

North Queensland Waste and Resource Recovery Strategy 2020-2030







HINCHINBROOK SHIRE COUNCIL



a stronger north together



Foreword

The North Queensland Regional Organisation of Councils (NQROC) is a collaborative organisation that promotes cooperation and resource sharing between Councils and effectively advocates for regional priorities. This is achieved through ongoing collaboration and advocacy and by working closely with regional partners and stakeholders.

NQROC represents five member councils, these being Burdekin Shire Council, Charters Towers Regional Council, Hinchinbrook Shire Council, Palm Island Aboriginal Shire Council and Townsville City Council. It extends over 80,036 square kilometres with a population of approximately 236,000 (7.9% Indigenous). These five member councils make up what is referred to as the North Queensland region.

Waste management and resource recovery are a significant priority for North Queensland as the impacts of waste create a risk to the community, environment, and economy. Regional collaboration is critical to deliver a highlevel assessment of waste management in the North Queensland region. The North Queensland Regional Waste and Resource Recovery Strategy 2020-2030 will assist in determining the waste priorities for North Queensland as well as identify current and future infrastructure needs. It will enable the North Queensland region to reduce the environmental impact of waste and use resources more efficiently and effectively.

NQROC would like to acknowledge and pay respect to the First Nations peoples of the land on which we live and work, and to Elders past, present, and future.

The five NQROC member councils are acknowledged for their valuable time and contributions into the North Queensland Waste and Resource Recovery Strategy 2020-2030.

Yours sincerely,

Lyn McLaughlin

Councillor Lyn McLaughlin Chair, North Queensland Regional Organisation of Councils (NQROC)

Mayor, Burdekin Shire Council

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Councillor Frank Beveridge Deputy Chair, North Queensland Regional Organisation of Councils (NQROC)

Mayor, Charters Towers Regional Council

Councillor Ramon Jayo Mayor, Hinchinbrook Shire Council NQROC member Council

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CRS	Container Refund Scheme
C&D	Construction and Demolition Waste
C&I	Commercial and Industrial Waste
EfW	Energy from Waste
MRF	Materials Recovery Facility
MSW	Municipal Solid Waste (domestic waste)
NQROC	North Queensland Regional

Organisation of Councils

De la composition

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Strategy overview

Waste is a concept just as much as it is an endof-life material to be removed and disposed. The North Queensland Waste and Resource Recovery Strategy 2020-2030 identifies that a more rigorous view is required of the region's 'waste' streams and the opportunities they present to reduce, reuse, repair, recycle and otherwise recover. It supports the development of a circular economy that creates jobs, reduces pressure on landfill and the environment, and works towards the State and National 2050 waste targets.

A region-wide focus presents opportunities to develop a Strategy that is more than the sum of its five individual councils. Combined volumes of waste can attract investment in more ambitious recovery infrastructure.

There are also unique challenges in bringing together the disparate local government areas of the NQROC region. The solutions must be tailored to fit, whether across the full region or targeted at specific clusters of councils.

The single biggest decision over the 10-year life of the Strategy is how to extract more value from the residual waste in general waste bins. The key options proposed within the Strategy are improved collection and management of organic materials and recovering energy from the mixed waste stream through an energy-from-waste facility. Preliminary analysis has identified viable pathways for both options, including in tandem, although detailed investigations are required.

The opportunities go beyond kerbside waste to expanding the region's capacity to recycle a wide range of products and materials that are currently landfilled.

The key challenges to developing new recycling programs and facilities in the NQROC region are the limited quantities, long transport distances both within and outside the region, and the need for secure end markets for the recovered materials.

The Strategy identifies a suite of actions to address these challenges and unlock investment in new infrastructure and equipment for targeted recovery streams.



The region in profile

The NQROC region consists of five local governments, Townsville City Council, Burdekin Shire Council, Hinchinbrook Shire Council, Charters Towers Regional Council and Palm Island Aboriginal Shire Council.

THE NQROC REGION HAS A TOTAL LAND AREA OF 80,036 KM² AND A TOTAL POPULATION OF APPROXIMATELY 240,000. Around 80% of residents are concentrated in the city of Townsville, which is the main commercial hub and key administrative and service centre for the broader northern half of Queensland. The Port of Townsville is Australia's third largest multi-cargo port, handling up to 800 vessels per year, and has major road and rail links to the rest of the state in all directions. Outside of Townsville, the economy has a slightly different focus, with agriculture playing a major role including sugar, beef and horticultural products.

The regional population growth rate over the last decade averaged 1.1% per year, led by Townsville and Palm Island. The population is forecast to grow more than 50% by 2050 to around 364,000 people, with most growth in Townsville.



North Queensland Waste And Resource Recovery Strategy 2020-2030

Policy context and guiding principles

POLICY CONTEXT

ment	Action Plan 2019, including key action areas of:
/ern	banning the export of unprocessed waste plastic, paper, glass and tyres
Go	• reducing total waste generated in Australia by 10% per person by 2030
eral	80% average resource recovery rate from all waste streams by 2030
ede	 significantly increasing the use of recycled content by government and industry
	 phasing out problematic and unnecessary plastics by 2025
	 halving the amount of organic waste sent to landfill by 2030
	improve data quality and availability
	The Federal Government is also responsible for developing, implementing and or overseeing National Product Stewardship Schemes, collating and reporting waste data at the national level, the National Packaging Targets, and the National Food Waste Strategy.
'nt	Develops and implements the Waste Management and Resource
Jme	Recovery Strategy, with strategic priorities including:
verr	reducing the impact of waste on the environment
о Э	transitioning to a circular economy for waste
tate	building economic opportunity
Ñ	The State Government is also responsible for the implementation of various Infrastructure Plans, the Biofutures Roadmap, Plastic Pollution and Organics Action Plans, Containers for Change Scheme, and Renewable Energy Targets.
	Furthermore, in 2019 the State Government introduced the Queensland Waste
	Levy to drive behaviour change away from disposal as the preferred option.
Governments	 The combined NQROC councils collaborate to produce and implement the NQROC Waste and Resource Recovery Strategy, with key objectives of the strategy being: reducing waste to landfill implementing financially sustainable and responsible waste management practices
cal (developing regional markets and promoting the circular economy
Ľ	bringing the community on the journey

GUIDING PRINCIPLES

The rising national waste agenda

The effective closure of the China trade for mixed recyclables has created pressure for the Commonwealth to provide national leadership. The largely mothballed 2009 National Waste Policy was redrafted and National Packaging Targets were unveiled with ambitious 2025 goals for recycling and recycled content, while the recent National Food Waste Strategy is the response to the UN Sustainable Development Goal to halve food waste by 2030.

Circular economy

The circular economy model illustrates the actions and relationships that deliver the outcomes under the waste hierarchy. It conceives the supply chain as a network of pathways designed to circulate materials within their highest order uses, minimising waste and environmental impact. In general, the earlier in the circle the more effective the intervention, with 90% of the lifecycle impact of many products determined at the design stage.



Circular economy

Waste hierarchy

The waste hierarchy is applied globally as the core conceptual framework that underpins waste policy and strategy. It establishes the priorities in waste management based on environmental impact and broader sustainability principles, promoting efficient use of resources and reduction of disposal of waste to landfill.

This hierarchy combines with the circular economy concept to guide the development of actions within this strategy.



Waste hierarchy

Where are we now?

WASTE SERVICES AND INFRASTRUCTURE

Collection services

Collection of waste and recyclables from households is a core local government responsibility. The bin configurations and waste services differ between each council, and in some cases between urban and rural locations within a local government area.

Other services

All council transfer stations offer self-haul drop-off for residual waste, recyclables and garden organics.

In general, across the region, residual waste drop-off incurs a fee with the exception of one free dump weekend each year in Townsville and Burdekin, and four free vouchers per house in Hinchinbrook. Drop-off of recyclables and garden waste is offered free of charge, (with some exceptions), and drop-off of sorted domestic residual waste in the Burdekin also does not incur a charge.

The councils also provide commercial services to businesses within each local government area.



Existing infrastructure

The NQROC region is home to nine active landfills, including one privately owned facility that receives relatively small inputs of building waste. Each LGA has a principal landfill, while Charters Towers also operates three small rural landfills.

A large, modern materials recovery facility (MRF) processes all domestic kerbside recyclables in the region, and the northern part of Whitsunday Regional Council, as well as receiving commercial recyclables and container exchange materials.

There are two commercial recycling facilities in the region, which primarily handle clean commercial recyclables such as source separated cardboard.

For building waste, the region has one dedicated recycler, which has significant capacity at its current site, and some council landfills crush significant volumes of clean concrete for reuse.

Regional waste flows

KEY WASTE STATISTICS IN THE NQROC REGION



A comparison of the NQROC region's performance compared with the state average and state targets is provided below. The region outperforms state average in overall waste recovery (48% diversion compared to 45%). The overall performance obscures significant variation between streams, and falls short of the state targets as established in the Queensland Waste Avoidance and Resource Recovery Strategy.

	% Diversion from Landfill			
Waste Type	NQROC	State Average	State Target 2025	State Target 2030
Combined waste (all categories)	48	45	65	80
Municipal solid waste (MSW)	36	32	55	70
Commercial and industrial (C&I) waste	36	47	65	80
Construction and demolition (C&D) waste	76	51	75	85

Other waste streams

A further 37,000 tonnes of regulated waste was received at landfills, primarily contaminated soils and asbestos. Additional items being recovered at the waste facilities include tip shop items, metals, cardboard, fluorescent light bulbs, gas bottles and fire extinguishers.



Where do we want to get to?

STRATEGIC OBJECTIVES

Waste and resource recovery solutions must be grounded in the local context. What works in Brisbane or Europe or anywhere else may not be fit for purpose in NQROC. This is in part due to the basic factors of size, location and cost, but solutions are also a reflection of the aspirations of the community.

The following key strategic priorities have been formulated to reflect the common priorities of each council. They have guided the selection and development of the actions contained within this document.

VISION STATEMENT

Less waste in the North and more resources together

OBJECTIVE 1:

REDUCE WASTE TO LANDFILL

Expected outcomes

- Reduced waste to landfill to meet State Government targets, minimise the impacts of waste on the environment and community, and avoid the loss of resources from the economy.
- 2. Maximised lifespan of existing assets (as some councils are facing landfill capacity challenges over the coming decades).
- 3. Waste avoidance is prioritised, and resource recovery improved.
- Realise step-changes in organics and residual waste processing, supported by incremental improvements in recycling and other streams.
- 5. Opportunities for councils to influence diversion of C&I and C&D waste from council landfills are considered.

OBJECTIVE 2:

FINANCIALLY SUSTAINABLE AND RESPONSIBLE WASTE MANAGEMENT

Expected outcomes

- Actions under the Strategy are financially viable and represent responsible spending of ratepayer funds, delivering value to the community (broadly defined rather than just the cheapest option).
- Investment is supported by detailed business cases, with a clear assessment of financial viability, feasibility, key risk factors and optimal ownership models (councils, State Government or private sector).
- Programs are funded and supported to ensure their longevity, with options to be considered as needed.

OBJECTIVE 3:

REGIONAL MARKET DEVELOPMENT AND CIRCULAR ECONOMY

Expected outcomes

- Strong local markets support sustainable resource recovery programs, while providing local economic development and employment benefits.
- 2. Value-added recovered resources develop more stable and diverse market opportunities.
- 3. Local reuse and remanufacturing opportunities are supported, where viable, by collaborating with local industry and Council leadership in procurement of recycled content materials where at the appropriate standard.
- 4. Circular economy principles are appropriately acknowledged, accepting councils only impact part of the 'circle'.

OBJECTIVE 4:

BRING THE COMMUNITY ON THE JOURNEY

Expected outcomes

- The community supports and helps deliver the Strategy, which is well communicated and aligned with community expectations.
- Community engagement, including appropriate education programs, is harnessed to support implementation.
- 3. There is a secure social license to develop new waste infrastructure through meaningful engagement.

How do we get there?

There is a clear need and ambition to improve the recovery rate across the region in order to reduce environmental impact, optimise the life of the landfills, manage cost pressures and support the ongoing development of a local circular economy. For each priority objective there are a range of delivery options; the key is to determine the pathway that best fits the NQROC. The following outlines key waste service solutions which may be investigated to drive change in the way waste and resources are managed across the NQROC. More detailed action plans have been developed for each individual member council.

IMPROVED RECYCLING PERFORMANCE

With 26% of materials in the region's general waste bins being misplaced recyclable materials, the need for commitment to long term education and improved recycling performance is clear, and can be achieved by focusing on:

- Collecting more recyclables via enhanced education, targeting recycling at events, and leveraging existing product stewardship schemes including the Containers for Change container refund scheme (CRS)
- Adding value to recyclables opportunities exist for additional recycling infrastructure such as plastic flaking or paper pulping plants which will add value to recyclables and provide opportunities to facilitate local remanufacturing, which in turn will keep resources in regional markets longer.

Next steps to support improved recycling performance:

- Consider options to expand use of the Containers for Change CRS depots and transport for extra recycling streams
- Expand recycling at public events through council operations or via recycling clauses in event approvals
- Assess the potential for a regional reprocessing facility for target plastic(s), together with collection networks and end-market support
- Smaller councils to consider micro-scale glass crushing options at local facilities
- Assess options for specific collection and reuse of clean paper and cardboard
- Develop educational programs and deliver to schools, workplaces and community groups. Programs should provide clear, simple messages to increase household recycling and reduce recyclable contamination.

DIVERTING ORGANICS FROM LANDFILL

The largest fraction of the residual municipal waste bin is organic material, which across the region accounts for 38% of this disposal stream. Each year, this equates to around 12,000 tonnes of food scraps, and 9,000 tonnes of garden clippings disposed of in landfill from domestic premises alone. Enhanced organics diversion may be achieved via:

- Introducing organic waste collection

 via mandating a third bin at the kerbside for garden organics, or garden organics and food organics
- Introducing enhanced processing of organic waste – via more intensive conversion of diverted product into compost to deliver a product with broader application and appeal.

Next steps to support diversion of organics from landfill:

- Investigate kerbside organics collections in the NQROC region, including viability, model and timing
- Investigate the optimal organics processing technologies for the NQROC region, aligned to the preferred organics collection option
- Develop a food waste avoidance strategy for the community, and potentially businesses/institutions.

MANAGING RESIDUAL WASTE

Alternative waste treatment:

Improved recycling and recovery of organics will address major components of residual waste, but this leaves a significant volume still requiring disposal in landfill. An alternative, or complementary approach, is to process the residual stream directly to recover specific value (in the form of heat and or power) and reduce disposal volume.

Energy from Waste (EfW) technologies such as combustion and gasification recover the inherent value in waste and can be scaled in size to suit NQROC waste flows. A preliminary feasibility analysis indicates that such technologies may be suitable for the NQROC region. Furthermore, the feasibility of a small scale EfW facility in NQROC increases over time as the Queensland Waste Levy rate continues to increase annually.

Disposal and transfer:

An aggregated assessment of regional landfill capacity and needs indicates a growing reliance on the Stuart Landfill in Townsville, which has capacity for an estimated 10 years within its currently designed footprint. Whilst this site has a total approved capacity to accept waste until around 2044 based upon current estimates, given the location of the site at the southern entry to Townsville, maintaining the social license to continue landfilling at this location will become more difficult to manage as the site grows and encroaches closer to the highway.

Furthermore, it is likely that in the near to mid future, the adjoining smaller councils (with the exception of the Burdekin Shire) may need to transport waste to a large regional facility, in all cases almost certainly located near Townsville.

Next steps to support improvement management of residual waste:

- Analyse EfW suitability for the region, including industry and community engagement, tours of existing facilities, and review of ownership options
- Assess the need for additional longterm landfill capacity in the region and waste transfer needs to support any region-wide solutions
- Review waste transfer needs to support a region-wide solution for residual waste management

IMPROVE COMMERCIAL AND CONSTRUCTION WASTE OUTCOMES

Councils are not directly responsible for nonmunicipal waste, however council landfills receive significant quantities of commercial and construction waste. Key opportunities to improve recovery of these waste streams are associated with additional regional infrastructure to support tyre reprocessing, construction and demolition material recycling, timber reprocessing, and paper/cardboard collection and processing.

Next steps to support improved commercial and construction waste outcomes:

 Consider joint procurement of mobile equipment for processing C&D waste and or timber.



PETERBOROUGH ERF, UK

- 85,000t per annum combustion of MSW
- 30-year contract
- 7.25MW output (15,000 homes)
- £72M capex (~\$145M), funded by Council
- Completed late 2015 (2.5-year construction)
- 28 operational jobs

ENHANCED REGIONAL MARKET DEVELOPMENT

Recyclers rely on the scale and certainty of end markets for recovered materials to underpin revenues. Joint regional procurement of recycled materials could provide the confidence for investment in recycling capacity and technologies able to produce materials to specifications. The use of recycled content in civil works and promotion of compost benefits may help develop regional markets for diverted organics and construction materials. Furthermore, the development of guidelines for sustainable procurement and strengthening partnerships in the supply chain may also contribute to enhancing regional markets.

Next steps to enhance regional markets for recovered product include:

- Support council works teams to assess and promote specific opportunities to use organics and other recycled materials
- Develop or support the development of technical specifications for the incorporation of recycled content in lieu of virgin materials
- Identify local products suitable for incorporation into regional markets and identify providers to assist with processing to the required specification
- Revise council procurement processes and technical specifications to preference local suppliers of recycled materials, where suitable
- Investigate the potential for a regional tyre reprocessing facility and associated collection network.

MANAGING PROBLEM AND HAZARDOUS WASTE

The region has variable systems and facilities for managing hazardous wastes such as batteries and paint, and problem wastes such as mattresses and gas bottles. Options which may improve the management of these wastes include:

- Collection centres and events including standardising regional collection centres and undertaking a region-wide program to cost-effectively capture hazardous waste
- Community awareness implementation of a standard suite of regional communication messages may foster community understanding and promote correct behaviour
- Mattress reprocessing development of a local mattress reprocessing plant to strip mattresses into their constituent parts will assist in the management of bulky wastes which are currently problematic in landfills
- Emerging waste investigation into solutions for the management of emerging wastes such as solar panels will become necessary as the number of panels requiring disposal increases over time.

Next steps to improve the management of problem and hazardous waste include:

- Assess the potential of a consistent regional approach and messaging for problem wastes
- Explore mattress recycling models, including collection options such as drop-off events/locations
- Evaluate regional options to improve the capture of problem and hazardous wastes, including emerging waste.

IMPROVE WASTE DATA

Sharing data on waste volumes, composition and recovery will support stakeholder buy-in, investment and monitoring of the Strategy. Improvements in data management may be achieved via:

- Streamlining of regional data potentially via a regional platform
- Increasing waste data visibility via publishing waste data on council websites
- Focusing on data quality to ensure it is suitable to inform regional waste decisionmaking, including periodic composition audits
- Assigning ownership for data management

 via consideration of employing a data co-ordinator to increase consistency and assist regional data collection, verification and publishing.

Next steps to improve waste data quality:

 Investigate options to enhance the quality and transparency of council waste data, including considering the role of a regional waste data coordinator.

DISASTER PLANNING

Disaster waste management planning is critical in tropical regions. Given the scale at which natural disasters can impact, a regional approach offers potential benefits. Disaster waste planning may be improved by:

- Regional planning and response including considering opportunities to collaborate around planning, shared resources, and emergency response plans
- Review of council Disaster Management Plans

 to focus on resource recovery opportunities, sharing resources and the merits of securing pre-approval for temporary sites for transfer and processing at each nominated location
- Landfill capacity calculation of long-term landfill capacity should include investigation into the capacity of sites to cater for high volumes of residual waste generated in a natural disaster, or in an emergency situation such as unexpected closure of other residual waste processing facilities.

Next steps to improve disaster planning include:

• Councils to develop a regional approach to disaster waste to coordinate responses, share equipment, and improve resource recovery.



WASTE AVOIDANCE AND COMMUNITY EDUCATION

Initiatives encouraging waste avoidance and product reuse lessen end-of-life volumes, while waste behaviours are key to many of the initiatives in the Strategy. Education has been integrated into specific action areas and should be supported by regional campaigns. Councils may consider the following to improve community education and promote waste avoidance:

- Recycling education programs and resources

 building on existing regional programs through new shared resources and messages. Consideration should also be given to employing a regional waste education officer
- Funding for regional education resources Councils may consider alternative funding mechanisms for regional education programs, such as a local levy on waste to landfill
- Regional food waste avoidance programs adaptation of programs such as the 'Love Food Hate Waste' brand combined with building research about household food consumption and waste will help in avoiding food waste
- Reuse centres and zero waste networks

 optimisation of networks via colocation with councils or other services such as repair businesses or charities
- Price signals for behaviour change

 including variable waste charges
 to incentivise households to recycle
 and reduce waste to landfill.

Next steps to improve community education and promote waste avoidance:

- Investigate options for regional education and engagement programs on recycling, food waste, and other priorities, and develop consistent messaging
- Consult around reuse centre options and dynamics
- Research other councils using price signals to incentivise preferred behaviours
- Investigate the benefits of co-location of reuse and repair centres with council or other services, such as an eco-hub and charities
- Investigate the use of variable pricing arrangements to incentivise improved kerbside recycling.

REDUCING LITTER AND ILLEGAL DUMPING

Illegal dumping and litter impact the environment and can affect human health. Furthermore, clean up of illegal dumping is expensive for councils to collect and dispose of. Efforts such as the below, implemented at a regional level would offer multiple benefits and should result in reducing the incidence of litter and illegal dumping:

- Improving access to services via expanding kerbside hard waste services, improving local drop-off infrastructure, promoting peer-topeer exchange platforms, and expanding networks for distributing reusable materials
- Improving building waste recovery via other actions mentioned above will create markets for recovered product and help reduce the incentive for illegal dumping
- Implementation of regional compliance and communication programs – such as a regional investigation and enforcement program or team to trace and deter large scale incidents.
 Such a program could be implemented in line with a region-wide education campaign
- Regional action on single-use plastics to complement the Queensland Plastic Pollution Reduction Plan in conjunction with council policies restricting the purchase of disposable plastic products, and bans on plastics at events.

Next steps to reduce litter and illegal dumping include:

- Councils to review current services and options at differing scales to encourage recycling and improved practices
- Investigate the development of compliance and enforcement programs, supported by consistent communications
- Councils to develop a Single-Use Plastics Action Plan to complement the Queensland Plastic Pollution Reduction Plan.

What does success look like?

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The North Queensland Waste and Resource Recovery Strategy 2020-2030 sets a 10-year direction for the region for optimising resource recovery and reuse, evolving waste facilities, managing residual waste and continuing to facilitate a clean and healthy environment.

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THIS IS CAPTURED IN THE STRATEGY'S OVERARCHING VISION:

Less waste in the North and more resources together

The Strategy aims to enhance regional collaboration in order to deliver solutions that could not be delivered by a single council. Over the life of the Strategy, NQROC members will strive to deliver the following achievements which will signal the successful implementation of the action plans:

Circular culture

Residents, businesses and councils recognise products and materials as valuable resources by making conscious choices about their consumption, use, recovery and end-of-life treatment.

Sustainable services

Council waste management facilities and services are fit for purpose in terms of quality service offerings, recovery performance, reasonable cost, longevity and overall satisfaction.

Recycling revolution

Opportunities to reuse products and recycle materials are maximised, including development of facilities and end markets in the region that build local industry and support the resilience of Australian recycling.

Red bin recovery

Councils have secured a solution to divert a significant portion of general waste from landfill to higher-value use, in the process extending the useable life of existing landfills.

Liveable lifestyle

The region retains its status as a healthy, attractive and liveable region.

Active leadership

Councils will continue to monitor, pursue and advocate for best practice in waste and resource management.





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