I and C&amp;D waste.</p> <p>Council's Waste Management Centres operates under an environment protection licence (EPL). The EPL includes requirements on operations to minimise environmental impacts.</p>
<b>NSW Waste Avoidance and Resource</b>	<p>The WARR Act is the primary Act governing resource recovery in NSW. The objectives of the WARR Act are to promote:</p>

<b>Recovery Act 2001 (WARR Act)</b>	<ul style="list-style-type: none"> <li>• The most efficient use of resources, including resource recovery and waste avoidance;</li> <li>• A reduction in environmental harm, including pollution through waste;</li> <li>• A consideration of the resource management hierarchy through avoidance of unnecessary resource consumption and disposal; and</li> <li>• Resource recovery, which includes reuse, reprocessing, recycling and energy recovery.</li> </ul> <p>The WARR Act defines the Waste Hierarchy, which ranks waste management options in order of general environmental desirability. The waste hierarchy is intended for use alongside other assessment tools, such as cost benefit analysis, to guide decision-making.</p>
<b>NSW Waste and Sustainable Materials Strategy 2041 (Stage 1: 2021-2027)</b>	<p>The NSW Waste Strategy provides a framework for waste management in NSW. The strategy outlines four key directions for the future of waste management:</p> <ul style="list-style-type: none"> <li>• Generate less waste by avoiding and ‘designing out’ waste, to keep materials circulating in the economy;</li> <li>• Improve collection and sorting to maximise circular economy outcomes and lower costs;</li> <li>• Plan for future infrastructure by ensuring the right infrastructure is located in the right place and at the right time; and</li> <li>• Create end markets by fostering demand for recycled products in NSW (particularly glass, paper, organics, plastics and metals) so that recovered materials re-enter our economy and drive business and employment opportunities.</li> </ul> <p>The initial Stage 1 targets have been set to be achieved by 2030:</p> <ul style="list-style-type: none"> <li>• Reduce total waste generated by 10% per person;</li> <li>• Have an 80% average recovery rate from all waste streams;</li> <li>• Phase out problematic and unnecessary plastics while tripling plastics recycling rates;</li> <li>• Halve the amount of organic waste sent to landfill;</li> <li>• Net zero emissions from organics in landfill; and</li> <li>• Overall litter reduction target of 60%.</li> </ul> <p>The NSW Strategy guides the development of Council’s resource recovery targets, especially for organic waste through mandating Food Organics Garden Organics (FOGO) services for all of NSW by 2030.</p>
<b>NSW Landfill Levy</b>	<p>The Waste Levy applies to the regulated area of NSW, of which MCC is included. Landfills in regulated areas are required to pay a contribution for each tonne of waste received at the facility. The aim of the levy is to drive a reduction in the amount of waste being landfilled and promote recycling and resource recovery.</p> <p>The 2021-22 Waste Levy rate, which applies from 1 July 2021, is \$84.70/tonne for regional levy area (RLA) councils. Under current regulations, the levy will increase every year in line with the Consumer Price Index.</p>

<b>Local Government Act 1993</b>	Defines how Councils may exercise their powers and the manner in which Councils are managed and financed. With respect to waste management, Councils may make an annual charge for the provision of waste management services. Councils must make and levy an annual charge for the provision of domestic waste management services (s. 496). Council charges for domestic waste management must be calculated so as to not exceed the reasonable cost to the council of providing those services.
<b>Waste Less Recycle More Initiative</b>	The WLRM grant program provides funding for organisations, including Councils, to improve their management of waste and recovery of resources. Phase 1 of WLRM provided \$465.7 million over the period July 2012 to June 2017, focusing on funding new, large-scale waste and recycling infrastructure, recycling facility upgrades, drop off centres, food and garden organics processing and recycling innovations. Phase 2 of WLRM commenced on 1 July 2017, with the capacity to award \$337 million over four years.
<b>NSW Circular Economy Policy Statement: Too Good To Waste 2019</b>	<p>The NSW Circular Economy Policy Statement was developed by the NSW Government to provide clear directions and principles to direct the NSW economy transition to a circular economy. The NSW Circular Economy Policy Statement lists seven key principles to lead the transition towards a circular economy in NSW:</p> <ul style="list-style-type: none"> <li>• Sustainable management of all resources;</li> <li>• Valuing resource productivity;</li> <li>• Design out waste and pollution;</li> <li>• Maintain the value of products and materials;</li> <li>• Innovate new solutions for resource efficiency;</li> <li>• Create new circular economy jobs; and</li> <li>• Foster behaviour change through education and engagement.</li> </ul> <p>The Circular Economy Policy Statement provides a framework for MCC to review and transition operations to meet circular economy goals.</p>
<b>NSW Illegal Dumping Strategy 2017-21</b>	The NSW Illegal Dumping Strategy 2017-21 provides a framework for the NSW EPA and partner organisations (including local councils) to reduce illegal dumping in NSW by 30% by 2020. The NSW EPA updated the Illegal Dumping Strategy action table to provide a revised set of actions to achieve the set targets in the last two years of the Strategy (2020-21).
<b>NSW Litter Prevention Strategy 2019-2022</b>	The NSW Litter Prevention Strategy 2019-2022 has been developed with the key objective to reduce the volume of litter by 40% by 2020. The latest report card published in 2019 showed that NSW has reduced the volume of litter by 35%.
<b>MidCoast Council</b>	
<b>Midwaste Regional Waste Avoidance and Resource Recovery Strategy 2014-21</b>	<p>The Midwaste WARR Strategy explores options for addressing waste management challenges into the future. It provides a clear direction for improving sustainable waste avoidance and resource recovery practices across the region and demonstrates the region's commitment to adopting a strategic approach to waste management. The Midwaste WARR strategy primarily considers:</p> <ul style="list-style-type: none"> <li>• Alternative service delivery options for kerbside waste collection where appropriate;</li> </ul>

	<ul style="list-style-type: none"> <li>• Maximisation of the operational efficiency of landfills;</li> <li>• Opportunities for innovative educational activities and collaboration between member Councils and community;</li> <li>• How to best reduce illegal dumping and littering in the regional context; and</li> <li>• Examining the most suitable options for dealing with problem waste streams.</li> </ul>
<b><i>MidCoast 2030 Shared Vision, Shared Responsibility (Community Strategic Plan 2018-2030)</i></b>	The MCC Community Strategic establishes the framework under which Council will set the direction of its activities, programs and projects until 2030. It confirms the vision of responsible resource management through waste reduction, reuse, recycling, and repurposing. It encourages participation in all sectors of the community for collaboration towards Council objectives.
<b><i>MidCoast Council Climate Change Action Strategy</i></b>	The MCC Climate Change Strategy sets targets and action to will achieve net zero greenhouse gas emissions from its operations (including all facilities, transport and landfill waste) and 100% renewable electricity for its operations by 2040. Council will offset those emissions that can't be mitigated by investing in renewable energy and local carbon sequestration initiatives such as wetland restoration, where feasible.

## Appendix B Description of Council waste facilities

### Taree Waste Management Centre

6843 The Bucketts Way, Tinonee 2430

Services provided: a licenced landfill, sorted and unsorted loads of waste, commercial waste, green waste and recyclable materials including clean fill, bricks, concrete and scrap metal, asbestos collection, a community recycling centre with a problem waste drop off point (e.g., paints, batteries, household chemicals), and a tip shop.

**Opening Hours:** The Landfill and Transfer Station operates seven days per week from 7am to 5pm. The Reviva Tip Shop is open Wednesday - Sunday from 9am to 3pm.

### Bulahdelah Waste Management Centre

Pacific Highway, Bulahdelah, 2423

Services provided: sorted loads of waste and recyclable material including domestic trailer loads of concrete, bricks and tiles, scrap metal, problem waste (e.g., paints, batteries, household chemicals) and a tip shop. The landfill is now closed.

**Opening Hours:** Tuesday 1pm to 5pm; Friday 12 noon to 4pm; Sunday 10am to 2pm. Reviva Tip Shop is open the same hours.

### Gloucester Waste Management Centre

385 Thunderbolts Way, Gloucester 2422

Services provided: licenced landfill, sorted and unsorted loads of waste and recyclable material including clean fill, bricks, concrete and scrap metal, commercial waste, asbestos collection, a Community Recycling Centre for problem waste drop off (e.g., paints, batteries, household chemicals) and a tip shop.

**Opening Hours:** Monday Closed; Tuesday - Friday 7.30am to 4pm; Saturday - Sunday 11am to 4pm. The Tip Shop is open the same hours.

### Stroud Waste Management Centre

Simmsville Road, Stroud 2425

Services provided: a licenced landfill, sorted and unsorted loads of waste and recyclable material, asbestos, problem waste drop off (e.g., paints, batteries and household chemicals) and a tip shop.

**Opening Hours:** Monday 11am to 3pm; Thursday 12 noon to 4pm; Sunday 11am to 4pm. The Tip Shop is open the same hours.

### Teagardens Waste Management Centre

Winta Road, Tea Gardens, 2324

Services provided: sorted loads of waste, green waste, recyclable material (including concrete, bricks and tiles and scrap metal), a problem waste drop off point (e.g., for paints, batteries and household chemicals) and a tip shop. The landfill is now closed.

**Opening Hours:** Monday & Wednesday 12 noon to 4pm; Tuesday, Thursday - Friday 8am to 12 noon; Saturday Closed; Sunday 12 noon to 4pm. The Reviva Tip Shop is open Wednesday - 12pm to 4pm Thursday & Friday - 8am to 12pm Sunday - 12pm to 4pm.

### Tuncurry Waste Management Centre

Midge Orchid Road, Tuncurry (formerly Tip Road) 2428

Services provided: sorted loads of waste, green waste and recyclable material (including concrete, brick and tiles and scrap metal), a Community Recycling Centre for problem waste drop off (e.g., for paints and household chemicals) and a tip shop. The landfill is now closed.

**Opening Hours:** The transfer station operates 7 days a week from 8am to 4pm. The Reviva Tip Shop operates Wednesday - Sunday 8am to 3pm.

