ATTACHMENTS

Development and Infrastructure Services Committee Meeting

15 May 2019

6.00pm

City of Albany Council Chambers

TABLE OF CONTENTS

2019-26

COMMUNITY WASTE RESOURCE STRATEGY

CITY OF Albany

Table of Contents

Executive Overview

The City of Albany is committed to providing a sustainable and progressive approach to waste management and recognises waste as a resource with potentially many forms of reinvention and reuse. The Community Waste Resource Strategy 2019-26 aligns with the State Government's Waste Avoidance and Resource Recovery Strategy 2030 and provides an innovative way forward to decrease waste generation and manage our community's unwanted waste resources

Recent changes to international recyclable commodity policies have heightened community demand for sustainable waste practices and highlighted Australia's vulnerability in relying on offshore solutions for waste generated here. Central to the Strategy are the waste hierarchy which prioritises waste avoidance and minimisation and the circular economy model which values waste resources and maximises use of materials by keeping them in circulation as long as possible.

With the City's major landfill site on Hanrahan Road anticipated to close in 2026, capital infrastructure planning and investment is a major component of the Community Waste Resource Strategy. While the search for a new landfill site with capacity to service the City and its regional neighbours has already commenced the complete process of site selection, environmental approvals and infrastructure construction is likely to take until 2026.

From an environmental and social perspective the introduction of a Food Organics and Garden Organics (FOGO) collection has the potential to divert 2,300 tonnes of food waste from landfill per year and a Sustainable Products Procurement Plan for the City's operations will define it as a community leader in sustainability.

Albany's steadily growing population has an entrenched recycling culture and expects sustainable and environmentally sensitive management of waste. The Strategy recognises an ongoing need to build community accountability for the waste it produces and the role each resident has to play.

To meet the waste challenges ahead the following guiding principles have been established:

- Empower the community
- Think creatively
- Build employment
- Manage waste as a resource
- Plan for the future
- Regional focus

These guiding principles are underpinned by a framework of strategies, focus areas and key actions to be undertaken. The Community Waste Resource Strategy 2019-26 provides direction to sustainably manage the waste resource the community produces and build a circular economy around the resource it captures.

A population of more than 37,000 lives in almost 17,000 urban and rural dwellings across the City's area of 3,310 square kilometres. Forecast population estimates indicate an average growth of 1.5% each year to 2026.

Local industries include agriculture and retail as well as health care and social assistance, construction, forestry, fishing and tourism. Albany has more than 3,400 businesses operating in the area with approximately 16,200 residents in gainful employment.

The City has a high aged demographic reflecting a developed retirement lifestyle, while 25% of households are couples with children.

What is the Current Situation?

About Albany

The City of Albany is the thriving cultural and administrative hub of the Great Southern region in Western Australia. Located 400km from Perth, Albany boasts the convenience of a major city while being surrounded by an amazing natural environment.

Waste Services in Albany

Waste services in Albany are split into urban and rural areas. There are more than 14,000 households in the urban area centred on the Albany Township and more than 1,400 households in rural areas. All residents have seven-day-a-week access to the Hanrahan Road Waste Facility and Fossicker's Shop as a drop-off point. Services operate in accordance with the State WARR Act (Waste Avoidance and Resource Recovery Act, 2007)

Residential Kerbside Collection

A three-bin kerbside service is provided to urban residents and consists of the following collections:

- Weekly 140L general waste bin
- Fortnightly 240L commingled recycling bin
- Four weekly 240L garden organics bin

Waste collection services are undertaken by the City's waste and recycling contractor.

Residential Waste Passes

Urban residential ratepayers receive passes to dispose of up to 300kg of sorted domestic waste at Hanrahan Waste Facility. In years when there is no bulk hard waste verge collection two passes are provided and in bulk collection years only one is provided.

Property owners receive one pass per year entitling them to drop off two cubic metres of garden waste at the green waste contractor's depot in John Street.

Rural Services

Rural residents have limited free access to drop-off facilities at transfer stations and waste facilities. The five transfer stations are managed by the City's waste and recycling contractor and bins at the stations are serviced by the City of Albany.

Bulk Verge Collections

From 2004 to 2018 the City provided annual bulk hard and green waste verge collections for urban residents, with residents entitled to place up to two cubic metres of hard waste and two cubic metres of green waste on the verge during scheduled collections. Residents are directed to separate their hard waste to allow recycling of e-waste and scrap steel. In 2017 Council determined that the hard waste collection would become a biennial service. Following a service in 2018 the next pick up is scheduled for 2020 and every second year thereafter. The bulk green waste verge collection will continue as an annual service.

Green Waste

A privately-owned operator provides a drop-off depot for Albany's green waste. This business is contracted by the City to process garden organics gathered in the kerbside collection and bulk green waste verge collections and dropped off at their premises. Green waste is processed into compost at the contractor's facility on Mindijup Road, Palmdale.

Commingled Recyclables

Recyclables collected through the kerbside service and public place bins and deposited at transfer stations and waste facilities is processed at the Material Recovery Facility (MRF) located at the Hanrahan Road Waste Facility. The MRF is owned by the City of Albany and operated by its waste and recycling contractor.

Public Place Bins

The City provides more than 400 public place bins in urban areas, camp grounds and places of interest. Additional bins are provided at some locations during peak periods. Commingled recycle bins are provided at an increasing number of locations.

Event Recycling Trailer

The event recycling trailer is a free service to encourage recycling at community events. The trailer contains 12 recycle bins with large yellow caps to promote recycling and limit contamination. The waste and recycling contractor coordinates bookings and event organisers are responsible for collecting and returning the trailer.

Commercial Services

A number of private contractors collect waste produced by Albany's Commercial & Industrial (C&I) and Construction & Demolition (C&D) sectors. A diverse range of bin styles and sizes is available.

Fossicker's Shop

Fossicker's Shop at Hanrahan Waste Facility operates seven days a week for residents to drop off Household Hazardous Waste, commingled recyclables, e-waste, needles and syringes, used cooking oil, and used goods suitable for resale. Fossicker's is also open daily for customers to purchase used goods and access information.

Waste Education Services

Information to promote waste reduction and awareness is provided to the community through a variety of methods. A Waste & Recycling Guide and sustainability tips are incorporated into the City's annual Community Calendar and messages are regularly communicated through newsletters and social media. The annual Green Fair on the Square encourages residents to reduce, reuse and recycle, and workshops and information sessions are held throughout the year. The waste and recycling contractor's Education Officer promotes recycling and waste reduction to residents through tours at the Material Recover Facility, attendance at community events, incursions for schools and community groups, and feedback provided during weekly bin audits. The City also works with community groups and other agencies to encourage innovation and awareness of waste reduction and recycling.

Waste Infrastructure

Waste infrastructure in Albany is primarily owned by the City of Albany and Vancouver Waste.

City of Albany infrastructure:

- **Hanrahan Road Waste Facility including**
  - Landfill
  - Fossicker's Shop
  - Household Hazardous Waste Drop Off Facility
  - AWARE (Albany Waste and Recycling Education) Centre
  - Material Recovery Facility
- **Bakers Junction Waste Facility**
- **Five Transfer Stations located at Kronkup, Redmond, Manypeaks, South Stirling and Wellstead**

Vancouver Waste infrastructure:

- **John Street green waste drop off and loading depot**
- **Multiple Use Facility, Mindijup Road, Palmdale:**
  - Compost manufacturing and soil blending
  - Solid waste disposal including used tyres and asbestos
  - Current application for Class III putrescible landfill site

Waste Trends and Reporting

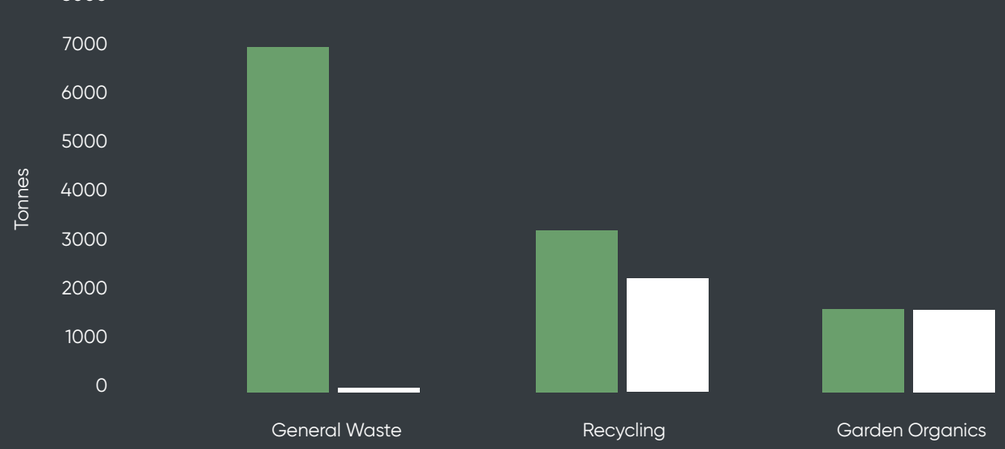
In compliance with licence conditions and federal and state regulations, regular environmental monitoring is conducted to determine impact of waste facilities on groundwater, pollution and the environment.

Annual Environmental Reporting incorporating water monitoring, volumes of waste types, receipt of asbestos and contaminated materials, and any environmental complaints is submitted to the Department of Water & Environmental Regulation as per conditions of the applicable landfill licences. In compliance with federal and state regulations annual reporting is also submitted to the National Pollutant Inventory. Annual reports on quantity of materials collected, disposed to landfill and recovered for recycling are submitted to the State Waste Authority's annual census of waste and recycling services.

Kerbside Collection

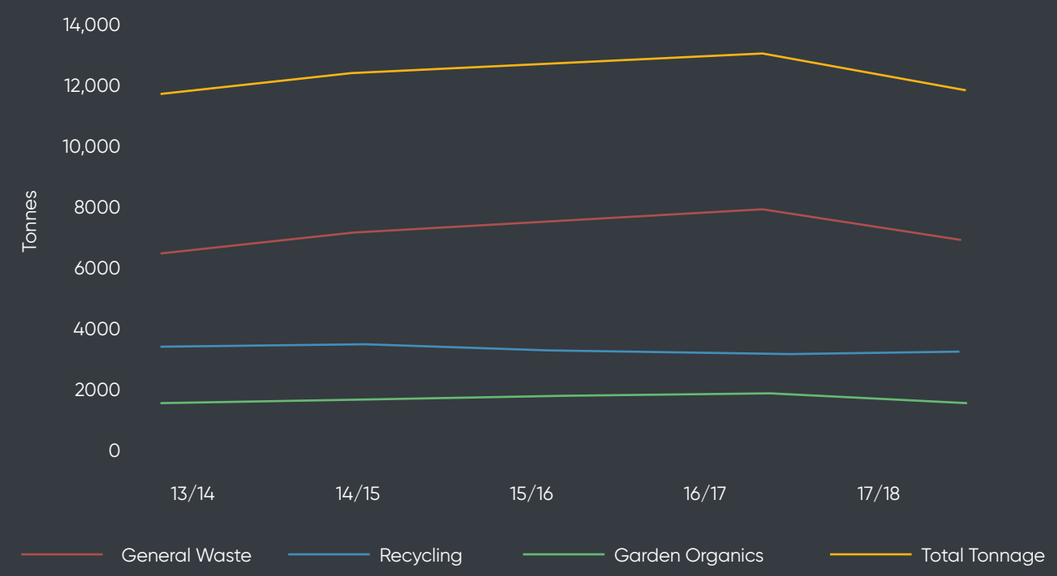
A total of 11,836 tonnes of waste was collected during residential kerbside collections in 2017/18, with 33% diverted from landfill. After a gradual climb in the tonnage of general waste and a proportionate decrease in the amount of recycling presented for collection between2014 and 2017 there was an encouraging change in the trend in 2017/18.

Residential Kerbside Collection Tonnages 2017/18



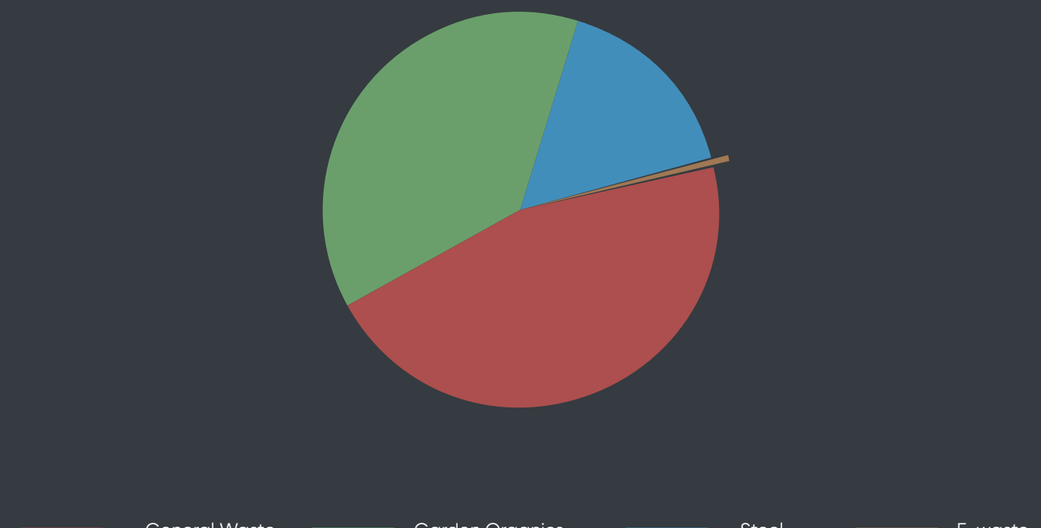
Collected	6934	3269	1633
Recovery	0	2289	1633

Residential Kerbside Collection Tonnages 2017/18

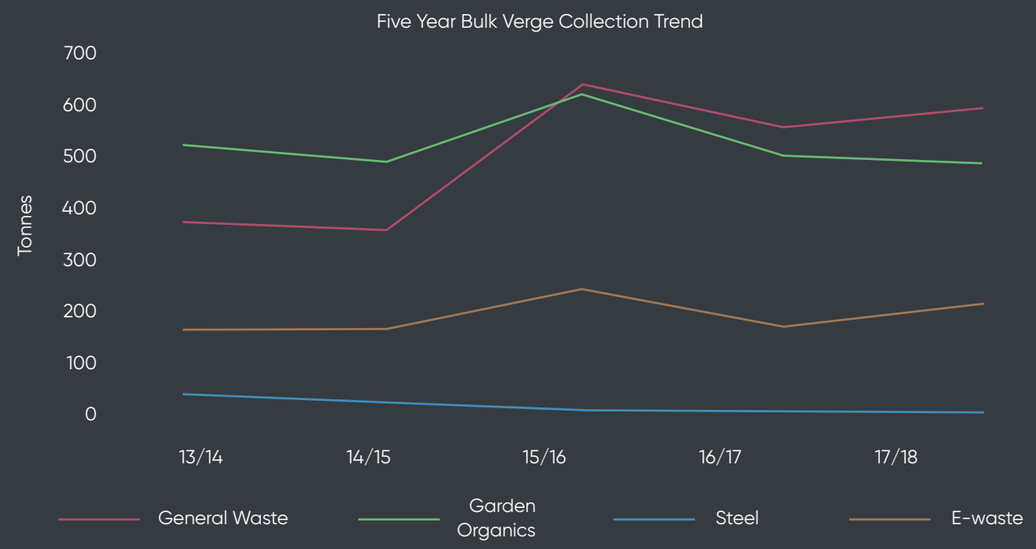


Bulk Verge Collections

Hard waste collection volumes spiked in 2016 after a six month delay in the collection schedule and continue to remain higher than 2014 figures. Garden organics, steel and e-waste are recovered for recycling. The next bulk hard waste collection is scheduled for 2020 and every second year thereafter. Bulk green waste collections will continue annually.



Bulk Verge Collections (cont.)



Waste Composition

Waste is received at Hanrahan Road and Bakers Junction landfills where loads are weighed and categorised, and charged accordingly. For reporting purposes waste is classified according to the Waste Facility Licence and is further categorised to encourage separation of recyclable materials such as scrap steel, cardboard and oil.

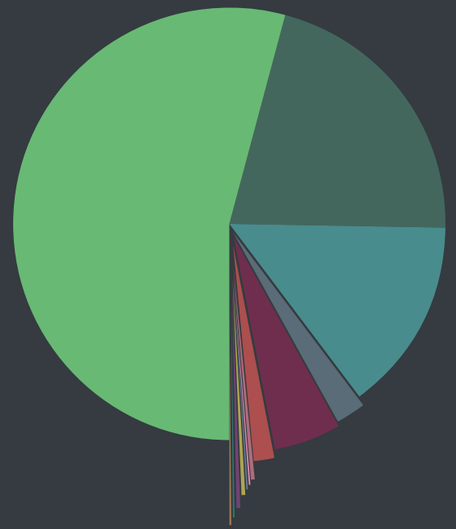
Data collection and weighbridge software will be reviewed as an action of the Strategy.

Site Name Hanrahan Rd	2014	2015	2016	2017	2018
Clean Fill	20289.9	29740.20	25934.7	48693.39	23789.54
Hazardous Waste	23.21	39.33	31.43	43.48	74.58
Inert Waste Type 1	6397.34	23410.02	6224.65	5225.83	3270.96
Inert Waste Type 2	107.9	108.84	32.91	26.69	60.45
Putrescible Waste	25169.1	23054.29	24673.7	24679.69	24300.23
Quarantine Waste	36.94	42.92	14.66	23.12	18.72
Special Waste Type 1 (Asbestos)	2.6	616.06	359.63	379.02	289.06
Special Waste Type 2 (Biomedical Waste)	5.76	4.90	9.2	7.16	9.28
Recyclables removed from landfill	2220.19	716.76	1560.68	2188.04	1148.79
Inert Waste Type 1 Removed from Bio-Gas Site)		16257	0	0	0
Total	**49812.51**	**76299.80**	**55720.12**	**76890.34**	**50664.03**

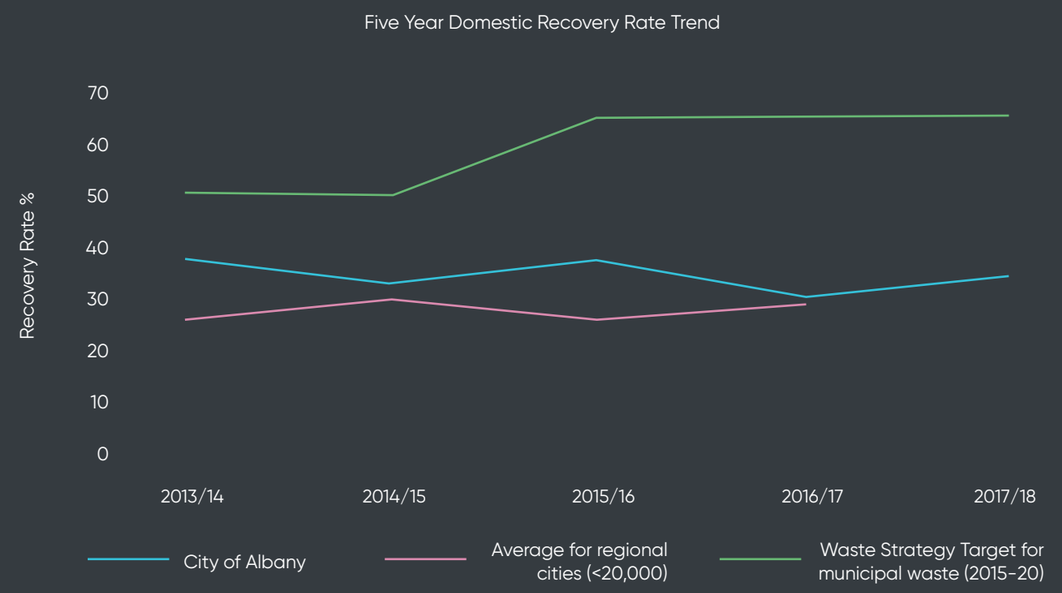
Recycling Composition

Changes to international recycling policies have cast intense public scrutiny on recycling services provided by local governments and end markets for recyclables. Contamination of recyclable material streams is a current challenge for the waste industry.

The major contaminant by weight in Albany's commingled recyclables stream is broken glass. Other contaminants include recyclables in plastic bags, soft plastics, clothing and food. There is significant opportunity to increase the proportion of materials recovered for recycling as an action of the Strategy.



Garden organics	3129
Paper & cardboard	1213
Glass	846
Plastic	114
Scrap steel	298
Steel cans	94
Aluminium cans	22
Aluminium (other)	4
Other metals	4
Waste oil	16
Lead batteries	17
Household hazardous waste	5
E-waste	4



Composting workshop - City of Albany

What is the Purpose of this Strategy?

Strategic Alignment

The Strategy's 2019-26 timeline aligns with major organisational milestones and the anticipated timeframe to establish a new waste facility. The development of a new landfill site will require significant changes to logistical operations and types of services the City provides. Capturing the whole of this period of change is a practical approach.

The Community Waste Resource Strategy complements the South Coast Sustainable Waste Alliance's Strategic Vision and fits under the umbrella of the City of Albany's 2030 Community Strategic Plan, which provides an ambitious long term vision for community priorities.

The Strategy incorporates the following priorities from the City of Albany's 2030 Community Strategic Plan:

Theme: Clean, Green and Sustainable.

Objective 3.3: To identify and deliver improvements in sustainability within the City and wider community.

Community Priorities: Deliver a sustainable and progressive approach to waste management including collaboration with neighbouring local governments.

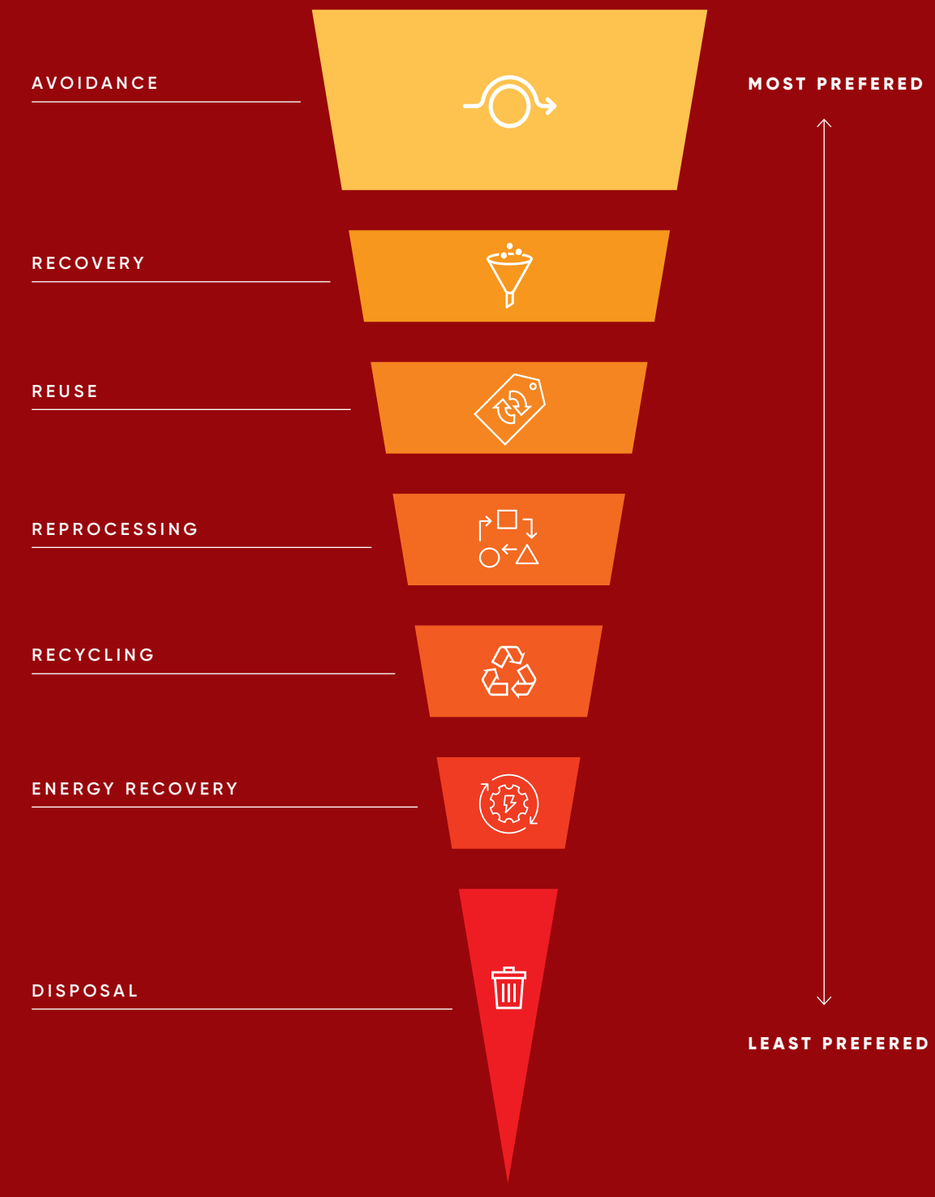
The Strategy aligns with the goals and targets of the State Government's Waste Avoidance and Resource Recovery (WARR) Strategy 2030 which is guided by the priorities of the waste hierarchy to avoid and minimise waste and the optimised use of resources through the circular economy model.

The City also acknowledges the need to ensure shared responsibility for waste management and minimisation between those who generate, produce and use goods and services (the Polluter-Pays, User-Pays and Product Stewardship principles), while dealing with waste as close to the place of production as possible (the Proximity Principle).

Waste Hierarchy

The waste hierarchy ranks waste management options in order of environmental impact and is designed to be applied together with other tools to analyse environmental, economic and social impacts.

Action is required by community, industry and all levels of government to maximise efficiency and avoid unnecessary consumption.



Building a Circular Economy

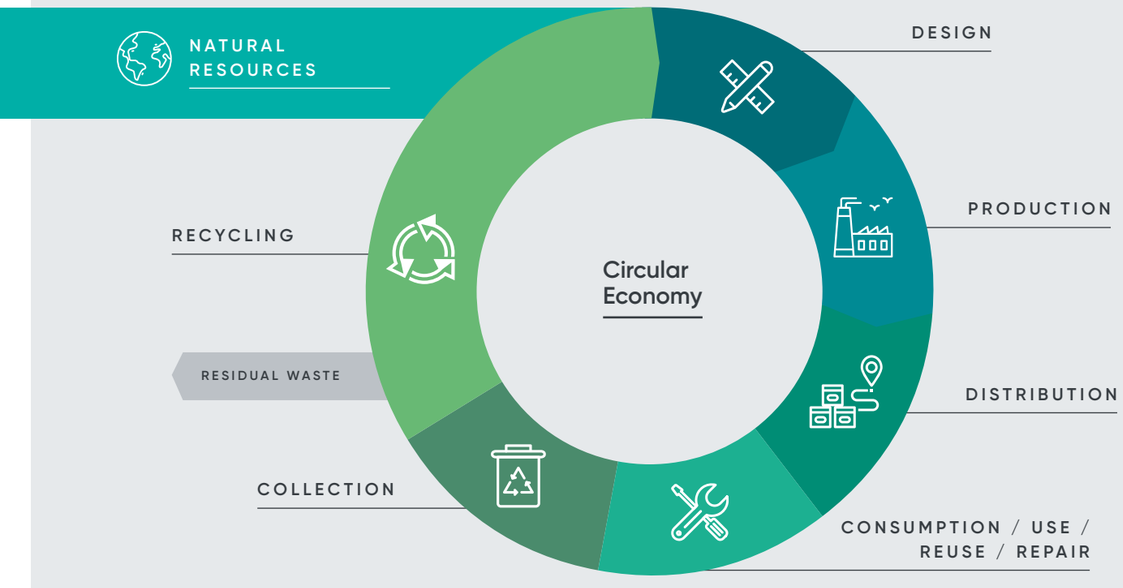
The circular economy is the underlying principle of the WARR Strategy 2030 and an internationally-recognised foundation for strategic planning models of a growing number of organisations and governments.

This differs significantly from the "take, make, use and dispose" behaviour in the linear economy which has driven retail markets and lifestyles for several decades. A linear economy places a low value on a natural resource by viewing it as a single use commodity where, once it has had its primary use, it is discarded and replaced with a new product manufactured from new resources.

Linear Economy

Circular Economy

The objective of circular economy planning is to increase the value of a natural resource by keeping it in circulation until its productive life is exhausted. As an ingredient of one manufactured product a resource can be kept in circulation through reuse or repair of the product or recycle and remanufacture into another product.



Regional Focus

The South Coast Alliance (SCA) between the City of Albany and Shires of Plantagenet and Denmark is committed to furthering the economic development and future prosperity of the region.

The Sustainable Waste Alliance sub-committee operates under a Memorandum of Understanding within the SCA and meets on a monthly basis with the major objectives to:

1. Develop a consistent approach to the collection, treatment and disposal of domestic and commercial waste.
2. Investigate the potential need and possible development of a regional landfill site which may include existing sites within the sub-regional area or new sites both within and without of the sub-regional area.
3. Improve recycling and reuse in the sub-regional area.
4. Develop education programs in the sub-region to develop knowledge of the waste stream, treatment and recycling to encourage positive attitudes towards efficiencies in waste treatment.

The South Coast Sustainable Waste Alliance's Strategic Vision was adopted in March 2019 and sets the direction for regional waste management with the following objectives:

1. Reduce waste to landfill
2. Minimise environmental risks and human impacts
3. Provide a quality, cost-effective waste collection service to the community
4. Determine a long-term waste disposal solution for the region's future waste needs
5. Maintain effective relationships with Alliance Partners and other Stakeholders

THE SOUTH COAST SUSTAINABLE WASTE ALLIANCE'S STRATEGIC VISION WAS ADOPTED IN MARCH 2019

What are our Objectives and Priorities?

Our Waste Management Guiding Principles

In 2004 the City of Albany was the first local government in Western Australia to introduce a three bin collection service for residents. After a long period of consolidation which has seen the Albany community embrace and build a strong recycling culture it is now time for a new round of innovative steps to become leaders in local government waste management.

Six principles will guide the City's waste management innovations and services:

1. Empower people

Build long lasting community relationships to facilitate behaviour change and a readiness to participate in waste minimisation and new methods of resource recovery.

2. Think creatively

Work with and encourage all community stakeholders to be innovative when looking for new solutions and commercial opportunities.

3. Build employment

Encourage new commercial opportunities and developing social enterprise initiatives which will create new jobs.

4. Manage waste as a resource

Help the community understand the principles of a circular economy and the value of waste resources.

5. Plan for the future

Plan for the best possible outcomes for our community and environment – now and into the future.

6. Regional focus

Reinforce a regional partnership to support larger goals and economies of scale.

Underpinning the guiding principles are five strategic objectives which will target key focus areas.

1. **Minimise waste to landfill**
2. **Engage stakeholders**
3. **Lead and advocate for best practice waste management**
4. **Encourage innovation**
5. **Provide cost-effective services**

Our Waste Management Strategic Objectives & Priorities

STRATEGIC OBJECTIVE 1.

Minimise Waste to Landfill

Key Focus Areas	Priorities	Key Performance Measures
1. Waste Reduction & Recycling	**1.1** Improve waste reduction and recycling within City of Albany operations, worksites and events	. Decreased waste output and increased proportion of recycled material
	1.2 Investigate and provide further opportunities to reduce waste outputs and increase recycling by commercial operators	. Decreased waste to landfill and increased proportion of recycled material
	1.3 Increase range of materials accepted for recycling	. Increased number of products accepted at the MRF, waste facilities and across the community
	1.4 Explore options for the processing of C&D waste	. Increased diversion volumes of C&D waste
2. Procurement	**2.1** Develop a Sustainable Resource Management Plan for the City of Albany organisation which gives direction to procurement of and planning across all business units	. Implementation of Sustainable Resource Management Plan
	2.2 Investigate the inclusion of a waste management component to the evaluation criteria of City tenders and quotations	. Inclusion of waste management criteria in tender and RFQ evaluation documentation
3. Diversion	**3.1** Review product stewardship schemes for opportunity to target problematic waste streams	. Report recommendations to Waste Management Working Group
	3.2 Identify opportunities to support circular economy business initiatives	. Dialogue held with government, business and community and reported back to Waste Management Working Group
	3.3 Promote Fossicker's Shop as a means of diverting goods	. Increased number of customers using facility
	3.4 Conduct a business analysis of the management of Fossicker's Shop and provide recommendation on its future development	. Report recommendations to Waste Management Working Group

STRATEGIC OBJECTIVE 2.

Engage Stakeholders

Key Focus Areas	Actions	Key Performance Measures
1. Sustainability	**1.1** Workshop potential synergies with sustainability enterprises	. Report recommendations to Waste Management Working Group
	1.2 Regularly investigate social enterprise opportunities	. Report recommendations to Waste Management Working Group
	1.3 Review how waste sustainability integrates into the City's organisational sustainability plan	. Report recommendations to Executive Director Infrastructure and Environment
2. Littering	**2.1** Review the City of Albany's organisational approach to litter and public dumping, including data collection, intervention and compliance	. Present report to Executive Management Team
	2.2 Provide support to community groups working to minimise littering along roadsides and in public open space	. Reduced volumes of litter collected during scheduled roadside pickups
3. Community	**3.1** Develop and implement a communications plan to guide community education, engagement and responsibility	. Present Community Waste Engagement Plan to Waste Management Working Group
	3.2 Build community waste networks including community groups, agencies and business representatives	. Creation of a formalised community waste network
	3.3 Inform the community of waste targets and achievements	. Community engagement implemented via Community Waste Engagement Plan

STRATEGIC OBJECTIVE 3.

Lead and Advocate for Best Practice Waste Management

Key Focus Areas	Actions	Key Performance Measures
1. Advocacy	**1.1** Develop profile as waste resource recovery innovator	. Increased representation on external waste industry committees based on 2018 participation . Increased number of COA led community waste initiatives based on 2018 participation
	1.2 Increase involvement in waste industry discussions	. Increased number of COA led industry waste initiatives based on 2018 participation
	1.3 Actively lobby all levels of government for changes to waste-related policies and funding for new waste initiatives	. Increased number of submissions to government on waste-related issues based on 2018 figures
2. Waste Infrastructure	**2.1** Investigate and select suitable site for new waste facility with regional capacity	. Recommend site for new waste facility to Council
	2.2 Plan and construct operational infrastructure for new waste facility	. Construction and commissioning of a new waste facility
	2.3 Plan the closure of the Hanrahan Landfill	. Present Post-Closure Plan to Waste Management Working Group
	2.4 Implement capital works projects associated with the Hanrahan Landfill Post-Closure Plan	. Successful project delivery
3. Regional Partnerships	**3.1** Continue to grow South Coast Sustainable Waste Alliance Collaboration	. Regular Sustainable Waste Alliance meetings
	3.2 Implement and periodically review the South Coast Waste Alliance Strategic Vision	. Provide regular implementation updates to the South Coast Economic Alliance
	3.3 Implement effective audits and recommendations of regional approaches	. Review through Sustainable Waste Alliance meeting

STRATEGIC OBJECTIVE 4.

Encourage Innovation

Key Focus Areas	Actions	Key Performance Measures
1. Alternative Practices	**1.1** Regularly review alternative waste practices such as waste to fuel, anaerobic digestion and waste to energy	• Update Alternative Waste Technology information folder
	1.2 Openly consult with business to discuss alternative waste practice opportunities	• Document discussions and update folder
	1.3 Investigate the viability of using landfill gas from Hanrahan Landfill as a potential energy source	• Present consultant's report to Waste Management Working Group
2. Technology & Development	**2.1** Investigate and implement alternative methods to divert target waste streams from landfill	• Present report to Waste Management Working Group
	2.2 Investigate new technologies to manage waste at landfills, transfer stations and MRF	• Present report to Waste Management Working Group
	2.3 Review process for design, planning and installation of public place bins and waste infrastructure	• Present report to Executive Management Team
	2.4 Investigate smart technology for public place bins and collection fleets	• Template for grant funding submissions
3. Data Collection	**3.1** Review data collection, weighbridge software and reporting methodology	• Increased reporting on waste categories
	3.2 Improve data collection of household waste habits	• Present results of kerbside assessments to Waste Management Working Group
	3.3 Regular audits of waste composition at landfill and recovery sites	• Present results of waste audits to Waste Management Working Group

STRATEGIC OBJECTIVE 5.

Provide a Cost Effective Service

Key Focus Areas	Actions	Key Performance Measures
1. Contracts	**1.1** Explore opportunities for contract sharing among Alliance partners	• Present options and costs to South Coast Alliance
	1.2 Review and tender the City's waste services contract to maximise resource recovery and community confidence	• New contract in place
	1.3 Investigate other contractual opportunities which may benefit waste operations	• Present options to Waste Management Working Group
2. Collection	**2.1** Integrate food organics into kerbside garden organics collection	• Successful project delivery
	2.2 Develop criteria for extending collection services to include new residential areas	• Residential Waste Collection Service Implementation Guidelines
	2.3 Audit and regularly review collection schedule and location of public place bins, including frequency during peak and seasonal times	• Annual public place bin report
3. Flexibility	**3.1** Survey residents and conduct visual audits on kerbside bin usage and capacity	• Report to Waste Management Working Group
	3.2 Review bin size and collection model and determine feasibility of offering a tailored collection service	• Report to Waste Management Working Group
	3.3 Review separated waste pricing options for commercial operators	• Report to Waste Management Working Group

How will we Monitor, Measure and Report Progress?

The Strategy's Actions and Key Performance Measures will be monitored on an Action Plan Scorecard and reported on quarterly.

Targets

Waste Authority Targets

After recording the nation's highest rate of waste generation per capita and the equal second lowest rate of resource recovery in 2014/15 the WA Waste Authority has set ambitious targets to increase recovery rates and divert waste from landfill.

WARR Strategy Targets

Waste Generation	2025	2030
Reduction in waste per capita compared to 2014 -15	10%	20%
Waste generation (kilograms per capita)	2,361	2,098

Resource Recovery Rate	2020	2025	2030
All sectors Western Australia		70%	75%
Municipal Solid Waste Perth metropolitan region	65%	67%	70%
Municipal Solid Waste Major regional centres	50%	55%	60%
Commercial and Industrial Western Australia	70%	75%	80%
Construction and Demolition Western Australia	75%	77%	80%

City of Albany Targets

In 2017/18 Albany households generated an average of 1092kg over the year, or 9kg of waste per person every week. While our per capita waste generation remains significantly lower than the state average, annual waste generation has increased since current reporting methods commenced in 2012/13, although there was a promising decrease from 2016/17 to 2017/18.

Additionally, Albany's domestic waste recovery (i.e., percentage of waste diverted for recycling) has been on a downward trend since 2012/13, with 2017/18 data indicating a recovery rate of 30% which was slightly more than the previous financial year but well short of the state target rate of 50%.

The Strategy aligns with Waste Authority targets for waste reduction and resource recovery to improve current waste trends. Significant innovation and collaboration with community, business, and the state government will be required to meet the ambitious goals

Federal government leadership in the advancement of a sustainable circular economy model will be essential in seeing targets met.

5.2 Delivery of Major Projects

There are many actions to be delivered over the life of the Strategy including several exciting projects which will be undertaken to substantially change the Albany community's waste behaviour and waste treatment infrastructure.

FOGO Collection

The introduction of food organics waste into the garden organics bin in the 2019/2020 financial year will be a significant short term goal which will potentially divert 30%, or 2,300 tonnes, of kerbside general waste bin contents from landfill each year. Implementation of the new system will be supported by a comprehensive communications strategy to assist residents with waste reduction and separation.

New Landfill Site

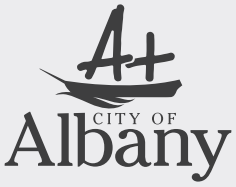
The identification, acquisition and subsequent approval of a new landfill site is an important objective to ensure long term security of the City's waste disposal options.

Hanrahan Landfill Closure

Hanrahan Landfill will reach capacity in approximately 2026 and will require significant earthworks and infrastructure development to control landfill gas and leachate emissions during its progressive closure.

New Waste Facility Construction

Following the acquisition of a new site and during the closure phase of Hanrahan Landfill, major capital works projects will be undertaken to construct a new landfill and associated infrastructure such as landfill gas management systems and leachate treatment facilities.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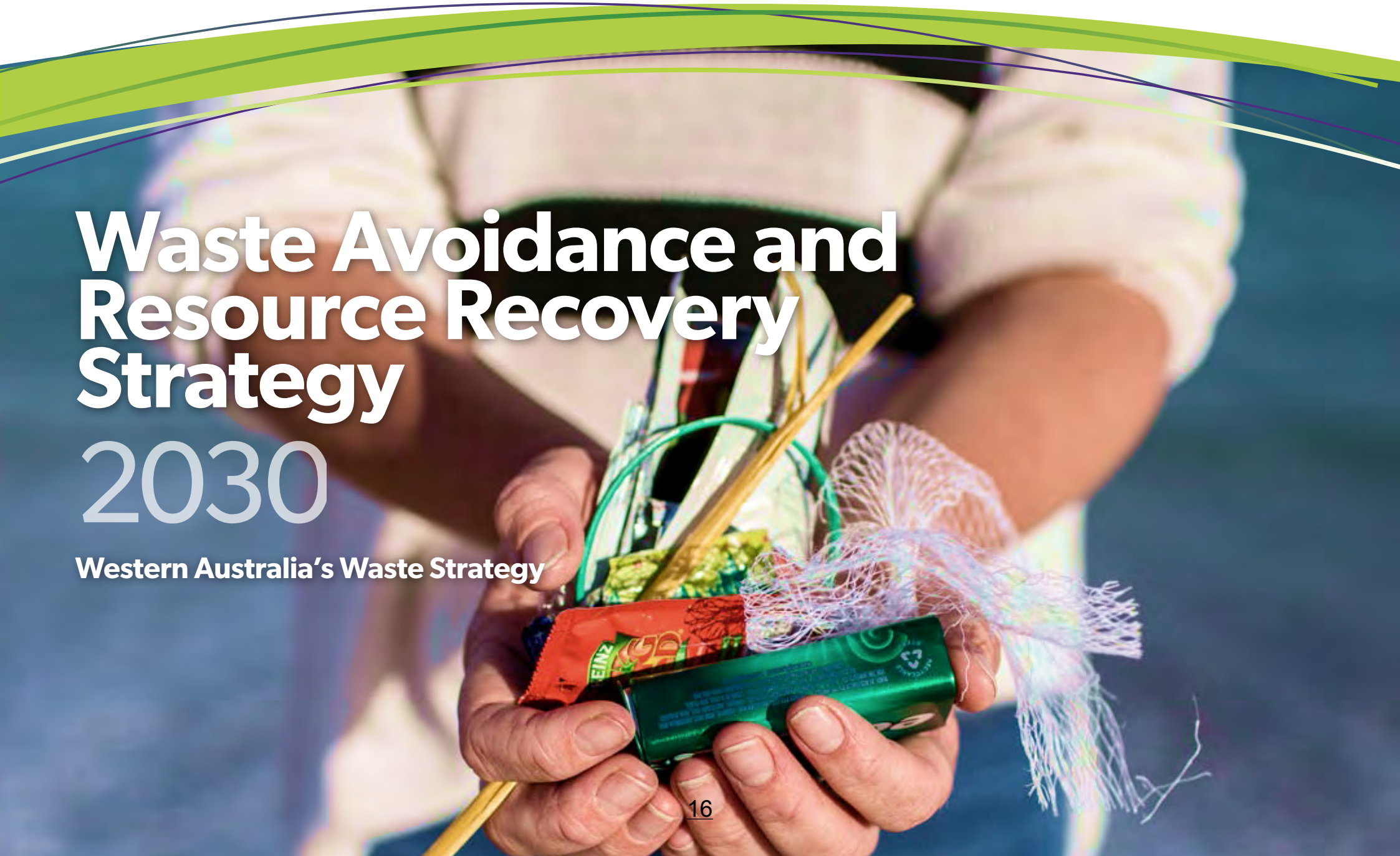
Waste Authority



Waste Avoidance and Resource Recovery Strategy 2030

Western Australia's Waste Strategy

Waste Authority
C/O Department of Water and Environmental Regulation
Department of Water and Environmental Regulation
Prime House, 8 Davidson Terrace
Joondalup Western Australia 6027
www.wasteauthority.wa.gov.au.

Acknowledgements
The Waste Authority would like to acknowledge the contribution of Department of Water and Environmental Regulation staff to the development of this document.

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This document is available in alternative formats and languages on request to the Waste Authority.

Statutory context
The Waste Authority is charged with promoting better waste management practices in Western Australia under the *Waste Avoidance and Resources Recovery Act 2007*. One of the Authority's functions under the Act is to draft, for the Minister for Environment's approval, a long term waste strategy for the whole of the State for continuous improvement of waste services, waste avoidance and resource recovery, benchmarked against best practice and targets for waste reduction, resource recovery and the diversion of waste from landfill disposal. This strategy takes a ten year and beyond view and must be reviewed at least every five years. This Strategy was approved by the Minister for Environment and replaces Western Australia's inaugural waste strategy, *Creating the Right Environment*, approved and published in 2012.

Contents

Invitation from the Minister

Western Australia is a spectacularly beautiful place with a vibrant and growing population.

It's because of this that we all have a significant opportunity in terms of how we live our lives and the impact we have on our environment.

We can make a significant impact by acting on the waste we generate and how we manage resources from extraction through to manufacturing, use and disposal.

Right now, Western Australia is close to leading the "wrong lists". National figures from 2014–15 (the latest available as at September 2018) show Western Australia had the highest rate of waste generation *per capita*[1] in the nation, and the equal second lowest rate of resource recovery – 13 percentage points below the national rate.

We have an obligation to our current community and generations to come to generate less waste, extract more from our valuable resources and to better manage the disposal of our waste.

Waste Avoidance and Resource Recovery Strategy 2030 rises to address that challenge and the opportunities that better choices and better waste management present.

We will have to work hard to meet the ambitious targets set out in this Strategy and deliver against long-standing issues in the waste community. We won't, for example, be able to meet our 2025 recovery targets without all metropolitan local governments adopting a three-bin FOGO system, and I will work with those local governments to achieve this.

I acknowledge that with this comes significant environmental, social, cultural and economic impacts and opportunities associated with improved waste management.

Across Australia, the waste sector contributes more than $10 billion a year to the economy. At the same time, materials worth hundreds of millions of dollars are lost to landfill each year (ABS, 2014).

High-performing waste and recycling systems which see materials recovered, reused and recycled can and do reduce this impact. The creation of a circular economy has the potential to harness the economic value of these materials that would otherwise be lost, and drive investment in infrastructure and jobs.

Reducing the amount of waste disposed of to landfill can also generate significant economic opportunities for the Western Australian community. It is estimated that for each 10,000 tonnes of waste recycled, 9.2 full-time equivalent jobs are created compared to only 2.8 jobs for landfill (Access Economics, 2009).

With an increasing population and our current waste management performance, maintaining the status quo is not an option.

But there is an upside; we can make waste work for us – and enjoy the environmental, social, cultural and economic benefits improved waste management can deliver.

Waste is everyone's business – individuals, households, neighbourhoods, community groups, schools, small and big businesses, local governments, waste managers, the State Government and the media.

There's a big challenge ahead of us all and this strategy is about finding a united way forward.

The McGowan Government will continue to show leadership in the waste arena for the benefit of all Western Australians now and into the future.

As WA's Environment Minister, I encourage everyone to act on waste and own your impact – whether it's in your role as a consumer, producer, waste manager or regulator.

We've made good progress in recent years and there's great momentum building.

Let's harness that commitment and energy in the years ahead and work towards a cleaner future for all Western Australians.

Hon Stephen Dawson MLC
Minister for Environment

[1] Dr Joe Pickin and Paul Randell, *Australian National Waste Report 2016*, Department of the Environment and Energy, Energy and Blue Environment Pty Ltd. Figures exclude fly-ash (a by-product of coal-fired power stations)

Introduction by the Chair

Western Australians are consciously reusing, reprocessing, recycling and avoiding waste at an increasing rate. We are generating less waste and recycling more. However, to protect our unique environment from the impacts of waste and litter, and to maximise the benefits of good waste management, more work needs to be done.

Building on and updating the first *Western Australian Waste Strategy: Creating the Right Environment* published in 2012, this strategy introduces significant transformations aimed at Western Australia (WA) becoming a circular economy, with a greater focus on avoidance as well as moving to targets for material recovery and environmental protection in addition to landfill diversion.

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.

In 2014-15, WA's recycling rate was 48 per cent, which is lower than other mainland states.

Waste collection and processing arrangements vary considerably across WA. Long-term planning for waste processing and recycling facilities and local recovery options would benefit resource recovery and promote the most efficient use of resources assisted by economic incentives, modern regulations, compliance and enforcement.

Community engagement, acceptance and awareness is as important as the provision of physical infrastructure and collection systems. Consistency of messaging across homes, workplaces and public areas is a key *fundamental* that needs to be tailored to local recovery infrastructure and systems.

The waste management sector is in a transitional phase and will require clear direction and guidance going forward that may include more directive approaches over voluntary ones. This could be aligned with careful reinvestment of waste levy funds into programs and alternative delivery methods to support implementation of our waste strategy.

There needs to be commitment by all stakeholders of adopting best practice management and engagement and ensuring transition and waste plans are implemented in a timely manner.

The approach taken in this strategy is founded on working collaboratively across all levels of government, industry, the social enterprise sector and the community, supported by government leading by example in areas such as sustainable procurement, minimum levels of recycled content and underpinned by targets and action plans.

The focus of this strategy, including priorities and targets, is on solid waste. However, the principles and approaches in this strategy apply to waste management across WA, regardless of the type, form or source of waste.

Minimising waste and protecting our environment is important to all West Australians and with this renewed focus I am confident we will move towards a more sustainable, low-waste, circular economy.

I look forward to sharing this journey with you.

Marcus Geisler
Waste Authority Chairman

Key strategy elements

VISION	*Western Australia will become a sustainable, low-waste, circular economy in which human health and the environment are protected from the impacts of waste.*		
OBJECTIVES	**Avoid** *Western Australians generate less waste.*	**Recover** *Western Australians recover more value and resources from waste.*	**Protect** *Western Australians protect the environment by managing waste responsibly.*
TARGETS	◉ **2025** – 10% reduction in waste generation per capita ◉ **2030** – 20% reduction in waste generation per capita	◉ **2025** – Increase material recovery to 70% ◉ **2030** – Increase material recovery to 75% ◉ **From 2020** – Recover energy only from residual waste	◉ **2030** – No more than 15% of waste generated in Perth and Peel regions is landfilled. ◉ **2030** – All waste is managed and/or disposed to better practice facilities
HEADLINE STRATEGIES	• A consistent three bin kerbside collection system, which includes separation of food organics and garden organics from other waste categories, to be provided by all local governments in the Perth and Peel region by 2025 and supported by State Government through the application of financial mechanisms. • Implement local government waste plans, which align local government waste planning processes with the *Waste Avoidance and Resource Recovery Strategy 2030*. • Implement sustainable government procurement practices that encourage greater use of recycled products and support local market development. • Provide funding to promote the recovery of more value and resources from waste with an emphasis on focus materials. • Review the scope and application of the waste levy to ensure it meets the objectives of Waste Avoidance and Resource Recovery Strategy 2030 and establish a schedule of future waste levy rates with the initial schedule providing a minimum five year horizon. • Develop state-wide communications to support consistent messaging on waste avoidance, resource recovery and appropriate waste disposal behaviours. • Review and update data collection and reporting systems to allow waste generation, recovery and disposal performance to be assessed in a timely manner. • Undertake a strategic review of Western Australia's waste infrastructure (including landfills) by 2020 to guide future infrastructure development.		

Supporting documents

Other documents which align with or support this strategy *Waste Avoidance and Resource Recovery Strategy 2030* include the:

1. *Waste Avoidance and Resource Recovery Strategy 2030 Action Plan*
2. Waste Authority position and guidance statements
3. State Waste Infrastructure Plan
4. Annual Business Plan
5. Waste Data Strategy

Setting the direction

Waste is Australia's most rapidly increasing environmental and economic metric, according to the Australian Bureau of Statistics[2].

Western Australian's per capita waste generation rates are higher compared to other jurisdictions, while our recovery rates are lower. This poor performance partly reflects some of the unique characteristics of WA such as our geographical size, isolation from markets, vast regional and remote areas, and a heavy reliance on mineral and resource industries. Despite this, there are significant opportunities to improve our waste and recycling practices and performance.

The Australian waste sector contributes over $10 billion a year to the economy. Materials worth hundreds of millions of dollars are lost to landfill each year (ABS, 2014). High performing waste and recycling systems in which materials are recovered, reused and recycled can reduce this impact. The creation of a circular economy has the potential to harness the economic value of materials and drive investment in infrastructure and jobs.

Reducing the amount of waste disposed of to landfill can generate significant economic opportunities for the WA community. It is estimated that for each 10,000 tonnes of waste recycled, 9.2 full time equivalent jobs are created compared to only 2.8 jobs for landfill (Access Economics, 2009).

Most importantly, waste can have a significant impact on the environment and public health through greenhouse gas emissions, pollution, biodiversity loss and resource depletion (Environmental Protection Authority, 2015). Reducing the volume of waste generated is the best way to manage those risks. It is also critical that where waste cannot be recovered it is safely disposed.

The *Waste Avoidance and Resource Recovery Act 2007* requires the development of a long-term waste strategy for the state to drive continuous improvement in waste services, waste avoidance and resource recovery; and set targets for waste reduction, resource recovery and the diversion of waste from landfill.

This new waste strategy sets a direction to guide such decisions and builds on the state's previous *Western Australian Waste Strategy: Creating the Right Environment*. It has been developed in consultation with the WA community, industry and government and builds on the *Western Australian Waste Avoidance and Resource Recovery Strategy consultation paper*. Stakeholder feedback confirmed an overall desire for WA to do more and improve its waste management performance relative to other Australian jurisdictions.

Given this need, this waste strategy has been developed to set the direction for all Western Australians and guide their decisions with regards to waste. To do this, the waste strategy includes a vision for Western Australians to strive for, which is supported by principles, objectives, targets, priorities and strategies to provide stakeholders with clear guidance on how to align their decision making with the intent of the waste strategy's vision.

The waste strategy will also be supported by an action plan that will outline specific actions to be implemented to achieve the objectives of the strategy. The action plan will be prepared by the Waste Authority in consultation with relevant State Government agencies, for consideration by the Minister for Environment. The waste strategy will be reviewed in five years, while the action plan will be reviewed on a more regular basis.

[2] Pickin and Randell, 2017.

Our starting point

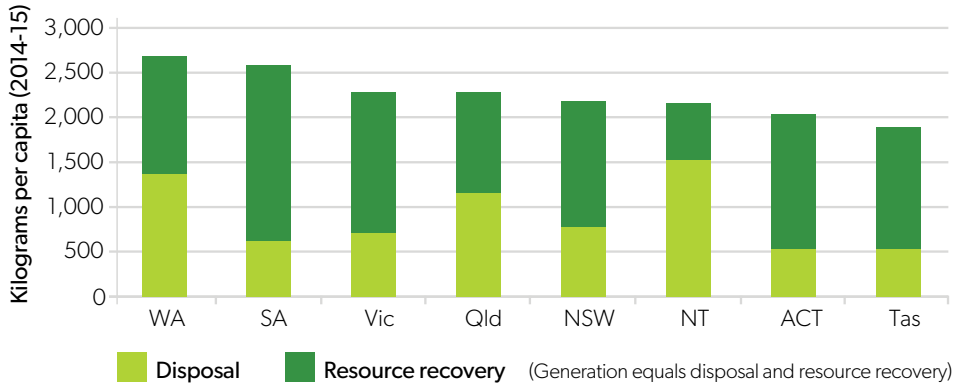
This strategy builds on Western Australia's previous waste strategy *Creating the Right Environment*, which was introduced in 2012 and achieved significant improvements in recycling, reducing waste generation, diverting construction and demolition waste, and better managing commercial and industrial waste.

The achievements were encouraging, but not enough.

In 2014-15 Western Australians:

- generated more waste than people in other Australian states and territories (2,623 kilograms per capita per annum, all waste excluding fly ash);
- disposed of the second highest amount of waste to landfill (1,358 kilograms per capita per annum, all waste excluding fly ash); and
- had the equal second lowest rate of resource recovery (48 per cent)[3].

Figure 1: Waste disposal and resource recovery by state (Pickin and Randell, 2017)



Western Australia has some challenging features when it comes to waste management but these cannot be an excuse. Our state is vast and located a considerable distance from waste end-markets, which can impact investment in waste and recycling infrastructure and overall recycling rates. This vastness also means it can be difficult to prevent environmental impacts from waste, through activities such as illegal dumping.

However, we have encouraging waste management results and momentum on which to build. In the nine years to 2014–15, total waste generation in Western Australia increased by about 20 per cent – or an average of 2.1 per cent per year[3]. However, our population also increased over that time and, on a per capita basis, waste generation actually decreased marginally by 0.3 per cent per year.

In terms of waste recovery over the same period, the state's overall picture also improved – waste to landfill declined and resource recovery rose. In particular:

- resource recovery rate increased from 34 per cent to 48 per cent;
- recycling tonnages rose an average of 6.8 per cent;
- the amount of waste disposed of declined by 6 per cent, by tonnage, or an average fall of 0.7 per cent per year; and
- waste disposal in WA dropped by 24 per cent on a per capita basis, or 3 per cent per year on average, which was the nation's largest fall in waste disposal per capita over the period[4].

[3] Pickin and Randell, 2017

[4] ASK Waste Management, 2017

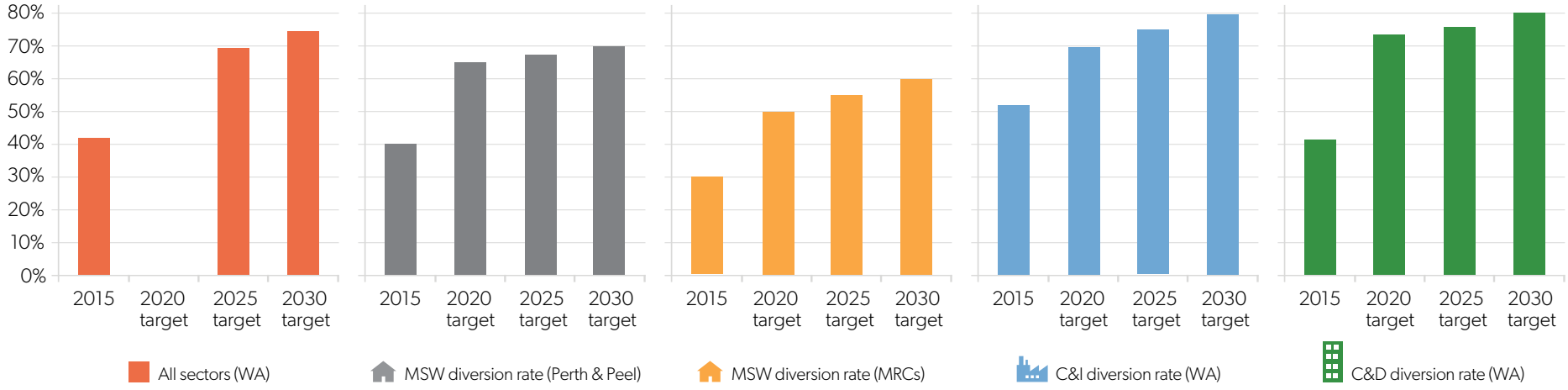
Table 1: Changes in waste generation and landfill in Western Australia, 2010–11 and 2014–15 (Hyder, 2013 & ASK Waste Management, 2017)

	2010–11	2014–15	Percentage change
Generation – total	6.53 million tonnes	6.23 million tonnes	↓5%
Generation – per capita	2,764 kilograms	2,437 kilograms	↓12%
Waste to landfill	4.49 million tonnes	3.61 million tonnes	↓20%
Resource recovery	2.04 million tonnes	2.62 million tonnes	↑28%

The 2017 *Recycling Activity Review* commissioned by the Waste Authority reported generally encouraging trends in waste management in Western Australia between 2010–11 and 2014–15. Note: National and State data differ due to hazardous waste being included in national data sets and some overlap in data collection and attribution.

The journey to becoming a circular economy will not be easy and, as shown in Figure 2, there is a substantial gap between our current performance and the performance required to achieve our waste generation and material recovery targets.

Figure 2: Material recovery performance in 2015–16 and waste strategy targets for 2020, 2025 and 2030 (ASK Waste Management 2017)



Vision

Western Australia will become a sustainable, low-waste, circular economy in which human health and the environment are protected from the impacts of waste.

As Western Australians, we live in a unique environment and we recognise its value and importance. We share a desire to be environmentally sustainable.

To be sustainable means to be a low-waste society. Waste avoidance is a priority, which means we strive to avoid the unnecessary generation of waste.

This waste strategy recognises that some level of waste generation is unavoidable and so encourages a circular economy approach, where any waste that is generated is valued as a resource that can be reused or recycled for the benefit of the Western Australian economy.

A sustainable, circular economy also means we manage waste to protect the environment. Such management needs to occur through the entire life cycle – from design and manufacture, through to use and then disposal options consistent with the waste hierarchy.

Waste Avoidance and Resource Recovery Strategy 2030 recognises that individuals, governments and industry all generate waste and can play an important role in avoiding waste, recycling and disposing of waste correctly to protect the environment. The waste industry has an important role to play in terms of maximising the recovery of resources and then managing the disposal of residual waste, or waste that cannot be practically recovered.

Objectives

This strategy includes three objectives to guide the Western Australian community and enable the development of a sustainable, low-waste and circular economy.

These objectives frame the priorities and strategies that will contribute to delivering on the vision:

Objective 1

Avoid

Western Australians generate less waste.

Objective 2

Recover

Western Australians recover more value and resources from waste.

Objective 3

Protect

Western Australians protect the environment by managing waste responsibly.

Targets

Waste Avoidance and Resource Recovery Strategy 2030 provides a long-term strategy for the State for continuous improvement of waste management benchmarked against best practice.

It includes targets for waste avoidance, resource recovery and environmental protection, including the diversion of waste disposed to landfill.

Under each objective, high-level targets have been set for the state that are Specific, Measurable, Achievable, Relevant and Time-bound (SMART).

Targets have been set with reference to performance in other jurisdictions and knowledge about local performance and barriers.

These targets will support our move towards becoming a sustainable, low-waste and circular economy and allow progress to be monitored.

Establishing baseline data is an ongoing challenge in waste management and ensuring data is provided by key sources is an important focus of this strategy.

Improved data collection and analysis will better enable the measurement and evaluation of waste management programs and initiatives. In turn, we will be able to ensure funding and other resources are directed where they are most needed and can be most effective.

For the purpose of this strategy, targets have been set using 2014–15 national data. This data was the latest available during the consultation and development of the strategy. More recent waste data, which became available in the *National Waste Report* in November 2018, is less accurate than the 2014–15 data, due most significantly to waste stockpiling.

Data improvement to address accuracy issues is a headline strategy in this waste strategy, and will be addressed as a priority.

Overall objectives and state targets

Avoid	Recover	Protect
Western Australians generate less waste.	*Western Australians recover more value and resources from waste.*	***Western Australians protect the environment by managing waste responsibly.***
⊙ **2025** – 10% reduction in waste generation per capita ⊙ **2030** – 20% reduction in waste generation per capita	⊙ **2025** – Increase material recovery to 70% ⊙ **2030** – Increase material recovery to 75% ⊙ **From 2020** – Recover energy only from residual waste	⊙ **2030** – No more than 15% of waste generated in Perth and Peel regions is landfilled ⊙ **2030** – All waste is managed and/or disposed to better practice facilities

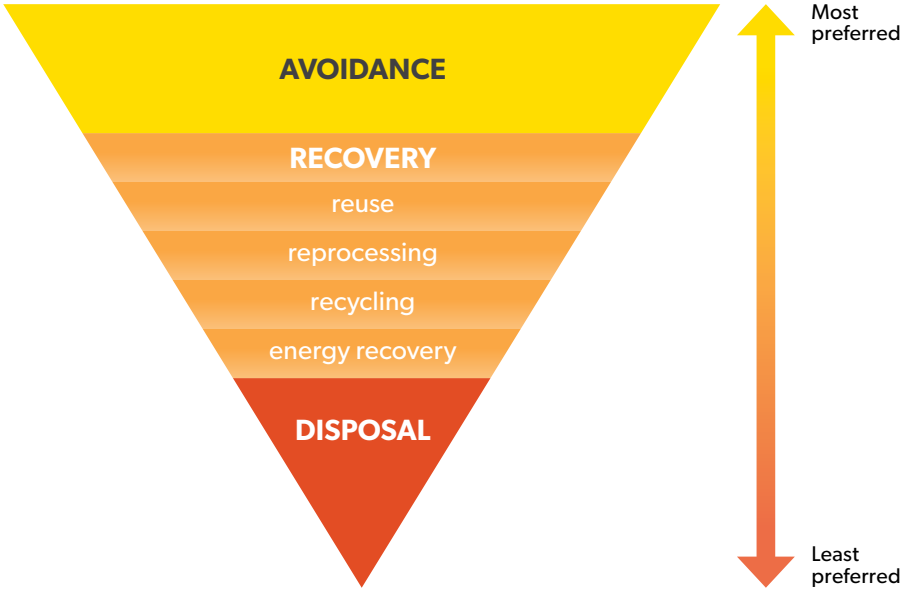
Guiding concepts

Waste hierarchy

Waste Avoidance and Resource Recovery Strategy 2030 applies the waste hierarchy, which is a widely accepted decision making tool which is set out in the *Waste Avoidance and Resource Recovery Act 2007*. 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.

Figure 3: Waste hierarchy



Resource recovery options recover value from materials, thereby offsetting the environmental impacts of extracting and processing raw materials. Energy recovery is the least preferred recovery option.

Disposal is the least preferred option. Disposal generally recovers the least value from materials and delivers the least environmental benefit.

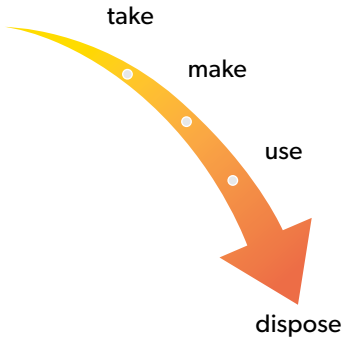
Circular economy

A circular economy builds on long-standing sustainability concepts, including life cycle thinking and resource efficiency, and it complements the waste hierarchy. A circular economy refers to the flow of both materials and energy – it moves away from the linear 'take, make, use and dispose' model to one which keeps materials and energy circulating in the economy for as long as possible.

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

Local solutions are particularly important in a state as large as WA where access to markets is limited, and transport costs and impacts are high. WA has an opportunity to benefit from greater local recycling activity. If local recycling options are not available, solutions within Australia will be preferred.

Figure 4: Current waste approach versus circular economy

Current approach	Circular economy
	
Linear flow of materials – 'take, make, use and dispose' model.	Circular flow of materials – materials sorted and retained in the economy for as long as possible.
Limited use of renewable materials and energy.	Preference for renewable materials and energy.
Significant volumes of materials disposed of and lost to the economy. Loss of embodied materials, energy and water.	Materials recovered as high up the waste hierarchy as possible. Embodied materials, energy and water retained in the economy. Organic materials re-enter and regenerate the environment safely (for example, as compost).
Materials managed locally and globally.	Preference to manage materials locally to reduce the costs and impacts of transport, and to provide local employment and investment opportunities.
Economic value of materials, employment and investment not fully accounted for.	Economic value of materials, employment and investment accounted for.
Limited focus on life cycle thinking.	Products designed and manufactured to minimise environmental impact through whole of life.

Behaviour change – knowledge, enabling infrastructure, incentives

Building on the Western Australian Waste Strategy: *Creating the Right Environment* (2012), *Waste Avoidance and Resource Recovery Strategy 2030* aims to change behaviour through a combination of strategies grouped around knowledge, enabling infrastructure and incentives.

Knowledge plays an important role in getting individuals and organisations started on behaviour change, but it is only a start. Knowledge needs to be complemented with the incentives and practical support individuals and organisations need to act on their decision to change behaviours.

Access to appropriate enabling infrastructure is critical in allowing individuals and organisations to engage with waste management options to improve their effectiveness and efficiency. Enabling infrastructure includes the physical facilities necessary to manage waste, as well as the organisational structures of government and legislation applying to individuals and organisations.

Appropriate knowledge and enabling infrastructure can assist in removing barriers to behaviour change, and incentives can provide a driving force for change. Incentives can be positive, such as funding, or negative, such as penalties and compliance actions.

Our principles

Five key principles, aligned with legislation, guide the thinking behind *Waste Avoidance and Resource Recovery Strategy 2030* and will drive future decision making.

Shared responsibility and partnership – owning your impact

The state's environmental resources belong to all Western Australians and we all have a role to play in protecting them. The State Government will lead by example by working collaboratively with the community, industry and governments to improve waste management outcomes.

We will support product stewardship and extended producer responsibility as part of our approach to shared responsibility.

Innovation and growth

Western Australia will encourage, embrace and celebrate innovation in all forms that enables and expands our waste management capacity and know-how.

Better practice

Western Australians will pursue better practice approaches in waste management that takes into account the full costs, benefits and impacts of waste management decisions.

This strategy will inform priorities for developing better practice approaches to waste and recycling services. Better practice will be outcome-focussed, evidence-based, informed by performance achieved in other jurisdictions, developed in consultation with key stakeholders, and set out in guidelines that are framed to reflect the varying resources and capacities of the users of those guidelines. We will stay abreast of national and international best practice and responsibly measure, evaluate and benchmark our own performance against it.

Better practice guidelines will inform stakeholders, such as waste managers and local governments, about preferred systems to achieve the targets in *Waste Avoidance and Resource Recovery Strategy 2030*. Local government waste plans will have regard to better practice guidelines published or referenced by the Waste Authority.

When better practice waste management is promoted by State Government, stakeholders will adjust practices to meet or exceed this new benchmark.

Waste as a resource

Western Australians will adopt and implement the waste hierarchy, avoiding the generation of waste where possible, maximising the recovery of waste that is generated, and protecting the environment from the impacts of disposal.

Intergenerational equity

Western Australians will make waste management decisions which ensure the health, diversity and productivity of our environment is maintained or enhanced for the benefit of future generations.

Our approach

Using your influence – owning your impact

As individuals, we make decisions in different roles and have different spheres of influence when avoiding and recovering waste and also when protecting the environment from the impacts of disposal.

In our different spheres of influence we can have a greater or lesser impact on what resources or materials are used, how long they stay in circulation, what waste is generated, what resources are recovered and, ultimately, the method of disposal and the impact that has on our environment.

An individual or single household can make positive choices to contribute to the circular economy. For example, being informed about how to source separate recyclables and purchasing recycled products for use in the home. When individuals act collectively, in our neighbourhoods, schools and community groups, there is an even greater potential to make a difference.

As manufacturers, industry can make significant contributions to the circular economy through shifts to more sustainable design and manufacturing methods, and enabling greater resource recovery. As waste managers, the sector can innovate to improve waste management outcomes and better protect the environment.

Local, State and Commonwealth governments can influence, educate and inform – and can also be significant consumers whose purchasing decisions and procurement policies can have very positive impacts and influence. They have important legislative and regulatory roles and develop and implement strategies. Australia is also part of global action on waste management.

Local solutions and markets

Waste Avoidance and Resource Recovery Strategy 2030 places a focus on identifying and prioritising local market solutions for those recyclable materials traditionally exported from the state. Local markets for large volume wastes, such as construction and demolition waste and organic waste lend themselves to being managed close to the source of generation for economic and environmental reasons. This is an example of the circular economy approach in action, supporting local innovation and local jobs.

For other priority materials such as plastics, it is not as straightforward to identify local reuse options across the state that make sense locally. This strategy places an increased focus on promoting procurement decisions that preference local markets and play a role in supporting the development of a remanufacturing industry within Western Australia, along with the employment and investment it can bring to the state.

Attracting investment into local reuse options requires a degree of certainty which has not been present under standard market conditions in Western Australia. This will rely on procurement decisions recognising the benefits that local reprocessing, and the use of products made locally from recycled materials, can offer compared to national or international export options.

Waste generators and waste managers

Waste Avoidance and Resource Recovery Strategy 2030 recognises the roles that different individuals and organisations have in generating and managing waste. This strategy recognises entities that are primarily generators of waste (community, local and state government, and industry), and entities that are primarily managers of waste (the waste industry, including private industry and local government).

This approach allows individual strategies to better target certain groups to help avoid, recover and protect the environment from the impacts of waste. For example, community members can make better purchasing decisions with more knowledge and information, and can influence industry in its packaging and production decisions with the choices they make; industry can make decisions about more circular design and production of goods; while waste managers can embrace technology and innovation to achieve improved waste management practices.

This waste strategy recognises circumstances where resources and capacities will be limited. The action plan and supporting better practice guidance documents will be framed to reflect this.

Waste streams

Consistent with other jurisdictions, solid waste will continue to be categorised for the purpose of measurement and comparison against targets in the following three streams:

- **Municipal solid waste (MSW):** primarily waste collected from households and local governments through waste and recycling collections.
- **Commercial and industrial (C&I) waste:** waste that is produced by institutions and businesses. It includes waste from 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.

These waste stream descriptions are consistent with the previous Western Australian Waste Strategy (2012), and are consistent with the way Australian jurisdictions categorise and report on waste and recycling performance. The stream descriptions are carried forward to *Waste Avoidance and Resource Recovery Strategy 2030* from the previous strategy to maintain continuity and enable waste and recycling data to be effectively benchmarked against other jurisdictions.

National context

Western Australia contributes to national strategies aimed at increasing the recovery of materials from waste, including:

- The *National Waste Policy: Less waste, more resources, 2018* and the *Product Stewardship Act 2011* support national approaches to problem wastes such as televisions, computers, paint, tyres and packaging.
- The Australian Packaging Covenant and the Environment Protection (Used Packaging Material) Measure are national programs aimed at reducing generation and encouraging the reuse and recycling of used packaging materials.

Our roles and responsibilities

Collective responsibility – waste is everybody's business

All Western Australians generate waste, and while there are some businesses that manage our waste for us, we can all take a bit more responsibility for better managing the impacts of our own waste. Whether large or small, waste is generated by households, schools, workplaces, local government authorities, government departments, businesses and industry in large cities and remote towns around our vast state.

As a collective issue, waste demands a collective solution. To achieve this strategy's objectives and targets, a model of collective, shared responsibility and action must be adopted.

State Government will work collaboratively with all stakeholders to guide and develop collective policies and solutions. These solutions will be founded in behavioural change campaigns and leading industry policy and practices – starting from within, through leadership in government activities that minimise waste, such as procurement policies and disposal processes.

For local governments and industry, the collective partnership approach will mean adopting best practice approaches to waste minimisation, resource recovery and appropriate waste management.

For businesses, it may mean expanding recycling programs or reviewing outdated practices and policies to reduce waste impacts. For waste managers, it will mean embracing innovation, new technologies and best practice performance in waste management. For the Western Australian community, it will mean being informed about the impact different decisions can make on waste contributions and adopting positive waste behaviours.

As every individual and group contributes to the waste problem, everybody will contribute to the solution in a range of different roles and ways:

- **Commonwealth Government** can help influence outcomes through national waste legislation, strategies and policy frameworks that fulfil obligations under international agreements. The Commonwealth Government will continue to manage and monitor compliance with international conventions, administer the *Product Stewardship Act 2011* and related schemes, and work with jurisdictions to identify and address issues that warrant nationally consistent approaches. It will also establish forums for cross jurisdictional collaboration to improve national waste policy outcomes.
- **State Government** can influence outcomes through its policies and programs, but also generates waste through its operations. As the "system steward" State Government will provide waste management leadership. It will influence waste behaviours through legislation, regulation, policies and programs that align with national approaches. Through engagement and collaboration, the government will create an environment that encourages community to adopt positive behaviour change and businesses to invest and innovate in the waste and recycling sector to move Western Australia towards becoming a circular economy. Agencies will also lead by example by committing to actions and targets in this strategy and reporting on their performance to contribute to its delivery.
- **Waste Authority** can influence outcomes through its programs. Established under the *Waste Avoidance and Resource Recovery Act 2007*, the authority will provide waste management advice to Government and waste management leadership to the community. It will lead the delivery of this strategy by coordinating stakeholder commitment and collaboration on strategies, administering the Waste Avoidance and Resource Recovery Account (fund), publishing position statements, and preparing annual business plan objectives, priorities and programs that align with this waste strategy.
- **Local governments and regional councils** are primarily waste managers that provide household waste collection and recycling services, manage and operate landfill sites, and deliver education and awareness programs. Local governments and regional councils will provide information, infrastructure and incentives that encourage behaviour change and they will plan for the management of waste within their districts. The issues faced by local governments vary, particularly between metropolitan and regional areas, so there will be a need to identify local, fit-for purpose solutions that reflect better practice, align with this strategy and support a move towards becoming a circular economy. Local governments also generate waste resulting from the range of services provided to the community and can influence purchasing and practices to increase avoidance and recovery and maximise protection of the environment.

One of the headline strategies of this waste strategy is the implementation of local government waste plans. Waste plans will bring together the many different aspects of local government waste management, and provide local governments with a mechanism that aligns their waste services and contracts with the waste strategy and better practice. Waste plan requirements will be developed by the Department of Water and Environmental Regulation in collaboration with the Department of Local Government, Sport and Cultural Industries and the Western Australia Local Government Association. Guidance and templates will be provided to assist local governments in developing and reporting on their waste plans. Waste plan requirements and guidance will be developed in consultation with local governments and designed to reflect the varying resources, capacities and issues faced by local governments.

- **Business and industry** are primarily waste generators that can make decisions to reduce the generation of waste (e.g. by using reduced packaging) and increase recyclability. The business community often deals with large volumes of waste, as well as harmful types of waste, which requires responsible management.
- **Waste industry** is primarily the manager of waste and is responsible for waste management services including collection, sorting, processing (i.e. reuse or safe disposal). Waste managers can also play a key role in providing information to the community. The waste industry will be relied on to make informed infrastructure and technology investment decisions that meet waste and recycling market needs and move the state toward becoming a circular economy.
- **Community, individuals and households** are primarily waste generators who make decisions about purchasing and waste disposal. The community has a key role to play to avoid waste and then properly recover and manage waste once it is generated. Decisions by these individuals and groups regarding the purchasing of products or services can have a significant influence on the behaviour of many other entities.

Opportunities and focus materials

Opportunities to avoid and recover waste and protect the environment through its responsible management exist for all materials and arise in many different situations. Even the smallest changes in behaviour at a personal level contribute to overall improvements in waste outcomes.

This strategy also identifies focus materials, which will be the focus of actions and measurement under this waste strategy. Significant improvements will need to be made for each of these focus materials if we are to meet the targets in *Waste Avoidance and Resource Recovery Strategy 2030*.

Construction and demolition waste

Construction and demolition (C&D) waste makes up around half of Western Australia's waste stream and represents around 45 per cent of material recovered for recycling. C&D waste represents a significant opportunity for waste avoidance and material recovery. As a waste generator, the construction industry can play a role in avoiding the amount of waste generated – for example through more efficient building processes – while waste managers can maximise recovery of waste that is generated.

Organics: food organics and garden organics

Organic material, including food waste, represents nearly 20 per cent of material recovered for recycling. The National Food Waste Strategy estimates that over 5.3 million tonnes of food that is intended for human consumption is wasted from households and the commercial and industrial sectors each year. Food waste disposed to landfill generates greenhouse gases, reduces landfill capacity, and represents a loss of valuable organic material which could otherwise be recovered for productive use.

Metals: steel, non-ferrous metals, packaging and containers

Metals represent around 20 per cent of material recovered for recycling by weight. Metals are a high value commodity with significant embodied energy. While recovery rates are relatively high compared to other materials, it is important to ensure these materials are only used where necessary and that as much value and embodied energy as possible is recovered from them.

Paper and cardboard: office paper, newspaper and magazines

Paper and cardboard represent around 10 per cent of material recovered for recycling. Paper and cardboard is a high value commodity. When disposed to landfill, paper and cardboard generates greenhouse emissions and represents a loss of economic value.

Glass: packaging and containers

Glass packaging and containers contain significant embodied energy which is lost if disposed to landfill. Glass that is inappropriately disposed (littered or dumped) can also present direct risks and impacts to the environment and human health.

Plastics: packaging and containers

Plastic makes up a significant proportion of packaging materials in our waste stream. There are significant opportunities to avoid plastics, and in particular, single use plastics. Plastic is a high value commodity, particularly where contamination rates are low. Disposal to landfill represents an economic loss, and inappropriate disposal into the environment (litter and dumping) can result in significant harm to the environment and wildlife.

Textiles: clothing and other fabric-based materials

Textiles contain valuable materials and significant embodied energy. When disposed to landfill or illegally dumped, textiles represent a loss of resources and can negatively impact the environment.

Hazardous waste

Hazardous waste is described as unwanted products that are corrosive, flammable, toxic or reactive and present a potential risk to human health and the environment. Hazardous waste represents only a small percentage of the total waste stream, however it presents significant risks if not well managed. Opportunities exist to avoid hazardous waste through consumer purchasing decisions, and collect hazardous waste for recovery or safe disposal using best practice service infrastructure.

Our objectives, targets and strategies

Objective 1: Avoid

Western Australians generate less waste

The waste hierarchy places waste avoidance at the forefront of approaches for managing waste. This waste strategy reflects that priority and recognises that reducing the amount of waste generated in our state requires significant and sustained behaviour change by government, industry and households if this objective is to be achieved.

National data for 2014–15 indicate that Western Australians generate more waste per capita than the national average and that generation per capita has remained static between 2010–11 and 2014–15*. This is in spite of past efforts to reduce waste generation and it suggests that reducing our generation rate will be very challenging.

This waste strategy first aims to close the gap between our current generation rate and the national average. Given our unique characteristics relative to other jurisdictions (particularly in relation to our geography and economy), reducing our generation of waste to this level will be challenging, but is achievable. Once achieved, our per capita generation rates can then be benchmarked against the nation's best performing jurisdictions.

Waste avoidance is driven in a large part by purchasing behaviour; it relies on high levels of awareness and motivation by consumers, both individuals and organisations, about how to reduce the impacts of purchasing decisions.

Education and incentives are critical to increase awareness of waste avoidance and to support waste avoidance behaviours.

Waste avoidance can also be pursued through the product design and manufacturing phase. Industry has an opportunity to reduce the amount of material used in products to avoid generating waste, often in response to consumer demand. For example, there are significant opportunities across the packaging sector to avoid some wastes altogether or to minimise their use.

AVOID TARGETS		
◉ **2025** – Reduction in waste generation per capita by 10% *(from 2014/15 generation rate)* ◉ **2030** – Reduction in waste generation per capita by 20% *(from 2014/15 generation rate)*		
Waste generators		**Waste managers****
Community	**Government and industry**	**Waste industry**
◉ **2025** – Reduction in MSW generation per capita by 5% ◉ **2030** – Reduction in MSW generation per capita by 10%	◉ Reduction in C&D waste generation per capita by 15% by **2025**, 30% by 2030 ◉ Reduction in C&I waste generation per capita by 5% by **2025**, 10% by **2030**	◉ **2030** – All waste is managed and/or disposed using better practice approaches

* 2016–17 national data has not been used in this strategy. WA reportedly has significant waste stockpiling that is not reflected in the 2016–17 data but accurate assessment of this stockpiling is not yet available. Data improvement to address accuracy issues is a headline strategy in this waste strategy and will be addressed as a priority.

** Includes local government, private industry and state entities.

Focus materials

Achieving the avoidance targets will require an emphasis on the waste materials that, by weight, currently make up more than 90 per cent of the waste Western Australian's generate:

- **Construction and demolition materials:** concrete, asphalt, rubble, bricks, sand and clean fill
- **Organics:** food organics and garden organics
- **Metals:** steel, non-ferrous metals, packaging and containers
- **Paper and cardboard:** office paper, newspaper and magazines
- **Glass:** packaging and containers
- **Plastics:** packaging and containers
- **Textiles:** clothing and other fabric-based materials

Table 2: Avoid strategies

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	**Lead stakeholder**	**Community**	**Local government**	**State Government**	**Industry**	**Waste industry**	**#**
KNOWLEDGE	Coordinate consistent state-wide communication, engagement and education on waste avoidance behaviours with an emphasis on focus materials.	State Government	✓	✓	✓	✓	✓	1
	Investigate, develop and publish, in collaboration with stakeholders, locally relevant actions for reducing waste generation with an emphasis on focus materials.	Waste Authority	✓	✓		✓	✓	2
	Lead collaboration between State Government agencies on actions that reduce the waste generation with an emphasis on focus materials.	State Government		✓	✓			3
	Coordinate communications and education that leads to food organics and garden organics waste reduction behaviour change.	Waste Authority	✓	✓	✓	✓	✓	4
	Collaborate with decision-makers and opinion leaders to explore opportunities arising from circular economy approaches and communicate them publicly.	Waste Authority		✓	✓	✓	✓	5
ENABLING INFRASTRUCTURE	Develop mechanisms and platforms that enable the community to adopt avoidance behaviours, and explore reuse and low-waste alternatives.	State Government	✓	✓	✓			6
INCENTIVES	Provide support to community, government and industry initiatives that lead to waste avoidance and contribute to waste strategy targets with an emphasis on focus materials.	State Government	✓	✓	✓	✓	✓	7
	Introduce regulations to prevent unnecessary waste generation.	State Government	✓	✓	✓	✓		8

* Includes local government, private industry and state entities.

Objective 2: Recover

Western Australians recover more value and resources from waste

Where waste generation is unavoidable, efforts should be made to recover more value and resources from waste. Consistent with the waste hierarchy and circular economy approaches, material recovery is preferred over energy recovery. Energy recovery is preferable to landfill disposal but should only be applied to residual waste once better practice source separation approaches have been exhausted.

Waste Avoidance and Resource Recovery Strategy 2030 supports the recovery of more valuable resources from the waste stream by applying a combination of strategies relating to knowledge, enabling infrastructure and incentives to encourage behaviour change by waste generators and waste managers.

The Waste Authority will produce better practice guidelines and encourage the sector to implement better practice through mechanisms such as local government waste plans. Implementation of food organics and garden organics (FOGO) systems are a priority in this strategy, which will increase the recovery of material collected through kerbside services. Implementation of FOGO systems will be supported by State Government through the application of financial mechanisms to make it a cost competitive option for local governments.

RECOVER TARGETS

- **2025** – Increase material recovery to 70%
- **2025** – All local governments in the Perth and Peel region provide consistent three bin kerbside collection systems that include separation of FOGO from other waste categories
- **2030** – Increase material recovery to 75%
- **From 2020** – Recover energy only from residual waste

Waste generators		Waste managers*
Community	**Government and industry**	**Waste industry**
2020 – Increase MSW material recovery to 65% in the Perth and Peel regions, 50% in major regional centres **2025** – Increase MSW material recovery to 67% in the Perth and Peel regions, 55% in major regional centres **2030** – Increase MSW material recovery to 70% in the Perth and Peel regions, 60% in major regional centres	C&I sector – Increase material recovery to 70% by **2020**, 75% by **2025**, 80% by **2030** C&D sector – Increase material recovery to 75% by **2020**, 77% by **2025**, 80% by **2030**	**2030** – All waste facilities adopt resource recovery better practice

* Includes local government, private industry and state entities.

Focus materials

In working towards these targets, this strategy focuses on the reuse, reprocessing and recycling of the following materials that present the greatest potential for increased recovery:

- **Construction and demolition materials:** concrete, asphalt, rubble, bricks, sand and clean fill
- **Organics:** food organics and garden organics (FOGO)
- **Metals:** steel, non-ferrous metals, packaging and containers
- **Paper and cardboard:** office paper, newspaper and magazines
- **Plastics:** packaging and containers

These focus materials reflect overall state priorities, however, it will be appropriate to consider local circumstances to increase recovery in different parts of Western Australia, and particularly between metropolitan and non-metropolitan areas. Local circumstances include factors such as access to processing infrastructure and access to markets for recycled products. *Waste Avoidance and Resource Recovery Strategy 2030* encourages the adoption of solutions that reflect local circumstances and contribute to the overarching targets.

Just as local approaches based on local circumstances can lead to unique solutions, consistent services where similar conditions exist can lead to more efficient service delivery. Consistency in the provision of kerbside services to households in urbanised areas is an example of where consistent systems, including three bin food organics and garden organics (FOGO) systems, can improve messaging to the community about how to recycle effectively and lead to better practice outcomes across large urbanised populations. Consistent collections also provide opportunities for service providers to establish processing options for clean and consistent streams of materials, which can reduce costs and improve product quality and therefore access to markets.

Energy recovery

Resource recovery includes the recovery of energy from waste. However, energy recovery is considered to be the least preferred of all resource recovery options in the waste hierarchy as it merely releases embodied energy but does not preserve the material for reuse. For this reason, the waste strategy identifies that only residual waste (waste which remains following the application of better practice source separation and recycling systems) is to be used for energy recovery. Where better practice guidance is not available, an entity's material recovery performance will need to meet or exceed the relevant stream target (depending on its source - MSW, C&I or C&D) for the remaining non-recovered materials to be considered residual waste under this waste strategy.

Table 3: Recover strategies

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	**Lead stakeholder**	**Community**	**Local government**	**State Government**	**Industry**	**Waste industry**	**#**
KNOWLEDGE	Investigate options to recover and promote related local markets through State Government procurement actions with an emphasis on focus materials.	State Government			✓			9
	Develop and publish better practice guidance and standards for waste-derived products to build confidence in recycled products and ensure protection of the environment.	Waste Authority	✓	✓	✓	✓	✓	10
	Maintain a communications toolkit for local government on consistent messaging for better practice kerbside service delivery.	Waste Authority	✓	✓			✓	11
	Develop education and engagement resources to communicate the benefits of resource recovery and the use of recycled products, and to minimise contamination in collection systems.	Waste Authority	✓	✓	✓	✓	✓	12
	Develop and publish better practice guidance to support increases in recovery with an emphasis on focus materials.	Waste Authority	✓	✓	✓	✓	✓	13
	Identify and implement options for collaboration between industry and the State Government to support market development and recovery with an emphasis on focus materials.	Waste Authority			✓	✓	✓	14
	Investigate and improve reporting on material that is reused (as distinct from recycled) to better monitor the state's move toward becoming a circular economy.	State Government	✓	✓	✓	✓	✓	15
ENABLING INFRASTRUCTURE	Establish mechanisms, including funding approaches to support investments in local infrastructure for recovery with an emphasis on focus materials.	State Government					✓	16
	Develop and support measures to establish and maintain product stewardship schemes aligned with the State's waste priorities, commencing with a container deposit scheme.	State Government	✓	✓	✓	✓	✓	17

* Includes local government, private industry and state entities.

Table 3: Recover strategies continued

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	**Lead stakeholder**	**Community**	**Local government**	**State Government**	**Industry**	**Waste industry**	**#**
INCENTIVES	Provide funding to local governments to introduce better practice services and extend the Better Bins program to include FOGO (food organics and garden organics services).	Waste Authority	✓	✓			✓	18
	Provide funding to promote the use of priority recycled products and support the establishment of local markets with an emphasis on focus materials.	State Government		✓	✓	✓	✓	19
	Support community, government and industry initiatives that promote resource recovery in the Perth and Peel regions, major regional centres and remote areas through grant programs.	State Government	✓	✓	✓	✓	✓	20
	Develop a legislative framework to encourage the use of waste derived materials, including product specifications, to build confidence in recycled products, increase their demand and develop relevant markets while protecting the environment.	State Government		✓	✓	✓	✓	21
	Implement sustainable government procurement practices that encourage greater use of recyclable and recycled products and support local market development.	State Government		✓	✓	✓		22

* Includes local government, private industry and state entities.

Objective 3: Protect

Western Australians protect the environment by managing waste responsibly

The transport, storage, processing and disposal of waste all have the potential to directly impact the environment.

Certain wastes, such as hazardous materials or materials that are commonly littered or dumped, can also pose significant risks to public health and the environment. Poorly managed waste infrastructure (including landfills and recycling facilities) and services, as well as adverse waste behaviours, all increase the risk of negative impacts on public health and the Western Australian environment.

In the event waste cannot be avoided, it is important that waste management systems – including recycling and disposal (landfill) facilities – protect the environment from the negative impacts of waste by adopting better practice.

Waste managers face different waste management challenges and have varying capacities to address these challenges. For example, better practice approaches in remote areas are likely to vary substantially to those in metropolitan areas, due to differences in populations, infrastructure, resources and market access. Better practice guidance developed under this strategy will reflect these differences.

Litter and illegal dumping can significantly damage our environment. It is important that waste enters the correct waste management system so that it can be properly managed by better practice facilities, and is not littered or dumped in the environment.

PROTECT TARGETS		
⊙ **2030** – No more than 15% of Perth and Peel regions' waste is disposed to landfill ⊙ **2030** – All waste is managed by and/or disposed to better practice facilities		
Waste generators		**Waste managers***
Community	**Government and industry**	**Waste industry**
⊙ **2030** – Move towards zero illegal dumping ⊙ **2030** – Move towards zero littering	⊙ **2030** – Move towards zero illegal dumping	⊙ **2030** – No more than 15% of Perth and Peel regions' waste is disposed to landfill ⊙ **2030** – All waste facilities adopt environmental protection better practice

* Includes local government, private industry and state entities.

Priority areas

In working towards achieving these targets, Western Australia should focus on behaviours and materials that provide the greatest potential to protect the environment including:

- the transport, storage, processing and disposal of waste;
- problem wastes, including hazardous materials;
- poorly managed waste infrastructure, including landfills, recycling facilities and services;
- taking action early in a waste material's life cycle; and
- giving priority to reflect the risk posed by a waste material.

National priorities

The management of some types of waste require an international approach. Initiatives that are the responsibility of the Commonwealth Government and to which WA contributes include the Basel Convention, an international treaty to reduce the movement of hazardous waste between countries with a view to protecting public health and the environment, and the Minamata Convention on Mercury, a global treaty to protect public health and the environment from the adverse effects of mercury.

Table 4: Protect strategies

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	**Lead stakeholder**	**Community**	**Local government**	**State Government**	**Industry**	**Waste industry**	**#**
KNOWLEDGE	Identify the data that is required to quantify and measure illegal dumping activity, collect the identified data on an ongoing basis and use the collected data to better target illegal dumping monitoring and enforcement activities.	State Government		✓	✓		✓	23
	Deliver a community engagement and education campaign to raise awareness of illegal dumping and its impacts.	State Government	✓	✓	✓	✓		24
	Investigate, document and publish options for avoiding waste plastic.	Waste Authority	✓	✓	✓	✓		25
	Review and report on approaches to the management of hazardous waste including controlled and liquid waste.	State Government				✓	✓	26
	Assess existing recovery facility and landfill siting and management practices and publish information to guide achievement of better practice approaches.	Waste Authority					✓	27
ENABLING INFRASTRUCTURE	Work with land owners and managers to build their capacity to tackle illegal dumping.	State Government	✓	✓	✓	✓		28
	Investigate and report on the role of funding approaches to drive the uptake of better practice approaches at waste management facilities.	Waste Authority		✓			✓	29
INCENTIVES	Support local governments to safely collect and manage hazardous materials generated by households that present a significant risk to public health and the environment.	State Government	✓	✓			✓	30
	Provide relevant funding and guidance to prevent the illegal dumping of waste at charitable recycler waste collection sites.	State Government					✓	31

* Includes local government, private industry and state entities.

Table 4: Protect strategies continued

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	**Lead stakeholder**	**Community**	**Local government**	**State Government**	**Industry**	**Waste industry**	**#**
INCENTIVES	Implement the litter prevention strategy to reduce littering and manage its impacts.	Keep Australia Beautiful Council	✓	✓	✓	✓		32
	Detect, investigate and prosecute illegal dumping.	State Government	✓	✓	✓	✓		33
	Review and update the regulatory framework for waste to ensure it is appropriate and reduces the environmental impacts and risks from waste management.	State Government					✓	34
	Revise and publish waste classifications and definitions to reflect current knowledge to ensure waste materials are managed according to their risk and are treated and/or disposed of appropriately.	State Government			✓		✓	35
	Develop and revise legislative frameworks to encourage the use of waste derived materials and build confidence in recycled products.	State Government	✓	✓	✓	✓		36

* Includes local government, private industry and state entities.

Foundation strategies

that apply to multiple objectives

Waste Avoidance and Resource Recovery Strategy 2030 includes strategies which support multiple objectives and underpin the delivery of this waste strategy. These are referred to as foundation strategies.

Foundation strategies include:

- information and data – to provide high quality information to the community, government and industry to inform decision making.
- regulation and policy – to provide a level playing field and deliver efficient and effective waste management outcomes.
- education – to underpin behaviour change approaches for avoid, recover and protect, for waste generators and waste managers.
- planning – to provide support and guidance for waste services planning as well as infrastructure and land use planning.

The waste levy will continue to play a key role by providing a disincentive to dispose of waste, and by generating revenue to fund programs which support the waste strategy. Reflecting this, a key foundation strategy is for the scope and application of the waste levy to be reviewed to ensure it meets the objectives of *Waste Avoidance and Resource Recovery Strategy 2030*, and to establish a schedule of future waste levy rates.

The range of strategies, both new and ongoing, that will allow Western Australians to achieve outcomes against all three objectives of the waste strategy are presented below.

Table 5: Foundation strategies

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	Lead stakeholder	Community	Local government	State Government	Industry	Waste industry	#
INFORMATION AND DATA	Review and update data collection and reporting systems to allow waste generation, recovery and disposal performance to be assessed in a timely manner.	State Government		✓	✓	✓	✓	37
	Collaborate with industry to develop a data strategy that includes actions to improve waste data collection, management and reporting, and guides their implementation.	State Government Waste Authority		✓	✓	✓	✓	38
	Investigate and report on the application of the circular economy in WA, including opportunities and barriers implementation.	Waste Authority	✓	✓	✓	✓	✓	39

* Includes local government, private industry and state entities.

*Table 5: **Foundation strategies*** continued

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	**Lead stakeholder**	**Community**	**Local government**	**State Government**	**Industry**	**Waste industry**	**#**
INFORMATION AND DATA	Collaborate with the Commonwealth Government to develop local approaches to implementing the National Food Waste Strategy.	State Government	✓	✓	✓	✓	✓	40
	Provide support to local governments, recyclers and landfill operators for reporting under amendments to the *Waste Avoidance and Resource Recovery Regulations 2008*.	State Government		✓			✓	41
	Develop state-wide waste communications to support consistent messaging on waste avoidance, resource recovery and appropriate waste disposal behaviours.	State Government	✓	✓	✓	✓		42
ENGAGEMENT AND EDUCATION	Recognise and reward the adoption of positive behaviours, practices and innovation that contribute to reduced waste generation, increased resource recovery and protection of the environment.	Waste Authority	✓	✓	✓	✓	✓	43
REGULATION AND POLICY	Investigate options for developing a 'needs based' approach to the approval of new landfills and other waste infrastructure.	State Government					✓	44
	Contribute to national waste policy and programs aimed at waste avoidance, resource recovery and environmental protection.	State Government	✓	✓	✓	✓	✓	45
	Review the scope and application of the waste levy to ensure it meets the objectives of Waste Avoidance and Resource Recovery Strategy 2030 and establish a schedule of future waste levy rates with the initial schedule providing a minimum five year horizon.	State Government	✓	✓	✓	✓	✓	46

* Includes local government, private industry and state entities.

Table 5: Foundation strategies continued

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	Lead stakeholder	Community	Local government	State Government	Industry	Waste industry	#
REGULATION AND POLICY	Review and revise regulations and policies to achieve a level playing field for industry which ensures entities that are compliant and apply best practice are not disadvantaged.	State Government		✓	✓	✓	✓	47
	Implement local government waste plans which align local government waste planning processes with the waste strategy.	State Government	✓	✓				48
	Lead and support initiatives that bring together agencies, local governments, industry and community to assist knowledge exchange and strategic waste planning.	Waste Authority	✓	✓	✓	✓	✓	49
PLANNING	Undertake a strategic review of Western Australia's waste infrastructure (including landfills) by 2020 to guide future infrastructure development.	State Government	✓	✓	✓	✓	✓	50

* Includes local government, private industry and state entities.

Next steps

Supporting documents

Waste Avoidance and Resource Recovery Strategy 2030 Action Plan

This strategy is supported by an action plan which outlines specific actions to be implemented to achieve the objectives of the strategy.

The initial action plan has been prepared by the Waste Authority in consultation with relevant State Government agencies, and was approved by the Minister for Environment. Stakeholder consultation will be undertaken in the preparation of subsequent action plans.

Waste Authority Position and Guidance Statements

The Waste Authority publishes position statements from time to time. Position statements formalise the views of the Waste Authority and may be used to inform decisions relevant to the Waste Authority's role in implementing the strategy.

Better Practice Guidance

The Waste Authority recognises the importance of developing better practice guidelines, measures and reporting frameworks and supporting their adoption. The Waste Authority will publish better practice guidance from time to time, which sets out high-performing systems and outcomes benchmarked against comparable jurisdictions.

State Waste Infrastructure Plan

A state waste infrastructure plan will be developed together with key stakeholders to guide the planning and decision making for the establishment and maintenance of critical infrastructure. This will include the type and capacity of additional infrastructure that will be needed to meet the targets in this strategy, the areas in which infrastructure may be best located and forecast dates for when it is needed.

Annual Business Plan

The *Waste Avoidance and Resource Recovery Act 2007* (WARR Act) requires the Waste Authority to prepare a draft business plan to be submitted to the Minister each year. The business plan sets out objectives and priorities for government funding for the next five financial years, and must be consistent with this strategy.

Waste Data Strategy

A waste data strategy will guide the ongoing development of data definitions, collection mechanisms, management and reporting requirements to ensure progress on *Waste Avoidance and Resource Recovery Strategy 2030* can be monitored appropriately and that any revision of approach is based on sound information.

Measuring progress

The Waste Authority will be responsible for evaluating *Waste Avoidance and Resource Recovery Strategy 2030*, including progress towards objectives and targets. The Waste Authority will publish annual reports against its business plan, and coordinate reports on behalf of the Minister against the outcomes of the action plan.

Strategy updates

As Western Australia implements this waste strategy, new opportunities and priorities may be identified which may warrant a review of the scope and focus of the strategy. The WARR Act requires that the waste strategy be reviewed for currency at least every five years, including a full public consultation process. Minor amendments to the waste strategy can be made by the Waste Authority subject to the approval of the Minister.

Glossary

Term	Definition
Better practice	Better practice refers to practices and approaches that are considered by the Waste Authority to be outcomes-focussed, effective and high performing, which have been identified based on evidence and benchmarking against comparable jurisdictions. Better practice will be supported by the Waste Authority through the development of better practice guidelines, measures and reporting frameworks, which will be developed to reflect the different capacities and challenges faced by waste generators and managers. Better practice is synonymous with the term best practice, but captures the dynamic nature of best practice.
Circular economy	An alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible – extracting the maximum value from them while in use, then recovering and reusing products and materials. Three core principles underpin a circular economy – design out waste and pollution; keep products and materials in use; and regenerate natural systems.
Commercial and industrial (C&I) waste	Waste produced by institutions and businesses, including 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.
Drop-off facility	Site where residents can bring their waste or recyclables for disposal.
Embodied energy	Embodied energy is the energy used to produce a material substance (such as processed metals or building materials), taking into account energy used at the manufacturing facility, energy used in producing the materials that are used in the manufacturing facility, and so on.
Food organics and garden organics (FOGO)	Food organics include waste food, inedible food, and parts of food that are not consumed and/or are considered undesirable (such as seeds, bones, coffee grounds, skins and peels). Garden organics include organic wastes that arise from gardening and maintenance activities, such as lawn clippings, leaves, cuttings and branches. FOGO can also include other organic wastes that may be compatible with FOGO collections and can include items such as paper and cardboard.

Term	Definition
Household hazardous waste	Products used in and around the home that have at least one hazardous characteristic (flammable, toxic, explosive or corrosive).
Hazardous waste	Waste that, by its characteristics, poses a threat or risk to public health, safety or the environment.
Illegal dumping	Premeditated littering where people go out of their way to dump waste in public places illegally, typically for commercial benefit or to avoid disposal fees.
Kerbside collection	A regular containerised service that collects waste from a residents' kerbside.
Litter	Waste that is left in public places and not deposited into a bin.
Litter Prevention Strategy	Litter Prevention Str*ategy* for Western Australia 2015–2020.
Liquid waste	Wastes that are not solid or gaseous. May refer to sludges and slurries, or other liquids discharged to sewer. May also refer to waste water.
Major Regional Centre	Major Regional Centres: The cities of Albany, Busselton, Bunbury, Greater Geraldton and Kalgoorlie-Boulder, which are local governments outside the Perth and Peel region that have both a relatively large population and reasonable access to markets. Other major regional centres may be identified by the Waste Authority during the life of the waste strategy.
Municipal solid waste (MSW)	Waste primarily collected from households and local governments through waste and recycling collections.
Organic waste	Waste materials from plant or animal sources, including garden waste, food waste, paper and cardboard.
Perth and Peel region	The Perth region, or Perth metropolitan region, is the area defined by the Metropolitan Region Scheme. The Peel region is the area defined by the Peel Region Scheme. Municipal solid waste targets are set for the Perth and Peel region to reflect current urbanisation trends and to align with waste infrastructure servicing and planning needs.

References

Term	Definition
Product stewardship	Product stewardship is an approach to managing the impacts of different products and materials. It acknowledges that those involved in producing, selling, using and disposing of products have a shared responsibility to ensure that those products or materials are managed in a way that reduces their impact, throughout their life cycle, on the environment and on public health and safety.
Residual waste	Waste that remains after the application of a better practice source separation process and recycling system, consistent with the waste hierarchy as described in section 5 of the *Waste Avoidance and Resource Recovery Act 2007* (WARR Act). Where better practice guidance is not available, an entity's material recovery performance will need to meet or exceed the relevant stream target (depending on its source - MSW, C&I or C&D) for the remaining non-recovered materials to be considered residual waste under this waste strategy.
Resource recovery	The process of extracting materials or energy from a waste stream through re-use, reprocessing, recycling or recovering energy from waste.
Vergeside service	Local government services that collect a range of materials from the verge for recovery or disposal.
Waste avoidance	Refers to the prevention or reduction of waste generation, or the prevention or reduction of the environmental impacts (for example toxicity) of waste generation.
Waste Avoidance and Resource Recovery (WARR) Account	In accordance with the *Waste Avoidance and Resource Recovery Act 2007* (WARR Act), each year the Minister for Environment must allocate not less than 25 per cent of the forecast levy amount to the WARR Account. Funds in the WARR Account are applied to programs for the management, reduction, reuse, recycling, monitoring or measurement of waste and to support implementation of the Waste Strategy.
Waste diversion	The act of diverting a waste away from landfill for another purpose such as re-use or recycling.

Access Economics 2009, *Employment in waste management and recycling*, commissioned by the Department of Environment, Water, Heritage and the Arts, July 2009.

ASK Waste Management (2017), *Recycling Activity in Western Australia 2015–16*, Report prepared by ASK Waste Management Consultancy Services for the Waste Authority. Available from: www.wasteauthority.wa.gov.au/media/files/documents/WA_Recycling_Activity_15_16-Amended.pdf.

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Organisation for Economic Cooperation and Development (OECD) (2017), *Municipal waste, Generation and Treatment*. Available from: stats.oecd.org/Index.aspx?DataSetCode=MUNW. [18 October 2017].

Pickin, J. and Randell, P (report prepared by Blue Environment Pty. Ltd. in association with Randell Environmental Consulting) (2017), *Australian National Waste Report 2016*, Department of Environment and Energy. Available from: www.environment.gov.au/system/files/resources/d075c9bc-45b3-4ac0-a8f2-6494c7d1fa0d/files/national-waste-report-2016.pdf.

Pickin, J, Randell, P, Trinh, J and Grant, B 2018, National Waste Report 2018, Blue Environment Pty. Ltd, prepared for Department of the Environment and Energy, November 2018. Available at www.environment.gov.au/protection/waste-resource-recovery/national-waste-reports/national-waste-report-2018.

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STRATEGIC VISION

SOUTH COAST SUSTAINABLE WASTE ALLIANCE

ALBANY, DENMARK, PLANTAGENET

ALL TOGETHER BETTER

OUR PURPOSE

"DIVERT IT, REVERT IT, CONVERT IT"

To work together on a sustainable approach to waste management that meets the needs of our communities in a manner that is cost effective and innovative.

OUR OBJECTIVES:

OBJECTIVE	HOW MEASURED
Reduce waste to landfill.	To reduce waste generation through effective education programs and advocacy to government and industry To improve processes by changing how we do business
Minimise environmental risks and human impacts.	To effectively manage current sites while planning for post-closure activities To identify and promote sustainable practices, innovative solutions and alternative treatments
Provide a quality, cost-effective waste collection service to the community.	To review and improve current services and contract arrangements To develop and foster dynamic engagement and partnerships with our communities
Determine a long-term waste disposal solution for the region's future waste needs.	To Identify and assess appropriate sites and determine suitability, logistics and transition planning To monitor performance against industry best practice
Maintain effective relationships with Alliance Partners and other Stakeholders	To communicate with and gain support from Elected Members of the South Coast Economic Alliance To deliver effective engagement and reporting with Alliance Partners and other Stakeholders

HOLIDAY ACCOMODATION MANAGEMENT PLAN FOR 16 TAYLOR STREET MIRA MAR

“Sea to town homestay”

CONTENTS

1. LOCATION

The property at 16 Taylor Street, Mira Mar is identified in the "preferred" area for holiday accommodation.

The location is situated in- between Albany's CBD and Middleton Beach, with a leisurely 2.5 kilometre walk in each direction to these local attractions. Close by are local parks, super market, bakery, pharmacy, butcher shop, bottle shop and lookout points of interest. It's a pleasant area to walk, cycle or drive and is opposite public open space with picnic tables.

2. PROPERTY MANAGEMENT

This property will be managed by Hollie & John Hummerston who live two streets away at 19 Anderson Place, Mira Mar. We will maintain a guest register and maintain one person will not reside for more than 3 months within a 12 month period.

The property will be overseen by us ourselves and we will make sure all rules are strictly followed. We live in Mira Mar ourselves and want it to remain a harmonious and enjoyable suburb to reside in.

We will meet guests on site so we can ensure the correct number of people are checking in. If it is after hours (after 7pm) there will be a lockbox available and a meet and greet will be conducted the next day.

All adjacent neighbours and neighbours in close proximity will be given our contact phone numbers for any problems that may arise.

3. ACCEPTANCE

Full payment is due before check in and this constitutes acceptance of all terms and conditions.

Check in time is after 2pm on the arrival date and check out time is before 10am on the departure date.

4. PAYMENT

Bookings must be paid in full prior to arrival via the guests chosen website air bnb or booking.com.

5. CANCELLATIONS

We hold a strict cancellation policy, there will be a full refund for cancellations made within 48 hours of booking. If the check in date is at least 14 days away a 50% refund is available and if the cancellation is made within 7 days of the check in there is no refund.

6. MINIUM NIGHT STAY

There is a 2 night minimum stay.

7. SECURITY BOND

There is a $250 security bond held against your card for the duration of your stay. Upon checking out and assuring the rules haven’t been breached and nothing is damaged the $250 hold will be taken off on the departure day after checkout.

8. UNAVAILABILITY

If the property becomes available during the duration of your stay due to unforeseen circumstances e.g fire, damage ect you will be advised immediately and all money will be refunded.

9. LINEN TOWELS & SERVICING

All linen, towels and bedding will be provided for the approved amount of guests per stay and must be left at the property once vacated.

10. GENERAL CONDITIONS

- Disturbance to our neighbours, including excessive noise is not permitted and may result in eviction without a refund. Guests must comply with quiet times being from 10pm though till 8am. In the event we are notified by neighbours of excessive noise you will receive a written and verbal warning, if this is breached again the tenant will be vacated and accommodation costs will be retained in full by owners with no refunds given.
- All guest must comply with house rules and read all instructions from management.
- Guests are responsible for damage, theft and loss of property during their stay. You must notify us immediately if this occurs.
- Additional guests to the amount requested through the booking portal must be approved by management prior to arrival and a variation can be created. (please keep in mind a maximum of 6 guests at anytime)

- Please dispose of all garbage after your stay to the outside bins located next to the garage.
- The property must be left in a clean and tidy condition upon departure as it is found. Dishes done, rubbish disposed of and recycling taken out.
- All doors and windows must be locked upon leaving.
- Smoking is not permitted indoors
- Parties are not permitted at anytime. No more than 10 people at any given time are allowed in the property (inclusive of guests and visitors) if this rule is breached a warning will be given and if its not rectified an eviction may occur.

11. PARKING

Guests and visitors must comply with parking regulations.

There is a 2 car garage available for two large vehicles, two more cars can park directly behind these spots.

Guest must be mindful of neighbours when parking and only park in allocated parking spots on the property.

12. PETS

Only 1 pet at a time may be approved upon booking, non-approved pets are not permitted and will breach house rules. The pet will have to remain outside at all times and not be of disturbance to any neighbours. The yard at 16 Taylor Street is fully fenced and secured. If pets are a disturbance and is reported by neighbours a warning will be issued in writing immediately and eviction may occur if the noise is not rectified with all monies being non- refundable.

13. DAMAGES OR BREAKAGES

Must be reported to manager immediately.

14. DEPARTURE

Guests must comply with house rules take out rubbish and personal items. The property should be locked completely and keys left in the lockbox.

15. COMPLAINTS HANDLING

Guest have an obligation to report any problems or incidents to their manager.

It is recommended all guests take out personal travel insurance.

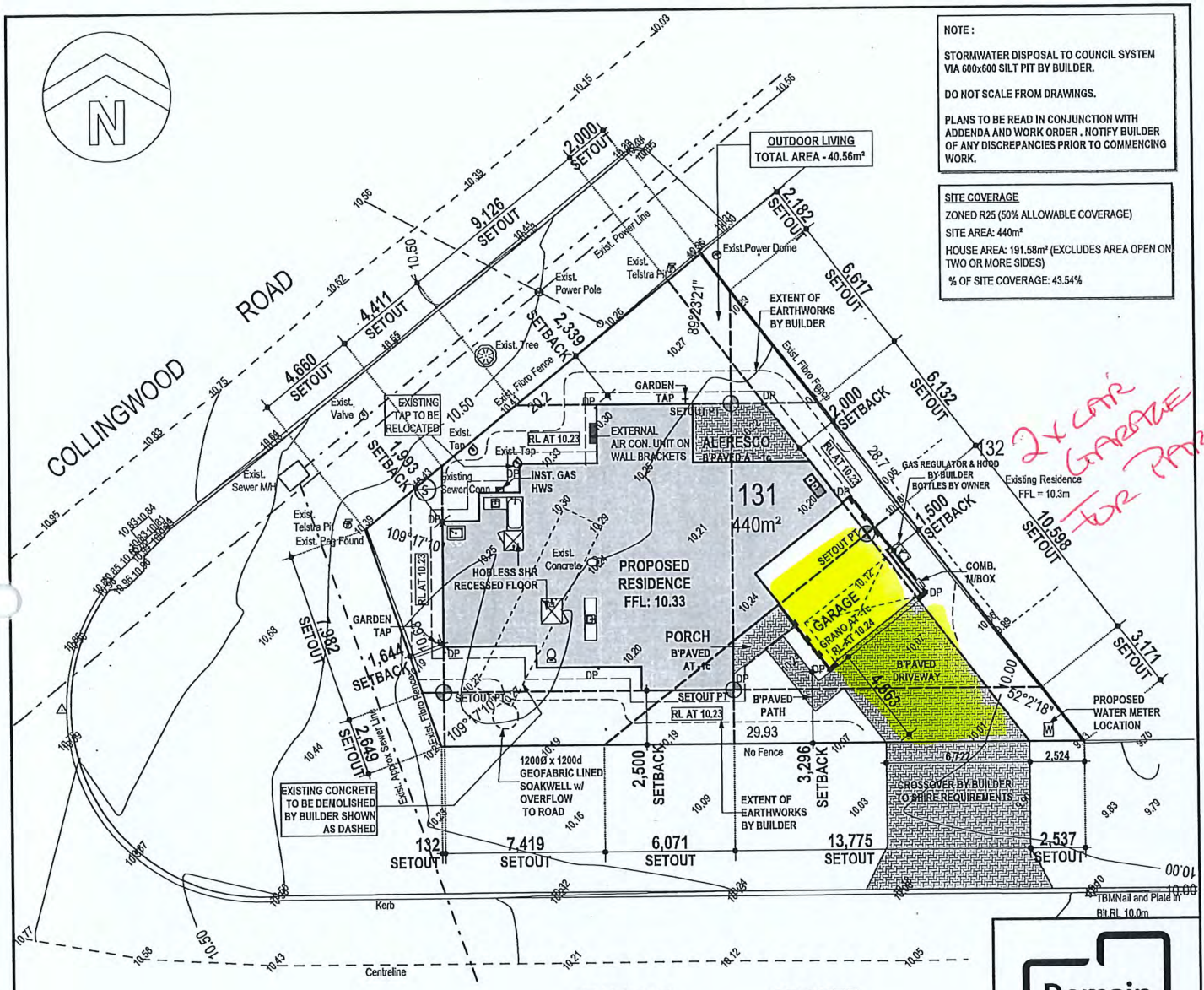
16. EMERGENCY RESPONSE PLAN

- Any emergency relating to the property please contact Hollie 0428410006 or John 0409323500. We live two streets away and can be available for any problems that arise.

- Medical Emergency, please contact 000 (Please note the hospital is 4 minute drive) A first aid box is located In the main bathroom.

- Fire Emergency, please contact 000. Please evacuate the building via the exits at the front and back door.

(There is a fire extinguisher also located in the kitchen cupboard)



NOTE :

STORMWATER DISPOSAL TO COUNCIL SYSTEM VIA 600x600 SILT PIT BY BUILDER.

DO NOT SCALE FROM DRAWINGS.

PLANS TO BE READ IN CONJUNCTION WITH ADDENDA AND WORK ORDER . NOTIFY BUILDER OF ANY DISCREPANCIES PRIOR TO COMMENCING WORK.

SITE COVERAGE

ZONED R25 (50% ALLOWABLE COVERAGE)

SITE AREA: 440m²

HOUSE AREA: 191.58m² (EXCLUDES AREA OPEN ON TWO OR MORE SIDES)

% OF SITE COVERAGE: 43.54%

SITE PLAN

1:200

TOTAL

LEGEND

- Fence
- Top of bank
- Bottom of bank
- Overhead powerline
- Road centreline
- Water meter/connection
- Power dome
- Sewer connection
- Survey control

0 2 4 6 8 10

Scale 1:200 (A3)

JOHN KINNEAR & ASSOCIATES
Consulting Surveyors
45 COLLIE STREET
PO BOX 293
ALBANY WA 6331
PHONE (08) 9842 1353 FAX (08) 9842 1570
JKA REF. 1386 - Siley A3

NOTE:
This is a site survey only. The boundaries shown should be used as a reference only as they have NOT been re-established as part of this survey.

Areas & dimensions are subject to final survey.

Station heights are assumed, TBM = 10.0m.

Sewer information is as supplied by the Water Corporation of W.A. and has not beenconfirmed on site.

KERB - semi mountable (good condition)
SEWER - yes
WATER - yes
POWER - yes
TELSTRA - yes
GAS - Not sighted

DOWNPIPE, NOTE:

FRONT ELEVATIONS DOWNPIPE POSITIONS AS INDICATED ON PLAN

ALL OTHER DOWNPIPES ARE INDICATIVE ONLY & MAY BE CHANGED AT THE BUILDER'S DISCRETION.

ALL DOWNPIPES TO BE ZINCALUME THROUGH-OUT

BUSHFIRE PRONE AREA - (BAL-LOW) - min requirements

DWELLING COMPLIES TO BCA 3.7.4 AND AS 3959.

NOTE:

- REFLUX VALVE TO SEWER.

SITE PAVING AREAS	
LOCATION	AREA
CROSSOVER	47.45
DRIVEWAY/PATH	38.43
ALFRESCO	11.84
PORCH	3.75
	101.47 m²

WIND CLASSIFICATION AS PER A.S. 4055: N1 - FOR GROUND STOREY OF RESIDENCE

Domain By Plunkett
344 Middleton Road, Albany, W.A. 6330.
PO Box 5500, Albany, W.A. 6332.
Ph 08 6819 5900.
Fx 08 9847 4675.
www.plunkettthomes.com.au
Reg. Builder WC 7995 A.B.N. 58 009 239 373

E & OE

SPECIAL

TYPE: BRICK VENEER | SPECIFICATION: CLASSIC | MODEL N°

SP-01

REV	VO #	DRN	DATE	CHK
01	SITING	VN-CC	12-09-18	SG
02	391072	NHA	13/11/18	CG
03	391275	NHA	29/11/18	NHA
04	391766	NHA	17/01/19	NHA

Sub-contractors to verify all dimensions on site.

WORKING DRAWINGS
THIS IS ONE OF THE DRAWINGS REFERRED TO IN THE CONTRACT.

DATED: ___/___/___

OWNER WITNESS
OWNER WITNESS
BUILDER WITNESS

SHEET N° 1 OF 7 + 1 ANG
JOB N° 180048
REVISION 04 DATE 17/01/19

CLIENT: PLUNKETT GROUP / HUMMERSTON

LOT: 131 (H14) COLLINGWOOD ROAD & TAYLOR STREET, MIRA MAR

PLAN: 400808

SCALE: 1:200 (A3)

C/T Vol/Fol: 2910-148

MAP REF: SEE SMARTPLAN

AUTHORITY: CITY OF ALBANY

JOB NUMBER: 180048

SHEET SIZE A3

SHEET 1 OF 7

SURVEY DATE: 30/08/2018

MEMORANDUM

To:	Elected Members
From:	Building Infrastructure Officer
Owner:	City of Albany
Date:	28 March 2019
Synergy Ref:	File CP.MAI.7: Job 3996: VAC refurbishment of roof shingles.
Subject:	Vancouver Arts Centre (VAC) – Roof Condition Report

Following the alternate motion by Councillor Smith in the March Ordinary Council Meeting (DIS149, Vancouver Art Centre Roof Re-Cladding), an additional condition assessment was undertaken on the existing VAC roof by the City of Albany's Building Infrastructure Officer on Thursday 28th March 2019.

The results of this inspection are detailed below along with historical supporting information.

Condition & Materials:

- The condition of the existing shingle roof is beyond the City of Albany's current intervention levels.
- The rate of shingle displacement has increased as evidenced by comparing images 1 & 4 below. Both images are of the front elevation.
- The displaced shingles expose the underlying Jarrah Sark lining.
- There is a real threat of water ingress to building ceiling cavity with the current state of the shingles.
- In 2016 shingles to flat veranda roofs were covered with temporary corrugated galvanised iron, see images 2 & 3, to prevent further damage to the underside and internal structure caused by heavy rain.
- The flat tiling will replicate the shingle appearance and this treatment will be applied to the verandas that are currently covered by corrugated iron.
- Roof frames appear sound and well-constructed.
- There is evidence of rot starting between shingles and Jarrah Sark lining. Underside of Jarrah Sark lining is shown in image 6.
- The bright (non-galvanised) nails that were installed to hold the shingles in place are continuing to fail resulting in further shingles being dislodged from roof.

General Information:

- The roof can no longer be serviced by walking on the existing shingles due to the high risk of shingle slippage.
- Strong wind is having an effect on remaining shingles, particularly where there are existing shingles missing that create a lifting point for the high winds.
- Existing roof frame is more than adequate to support flat tiles.

Safety and other issues to consider

- There is safety concerns to customers and passing public due to the risk of falling shingles.

Andrew Glendinning
Building Infrastructure Officer
City of Albany

Image 1 Front elevation prior to removal of lichen **2009**	
Image 2 Veranda damage water ingress **2016**	
Image 3 Corrugated iron treatment to reduce potential for further damage to veranda **2016**	

Image 4 Front Elevation **2019**	
Image 5 Typical damage and displacement of shingles **2019**	
Image 6 Jarrah lining under shingles that the Heritage Council ask to be retained. **2019**	

Vancouver Arts Centre - Albany Cottage Hospital (fmr): Replacement of roof cladding
Heritage Impact Assessment

Prepared by Lynne Farrow Architect
for the City of Albany
April 2017

TABLE OF CONTENTS

LIST OF PHOTOS

LIST OF PHOTOS

1. Background

Location

Vancouver Arts Centre is located on Reserve 3693, at 77-87 Vancouver Street, Albany. The Lot is 1.1144 hectares in size with an irregular shape and runs between Vancouver and Festings Streets.

History

Vancouver Arts Centre comprises a number of buildings, the most important is the original *Albany Cottage Hospital,* a two storey limestone building with a moderately pitched gable roof clad in timber shingles, designed by George Temple Poole in the Federation Arts and Crafts style, partially constructed in 1887 and completed in 1896. This building is the subject of this report. The shingle cladding on the roof has reached the end of its life and requires replacement.

The building was designed with an L shaped floor plan, with a two storey administration and services area in the centre, with two long perpendicular wards. Initially only the men's ward was constructed to the south (in 1887), but the women's ward was planned at the same time and constructed to the west in 1896.

The exceptional heritage value of the place is evidenced by its entry on the Register of Heritage Places, Register of the National Estate and Classification by the National Trust.

The building is a particularly picturesque example of the work of George Temple Poole. The outstanding feature is the two square turrets influenced by French chateaux with steeply pitched roofs on the external corners of the west ward. Other significant features include the oriel window on the front façade beneath a half timbered gable, and deep verandahs with thick turned timber posts.

A number of different buildings were subsequently constructed on the site, including:

- Timber morgue (date unknown - possibly part of original)
- Timber nurses quarters - a separate timber building constructed to the west 1918 with additions in 1935
- Eastern wing 1925 with additions in 1938 (including the weavers room).
- Laundry 1925 with maids quarters added to the east in 1937
- Carpenters workshop
- Native ward

The hospital was vacated in 1962 and became a hostel for pupils of the Albany Senior High School, who had previously resided in Norman House. When a new purpose built hostel was constructed at the rear of the high school, the building became vacant. In 1980, the Albany Arts Group occupied the complex and carried out a number of conservation works to make the building usable. An internal stair was reinstated, albeit in a different configuration to the original. It was called the Vancouver Arts Centre, which name and function it retains. The place is now managed by the City of Albany.

The present timber shingles on the roof of the cottage hospital were laid over 30 years ago in approximately 1986. They replaced former shingles and the original architectural drawings show that the original roof material was shingles. These shingles are in very poor condition and photographs illustrate the extent to which they have slipped and are therefore leaking. They require replacement. The City of Albany maintain a number of heritage buildings, some of which have shingled roofs, and have found shingles to be problematical in terms of cost, longevity and procurement and are keen to consider another fabric, either plain tiles (Marley Eternit Acme Single Camber, colour grey, sandfaced finish), flat tiles (Midland Brick Shingle, colour Asphalt) or corrugated iron (Bluescope Z6000 heritage galvanized or Custome orb Zincalume finish).

Conservation Plan

A Conservation Plan for the building was prepared by David Heaver Architect in Association with Lynne Farrow Architect in 2000.

There is no specific recommendation regarding the roofing material. The timber shingles was the authentic roof fabric, albeit replacement, and was in good condition when the conservation plan was completed.

2. Heritage listings

Heritage Council of Western Australia:	Place number	00069
Register of Heritage Places:	Interim	5 June 1992
	Permanent	22 Nov 2002
Register of the National Estate:	Permanent	11 Aug 1987
Classified by the National Trust:	Classified	08 Mar 1983
Municipal Inventory:	Adopted	23 Sept 1999

3. Statement of significance

The following statement of significance has been taken from the Registration Documentation of the State Heritage Office.

Vancouver Arts Centre Group, comprising a limestone building designed in the Federation Arts and Crafts style with two steeply pitched roofs, a single storey timber nurses' quarters, a timber clad morgue with a pyramid roof, a laundry/nurse quarters, carpenters workshop, and eastern wing, has cultural heritage significance for the following reasons:

> the original limestone cottage hospital building is one of the oldest hospital buildings in Western Australia, and the oldest surviving hospital in Albany, operating from the period 1897-1962;
>
> the original limestone cottage hospital building is an aesthetically exceptional example of the work of the architect George Temple Poole, Chief Architect for the Public Works Department from 1887-1897;
>
> the place is a significant aesthetic landmark, as a precinct of historic buildings with scenic vistas overlooking Princess Royal Harbour; and,
>
> the complex is a rare example of a relatively intact hospital complex representing the type of medical facilities available from the late 19th to the early/mid 20th century.

4. The existing structure

Albany Cottage Hospital is a limestone building with a moderate to steeply pitched roof of about 36 degrees pitch (verandahs about 22.5 degrees), clad with shingles. The present shingles were installed in 1986, as a replacement for existing shingles, and this process is shown in photographs on p. 31 of the Conservation Plan. Some of the verandahs (those to the south, west and east) have been enclosed and are now roofed with corrugated iron, as their pitch of 22.5 degrees is not steep enough to ensure the shingles are watertight.

The original drawings, reproduced on Page 41 of the Conservation Plan, show that the original roof material was shingles. These were laid on 1 inch (25 mm) lapped timber sarking boards, which are

extant.

The gutters are zinc with a quarter round profile, installed in about the late 1990s.

5. The current issue

The shingle roof cladding on the limestone Cottage Hospital building requires replacement. It is now over 30 years since the existing shingles were laid, and the nails have rusted and the shingles slipped and a number are missing. The lapped jarrah board sarking has kept the roof relatively watertight, and although there is little leaking, continued water penetration will eventually damage the jarrah boarding. The roof needs re-cladding before the timber sarking boards deteriorate from exposure and leaking increases.

The City of Albany had budgeted $180,000 for the replacement of the shingles over the western half of the building, in this years (2016-7) works, with a similar amount projected for next years works program. However, due to the high quoted cost of the replacement shingles, this allocation had now been completely transferred to the 2017-18 financial year.

The City of Albany has a number of buildings with heritage significance in its portfolio. It is committed to the conservation of these buildings and dedicates staff and financial and other resources to their conservation. Few of these building provide any income from rent, and all maintenance and other work is financed by the City of Albany works allocation.

A number of these buildings have shingled roofs, and the City of Albany has found shingles to be problematical for a number of reasons, including cost, longevity, maintenance, procurement and quality as follows:

a. Cost.

One of the major issues is the cost of replacing the shingles. Two quotes have been received by the City of Albany on a per metre basis.

- The preferred quote from a recommended and experienced roofer experienced in laying shingles, was **$1,213.22** /m2
- The second quote was **$577.50**/m2

At these rates, to replace the shingles over the whole roof of the Albany Cottage Hospital building would cost **$636,000** with the preferred contractor and **$350,000** with the cheaper quote.

She-oak shingles are very expensive and the price will continue to escalate.

b. Longevity

Shingles usually last for about 20-30 years. It is over 30 years since the shingles were replaced on the roof of the Cottage Hospital at the Vancouver Arts Centre.

It is a large financial burden for the City of Albany and its ratepayers, to repeat the re shingling every 20-30 years at the current cost, and this is likely to increase above CPI as the availability of the product and roofing skills decrease.

c. Maintenance.

Considerable maintenance is required to keep a shingle roof watertight. Lichen and moss build up on the surface and require removal otherwise water will back flow through the shingles and rot can set in. Lichen has had to be removed from the roof of the Cottage Hospital.

Split and dislodged shingles require replacement. The shingles on the roof of the Cottage Hospital have slipped and some are missing and require replacement.

Ideally the shingle roof should be 'oiled' every few years with 50/50 raw linseed oil and mineral turps. This procedure is expensive, for example, the cost of oiling St Bartholomew's, East Perth Cemeteries in 2007 was $8,100.

d. Quality

The quality of sheoak shingles has deteriorated as all good mature trees have been harvested. The logs that are now available are very different in quality to those available in the late 19th century.

The traditional method of quartering the timber logs, and taking material that followed the grain is no longer followed, and the logs are cross cut which results in an inferior product due to its tendency to split.

Imported shingles are far less durable than sheoak, due to the extreme climate conditions in Australia.

e. Availability of shingles

Sheoak logs are only available from private land clearing or forest clear felling practices and are not a renewable resource. Whilst the supply is limited, sheoak is also in increasing demand for high value-added products such as furniture and flooring. Sheoak roof shingles are becoming financially unviable as a roof cladding and will be of restricted availability in the future.

Sheoak shingles made by traditional methods were the best material available to early settlers of limited means, although there was some importation of slate. Galvanised corrugated iron became more widely available in the mid nineteenth century, and due to its far greater longevity and ease of construction rapidly became the roof cladding of choice in Australia. Sheoak shingles are currently only available from one sawmill in Western Australia. Shingles are now shorter and generally narrower than traditional shingles to obtain the maximum amount from each log and water tightness suffers as a result.

Orders for shingles must be placed in advance as supply may take several weeks and more for large orders.

f. Availability and skill of roof contractors

Tradespeople skilled in shingle roof repair are rare and expensive. In Western Australia only a few firms will install shingle roofs. The National Trust only has one contractor who they will recommend as proven to be capable of roof shingling to the required standard.

g. Fire safety

As they age shingles become highly flammable and there is considerable more risk in a fire and loss of the whole building. Risks are from wood fire sparks, bushfires and electrical.

6. The proposal and options

Due to the ongoing costs associated with the shingles - the initial cost of replacement, maintenance, and projected cost of replacement every 25-30 years - the City of Albany propose to remove the timber shingles and this report is intended to enter into a discussion with the State Heritage Office to consider other options for the roofing material. The City of Albany are considering three options; Marley Eternit Acme Single Camber (machine made) plain tiles - colour grey sandfaced, Midland Brick terracotta shingle roof tile - colour asphalt (grey) and corrugated iron, either galvanized Bluescope Z600 heritage galvanized iron or Customorb profile zincalume.

The existing timber sarking boards will remain, and additional sarking fabric will be installed. The existing zinc quarter round profile gutter will remain. The existing gutterboard will remain unless it is

required to be modified to suit the roof material.

Turrets: One important consideration is the square turrets at the west end of the building. The small scale of the existing timber shingles compliments the small planes of the turret roofs. Consideration could be given to retaining the timber shingles on the turrets, as has been done on the Albany Post Office (fmr), whose turret has retained the shingle finish although the rest of the roof is now clad with tiles.

a. Marley Eternit Acme Single Camber (machine made) plain tiles Grey Sandfaced colour

Approximate cost: $442,000.00. These tiles are cheaper than the more expensive and preferred shingles quote of $636,000.00

Longevity: Guaranteed for 100 years.

Colour: The colour Grey Sandfaced is a similar colour to the grey of weathered shingles.

Visual aesthetic: The laid size is similar to shingles, the colour is similar to a weathered shingle, and the flat square edged shape is also similar to shingles.

Structure: The roof structure will require assessment by a structural engineer and recommendations made to strengthen the timber, if required. City of Albany building infrastructure officers indicate the present roof structure can withstand the additional weight.

Minimum pitch: The recommended minimum pitch of the Acme single camber is 30 degrees, but the lower pitch of about 22.5 degrees of the former (now enclosed) verandahs can be accommodated by the installation of accessories (Plain easy from Permavent www.permavent.co.uk/plain-easy/) laid under the tiles to channel any incursion of moisture.

Photo 1 Marley Eternit Acme Single Camber Plain Tile, shown in Heather Blend colour.

This photo shows the tiles to the right, next to timber shingles. (note the selected colour for the Vancouver Arts Centre roof is grey sandfaced.) Photo: Nigel Carter November 2016

b. <u>Midland brick terracotta shingle roof tile – colour asphalt (grey)</u>

Approximate cost: $222,000.00 These tiles are cheaper than the shingles or the plain tiles, they are made in Australia.

Longevity: Guaranteed for 50 years.

Colour: The colour Asphalt is a grey colour with a brownish tinge, similar to the grey of weathered shingles.

Visual aesthetic: The laid size is larger than a timber shingle. The colour is similar to a weathered shingle, and the flat square edged shape is also similar to shingles.

Structure: City of Albany building infrastructure officers indicate the present roof structure can withstand the weight of these tiles.

Minimum pitch: 18 degrees, suitable for the enclosed verandahs.

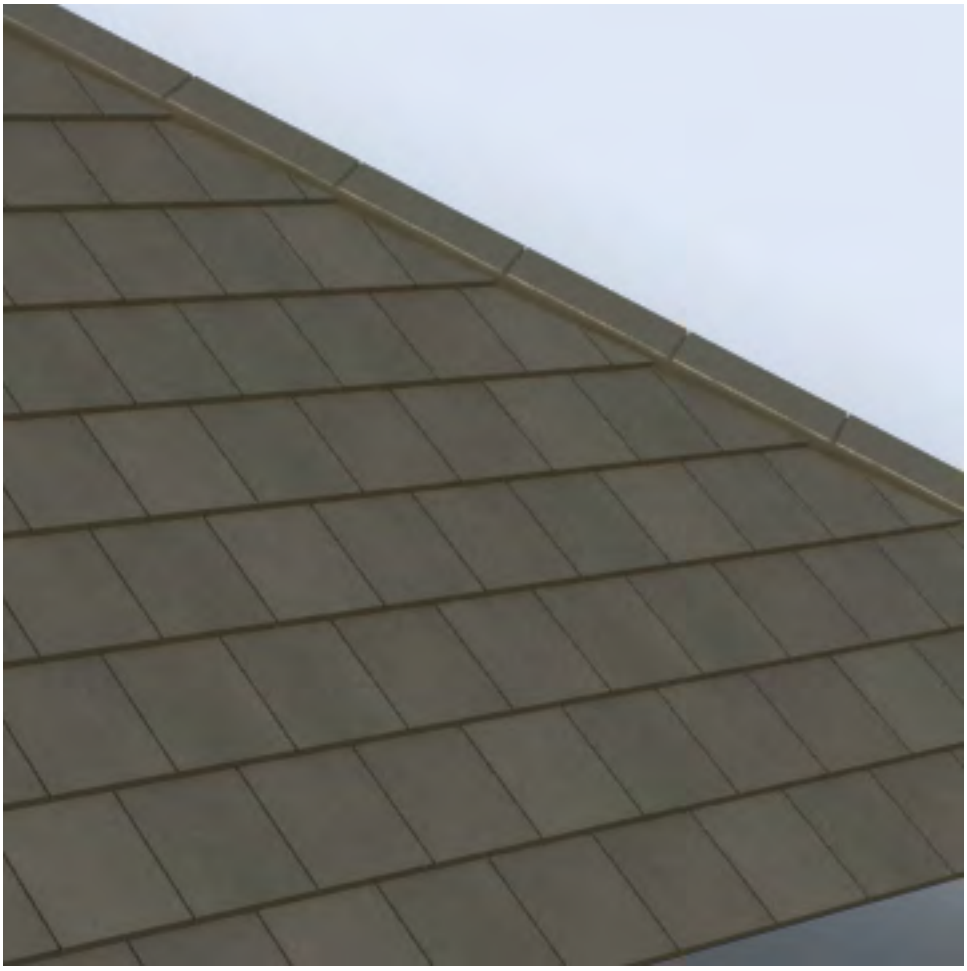


Photo 2 Midland Brick shingle, colour Asphalt

c. <u>Corrugated iron either Bluescope galvanised Z600 or customorb zincalume finish</u>

Galvanized iron was usually historically the replacement material for shingles. It became widely available in the early 1900s and a number of shingle roofs were replaced with galvanized iron in the first half of the twentieth century because of its greater longevity and cheaper price. Often the iorn sheets were laid on top of the shingles.

Approximate cost: $157,400.00 (galvanized) $146,400 (Zincalume)

Longevity: Galvanised: warranty of 10 years years and Zincalume 20 years. This guarantee applies to lined roofs only, therefore the front verandah would have to be lined.

Colour: Silver. The galvanised will weather quickly to a dull sheen, the zincalume weathers more slowly.

Visual aesthetic: The visual aesthetic is quite different to the present shingles. The zincalume is laid in long lengths. Both roofs are laid with hexagonal head screws that project above the sheeting, as opposed to the early method of nails. However, the hexagonal screws are far more watertight than nails.

Structure: Corrugated steel sheeting is light and the roof structure is able to withstand its weight.

Minimum pitch: 5 degrees – considerably less than the pitch of 22.5 degrees on the verandahs.

7. The impact of the proposal on the heritage significance of the place

The following aspects of the proposal respect or enhance the heritage significance of the place or area, for the following reasons:

The three roofing materials proposed all provide a durable roofing material that will protect the fabric of the building for some considerable period. In the case of the Marley Eternit tiles, about 100 years, the Midland Brick 50 years, and although the corrugated iron sheeting is only guaranteed for 10 or 20 years, depending on the finish, in practice it will last considerably longer than that.

The Marley Eternit Acme Single Camber “plain” tile reflects the original shingle finish in its size and colour. Its longevity of 100 years as opposed to 20-30 years for shingles will ensure the building remains watertight for a long period before requiring re roofing.

The Midland Brick shingle is larger than the current timber shingles, but its flat square shape and proposed Asphalt colour reflects the timber shingle.

The corrugated iron is currently the roofing material for the south, west and east enclosed verandahs at the rear of the place, so there is a historical precedent for this material on this building. Galvanised sheeting historically often replaced shingles due to its increased durability and impermeability.

The following aspects of the proposal could detrimentally impact on heritage significance.

Shingles have been used on the building since its original construction in 1886/97, and is therefore the historically correct roof cladding. Its soft irregular surface is has an organic aesthetic.

All three proposals are introduced elements and have a visual difference to the shingles. The Marley Eternit plain tile has the closest resemblance to the timber shingle. The large grey Midland Brick shingle tile is a modern element that is a normal tile size and much larger than

the shingles or the plain tiles.

The galvanized or zincalume corrugated iron softens to a grayish colour but the corrugations have a strong straight vertical line.

Any alteration of roof cladding would also have to take into account the smaller roof planes of the two turrets at the west end of the building.

8. Conclusion:

The heritage values of *Vancouver Arts Centre* are extremely high, particularly the aesthetic value of the *Albany Cottage Hospital* building, which is one of the most picturesque of George Temple Poole's designs.

The City of Albany has a large portfolio of heritage buildings that it maintains, a number of which have shingled roofs. Few of these buildings produce any income from rent. Heritage funding that was previously available from Lotterywest to finance conservation works has largely been diverted to community projects.

The cost to the City of Albany to replace the timber shingles is extremely high, and the building needs to be re-shingled about every 25 years. Maintenance is costly and it is difficult to procure the expertise.

Recent approval to use a grey coloured clay "plain" tile (Marley Eternit Acme Single Camber clay tile, colour grey sandface) on *Albany Post Office (fmr)*, and subsequent approval to use the Midand Brick Asphalt coloured shingle, has prompted the City of Albany to propose the same tiles for the Vancouver Arts Centre Albany Cottage Hospital building, to provide a roof covering that is more cost effective and durable.

Also as corrugated iron is present on the enclosed verandahs of the building, it is logical to also propose that material as an alternative.

The plain tile reflects the shape and colour of the shingles, although its appearance is more regular. The Midland Brick shingle is a larger size but has a flat square shape as does the shingles, and its colour also reflects the grey of weathered shingles. The corrugated iron was a product that historically replaced shingles on a number of buildings as a more durable and watertight product, and was often laid over the top of shingles.

The cost effectiveness of the corrugated sheeting is appealing to the City of Albany. The Midland Brick clay shingle is also cost effective and longer lasting than timber shingles. The plain tile is more cost effective than the preferred quote of $636,000 for the shingles, and is considerably more durable, having a life expectancy of 100 years. None of these products have the maintenance and failure issues associated with she-oak shingles.

If one or more of these replacement materials is acceptable to the Heritage Council, the ongoing cost of maintenance and recurring cost of re-shingling every 30 years will be alleviated, and the risk of leaking and subsequent deterioration of fabric will be considerably averted.

9. References and attachments

Vancouver Arts Centre Group Conservation Plan. David Heaver Architect in Association with Lynne Farrow Architect March 2000

www.**marleyeternit**.co.uk/.../**Acme**-**Single**-**Camber**-Clay-Plain-Tile

https://www.midlandbrick.com.au/Shop/Product/Roof%20Tiles/Shingle/Terracotta%20Shingle%20Asphalt/2707/3187/5827/2950/Nominal%20Dimensions

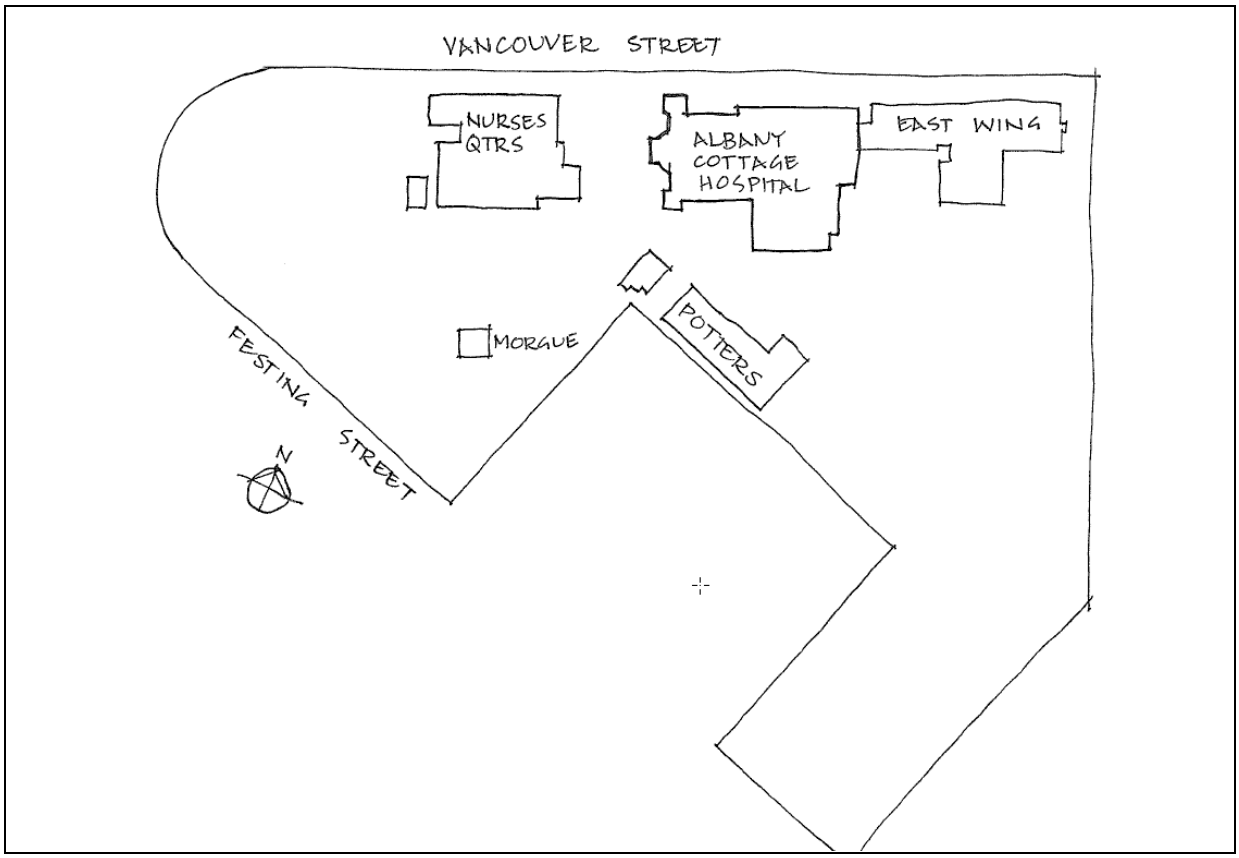


Figure 1 Site Plan
Showing Albany Cottage Hospital building

Photo 3 Satellite photo showing areas to be re roofed

Photo Lynne Farrow January 2017

Photo 4 Vancouver Arts Centre – Albany Cottage Hospital (fmr): north (front) façade

Photo: Lynne Farrow January 2017

Photo 5 Vancouver Arts Centre – Albany Cottage Hospital (fmr): west façade

Photo: Lynne Farrow January 2017

Photo 6 Vancouver Arts Centre – Albany Cottage Hospital (fmr): south (rear) façade

Photo: Lynne Farrow January 2017

Photo 7 Vancouver Arts Centre – Albany Cottage Hospital (fmr): east façade

Photo: Lynne Farrow January 2017

Photo 8 The Midland Brick Terracotta Shingle in Asphalt colour is in the centre of the photo, with the Marley Eternit Single Camber plain tile to the right

The Marley Eternit Single Camber is shown in Heather Blend colour, but the proposed colour is grey sandfaced, as shown on the right

Photo Lynne Farrow March 2017

Photo 9 Midland Brick Catalogue page showing Asphalt shingle at the left

Photo 10 Midland Brick photo of house with shingle roof in very poor condition

Photo 11 The same roof clad with Midland Brick Shingle Asphalt cover

Note the size is larger that the timber shingle and the texture is smoother