TOOWOOMBA
REGION

WASTE MANAGEMENT STRATEGY

2021

Rich traditions. Bold ambitions

Toowoomba Regional Council

Greater Toowoomba Waste Management Facility
Excellence Award - 2019 National Landfill & Transfer Stations Innovation and Excellence Awards
Innovation Award - 2017 National Landfill & Transfer Stations Innovation and Excellence Awards

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ACKNOWLEDGEMENTS

We acknowledge the Traditional Custodians of the Toowoomba Region whose song lines traverse our lands and pay our respect to Elders past, present and emerging, for they hold the knowledge, rich traditions and bold ambitions of Australia's first peoples

"Green Rolling Hills" - Crows Nest

Introduction

This Toowoomba Regional Council Waste Management Strategy 2021 builds on past achievements. It sets out how the waste and resource recovery needs of the region will be met over at least the next 10 years.

The Waste Management Strategy is driven by improved understanding of the consequences of how we use and dispose of resources, making best practical use of the approach in the waste management hierarchy to identify opportunities to reduce waste to landfill, and maximising the value of resources to benefit the regional economy.

It is deliberately concise and strategic in its approach, identifies the outcomes the Toowoomba Region needs to achieve in the future and focuses on the key areas of activity that make the greatest contribution to deliver results.

At the heart of the Waste Management Strategy is a change of perception, a need for everyone to start viewing waste as a potential resource and to think about how to use that resource most efficiently.

Vision & Guiding Principles

National Waste Policy 2018 - Less Waste More Resources

At a whole of Australia level, the National Waste Policy 2018 has been developed as a collaborative effort between federal, state and local government and embodies a circular economy, shifting away from 'take, make, use and dispose' to a more circular approach where we maintain the value of resources for as long as possible.

The National Waste Policy principles have been identified as:

- Avoid waste;
- Improve resource recovery;
- Increase use of recycled material and build demand and markets for recycled products;
- Better manage material flows to benefit human health, the environment and the economy;
- Improve information to support innovation, guide investment and enable informed consumer decisions.

Queensland Waste Management and Resource Recovery Strategy 2018

Queensland's policy reflected in the Queensland Waste Management and Resource Recovery Strategy will "…guide the transition to a more circular economy, reduce the amount of waste disposed of to landfill, or illegally, and provide a more sustainable source of end-of-life products and materials to create new products."

It's three strategic priorities are:

- ✓ Reducing the impact of waste on the environment and communities;
- ✓ Transitioning towards a circular economy for waste; and
- ✓ Building economic opportunity.

Toowoomba Regional Council Waste Management Strategy 2021

The Council Strategy vision is –

A Sustainable Tomorrow

…. where most waste materials will have been reused, recycled or recovered for their value and energy content, and

…. where there is no longer any 'waste' because we recognise the inherent value of materials we handle as a resource.

…. to be flexible and proactive and respond to changing needs, impacts and policy issues.

In response to National, State and Local approaches, the Strategy's objectives have been developed and refined over recent years and we have asked the community what is important.

Our objectives are to:

1 Optimise Service Levels

- ✓ Make using Council waste services more convenient for customers
- ✓ Provide customers with better choices for reducing, reusing and recycling their waste
- ✓ Encourage customers to use Council services as their first choice for disposing of their waste

2 Increase Diversion

- ✓ Increase the amount of resources recovered and put them back into the productive economy
- ✓ Reduce the amount of waste sent to landfill for disposal
- ✓ Lower the medium to long term risks to the community, the Council and to the environment associated with landfills

3 Balance Cost

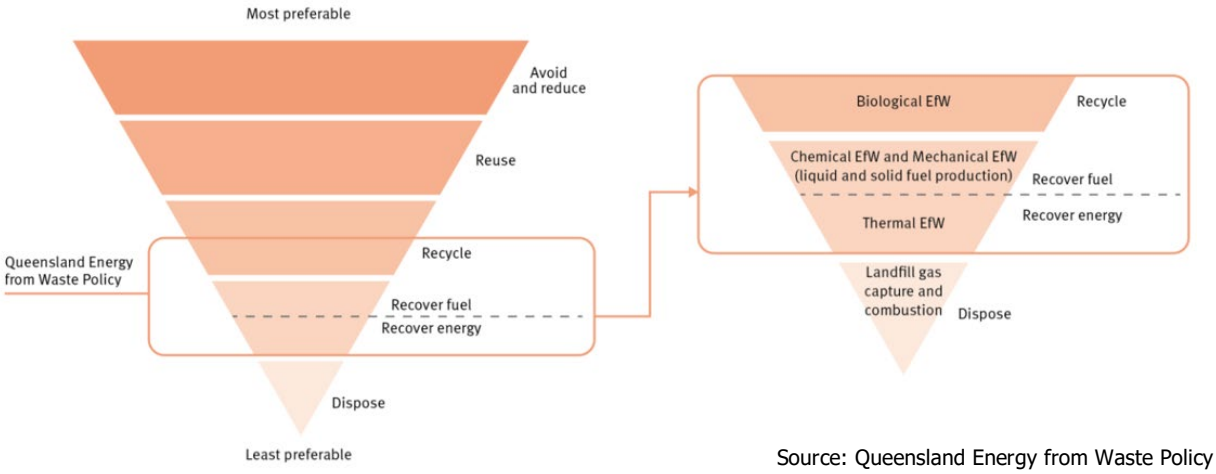
- ✓ Balance the cost of managing waste
- ✓ Improve the economics of recovering resources
- ✓ Make using Council services and facilities attractive to customers

"Front Garden at Dawn" - Pittsworth Waste Management Facility

Key Policy Drivers

The waste and resource management hierarchy remains at the heart of international, national and state waste legislation and policy, and forms the backbone of this strategy. It sets out the preferred order of priority for managing waste and is applied from the top down.

Figure 1: Queensland Waste and Resource Management Hierarchy



Source: Queensland Energy from Waste Policy

In a resource efficient Circular Economy, waste should:

- ✓ first be reduced and avoided from being created,
- ✓ be reused,
- ✓ followed by being recycled and then,
- ✓ any residual waste that has not been reused, recycled or composted should be treated so that further energy can be recovered and the impact of final disposal is minimised, and
- ✓ finally, any remaining waste will then be disposed of and landfill gas captured and combusted where possible.

The Strategy takes a circular approach to the Waste hierarchy in which waste materials are used at their highest value for as long as possible, rather than treated as having no value and buried in landfill.

Figure 2: The Circular Economy

Source: National Waste Policy Action Plan

Where Are We Now?

With an estimated resident population of 168,000 people (as of 30 June 2018), Toowoomba Regional Council is the eighth largest local government in Queensland and Australia's second largest inland settlement.

Services & Infrastructure

Council currently provides a weekly kerbside waste collection, fortnightly kerbside recycling collection and optional green waste collection using 240 litre bins.

A new waste collection service provider arrangement is due to commence in 2023 with a key consideration of this strategy being collection service requirements to cater for the next decade.

Kerbside general waste is delivered to our local landfill network, principally the Toowoomba Waste Management Centre, for disposal.

Collected kerbside recyclables are delivered to a Materials Recovery Facility (MRF) operator in Brisbane. This involves significant transport cost and emissions, does not consider employment opportunities, nor recent developments including revenue opportunities (such as from the container refund scheme) and limits local market development and participation.

Toowoomba as a region is well placed to host and participate in this emerging industry.

Council has established a network of 17 waste management facilities and 6 bin station sites where residents and businesses can take waste. Re-use Shop retail outlets are located at our largest waste management facilities, and trash and treasure depots at all other supervised waste management facilities.

Upgrading of Council's waste infrastructure is well advanced, guided by an ambitious Waste Infrastructure Plan 2020 identifying infrastructure requirements for the future.

Kerbside Collection Coverage

93.5%

of rateable properties have a kerbside collection service.

6,000,000 Wheelie Bins Emptied

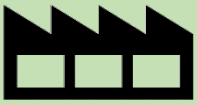
Annually, wheelie bins are lifted around 6 million times by our waste collection trucks.

830,000 km Travelled

Annually, our waste collection trucks travel the equivalent of 18 times around the world.

Waste Management Facilities

23



There are 23 facilities in our region, including waste transfer stations, landfills and bin stations.

Waste Management Facility Coverage

98%

of the population in our region live within a 20-minute drive of a waste management facility.

362,000 Customer Visits

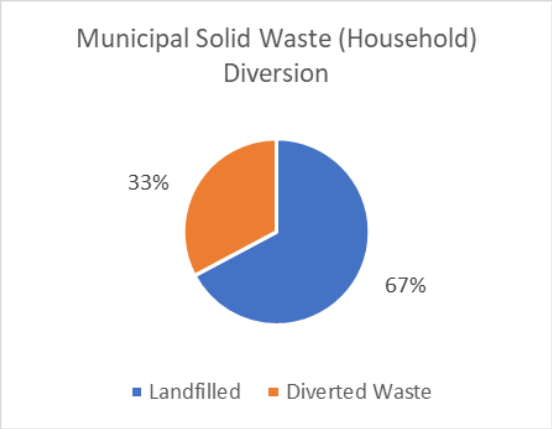
Our waste management facilities receive over 360,000 customer visits each year.

Resource Recovery Performance

The recovery rate for new waste management facilities is up to 70%, compared to a recovery rate of less than 30% for historical facilities that are not yet upgraded. The recovery rate for wastes collected from kerbside (principally due to kerbside recycling) is up to 30%.

The overall recovery rate for domestic waste is 33% for 2019/2020 with approximately 25,000 tonnes of waste recovered in 2019/20. This also means that over 50,000 tonnes were landfilled.

This result will improve as more waste management facilities are upgraded.



Recent studies have revealed that over 80% of the contents of resident's domestic waste bins could be recovered including proportions of:

- 23% with a calorific value and potentially suitable for energy from waste solutions,
- 45% consisting of green or organic waste, and
- 19% that should have been placed in the recycling bin.

This study also revealed similar opportunities to increase recovery actions at the waste management facilities with 63% of waste received having a calorific value and potentially suitable for energy from waste solutions.

Community Opinions

In 2020 Council asked the community about their opinions and expectations. In terms of 'where are we now', key insights into the community's current perception of how waste is managed include:

- 97% of all respondents believe it is important to reduce waste to landfill,
- 87% of all respondents find it easy to recycle,
- 54% of all respondents have confidence that materials placed in their recycling bin (yellow lid) are appropriately recycled, and
- 25% of all respondents are aware of the State Government has set in place a waste hierarchy.

Further details can be found in Appendix 1.

Challenges and Opportunities

We are generating more household waste - We are growing at around 1% per annum but currently producing 2.6% more waste each year.

- ✓ Improve how we recycle as materials are often found in the wrong bins.
- ✓ Reduce the volume of waste and contamination to help protect our environment, preserve our valuable resources and reduce the costs of handling, transporting and managing recyclables.
- ✓ Educate the community and schools to help address these challenges.

Targets imposed by National and State Policy frameworks - it is important that we monitor key policies and strategies and are able to respond.

- ✓ Recovering value and creating markets for the material produced from waste should become the principal policy drivers for Council.

Landfill diversion targets mean that reliance on a 'business as usual' approach will not succeed.

- ✓ In practice by observing the State's Waste Hierarchy, higher order treatment and processing opportunities will be needed as an alternative to landfill.
- ✓ Council is in a renewal and refocus stage from outdated landfills to new facilities with a resource recovery focus.
- ✓ Reliance on this improved infrastructure alone will not enable us to meet the State's newly established diversion targets.
- ✓ Considering how wastes are collected, providing a food and organics waste collection service, directing organics to composting and anaerobic digestion, and other wastes with a calorific value to energy from waste solutions will be key to success.

Markets for recovered materials with an inherent value can be limited by the ability to match materials with markets.

- ✓ Developed markets for recovered materials in the region are not robust which limits our ability to improve resource recovery.
- ✓ Local markets need to be identified and closed loop recycling established. Treating waste as a resource refocuses the way in which we see waste management.
- ✓ Collaborating regionally will also increase our opportunity to maximise the recycling and recovery efforts.

Resource efficiency - our linear economy (take, make and dispose) is unsustainable locally and globally

- ✓ The linear way in which waste is managed produces too much waste. In the circular economy, the role of waste management is to collect, treat and return resources and recovered energy back into the cycle of production and consumption.

The costs of managing wastes are continuing to increase.

- ✓ Increased landfill diversion targets will command more capital and operational resources from Council. This will be balanced by the ability for Council to realise costs savings, employment opportunities and revenues from new activities focusing on resource recovery.
- ✓ The establishment of a new Material Recovery Facility and becoming invested in the Container Refund Scheme is a potential pathway to offset some of the increase in costs.

Community expectations.

In 2020 Council asked the community about their opinions and expectations. In terms of opportunities for the future, key insights into the majority community perception of how waste could be managed in the future included:

- ✓ inclusion of food waste (food, meat, bread and vegetable scraps) into the green waste kerbside bin (green lid) to remove it from landfill.
- ✓ eliminating organics from the waste kerbside bin (red lid), incorporating it into the organics waste and processing it.
- ✓ eliminating recyclables that are incorrectly placed in the waste kerbside bin (red lid).
- ✓ using remaining, non-recyclable waste from the red lid bin for the generation of electricity.
- ✓ making more wheelie bin combinations available.
- ✓ investigating establishment of a local MRF to save costs, generate employment and provide opportunity for local access and re-processing of the materials.
- ✓ developing Council provided waste education and awareness activities.
- ✓ consideration be given to introducing a bulk kerbside collection service providing that it does not result in excess materials being sent to landfill.

How Will We Get There?

A structured plan has been prepared to transition from where we are now to where we need to be.

From the three strategic objectives to:

- Optimise Service Levels
- Increase Diversion, and
- Balance Cost,

Five major outcomes, aligned with the state and national policy direction, have been established to provide guidance for the Waste Management Strategy 2021 and beyond.

These are:

- Waste avoidance and reduction
- Future capacity and capability
- Commercial focus
- Advocacy and collaboration, and
- Education and awareness

These outcomes in turn have enabled the identification of 18 key actions.

The focus of the key actions is on addressing the current and emerging resource recovery and waste management challenges and opportunities in the region and to shape the region's future direction in the management of waste as a resource.

From our 3 strategic objectives we have adopted 5 major outcomes and 18 key actions.

Resource Recovery Area – Greater Toowoomba Waste Management Facility

Outcome 1: Waste Avoidance & Reduction

To achieve this outcome, Council and our community take responsibility for reducing their own waste and using resources effectively.

A change in mindset is required, to a society where everyone tries to avoid and reduce waste generation as the first step and then to reduce the volume of waste we create and maximise reuse and recycling options to help protect our environment, preserve our valuable resources and reduce the costs of handling, transporting and managing this waste.

This objective is underpinned by waste education and awareness and participation in reduction and reuse initiatives.

Actions		Steps	
1.1	**Investigate Organic Waste Collection** Organic waste including green waste and food wastes represent a significant component of the current waste stream. Whilst services and systems are available to capture green wastes and use its inherent value in returning it for agricultural and landscaping reuse and processing options, there remains a significant opportunity to capture much more. The practice of disposing of other organic wastes in landfill can no longer be acceptable if we are to realise its value, adopt the resource efficiency mindset and achieve the diversion targets set.	1.1.1	Expand the green waste collection service to be accessible to more suburban homes (including rental properties), businesses and schools.
		1.1.2	Investigate and implement organic waste collection (including food waste) within selected suburbs
		1.1.3	Minimise the organic waste fraction in kerbside collected waste stream sent to landfill.
1.2	**Expand opportunities for recycling problematic wastes*** Problematic wastes impact on our system and resources by unnecessarily consuming funding, resources and landfill space causing environmental risks and imposing costs without the opportunity to recover value or energy from those waste streams. In collaboration with academic and business partners waste streams where discrete solutions may exist have begun to be targeted. The level of focus on problematic waste will be increased.	1.2.1	Develop alternate options for the collection and processing of organics wastes.
		1.2.2	Investigate alternate technologies as a solution for reducing waste to landfill and implement them where they are viable.
		1.2.3	Develop new processing streams for identified materials. *including: organic waste, treated timber, mattresses, paints, fluorescent tubes, polystyrene, waste oil, solar panels, asbestos, PCBs."
1.3	**Leverage Pricing incentives for Resource Recovery** The strategic objectives adopted for the Waste Management Strategy 2021	1.3.1	Monitor regulatory changes and government introduced pricing signals to maintain service pricing consistent with State Government policy.

	include the need to balance costs. Where there is no evidence of recovery and diversion the sentiment of the 'user pays' principle will be retained. As a means to guide and maximise recycling and recovery behaviours, price incentives are recognised as a necessary inclusion in the strategic approach.	1.3.2	Develop annual waste services and facilities pricing policies to incentivise waste reduction and resource recovery.
		1.3.3	Advertise and promote any incentives to encourage householders and businesses to participate in initiatives.
1.4	**Increase Waste Avoidance and Resource Recovery of Council activities** As a leading community organisation, Council has an important role to promote resource recovery and resource efficiency, not only through the services provided to the residents, but in the way Council manages its own waste.	1.4.1	Raise awareness and understanding of waste issues across all internal departments and lead by example.
		1.4.2	Determine baseline waste generation, composition and recycling rates for all Council generated waste and improve data capture.
		1.4.3	Strengthen and support Council's policies, purchasing practices and internal processes to ensure sustainable waste solutions.
1.5	**Increase Waste Avoidance and Resource Recovery at WMFs** The aim of this action is to reduce overall waste generated. This can be by encouraging waste producers (including businesses, tourists and organisations) to minimise the amount of waste they generate, reuse and diversion of items from disposal and supporting the development of possible employment opportunities in repair, refurbishment and remanufacturing.	1.5.1	Maximise diversion opportunities at WMFs to recover more materials (e.g. dry recyclables, organics and other wastes with an inherent value).
		1.5.2	Find viable market options for new recovery programs.
		1.5.3	Plan and deliver an education and awareness program.
1.6	**Improve capacity and capability of recycling services** Whilst the community recycling efforts have reduced contamination in the recycling bins, there is a significant amount of recyclable material placed in the waste bins	1.6.1	Minimise recyclables contamination in the kerbside collected waste stream and minimise contamination in the recycling stream.
		1.6.2	Develop kerbside collection system options to optimise the recovery of materials and complement future recovery and treatment solutions.
		1.6.3	Evaluate and implement opportunities for service expansion in the domestic and commercial sectors.

Outcome 2: Future Capacity & Capability

Through delivery of this outcome our capacity and capability to manage future waste is secured.

Toowoomba's waste and resource recovery system provides an essential service in managing collection, sorting, transport, reprocessing (extracting both materials and energy) and exporting recoverable materials. As well as safely managing and disposing of residual waste and preventing harm to human health, the natural environment and economic impacts must be managed properly.

The key infrastructure currently employed by Council includes the Toowoomba Waste Management Facility and Council's network of Transfer Stations placed throughout the community, designed to receive waste and maximise recovery.

Future capability and capacity based on the business-as-usual model has been secured for a period, however diversion and advanced processing of wastes with an inherent value that maximises resource recovery must continue to be developed. Long term infrastructure and systems planning will include the establishment of new processes and infrastructure.

KEY ACTIONS

Actions		Steps	
2.1	**Plan and deliver necessary infrastructure for resource recovery systems and processes** Contemporary resource recovery systems and infrastructure needs to be implemented. Future facilities need to be on secure, long-term sites, to have secure supplies of feedstock, be close to freight corridors, population and growth nodes (or collection points) and have markets for the end products to be viable. Alignment with land use planning is also essential to minimise conflicts with incompatible land uses, urban growth and sensitive areas.	2.1.1	Plan and deliver Infrastructure in accordance with the Waste Infrastructure Plan 2020.
		2.1.2	Investigate the viability of a local Material Recovery Facility (MRF) for recovering and sorting dry recyclables and other materials with a value. If a local MRF is found to be viable, implement according to the most cost-effective model.
		2.1.3	Develop our facilities and processes as a key destination for the Container Refund Scheme.
		2.1.4	Develop opportunities for local reuse of recycled materials, both within Council and in the private sector.
		2.1.5	Consider and develop an optimal suite of processes to maximise resource recovery, including energy and to minimise carbon emissions, including fugitive gases.

2.2	**Assess the feasibility of advanced waste treatment options** Key infrastructure, systems and processes enabling Council to meet State waste reduction and recovery targets will need to be considered within the life of this strategy. A comprehensive knowledge base is important to sound decision making on the provision of appropriate resource recovery infrastructure. This must include technology, risk mitigation and commercial arrangements applicable to the various waste treatment options.	2.2.1	Determine the optimal processing options for organic wastes collected from kerbside and received at WMFs.
		2.2.2	Monitor technology developments in resource recovery and waste processing to identify and pursue opportunities for targeted waste streams.
		2.2.3	Investigate energy from waste solutions in addition to landfill gas to reduce waste to landfill in compliance with the National Waste Strategy 2019 items 1.9, 6.2 and 6.4. Deliver an appropriate combination of solutions to meet the needs and targets.
2.3	**Investigate regional collaboration opportunities with industry and government** Commitment to long term planning, research and collaboration for effective waste management is essential to cater for the needs of our growing population and delivering appropriate waste management solutions. Collaboration will support ongoing development of fit-for-purpose waste management outcomes, attract public and private investment, engage with community to participate in solutions, and help capitalise on opportunities.	2.3.1	Foster key stakeholder relationships with identified sectors.
		2.3.2	Maintain an active watching brief of new and emerging issues, systems and technologies.
		2.3.3	Monitor and capitalise on regional opportunities for synergistic co-processing of waste and resource streams with materials from other sources in the broader region.
2.4	**Minimise emissions from waste** A range of potential sources of carbon emissions are associated with waste management activities from fuel used in collection vehicles through to processing and disposal emissions. The largest sources of council generated carbon emissions include methane from the disposal of organic waste in landfill.	2.4.1	Develop and improve landfill gas emissions capture systems to minimise fugitive gas.
		2.4.2	Reduce the amount of organics disposal to landfill through more efficient processing.
		2.4.3	Embrace opportunities to reduce carbon emissions from waste operations and facilities.

2.5	**Landfill management** Whilst it is the least preferred solution on the State's Waste Hierarchy, Waste disposal by landfill is the identified solution for the foreseeable future for disposal of residual waste with no inherent value. The strategy vision is for a significantly reduced reliance on landfill nevertheless this essential infrastructure must be provided, developed and maintained for the future.	2.5.1	Maintain best practice in development, systems and operations at Council's Toowoomba Waste Management Centre. Proceed in accordance with the established Masterplan to secure long-term capacity for residual wastes requiring landfilling.
		2.5.2	Maintain best practice development, systems and operations at Council's Regional sites for residual wastes requiring landfilling.
		2.5.3	Implement timely and effective closure and aftercare management plans for all identified closed landfills.
2.6	**Design targeted Waste Collection systems** A new kerbside collection system will be commenced in mid-2023 catering for waste and recyclable collections needs beyond 2030. Within the life of this strategy significant changes may be implemented to maximise landfill diversion. It is important to ensure that appropriate collection systems are designed and implemented to maximise feedstock for future technology solutions.	2.6.1	Further develop kerbside collection systems to optimise the recovery of materials and complement future recovery and treatment solutions.

"Lavender Sunrise" - Greenmount Waste Management Facility

Outcome 3: Commercial Focus

Waste management is a significant yet unique business of Council. In transitioning towards a circular economy for waste we should build on economic opportunity, promoting waste avoidance, providing tangible essential services and infrastructure for the community, minimising risks, providing employment and maximising the value both environmentally and financially from recovered materials.

With an increased emphasis on the circular economy there is a strong drive to maximise the resource value and energy contained within recovered materials and returning them to markets for reprocessing, reuse and remanufacture. By necessity this requires Council to apply a commercial focus to the business and to exploit all opportunities identified.

Actions		Steps	
3.1	**Investigate new and emerging business opportunities, systems and technologies for management of wastes** As an essential service provider for waste collection and resource recovery, Council will apply an active watching brief over opportunities to maximise value of materials recovered, to apply the circular economy principles in every action undertaken and to exploit all identified opportunities to achieve optimal results.	3.1.1	Prepare for participation as an active partner and key destination for the Container Refund Scheme.
		3.1.2	Secure access to materials, through MRF operation and from other sources, to process and proactively manage their resale and reuse.
		3.1.3	Improve opportunities for employment and resource recovery uses by establishing a local MRF.
3.2	**Maximise the value of recovered resources revenue streams** Resource recovery values are impacted by local, regional, national and international markets. These markets fluctuate in terms of quality demands, costs and returns.	3.2.1	Regularly test the market for recovered resources processing costs and revenue streams.
		3.2.2	Identify new opportunities to reuse resources generated as by-products of processing activities.
		3.2.3	Promote the establishment of new recycling businesses in the local area to stabilise and secure demand for recovered resources.
		3.2.4	Council to become a major consumer of recovered resources where-ever a cost benefit is identified in doing so.
3.3	**Develop scale through working regionally** As a smaller region, recovery opportunities may not be feasible due to critical scale requirements. A broader regional approach to resource recovery will improve the likelihood of achieving the scale required to succeed.	3.3.1	Actively collaborate with business and other local governments in the region to develop economies of scale for recovery operations.
		3.3.2	Seek out "right-sized" technology to provide solutions that match population density, location, distances and tonnages of various waste streams to be processed, for cost effective operations.

Outcome 4: Advocacy & Collaboration

Council aims to be an active partner in strategic alliances and partnerships, providing effective advocacy for best practices in waste management.

It is important that the region's voice is heard in regional, state and national forums, to have beneficial influence in the policy arena and to attract needed funding.

All efforts to recover resources must be matched by efforts to source demand for these materials from emerging and well-developed markets. Insufficient demand for recovered resources has historically led to unintended environmental and economic consequences.

Regional collaboration with neighbouring Councils, industry, other levels of government and universities will be essential in developing solutions and obtaining funding to achieve these objectives.

Actions		Steps	
4.1	**Act as key regional advocate on important waste and resource recovery issues** The ongoing development of the region's waste management strategy depends on the strength and ability to influence outcomes, attract public and private investment, deal with community issues and capitalise on opportunities.	4.1.1	Participate in influencing legislation and policy change towards a greater focus on resource efficiency.
		4.1.2	Engage in influencing the development of secondary markets.
		4.1.3	Advocate for assistance and funding.
		4.1.4	Identify opportunities to provide a consistent approach to waste processing and recycling infrastructure development, through planning codes, Council provided publications and waste management strategy.
4.2	**Maximise regional collaboration options with industry and governments** Regional collaboration will be essential to maximise efforts to meet the targets of the Queensland Waste management and Resource Recovery Strategy.	4.2.1	Partner with industry, universities and government in developing the most appropriate waste management solutions.
		4.2.2	Collaborate with business and industry to develop a regional focus and approach to materials processing and markets.
		4.2.3	Develop initiatives to attract new business to the region or support existing businesses in the resource recovery sector.

Outcome 5: Education & Awareness

As our growing population generates greater volumes of waste, additional pressure is placed on our collection services and waste infrastructure. Key issues include the way residents access facilities, fill their bins, littering and illegal dumping.

Individuals, schools, organisations and businesses need to understand how their behaviour can prevent waste in the first place. From product design, creation and purchase, how they are used and how to recover their end-of-life value.

Success will depend on everyone recognising and taking responsibility for playing their part.

This outcome is a fundamental, overarching element of this Waste Reduction and Recycling Strategy which supports the actions and performance across all the other objectives.

Actions		Steps	
5.1	**Develop and deliver an Education and Awareness Plan** The aims of this action will be to build on recent successes of education and awareness campaigns to target recycling and contamination, and engage the community to reduce waste generation, improve resource recovery and increase awareness and understanding of waste and resource recovery and available infrastructure and services.	5.1.1	Deliver tailored external programs to community sectors with focus on the ***waste hierarchy*** and the ***circular economy*** principles.
		5.1.2	Develop internal programs for managing waste generated by Council activities, both as an example and to the best outcomes.
		5.1.3	Develop a framework and associated systems for improved capture, analysis and utilisation of waste data and market intelligence.

Recovered and donated items and materials that can be repaired, reused or repurposed are available for purchase at our Reuse Shops and Trash & Treasure locations

Implementing the Strategy

This Waste Management Strategy sets out 18 key actions under 5 key outcomes to achieve the targets set.

Outcomes & Actions		2020 2021 2022 2023 2024 2025 2026 2027 2028
	Legend	Plan / Implement / Maintain
1. Waste Avoidance & Reduction		
1.1	Expand Green Waste Collection	
1.2	Investigate opportunities for problematic wastes	
1.3	Investigate Pricing incentives for Resource Recovery	
1.4	Increase Waste Avoidance and Resource Recovery of Council activities	
1.5	Increase Waste Avoidance and Resource Recovery at WMFs	
1.6	Improve capacity and capability of recycling services	
2. Future Capacity & Capability		
2.1	Plan and deliver necessary infrastructure resource recovery systems and processes	
2.2	Assess the feasibility of advanced waste treatment options	
2.3	Investigate regional collaboration options with industry and government	
2.4	Minimise emissions from waste	
2.5	Landfill management	
2.6	Design targeted Waste Collection systems	
3. Commercial Focus		
3.1	Investigate new and emerging business opportunities, systems and technologies for management of wastes	
3.2	Maximise value for recovered resources revenue streams	
3.3	Develop scale through working regionally	
4. Advocacy & Collaboration		
4.1	Act as key regional advocate on important waste and resource recovery issues	
4.2	Maximise regional collaboration options with industry and governments	
5. Education & Awareness		
5.1	Develop and deliver a communication action (education) plan	

Measuring Our Success

Over the lifetime of this strategy we will strive to achieve the vision, all the objectives and outcomes. In the shorter term the following targets have been identified.

This may require establishing new collection and recovery infrastructure, embracing new processing systems and technology, supporting local community initiatives, developing better ways of working together and improving data collection.

Monitoring how we have performed against delivery of the vision, objectives and outcomes in the strategy will be according to the following set of performance measures:

Waste reduction targets per household

Waste Stream	Baseline (2018)	2025	2030	2040	2050
*MSW	0.54t per capita	10%	15%	20%	25%

*Municipal Solid Waste

Waste Diversion from landfill (Recovery rate as a percentage of total waste generated)

Stream	Baseline (2018)	2025	2030	2040	2050
MSW	32.4%	55%	70%	90%	95%
Overall	45.4%	65%	80%	85%	90%

Recycling rate as a percentage of total waste generated (excluding Energy from Waste)

Stream	Baseline (2018)	2025	2030	2040	2050
MSW	31.1%	50%	60%	65%	70%
Overall	44.9%	60%	65%	70%	75%

The Strategy will be reviewed every three years and the key actions reviewed on an annual basis. Waste management is undergoing a period of rapid development and any significant changes may trigger a need for an early review.

Concluding Remarks

Waste management is one of those important essential services that plays a role in minimising impacts to our environment, providing community amenity and enhancing public health.

In waste management this is shown through Council's significant commitment to implementing its Waste Infrastructure Plan; an ambitious plan to upgrade Councils network of waste management facilities to cater for current and future communities' needs, and its Disposal Management Plan; including measures to rehabilitate expired landfills and plan for future needs of the region.

There is no single technological answer to replace landfill and meet the required waste reduction and diversion targets.

A suite of solutions will be required to simultaneously achieve the goals of the Queensland and National policies for waste diversion, comply with the waste hierarchy and circular economy principles, and to optimise the cost effectiveness of waste management.

These solutions may include increased awareness, food and organics collection, Materials Recovery Facility considerations and Energy from Waste processes.

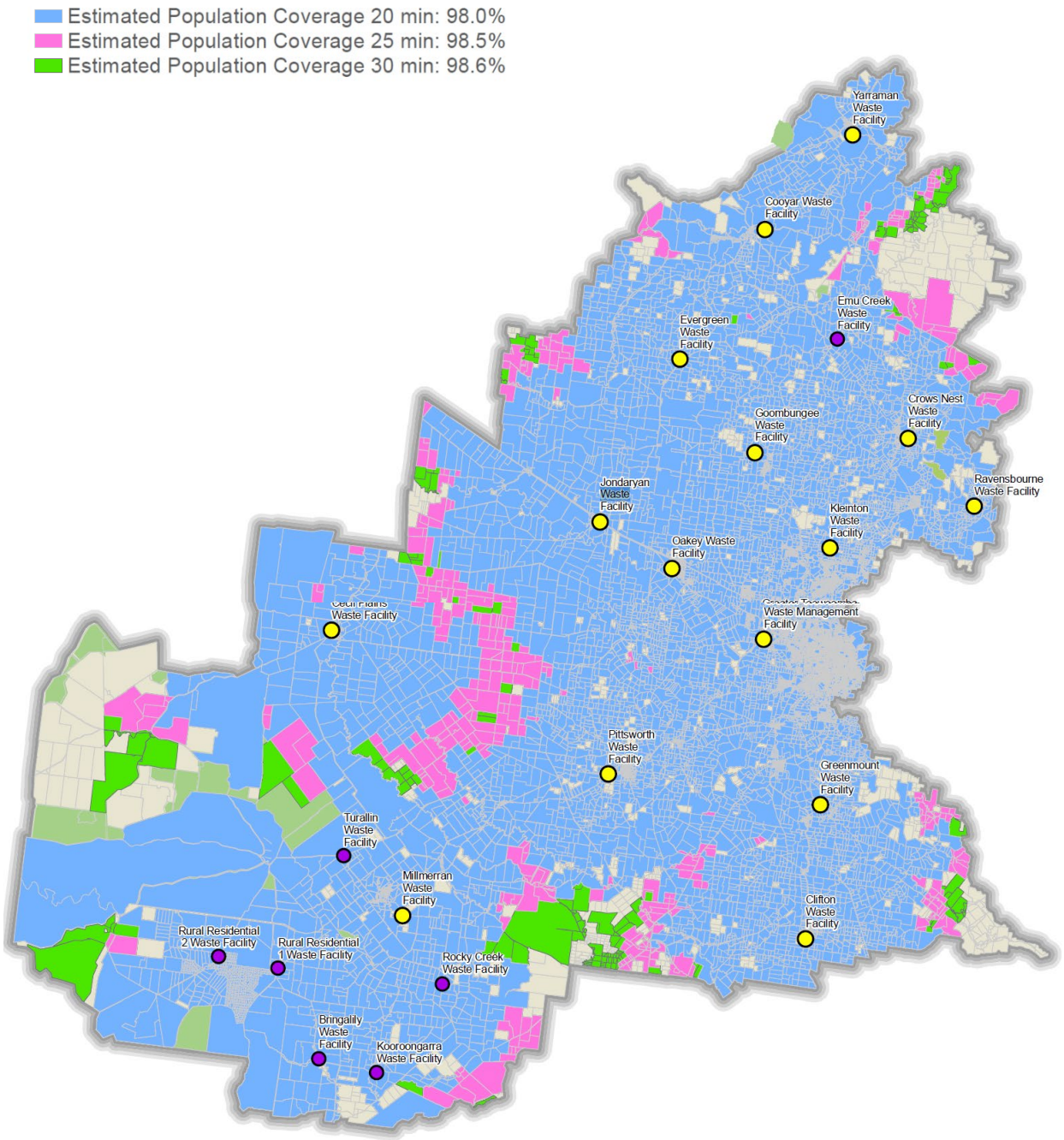
In planning for the future this Waste Management Strategy 2021 has identified a number of challenges and opportunities for all sectors of the community including Council.

With its vision of 'a Sustainable Tomorrow' and central theme of Resource Recovery, the Strategy includes principles and actions to reduce wastes and preserve resources in what is becoming an increasingly robust and dynamic waste management industry.

The benefits will be sustainable resource management, environmental protection and economic benefits for the whole community.

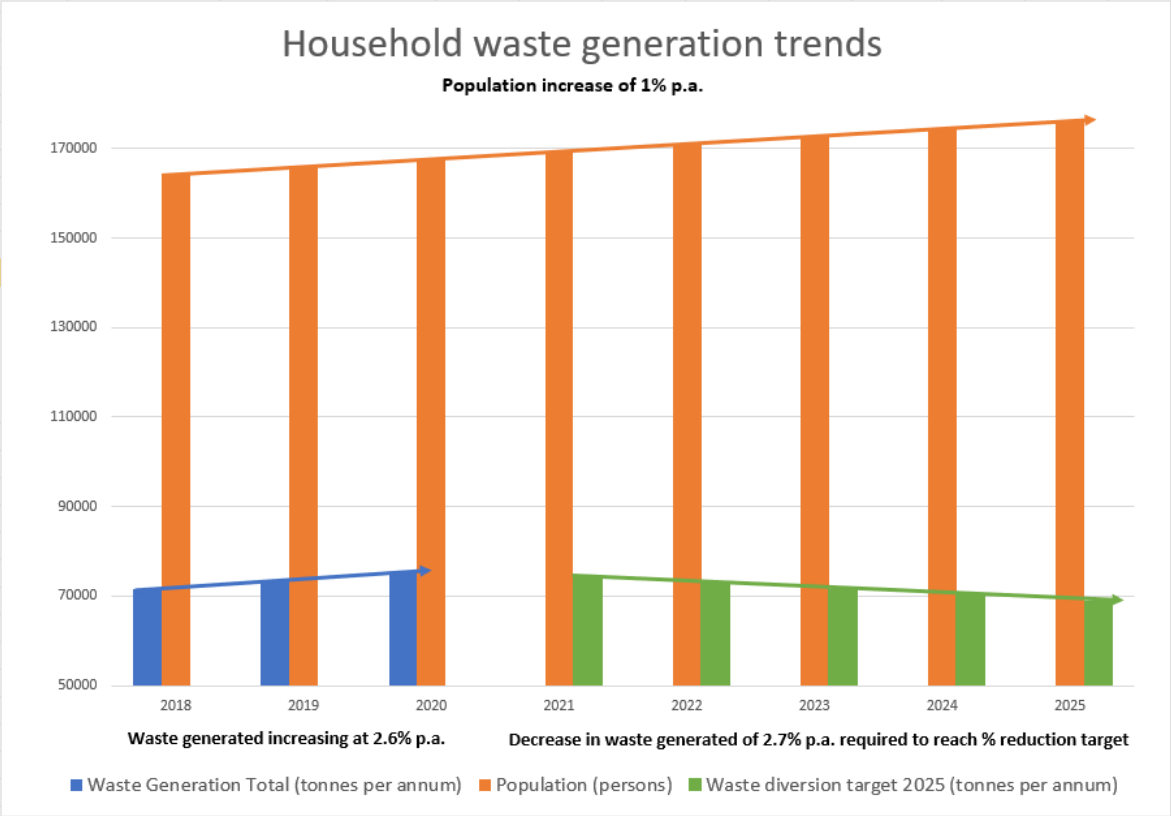
Appendix 1: Waste Performance Data

Waste Management Facility Percentage Population Coverage by Driving Time



Waste Generation compared to Population growth

Recent trends indicate the rate of growth of waste generation (2.6% p.a.) is exceeding population growth (1% p.a.).



Current Service Performance

Council conducts periodic waste and recycling stream audits to measure waste and recycling stream composition.

The 2019 audit shows that the kerbside waste contains 45% of green and organics that can be processed into compost like material.

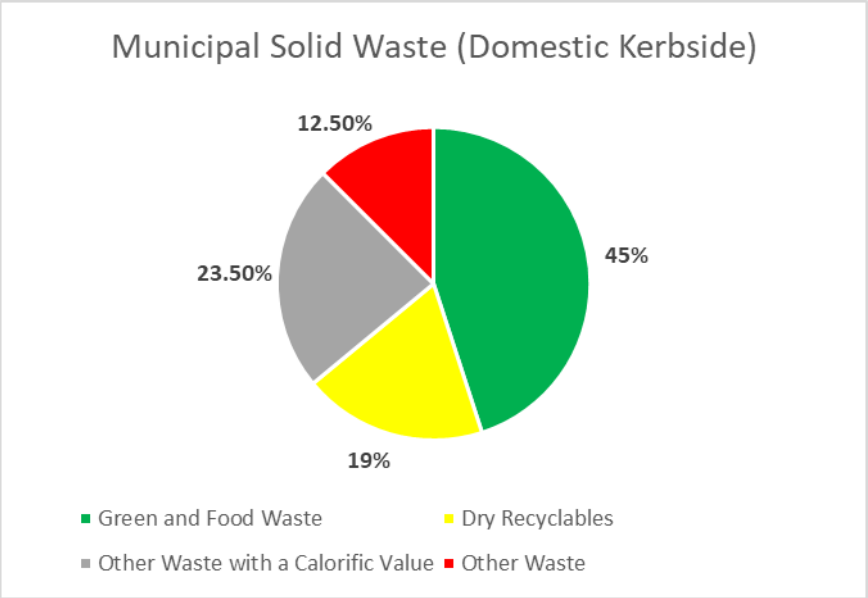
This presents a significant opportunity to reduce waste to landfill and reduce greenhouse emissions by focusing on the organics processing capability and separating the collection of organics from waste.

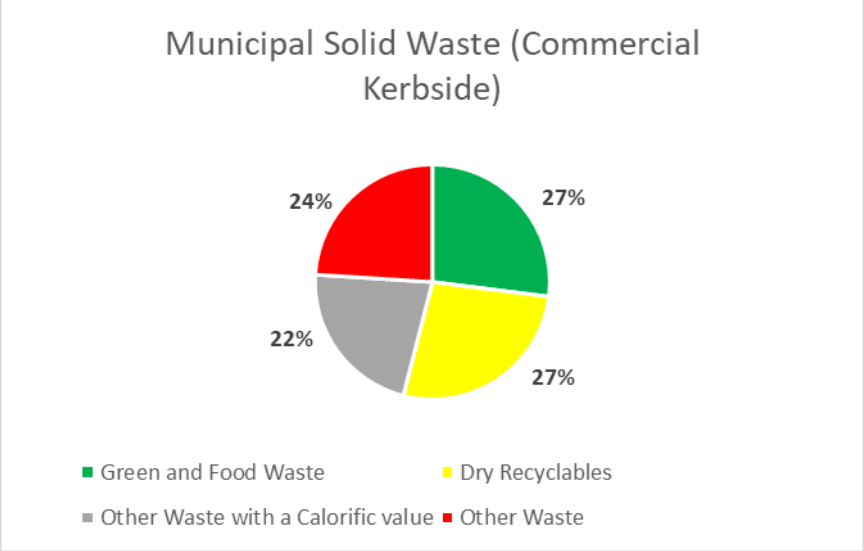
It also contained 19% of compliant dry recycling.

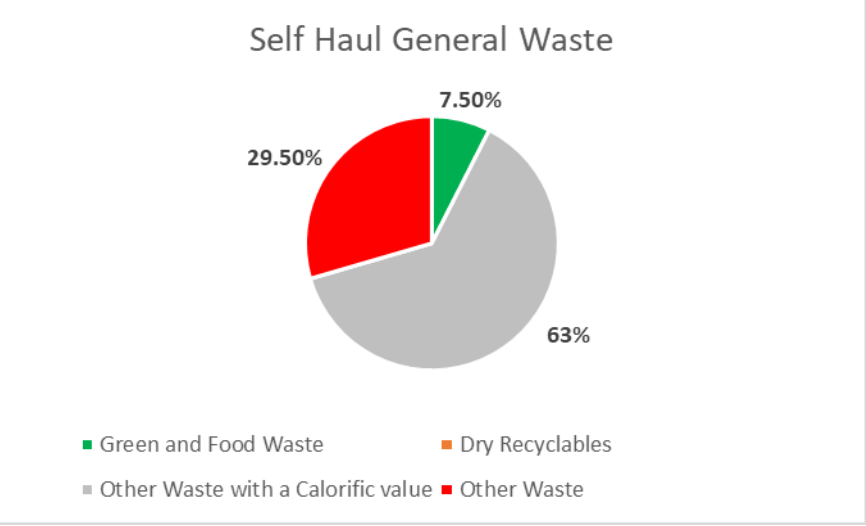
Whilst the rate of recyclables contamination in the waste stream (red lid) is reducing compared to previous data, there is still a significant amount of recycling misplaced in waste bins which needs to be improved. The most prominent recyclables found were paper/cardboard, plastics and glass.

Excluding green and organics and compliant recyclables there also is a significant percentage of waste (~ 40%) with a likely calorific value in the kerbside waste streams potentially suitable for further investigation for energy from waste applications.

Similar processing and diversion opportunities exist for commercial waste collected from kerbside and also wastes delivered to the waste management facilities as shown by the following figures







Community Opinions and Expectations

The latest 2020 Community Survey summary results include the following:

Landfill and Diversion

- 97% of all respondents believe it is important to reduce waste to landfill.
- 88% of all respondents are supportive of adding organics, including food, to the green waste kerbside bin (green lid) to remove it from the waste disposed to landfill.
- 91% of all respondents are supportive of eliminating organics from the waste kerbside bin (red lid), including it in the organics waste and processing it as compost.
- 92% of all respondents are supportive of eliminating recyclables that are incorrectly placed in the waste kerbside bin (red lid).
- 92% of all respondents are supportive of using remaining waste from the red lid bin for the generation of electricity.

Understanding behaviours and attitudes

- 75% of all respondents are unaware that the State Government has set in place a waste hierarchy.

Kerbside Bin Collections

- 61% of respondents would like to see more wheelie bin combinations available with most favoured being a:
  - 240 Litre Red Lid/240 Litre Yellow Lid /240 Litre Green Lid,
  - 240 Litre Red Lid/360 Litre Yellow Lid /240 Litre Green Lid, and
  - 140 Litre Red Lid/240 Litre Yellow Lid /240 Litre Green Lid.

Kerbside Recycling

- 54% of all respondents have confidence that materials placed in their recycling bin (yellow lid) are appropriately recycled and 87% of all respondents find it easy to recycle.
- 98% of all respondents support Council investigating establishment of a local MRF to save costs, generate employment and provide opportunity for local access and re-processing of the materials.

Organics

- 82% of all respondents are supportive of the inclusion of food waste (food, meat, bread and vegetable scraps) into the green waste kerbside bin (green lid) to remove this from landfill, if this bin was collected weekly.

Education and Engagement

- 86% of all respondents believe that Council provided waste education activities are important

Types of Waste

MUNICIPAL SOLID WASTE (MSW)

Waste generated from a combination of households and collection of waste from public places and illegal dumping.

COMMERCIAL & INDUSTRIAL (C&I)

Waste generated from businesses, including waste from schools, restaurants, retail, offices, agriculture, manufacturing, council activities e.g. parks and gardens, community groups and sporting clubs.

CONSTRUCTION & DEMOLITION (C&D)

Waste generated from construction and demolition activity, usually including brick, timber, concrete and metal.

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