

TOWN OF PORT HEDLAND WASTE MANAGEMENT STRATEGY

2022-2027

Prepared by Rawtec in consultation with
the Town of Port Hedland



Document verification

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Acknowledgement

The Town of Port Hedland would like to acknowledge the Kariyarra, Ngarla and Nyamal people as the Traditional Custodians of the Town of Port Hedland lands. We recognise their strength and pay our respects to their Elders past and present. We extend that respect to all Aboriginal and Torres Strait Islander people of the local community and recognise their rich cultures and their continuing connection to land and waters.



Executive Summary

The Town of Port Hedland Waste Management Strategy 2022 – 2027 sets the strategic direction for waste management at the Town of Port Hedland ('the Town') over the next five years. It builds on our 2018 Waste Management Strategy and considers the region's industrial activity, unique location, waste infrastructure and our population's waste generation and disposal trends. We have aligned with state and national trends in waste management including consideration of the circular economy.

The Town is a globally significant mining and resource hub with high levels of activity and a port that is a critical piece of economic infrastructure for the nation. The Town's Vision and Mission consider the environment and sustainability, and are relevant to waste and this strategy.

Vision

The Town's strategic vision is: To be Australia's leading Port Town embracing community, culture and environment.

Mission

Our mission is: To be a cohesive team working together to provide efficient, sustainable and quality services to our diverse community who are proud to call Port Hedland home.

Waste flows managed by the Town

The Town manages a large amount of waste (~85,000 tonnes per year) and the majority of this is from industrial activity. Waste generation is 5 tonnes per person per year, significantly higher than the WA average of 2 tonnes per person per year. Municipal solid waste, which is the waste generated by households, makes up only 13 percent of all waste generated in the region. This is significantly lower than the Western Australian average of 30 percent. This data demonstrates the high level of industrial activity in the region and the importance of our waste infrastructure including our landfill to service both residents and the commercial sector. At kerbside, we recently introduced comingled recycling which has led to diverting valuable resources from households to recycling. Through this initiative we have diverted over 600 tonnes from landfill and our kerbside diversion rate is now 10 percent, up from 0 percent.

Waste direction

WA and Australia are transitioning towards the circular economy where waste is minimised and resources better managed. There is a continued focus on diverting recyclables from landfill. The Town is on a journey towards being more 'circular' and extending the life of our landfill wherever possible. When making decisions relating to waste and resource management, we must consider the financial viability of the idea, the risk to the Town and the region, and feedback provided by our residents. With this in mind and considering the waste direction of WA and Australia, we have identified four priority areas for the Town over the next five years (further description in Table E1):

- 1. Sound landfill management and planning to lower risk for the Town and the region**
- 2. Conserve landfill space by maximising material separation and recovery**
- 3. Circular economy initiatives including waste reduction**
- 4. Collaboration across the Pilbara and other regions.**

Our Waste Management Strategy 2022 - 2027 focuses on four waste priorities for the Town:

Table E1: Waste priorities for the Town

Waste priorities for the Town of Port Hedland 2022-2027

1. Sound landfill management and planning to lower risk for the Town and the region

The landfill is a key asset for the region, including for our residents and industry. Our priority is proper management of our landfill throughout its lifespan and planning for its closure. We will seek to understand the full cost of owning and running the landfill considering operating and closure costs. We will improve safety at the landfill and implement strategies to minimise contamination of our recycling streams offered at the site.

Focus areas:

- 1.1. Financial plan and pricing model
- 1.2. Landfill Operations Plan and Landfill Closure Plan
- 1.3. CRC development and associated activities
- 1.4. Other landfill development and upgrades to increase safety, ensure it is appropriately resourced, align with WA government regulations and minimise contamination
- 1.5. Beneficial reuse of materials on site, if appropriate from an environmental and cost perspective
- 1.6. Plan for landfill closure and opening of a new landfill (consider costs, steps, zoning etc)

2. Conserve landfill space by maximising material separation and recovery

We want to conserve as much landfill space as we can so it can continue to provide a disposal avenue to the region for as long as possible. We will investigate several options to maximise material recovery including an opt in garden organics service for our residents and tyre recycling. We will continue to recycle a range of materials brought to the site include green waste, metals and batteries. We will also consider the role of education and explore alternative methods of driving the community to reduce waste and contamination and increase recycling.

Focus areas:

- 2.1. Education to minimise contamination at kerbside and the landfill and maximise recycling, including education at schools, mining sites and community groups
- 2.2. Increased material separation, recovery and sale/purchase
- 2.3. Explore using materials brought to landfill as refuse derived fuel feedstock.

Waste priorities for the Town of Port Hedland 2022-2027

3. Circular economy initiatives including waste reduction and education

The circular economy provides the opportunity to better manage resources and provide financial savings. We will look to change how we procure goods including potentially buying back recycled materials, and other initiatives the Town can do to progress towards being more circular.

Focus areas:

- 3.1. Explore opportunities for Council contribution to the circular economy including waste generation reduction at the Town. This includes a procurement strategy for the Town that encourages recycled material in products, reusable materials, and minimises packaging/wastage.
- 3.2. Product stewardship opportunities to maximise recovery
- 3.3. Illegal dumping/litter prevention mitigation initiatives and education

4. Collaboration across the Pilbara and other regions

There are opportunities to work with stakeholders across the Pilbara and other regions. We will explore these including joint procurement of equipment and waste services, funding opportunities and knowledge sharing.

Focus areas:

- 4.1. Knowledge sharing, funding, and joint procurement opportunities across the region.

The Town of Port Hedland Waste Management Strategy demonstrates how the Town can continue to improve how it manages waste while also providing critical ongoing waste infrastructure that services our highly active and exciting region.



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Foreword

We are pleased to present the Town of Port Hedland Waste Strategy for 2022 - 2027. XXX
XXX

XXX
Mayor

XXX
Chief Executive Officer



Glossary and abbreviations

Glossary

Term	Description
Circular economy	According to Western Australia’s Waste Avoidance and Resource Recovery Strategy 2030, a circular economy means transitioning from the current take-make-use and dispose system to a material efficiency approach which aims to keep products, components and materials at their highest utility and value for as long as possible.
Comingled recyclables	Household recyclables collected in yellow-lidded bins at kerbside. Includes paper, cardboard, bottles and cans, glass, rigid plastics and milk and juice cartons.
Commercial and industrial (C&I) waste	Waste produced by institutions and businesses. It includes waste from mining companies, schools, restaurants, offices, retail and wholesale businesses and industries, including manufacturing.
Construction and demolition (C&D) waste	Waste produced by demolition and building activities, including road and rail construction and maintenance, and excavation of land associated with construction activities.
Contamination	Materials placed in a recycling stream that are not recyclable within that system. For example, plastics in garden organics recycling streams, or food in comingled recycling bins.
Municipal solid waste (MSW)	Waste and recyclables generated by residents/households.
Service Entitled Premises (SEPs)	Households provided a kerbside waste bin(s) and waste collection by the Town.
Waste hierarchy	According to Western Australia’s Waste Avoidance and Resource Recovery Strategy 2030, the waste hierarchy ranks waste management options in order of their general environmental desirability. The waste hierarchy is used alongside other tools (including economic, social and environmental assessment tools) to inform decision making. Waste avoidance is the most preferred option in the hierarchy.



Abbreviations

Term	Full form
BAU	Business as usual
C&D	Construction and demolition
C&I	Commercial and industrial
EfW	Energy from Waste
FOGO	Food organics garden organics
MSW	Municipal Solid Waste (residential waste)
RDF	Refuse derived fuel
SEP	Service Entitled Premises



1. Introduction and background

1.1. Introduction

The Town of Port Hedland Waste Management Strategy 2022 - 2027 ('Waste Management Strategy') sets the strategic direction for waste management in the Town of Port Hedland ('the Town') over the next five years. It builds on the 2018 Waste Management Strategy and considers the Town of Port Hedland's disposal trends, industrial activity, location, waste infrastructure and initiatives, and trends in waste management in WA and across Australia.

This Waste Management Strategy has a five year outlook but will be reviewed and updated every 2.5 years.

1.2. The Town of Port Hedland

The Town of Port Hedland is in the Pilbara region in northern Western Australia. The Town covers 18,800 km² and is 1,800 kilometres north of Perth. The Town is a globally significant mining and resource hub, and the Port is one of the most significant pieces of economic infrastructure in Australia¹. Port Hedland's population is approximately 15,500² and there is a high degree of 'churn' with around 20 percent of the population arriving and departing each year based on industry activity³.

The Town has several precincts within the local government boundary. These include but are not limited to Port Hedland, which is the residential and commercial area adjacent to the Port, the Port itself, which is the largest bulk export terminal in the world that exported 538 million tonnes in 2020 and accounts for 57% of all resource exports from Australia⁴, South Hedland which is the main residential and retail/commercial service area for the region and where the landfill is located, Wedgefield (an industrial area and transport depot that has the container deposit scheme facility), and the Airport precinct.

Unless otherwise noted, reference to the 'Town of Port Hedland' and 'The Town' refers to the Council and the Town of Port Hedland local government area which includes the precincts outlined above.

¹ See Town of Port Hedland Draft Economic Development and Tourism Strategy 2021

² Profile ID Town of Port Hedland

³ See Town of Port Hedland Draft Economic Development and Tourism Strategy 2021

⁴ See Town of Port Hedland Draft Economic Development and Tourism Strategy 2021

1.3. The Town's Vision and Mission

The Town considers sustainability and the environment in its actions and services. This is reflected in its Vision and Mission, stated in its Corporate Business Plan for 2018-2022. The Town of Port Hedland's Vision and Mission are considered in this Waste Management Strategy.

The Town of Port Hedland's Vision

The Town's strategic vision is: To be Australia's leading Port Town embracing community, culture and environment.

The Town of Port Hedland's Mission

Our mission is: To be a cohesive team working together to provide efficient, sustainable and quality services to our diverse community who are proud to call Port Hedland home.

Port Hedland foreshore



2. Strategic context

2.1. Guiding concepts

Waste hierarchy

This Waste Strategy considers the waste hierarchy when evaluating initiatives and forming actions for the Town of Port Hedland. The waste hierarchy is a widely accepted decision-making tool which is set out in the Waste Avoidance and Resource Recovery Act 2007 and WA's Waste Avoidance and Resource Recovery Strategy 2030. The waste hierarchy ranks waste management options in order of their general environmental desirability. Avoiding waste generation in the first instance is the most preferred option, followed by recovery options (reuse, reprocessing, recycling and energy recovery), then disposal to landfill. The waste hierarchy is used alongside other tools (including economic, social and environmental assessment tools) to inform decision making.

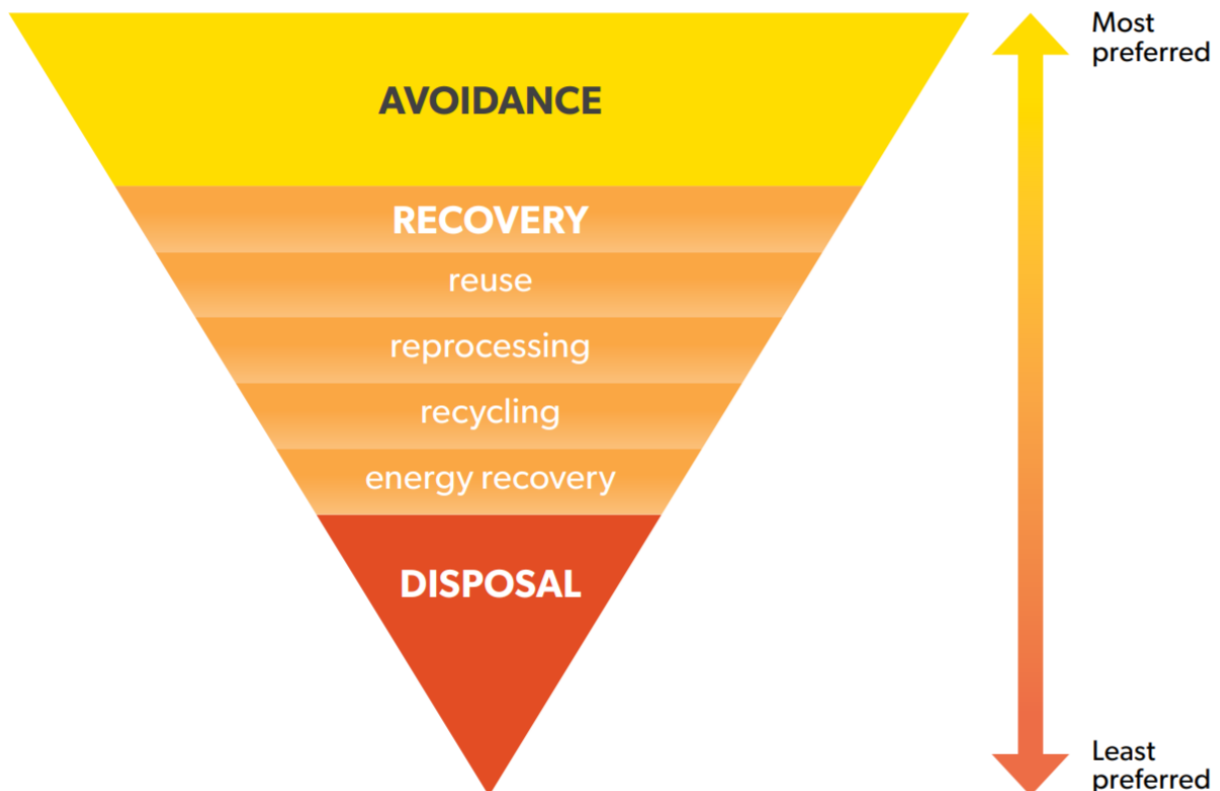


Figure 1: Waste management hierarchy⁵

⁵ From https://www.wasteauthority.wa.gov.au/images/resources/files/2019/10/Strategic_Direction_-_Waste_Avoidance_and_Resource_Recovery_Strategy_2030.pdf

Circular economy

Typical consumer systems follow make-take-dispose models, which consume materials in an inefficient manner and can negatively impact the environment. A circular economy model, detailed in Figure 2, is characterised by the avoidance of waste through the efficient and productive use of materials throughout their life cycle. This is achieved by prioritising the reduction of waste through good design and by encouraging the reuse and repair of items to keep materials within the system for as long as possible before disposal. When items can no longer be reused or repaired, they should be made available for recycling and energy recovery processes, with minimal materials sent to landfill if they cannot be recovered. An effective circular economy requires the development of markets for recovered materials to complete the cycle and maximise material use.

A circular economy encourages manufacturers and retailers of products to provide end-of-life options for the recycling and energy recovery stage of the cycle. This might include a service that assists consumers with maintenance or disposal of a product. While a circular economy aims to reduce environmental impacts, it has the added benefits of maximising the economic value obtained from resources, encouraging innovative thinking, stimulating economies, generating business in existing areas and encouraging the development of new businesses and jobs.

The circular economy is in WA's Waste Strategy 2030, and there are actions the Town can take to contribute to the circular economy.

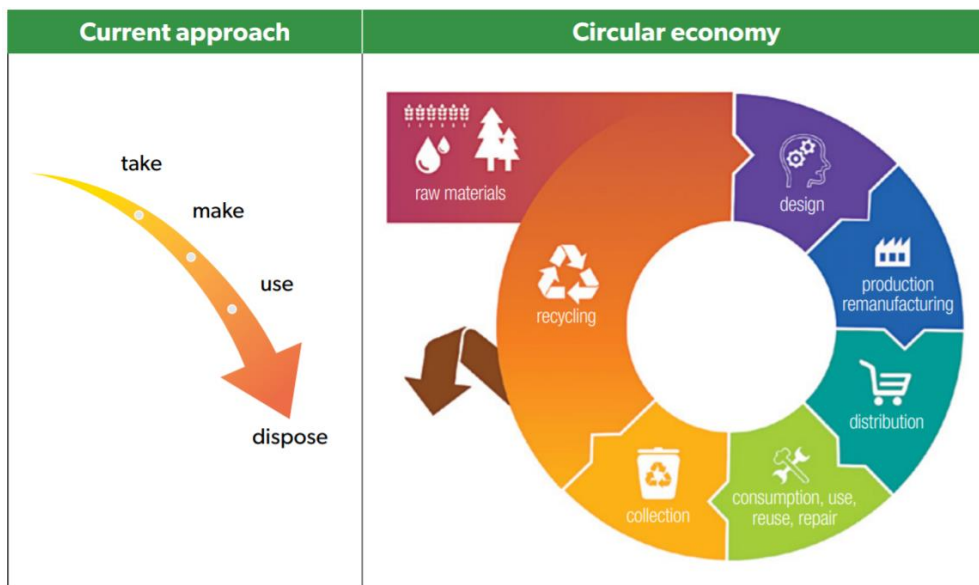


Figure 2: Circular economy framework compared to a current linear approach according to WA Waste Strategy⁶

⁶ From https://www.wasteauthority.wa.gov.au/images/resources/files/2019/10/Strategic_Direction_-_Waste_Avoidance_and_Resource_Recovery_Strategy_2030.pdf

According to the Waste Avoidance and Resource Recovery Strategy 2030, in a circular economy:

- Renewable materials and energy are preferred
- Materials are sorted and retained in the economy for as long as possible
- Materials are recovered as high up the waste management hierarchy as possible
- There is a preference to manage materials locally
- The economic value of materials, employment and investment are accounted for when considering material management
- Products are designed and manufactured to minimise environmental impact through whole of life.



2.2. Key stakeholders for this Waste Strategy

We must consider a range of stakeholders when implementing ideas and initiatives in this Waste Management Strategy. These are highlighted in Figure 3 below.



Figure 3: Stakeholders influencing/ impacted by the Waste Management Strategy



2.3. Town of Port Hedland 2018 Strategy

In 2018, Talis worked with the Town to develop the Waste Management Strategy. This 2022 Strategy builds on the work done in the 2018 Strategy. Table 1 below highlights some of the targets in the 2018 Strategy and what has since been achieved.

Table 1: Targets in the 2018 Waste Strategy and associated achievements

Hierarchy	Strategic Option	Action taken
Avoid, reduce, reuse	Integrated Waste Education Program	Not completed
	Providing information to commercial business operators to improve their waste management practices	Not completed
	Waste Education Officer	Not completed
	Reuse Shops	Plan to incorporate into CRC, not completed
	Free Trade Website	Not completed
Recycle	Green Waste Mulching	Commenced
	Scrap Metal Recycling	Commenced
	Tyre Recycling	Underway/further investigation
	Battery recycling	Commenced
	E-waste recycling	Commenced
	Commingle Recycling Collections	Commenced
	Mattress Recycling	Not completed
	C&D Waste Processing	Underway/further investigation
	Modern Community Recycling Centre	Postponed
	Container Deposit Scheme	Introduced in WA. Depot is set up and run by NGO
Recover and Treat	Kerbside Organics Collections	Not completed
	Organic Waste Processing (i.e. Windrow Aeration & Forced Aeration)	Not completed
	Special Waste Processing (e.g. biodiesel from cooking oil, diesel from waste plastics)	Not completed
	Thermal Energy from Waste (i.e. Gasification)	Not completed



2.4. Related documents and targets

Related documents

Figure 4 shows how this Waste Management Strategy fits with related national, state and local documents. These documents were considered in the development of the Waste Management Strategy.

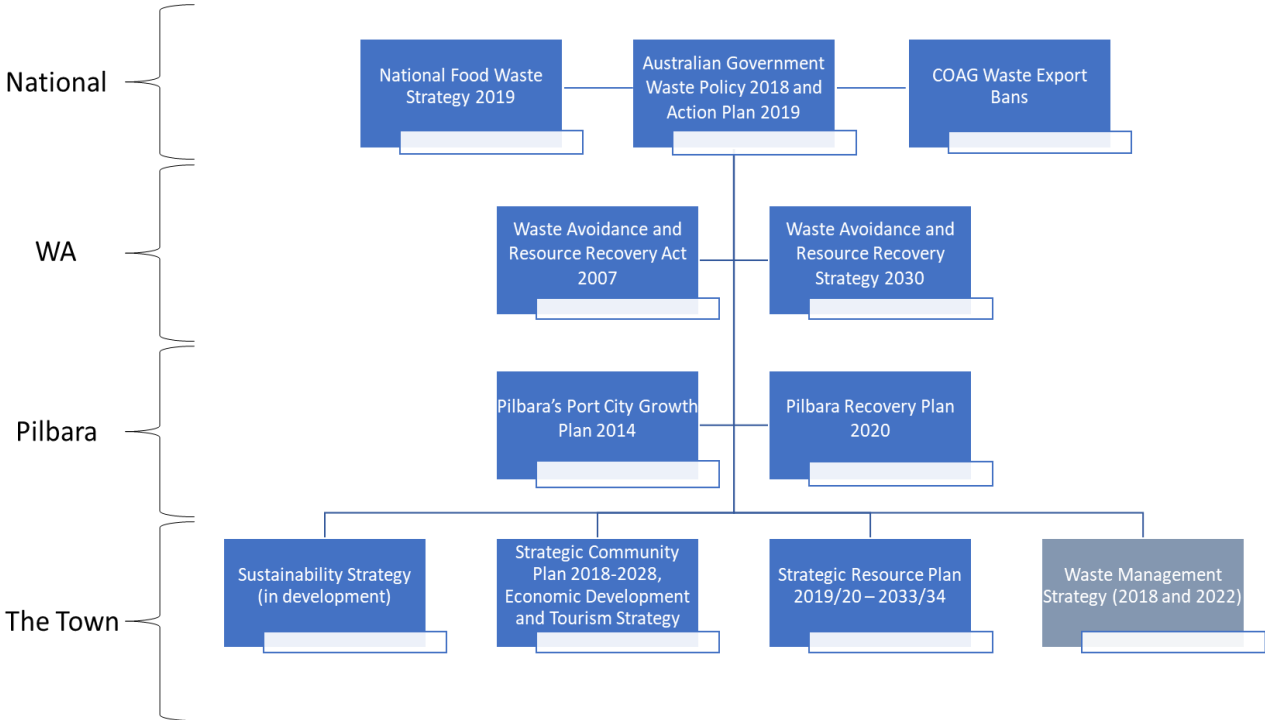


Figure 4: Town of Port Hedland Waste Strategy and relation to other relevant documents



Targets and focus

National

Australia has several waste-related targets. The targets in the National Waste Policy 2018 and Action Plan 2019 relate to applying the circular economy principles for waste, recycling and resource recovery. There are 14 strategies including waste avoidance, changing design to minimise waste, knowledge sharing, education and behaviour change, reducing organic waste, product stewardship and increasing industry capacity⁷. National targets are⁸:

- Ban the export of waste plastic, paper, glass and tyres.
- Reduce total waste generated in Australia by 10% per person by 2030.
- 80% average resource recovery rate from all waste streams following the waste hierarchy by 2030.
- Significantly increase the use of recycled content by governments and industry.
- Phase out problematic and unnecessary plastics by 2025.
- Halve the amount of organic waste sent to landfill by 2030.
- Make comprehensive, economy-wide and timely data publicly available to support better consumer, investment and policy decisions.

WA

Western Australia has three objectives: generate less waste (avoid), recover more value and resources from waste and protect the environment. There are various targets set across the state overall and targeted at waste generators and waste managers. By 2030 the MSW and C&I per capita waste reduction target is 10% while the C&D target is 30% reduction. The MSW resource recovery target is 60% in 'major regional centres' and the community is moving toward zero littering and zero illegal dumping, while the C&I and C&D target is 80% recovery by 2030. All waste facilities are expected to adopt resource recovery better practice, and all waste is expected to be managed and/or disposed using better practice approaches. This includes local government, private industry and state entities.

Mining companies

Some of the major mining companies in the region have made a commitment to achieving net zero emissions in the future. This is relevant as reducing material use and diverting materials from landfill reduces emissions.

⁷ See National Waste Policy 2018

⁸ See National Waste Policy Action Plan 2019



Australia is transitioning towards a more circular economy, with improved management of our resources and emissions reductions.



3. Waste

management in
the Town of Port
Hedland

3.1. The Town's waste performance and actions

Key waste data and recent actions for the Town are summarised below.



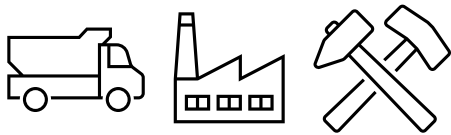
85,000

tonnes per year of solid waste received at South Hedland Landfill Facility.



55,000

tonnes per year of solid waste landfilled at South Hedland Landfill (around 30,000 tonnes are used on site to build cell walls and for landfill cover).



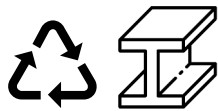
87%

of waste generated comes from the commercial/industrial and construction/demolition sectors.



4,000

tonnes per year of organics captured for recovery at the landfill.



1,000

tonnes per year of metals (500 tonnes) and batteries (500 tonnes) are recycled



Kerbside comingled recycling service commenced in 2021, collecting 55 tonnes per month.



E-waste (~20 tonnes per annum) is captured and recycled, as well as gas bottles, fire extinguishers etc.



Improved waste data tracking



The Town of Port Hedland has undertaken several actions since the previous Waste Management Strategy. This includes the roll out of kerbside comingled recycling and beneficially reusing materials on our landfill site.



Overall tonnes generated in the Town of Port Hedland, by sector

Overall tonnes generated in the Town of Port Hedland by sector is included in Figure 5 below. Key points are:

- The Town of Port Hedland supports a high industry activity, and this is reflected in the tonnes generated by sector.
- Municipal Solid Waste (MSW), which is the waste generated by households, makes up only 13 percent of all waste generated in the region. This is significantly lower than the Western Australian average of 30 percent⁹.
- Waste generation across all waste streams per capita is 5 tonnes/person/year, significantly higher than the WA average of 2 tonnes/person/year.
- Managing commercial and industrial wastes (including construction and demolition waste) is critical in the region.

Town of Port Hedland 2020-2021 tonnes by sector

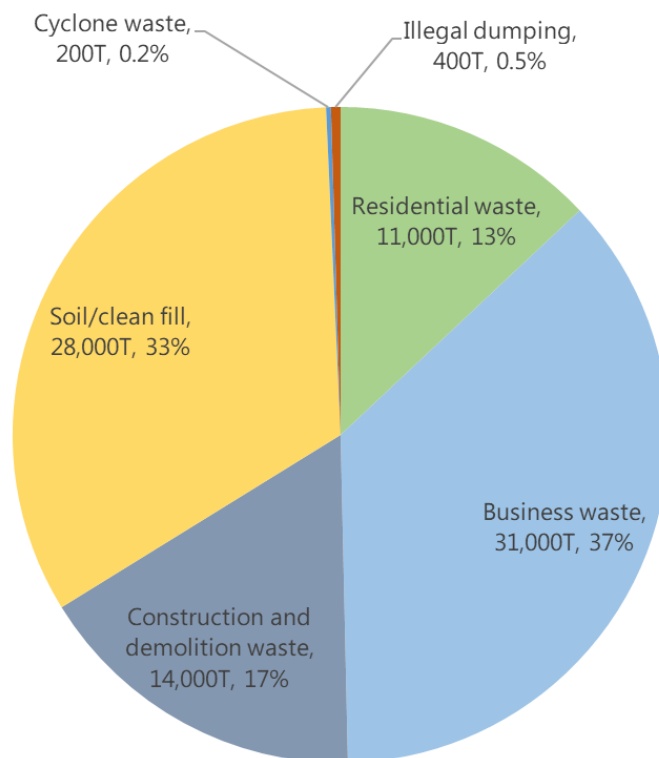


Figure 5: Overall tonnes generated in the Town of Port Hedland, by sector¹⁰

⁹ See Recycling Activity in Western Australia 2018-19 by Ask Waste Management Services, July 2020

¹⁰ C&I = commercial and industrial, C&D = construction and demolition, MSW = municipal solid waste

By destination

Figure 6 shows the destination of the waste delivered to South Hedland Landfill Facility. Of the 85,000 tonnes generated in 2020-21¹¹:

- Most of the waste is disposed to Landfill.
- Just over 1,700 tonnes are sent out of the region for recycling (metals, batteries, comingled recycling etc.).
- Green waste shredding is taking place.
- Recycling is 2% by weight when not including green waste or beneficial reuse on the landfill (e.g. clean fill/soil).

Town of Port Hedland 2020-2021 tonnes by destination

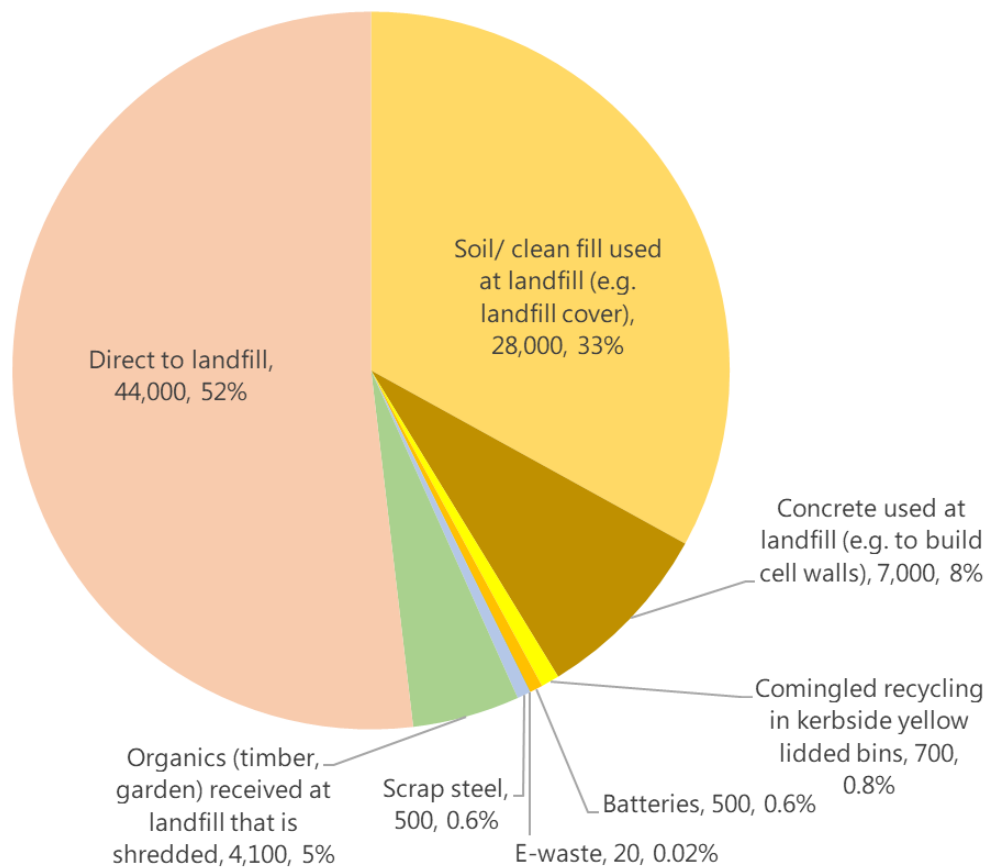


Figure 6: Tonnes by destination

¹¹ Comingled recycling data for the 2021-22 financial year was used as this better reflects current trends.



Commercial truck disposing green waste to green waste area at the South Hedland Waste Management Facility



MSW waste - kerbside

Residential waste and recycling tonnes discarded in kerbside bins over the past five years are included below (Figure 7). The Town has increased diversion from landfill from 0% to 10% by introducing kerbside comingled recycling bins. Contents from these bins goes to a recycling facility that separates out the materials (plastics, glass, cardboard, metals) and sells these to recycling markets. Anecdotally, contamination rates are high in recycling bins.

Kerbside audits indicate that over a third of waste in general waste bins is organic material (food organics garden organics (FOGO) material). This proportion is likely to be higher now that the container deposit legislation and comingled recycling service have been introduced, as these would have taken valuable materials out of the landfill bin. There is an opportunity to further increase kerbside diversion through focusing on organics.

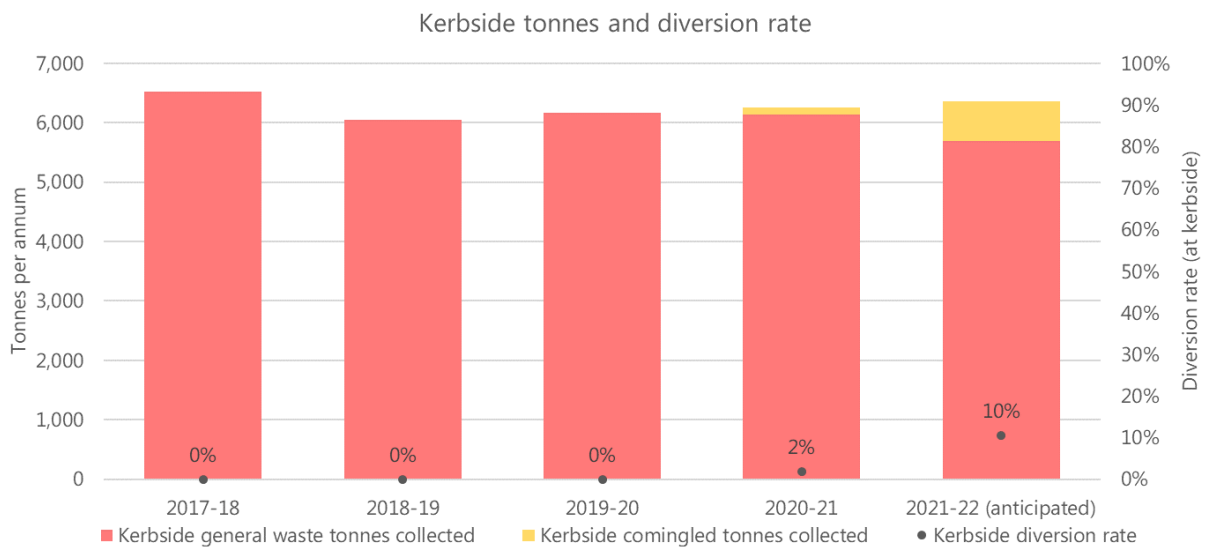


Figure 7: MSW waste tonnes and diversion at kerbside, 2017 - 2022



The South Hedland landfill is a key strategic asset for the region and the industry operating in the area. There are opportunities to divert more from landfill to maximise its lifespan and delay closure costs.



3.2. Recent and planned waste activities for the region

The Town of Port Hedland and surrounding councils have several relevant upcoming activities relating to waste management. These include:

- Town of Port Hedland plans to build a **Community Recycling Centre (CRC)**. The CRC will include a tip shop and drop off points for green waste, concrete, scrap metal recycling, battery recycling, E-waste recycling and hazardous waste. There may be additional materials separated over time such as cardboard and glass if financially viable.
- The City of Karratha recently trialled a **composting facility/area** at the Karratha landfill and has plans to expand to accept additional tonnes from neighbouring councils.
- The Shire of Ashburton recently completed construction of a Regional Waste Management Facility in Onslow, which has the **only Class IV landfill outside of Perth**.
- Councils in the Kimberley region are about to go out to tender for disposal/processing of kerbside waste and recyclables as part of a **joint procurement process**, which is anticipated to provide savings for the councils.
- Cleanaway have plans to build a **mini-material recovery facility (MRF)** in Karratha as part of the kerbside collection contract with The Town, that separates out materials from the comingled recycling bins.



4. Waste management actions and priorities 2022 – 2027

4.1. Key considerations for waste decisions

As emphasised in Town of Port Hedland’s vision and mission statements, environment and sustainability are key to the Town’s operations and outlook, and align with the WA State and federal direction. The Town’s policies and the State and federal waste policies and targets were considered when prioritising waste initiatives. This includes reducing waste generation, increasing resource recovery, reducing illegal dumping and littering.

In addition, our landfill is a key strategic asset for the region and critical for the industry that operates within the Town of Port Hedland. Managing waste and operating the landfill do not come without risk and costs to Council, and it is critical to consider these when looking at waste priorities. We acknowledge that for ongoing operational success at Council and to effectively manage waste in the Town of Port Hedland we need to consider the risks and financial impact (positive and/or negative) of our decisions and actions.

Bringing this together, our key priorities for waste and resource recovery for the Town of Port Hedland are risk to Council and the region, financial impact and state and federal resource recovery targets / directives (Figure 7).



Figure 7: key considerations for waste management direction for the Town of Port Hedland



4.2. Opportunities

Some of the opportunities for the Town of Port Hedland include but are not limited to:

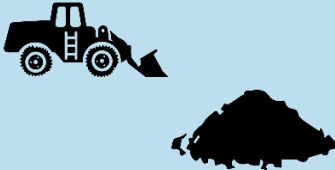
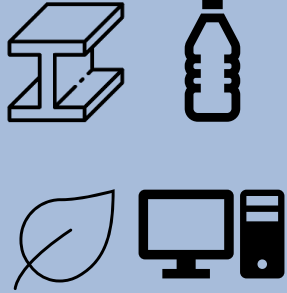


- Strong understanding of the costs of running the landfill and the potential closure costs, as well as costs to acquire and build a new landfill site
- The rates that we need to charge our customers to recover these costs
- Continual education for the community to reduce contamination in comingled recycling bins and increase recycling
- Increased recycling at the landfill while reducing contamination and processing equipment issues
- Collaboration across the region including joint procurement opportunities
- Increase in diversion from landfill to maximise landfill lifespan and delay closure costs.

Active tipping face at South Hedland Landfill



4.3. Waste priorities for Town of Port Hedland 2022-2027

We have identified four priorities for waste management in the Town of Port Hedland from 2022-2027. This is based on our current position, community survey results, waste opportunities for the Town of Port Hedland and the key considerations driving waste for the Town (WA waste direction, risk and financial impacts):

Waste priorities for the Town of Port Hedland 2022-2027	
1. Sound landfill management and planning to lower risk for the Town and the region	
2. Conserve landfill space by maximising material separation and recovery	
3. Circular economy initiatives including waste reduction and education	
4. Collaboration across the Pilbara and other regions	



Each of these Strategies has a number of associated focus areas. These are highlighted below¹².

Priority	Focus area
<p>1. Sound landfill management and planning to lower risk for the Town and the region</p>	<ul style="list-style-type: none"> 1.1. Financial plan and pricing model 1.2. Landfill Operations Plan and Landfill Closure Plan 1.3. CRC development and associated activities 1.4. Other landfill development and upgrades to increase safety, ensure it is appropriately resourced, align with WA government regulations and minimise contamination 1.5. Beneficial reuse of materials on site (incl minimising clean fill to landfill), if appropriate from an environmental and cost perspective 1.6. Plan for landfill closure and opening of a new landfill (consider costs, steps, zoning etc)
<p>2. Conserve landfill space by maximising material separation and recovery</p>	<ul style="list-style-type: none"> 2.1. Education to minimise contamination at kerbside and the landfill and maximise recycling, including education at schools, mining sites and community groups. 2.2. Increased material separation recovery sale & purchase 2.3. Explore using materials brought to landfill as refuse derived fuel feedstock.
<p>3. Circular economy initiatives including waste reduction and education</p>	<ul style="list-style-type: none"> 3.1. Explore opportunities for Council contribution to the circular economy including waste generation reduction at the Town. This includes a procurement strategy for the Town that encourages recycled material in products, reusable materials, and minimises packaging/wastage. 3.2. Product stewardship opportunities to maximise recovery 3.3. Illegal dumping/litter prevention mitigation initiatives and education
<p>4. Collaboration across the Pilbara and other regions</p>	<ul style="list-style-type: none"> 4.1. Knowledge sharing, funding, and joint procurement opportunities across the region.

¹² The Town has actions associated with each focus area, found in the Town’s internal documents.



4.4. Implementing initiatives and actions

When implementing our waste ideas, initiative and actions, we will first conduct further research to confirm the costs and benefits of the idea, and then seek to pilot ideas wherever possible, to lower risk and learn from the new initiative. We will make incremental improvements that lead to bigger actions and outcomes once we can demonstrate the viability and benefits, volumes are clearly known, and contamination levels better managed.

Our estimated timing to explore/implement initiatives within the focus areas and the priority imperative for Council is set out below.

Priority	Focus area	Potential timing of initiatives/pilots/actions										
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
1. Sound landfill management and planning to lower risk for the Town and the region	1 Financial plan and pricing model											
	2 Landfill Operations Plan and Landfill Closure Plan											
	3 CRC development and associated activities											
	4 Other landfill development and upgrades to increase safety, ensure it is appropriately resourced, align with WA government regulations and minimise contamination.											
	5 Beneficial reuse of materials on site, if appropriate from an environmental and cost perspective											
	6 Plan for landfill closure and opening of a new landfill (consider costs, steps, zoning, timing)											
2. Conserve landfill space for the Town by maximising material separation and recovery	1 Education to minimise contamination and maximise recovery, including education at schools, mining sites and community groups.											
	2 Increased material separation, recovery and sale/purchase											
	3 Explore using materials brought to landfill as refuse derived fuel feedstock.											
3. Circular economy initiatives including waste reduction	1 Explore opportunities for Council contribution to the circular economy including waste generation reduction at council and a procurement policy that encourages purchase of items containing recycled material and minimising waste											
	2 Product stewardship opportunities to maximise recovery											
	3 Illegal dumping/litter prevention mitigation initiatives and education											
4. Collaboration across the Pilbara and other regions	1 Knowledge sharing, funding and joint procurement opportunities across the region											

The Appendices, which can be found in a separate document managed internally by the Town, contain further information on specific waste initiatives and actions that Council can explore and align with these four priorities and 13 focus areas.





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5. Appendices for the Town of Port Hedland Waste Management Strategy

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5.1. Appendix One – Specific initiatives and actions for the Town of Port Hedland

The below captures the Town's specific initiatives and actions based on the focus areas within the Strategy.

Priority One: Sound landfill management and planning to lower risk for council and the region			
Action	Timeline	Responsibility	Priority ¹
1.1. Financial plan and pricing model			
1.1.1 Create a financial plan that is reviewed bi-annually based on waste management costs including landfill operating, closure and all financial provisions (waste reserve etc.).	2022 (reviewed bi-annually)	Infrastructure Services	High
1.1.2. Update the pricing model to reflect costs of landfill and waste management (rates, landfill gate rates)	2022 (reviewed annually)	Infrastructure Services	High
1.2. Landfill Operations Plan and Landfill Closure Plan			
1.2.1. Finalise the Landfill Closure Plan considering life expectancy	2022 (reviewed bi-annually)	Infrastructure Services	High
1.3. CRC development			
1.3.1. Finalise planning for CRC and build facility	2025	Infrastructure Services	High
1.3.2. Provide input into the CRC, including: <ul style="list-style-type: none"> • layout so it is easier for residents and commercial customers to navigate through and recycle, and less likely to contaminate loads, and a safer set up (including safer drop off point out front) • Reuse shop • Review the opportunity for a bulk transport set up at the landfill (potential to bulk transport green waste, comingled recyclables, other streams if required/beneficial) 	2025	Infrastructure Services	High
1.3.3. If CRC is delayed/not pursued, implement small scale changes where viable (e.g. 40 foot container for re-use shed, change layout where practical etc)	2025	Infrastructure Services	Low

¹ Based on alignment with WA waste direction, environmental impact, risk to council and the region, and financial implications

Priority One: Sound landfill management and planning to lower risk for council and the region

Action	Timeline	Responsibility	Priority ¹
1.4. Other landfill development and upgrades to increase safety, ensure it is appropriately resourced, align with WA government regulations and minimise contamination.			
1.4.1. Review operations and equipment at landfill to ensure number of staff and equipment is appropriate for landfill size (water cart, compactor etc).	End 2022	Waste Ops Team	Medium
1.4.2. Review staff numbers at landfill and supporting admin to ensure appropriately resourced.	End 2022	Infrastructure Services collaborating with Waste Ops Team	Medium
1.4.3. Set up systems to reduce contamination (disposal in clear line of sight of weighbridge, easy entry in and out, signage, potentially issue people with fines/warnings for contaminating) including noxious weeds in garden organics loads	End 2022	Waste Ops Team	High
1.4.4. Update landfill and operating licencing so they are fit for purpose (e.g. licence for storing metals, green waste etc).	End 2022	Waste Ops Team (collaborate with DWER)	Medium
1.4.5. Waste management plans in line with WA government	2024	Waste Ops Team	Low
1.5. Beneficial reuse of materials on site, if appropriate from an environmental and cost perspective			
1.5.1. Reuse fill in place of purchasing fill for landfill capping and management.	2023	Waste Ops Team	High
1.5.2. Continue to beneficially reuse concrete/other C&D waste if no recycling options	Ongoing	Waste Ops Team	Medium
1.6. Plan for landfill closure and opening of a new landfill (consider costs, steps, zoning, timing			
1.6.1. Review steps required to close landfill including timing and costs and zoning. Start planning in case of early closure.	2023		High

Priority Two: Conserve landfill space for the Town by maximising material separation and recovery

Action	Timeline	Responsibility	Priority ²
2.1. Education to minimise contamination and maximise recovery, including education at schools, mining sites and community groups.			
2.1.1. Continue integrated waste education program from 2018 strategy	2023	Infrastructure Services	High
2.1.2. Explore and potentially introduce a bin tagging program to minimise contamination in kerbside bins and increase recycling.	2024	Infrastructure Services	Medium
2.1.3. Explore other opportunities to provide feedback to residents, e.g. working with collection contractor to upgrade technology to notify council when gross contamination identified. Council to warn residents nicely at first and then after multiple contamination occurrences, warning becomes more serious and eventually, bin is removed.	2024	Infrastructure Services	High
2.1.4. Link with schools, mining sites and community groups where appropriate. Seek opportunities for shared resourcing with volunteer groups to educate community. E.g. introducing sustainability via town events / public bins schools programs ect collaboration across the Pilbara.	2023	Infrastructure Services	High
2.2. Material separation, recovery and sale/purchase			
2.2.1. further explore and if appropriate, implement an opt in garden organics (GO) at kerbside, with material going to organics reprocessing at South Hedland landfill (alternative option Karratha).	2024	Infrastructure Services	Medium
2.2.2. Purchase of recycled organics from Karratha to use in parks and gardens, if viable.	2023	Procurement in collaboration with Infrastructure Services	Medium
2.2.3. Continued mulching and pasteurising of green waste at landfill, but also explore markets (even if will only accept it for a fee) for current shredded organics stockpiled. Improve product	2023	Waste Ops Team	High

² Based on alignment with WA waste direction, environmental impact, risk to council and the region, and financial implications

Priority Two: Conserve landfill space for the Town by maximising material separation and recovery

Action	Timeline	Responsibility	Priority ²
quality of future shredded green waste by contamination and weed reduction strategies and assess if biosolids can be blended with green waste and licencing requirements for this.			
2.2.4. Make available mulch / organic products to public free of charge removing the product from site conserving landfill space.	2023	Waste Ops Team	High
2.2.5. Signage and communication from staff at weighbridge to encourage proper source separation where appropriate and instructions on how best to source separate.	2023	Waste Ops Team	Medium
2.2.6. Investigate greater price differential for recycling (greater disposal rates and/or lower recycling rates) for commercial sector to encourage source separation	2023	Infrastructure Services	Medium
2.2.7. Explore use of voucher system for residents to limit waste to landfill and encourage reuse/recycling	2024	Infrastructure Services	Low
2.2.8. Investigate other recycling options and compare the costs and benefits (when quotes received). Ensure gate fees cover recycling cost. For example: alternative end uses for biosolids (Karratha compost, own compost if this is pursued), tyre recovery, bulker bags, mattresses.	2023	Waste Ops Team	High
2.3. Energy from waste facility or feedstock			
2.3.1. Assess the viability of creating a refuse derived fuel (RDF) from materials brought to landfill. This may include consulting with high energy users in the region and other potential consumers of an RDF to assess potential markets and quality requirements, speaking with RDF experts that can create this product for further information on the process, conducting an audit at the landfill to assess material profile of incoming material and proportion that could be used as an RDF.	2025	Infrastructure Services	Medium

Priority Three: Circular economy initiatives including waste reduction and education

Action	Timeline	Responsibility	Priority ³
3.1. Explore opportunities for Council contribution to the circular economy including waste generation reduction at council			
3.1.1. Explore opportunities for council to participate in the circular economy (circular hubs, repair café, buying back materials with recycled content, purchase of refurbished equipment that is repairable, office paper reduction, packaging reduction, electric vehicles and use of renewable energy etc)	2024	Infrastructure Services in collaboration with other departments	Medium
3.2.2. Purchase items with recycled content (office paper, mulch, road base, playground equipment and public space furniture etc). Work with Procurement to procure such items. Track how many items/weight purchased and report to community. Investigate adjusting procurement evaluation to incorporate recycled content.	2024	Procurement in collaboration with Infrastructure Services	Medium
3.2.3. Create a procurement policy that aligns with the circular economy (increase purchase of materials containing recycled material, minimise waste/packaging, purchase items that are reusable and if not, easy to recycle at end of life).	2023	Procurement in collaboration with Infrastructure Services	High
3.2. Product stewardship opportunities to maximise recovery			
3.2.1. Investigate new battery recycling scheme and whether the Town could benefit financially. Implement if appropriate.	2023	Infrastructure Services	Low
3.2.2. Continue with current product stewardship programs (e.g. Neverfail drink bottles) and explore other opportunities (e.g. CDS, oils, other)	Ongoing	Waste Ops Team	High
3.3. Illegal dumping/litter prevention mitigation initiatives and education			
3.3.1. For illegal dumping outside a household, trial the 'yellow tape with warning' system where yellow tape is placed around the illegal dumping with a message stating the person(s) has 24 hours to remove it or risks an investigation.	2024	Waste Ops Team	Low

³ Based on alignment with WA waste direction, environmental impact, risk to council and the region, and financial implications

Priority Three: Circular economy initiatives including waste reduction and education

Action	Timeline	Responsibility	Priority ³
3.3.2. For illegal dumping in other locations, identify hotspots and explore surveillance and signage and other techniques implemented by councils. Trial and test success of initiative.	2023	Waste Ops Team	Low

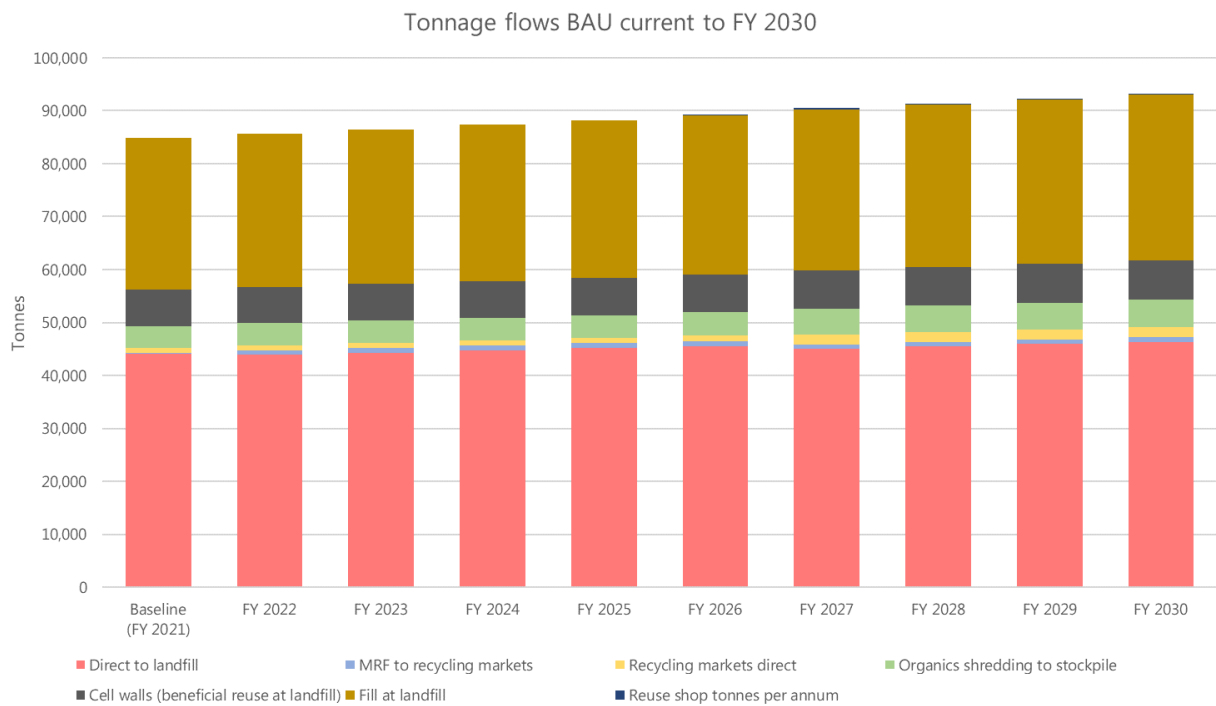
Priority Four: Collaboration across the Pilbara and other regions

Action	Timeline	Responsibility	Priority ⁴
4.1. Knowledge sharing, funding and joint procurement opportunities across the region			
4.1.1. Explore opportunities for funding across the region to support waste initiatives (including joint initiatives). Share knowledge and learnings and collaborate in funding applications where applicable.	2023	Waste Ops Team	Medium
4.1.2. Confirm interest in joint procurement with region for a range of options (kerbside collection, equipment, education officer). Commence if viable and interest across region.	2023	Waste Ops Team	Medium
4.1.3. Regularly meet with other councils and share knowledge on waste initiatives (reports, pilots, opportunities)	Commence 2022	Waste Ops Team	Low
4.1.4. Explore opportunity for Council facilitation across Pilbara region of second hand sales online (e.g. Free Trade Website as identified in 2018 Waste Strategy)	2024	Waste Ops Team	Low

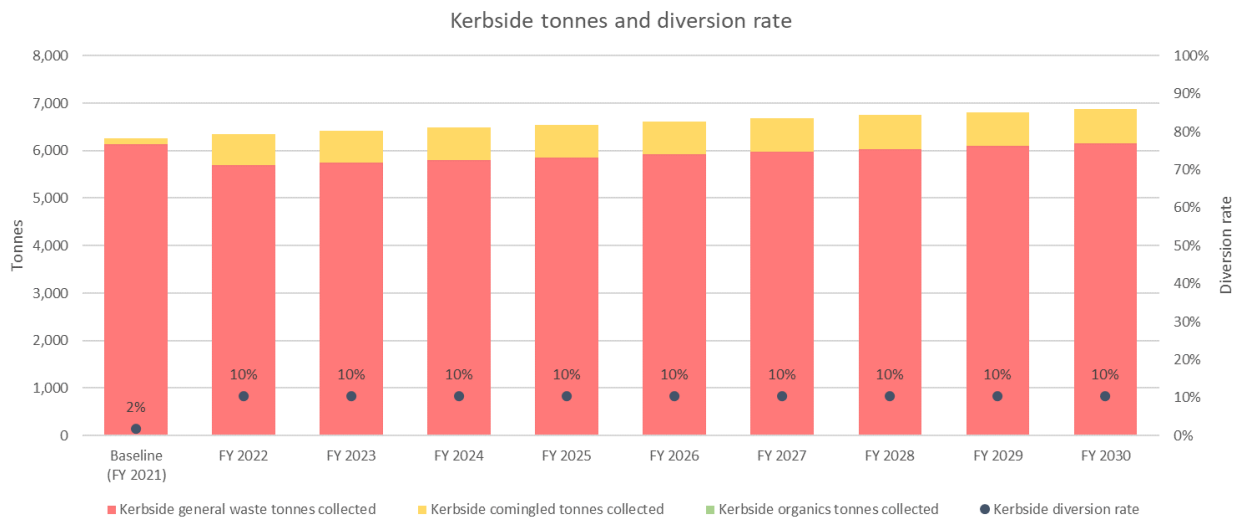
⁴ Based on alignment with WA waste direction, environmental impact, risk to council and the region, and financial implications

5.2. Appendix Two – Tonnage flows

BAU current to FY 2030, all waste



Kerbside anticipated tonnes (if no organics service implemented)



5.3. Appendix Three – High level assessment of opt in garden organics service

Rawtec assessed the high level costs and benefits if the Town rolled out a garden organics service at kerbside. The Town has several options for rolling out this service. These include but are not limited to:

- **Option one: user pays opt in garden organics service.** Residents are offered the garden organics service and can 'opt in' if they would like to take part. In this case residents would pay an annual fee for the service and bin.
- **Option two: Council funded opt in garden organics service.** Residents are offered the service and can 'opt in' if they would like to take part, but the Town would fund the service.
- **Option three: mandatory kerbside garden organics service for all residents** (not recommended).

Options one or two are recommended. Option one would result in the lowest uptake, but given residents are funding the service it is more likely that the service would be used appropriately (minimal contamination, maximum resource recovery per household).

In each of these options it is assumed the garden organics is brought to the South Hedland landfill and reprocessed into mulch, which is then sold/given away.

Although a food and garden organics (FOGO) service would result in the greatest volume of material, it is not recommended until further investigation into the potential end destinations, logistics and costs are considered.

The high level assessment of an opt in garden organics service indicates that if the Town were to roll out this service, the average cost per household per year would be ~\$118 over ten years. It is recommended that quotes from industry be requested on new bins, bin lids, and collection costs and re-assessing the estimated costs. With current assumptions this would divert around 200 tonnes of organics from landfill per annum which equates to 45 tonnes of CO2 savings per annum.

If assumed figures are accurate and the Town wanted to pursue option one above (user pays garden organics service) we would recommend charging \$150-\$200 per household per year to opt in plus (potentially) purchase cost of the new bin.

Analysis output:

	Year	1	2	3	4	5	6	7	8	9	10	Notes
Population and services												
Total on garden organics service	# hhs	1,280	1,293	1,306	1,319	1,332	1,345	1,359	1,372	1,386	1,400	
Total SEPs across ToPH	# hhs	6,400	6,464	6,529	6,594	6,660	6,726	6,794	6,862	6,930	7,000	
Volumes collected - kerbside												
Total tonnes	tonnes/year	200	202	204	206	208	210	212	214	216	218	
Contamination (within tonnes above)	tonnes/year	2	2	2	2	2	2	2	2	2	2	
Net costs												
Up front costs (bins, promotion, letters, new lids for general waste bins)	\$/year	\$332,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Collection costs (organics bins)	\$/year	\$99,840	\$100,838	\$101,847	\$102,865	\$103,894	\$104,933	\$105,982	\$107,042	\$108,112	\$109,194	
Ongoing engagement and promotion	\$/year	\$0	\$32,320	\$32,643	\$32,970	\$33,299	\$33,632	\$33,969	\$34,308	\$34,651	\$34,998	
Net total disposal/reprocessing costs	\$/year	-\$17,692	-\$17,869	-\$18,047	-\$18,228	-\$18,410	-\$18,594	-\$18,780	-\$18,968	-\$19,158	-\$19,349	Negative is revenue
Product sale income	\$/year	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Negative is revenue
Ongoing cost for bins after commencement	\$/year	\$0	\$8,064	\$8,145	\$8,226	\$8,308	\$8,391	\$8,475	\$8,560	\$8,646	\$8,732	Average per year
Total cost	\$/year	\$414,948	\$123,354	\$124,587	\$125,833	\$127,092	\$128,362	\$129,646	\$130,943	\$132,252	\$133,575	\$157,059
Cost per SEP (those who have opted into program)	\$/SEP	\$324	\$95	\$95	\$95	\$95	\$95	\$95	\$95	\$95	\$95	\$118

Key assumptions:

- 20% of the 6,400 service entitled premises (SEPs) take up the service
- Population increases 1% per annum
- 20% leave the opt in program per year (due to churn/turn over) and 20% enter the program per year (due to promotion of the program and community interest)
- All households across the Town would receive new red lids for general waste bins
- Organics bins are 240L and anticipated to be \$100 per bin plus \$5 delivery, \$5 for the flyer/info pack.
- Swapping bins from a household that has left the program to a household entering the program is \$25.
- Collection of organics is \$3 per household per lift.
- Organics bins are collected fortnightly and taken to the South Hedland landfill direct in kerbside trucks.
- Cost to process organics is \$50 per tonne but shredder lease costs are \$0 as this is already being paid for so would not be an additional cost due to the new initiatives.

See spreadsheet for full analysis and assumptions.

5.4. Appendix Four – Consultation list

The following organisations provided feedback in relation to this Strategy and waste activities in the region:

1. ToPH Executive leadership team
2. ToPH Elected Members
3. ToPH Waste ops team
4. Ask Consulting
5. City of Karratha
6. Shire of Ashburton
7. Shire of East Pilbara
8. Shire of Broome
9. Department of Water and Environmental Regulation
10. WALGA
11. Cleanaway
12. Care For Hedland
13. Containers for Change
14. Community (via survey).

The following were contacted but a meeting was not arranged:

1. Pilbara Ports Authority
2. Fortescue Community Office
3. Pilbara Meta Maya
4. Hedland Aboriginal Strong Leaders
5. PH Industries Council
6. PH Chamber of Commerce.

5.5. Appendix Five - Parameters for pricing model

The notes below provide guidance on the parameters for a pricing model should the Town wish to implement this initiative. The notes aim to establish the scope of elements required for a financial model that can be used to estimate fees and charges for waste management services, including the waste component of rates charges.

Principles:

1. Determine the basis for and quantum of corporate/overhead costs that will be applied to the waste budget.
2. Determine how capital expenditure is to be funded and accounted for in the waste budget.
3. Set the cost of capital.
4. Bring to account all capital and operating costs involved in the provision of services, including long-term capital expenditure provisions associated with the establishment and closure of facilities.
5. Determine the minimum balance for the waste reserve account.
6. Use the waste reserve account, early provisioning for future capital requirements and regular contributions from the waste budget to smooth-out peaks and troughs in demand for capital such that fees and charges remain reasonably stable year on year and (typically) show a steady increase year on year.
7. Include growth estimates relating to population, service numbers, and waste generation rates.
8. Use the financial modelling to establish fees and charges for the base level or standard services (e.g. kerbside collection and management of 240L MGBs, and disposal of mixed waste to landfill).
9. Adjust charges (up or down) for service variations, external to the model.
10. Establish fees and charges for abnormal or special services (e.g. hazardous disposals such as asbestos, dead animals etc at landfill) external to the model using the base level or standard service fee and then adjusting for additional costs and other market/competition considerations.
11. Avoid cross-subsidisation between the delivery of residential kerbside services and facility services in the first instance.
12. Avoid cross-subsidisation between the delivery of services to residents and services to commercial customers in the first instance.
13. Apply any cross subsidy and/or equity considerations after the true cost of services has been established.
14. Apply any price incentive considerations (e.g. penalties for mixed waste over sorted waste delivered to landfill) after the true cost of services to all customers has been established.
15. Allow for input to the financial model of the net implications of any policy decisions relating to cross subsidies, incentives, equity considerations, special service charges etc. to ensure reasonable cost recovery and reasonable charging and to avoid runaway losses or surpluses.

Key Model Elements:

- A 10-year model of waste generation, collections, resource recovery and disposal operations - including service numbers for kerbside services.
- A 20-year model of capital demand and expenditure for major works.
- A 10-year model of capital demand for operational plant and equipment.
- A 10-year model of operating costs for the delivery of all waste services.
- A 10-year model of the waste reserve account.

5.6. Appendix Six – Community Consultation results

Overall comparison of key themes from community survey, 2019 and 2021 is provided below. There was an increase in comments about organics recycling in the Town, and a decrease in comingled recycling (likely due to introducing the service). There were also more comments about the environment more broadly, and renewable energy, with suggestions the Town could lead the way with electric vehicles and charging stations, workshops on environment etc.

	organics recycling	comingled recycling	landfill	environmental	bins	waste info/ education	litter	waste collection	sustainability	Street & footpath sweeping	illegal dumping	other	total
2021 (current)	11	18	8	18	1	6	18	10	15	9	4	21	139
2019 (previous)	3	24	10	4	2	1	42	n/a	n/a	n/a	n/a	n/a	86

Themes from the 2021 community survey are provided below.

- The Town could do more to reduce litter/amenity issues at properties and on the streets, parks etc.
- Introduce organics recycling collection and use recycled organics locally.
- A tip shop would be useful for the Town.
- There were many general comments on environmental protection, conservation of species and land quality/putting carbon back into soil. Suggestion for the Town to run workshops on these topics.
- Renewable energy, electric vehicles and charging points. The Town could set the example in these areas.
- The Town could create more cycle ways, walking tracks and ensure these remain clean and clear.

Themes from the 2019 survey results are provided below.

- More recycling opportunities for the community particularly comingled recycling, and that they thought comingled recycling was a positive step (noting that at the time of the survey council had announced plans to run the comingled recycling service)
- Litter is an issue that could be improved in the town
- There is interest in a tip shop or second hand sales shop
- There are opportunities to improve the landscaping in the town including more trees and grass and better ongoing maintenance (recycled garden organics as a mulch could assist with this)
- The landfill is well run and options to recycle are well received
- Education/information on how to recycle and how to get involved in the community to improve environmental outcomes for the town (e.g. clean up days) would be useful.