

Waste Management Strategy and Action Plan

2020 - 2025

Ref: 9370#534



Table of Contents

Executive Foreword	4
1 Our Vision	1
2 Waste Management Objectives	1
3 The Circular Economy	1
4 Federal Government Strategic and Policy Direction	5
4.1 National Waste Policy.....	5
4.2 Heavy Vehicle National Law – Chain of Responsibility.....	6
5 NSW Government Strategic and Policy Direction	6
5.1 20-Year Waste Strategy.....	6
5.2 Waste Diversion Targets.....	7
5.3 Waste Less, Recycle More Initiative.....	8
5.4 Container Deposit Scheme.....	8
6 Risk Management	9
7 Council’s Strategic Waste Management Directions	9
7.1 Pursuing Landfill Diversion.....	9
7.2 Setting a Landfill Diversion Target.....	13
7.3 Domestic Waste Collection.....	14
7.4 Domestic Waste Processing.....	14
7.5 Contamination Management in Domestic Waste Bins.....	15
7.6 Domestic Kerbside Clean-Up Services.....	16
7.7 Litter Management.....	16
7.7.1 Community Education.....	16
7.7.2 Public Place Litter Bins.....	17
7.7.3 Public Place Recycling.....	18
7.7.4 Waste Wise Events.....	18
7.8 Illegal Dumping.....	18
7.8.1 Illegal Dumping Activity.....	18
7.8.2 Deterrence and Detection.....	18
7.8.3 Collection and Recovery.....	20
7.9 Waste Avoidance and Reduction: Council Leading by Example.....	21
7.9.1 Council Facilities.....	21
7.9.2 Use of Recycled Organics.....	21
7.9.3 Sustainable Procurement.....	22
7.10 Problem Waste Management.....	22
7.10.1 Medical Sharps Collection and Disposal Service.....	22
7.10.2 Household Chemical CleanOut.....	22
7.10.3 Community Recycling Centre.....	23
7.10.4 drumMUSTER.....	24
7.10.5 Mattress Recovery.....	24
7.10.6 E-Waste Recycling.....	24
7.11 Waste Education and Information.....	25
7.11.1 Community Engagement.....	25
7.11.2 Correct Use of the Three-Bin System.....	25
7.11.3 Publications and Promotional Material.....	25
7.11.4 Promotion of Events and Services.....	25
7.11.5 Home Recycling of Kitchen Organics.....	26

7.12	Business Waste	26
7.12.1	Kerbside Bin Services	26
7.12.2	Bulky Commercial & Industrial Waste and Construction & Demolition Waste	26
7.13	Development Controls for Waste Management	27
7.14	Management of Grant Funding.....	27
7.15	Waste Infrastructure	28
7.15.1	Bargo Waste Management Centre	28
7.15.2	Management of Closed Waste Management Facilities	29
7.15.3	Future Waste Infrastructure.....	29
7.16	Regional Collaboration	30
7.16.1	Project 24.....	30
7.16.2	Regional Waste Coordinator	30
7.16.3	Regional Waste Avoidance and Resource Recovery Strategy.....	31
8	External Factors Influencing Kerbside Waste Generation	31
8.1	Reduction in Kerbside Recycling and Garden Organics Volumes	31
8.2	Packaging Waste.....	32
9	Annual Review.....	32
10	Action Table.....	33

DRAFT

Executive Foreword

In recent years we have become more aware of the environmental cost of ever-increasing waste generation, the consumption of valuable natural resources and the ecological damage associated with irresponsible disposal of waste. This increased awareness has brought about a greater preparedness by the community to become more actively involved in making a difference for the better. As the level of government with the greatest interaction with residents, councils are in a prime position to work together with their communities to develop and engage in initiatives and behaviours that will benefit the environment in which we live.

Wollondilly Shire Council is committed to the implementation of sustainable approaches to waste management. Issues relating to waste management and in particular waste avoidance and resource recovery are attracting greater community interest. This Strategy reflects the community's aspiration towards economically and environmentally sustainable waste management. It aims to guide Council towards delivery of environmentally, economically and socially sustainable waste management systems, policies and practices.

The Strategy outlines:

- Council's key activities in the management of waste
- Specific actions aimed at achieving the objectives of the Strategy
- Target completion dates for each action
- Expected outcomes from each action.

The Strategy will be reviewed periodically to ensure that it adapts to external changes that may occur during its term, and to ensure that it remains relevant, up-to-date and reflective of the community's expectations. With the NSW Government's 20-Year Waste Strategy due to be released in late 2020 it will be important to review Council's Waste Management Strategy and Action Plan to ensure that the objectives of the two are aligned.

I commend the Waste Management Strategy and Action Plan and look forward to its successful implementation.

Ben Taylor

Chief Executive Officer
Wollondilly Shire Council

1 Our Vision

The *Create Wollondilly Community Strategic Plan 2033* presents an overall vision of Rural Living:

....the Community's desire to maintain Wollondilly Shire's rural character together with the sense of belonging to caring communities that have been at its core for generations.

From an environmental perspective the Strategic Plan envisions:

1. A local environment that is valued and protected
2. A Community that interacts with and cares for their environment.

Consistent with the Strategic Plan, Council's Waste Management Mission is:

To ensure that within Council's mandated responsibility, Wollondilly Shire residents have long-term access to waste management and resource recovery services and infrastructure that are affordable, economical and environmentally sustainable.

2 Waste Management Objectives

In working towards its Waste Management Mission, Council has adopted five key Waste Management Objectives:

1. Provide a domestic waste management service that meets the needs of Wollondilly residents
2. Provide sustainable waste management and resource recovery services that meet the needs of Wollondilly residents
3. Create minimal adverse environmental impacts associated with the provision of waste management services
4. 'Lead by example' by demonstrating sustainable waste management practices across its services, and
5. Work cooperatively with other Councils to seek mutually beneficial and cost-effective regional waste management solutions.

Each of the specific actions identified in this Strategy and Action Plan links directly to one or more of these Objectives.

3 The Circular Economy

Local Government can contribute greatly to the greater economy in relation to providing cleaner source separation for waste products, such as glass, plastics and food waste. The more effective that source separation is, meaning the cleaner the streams of waste, the easier it is to use back into products. The down side is the more refinement that is needed the greater the cost in recovery. The recycling of plastics and glass has recently faced extreme challenges in Australia. There is an increasing belief that the future viability of recycling these products will rely on the development of a strong circular economy. Council can do a lot to engage with the community to

create support for better recycling and source separation to support business markets for recycled products domestically in NSW and Australia. To understand this concept, it is worth looking back on the history of recycling of these commodities in Australia.

The early years of domestic waste management in Australia operated on the principles of a traditional linear economy (shown in Figure 1):



Figure 1: Product lifecycle in a traditional linear economy

The early to mid-20th century saw the emergence of localised circular economy principles for some consumer products, with examples including:

- 'Bottlos' on horse and cart collecting glass beverage containers for recycling
- A successful container deposit scheme operating during the 1960s for soft drink bottles that were washed and re-used by soft drink manufacturers
- 'Milkos' collecting empty glass milk bottles during home deliveries, for return to the depot for washing and re-use, and
- Scout groups operating drop-off centres for used glass and aluminium beverage containers

The localised circular economy principle (Figure 2) became well established and functioned efficiently.

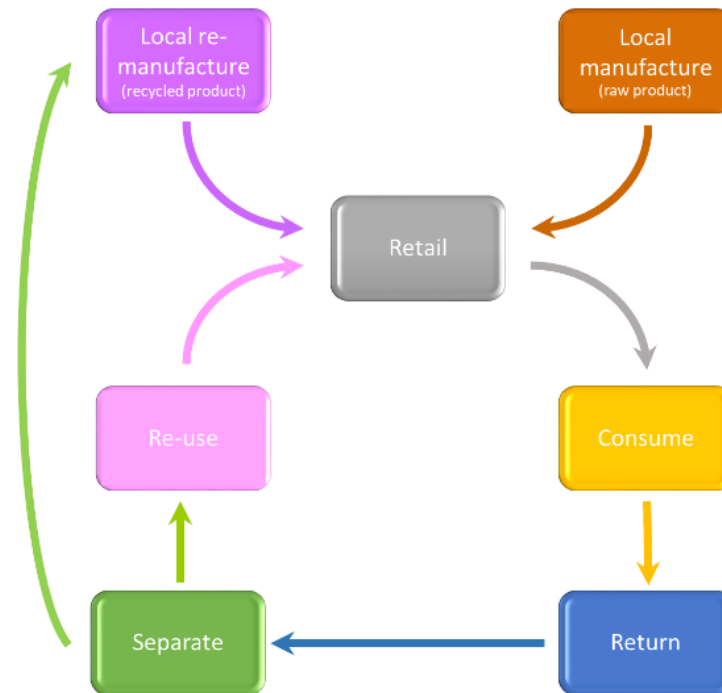


Figure 2: Product lifecycle in a localised circular economy

During the late 1960s the relatively low cost of oil in turn led to a low cost of plastics. Manufacturers increasingly switched from glass to plastic containers for beverages and other liquid products. The switch was driven also by the fact that plastic containers are significantly lighter weight, attracting lower freight costs. The cost to manufacture virgin plastic was cheap by comparison with recycling used plastic. As a result the demand for recycled plastic remained low and the plastics recycling industry in Australia remained at a modest scale.

As international oil markets fluctuated during the 1980s and 1990s the plastics recycling industry in Australia experienced ebbs and flows in business prosperity. The introduction of kerbside recycling crates and later the yellow-lid 'wheelie bin' saw a more structured and efficient collection system, yielding access to significantly greater tonnages of materials available for recycling.

During the 1990s recyclables processing companies found that they could more economically export mixed plastics to overseas recyclers who could separate and process the different types of plastics and on-sell them to manufacturers. With its rapidly growing economy, China became the world's largest importer of mixed plastics. Prices paid by Chinese markets put pressure on local plastics re-processors who found they could not compete. With the vast bulk of kerbside-collected plastic beverage containers now being exported, the next two decades saw a significant decline in the already modest on-shore plastics recycling industry. For plastics the circular economy model as we once knew had now changed, with the export of collected containers and the import of re-manufactured containers featuring prominently in the cycle, and more importantly, a declining local re-manufacturing industry to the point that it is now almost non-existent, as shown in Figure 3:

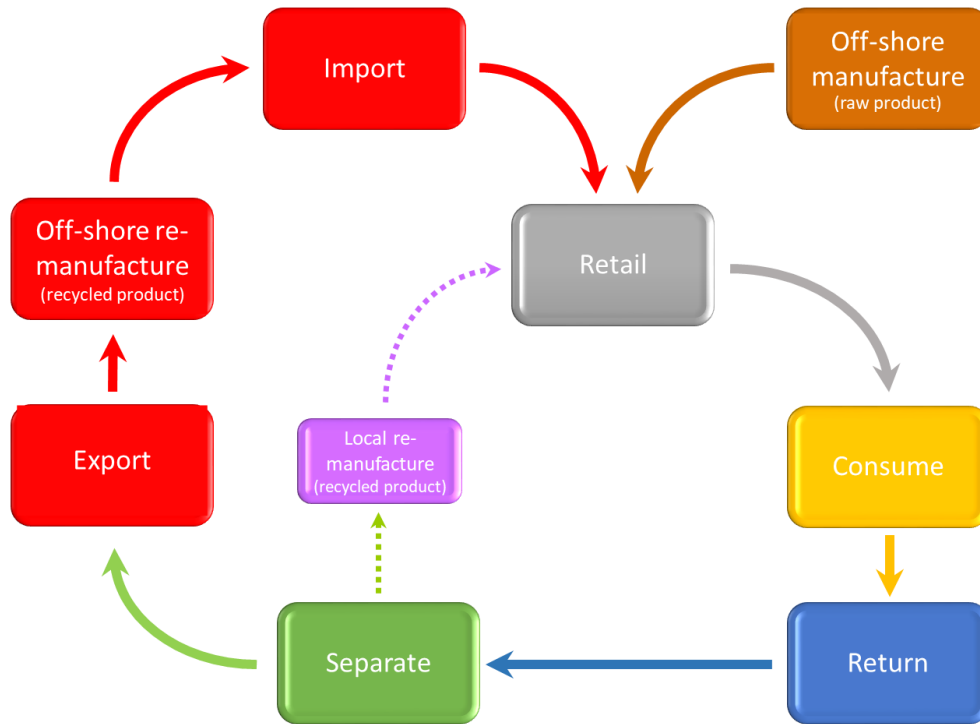


Figure 3: Product lifecycle following the decline of the on-shore re-manufacturing industry

In July 2017 China announced that its National Sword Policy would be enforced from early 2018. This policy would severely reduce the acceptable threshold of contamination in the plastic containers it imported for recycling. While peak bodies representing the Australian waste and recycling industry alerted governments to the impending problem, it would appear that little was done by both private and public sectors to seek out alternative markets or to develop on-shore alternatives, and so a ‘business-as-usual’ approach was generally adopted. With China’s enforcement of its policy in 2018 and Australian recyclables processors’ relatively unchanged methods for preparation of materials for export, the off-shore market for recyclable plastic collapsed. As an on-shore market barely existed, stockpiling or landfilling of large volumes of kerbside-collected plastics commenced, pending development of a solution to the supply/demand imbalance. While some limited markets have been established in other Asian countries, these countries’ demand is exceeded by the amount of plastic containers produced in Australia, The Australian and State Governments have begun working with the waste industry to investigate possible solutions, and have agreed in principle that re-establishment of a localised circular economy approach is a highly desirable solution. This will involve the development of healthy on-shore recyclables processing and re-manufacturing industries and the creation of increased demand for recycled product.

While the on-shore recycling of paper, cardboard, aluminium and steel remains viable, glass recycling in Australia faces similar challenges to that of plastics. Due to the low price of virgin glass, the demand for locally re-manufactured glass is limited in Australia. Until markets are developed for recycled glass, most glass beverage containers collected at the kerbside are being either landfilled or stockpiled. On the positive side, there are emerging trials of crushed glass applications in civil construction materials.

Development of a local circular economy in Australia in earnest is in its early stages. Local and State Government have an opportunity to play a pivotal role in the development of the circular economy by focusing on sustainable procurement policies. For example, trials are under way using finely crushed glass beverage containers as an additive to cement. One company conducting such a trial has stated that should the trial succeed and should every council in NSW specify a minimum of just 10% glass content in tenders for the supply of concrete foot-paving, the glass recycling crisis would be immediately resolved.

Action 1: *Subject to the availability of suitable technologies and products, review Council's procurement practices with a view to mandating recycled content where practicable in order to support the circular economy*

4 Federal Government Strategic and Policy Direction

4.1 National Waste Policy

The 2018 National Waste Policy focuses on a circular economy, with emphasis on improving standards of waste management, creating opportunities for jobs, protecting the environment and better managing valuable and finite resources.

The Policy provides a framework for collective action by businesses, governments, communities and individuals until 2030. Waste service delivery for Council and the community must align with the key strategies identified in the plan.

The Policy comprises 14 key strategies:

1. Waste Avoidance
2. Design of systems and products to avoid waste
3. Knowledge sharing, education and behaviour change
4. Product stewardship
5. A common approach towards waste policy and regulation to support development of markets for recycling
6. Improving access for regional, remote and indigenous communities to access, influence and participate in a circular economy
7. Increasing industry capacity for improved waste collection, recycling and energy recovery
8. Sustainable procurement by governments
9. Sustainable procurement by business and individuals
10. Reduction in the environmental impacts of plastics and packaging
11. Sound management of chemicals and hazardous waste
12. Reduced organic waste including garden and food waste
13. Data and reporting
14. Market development and research

4.2 Heavy Vehicle National Law – Chain of Responsibility

The Heavy Vehicle National Law (HVNL) focuses on key safety issues in the transport industry including fatigue management, vehicle weights, securing of loads and vehicle maintenance. Under new 'Chain of Responsibility' (CoR) laws introduced on 1 October 2018, all parties along the supply chain carry a legal liability for their actions or inactions that lead to breaches of the HVNL.

The CoR laws have a number of implications for Council's management of waste. To comply with the HVNL it will be important to ensure that:

- Council's tender specifications for waste contracts do not include requirements that may require the contractor to breach the HVNL
- Council appropriately manages and acts on information indicating that a waste contractor has breached the HVNL
- Council appropriately manages and acts on information indicating that a vehicle entering the Bargo Waste Management Centre or other waste management facility managed by Council, may be in breach of the HVNL.

5 NSW Government Strategic and Policy Direction

5.1 20-Year Waste Strategy

The New South Wales Environment Protection Authority (EPA) is leading the development of a 20-year Waste Strategy for NSW in partnership with Infrastructure NSW. The Strategy, scheduled to be written by the end of 2019, will aim to set a long-term vision for reducing waste, drive sustainable recycling markets and improve the waste infrastructure network. The EPA has committed to providing industry with certainty so the right infrastructure investments are made to meet community needs.

The Strategy's objectives include:

- New 20-year goals for reducing waste generation rates, resource recovery and landfill diversion
- New waste avoidance and resource recovery policy positions and strategic directions
- A plan for new or enhanced policies and programs to improve waste collection and distribution
- A framework for the delivery of an integrated state infrastructure network
- An alignment of policy and regulation to achieve long-term strategic objectives
- A plan to strengthen data quality and access

To enable public input into the drafting of the 20-Year Waste Strategy, in March 2020 the NSW Government released an Issues Paper titled '*Cleaning Up Our Act: The Future for Waste and Resource Recovery in NSW*'. This document set out the challenges facing the waste industry and all levels of government under four key focus areas:

- Generating less waste
- Improving collection and sorting
- Planning for future infrastructure, and
- Creating end markets.

The document asked pertinent questions under each of these areas and invited submissions from the public. Council, in partnership with its neighbouring councils of Campbelltown, Wingecarribee, Camden and Liverpool, lodged a joint comprehensive submission. It is hoped that this and submissions lodged by other parties will contribute significantly to the drafting of the 20-Year Waste Strategy. Council will continue to liaise with the NSW Government and advocate for the interests of the Wollondilly community during the drafting of the Strategy.

5.2 Waste Diversion Targets

The NSW Government's current Waste Avoidance and Resource Recovery Strategy 2014-2021 (WARR Strategy) sets a landfill diversion target of 75% of municipal solid waste by 2021/22.

In recent years a number of circumstances beyond local government's control have impacted on the ability to meet this target. For example, for some years many Australian companies engaged by councils to accept kerbside-collected recyclables had contracts with Chinese recyclers. The recent enforcement of China's 'National Sword' resulted in China dramatically reducing the amount of recyclable plastic containers it would import. Other Asian countries have followed suit, resulting in kerbside recyclables being landfilled or stockpiled pending access to alternative markets. The NSW Government is now working with the affected councils and their contractors to develop solutions to this issue.

Over the past two decades the advanced treatment of municipal solid waste has enabled operators of waste treatment facilities to separate organic matter from inorganic matter, producing a 'dirty compost' known as 'Mixed Waste Organic Output' (MWO) which was deemed by the EPA to be suitable for limited land application. In November 2014 the EPA issued the 'Resource Recovery Order' and 'Resource Recovery Exemption' which allowed MWO to be used in mine-site rehabilitation and agricultural applications. Over the next four years the sites on which MWO was applied were analysed by independent scientists engaged by the EPA. The EPA received the scientists' Technical Advisory Report In May 2018. In response to that report, the EPA revoked the Order and Exemption in October 2018. This has had a serious impact on the ongoing viability of existing advanced waste treatment facilities, resulting in a significant increase in the amount of municipal solid waste being re-directed to landfill.

With Local Government's limited ability to influence the rates of landfill diversion of municipal solid waste through waste separation and processing technology, it will be important for Council to focus on encouraging residents to produce less waste, and to divert more waste from the 'red-lid' bin. To achieve this Council will promote activities such as home composting, cooking to produce less food waste and avoidance of unnecessary packaging. Leading by example, Council-owned and operated facilities such as library, child care centres and leisure centre adopt waste reduction initiatives.

Action 2: *Deliver education and marketing initiatives encouraging residents to produce less waste and to divert waste from the 'red-lid' bin*

Action 3: *Review current waste avoidance and reduction measures in place at Council-owned and operated facilities, with a view to identifying opportunities for improvement.*

5.3 Waste Less, Recycle More Initiative

The NSW Government's 'Waste Less Recycle More' (WLRM) initiative makes grant funding available during the period 2017 to 2021 for the development of waste and resource recovery related initiatives. Funding is distributed largely through a series of targeted grants available to the waste industry, not-for-profit organisations and councils. The key areas addressed by the WLRM initiative include:

- Local government waste and resource recovery
- Illegal dumping prevention and enforcement
- Litter prevention and enforcement
- Managing household problem wastes
- Waste and recycling infrastructure
- Organics infrastructure
- Business recycling
- Recycling innovation
- Asbestos management

Council will continually monitor the availability of waste-related grants from the Waste Less Recycle More initiative and apply for funding where appropriate.

5.4 Container Deposit Scheme

The NSW Government commenced rolling out the Container Deposit Scheme in December 2017. The primary objective of the Scheme is to reduce litter. Marketed as 'Return and Earn', the Scheme enables participants to redeem eligible beverage containers at designated centres for a 10-cent refund per container. The Scheme is funded by a levy on eligible containers which is included in the retail purchase price.

The community has responded enthusiastically to the Scheme from its outset, and participation continues to grow: it took twelve months for one billion containers to be redeemed, but only another six months for the second billion containers to be redeemed.

Unfortunately there are few redemption centres across the Wollondilly Shire. Council has lobbied and will continue to lobby for more redemption centres and support opportunities should they arise.

Action 4: *Lobby for more Container Deposit Scheme redemption centres to be located within the Wollondilly Shire.*

Since the introduction of the Scheme the average content of 'yellow-lid' household recyclables bins has reduced in weight and volume. This reduction, along with the potential change in value of the remaining items in the bin may have impacts on the current recyclables processing contract and future contracts.

While the Scheme has resulted in many benefits to the community, Council will continue to monitor the implications of the Scheme on current and future contracts.

6 Risk Management

Decisions regarding the management of waste must often be made under conditions of uncertainty, particularly in respect of changing state, federal and international government policies that impact on waste infrastructure, processing technologies and product output from those technologies. As we work towards successfully achieving waste management objectives, it will be important to adhere to Council's Enterprise Risk Management framework by continually identifying, analysing, monitoring and treating risks across the term of this Strategy.

Detailed risk assessments will be conducted on projects and activities identified in the Strategy as and when required.

7 Council's Strategic Waste Management Directions

7.1 Pursuing Landfill Diversion

The NSW Government's Waste Avoidance and Resource Recovery Strategy 2014-2021 (WARR Strategy) sets a landfill diversion target for municipal solid waste of 75% by 2021/22. A revised target is likely to be issued in the NSW Government's '20-Year Waste Strategy' which will replace the current Strategy and is likely to be released in late 2020.

While councils are not legally obliged to pursue or achieve this target, Wollondilly Shire Council will continue to pursue a reduction in municipal solid waste by:

- Encouraging residents to reduce their rates of waste generation
- Encouraging residents to make use of the kerbside recycling scheme
- Encouraging residents to recycle their food organic waste at home (eg. backyard composting and worm-farming), and
- Investigating available technologies aimed at recovering reusable resources from the 'red-lid' bin.

Through the kerbside three-bin system almost all of the contents of the yellow- and green- lid bins are recycled. Currently the contents of the red-lid bin in almost all cases are landfilled. Despite high resource recovery rates for the contents of yellow- and green- lid bins, Council does not meet the NSW Government's target. The only feasible means of reaching the target is by developing ways to divert at least some of the contents of the red-lid bin from landfill. The waste industry has developed various technologies to do this, however a number of factors currently obstruct councils from accessing these technologies:

- There is a serious shortage of waste infrastructure in the Sydney metropolitan area
- The amount of domestic waste generated in the Sydney metropolitan area far exceeds the current processing capacity of available advanced waste treatment facilities
- Recent policy decisions by the NSW EPA have resulted in major interruptions to the operational workflows of existing advanced waste treatment facilities. These policy decisions now require operators of these facilities to review their processing methodologies, which may require major work such as infrastructure modifications and sourcing new markets for end-products, and
- Future unpredictable policy changes may result in further threats to established technologies and the facilities that utilise them, and may have the potential to discourage the waste industry to invest in alternative technologies.

As a result of the above, there is a great deal of uncertainty across the waste industry and councils, resulting in the industry's hesitation to commit to further development of advanced waste treatment infrastructure, and councils' hesitation to commit to long-term waste processing contracts.

Landfilling domestic waste currently presents the lowest level of operational, technological and financial risk to ratepayers, however this disposal option almost guarantees that the NSW Government landfill diversion targets for domestic waste will not be met.

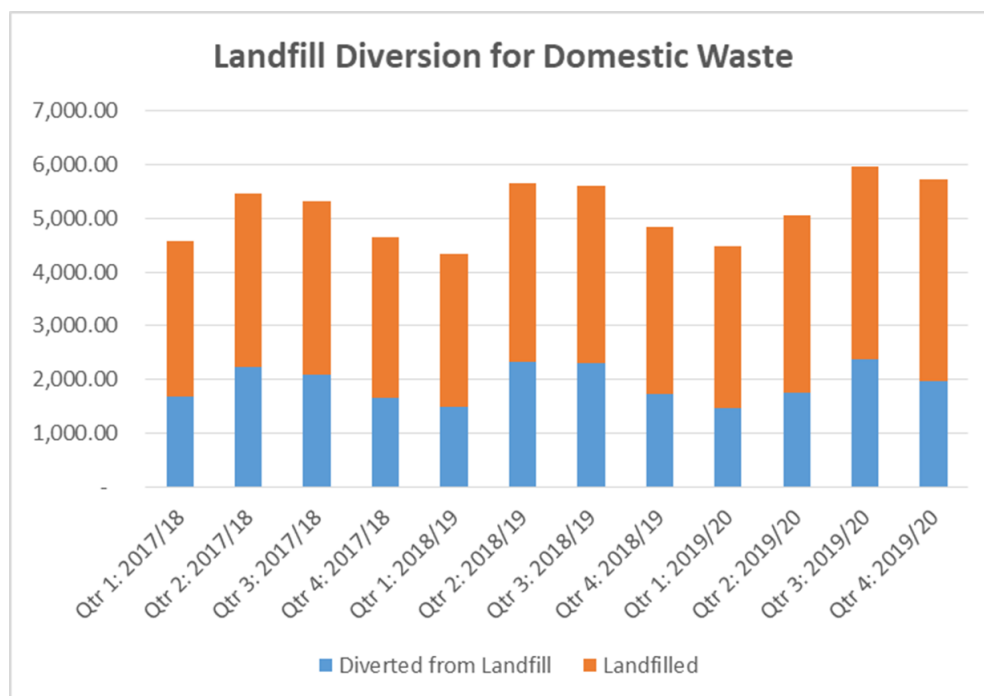
In recognition of the risk and uncertainty associated with development of waste infrastructure and future waste contracts, the NSW Government has committed to ensuring that the 20-Year Waste Strategy will provide certainty to enable the waste industry to provide stable and long-term infrastructure investments that will meet community needs.

Landfill diversion rates for 'yellow-lid' recyclables and 'green-lid' garden organics are very high, averaging 85.1% and 97.2% respectively between July 2017 and June 2020. The landfill diversion rate for domestic garbage is low, with an average 1.7% between over the same period. All kerbside clean-up waste is landfilled. For all waste streams combined, the average landfill diversion rate for Wollondilly Shire's domestic waste averaged 37.3% between July 2017 and June 2020, as shown in Table 1 and Figure 4.

Table 1: Landfill diversion for Wollondilly Shire's domestic waste: July 2017 – June 2020

	Tonnes Collected	Landfilled	Diverted from Landfill	% Diversion
Qtr 1: 2017/18	4,577.34	2,898.44	1,678.90	36.7%
Qtr 2: 2017/18	5,466.46	3,238.58	2,227.88	40.8%
Qtr 3: 2017/18	5,312.02	3,211.67	2,100.35	39.5%
Qtr 4: 2017/18	4,644.44	2,991.09	1,653.35	35.6%
Qtr 1: 2018/19	4,331.44	2,841.12	1,490.32	34.4%
Qtr 2: 2018/19	5,652.24	3,332.07	2,320.17	41.0%
Qtr 3: 2018/19	5,607.54	3,299.53	2,308.01	41.2%
Qtr 4: 2018/19	4,830.07	3,095.87	1,734.20	35.9%
Qtr 1: 2019/20	4,493.46	3,015.34	1,478.12	32.9%
Qtr 2: 2019/20	5,044.35	3,284.00	1,760.35	34.9%
Qtr 3: 2019/20	5,969.65	3,593.11	2,376.54	39.8%
Qtr 4: 2019/20	5,732.58	3,759.84	1,972.74	34.4%

Figure 4: Landfill diversion for Wollondilly Shire's domestic waste: July 2017 – June 2020



In 2017 Council commissioned a domestic waste composition audit. Figure 5 shows the composition of the average 'red-lid' domestic waste bin.

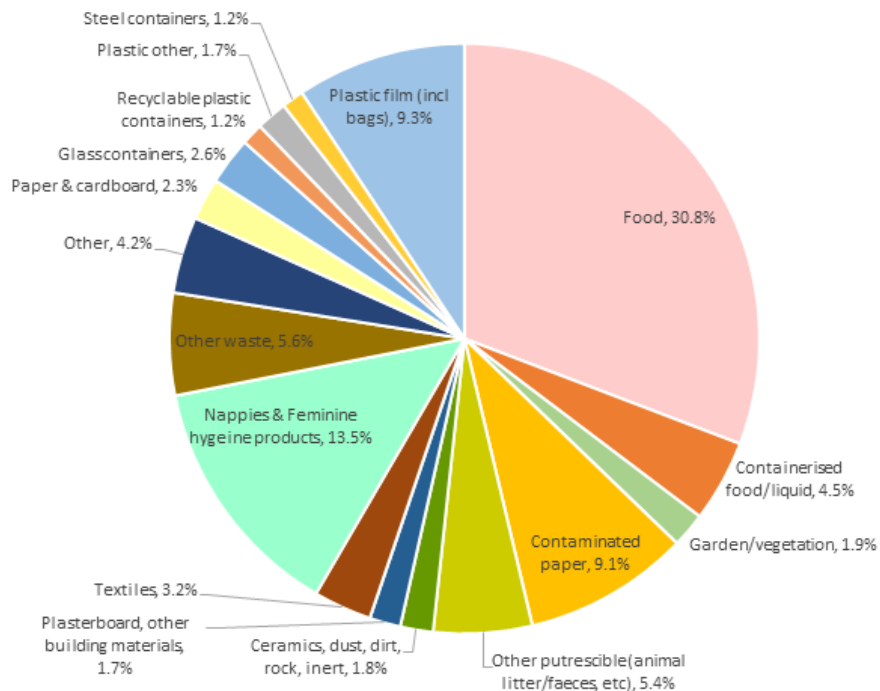


Figure 5: Contents of an average Wollondilly Shire domestic 'red-lid' bin during 2017

With 30.8% of the average household garbage bin containing food waste, it is clear that for Wollondilly Shire to improve its landfill diversion rate, food waste must be the highest priority. This can be tackled at two levels:

- Reducing the amount of food waste entering the red-lid bin: this can be done by encouraging residents to change how they buy, cook and store food. Other key ways of diverting food waste from the red-lid bin is to encourage home composting, worm farms, backyard chickens. Council will provide a targeted community education campaign to promote food waste avoidance and diversion of food waste from the red-lid bin (see Section 7.11.5), and
- Pursuing advanced waste collection, processing and treatment technologies that will result in diversion of food waste that is placed in red-lid bins.

Through Project 24 (see Section 7.16.1) Council is working towards awarding a new contract for domestic waste processing. A priority of Project 24 is to implement technologies that will achieve optimal landfill diversion for food waste. The NSW Environment Protection Authority (EPA) is strongly encouraging councils to adopt a waste collection system that sees residents place food organics in garden organics bins. The system is known by the acronym 'FOGO'. For a FOGO system to succeed both environmentally and financially, it relies on four key elements:

1. Residents minimising contamination in the organics bin with inorganic items
2. Residents placing most food waste in the organics bin and little, if any in the garbage bin
3. A facility that is able to efficiently receive, decontaminate and process the waste into compost, and
4. A viable market for the processed compost.

FOGO systems are currently in place in only one Sydney metropolitan council area and a small number of rural council areas. Where FOGO systems are in place or where they have been trialled in metropolitan areas, the greatest obstacles to its success are high levels of contamination, and low transfer rate of food organics from red-lid to green-lid bins. This in turn creates obstacles for the efficient processing of the materials into high quality and marketable compost. Notwithstanding, FOGO is in its early stages of development, and is an option that may result from the Project 24 waste contract procurement process.

Figure 5 shows 'nappies and feminine hygiene products' as the second most common items in the red-lid bin. While some advances have been made in Europe towards the recycling of disposable nappies, no such program is available in Australia. In addition, it is considered highly unlikely that a campaign to promote the use of cloth nappies instead of disposable nappies would have any significant impact.

Of particular note is that the 2017 audit showed 'plastic film (including bags)' at 9.3% of the contents of the red-lid bin. Given that the percentages shown in Figure 5 are by weight, not volume, and the fact that plastic film is very light weight, this suggests that the red-lid bin contains an extremely high volume of plastic film waste. As most of this is likely to be in the form of packaging, a campaign to encourage residents to reduce this type of waste would be ambitious, as in many cases residents do not have control over the packaging around the goods that they purchase. There are some instances where an education campaign could be effective, for example where residents unnecessarily use disposable plastic bags provided in supermarket fruit and vegetable sections to package large items such as apples, bananas and the like. These items can be packed loose in the shopping trolley and placed into the reusable shopping bag upon being checked out. While limited in its scope and likely impact on landfill diversion targets, Council will nevertheless provide a targeted education campaign towards the reduction in use of plastic film.

7.2 Setting a Landfill Diversion Target

As outlined in Section 5.2, achievement of most NSW councils' landfill diversion targets were placed out of reach following the EPA's revocation of the MWOO Order and Exemption in October 2018. Since that time the vast bulk of the contents of red-lid bins across has been and continues to be landfilled. Until some regulatory certainty is provided by the NSW Government, both councils and waste industry are reluctant to enter into waste processing contracts that will rely on expensive and high risk landfill diversion technologies. It is hoped that the NSW Government's release of its 20-Year Waste Strategy in early 2021 will provide the regulatory certainty and the reduced risk necessary to enable councils and the industry to commit to contracts offering technologies that will produce significant landfill diversion. Upon release of the 20-Year Waste Strategy and the subsequent awarding of Council's next domestic waste processing contract (the latter of which is likely to be in late 2021), Council will be in a better position to set a realistic and

achievable landfill diversion target for domestic waste. It is hoped that this target will be approximately 70%, to be achieved by 31 December 2024 (six months after commencement of the new domestic waste processing contract).

In the meantime, Council's current landfill diversion rate of 37.3% could be improved upon by targeted campaigns to reduce food waste, as outlined above. With this in mind, Council has adopted a short-term domestic waste landfill diversion target of 40%, to be achieved by 30 June 2023.

7.3 Domestic Waste Collection

The current domestic waste collection service offers residents:

- An 80-, 120- or 240-litre garbage bin emptied weekly
- A 240- or 360-litre recycling bin emptied fortnightly
- A 240-litre garden organics emptied fortnightly on the alternate week to recycling (urban areas only), and
- Two kerbside clean-up collections per year provided at scheduled intervals.

The collection service is provided by a contractor. Council conducts regular contract performance meetings with the contractor to monitor service delivery standards and the contractor's and Council's compliance with the conditions of the contract.

Contracted service arrangements have served the Shire's residents well for many years, and there are no plans to change this structure. In addition to the above services, the contract requires the contractor to repair and replace bins as required and to provide a customer call centre. The contract is due to expire in 2024 at approximately the same time as the expiry of the domestic waste processing contract. The expiry dates were intentionally scheduled to coincide, as the waste processing technology that will be adopted beyond 2024 will inform the bin configuration required by that technology.



Figure 6: Domestic waste collections in Wollondilly Shire

7.4 Domestic Waste Processing

In the early 2000s the councils of Campbelltown, Camden, Wingecarribee and Wollondilly collaborated in a regional procurement project for processing and disposal of the partner councils' four domestic waste streams (garbage, recyclables, garden organics and kerbside clean-up materials). Creating an 'economy of scale' by pooling each council's waste tonnages, the joint procurement process created a competitive market, attracting major industry participation in the

tender process. The project resulted in the partner councils engaging in a 15-year joint contract, with the contractor applying various advanced waste processing and resource recovery technologies which have resulted in a reduction in landfilling of the councils' waste. The contract is due to expire in 2024.

Currently most of the contents of the four partner councils' red-lid garbage bins are landfilled.



Figure 7: Material separation at a domestic recyclables resource recovery centre

The contents of yellow-lid bins are taken to a materials recovery facility where they are de-contaminated and separated into plastic containers, steel, aluminium, glass, cardboard, paper and liquid paperboard (see Figure 7). Each stream is then on-forwarded to either on-shore or overseas recyclers. The process results in recycling of 86% of the contents of yellow-lid bins across the four partner councils.

The contents of green-lid bins are taken to a garden organics processing facility where they are de-contaminated, shredded and composted. The composted material is then shredded more finely and blended with various

additives to produce a range of products depending on market demand at the time, including soil conditioners, potting mixes and contaminated site rehabilitation medium. The process results in recycling 97% of the contents of green-lid bins across the four partner councils.

Kerbside clean-up materials are generally landfilled after removal of larger recyclable items such as whitegoods and other items of scrap metal. Council's provision of a separate scrap metal kerbside clean-up collection service acts to reduce the amount of metals in general clean-up material.

The processing and disposal contract is managed by Campbelltown City Council on behalf of the four partner councils. Regular monthly contract performance meetings are organised and chaired by Campbelltown City Council. These meetings are attended by the contractor's representative and representatives from the four partner councils, and monitor the contractor's performance and all parties' compliance with the terms and conditions of the contract.

7.5 Contamination Management in Domestic Waste Bins

The red/yellow/green lid bin system enables residents to play an active part in diverting waste from landfill. Used correctly, the system ensures that renewable resources are easily separated and reused in the most environmentally sustainable ways.

The system relies on the appropriate use of the bins, however even a small amount of contaminants in the yellow- and green- lid bins can undermine the community's efforts. For example, a garden organics collection vehicle containing as little as 3% content of unacceptable materials may render the entire load unsuitable for recycling, resulting in the entire load being landfilled.

Contamination is a formal agenda item at regular performance meetings with the waste processing contractor. To date the contractor has reported that contamination levels in Wollondilly Shire Council's recyclables and garden organics loads fall within an acceptable range and require no intervention by Council.

Wollondilly residents have a proud record of using the system correctly. As the Shire's population grows with new families moving into the Shire, it will be important for Council to promote the correct use of the bins, and to ensure that residents are provided with sufficient information regarding acceptable and unacceptable materials.

7.6 Domestic Kerbside Clean-Up Services

Two scheduled clean-ups are currently provided to residents per year. The allowable volume per resident per clean-up is 1.5 cubic metres. Residents are encouraged to place metal items out separately. General clean-up materials and metals are collected separately and delivered to two separate locations. Metals are recycled, while most general clean-up material is landfilled.

With kerbside clean-up participation rates increasing in recent years, there has been pressure on Council to provide the service in a timely fashion in order to minimise the impact on streetscape visual amenity and to reduce the likelihood of additional waste being added to clean-ups. Under current arrangements Council's collection contractor is required to remove all clean-ups from the kerb within a specified one-week window. To date this requirement has been met. Council will continue to monitor the performance of the contractor to ensure this service standard continues.

For future waste processing and disposal tenders Council will explore the industry's capacity to increase the recycling rate of kerbside clean-up materials.

7.7 Litter Management

7.7.1 Community Education

According to research conducted by the NSW EPA prior to the introduction of the Container Deposit Scheme in December 2017, the single most common item of litter was the cigarette butt, which comprised almost half of the litter thrown away. The research identified other common forms of litter including small pieces of paper, chip and confectionery wrappers, fast-food packaging materials, bottle caps, plastic straws, glass pieces, alcohol bottles and soft drink containers (both plastic and metal). Since the introduction of the Container Deposit Scheme, new research may find a reduction in the litter of alcohol bottles and soft drink containers.

Past research has suggested that there is no known gender, age or class differentiation in littering behaviour, although young men are more likely to admit to littering.

While Council hopes to address the issue of littering through community education, it is difficult to design and deliver a targeted campaign without knowing the demographic of perpetrators and the motivation for their behaviour.

The NSW EPA is currently working on a Litter Prevention Strategy. The Strategy is scheduled for finalisation and publication in late 2019. It is hoped that the Strategy will provide sufficient information to enable Council to formulate and deliver a targeted education campaign and actions at a local level to combat litter.

7.7.2 Public Place Litter Bins

Public place litter bins include bins that are located on the kerbside in central business districts, urban areas, at bus stops, parks and recreation reserves and playing fields. The bins are serviced by a combination of Council staff and a contractor.

Many public place litter bins are of small open-top design. Problems associated with these types of bins include:

- Wind-blown litter escaping from the bins
- Scavenging by birds which results in litter being strewn around the bins, and
- The depositing of domestic and commercial waste in the bins.

In recent years Council has replaced a number of these bins with larger 'wheely' bins (identical to domestic recyclables and garden organics bins). There are a number advantages associated with these bins:

- The lidded bins eliminate windblown litter and access by birds
- A reduction in the deposit of domestic and commercial waste (for those bins installed with limited access such as an enclosure with a small opening or with an attachment that limits the opening of the lid)
- Given their larger capacity, the bins should require less frequent servicing, improving staff productivity and reducing contractor costs.

Location, size and quantity of bins in each area determine the optimum frequency with which bins need to be serviced. A review of current public litter bin placement and service frequency will ensure that the service meets the needs of the community in an economical fashion. Proposed actions already identified during the review include replacing small open-top bins with larger 'wheely' bins, removing bins from identified low-use locations, installing bins where litter is prevalent, and amending service frequencies to match demand.

7.7.3 Public Place Recycling

The mixed recyclables stream has a low tolerance threshold for contamination. While many councils have conducted public place recycling trials, they have yielded little success due to high levels of contamination. For these reasons few councils have introduced this service on a permanent basis. Notwithstanding, Council has located public place recycling bins in a small number of selected locations on a trial basis. Results will be monitored over a period of time to assist Council to determine whether to expand this service.

Action 5: *Continue the trial of public place recycling; undertake review of the trial to evaluate its effectiveness.*

7.7.4 Waste Wise Events

A number of large community outdoor events are held within the Shire each year and each of these events generates both general waste and recyclable materials. The NSW Government has developed a series of documents that provide for best practice resource recovery and litter minimisation at these events. The documents are collectively titled the 'Waste Wise Events Guide', and are available to assist community organisations to reduce waste and maximise resource recovery.

Development applications (DAs) for new large outdoor events are approved with a condition requiring compliance with the Waste Wise Events Guide.

7.8 Illegal Dumping

7.8.1 Illegal Dumping Activity

Past investigations have found that illegal dumping is perpetrated by residents and business operators from both within and outside the Wollondilly Shire. Dumping occurs in both urban areas and isolated bushland locations, sometimes in environmentally sensitive locations. Unfortunately the cost of investigation, clean-up and disposal is borne by every ratepayer.

7.8.2 Deterrence and Detection

The NSW EPA has identified five key mechanisms likely to be most effective in preventing illegal dumping:

- Making dumping harder – councils can make access to dumping hot spots difficult by using infrastructure such as lighting, barriers and landscaping
- Increasing the risk of getting caught – a perceived increase in the likelihood of getting caught will deter some offenders from illegal dumping
- Reducing the rewards by denying the financial benefits – for businesses that generate large amounts of waste, the financial savings from illegal dumping can be substantial. Financial disincentives to illegal dumping include fines and requirements on offenders to clean up dump sites

- Making legal disposal easier – householders are more likely to illegally dump waste if they perceive that the waste collection service is not efficient or convenient. Councils can discourage illegal dumping by adopting best practice waste collection services.
- Educating and informing the community – those who illegally dump may find it easy to rationalise and find excuses for their behaviour. These excuses can be challenged through targeted education and advertising

Illegal dumping often occurs in areas where there is already illegally dumped waste. For this reason it is important for Council to limit access to dumping 'hot spots' where possible, and to remove illegally dumped waste as quickly as possible after it is identified. Unfortunately in some cases prompt removal is not possible, for example where the dumping incident has been investigated and the alleged perpetrator identified: if the perpetrator is issued a clean-up notice, the notice must provide a reasonable period of time for the perpetrator to comply. Where it is appropriate for Council to collect illegally dumped waste, it is important that targeted response times are set and met.

Action 6: *That a target response time be set for collection of illegally dumped waste by Council or its contractor.*

Council secured grant funding to engage a full-time Illegal Dumping Enforcement Officer for a four-year period from 2018 to 2022.

The functions of this position include:

- Investigating dumping incidents
- Enforcement and compliance where perpetrators are identified
- Identifying illegal dumping 'hot-spots'
- Reducing opportunities for illegal dumping (eg. installation of fences and other barriers in isolated areas preventing vehicles from entering known bushland dumping locations)
- Undertaking covert surveillance operations
- Arranging installation of signage warning perpetrators of the legal consequences of illegal dumping
- Sharing intelligence and participating in joint investigations with the NSW EPA and neighbouring councils
- Community education
- Uploading illegal dumping data to the NSW EPA's centralised database

While the Illegal Dumping Enforcement Officer carries out the above functions to a high standard, the Wollondilly Shire is a large land mass for one person to monitor. The community may benefit from initiatives that include community engagement and encourage residents to promptly report illegal dumping as they see it.

7.8.3 Collection and Recovery



Figure 8: *Illegal dumping is perpetrated by residents and business operators from both within and outside the Wollondilly Shire.*

Illegal dumping is a significant issue in the Wollondilly Shire. Table 2 shows that for the period 1 July 2018 to 30 June 2019, 282 incidents of illegal dumping were recorded. While the highest number of incidents over that period involved general household waste, the largest quantity of waste by weight represented comprised soil and excavated material.

During this period Wollondilly ratepayers incurred more than \$77,000 in disposal costs alone.

Table 2: *Illegally dumped waste statistics – July 2018 to June 2019*

ILLEGALLY DUMPED WASTE – 2018/19	No. of Incidents	% of All Incidents	Total Est. Weight	% of Total Weight
Asbestos	16	5.7	48.3	8.06
Commercial and industrial	22	7.8	5.5	0.92
Construction and demolition	20	7.1	114.0	19.02
Electronic waste	4	1.4	0.1	0.02
Household waste	131	46.5	85.0	14.18
Liquid waste	7	2.5	0.8	0.13
Mulch and garden organics	21	7.4	59.0	9.84
Scrap metal	6	2.1	2.7	0.45
Soil and excavated material	8	2.8	271.0	45.20
Tyres	27	9.6	5.0	0.83
Vehicles and car parts	9	3.2	5.7	0.95
Other	11	3.9	2.4	0.40
TOTAL	282	100.0	599.5	100.00

During inspection and investigation of illegally dumped waste, Council's Illegal Dumping Enforcement Officer calculates the estimated weights of each waste type and feeds this data into a centralised database managed by the NSW EPA.

Illegally dumped material is currently collected and disposed of by Council employees and a contractor. Historically, all illegally dumped material was landfilled. However in recent years illegally dumped materials have been delivered to Council's Bargo Waste Management Centre, where recyclable items are recovered and diverted from landfill. These items typically include:

- Vehicle tyres
- Garden organics
- Mattresses
- Concrete, bricks and tiles
- Gas bottles
- Computers and other items of electronic waste
- Whitegoods and other scrap metal items.

In addition to providing a positive environmental outcome, this practice represents a cost saving to ratepayers, as diversion of these items from landfill avoids Council's liability to pay the NSW Government's landfill levy.

7.9 Waste Avoidance and Reduction: Council Leading by Example

7.9.1 Council Facilities

Council endeavours to reduce waste in its own operations and strive to be a leader in the community in proactively educating the community and also applying waste reduction within its own business. Council has introduced a number of initiatives to minimise its own waste and increase resource recovery. These actions include:

- Council's spent printer cartridges are recycled. Council also purchases recycled printer cartridges
- A mobile phone recycling container is located in the Administration Building's customer service area for free drop-off
- A household battery recycling container is located in the Administration Building's customer service area for free drop-off
- Every work-station in Council's Administration Building has access to a 'yellow-lid' recycling bin
- Council purchases selected 'green' stationery.

7.9.2 Use of Recycled Organics

A significant quantity of garden organics is regularly dropped off at the Bargo Waste Management Centre by residents and businesses. It is expected that this material will continue to be dropped off at any alternative facility provided by Council after closure of the Bargo Waste Management Centre.

Properly mulched and matured to the appropriate Australian Standard, processed garden organics will be a useful resource to Council's garden maintenance operation. Signage could be installed adjacent to selected gardens promoting the example being set by Council in using recycled organics.

Action 7: *Investigate the feasibility of processing organics from the Bargo Waste Management Centre and future Council drop-off facilities and using the processed product on Council gardens.*

7.9.3 Sustainable Procurement

Council's Purchasing Protocol requires a number of environmental considerations:

- **Minimise Waste** – Purchase in accordance with 'Avoid, Reduce, Reuse and Recycle' principles
- **Save Water and Energy** – Purchase products that save energy and/or water
- **Minimise Pollution** – Avoid purchasing products that pollute soils, air or waterways
- **Non Toxic** – Avoid purchasing hazardous chemicals that may be harmful to human health or ecosystems
- **Greenhouse Benefits** – Purchase products that reduce greenhouse gas emissions, and
- **Biodiversity and Habitat Protection** – Purchase in accordance with biodiversity and conservation objectives

7.10 Problem Waste Management

7.10.1 Medical Sharps Collection and Disposal Service

Medical sharps waste is classified as biohazardous and must be collected and disposed in a specific manner. This type of waste is unsuitable for disposal in any household waste stream.

Council provides a free drop-off and disposal service to residents across the Shire who require safe sharps disposal. Drop-off is available at a number of participating pharmacies across the Shire. Council will continue to provide this service and will periodically review the number and locations of drop-off facilities to ensure all residents have convenient access to this service.

Action 8: *Conduct a biennial review of sharps drop-off locations to ensure Shire residents have access to an efficient and convenient service.*

7.10.2 Household Chemical CleanOut

Each year the NSW EPA, in conjunction with most councils across NSW, conducts a free Household Chemical CleanOut event for the disposal of items identified by the EPA as household 'problem' wastes. The Shire's event is held in Picton at the rear of the Council Administration Building, usually during March. The following materials are accepted:

- Paints
- Pesticides and herbicides
- Poisons
- Household cleaners
- Oils and fuels
- Batteries
- Pool chemicals
- Hobby chemicals
- Acids and alkalis
- Gas bottles
- Fire extinguishers
- Fluorescent tubes.

This long-standing event is popular with residents and its patronage is likely to grow along with the Shire's population.

Action 9: *Continue to support the Chemical CleanOut event by providing the venue, traffic control and local advertising and promotion for the event.*

7.10.3 Community Recycling Centre

Council recently received a grant from the NSW Government to assist in the cost of building and operating Community Recycling Centre (CRC). The CRC grant program was established to enable residents to drop off, free of charge, the following 'problem wastes' as defined by the NSW EPA:

- Paints
- Gas bottles
- Fire extinguishers
- Motor oils
- Other oils (eg. vegetable oils)
- Car batteries
- Household batteries
- Smoke detectors
- Fluorescent globes and tubes

While the NSW EPA will fund the collection and recycling of these items, Council must fund staffing and other operational costs.

Typically, councils that have CRCs make free drop-off available for other common items such as:

- e-Waste
- Polystyrene, and
- 'Yellow-lid' bin contents

Collection and recycling of these additional items is at the council's cost. Wollondilly's CRC will include provision for drop-off of these additional items.

Having identified the preferred site, Council has now commenced the process to obtain building approval of its first CRC.

Action 10: *Construct and operate a Community Recycling Centre*

7.10.4 drumMUSTER

drumMuster provides farmers and chemical users with a free, environmentally responsible means of disposing of their empty chemical containers. The program is funded by levies collected by 'AgStewardship', which was established to develop stewardship programs for Australia's agriculture sector.

Washed empty containers can be deposited at the Bargo Waste Management Centre during its normal operating hours.

7.10.5 Mattress Recovery

Mattresses dropped off at the Bargo Waste Management Centre are transferred to a recycling contractor. The recycling process recovers the following materials for re-use:

- Steel springs for recycling into various steel products
- Coconut husk for weed matting and mulch
- Timber for mulch and animal bedding
- Foam for carpet underlay.

As the Bargo Waste Management Centre approaches capacity in coming years, Council will investigate opportunities to provide residents with an alternative drop-off location for mattresses.

7.10.6 E-Waste Recycling

The Bargo Waste Management Centre accepts computers, computer peripherals, televisions and other electronic equipment free of charge. The cost of recycling these items is subsidised through the Federal Government's National Television and Computer Product Stewardship Scheme. The Scheme introduced a levy on new equipment, paid by the consumer in the purchase price. The levy proceeds are used to fund disposal of old equipment at end of life.

As the Bargo Waste Management Centre approaches capacity in coming years, Council will investigate opportunities to provide an alternative drop-off location following closure of the Centre.

7.11 Waste Education and Information

7.11.1 Community Engagement

With recent media coverage regarding the challenges associated with waste and resource recovery, anecdotal evidence suggests that there is growing motivation in the community to take positive action towards minimising household waste output. Council can capitalise on this increased motivation by providing education programs and material to assist residents to take positive steps. In addition, Council's education initiatives will target other key areas such as illegal dumping, litter, and contamination in recycling and garden organics bins.

7.11.2 Correct Use of the Three-Bin System

Correct use of the 3-bin system is a key factor in maximising the diversion of waste from landfill. While Wollondilly residents have an excellent record in the correct use of bins, education initiatives will be important to encourage residents to maintain this record.

7.11.3 Publications and Promotional Material

Council publishes a range of printed and electronic material to promote waste avoidance and reduction. The annual waste booklet is delivered to every household, and is an effective and far-reaching means of delivering waste-related messages to residents. To maintain residents' interest in and attention to this publication, it will be important to ensure that it remains relevant and interesting.

Action 11: *Review the design and content of the waste booklet on an annual basis to ensure that it is relevant, fresh and eye-catching.*

Action 12: *Formally review all other waste-related printed media annually to ensure it remains relevant, fresh and likely to attract residents' interest.*

Action 13: *Review waste-related content on Council's website every six months.*

7.11.4 Promotion of Events and Services

Council supports the annual nationwide Clean Up Australia Day (CUAD) event by advising volunteers and CUAD organisers on the suitability of nominated clean-up sites, providing additional equipment such as gloves and bags and removing waste collected by volunteers.

Action 14: *Continue to support the annual Clean Up Australia Day event by providing advice to volunteers and organisers, providing additional equipment to volunteers and removing waste collected by volunteers.*

The EPA's Chemical CleanOut event is conducted annually across NSW. Council supports this event by promoting and advertising the event in its annual waste booklet, local newspaper, website and social media. (See item 7.9.2 for more information).

Council's Bargo Waste Management Centre provides free drop-off services to residents for items such as household and motor vehicle batteries, mobile telephones, e-waste, scrap metal, polystyrene and motor oils.

Action 15: *Continue advertising and promotion of free drop-off of targeted recyclable items at the Bargo Waste Management Centre.*

As illegal dumping is a significant issue in the Wollondilly Shire, it is important for Council to provide information to residents on legal means of disposal for bulky items, and the penalties applicable for illegal dumping.

Action 16: *Continue advertising and promotion of the availability of the kerbside clean-up service and the penalties applicable for illegal dumping.*

7.11.5 Home Recycling of Kitchen Organics

A significant portion of the household garbage stream comprises kitchen organics. Residents can reduce their household garbage output by producing less food waste and by composting the food waste that they do generate. Council has provided community education programs and will continue to investigate ideas to promote home composting and worm farming. These could include providing residents with kitchen organics caddies, subsidies on the purchase of compost bins, school competitions and playground waste audits at schools.

Action 17: *Continue to provide community education programs on home composting and worm-farming.*

7.12 Business Waste

7.12.1 Kerbside Bin Services

Council offers a waste collection and disposal service to commercial businesses that produce small amounts of waste of a similar nature to households. The standard commercial service includes garbage and recyclables 'wheely' bins, with optional garden organics bins. Use of Council's commercial waste services is optional: businesses may engage either Council's services or the services of a private contractor of their choice.

7.12.2 Bulky Commercial & Industrial Waste and Construction & Demolition Waste

Commercial and industrial waste generated within the Wollondilly Shire is accepted at Council's Bargo Waste Management Centre. The Centre offers a reduced gate fee for sorted concrete, bricks and pavers, all of which can be recycled. As the Bargo Waste Management Centre approaches capacity in coming years, Council will investigate the viability of offering a commercial waste drop-off service at an alternative site.

Action 18: *Investigate the viability of establishing a waste transfer station for commercial/industrial and construction/demolition waste following the closure of the Bargo Waste Management Centre.*

7.13 Development Controls for Waste Management

The Wollondilly Shire has been targeted as a significant growth area for south-western Sydney. Over the next three decades the Shire will see significant increases in residential development. Council will evaluate increasing numbers of proposals for new subdivisions, multi-occupancy developments, mixed-use complexes, small-lot and narrow-lot housing. Council's current controls for waste management were written some years ago, and in their current form do not adequately address the diverse range of housing that will be developed across the Shire in coming years.

It will be important that Council has waste controls in place which will provide clear guidance and direction to developers when formulating waste management plans for their proposals. It will also be important that Council's waste management specialists review applications for subdivisions and large residential and commercial developments to assess their compatibility with Council's waste collection and disposal operations.

Council will prepare a set of waste management guidelines to enable applicants to address key requirements for the diverse range of residential development that the Shire will see in coming years. These guidelines will be designed to be read in conjunction with the DCP.

Action 19: *Develop a set of waste management guidelines to be read in conjunction with the DCP.*

7.14 Management of Grant Funding

Through the Better Waste and Recycling Fund program, the NSW Government provides councils with guaranteed annual funding to address waste-related topics, for example waste avoidance, recycling, illegal dumping and litter. Each year Council must submit to the EPA projects which it proposes to implement with the funding. Council must maintain detailed financial records of its expenditure on approved projects, and report annually to the EPA on the progress of each.

7.15 Waste Infrastructure

7.15.1 Bargo Waste Management Centre

Council's Bargo Waste Management Centre is a landfill and resource recovery facility open to residents of the Wollondilly Shire and businesses that generate waste within the Shire. The Centre accepts non-putrescible materials for both recycling and landfill disposal, in addition to garden organics for mulching and reuse.

The following items may be dropped off free of charge:

- Scrap metal
- Clean paper and cardboard
- Yellow-lid recyclables
- Motor oils
- E-waste (computers, computer peripherals, televisions and other electronic equipment)
- Motor vehicle batteries
- Household batteries
- Clean expanded polystyrene



Figure 9: The Bargo Waste Management Centre's landfill is nearing the end of its operating life.

Residents can also drop off the following items at low rates subsidised by Council:

- Gas bottles
- Mattresses
- Tyres

The Bargo Waste Management Centre operates under strict EPA licensing conditions, which include a requirement to conduct regular environmental monitoring for risks typically associated with landfill operations, including surface and sub-surface gas, groundwater contamination and surface water contamination.

Having operated since the 1960s, the Centre's landfill is nearing the end of its operating life. During the period covered by this Strategy the Centre a site closure and rehabilitation plan will be implemented. In accordance with the NSW EPA's requirements, the site will be subject to a long-term program of regular environmental monitoring, including containment, removal and treatment of leachate, testing the quality of groundwater and stormwater, testing for the presence of landfill gas, and inspection for soil erosion.

Action 20: *Prepare and commence implementation of a Site Closure and Rehabilitation Plan for Bargo Waste Management Centre.*

Upon closure of the Centre it will be important for residents to be able to continue to access drop-off facilities for the items currently accepted by the Centre.

Action 21: *Investigate and if feasible, make available an alternative waste drop-off facility for residents' use after the closure of Bargo Waste Management Centre.*

7.15.2 Management of Closed Waste Management Facilities

Council is responsible for the management of five sites where now closed waste disposal facilities operated in the past. Council has a legal obligation to rehabilitate these sites. As site rehabilitation is costly to ratepayers, the rehabilitation program for all sites will be staged over coming years.

The Warragamba Waste Management Centre closed in 2014. The site was subsequently rehabilitated to EPA-approved standards and is now subject to a program of regular environmental monitoring. The monitoring program includes sampling and testing of groundwater, surface and sub-surface measurement of landfill gas, capture, testing and removal of leachate from the site and visual inspection for erosion of landfill capping. The monitoring program will continue for many decades.

7.15.3 Future Waste Infrastructure

There is a shortage of domestic waste processing and disposal infrastructure in the Sydney metropolitan area. As Sydney's population grows there will be increasing pressure on both the waste industry and the NSW Government to develop affordable and accessible waste infrastructure. As the availability of suitable land is likely to be one of the most significant obstacles to this objective, it is possible that infrastructure may be developed at increasingly further distances from the Sydney metropolitan area.

A typical daily domestic waste collection run within nearby distance to the processing/disposal contractor's facility requires the driver to suspend collections at least twice during the run to empty the truck. The further between the collection area and the contractor's facility, the costlier the collection service will be for ratepayers. When the distance between the collection area and the facility exceeds a certain threshold, it may be more economically and environmentally viable for a council to establish its own waste transfer station closer to the collection area. Waste from the transfer station is transferred in larger volumes to processing/disposal facilities, usually by semi-trailer. Currently Wollondilly Shire collection vehicles deliver directly to the contractor's facilities at Narellan. This arrangement will continue until at least May 2024 when the current domestic waste processing/disposal contract will expire.

Whether Council will need to establish its own domestic waste transfer station within the Shire will depend on the location of the drop-off point to be provided under the next domestic waste processing contract. This contract, due to commence in June 2024, is likely to be awarded in late-2021 (see Section 7.16.1). As the contract will be awarded jointly by Wollondilly and four neighbouring councils, consideration will be given to establishing a waste transfer station in collaboration with one or more of the partner councils.

Council-owned past and present waste management sites across the LGA may provide opportunities for development of a waste transfer station. There is also potential for Council to generate additional income by making the transfer station available to commercial customers.

Action 22: *Investigate the need and feasibility of developing a transfer station for domestic and commercial waste in the Wollondilly Shire.*

7.16 Regional Collaboration

7.16.1 Project 24

With the current domestic waste processing and disposal contract due to expire in 2024, the four partner councils engaged in the current contract, Campbelltown, Camden, Wingecarribee and Wollondilly councils, have once again agreed to collaborate in a joint procurement project for the next contract. The project has been aptly named 'Project 24'. Liverpool City Council has also joined the partnership. With the additional waste tonnages provided by Liverpool City Council, the project is likely to attract significant industry interest and a range of processing and disposal options including both traditional practices and advanced technologies.

The procurement of a contract of this magnitude is a long and detailed process and requires a great deal of work from the partner councils and the consultants they engage to assist with the project. The key outcome of Project 24 is to secure a contract for the processing and disposal of the five partner councils' domestic waste for a period of up to 15 years, commencing in 2024.

While more advanced and complicated waste processing technologies may yield higher landfill diversion rates, they may also require the councils to share a greater portion of the financial risk associated with these technologies. The collective decision of the Project 24 partner councils is likely to be influenced by State and Federal Government waste-related policies and the level of risk associated with future contract options.

Action 23: *Sign long-term contract for processing and/or disposal of domestic garbage, recyclables, garden organics and kerbside clean-up materials, commencing 2024.*

7.16.2 Regional Waste Coordinator

Through 'Regional Coordination Support Package' grant funding provided by the NSW Government's Waste Less Recycle More initiative, the Councils of Campbelltown, Camden and Wollondilly have employed a Regional Waste Coordinator to assist the councils with common goals and objectives.

The Regional Waste Coordinator's responsibilities include:

- Implementing the Regional Waste and Resource Recovery Strategy and its identified actions
- Sourcing grant funding for new regional projects
- Undertaking projects delegated by the partner councils
- Monitoring and reporting on developments in government policy and the waste industry.

The Regional Coordination Support Package has access to various State Government grant programs for projects targeted at waste avoidance and resource recovery. One role of the Regional Coordinator is to actively source these grants under the guidance of the partner councils and to deliver their targeted outcomes.

7.16.3 Regional Waste Avoidance and Resource Recovery Strategy

Grant funding from the Regional Coordination Support Package enabled the development of a Regional Waste Avoidance and Resource Recovery Strategy. The Strategy takes a collaborative approach to issues including:

- Waste infrastructure
- Recovery of resources from waste streams for beneficial use
- Waste education
- Reduction of contamination in kerbside recyclables and organics bins
- Illegal dumping
- Litter
- Problem wastes
- Planning controls
- Opportunities for shared services and resources.

8 External Factors Influencing Kerbside Waste Generation

8.1 Reduction in Kerbside Recycling and Garden Organics Volumes

With the Shire's steadily growing population, it could be reasonably assumed that the annual tonnages of household waste would increase. Figure 10 shows that while this is the case for domestic garbage, volumes of recyclables and garden organics have in fact declined over the past three years. These downward trends are most likely due to drought conditions in the case of the 'green-lid' bin, and to the introduction of the Container Deposit Scheme (see Section 5.4) in the case of the 'yellow-lid' bin.

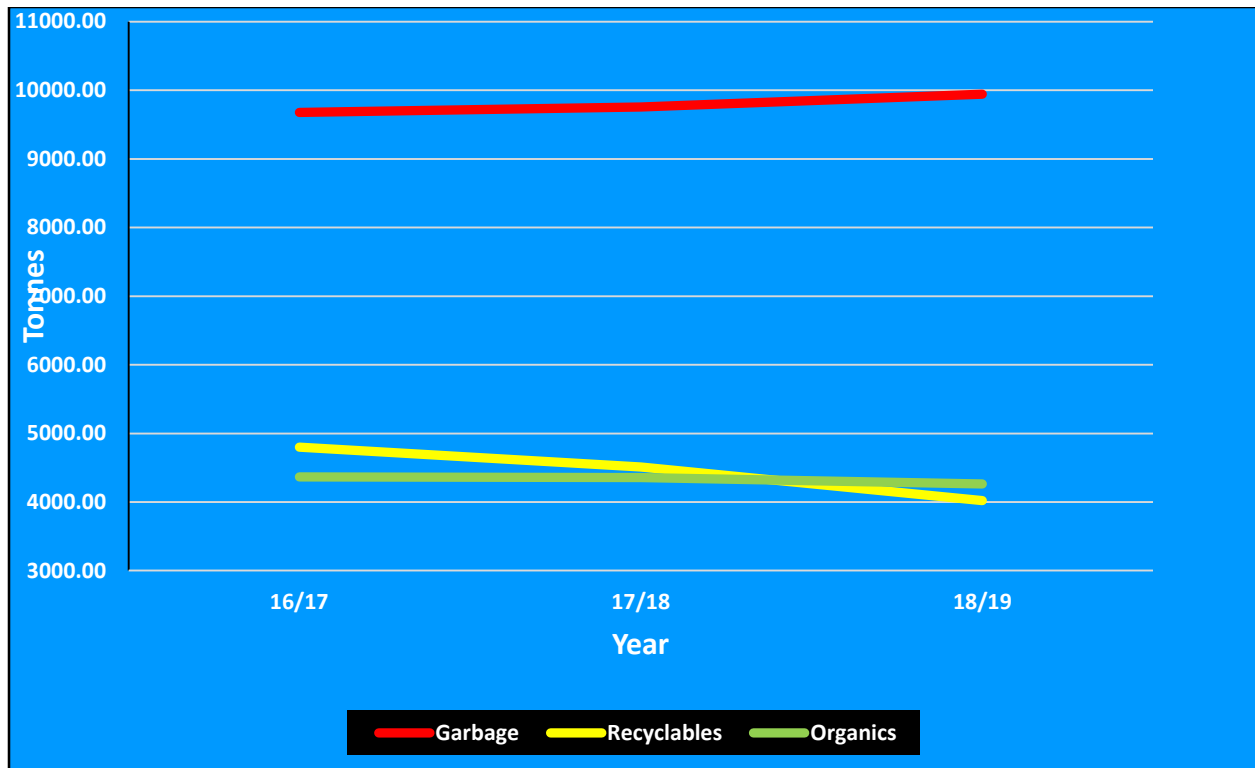


Figure 10: Domestic waste tonnages in the Wollondilly Shire – July 2016 to June 2019

8.2 Packaging Waste

Packaging waste that is unsuitable for recycling comprises a significant portion of the contents of household garbage. Examples include soft plastics and polystyrene. The Australian Packaging Covenant Organisation is a partnership between government and industry with its key objective to reduce the environmental impact of packaging. While the Covenant sets targets to increase the re-usability and recyclability of packaging materials, unfortunately there are no targets for manufacturers of consumer products to reduce the amount of packaging waste produced in the first instance. Residents are therefore limited in their ability to reduce the amount of packaging waste disposed of at the kerbside.

9 Annual Review

This Strategy will be formally reviewed on an annual basis between 1 July and 31 August. The formal review will:

1. Evaluate the content of the Strategy to ensure that it remains up-to-date and relevant; and
2. Report on the progress of each Action.

The Strategy may be reviewed at any time prior to scheduled annual review dates should it be deemed necessary. For example, if changes to State or Federal waste policies or legislation impact on items or Actions contained in the Strategy.

10 Action Table

Action No.	Description	Objective	Target Completion Date	Performance Measure
1	Subject to the availability of suitable technologies and products, review Council's procurement practices with a view to mandating recycled content where practicable in order to support the circular economy	4	Ongoing	Adoption of procurement practices that support the circular economy
2	Deliver education and marketing initiatives encouraging residents to produce less waste and to divert waste from the 'red-lid' bin	1, 2, 3	Ongoing	Evidence of targeted education and marketing initiatives
3	Review current waste avoidance and reduction measures in place at Council-owned and operated facilities, with a view to identifying opportunities for improvement	1, 2, 3	30/06/21	Completion of review and implementation of agreed improvements
4	Lobby for more Container Deposit Scheme redemption centres to be located within the Wollondilly Shire	1, 2	Ongoing	Evidence of lobbying for increased number of redemption centres within the Shire
5	Continue the trial of public place recycling; undertake review of the trial to evaluate its effectiveness	2, 3	31/03/21	Trial reviewed
6	That a target response time be set for collection of illegally dumped waste by Council or its contractor	2, 3	30/11/20	Target response time formally set
7	Investigate the feasibility of processing organics from the Bargo Waste Management Centre and future Council drop-off facilities and using the processed product on Council gardens	2, 3	30/06/21	Investigation completed and recommendations implemented
8	Conduct a biennial review of sharps drop-off locations to ensure all Shire residents have access to an efficient and convenient service	2	Every May 2021-25	Reviews completed and actions identified in the reviews implemented
9	Continue to support the Chemical CleanOut event by providing the venue, traffic control and local advertising and promotion for the event	2	Every Mar 2021-25	Chemical CleanOut events held as scheduled
10	Construct and operate a Community Recycling Centre	1, 2, 3	30 Sep 2021	Centre open to the public
11	Review the design and content of the waste booklet on an annual basis to ensure that it is relevant, fresh and eye-catching	2	Every May 2021-2025	Booklet formally reviewed and re-designed each year during the term of this Strategy
12	Formally review all other waste-related printed media annually to ensure it remains relevant, fresh and likely to attract residents' interest	2	Every Sep 2020-2025	Evidence of printed media being formally reviewed
13	Review waste-related content on Council's website every six months	2	Every Mar & Sep 2020-25	Evidence of web content being formally reviewed

Action No.	Description	Objective	Target Completion Date	Performance Measure
14	Continue to support the annual Clean Up Australia Day event by providing advice to volunteers and organisers, providing additional equipment to volunteers and removing waste collected by volunteers	2	Every CUAD event 2021-25	Evidence of additional equipment and advice being provided. Evidence of removal of waste generated from Clean Up Australia Day event
15	Continue advertising and promotion of free drop-off of targeted recyclable items at the Bargo Waste Management Centre	2, 3	Oct and Apr 2020-25	Evidence of promotion of free drop-off on Council's website, Facebook page and local newspaper
16	Continue advertising and promotion of the availability of the kerbside clean-up service and the penalties applicable for illegal dumping	2	Nov and May 2020-25	Evidence of promotion and advertising of kerbside clean-up service and penalties applicable
17	Continue to provide community education programs on home composting and worm-farming	1, 2, 3	Ongoing	Evidence of delivery of home composting and worm-farming workshops
18	Investigate the viability of establishing a waste transfer station for commercial/industrial and construction/demolition waste following the closure of the Bargo Waste Management Centre	2	30/06/21	Investigation complete and actions commenced
19	Develop a set of waste management guidelines to be read in conjunction with the DCP	2	31/12/20	Guidelines developed and implemented
20	Prepare and commence implementation of a Site Closure and Rehabilitation Plan for Bargo Waste Management Centre	2, 3	30/06/24	Plan approved by the NSW EPA and commencement of the stages identified in the Plan
21	Investigate and if feasible, make available an alternative waste drop-off facility for residents' use after the closure of Bargo Waste Management Centre	2	TBA (subject to confirmed closure date of BWMC)	Arrangements in place for alternative facility to operate immediately following closure of BWMC
22	Investigate the need and feasibility of developing a transfer station for domestic and commercial waste in the Wollondilly Shire	1, 2	31/12/21	Investigation completed
23	Sign long-term contract for processing and/or disposal of domestic garbage, recyclables, garden organics and kerbside clean-up materials, commencing 2024 (Project 24)	1, 2, 3, 5	31/12/21	Contract signed