

Waste STRATEGY

2020-2030



Building a Circular Economy



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Message from THE MAYOR

The implementation of responsible and affordable waste management practices has become one of the most important and high profile issues in recent years. The low cost of production and a desire for convenience has created a culture in which single-use materials have become the norm. This linear economic model of make-use-dispose is imposing a burden on the environment and on our economic wellbeing.

The decision by South East Asian governments to no longer accept contaminated recyclables sent shock waves through the Australian waste and recycling sector. Without either the necessary processing capacity or sufficient market demand for recyclable products, the sector has found itself scrambling for new ways of dealing with the ever increasing waste stream. As the managers of much of the nation's waste infrastructure, the burden is falling on local governments to find solutions and manage waste in the best interest of all parties.

The policy response from all levels of government now being witnessed is unanimous on one message, that Australia must embrace the principles of a Circular Economy. We can no longer afford to think in terms of waste, but rather need to think in terms of valuable resources, resources that if properly managed can be returned into productive use over and over again, delivering economic benefits and prosperity to our community. Products need to be designed, sold and consumed in a manner that facilitates their repaired, reused or recycled, with landfill seen as a solution of last resort. By embracing these principles, we will encourage innovation, increase resource productivity, and deliver economic benefits, jobs and social inclusion across our community.

It is with great pleasure that I present Rockhampton Regional Council's Waste Strategy 2020-2030 as an important first step in a community wide mobilisation to inspire change in the way we think about waste here in our own region. It lays out Council's waste management and resource recovery priorities for the next 10 years as we move towards a circular economy and help to secure the long term prosperity of our region.

This is an exciting time to be involved in the waste management sector, or should I say the resource recovery sector, since this is what it truly must become. I look forward to sharing this journey with each of you as we build a sustainable future for the Rockhampton Region.

Introduction

Waste management in Australia is currently undergoing a once in a generation transformation.

It is increasingly acknowledged that our current rate of consumption of natural resources is not sustainable. A desire for convenience and spiralling consumption of single use goods are contributing to an ever growing waste stream.

Despite decades of well-intentioned policy, there has been little or no improvement in the last decade in the proportion of waste being diverted from landfill, whilst the overall amount of waste continues to increase as our population and economic activities grow.

Bans imposed by South East Asian governments on the importation of contaminated recyclables from overseas has caused turmoil in the Australian recycling sector. An under capacity in domestic processing infrastructure along with a poorly developed market for recyclable goods has led to

a chronic oversupply of recyclable materials in the domestic market.

Both the Commonwealth and State Governments are recognising the urgent need to respond and are providing policy and investment to drive the structural changes that are now needed to our industry.

At the heart of this policy agenda is the concept of the circular economy. A circular economy is one where resources are retained in the productive cycle for as long as possible, minimising the environmental impact of our consumption and maximising the benefits of those resources in our local economy.

THE RRC WASTE STRATEGY

The RRC Waste Strategy is Rockhampton Regional Council's own response to meet these challenges and to align our efforts with the new policy positions being adopted across the waste management sector. Importantly, it outlines the strategies we will employ to support the transition of our community towards a circular economy with the long term goal of achieving zero waste by 2050.

In this strategy you will find an evaluation of our existing capacity and current performance. It then outlines what a zero waste community would look like in 2050 in terms of the waste we forecast our community will generate, establishes the measures against which we will monitor our progress and details the strategic actions that Council will implement over the next 10 years in pursuit of achieving the goal of zero waste by 2050.

This strategy also fulfils all of Council's obligations under the Waste Reduction and Recycling Act 2011.

Council recognises that to achieve the ambitions of a circular economy and zero waste, a whole of community response will be required. This strategy is therefore only the first step in a much longer conversation and collaboration across our community, local business, government agencies, the waste industry, educators and many other stakeholders.



Our Vision

To live in a community without waste.

We will become a “zero-waste” community by 2050, diverting 90% of waste from landfill.

ENVISIONED FUTURE

Our community will have embraced the principles of a circular economy and waste minimisation.

We will be diverting a minimum of 90% of our waste from landfill, the remainder being made up of only waste for which there is no other available disposal options such as regulated wastes.

We will adopt zero waste strategies across every waste stream, seeking out and nurturing viable local markets for the continuous recovery of materials, keeping the flow of resources as local as possible.

Business, social enterprise and the public sector will work in partnership to maximise the economic value out of all the resources we use, creating new economic activity and jobs in our community.

We will become an exemplar for best practice in waste management, being nationally recognised for the sustainable ways in which we manage our waste.

Council’s waste management services will be delivered at a level of service and at a cost that is admired by other local governments.

Key Policy Drivers

There are several national and state legislative and policy requirements that guide the direction of this plan.

NATIONAL WASTE POLICY

The National Waste Policy, revised in 2018 is aimed at providing a common national approach to waste management, applying the principles of a circular economy and giving effect to Australia's international obligations e.g. UN Sustainable Development Goal 12 on responsible consumption and production.

QUEENSLAND WASTE MANAGEMENT AND RESOURCE RECOVERY STRATEGY

The Queensland Waste Management and Resource Recovery Strategy (Queensland Waste Strategy) was adopted in July 2019 to provide a coordinated framework to deliver on the principles of the circular economy. It outlines a vision of a zero-waste society, which it further defines by way of a series of progressive targets for waste reduction and resource recovery to 2050.

Aligned around three strategic priorities, it promotes sustainable waste management practices for business, industry, local governments and households and sets the outline of a progressive policy and regulatory framework. The introduction of a waste disposal levy in 2019 provides the funding framework to implement the Queensland Waste Strategy whilst also sending a pricing signal to waste generators and acting as a disincentive for inter-state dumping practices.

WASTE REDUCTION & RECYCLING ACT 2011

The Waste Reduction & Recycling Act 2011 provides the waste management legislative framework in Queensland. Local government entities are required to adopt a Waste Reduction and Recycling Plan, which must set clear guidelines for waste management within the local government area in order to best achieve the objectives of the Act. The Act further requires that the Waste Reduction & Recycling Plan is reviewed as a minimum every three years. This strategy is the Waste Reduction and Recycling Plan for Rockhampton Regional Council.

ROCKHAMPTON REGIONAL COUNCIL PLANNING FRAMEWORK

This strategy has been developed with regard to the broader Rockhampton Regional Council planning framework, being specifically mindful to align with the Corporate Plan, Environmental Sustainability Strategy and other economic development strategies.

In particular, Council's Corporate Plan outlines three categories of initiative aimed at driving economic growth in our region:

- enabling initiatives that support growth and prosperity
- value adding initiatives that build on the existing strengths of our region's economy
- diversification initiatives that will foster growth in new industries and business

This strategy directly supports this approach, focusing on delivering solutions within the waste management context that build economic sustainability for current and future generations.

Guiding Principles

WASTE HIERARCHY

The waste and resource management hierarchy is a framework that guides the order of preference for managing waste. Waste should be avoided as a first priority, after which options for reuse and recycling should be explored. The options of fuel production, energy production or disposal should be reserved for residual waste that is unsuitable for higher order options. The hierarchy shapes this Strategy's priorities and provides the basis for the development of the strategic actions.

MOST PREFERABLE

Avoid and  Reduce Waste

Reuse  Waste

Recycle  Compost

Recover Fuel 

Recover Energy

Dispose of Waste

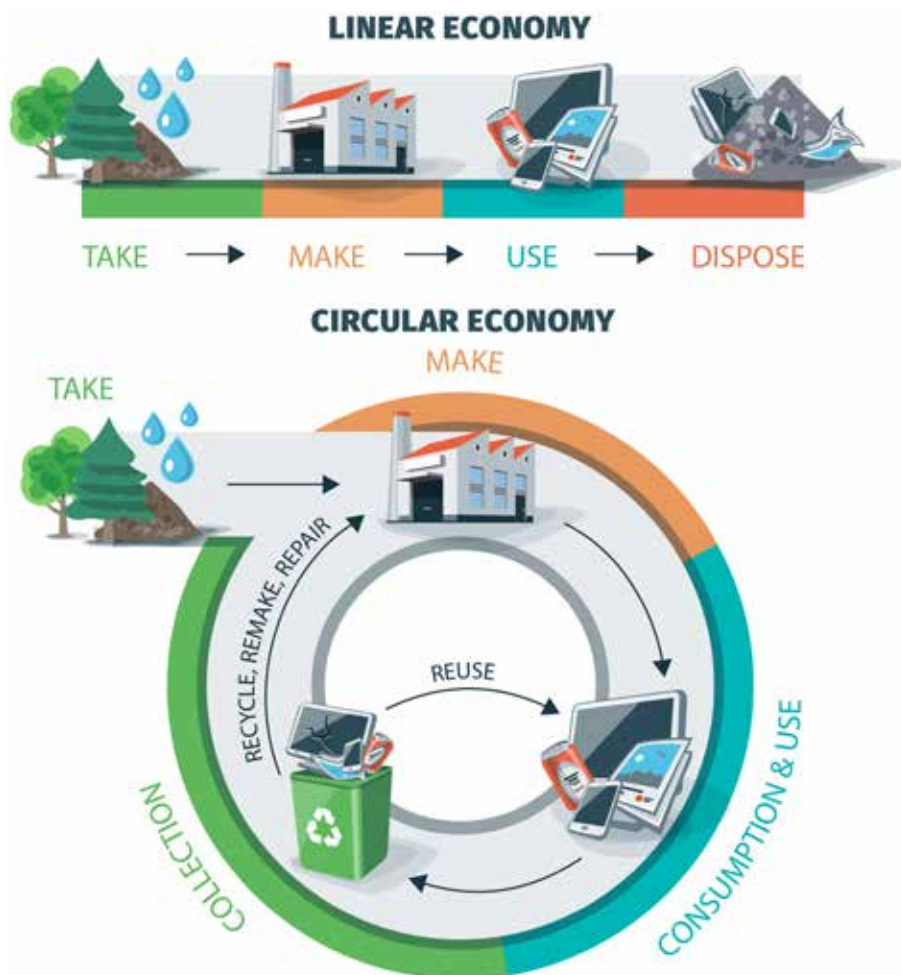


LEAST PREFERABLE

CIRCULAR ECONOMY

Rather than follow a linear take-make-use-dispose approach, circular economy principles consider opportunities across the entire supply chain to retain and circulate resources in the economy at their highest value for as long as possible. A circular economy builds

on long-lasting sustainability concepts, including life cycle thinking and resource efficiency, as well as complementing the waste hierarchy. A circular economy refers to the flow of both materials and energy.



The circular economy has the potential to transform the way we design, teach and invest, and how we buy products, gradually moving the economy to where there is no waste and we use fewer virgin resources.

INTER-GENERATIONAL EQUITY

We are committed to making waste management decisions which ensure the health, diversity and productivity of our environment is maintained or enhanced for the benefit of future generations.

When making pricing decisions for our services, it is important that the full cost of the service provided

is levied upon the user of that service and not future generations e.g. when we are pricing the cost of landfill disposal, we must ensure that we charge a price that reflects not only the current cost of construction and operation of the landfill, but also the closure and post closure cost of managing and remediating the site.

LOCAL SOLUTIONS

A circular economy presents opportunities for increased local recycling, reprocessing and manufacturing activity. Local solutions create local jobs and minimise the costs and environmental impacts of unnecessary transport.

Creating and supporting local markets retains the economic benefits within our community, creating new skills and opportunity, and attracting new investment from outside our region. This in turn increases economic and community resilience, an essential consideration for regional and rural communities as we tackle the longer-term impacts of climate change.

SNAPSHOT OF WASTE IN ROCKHAMPTON 2017-2018



Where Are We Now?

Rockhampton Regional Council has an estimated 2019 population of 85,978, living in approximately 35,000 residential dwellings. The region's population is projected to grow at an average annual increase of 1.8% to 112,701 by 2036. This growth has been factored into the waste flow projections presented here.

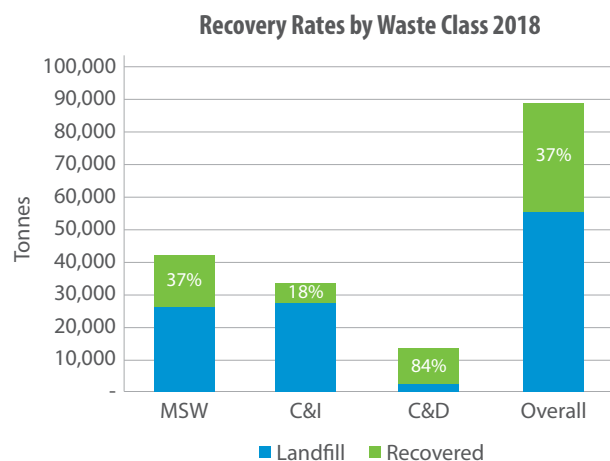
During the 10 years to 2014, economic growth in the region was consistent with state-wide growth, averaging 3.3% per annum. With the downturn in mining investment and completion of several large-scale infrastructure projects, the four years

to 2018 saw an average economic contraction of 1.7% per annum. Due to the unpredictability of economic growth rates in CQ, economic growth has not been factored in the waste flow projections presented here.

WASTE PROFILE

Total waste generated in 2017-18 was 89,000 tonnes. Of this 33,000 tonnes were recovered, via a combination of kerbside commingled collections and self-haul green waste and other recyclables

dropped off at WTS. The remaining 56,000 tonnes were buried in landfill, giving an overall recovery rate of 37%.



Stream	Landfill tonnes	Recovered tonnes	Recovery Rate	Qld Baseline 2017-18
MSW	26,488	15,678	37%	32%
C&I	27,173	6,111	18%	47%
C&D	2,135	11,217	84%	51%
Overall	55,795	33,006	37%	45%

The biggest waste source is Municipal Solid Waste (see side bar on next page for definitions) at 42,000 tonnes per annum, 37% of which was recovered.

Commercial and Industrial (C&I) waste accounted for 33,000 tonnes per annum, with just 17% being recovered.

Construction and Demolition (C&D) waste accounted for 13,000 tonnes, of which 84% was recovered, the direct result of the work of Civil Operations team who divert nearly all of their concrete, asphalt and clean earth materials for screening, crushing and reuse.

KERBSIDE COLLECTIONS

Council currently provides approximately 32,000 domestic and 5,000 commercial or public place general waste bin collections per week from the kerbside, using its own labour force and fleet of 11 collection vehicles. A further 32,000 domestic and 2,500 commercial or public place kerbside recycling bin services are provided on a fortnightly collection cycle via an external contractor. All kerbside collections use 240 litre wheelie bins.

The regional material recovery facility (MRF) is located in Wade Street, Rockhampton. It is privately owned and operated, and currently sorts 12,500 tonnes per annum of the kerbside recyclables from four participating councils in our region. Of this total, Rockhampton provides approximately 5,240 tonnes per annum.

WASTE FACILITIES

Council operates one active landfill site located at Lakes Creek Road, Rockhampton, comprising of a state of the art "piggyback" engineered landfill that will sit over the top of the existing closed landfill. This landfill will consist of a total of 12 adjoining cells, with construction scheduled to take approximately 20 years. When complete, the profile of the "piggyback" landfill area will match the height of the previous landfill. At current fill rates this site has a projected life expectancy of 40+ years.

Also on the Lakes Creek Road site is a large covered recycling drop off zone and adjoining tip shop where visitors drop off a wide range of household recyclables. General public and small commercial vehicles are then directed to a purpose built waste transfer station to unload general waste and bulky recoverable items such as metals, mattresses and tyres.

Council operates a network of six other waste transfer stations serving the remainder of the local government area, located at Gracemere, Mount Morgan, Bouldercombe, Alton Downs, Bajool and Bushley. Each of these facilities accept a variable mix of self-hauled materials from the general public, ranging from general waste, commingled recyclables, green waste, metals, oil, batteries, tyres, mattresses, e-waste, agricultural chemical containers and useful salvageable household items.

Our local government area also has an estimated 30 closed landfill sites which council is required to manage and monitor in line with the requirements of the *Environmental Protection Act 1994*.



Types of Waste EXPLAINED

Municipal Solid Waste (MSW) is a combination of domestic waste and other wastes arising from council activities (such as the management of parks and gardens, and the collection of litter and illegally dumped waste).

Commercial and Industrial (C&I) is waste generated by businesses, including waste from schools, restaurants, retail, offices, agriculture, manufacturing, community groups and sports clubs.

Construction and Demolition (C&D) is waste generated from construction and demolition activity, usually including brick, timber, concrete and metal.

Challenges & Opportunities

CHALLENGES	OPPORTUNITIES
Waste Generation	
Population growth and increasing per capita waste generation is creating an ever increasing quantity of waste to be managed.	Council has a strong voice in the local community, so can use this influencer role to promote key waste reduction messages.
Councils are not in control of many of the key drivers of this growth such as economic growth cycles, consumer trends, packaging design, and regulatory interventions.	Council can directly impact waste generation behaviours via pricing strategies on its key services.
	Council can directly reduce its own waste generation with structural changes to its procurement policies and behaviours.
Policy Landscape	
A large amount of policy work is currently in development across all levels of government and in the wider industry, in direct response to the issues facing the sector and driven by increasing political attention.	As a significant regional player, Council is well placed to play a leading role in development and implementation of this policy agenda, particularly as a voice for regional communities.
Difficulty for council is to remain responsive to this changing policy landscape whilst still being able to set our own long-term strategic agenda.	Now is the time to revise our own waste strategy in light of this new policy landscape but must ensure it is an adaptive and agile strategic framework that can respond to further inevitable policy and industry change.
	Opportunities to access several new streams of government funding.
Market Development	
Market demand for recovered materials in our local economy are very limited.	The development of commercially viable, local market opportunities for recovered materials can create jobs and economic growth, both the direct benefit arising from local reprocessing and the indirect benefits of creating local secondary and tertiary markets for the materials.
There is almost no secondary reprocessing of recyclable materials within our region, meaning all our recovered materials are transported out of region, interstate or overseas. This transportation burden reduces the value and is a lost opportunity for our local economy.	
Technological and Investment Risks	
The new appetite for change presents the industry with a wide range of potential technological solutions, each with a complex mix of technical and commercial risk and rewards.	Strategic review at this time gives council the opportunity to identify options that will deliver good quality outcomes for our community.
Poor decision making could lock council into inappropriate or failed solutions.	Strong business cases need to be developed for all the key investment decisions, drawing on advice from regulators, technical consultants, private sector partners, industry representative bodies and other councils.

CHALLENGES

OPPORTUNITIES

Regional Collaboration

Regional communities don't have sufficient population size to generate enough waste to make investment in large scale resource recovery solutions commercially viable. Long distances between dispersed populations create further cost and operational impacts.

Combining regional feedstock can overcome these challenges but require contractual certainty and political partnerships between councils over the medium to long term. No formal mechanism currently exists in CQ to facilitate this collaboration.

Building on the long term historical relationship between CQ councils combining feedstocks into regional MRF has forged an environment of collaboration and strong working relationships.

Regional education campaigns and collaboration can deliver better outcomes and financial savings.

Bin Contamination

High contamination levels in the recyclable stream reduces commodity value and creates operating inefficiencies.

The high contamination is generally the result of low community awareness of the commingled recycling process and of low levels of source separation across commercial waste generators.

Outmoded processing technologies are also not necessarily designed to efficiently deal with modern recyclable streams.

Targeted community education and awareness campaigns can drive down contamination rates.

Targeted business initiatives to encourage and enforce more user responsibility and source separation.

Integrated design of the collection infrastructure and processing technologies can minimise the impact of contamination and improve recovery rates.

Environmental and Public Health

Littering and illegal dumping is a key risk arising from waste management decisions.

Waste management facilities need to manage leachate, landfill gas, stormwater, odour, dust, litter and visual impact.

Landfill sites need post closure remediation and monitoring.

Maintain strict adherence to compliance frameworks and regulations in respect of site management, emissions etc.

Education campaigns to address behaviour change with respect to illegal dumping and littering.

Ongoing public consultation to ensure Council has a "social licence to operate" across all of its facilities.

Waste Data and Performance Management

The inconsistency of waste data and reporting requirements is a considerable blockage on understanding and monitoring performance.

Establish strategic measurement framework that is easily understood and communicated.

Investment in improved data capture and management systems and processes.

Strategic Targets

Our long term goal, in pursuit of our vision to live in a community without waste, is to become a zero-waste community by 2050.

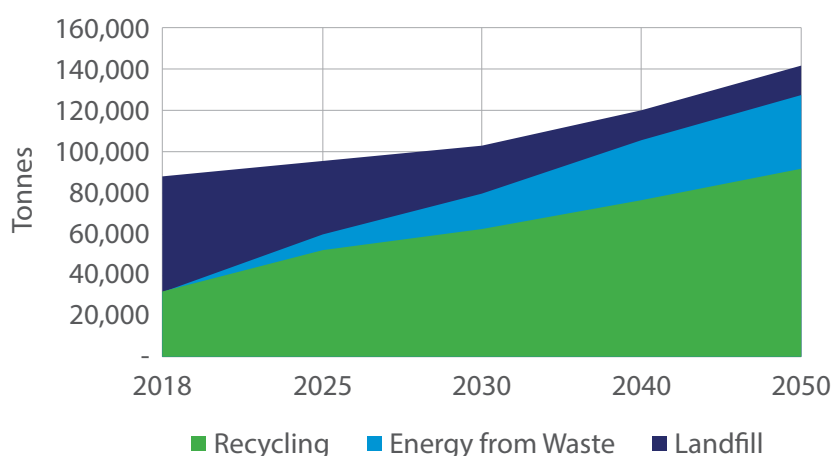
We acknowledge that there will always be residual wastes for which there is no viable alternative than to send to landfill, such as asbestos or contaminated soils. In line with the Queensland Waste Strategy, we have defined zero waste as achieving 90% diversion from landfill.

In order to measure progress against this long term target, our current waste streams have been modelled to 2050, with projections being based on the successful implementation of the actions outlined in this strategy. From this analysis, a series of targets have been established that reflect where we expect to be at given points along the journey.

Built into this modelling is an assumed 25% reduction in household waste between now and 2050, which aligns with the aspirations of the Queensland Waste Strategy.

We forecast that the total waste generated in our community by 2050 will be 142,000 tonnes per annum.

In order to meet a 90% diversion target, we anticipate diverting 65% of the waste stream through reuse and recycling, and a further 25% using waste to energy technology.



Total Waste Stream	2018	2025	2030	2040	2050
Waste Generated (tonnes)	88,803	96,205	103,017	120,871	142,212
Recycling %	37%	54%	61%	63%	65%
Energy from Waste %	0%	8%	17%	25%	25%
Total Diversion %	37%	63%	78%	88%	90%
Residual to Landfill %	63%	37%	22%	12%	10%
Residual to Landfill (tonnes)	55,796	35,739	22,873	14,422	14,179

A more detailed breakdown of this modelling is provided in Appendix 1.



Strategic Priority

01: Behaviour Change

Empowering the community to embrace the principles of a circular economy.

To achieve our goal of zero waste by 2050, every one of us must play our part. Our whole community must rethink our relationship with the materials we consume and dispose of, from the purchase decision, product design, repairability, and the process by which the materials can be returned into productive use. In a circular economy there is no such thing as waste, only resources being returned into the economic cycle.

Council aims to be an advocate for change, engaging with our community, delivering education and being a catalyst for a whole of community response.

KEY ACTIONS

1.1 Establish and implement a long term community engagement plan.

Taking a long term view of the key messaging required to embed the principles of a circular economy, we will liaise, partner and seek feedback from a wide range of stakeholders across sectors of the community to ensure we are delivering relevant outcomes.

1.2 Deliver a waste education and awareness program

1.2.1 Develop and deliver an annual waste education plan.

An annual plan will be formulated to set the scope and objectives of the program. Each annual plan will be designed to support the priorities of this strategy at that particular point in the strategic cycle, outlining key messaging, target audiences, delivery method and expected outcomes.

1.2.2 Deliver a regional education campaign in partnership with other CQ Councils.

Where neighbouring councils have the same messaging e.g. commingled recycling campaigns, there are benefits of pooling resources to procure media and marketing coverage that has a much bigger community reach.

1.3 Deliver an illegal dumping and littering reduction campaign.

To protect public health and the environment, we will work with other stakeholders to deliver strong messaging on the consequences of waste crime, coordinate education and support compliance activities.

1.4 Deliver a program of waste reduction strategies on behalf of our community.

1.4.1 Advocate and lobby government and industry stakeholders.

To bring about the legislative and policy changes that will lead to measurable reduction in waste generated within our community.

1.4.2 Leverage council's own policy and procedural resources.

In pursuit of best practices in waste reduction and resource management, including public events management, building infrastructure, development application requirements, etc.



Strategic Priority

02: Building Resource Recovery Capacity

Maximising resource recovery opportunities across our community.

In order to divert 90% of our waste from landfill by 2050, our community will need the capacity to process up to an estimated 140,000 tonnes of materials per annum.

This will require infrastructure investment for sorting, separation and processing purposes. It will require partnerships with a wide range of stakeholders including waste generators, private operators, technical experts, regulators and financial partners. It will require broad community support and buy-in, commonly referred to as a social licence to operate.

In many instances, Council's role will be that of service provider and owner of the infrastructure. In other instances, Council will be partner or facilitator providing the support to allow private operators to deliver appropriate service.

KEY ACTIONS

2.1

Organic waste

2.1.1

Develop an organics business case.

To establish best combined collections and processing solution to maximise the diversion of our organic waste stream.

2.1.2

Procure an organic kerbside collection service.

If determined to be viable by the business case, procure the necessary infrastructure, plant, equipment and/or engage third party service provider.

2.1.3

Procure an organic processing solution.

If determined to be viable by the business case, procure the necessary organics processing infrastructure, plant, equipment and/or engage third party service provider.

2.1.4

Commercial food waste action plan.

Implement a long term strategy aimed at maximising commercial food waste diversion. Exploring a range of collection options and/or on-site processing options, education campaigns, financial incentives, private operator partnerships and development approval initiatives. Targeting large and small generators.

2.2

Commingled recycling

2.2.1

Procure new MRF solution.

Develop business case, determining preferred ownership model, preferred operating model, collections method, identify capital funding sources, determine viable material streams to include, secure external feedstocks, seek out wider sorting and processing opportunities.

2.2.2

Develop a plastics processing business case.

Develop a business case to identify the most viable local processing solutions for the diversion of plastics.

2.2.3

Procure a plastics processing solution.

If determined to be viable by the business case, procure a plastics processing solution.

2.3

Mixed residual waste

2.3.1

Develop an Alternative Waste Treatment (AWT*) business case.

Undertake a technical analysis to establish best fit AWT solution(s) to process residual mixed waste into viable product and/or energy in line with diversion targets.

2.3.2

Procure an AWT solution.

If determined to be viable by the business case, procure AWT solution(s).

2.3.3

Develop a C&I and C&D sorting and separation solution.

Establish a processing solution for the cost effective diversion of materials from the C&I and C&D mixed waste stream, prior to feeding an AWT solution. It is envisioned that this will be a largely manual/mechanical solution, but the final scope will be contingent on the preferred AWT solution.

2.4

Regulated and difficult waste

2.4.1

Develop a solar panel management action plan.

Establish a policy position and management plan for accepting and processing solar panels.

2.4.2

Develop a textile waste recovery action plan.

Develop business case for viable recovery of textiles from the waste stream, establish potential market demand and develop long term action plan.

2.4.3

Develop a timber recovery action plan.

Establish a commercially viable solution for dealing with timber content in mixed waste streams.

***Alternative Waste Treatment** refers to a range of technological solutions that process mixed solid waste that would otherwise have gone to landfill into products such as compost, fuel or biogas, and increase recovery of resources including plastics, glass and metals. AWT solutions can be a single technology or a combination of several processes. Most common technologies employed around the world include aerobic composting, anaerobic digestion, mechanical biological treatment (MBT), process engineered fuel (PEF), pyrolysis and gasification.

2.5

Infrastructure management

2.5.1

Develop a concept plan for a Lakes Creek Road waste precinct.

Establish a long term plan for the development of the Lakes Creek Road site, to take advantage of existing infrastructure, co-location potential for reuse of extracted landfill gas, and creating a community amenity to be a hub for education and engagement.

2.5.2

Progressive construction of the piggyback landfill at Lakes Creek Road.

Continue with the construction of the piggyback landfill and associated infrastructure in line with the design masterplan as amended over time by changing forecast consumption of airspace and design best practices.

2.5.3

Procure landfill gas extraction infrastructure for Lakes Creek Road and Gracemere landfills.

Procure services from a third party contractor to install, own and operate landfill gas extraction infrastructure across capped landfill site, with future capacity to expand to the new piggyback landfill.

2.5.4

Upgrade of Gracemere Waste Transfer Station.

Complete the final capping of the landfill site and construct upgraded waste transfer facility to meet the future needs of the Gracemere community.

2.5.5

Implement a long term management plan for closed landfill sites.

Establish a risk based plan to best manage Council's legacy.



Strategic Priority

03: Market Development

Optimising the returns to our local economy by retaining resources in the local production cycle.

Retaining and circulating resources in the economy at their highest value for as long as possible will maximise the economic return on those resources. By keeping that economic activity local the benefits accrue to the local community in jobs, investment and secondary activities. Our local environment benefits from the lower demand on virgin materials.

Council is committed to developing and supporting sustainable local markets across a range of recovered materials and processed recycled products. As one of the largest organisations in our community, Council further acknowledges that it has a duty to lead by example and be amongst the largest purchaser of local recycled materials.

As a community, we need to ruthlessly drive up the quality of these materials. Higher quality materials are more likely to find a market. We need to treat waste as a tradeable commodity where quality is an important driver of price.

Regional communities have additional challenges to overcome, having to bear the cost of transportation to get materials to market. This creates an even greater imperative to seek out and support local processing solutions.

KEY ACTIONS

3.1

Development of a sustainable, local compost market.

Seek out sustainable markets for compost product from our chosen organics processing solution. Product could include composts, feed, nutrient supplements, fertilisers and soil conditioners.

3.2

Development of a sustainable AWT offtake product(s) market.

Develop a sustainable market for offtake products from chosen AWT solution. Depending upon final solution selected, offtake products could include recovered separated materials, processed engineered fuel, biogas, bio char, heat, synthetic gas.

3.3.

Development of a sustainable, local glass reuse market.

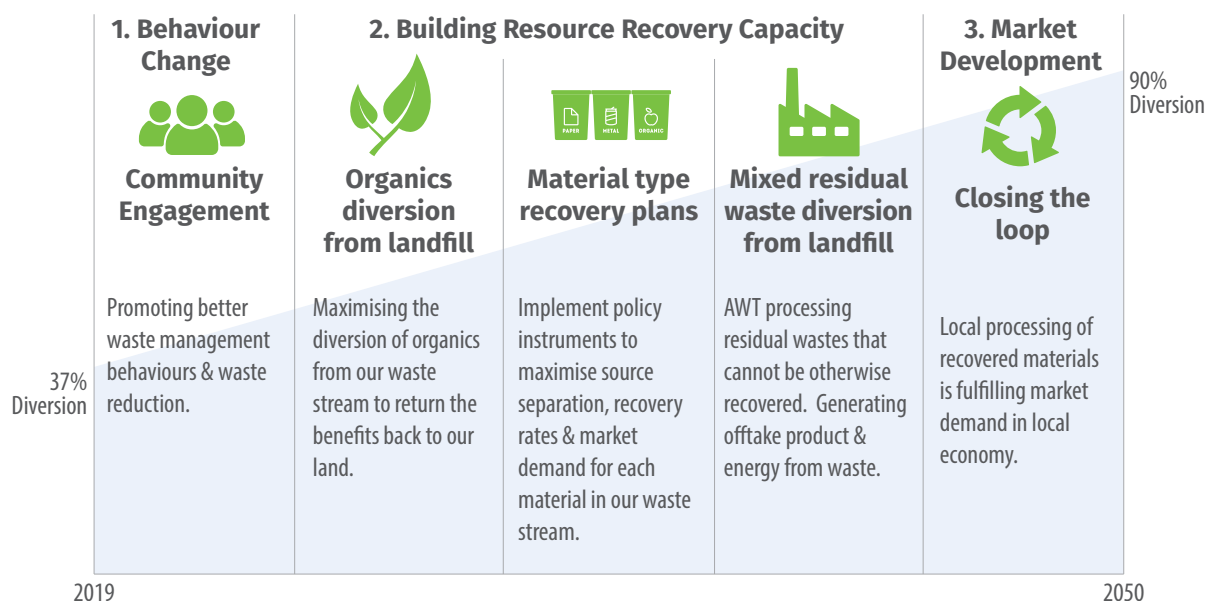
Establish a diverse and commercially sustainable local market for glass fines received in local kerbside collections, primarily focusing on encouraging construction sector to use as a sand substitute in road base, asphalt, pipe bedding, block manufacture and similar applications.

3.4.

Prioritise Council's own procurement of recycled materials.

Council will seek to adopt a comprehensive procurement position that prioritises the purchase of materials and goods that are manufactured from locally processed recovered materials.

STRATEGIC ROADMAP TO A ZERO WASTE COMMUNITY



PRIORITIES		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
01: BEHAVIOUR CHANGE											
1.1	Establish and implement a long term community engagement plan										
1.2	Waste Education										
1.1.1	Develop and deliver an annual waste education plan										
1.1.2	Deliver a regional education campaign in partnership with other CQ councils										
1.3	Deliver an illegal dumping and littering reduction campaign										
1.4	Deliver a program of waste reduction strategies on behalf of our community										
1.4.1	Advocate and lobby government and industry stakeholders										
1.4.2	Leverage council's own policy and procedural resources										
02: BUILDING RESOURCE RECOVERY CAPACITY											
2.1	Organic Waste										
2.1.1	Develop an organics business case to establish best combined collections and processing solution										
2.1.2	Procure an organic kerbside collection services										
2.1.3	Procure an organic processing solution										
2.1.4	Commercial food waste action plan										
2.2	Comingled Recycling										
2.2.1	Procure new MRF solution										
2.2.2	Develop a plastics processing business case										
2.2.3	Procure a plastics processing solution										
2.3	Mixed Residual Waste										
2.3.1	Develop an AWT business case										
2.3.2	Procure an AWT solution										
2.3.3	Develop a C&I and C&D sorting and separation solution										
2.4	Regulated and Difficult Waste										
2.4.1	Develop a solar panel management action plan										
2.4.2	Develop a textile waste recovery action plan										
2.4.3	Develop a timber recovery action plan										
2.5	Infrastructure Management										
2.5.1	Develop a concept plan for a Lakes Creek Road waste precinct										
2.5.2	Progressive construction of the piggyback landfill at Lakes Creek Road										
2.5.3	Procure landfill gas extraction infrastructure at Lakes Creek Road landfill										
2.5.4	Upgrade of Gracemere waste transfer station										
2.5.5	Implement a long term management plan for closed landfill sites										
03: MARKET DEVELOPMENT											
3.1	Development of a sustainable, local compost market										
3.2	Development of a sustainable AWT offtake product(s) market										
3.3	Development of a sustainable, local glass reuse market										
3.4	Prioritise Council's own procurement of recycled materials										

Measuring Our Success

Over the life of this strategy we will implement a wide range of actions and will work with many partners from across the community. Some of these actions will be easy to track and have a very clear measure of success, whereas other actions will be much harder to measure directly or over the short term. A series of key performance indicators will therefore be used to track long term performance against our overall goal of a zero waste community by 2050.

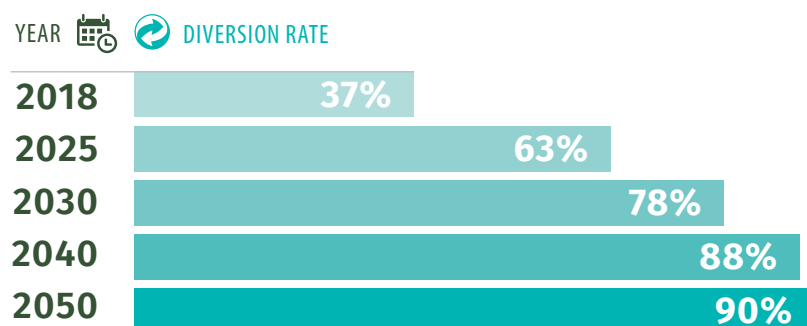
MUNICIPAL SOLID WASTE GENERATED PER CAPITA

Measuring the broader community engagement in reducing overall waste.



DIVERSION OF TOTAL WASTE FROM LANDFILL

Measuring the effectiveness of our investment in resource recovery.

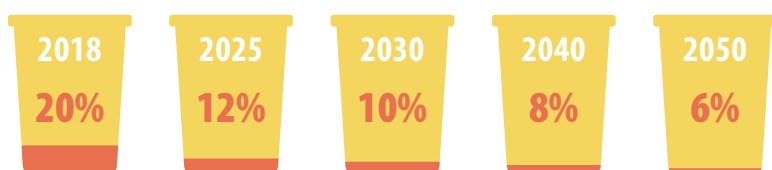


CONTAMINATION RATES

Measuring the effectiveness of our community engagement



COMMINGLED BIN CONTAMINATION % BY YEAR



The RRC Waste Strategy will be reviewed every three years and the key actions will be reviewed on an annual basis. More frequent review may be required should it be necessitated by significant change to the underlying assumptions such as dramatic changes in market conditions, or large-scale government policy shifts.



C&D Recovery Success

Over the past five years, our Civil Operations team has transformed a corner of our Lakes Creek Road Waste Facility into a C&D recovery centre.

Seeing an opportunity to reduce operational costs by recycling materials such as concrete, asphalt and dirty fill, the Civil Operations team is now reprocessing up to 30,000 tonnes per annum. Named after plant operator Terry Dale, the Dale Park site screens, grinds and separates the input materials into several clean products for reuse in civil construction projects across council and used to support the operations of the Lakes Creek Road landfill. Supervisor Mick Baker explains the commercial thinking behind the project:

"It was costing us \$180-\$200 per tonne to dump the material and at around 90 tonnes per day, the costs were huge. It now costs us around \$20 per tonne to crush material, so there are savings not only in disposal costs but of course, we are no longer purchasing the products as we are producing them in-house."

Council's commitment to recycling these materials has meant that we are now at the leading edge of what is standard industry practice, producing several grades of gravel profile as well as quality

topsoil and recycled asphalt. Mick goes on to say:

"In all my experience, I have never seen such good quality materials as what we have in our stockpiles now and we are also in the testing phase of producing high grade road base. Apart from some major cities, there are few Councils who are recycling and producing materials to the level that we do".

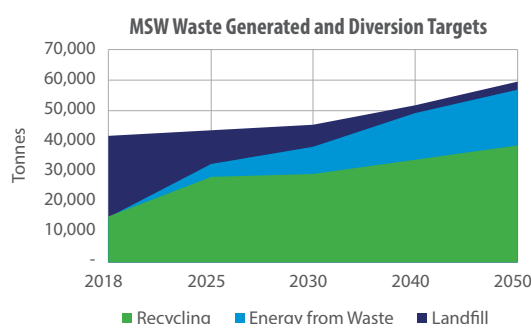
The project has not only of course saved money but has also resulted in a very significant diversion of materials from landfill. Civil Operations Manager David Bremert expressed pride in the project saying:

"The recycling of the materials meets the requirements from Council to reduce our impact on the environment and to be cost efficient. Since the beginning of this project, Council has saved a large sum of money which has been able to be used back on the roads. Special thanks go out to Mick and Terry who have developed a sensational facility".

Appendix 1 - Waste Stream Data

MUNICIPAL SOLID WASTE (MSW)

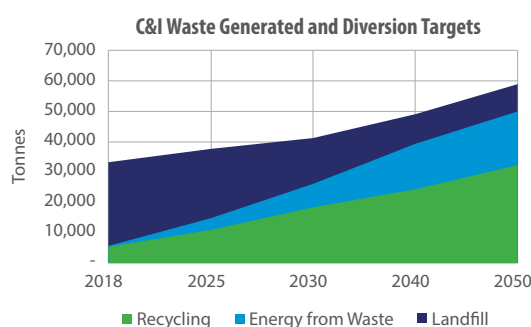
The MSW forecast has factored in a 25% per capita reduction in household waste between 2018 and 2050, in line with the Queensland Strategy. The combined impact of this per capital reduction with the increased population over the same period will result in a forecast of 59,742 tonnes of MSW waste in 2050. Diversion will come via commingled recycling, self-haul drop off of recyclables, self-haul green waste, organic diversion to an organics processing facility and mixed waste diversion into an AWT converting waste to energy.



MSW	2018	2025	2030	2040	2050
Waste Generated (tonnes)	42,166	43,386	45,279	51,867	59,742
Recycling %	37%	65%	65%	65%	65%
Energy from Waste %	0%	10%	20%	30%	30%
Total Diversion %	37%	75%	85%	95%	95%
Residual to Landfill %	63%	25%	15%	5%	5%
Residual to Landfill (tonnes)	26,488	10,846	6,792	2,593	2,987

COMMERCIAL AND INDUSTRIAL (C&I)

The C&I forecast waste at 2050 is 58,906 tonnes. This waste stream will require the biggest improvement in diversion performance. It is anticipated that 55% diversion will be achieved from processing of the organic fraction, improving the current level of source separation and self-haul recycling drop-off, as well as implementing a sorting/separation facility to further extract value out of the mixed waste prior to feeding it into an AWT solution. The AWT will then yield a further 30% recovery via energy from waste.

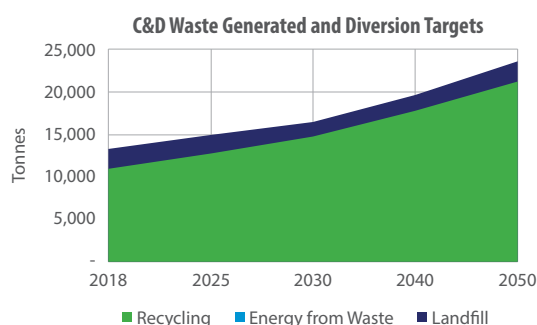


C&I	2018	2025	2030	2040	2050
Waste Generated (tonnes)	33,284	37,711	41,229	49,281	58,906
Recycling %	18%	30%	45%	50%	55%
Energy from Waste %	0%	10%	20%	30%	30%
Total Diversion %	18%	40%	65%	80%	85%
Residual to Landfill %	82%	60%	35%	20%	15%
Residual to Landfill (tonnes)	27,173	22,626	14,430	9,856	8,836

CONSTRUCTION AND DEMOLITION (C&D)

The C&D forecast waste at 2050 is 23,565 tonnes. However, C&D forecasts can vary significantly dependent upon just one or two major projects being undertaken in any given year.

Current diversion is extremely high due to the work over the last five years of Council's Civil Operations team to divert materials from their roads and construction activities. Since this waste stream is largely inert materials with negligible calorific value, it is not suited to waste to energy processing. The current recovery rates are therefore anticipated to continue with small improvements to 2050 based on implementing better technology and a reduction in mixed waste loads being received from commercial construction sites.

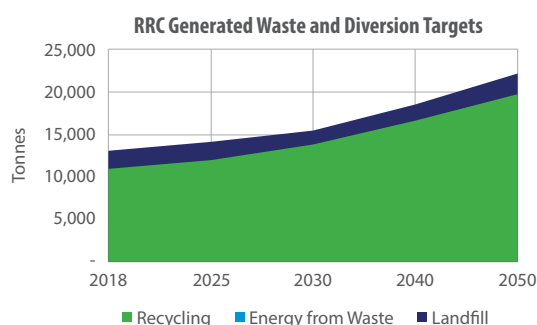


C&D	2018	2025	2030	2040	2050
Waste Generated (tonnes)	13,353	15,109	16,509	19,723	23,565
Recycling %	84%	85%	90%	90%	90%
Energy from Waste %	0%	0%	0%	0%	0%
Total Diversion %	84%	85%	90%	90%	90%
Residual to Landfill %	16%	15%	10%	10%	10%
Residual to Landfill (tonnes)	2,135	2,266	1,651	1,972	2,356

ROCKHAMPTON REGIONAL COUNCIL GENERATED WASTE

The Waste Reduction and Recycling Act 2011 requires that we set targets for overall waste reduction and recycling rates for Council's own waste.

Waste generated by Council's own activities is forecast to be 22,044 tonnes by 2050. The majority of this waste is Construction & Demolition materials arising from roads, water, sewerage, facilities management etc. This waste is generally made up of masonry materials so is not suitable for energy from waste processes. As such, no Energy from Waste target is set for Council's own waste.



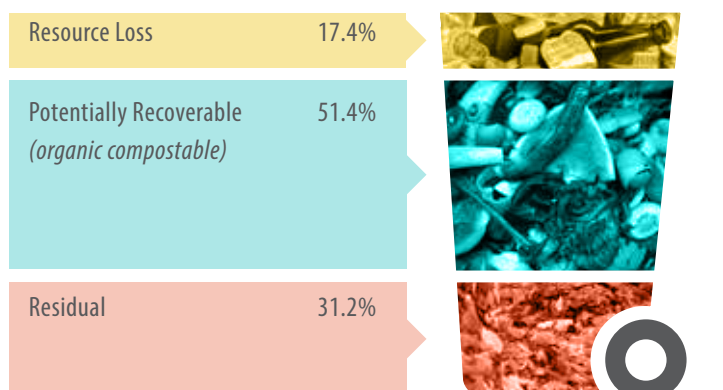
RRC	2018	2025	2030	2040	2050
Recycling %	88%	85%	90%	90%	90%
Energy from Waste %	0%	0%	0%	0%	0%
Total Diversion %	88%	85%	90%	90%	90%
Residual to Landfill %	12%	15%	10%	10%	10%
Residual to Landfill (tonnes)	1,447	2,117	1,543	1,844	2,204

KERBSIDE BIN COMPOSITION

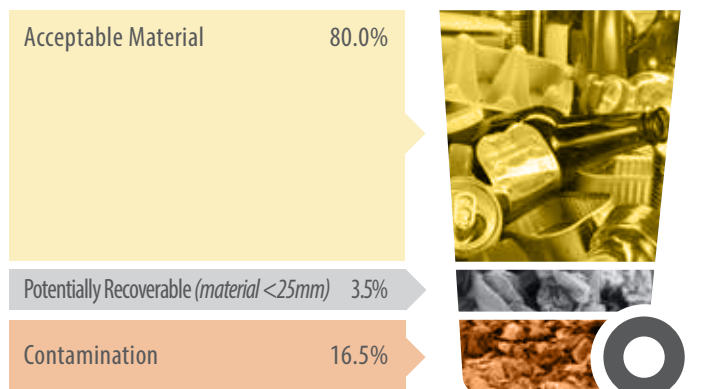
When modelling the data, some information was not directly available from weighbridge data capture, for example, we don't directly capture the material composition of mixed loads arriving at our site.

As such, estimates of particular material volumes have been included in the modelling which have been derived from other sources. A key source has been our annual bin audit, which takes a sample of 500 kerbside bins (250 general waste and 250 commingled recycling) and determines the average bin weight and composition by material type. The graphic above shows the results of the 2018 bin audit.

RRC Domestic Kerbside General Waste 2018



RRC Domestic Kerbside Recycling 2018







Glass Reused in Landfill Construction

Rockhampton Regional Council's Waste and Recycling team have introduced yet another innovative solution at their Lakes Creek Waste Facility.

Last year the 'Piggyback' project was commenced, extending the lifespan of the landfill site for another 40+ years by adding a series of additional cells.

Chair of Council's Waste Committee, Councillor Neil Fisher, said Council was now making the Piggyback project more environmentally sustainable by using recycled materials in the cells:

"It's really important that each of the cells has an excellent lining system to ensure liquid that is generated as waste decomposes does not enter the environment. This lining needs to be protected when the cell is initially filled to ensure sharp waste doesn't damage it, and part of that protection would usually be provided by sand supplied from the local area. However, our Waste and Recycling team will instead be taking glass from our local recycling facility after it has been crushed into tiny particles, similar in size to sand. This means we will be using 100% recycled materials rather than taking sand from the natural environment."

Councillor Neil Fisher said that its use wouldn't stop there: "As we build more cells, we will also use the processed glass in their construction, meaning that the glass from our recycling plant will be put to good use right here in Rockhampton. We are also working with our Civil Operations team to use the material effectively in some of their projects."



Council collects around 1,200 tonnes of glass per annum in the kerbside recycling bin, which is approximately 2.8M glass bottles recycled each year.





Waste STRATEGY

2020-2030

Building a Circular Economy

