Building Canberra's Circular Economy

Draft ACT Circular Economy Strategy
2022-2025

ACT Government

Acknowledgement of country

We wish to acknowledge the Traditional Owners of these lands and waters that we live and thrive on today. We pay our respect to the Ngunnawal and surrounding nations, and extend that respect to all Elders past, present and emerging for they hold the memories, the traditions, the cultures and the hopes of all Aboriginal and Torres Strait Islander peoples across the nation.

We also wish to acknowledge that this nation is and will always be Aboriginal and Torres Strait Islander land, recognising their living cultures, their strength, their resilience and their continued nurturing of these lands and waters for many thousands of years.

We recognise, and respect, that for millennia, circularity has been a way of life for Aboriginal and Torres Strait Islander people.

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Minister's foreword

The ACT Government is leading the way to a sustainable future.

We aspire to be a thriving and equitable city that respects the limits of our planet. We recognise our responsibility to act on the urgent challenges of a changing climate and reducing our environmental footprint. Through a circular economy we are turning our attention to how we can further reduce waste and maintain the intrinsic value of resources.

I am pleased to release the ACT's draft ACT Circular Economy Strategy – setting the vision, strategic objectives and focus areas to take the first steps to transitioning to a circular city.

We are already moving away from the idea of a throwaway society to one of repair, reuse and recycle. Our phase-out of single-use plastics have been embraced by business and the community. Initiatives such as the development of a new Materials Recovery Facility, the ACT Container Deposit Scheme and Bulky Waste Collection are also supporting improved resource recovery.

Momentum to implement circular economies is growing – locally, nationally and globally.

This Strategy sets our future direction, taking the initial steps towards the system level changes required to transition Canberra to a circular economy.

We are leveraging the experiences and lessons learned from other cities both here in Australia and around the world around adopting a circular economy. We have identified five areas of the economy to drive our initial efforts including food and organics, the built environment, consumer goods, and emerging and problematic waste streams. We also explore opportunities to create space for innovation and showcase our commitment to the circular economy here in Canberra.

We will look to focus on opportunities at the start of the supply chain to encourage greater action from producers and importers of goods in the economy. We will also look at ways to increase the availability of recovered materials and goods in Canberra, and support businesses to become more circular.

The benefits of adopting a circular economy are not just about improving the natural environment, wellbeing and supporting the transition to a net zero city. The circular economy provides great opportunities for innovation, economic growth and job creation.

To realise these benefits, the ACT Government has a key role to play in driving circular initiatives across the Territory with the delivery of projects, activities and services across Canberra.

We are ready to work with willing partners across business, industry and the broader community to collaborate and support innovative solutions to create a more circular Canberra and support our long-term goals of Canberra as a sustainable, prosperous and circular city.

Chris Steel MLA
Minister for Transport and City Services

What is a circular economy?

Circular economy refers to a cyclical, regenerative system that minimises resource inputs, waste, emissions and energy. It aims to stop waste being produced in the first place, and replace the dominant 'take-make-dispose' system, with one that is resource efficient and regenerative by keeping resources in continuous use at their highest possible value.

There are three key principles of a circular economy, including:

1. **Designing out waste and pollution**
2. **Keeping products and materials in use**
3. **Avoiding negative impacts to the environment and regenerating natural systems**[1]

Designing out waste and pollution

- Using less resources and avoiding waste creation through purposeful design of products and business models
- Designing with materials' entire life span in mind enables materials to re-enter the economy and retain their value

Keeping products and materials in use

- Extending the life of products and resources for as long as possible, reducing the need to extract raw materials and create new products
- Keeping materials circulating in the economy at their highest value through purposeful design that considers durability, repairability, reuse and recycling

Avoiding negative impacts to the environment and regenerating natural systems

- Increasing circularity to prevent the depletion of natural resources and in turn regenerate natural systems
- Supporting a thriving society through the efficient use of renewable, reusable, non-toxic resources and energy

Why do we need a circular economy?

In the last fifty years, global use of materials has nearly quadrupled, outpacing population growth. The current 'take-make-dispose' linear economic approach sees valuable materials end up in landfill while we continue to draw on precious natural resources to make new products.

The development of a circular economy responds to concerns about resource scarcity, pollution of the environment and the economic limits of patterns of production and consumption. It keeps materials in use for as long as possible, reducing the need to use natural resources.

The benefits of adopting a circular economy are not just around improving the natural environment, wellbeing and supporting the transition to a net zero city. The circular economy provides great opportunities for innovation, economic growth and job creation.

Canberrans getting items ready for their free Bulky Waste Collection service

Circular economy in action

There are many examples of a circular economy already in action in the ACT. Re-use shops and car and bike hire schemes have created thriving businesses that support our economy and drive circular actions. The single-use plastic bans focus on avoiding the use of problematic single-use plastics, and trials are underway to look at how we can better design city infrastructure and construction projects to avoid waste and use recycled materials wherever possible.

Some examples of the circular economy in the ACT

ACT Government

Single use plastic ban
- Bans on problematic single-use plastic items

Recycled plastic bollards
- Over 5,000 recycled plastic bollards installed

New Materials Recovery Facility
- Improving our local recycling capacity

Food Organics and Garden Organics (FOGO) pilot
- Piloting a Food Organics and Garden Organics collection for 5,000 households in Belconnen with future expansion Canberra-wide

New FOGO Facility
- Building a new industrial composting facility to recycle organic waste and return nutrients to the soil for plants, gardens and agriculture

Corflute recycling trial[3]
- 3.8 tonnes of used corflute were collected for recycling back into corflute during 2020-21, through dedicated collection points at Resource Management Centres
- An additional 1.5 tonnes were collected since the 2022 federal election

Northbourne Avenue Road Surface Rehabilitation
- 6,000 tonnes of recycled material was used in the rehabilitation of Northbourne Avenue, reducing new imported materials to site by 69%
- Innovative rehabilitation methods meant that the project was completed 80% faster than using traditional techniques

Bulky waste collection
- 39% recovery rate through Bulky Waste Collection service in 2021-22. Items including furniture are provided to those in need

Food Waste Challenge
- 5,000 ACT households participated in a food waste avoidance challenge, with 90% of respondents seeing a reduction in their food waste

Container Deposit Scheme
- 110 million eligible drink containers collected in 2021-22

Business

Thor's Hammer
- Creates furniture from recycled and recovered timber

Green Caffeen
- Approximately 90 Canberra cafes provide reusable coffee cups through a swap and go system

GIVIT
- A national not-for-profit that matches donated household items to assist people in need, while reducing wasteful dumping and warehousing of donated goods

Shared mobility
- Shared bike, car and e-scooter schemes

Charity Stores
- Op-shops including Vinnies, Salvos, and Red Cross stores offer a huge range of high-quality second-hand clothes and household items for sale

Green Shed
- Accepts reusable items from the public for resale, including household items, kitchenware, building materials, books, clothing, electrical, outdoor and gardening items

Community

Repair Cafes
- Community run Repair Cafes, teaching repair skills and keeping products in use

Community Toolbox Canberra
- Community led tool and equipment library, supporting shared access to tools and equipment

Gumtree and Facebook Market Place
- Free to use online marketplaces which connect buyers and sellers by facilitating safe, local trades

Store holders at the Enlighten Festival embracing the single-use plastic ban

Our vision

Our vision is for Canberra to become a circular city, that supports sustainability and allows our community and environment to thrive.

We all have a role to play in creating a circular Canberra.

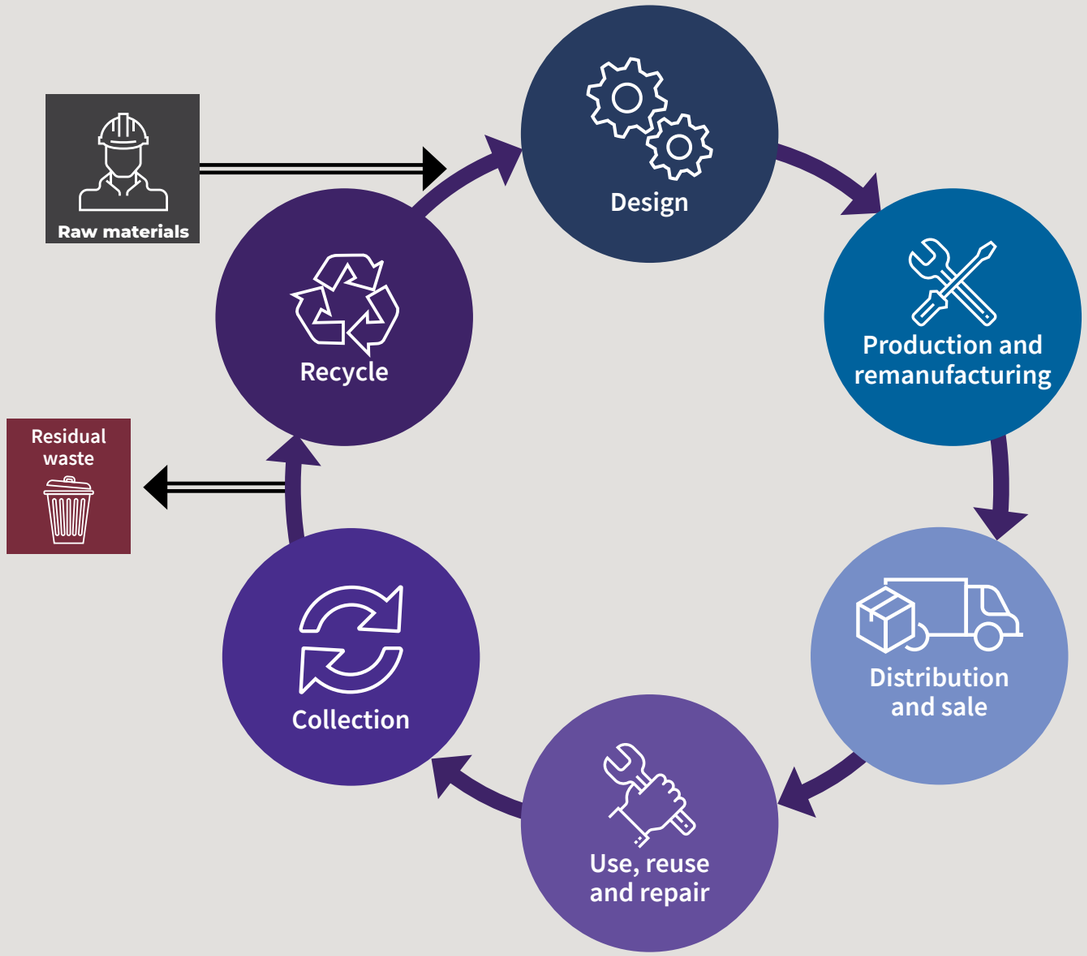
This Strategy provides the initial steps towards a more circular economy through to 2025. It outlines a common language and vision to bring the ACT Government, industry, business and the community together to build a circular economy that supports a prosperous and sustainable Canberra.

The Strategy will inform the development of a Circular Economy Action Plan and the development of new Circular Economy Legislation for the ACT.

As this is the first circular economy strategy for the ACT, it sets the high-level ambition to build on previous work to drive the initial steps towards a more circular economy through to 2025, at which point the Strategy will be reviewed and updated.

The circular economy will continue to mature and expand over time as the concept becomes embedded and our understanding of the concept - and its possibilities - grows.

Stages of the circular economy



We all have a role to play across the lifecycle of materials and products in a circular economy

Resource and energy providers

- Prioritise renewable resources and non-toxic substances
- Reduce extraction of raw materials

Product designers

- Design for extended product life, maintenance, repair, and easy disassembly at end-of-life
- Innovate to provide services in place of products.

Producers and manufacturers

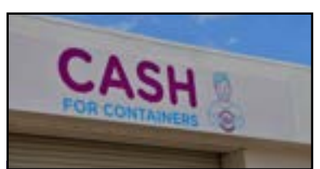
- Manufacture new products sustainably
- Re-engineer used products with the same, or improved, level of performance as ‘new’ products

Distributors and businesses

- Use efficient logistics to distribute products and reduce environmental footprint
- Factor in extended producer responsibility requirements at the point of sale

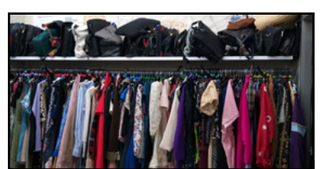
Individuals and businesses

- Consider the need to buy new products
- Prolong product lifespan, use, and value through repair, refurbishing, and resale
- Use product sharing services to achieve highest use of products



Individuals, businesses and governments

- Support responsible collection of products for re-use and recycling
- Use buy-back and take-back schemes, and collection and recycling programs
- Return organic materials to natural systems where possible



Recycling businesses

- Recycle collected products for reuse by producers and manufacturers
- Generate new value from existing resources

Context

Circular economy is a growing concept in Australia. In recent years it has typically focused on waste aspects, like recycling. Recycling will continue to play an important role in keeping products and materials in circulation, however with increased circularity we seek to move beyond this and address avoidance, better design and reusability, exploring opportunities across the entire product lifecycle.

Momentum on circular economy is growing in Australia and across the globe.

In Australia, the ACT has committed to the National Waste Policy Action Plan 2019 (NWPAP), which includes a series of targets and actions to guide progress towards a national circular economy. Potential opportunities for building the circular economy identified in the Strategy may allow the ACT to more closely align future work with actions in the NWPAP. This is complemented by the Commonwealth Recycling and Waste Reduction Act 2020, that aims to maximise the continued use of products and waste materials over their life cycle.

In the ACT, the Commissioner for the Sustainability and the Environment released a circular economy issues paper in 2019, titled Circular_CBR unlocking the potential of a circular economy in the ACT. This issues paper highlighted the status and future potential for an ACT circular economy.

The ACT will continue to build on our sustainability credentials, including being ranked the most sustainable city in the world in 2021,4 by transitioning to a circular economy to deliver social, economic and environmental outcomes for the region. With this in mind, CBR Switched On outlines the ACT Government's intention for future investments to focus on initiatives that demonstrate a commitment to the circular economy, and take advantage of opportunities to attract innovative new enterprises, high value jobs and support wellbeing.

A circular economy in the ACT will seek to support the goals of the ACT Climate Change Strategy 2019-25, recognising the climate change emergency and the urgent need to address greenhouse gas emissions is one of the most fundamental challenges of our time. The Strategy also aligns with broader sustainability goals of the ACT Transport Strategy 2020, ACT Planning Strategy 2018, the 2019 ACT Infrastructure Plan, and ACT Waste Management Strategy 2011-2025, as well as supporting the objectives of the Climate Change and Greenhouse Gas Reduction Act 2010, the Environment Protection Act 1997 and the Plastic Reduction Act 2021.

Strategic objectives

This Strategy is guided by three strategic objectives to support the transition to a circular economy, representing areas where the ACT Government would like to see action.

1. Grow extended producer responsibility

2. Grow markets for recovered materials and goods, and circular business models

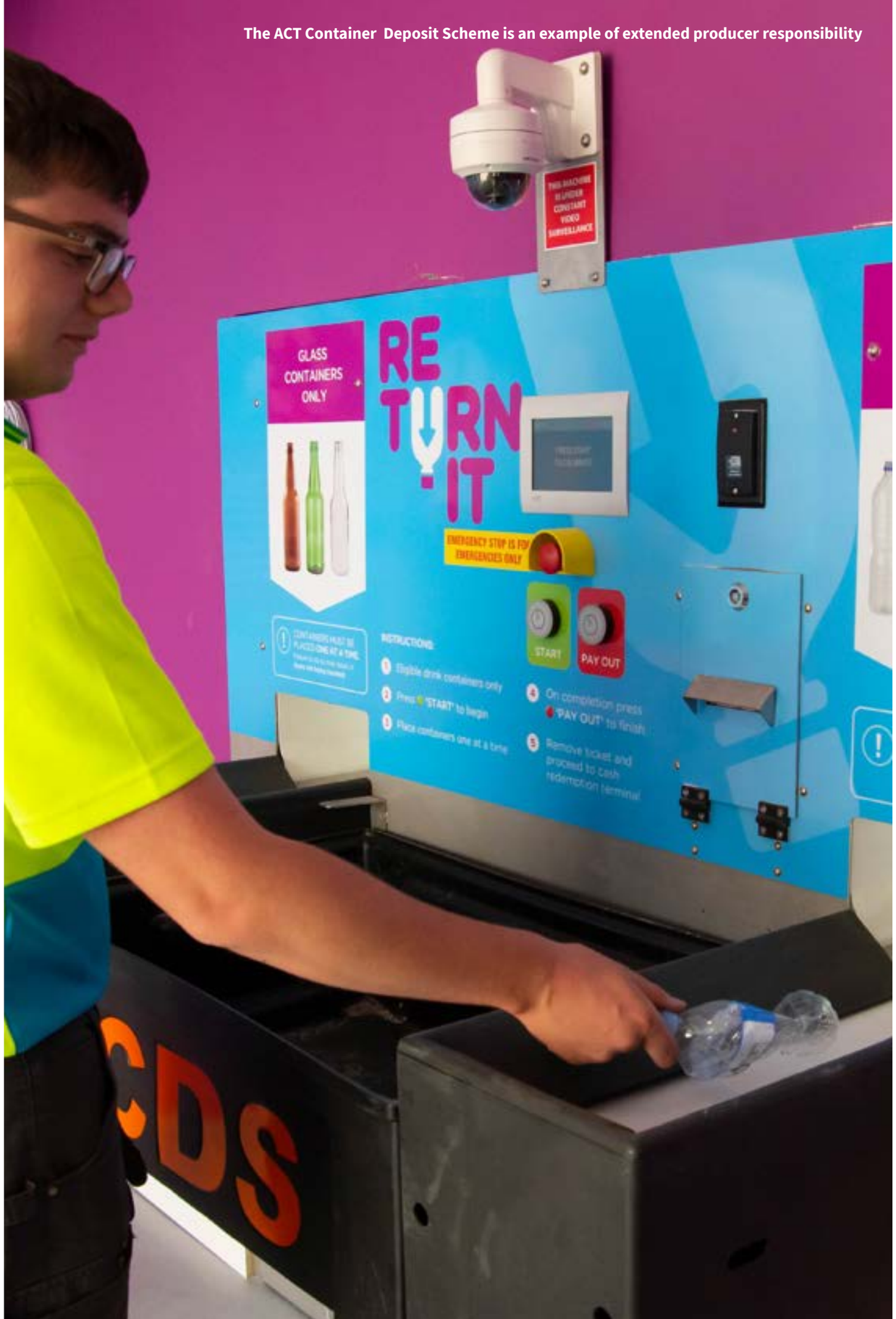
3. Create high value jobs and attract innovative new enterprises

Extended producer responsibility

Extended Producer Responsibility is a policy approach under which producers are given significant responsibility – financial and/or physical – for the treatment or disposal of post-consumer products. Assigning such responsibility may provide incentives to prevent waste at the source, promote product design for the environment and support the achievement of community recycling and materials management goals.[5]

The ACT Government will advocate at the national level to seek greater responsibility placed on producers and manufacturers as goods come into Australia and across state and territory borders. We will seek to do this through national forums such as the Resource Recovery Reference Group, and the Environment Ministers' Meeting, as well as looking for opportunities to advocate the ACT's position through engagement with other jurisdictions including the Commonwealth Government.

One example of how suppliers can take financial responsibility for the sustainable management of post-consumer waste is the ACT Container Deposit Scheme. The scheme allows people to return their eligible beverage containers to a return point and receive a 10-cent refund per container. Beverage suppliers fund the scheme, including the container refunds and scheme operating costs, the scheme coordinator manages financial operations and ensures scheme integrity, the network operator manages the return points and ensures returned containers are recycled, while the ACT Government governs and regulates the scheme to ensure it is operating efficiently.[6]



The ACT Container Deposit Scheme is an example of extended producer responsibility

Market growth

Businesses are fundamental to the development of an effective circular economy. They are innovation drivers and there are real opportunities for businesses to reduce costs and build resilience in supply chains through adopting a more circular approach.

To that end, we will consider our role in supporting the growth and viability of more diverse markets for recovered materials and goods, and circular business models such as sharing and service provider models.

Opportunities for the ACT Government to support market growth include government procurement, education, regulation and the promotion of businesses that are growing markets for recovered materials. For example, the ACT Government is supporting organics recovery and greater regional materials recovery capacity by investing in a new large-scale composting facility in the ACT, as well as supporting the construction of another major new recycling facility, in partnership with the Commonwealth Government.

We are looking for industry and businesses to partner with us on our circular economy journey, including to start making moves to identify market growth opportunities. Some emerging opportunities could include wood, textiles, e-waste, end-of-life solar photovoltaic (PV) systems and battery storage systems. We are open and ready to listen about how we can tackle these issues together.

Job creation and innovation

People will ultimately drive the circular transition by putting solutions into practice. Strengthening and advancing knowledge will be essential to encourage innovative solutions that respond to a changing context. Opportunities exist for job creation in reuse, repair, remanufacture and recycling, which are all labour and skill intensive jobs. It will require investment in skills to support industries to transition, particularly upskilling the construction workforce to build sustainable buildings. It will also require collaboration with industry to innovate and partner with us.

Focus areas

The Strategy focuses on five key areas to progress circular economy that provide a significant opportunity to advance circularity in the ACT through to 2025. The focus areas are:

1 Food and organics

2 Built environment

3 Consumer goods

4 Emerging and problematic waste streams

5 Creating space to showcase our commitment to the circular economy

These areas provide transformative potential for the ACT based on their contribution to material consumption, waste generation, and greenhouse gas emissions, as well as the opportunities they provide to create change across the supply chain

6,000 tonnes of recycled material was used in the rehabilitation of the Northbourne Avenue road surface

CBR360 Circular Economy Symposium 2022

Working together

The high concentration of resources, capital and talent found in cities means they are well placed to transition to a circular economy. The shift towards a new economy founded on knowledge and talent is already underway in the ACT, and the ambition set in CBR Switched On outlines the plan to continue this momentum.

"Partnerships with the research sector and innovation ecosystem will drive effective waste management, and the reuse, recycle and manufacture of materials,"
Andrew Barr MLA, Chief Minister, CBR Switched On.

The draft Strategy builds on that plan by providing a holistic vision for a collaborative approach that enables the shift from product-scale application of the circular economy, to a much broader systems level change that we are seeking.

Collaboration is vital for the transition towards a circular economy – not one government, industry, business or community member can achieve this on their own. A key part of our success will be the way we approach collaboration; we must consider how to move beyond the traditional top-down approach and accelerate our transition by working together, aligning stakeholders and encouraging everyone to move beyond traditional roles and responsibilities in a cooperative way.

Across Canberra, government, businesses and the community will drive the transition by putting circular solutions into practice.

Businesses drive innovation and provide great opportunities to reduce costs and build resilience in supply chains through adopting a more circular approach.

Tertiary education institutions including universities and the vocational education and training sector will be integral to skilling our future circular economy workforce, while partnerships with the research and innovation sector and industry will be critical to drive effective reuse and recycling of materials, improve product design and materials recovery processes.

From the waste hierarchy to a circular future

A circular economy seeks to expand on the traditional model of the waste hierarchy, which focuses on options to reduce waste and maximise resource recovery through a prioritisation of Reduce, Reuse, Recycle, Recover and Landfill options.

Creating a circular economy goes beyond waste to embed the circular concepts across the economy. It expands on the development of prevention (reduce) and reuse measures, reducing the need for consumption in the first place, and focusing on keeping materials in circulation for as long as possible, before needing to recycle them.

Waste hierarchy

Reduce

Reuse

Recycle

Recover

The ACT Waste-to-Energy Policy 2020-25 permits non-thermal treatment of waste to recover energy

Landfill

As we transition towards a circular economy the safe disposal of residual waste via landfill will sill be necessary

Circular economy hierarchy

Refuse	Make a product redundant by abandoning its function or by offering the same function by a different (e.g. digital) product or service
Rethink	Make a product more intensive (e.g. through product as a service, reuse and sharing models) or by putting multifunctional products on the market
Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources and materials
Reuse	Reuse of a product which is still in good condition and fulfills its original function (and is not waste) for the same purpose for which it was conceived
Repair	Repair and maintenance of defective product so it can be used with its original function
Refurbish	Restore an old product and bring it up to date (to specific quality level)
Remanufacture	Use parts of a discarded product in a new product with the same function (with quality to sell as new product)
Repurpose	Use a redundant product or its parts in a new product with different function
Recycle	Recover materials from waste to be reprocessed into new products, materials or substances

FOGO pilot scheme participants learning to use their kitchen caddy

Food and organics

Ambition

A circular economy where households, businesses and industry prioritise food waste avoidance or recovery at its highest market value to be returned to the natural environment.

Government commitments

» Introduce a citywide food organics and garden organics collection service to all Canberra households

» Mandate businesses to separate and recycle organic waste and develop food waste reduction plans, as part of circular economy legislation

Potential opportunities for the ACT

» Support behaviours that recognise the value of food and extend the life of food products

» Encourage and promote businesses with excess edible food to connect with food relief organisations that can deliver to those who need it

» Support households and businesses to reduce food waste and separate any unavoidable food waste for collection or processing in a safe and appropriate manner

Why is it a priority?

Processing organic waste is a key enabler for the circular economy in the ACT. Organic products provide more sustainable alternatives to problematic materials, like single-use plastic, which cannot easily be recycled. The ACT Government's investment in an industrial composting facility for the ACT will investigate options to allow products made of organic material, such as certified compostable products that have not previously been able to be recycled in the ACT, to be processed into compost in the ACT for the first time and sold on the open market. This will open up new opportunities to transition to more sustainable products made of organics.

Currently large amounts of organic material go into landfill and this contributes to climate change. When food waste is disposed of in landfill it turns into methane which is a potent greenhouse gas, and only some of this gas can be captured. Approximately 65,000 tonnes of organics from households, businesses and public organisations go to landfill each year in the ACT contributing to waste emissions. A significant proportion of this organic material comes from food organics.[7] A 2014 audit[8] found that, by weight, an estimated 35% of general household waste was food waste, and around 10% was garden waste.

Food waste is estimated to cost the Australian economy $20 billion each year.[9] Modelling undertaken by PricewaterhouseCoopers (PwC) estimates that reducing avoidable food waste can provide significant economic benefits to the ACT.[10] In addition, food that is harvested but ultimately wasted represents wasted energy, fuel and water used to grow and distribute the food.[11] Our food system is causing up to 80% of global biodiversity loss and we're depleting our remaining pristine habitats to grow more food, a third of which will get wasted.[12]

To support a circular economy for food and organics, the ACT Government has committed to create circular economy legislation to require businesses to have a separate collection for co-mingled recycling and organic waste collection; and a food waste reduction plan from 2023 that aims to reduce food waste from commercial operations.

In addition, we are investing in a large scale facility to process FOGO material and turn it into valuable compost, supported by the rollout of a citywide household FOGO collection service. Supporting food waste collections and implementing food waste reduction plans will also contribute to Target 6 of the National Waste Policy Action Plan to halve the amount of organic waste sent to landfill for disposal by 2030.

Benefits of a circular approach for organics

- Reducing emissions from waste and cost savings from materials and energy use
- Operational efficiencies for hospitality businesses that avoid food waste
- Supporting the community to make informed choices and change food waste behaviours
- Rescuing quality food that would otherwise be wasted and delivering to those who need it
- Job creation, including through the collection and processing of organics. The Australian Organics Recycling Association estimates that if 80% of organic waste was diverted from landfill, 2,682 jobs would be created nationally[13]
- Shortening of food supply chains supports access to healthy and nutritious food and builds resilience by helping ensure that food can still be accessed by those that need it
- Improving the quality of our soils for productive use with nutrients diverted from waste in landfill

Implementation of legislation

Mandating food waste reduction plans

The ACT Government will work with businesses to develop a business food waste reduction plan that will be easy to use and will be mandated through legislation for food related business to minimise the creation of food waste. Options for monitoring and reporting requirements for businesses and industry will be explored, and we will seek to encourage and support food waste avoidance activities across the broader community.

Mandating commercial food businesses to separate and recycle organic waste

8% of the material taken to landfill by commercial businesses in the ACT is food waste. The ACT Government will mandate food businesses like supermarkets and hospitality businesses to separate and recycle food and garden waste through the development of circular economy legislation. Consideration will be given to the types of businesses to which the legislation could apply, and options to ensure minimal cost impact, regulatory burden, safety and practicality will be explored.

Processing organic materials at scale

The ACT Government will build a large scale FOGO processing facility at the Hume Resource Recovery Estate to efficiently support the composting of FOGO materials collected from every household in the ACT. An in-vessel (enclosed) composting facility will be capable of processing 50,000 tonnes of FOGO material per year. This can be expanded to 70,000 tonnes per year to meet future demand across Canberra and the entire region. Designing for 50,000 tonnes of capacity will ensure that, in addition to household food waste, the facility can also process household garden waste and potentially commercial FOGO material.

Additionally, smaller scale and more flexible processing options may provide a range of options for commercial food waste, encouraging opportunities for innovation and job creation. Emerging small scale flexible technologies for processing food waste are already being used in the ACT. For example, the Canberra based company, Goterra, has developed a modular, automated, enclosed system that uses maggots to process higher quantities of food waste at a faster rate and producing higher value products in comparison to composting. The system produces high quality soil fertiliser and the maggots can be used as protein rich animal feed. Goterra is being used in the ACT to manage Woolworths' organic waste, recovering 6-tonnes of organic waste per week.[14] The ACT Government could play a role in educating food businesses on the range of recycling partners, big and small, to process their food waste.

Considerations

Contamination in composting

Reducing and managing chemical, plastic and glass contamination is a key challenge for enabling higher recovery rates of organics compost. This will require consideration and management across the planned citywide FOGO household collection service. With this in mind, the ACT Government will work to support community understanding of how to use FOGO.

Food waste avoidance

Changing consumer behaviour and waste patterns is key in practicing food waste avoidance. Increasing public awareness about the scale of the food waste problem is an important driver in reducing food waste, particularly at the household scale.[15] Education and guidance for businesses and industry will support successful source separation of organics and minimise contamination.

Food waste value chains

When diverting food waste from landfill, it is important to consider the commercial viability of end products, such as compost from FOGO processing. In the past, urban landscaping absorbed most compost products, but agriculture and horticulture are increasingly important outlets as awareness of the agronomic value of compost increases.[16] Logistical costs can also be a barrier to expanding agricultural markets for compost as they can be more price-sensitive than urban landscaping markets.[17]

Initiatives in the ACT

Preparing for citywide FOGO collection

» We are investing in a large-scale 50,000 tonnes per year FOGO processing facility at the Hume Resource Recovery Estate, turning FOGO into compost

» The facility will be designed to expand to take up to 70,000 tonnes per year to meet future demand

» To prepare for a citywide service, we are undertaking a collection pilot in selected Belconnen suburbs, investigating FOGO collection for a variety of housing types

ACT Food Donation Project

» Led by the Canberra Region Joint Organisation, the project is working to grow local food donation in the ACT through research, engagement and networking

» The project diverts food waste from landfill and alleviates issues associated with food insecurity

Food waste avoidance

» In 2021, around 5,000 Canberra households participated in a three week Food Waste Challenge, providing simple tips for reduce food waste and saving money

» Of those who completed a final survey, 90% saw a reduction in their food waste following the challenge[18]

» 78% of participants estimated they were saving some money per week - on average $583 per year per respondent

Food rescue

» The ACT Government provides ongoing funding to support OzHarvest food rescue activities across Canberra

A Canberra resident holding a FOGO kitchen caddy

CASE STUDY: Food Organics and Garden Organics Pilot

Throughout 2021-22, a FOGO collection pilot has been underway in four Belconnen suburbs. Participating households are given an easy to use kitchen caddy with compostable liners as a convenient way to collect their food scraps, which is then emptied into the FOGO bin along with garden waste.

FOGO material is then taken to a facility run by Corkhill Bros, where it is processed and turned into compost. In future, the ACT Government will look to deliver a dedicated in-vessel (enclosed) composting facility capable of cleanly and safely processing large volumes of organic material. Finished compost can be sold for gardening and agricultural uses in the ACT and beyond.

This pilot is providing valuable insights on how to best deliver the planned citywide FOGO collection service and understand contamination rates. Early results from the pilot have been very promising, with Canberrans in the pilot suburbs achieving an incredibly low contamination rate of less than 0.1% during the first six months of the pilot's operation, as well collecting 1,000 tonnes of material up to July 2022.

Preliminary results show that the FOGO collection model is achieving a significantly higher rate of FOGO diversion and lower rate of total waste generation from households. FOGO pilot households had on average 1.3 kilograms of recoverable organics sent to landfill, compared to households in non-pilot suburbs which had an average of 7.7 kilograms.

Once the FOGO collection model is rolled out to all Canberra households, it is estimated that the amount of the recoverable organic waste entering the landfill will reduce by approximately 22,000 tonnes per year, removing around 47,000 tonnes of emissions each year (based on 1 tonne of landfilled food waste disposed generating 2.1 tonnes of carbon dioxide equivalent).[19]

Repurposed tree logs at the Glebe Park playground

Built environment

Ambition

A circular economy that prioritises reuse, recovery and recycling in our growing built environment with influence to develop innovative and adaptive building and planning policies and practices.

Government commitments

- The CIT Woden Campus project is working to achieve a minimum of 90% of construction and demolition waste diverted from landfill
- The Suburban Land Agency is actively investigating opportunities to reduce waste going to landfill during construction and landscaping in their projects
- The ACT Government is developing a 10-year pathway to achieving world's best practice sustainable buildings, in the context of the ACT's net zero emissions target[20]

Potential opportunities for the ACT

- Explore opportunities for adaptive reuse and retrofitting to extend the life of existing buildings by considering whole of life costs
- Develop procurement guidance on embedding circular economy concepts in the procurement process to uphold the 'Environmental Responsibility' procurement value under the Government Procurement (Charter of Procurement Values) Direction 2020, identifying opportunities to obtain greater recovery of materials from existing infrastructure and support innovative solutions for repurposing in the built environment
- Embed sustainable practices in new projects throughout the project life-cycle to design out waste and pollution
- Examine options to set specific mandatory, minimum and/or desirable requirements for use of recycled materials in government infrastructure projects
- Align procurement policies and specifications for the use of recycled materials with our surrounding jurisdictions to leverage the combined purchasing power of ACT and New South Wales
- Develop new training products to skill and upskill the new and existing workforce in sustainable building and construction to support the circular economy

Why is it a priority?

The built environment refers to the human-made surroundings where people gather to live, work and play, such as roads, parks, playgrounds, public spaces, commercial and residential buildings and large civil infrastructure projects.

Circular design of the built form presents a significant opportunity to rethink the use of reclaimed and recycled materials to transition to a waste free, resilient economic system.

Across Australia, construction and demolition (C&D) activities produce the same amount of core waste as all other industry sectors combined.[21] This waste is often locked-in by decisions in the planning, design, construction, demolition, renovation, maintenance and repair of buildings and infrastructure – and comprises material types such as plastics, bricks, concrete, metals, wood and timber.

Many of these materials can be recycled or even reused for other purposes, leading the industry towards a more sustainable future – bricks, for example, are very sturdy and are easily re-used in all types of builds.

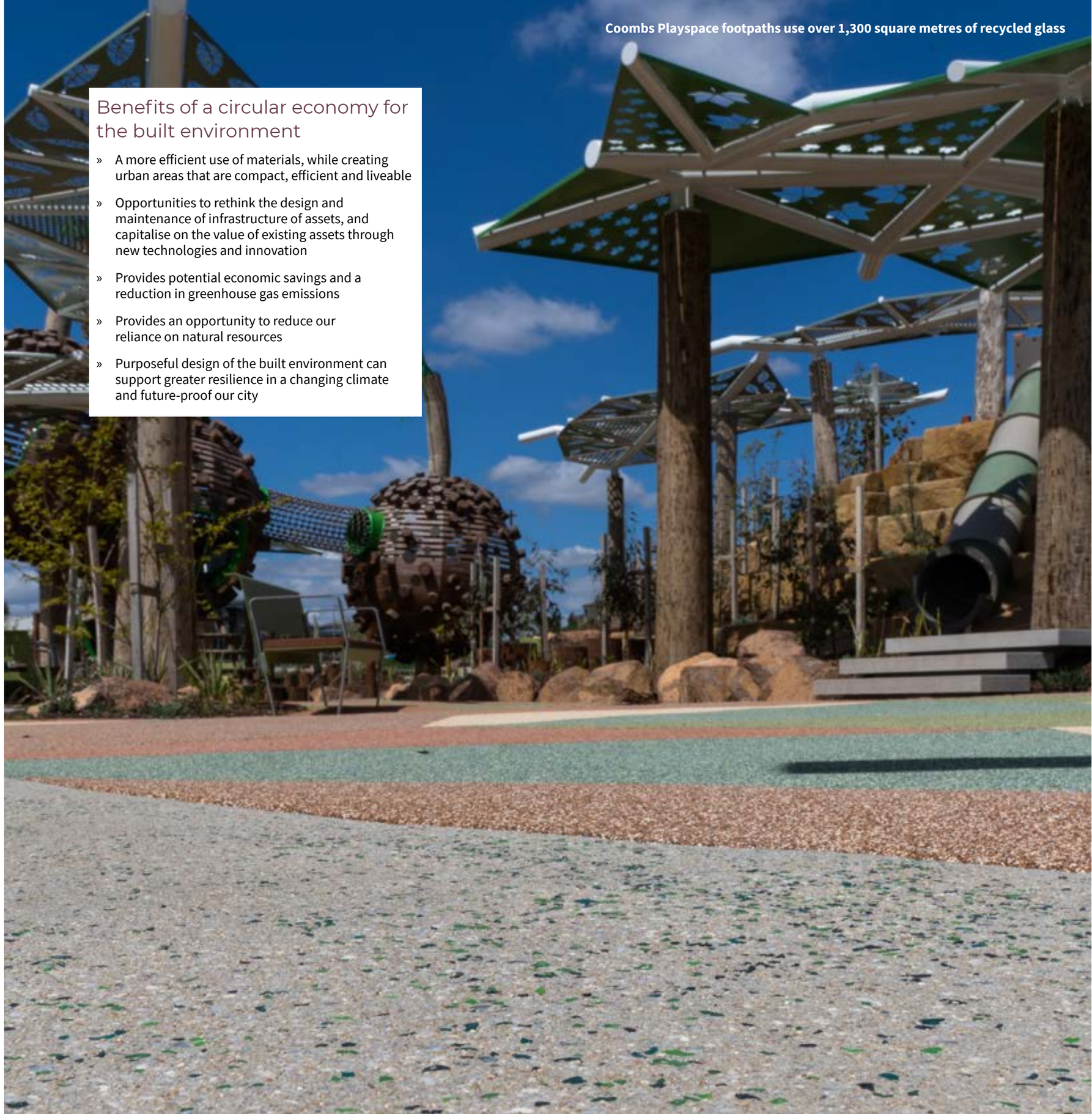
Planning system and planning controls influence our built environment and the building regulatory system. The ACT Government is committed to improving the sustainability of buildings across Canberra through reforms to both the building and planning systems, including strengthening regulations.

The ACT Government has tools available to make positive changes as we develop our built environment. This includes the Capital Framework, which ensures our investments in infrastructure projects provide maximum public value to the ACT community, and the ACT Digital Strategy, which sets out how we will continue to harness digital opportunities as we continue to grow Canberra as an inclusive, progressive and connected city.

ACT Government strategies, including the City Renewal Authority Sustainability Strategy and the Suburban Land Agency Sustainability Strategy have acknowledged the benefits of reuse of materials in the local economy throughout construction and operation, minimising impacts on the natural environment, and have encouraged a culture of share and repair.

The ACT Government's current Sustainable Procurement Policy (2015) takes the approach that 'waste should be looked at as a resource opportunity where products can be re-introduced into another product life cycle (known as "cradle to cradle" approach) at disposal stage. This encourages the inclusion of recycled content in goods and reduces demand for virgin resources'. It is proposed to retire this policy and introduce updated better practice guidance on embedding circularity in Government procurement.

Going forward, we will work collaboratively to evolve our approach to more deliberately and specifically pursue circular economy objectives in the built environment.



Coombs Playspace footpaths use over 1,300 square metres of recycled glass

Benefits of a circular economy for the built environment

- A more efficient use of materials, while creating urban areas that are compact, efficient and liveable
- Opportunities to rethink the design and maintenance of infrastructure of assets, and capitalise on the value of existing assets through new technologies and innovation
- Provides potential economic savings and a reduction in greenhouse gas emissions
- Provides an opportunity to reduce our reliance on natural resources
- Purposeful design of the built environment can support greater resilience in a changing climate and future-proof our city

Considerations

The build hierarchy

Enhancing building use involves considering whether construction is necessary in the first place. Through adaptive reuse and refurbishing of existing buildings, we can prevent demolition and the loss of resources in the economy. As we grow our efforts to embed circular principles, we will shift to a proactive approach to sustainable infrastructure and building design.

Regenerative resources

The built environment will be underpinned by renewable energy and enhanced by energy efficient design. Prioritising regenerative resources in the built form translates to making use of renewable materials, that have been grown in a regenerative way, rather than increasing the extraction of finite materials. Prioritising regenerative resources will also help us move away from the use of construction materials that have adverse environmental, health, and social impacts. Timber, as an example, is widely established as a low-carbon alternative to industrial materials such as concrete or steel, however trees take decades or even centuries to grow. Plant-based materials and bio-fabricated materials present an opportunity for innovation in our built environment.[22]

Improving our materials knowledge

By increasing our understanding of the materials used over their entire lifecycle we can enable greater transparency over which materials can be reused, remanufactured or recycled, and improve sorting and recovery processes, allowing the gathering of accurate and detailed waste data to make informed decisions.

Engineering standards and specification

We are continuing to update and develop new design standards, technical specifications, standard drawings, and guidelines, which set the planning and management of open space and public municipal infrastructure assets in Canberra. This work ensures currency with Australian Standards and strives to meet community and industry expectations in matters such as supporting the use of recycled products.

Digital technology to support our view of the whole lifecycle

Building Information Modelling and smart building technology can create a clearer picture of the built form and support collaboration during design, construction and the asset management phase. Building on our strength as the knowledge capital, the challenge to innovate in the built environment presents opportunities to showcase circular thinking in design and recover value from the built environment.

Procurement of recycled materials in infrastructure

The ACT Government has an opportunity to effect change through our purchasing power as a large investor in public infrastructure. We are already progressing circularity through trials and pilots of recycled materials in applications such as roads. We will work to embed this circular practice as business as usual behaviour in new standards. This will be influenced by factors such as access to recycled materials and the maturity of recycled material markets, cost effectiveness, the ability of industry to use recycled material to meet performance standards and confidence in recycled materials to meet engineering standards and specifications.

Product stewardship

The built environment sector could benefit from strengthening targets for waste and reuse, as well as incentives to promote extending product life and remanufacturing to bring about circularity.[23] Currently, product stewardship is limited to voluntary schemes for steel and PVC products. This presents an opportunity to explore greater emphasis on avoidance and waste reduction across other materials.

Thor's Hammer creates products from recycled timber

Bollards made from recycled plastic in Canberra

Aligning procurement standards for recycled content in infrastructure

Transport for New South Wales (TfNSW) is leading work on new procurement standards for recycled content across a range of civil infrastructure projects. In order to create a common market for recycled materials and infrastructure delivery partners working across jurisdictions, there is an opportunity to work with the NSW Government to adopt the same standards for recycled content in the procurement of infrastructure projects in the ACT.

TfNSW will:

- Implement Baseline Sustainability Requirements with consistent targets for recycled content and waste
- Evaluate commitments which exceed the Baseline Sustainability Requirements in the tender assessment process to encourage innovation and enhanced performance
- Update procurement processes to require Tenderers to submit a sustainability management plan prior to contract award
- Consider contractors' sustainability performance in future tender assessments
- Capture wider benefits of sustainability by embedding socio-economic externalities into decision making

Initiatives in the ACT

Recycling of combustible cladding materials from ACT Government buildings

- We are remediating combustible cladding on ACT Government buildings and recovering materials to be recycled, reducing potential emissions associated with avoided raw materials use
- Recycled polyethylene is being used in the production of plastic products, like flowerpots, commercial landscape drains and pits, pallets and bottles
- Recycled aluminium is being used in the production of new aluminium products, like window frames, park benches and building products

Circular economy solution for recovered glass

- The ACT Government partnered with Icon Water to develop a circular solution for glass, where recycled crushed glass was used in place of virgin sand for use in pipe bedding

Sustainable design for CIT Woden Campus

- We are prioritising sustainable design by supporting reuse and recycling during construction, demolition and excavation, and aiming to divert 90% of construction and demolition waste from landfill
- Recycled and recoverable materials are being prioritised
- The building will be designed for disassembly, a method that considers the need to disassemble parts of buildings for repair, refurbishment, or recycling
- Innovative sustainable and smart design systems will help to optimise materials use
- Lendlease will also help achieve the ambitious sustainability targets for the project attaining a 6-star Greenstar building rating
- This includes having a timber super-structure, using green concrete and providing all-electric systems, electric vehicle chargers and internal gardens

Reuse and repurposing of natural materials across our infrastructure projects

- The Namarag Reserve restoration project has reused 80,000 cubic metres of excess soil from the corresponding John Gorton Drive road duplication project
- 2,000 tonnes of rocks and over 400 logs were also repurposed for habitat restoration, landscaping and nature play

Recycled materials roads trial

- In 2019, the ACT Government trialled a new type of asphalt made from a range of recycled materials including soft plastics, used printer toner cartridges, crushed glass and reclaimed asphalt materials
- This method provided an economic and environmental benefit as less raw materials were required and provided an application for materials that were otherwise destined for landfill

Use of recycled materials in urban open space

- For around 10 years the ACT Government has been installing bollards made from recycled plastic across Canberra's urban open spaces
- Over 5,000 recycled plastic bollards have been installed in places such as sportsgrounds and parks

Hybrid working arrangements and shared buildings

- The ACT Government is continuing to decentralise our employment, allowing people to work across a number of different government offices, in a hybrid arrangement, lowering transport requirements and the need for office space
- Working from shared locations, in a hybrid manner can maximise the use of the buildings we already have, and reduce the need for new buildings

Timber recovery and reuse by a local recycling, joinery and furniture making business

- Thor's Hammer creates products from recycled timber giving life to a high quality resource
- They actively minimise timber waste by designing pieces to suit the typical sizes that come from house and factory demolitions, as well as furniture and products that are built for longevity, practicality, and easy maintenance
- Thor's Hammer puts to use its own waste materials by selling timber offcuts for use as firewood, sawdust to be compressed into briquettes, and nails, spikes and bolts either saved for reuse or recycled

CASE STUDY:
Recycled First Policy, Victorian Government[24]

The Victorian Recycled First Policy (RF Policy) supports the Victorian Government's circular economy strategy, Recycling Victoria – a 10 year plan to overhaul the state's recycling sector, grow domestic recycling capabilities and fuel innovation.

Since March 2020, all tenderers on Victorian major transport projects are required to demonstrate how they will optimise the use of recycled and reused materials within the current standards and specifications. Tenderers can also identify opportunities to trial new innovative products or opportunities to boost recycled and reused material quantities within existing standards and specifications.

Throughout the project delivery phase, successful tenderers must report against their RF Policy commitments. This ensures that recycled and reused materials are considered over virgin materials and diverts valuable materials from landfill. The RF Policy allows for continuous improvements to transport standards and specifications. It will develop new markets and create more sustainable transport infrastructure outcomes.

ecologiQ is leading the implementation of RF Policy across major transport projects and has developed reference guides to support the use of recycled and reused materials in road, rail and ancillary infrastructure. The guides offer a concise overview of current industry standards and specifications for recycled materials to help prospective Victorian government contractors, project teams and rail transport operators to maximise reused and recycled materials in line with the RF Policy.

The RF Policy is an example of how policy levers can create circular outcomes for built environment projects. The ACT Government continues to learn from and collaborate with other jurisdictions, taking positive steps to establish our own circular economy practices.

More than 570 tonnes of plastic waste were used to make the 32,000 square metres of noise walls used in Melbourne's Mordialloc Freeway

Alexander & Albemarle is an adaptive reuse project

CASE STUDY:
Adaptive reuse, Alexander & Albemarle buildings[25]

Alexander & Albemarle is an adaptive reuse project with a focus on sustainable alternatives to pursuing new builds. The original buildings were constructed as Commonwealth Government office accommodation in the 1960s, and prior to redevelopment, sat vacant for more than 10 years. Instead of demolishing the existing structure, a decision was made to preserve and adapt the pre-existing buildings, transforming them into a mixed-use precinct that includes retail, commercial, childcare, residential, hospitality, and health and wellbeing. The adaptive reuse project ensured the unique heritage features were preserved and celebrated while providing contemporary functionality.

Updating the sustainable design and planning elements of this building ensured that it meets contemporary standards for low impacts on the natural environment, including landscaping to mitigate the heat island effect of the precinct, and rainwater storage and reuse for maintaining these areas.

The Alexander & Albemarle project is an example of pursuing higher order circular economy solutions and preventing demolition, to generate positive outcomes in the built environment and add significant value to underutilised infrastructure, and reducing scope 3 emissions .

Canberra's Handmade Market

Consumer goods

Ambition

A circular economy where improved design and management of consumer goods keeps materials in circulation through collaboration with all levels of government, industry, local businesses and the Canberra community.

Government commitments

- Legislate requirements for businesses to have separate collections for comingled recycling
- Continue to phase out problematic and unnecessary single-use plastic items in line with the principles of circular economy
- Continue to advocate nationally for a consumer's right to repair

Potential opportunities for the ACT

- Advocate for changes to product design at the national level
- Advocate for product stewardship schemes to be established for key consumer goods
- Identify opportunities where market growth for consumer goods can be supported through regulation, procurement, and the encouragement of circular business models in the ACT
- Explore opportunities to help Canberrans participate in the transition to a circular economy for consumer goods through informed decision-making
- Work with industry and the community to ensure Canberrans have greater access to reuse and repair options for consumer goods

Why is it a priority?

Consumer goods are items that we rely on every day in almost every aspect of our lives. They are in our homes, our workplaces and our schools. The marketing of consumer goods through tactics like ‘buy now or miss out’, as well as impulse purchases and constantly changing trends influence consumer behaviour and our growing rate of consumption.

In this draft Strategy, we consider consumer goods as a broad category of items consisting of longer-life goods, such as kitchen appliances, furniture and electronics, and shorter-life goods, like packaging and single-use items.

Consumer goods typically follow the ‘take-make-dispose’ model. Our reliance and consumption of these items is having a detrimental impact on the environment, through an increased draw on raw materials and the generation of pollution and waste throughout the product lifecycle. According to the Ellen Macarthur Foundation, in industries like fashion and plastic packaging, the current design of products and systems means that the majority of materials are destined for landfill, or in some cases as pollution in the natural environment.[26]

Given that the ACT relies heavily on imported goods, the resources used, and emissions associated with the items consumed in the ACT typically occur outside of the ACT. A recent study by the University of New South Wales, University of Sydney and CSIRO Land and Water revealed that this type of emissions (referred to as Scope 3) account for more than 90% of the ACT’s total carbon footprint.[27] Although we may not see the direct impact of these emissions in the ACT, our consumption is still contributing to the depletion of global finite resources, increased pollution, and climate change.

The ACT Government is working to phase out problematic single-use plastic products through the Plastic Reduction Act 2021. Future work to phase out single-use plastics will be guided by the principles of a circular economy, including the selection of appropriate alternatives to encourage and appropriately prioritise avoidance, reuse and recycling.

Low levels of production and manufacturing of consumer goods in the ACT make it challenging for us to influence design and repair on our own. To achieve the best outcomes for Canberra, we will influence change at the national level by advocating for product stewardship schemes for consumer goods, with appropriate regulatory backing.

Benefits of a circular economy for consumer goods

- Reducing unnecessary consumption, materials use, and impacts from the production of these items
- Supporting our transition from single-use to reusable items, and the elimination of unnecessary or environmentally harmful packaging
- Through greater EPR, more responsibility is placed on the creators and sellers of consumer goods
- Regulated national product stewardship arrangements can encourage economies of scale, reduce free riders, and facilitate opportunities for harmonising management across jurisdictions
- Support for innovation and job growth through the creation of new markets for recycled consumer goods

Renewed Appliances-Manhos workshop

Considerations

Supply chains and product design

The design and manufacture of products at the start of the supply chain has implications later in the product lifecycle that influence whether goods can be repaired, reused, remade, recycled, or composted. Manufacturing generally occurs beyond our border, so it is important for us to understand the product design and supply chain process before products reach the ACT to identify opportunities to design out waste.

Availability of suitable alternatives

To disrupt existing market practices through bans on single-use items or packaging materials, consideration must be given to the viability of suitable alternatives to ensure that adverse social or environmental outcomes are avoided. This requires ongoing investment in product innovation and market development by industry, guided by the principles of a circular economy.

Product stewardship

Although the ultimate focus is on national product stewardship arrangements and harmonisation, we also have a role to play locally to support greater EPR and keep materials in the circular economy. In the future this could include bans on certain items from entering landfill, such as solar panels or other forms of e-waste if there are appropriate pathways in place for these materials, such as a product stewardship schemes. These decisions will consider the prevalence of these items as well as the availability of adequate processing technologies.

Right to repair

There are growing concerns in Australia and overseas that repair of consumer products is becoming increasingly difficult, resulting in costly and wasteful outcomes for consumers and the broader community.[28] These concerns have also been voiced in the ACT through a submission made by the ACT Government to the Productivity Commission's 'Right to Repair' inquiry in 2021, highlighting the lack of competition in repair markets, lack of certainty for consumers about reparability and costs, and the rapid increase in e-waste.

The Inquiry report, released in December 2021, found that there are significant and unnecessary barriers to repair for some products, and proposes a suite of measures that aim to enhance consumers' right to repair while providing net benefits to the community. The ACT Government awaits the response from the Commonwealth Government on the Inquiry report, to understand next steps on improving consumers' right to repair nationally.

Regulation

Regulation allows governments to address a perceived market failure to help enable the conditions required for a circular economy to emerge and thrive. Through regulation, we can take steps to bring about beneficial changes that reduce our reliance on consumer goods and packaging. For example, our commitment to phasing out single-use plastic items drives increasing availability of environmentally sustainable alternatives, as well as stimulating new solutions to effectively process those alternatives.

Initiatives in the ACT

Product stewardship

» The ACT Container Deposit Scheme (CDS) supports the collection of high quality materials for recycling, such as cans and bottles, whilst also reducing litter

» The National Television and Computer Recycling Scheme (NTCRS) provides access to the collection and recycling of certain consumer electronics, such as televisions, laptops, monitors, keyboards, printers and cables

» The Australian Packaging Covenant, managed by the Australian Packaging Covenant Organisation (APCO), sets out how governments and businesses share responsibility for managing the environmental impacts of packaging. APCO also facilitate delivery of the 2025 National Packaging Targets which apply to all packaging that is made, used and sold in Australia

Sharing economy

» The ACT shared bike and scooter schemes provide a flexible transport option, without the need to own a device

» Car share in the ACT reduces the need for personal vehicle ownership, through peer-to-peer and service-based models

» Community Toolbox Canberra, is a community-led, tool and equipment library that supports shared access to tools and equipment

Repair and extending product life

» Volunteer run Repair Cafés allow community members to bring in broken items, and work with a volunteer to repair them, with the added benefit of learning some repair skills themselves

» Clothing alteration and repair businesses provide services to repair and extend the life of clothing and textiles

Reuse and second hand markets

» Op shops and second hand stores support the donation and purchase of second-hand goods

» Online marketplaces provide opportunities to buy, sell and gift consumer goods

» The ACT bulky waste collection service collects items like furniture, household appliances, white goods and electrical equipment, diverting them from landfill and giving them a second life

» Lids4Kids collect plastic bottle lids and partner with plastic manufacturers to convert lids into recycled plastic projects to benefit the communities in which they were collected. Some of the recycled plastic products include mobility aids, park benches, kitchen splashbacks and cubby house roof tiles.

Regulation

» Problematic single-use plastics items are being progressively banned through the Plastic Reduction Act 2021. Banned items include single-use plastic cutlery, beverage stirrers and straws, expanded polystyrene containers for serving food or beverages, cotton buds with plastic sticks and all oxo-degradable plastics

Community Toolbox Canberra provides tools for hire

Soft Landing collect and recycle mattresses in the ACT

CASE STUDY:
Influencing product stewardship, a mattress recycling example

The diversity of materials and the variations in mattress design create complexity at their end-of-life. According to the Australian Bedding Stewardship Council (ABSC), in some cases the lack of consideration for recyclability during the product development stage makes circularity extremely challenging.

In the ACT, mattresses are diverted from landfill and go to Soft Landing, a national social enterprise that collects mattresses for recycling. Persons disposing of mattresses must pay a small fee to dispose of mattresses either directly to Soft Landing or through the Bulky Waste Collection Scheme. Mattresses are not accepted in the ACT landfill.

During 2021-22 Soft Landing collected and recycled 47,513 mattresses in the ACT. Through their operations they recycle up to 75% of all mattress components.

The ACT Government supports Soft Landing by providing them with a site from which to operate at the Hume Resource Management Centre. They are also provided with funding for the recycling of mattresses collected through the Bulky Waste Collection Service.

Whilst the scheme has been successful in diverting mattresses from landfill, its design is not considered optimal from a circular economy perspective, as the cost of recycling is paid at the point of disposal, rather than the point of sale. Therefore, it does not fully align with the objectives of a genuine product stewardship scheme, which focusses on building recovery into the process early in the product lifecycle rather than at end-of-life.

In 2020-21, 848 mattresses were illegally dumped in the ACT. If the cost of recycling mattresses was paid in the purchase price for the mattress at the point of sale there would be no disincentive to drop these items off for recycling, with no cost at the point of disposal.

The broader implication of not having the cost of recycling built into the product cost is that it provides no incentive for companies to design their products for easier recycling. More work is needed across Australia to improve the design and manufacturing of mattresses – and ultimately design out waste. Steps towards this are underway, and the Commonwealth Government is supporting the ABSC to develop an industry-led product stewardship scheme for mattresses and bedding.

Beyond recycling, the ACT Government can also play a role to improve producer responsibility for consumer goods, such as mattresses. By working with other governments and industry we can encourage greater producer responsibility for manufacturers to increase circularity in design and manufacturing.

In addition, we can advocate at the national level to encourage the Commonwealth Government to ensure that product stewardship schemes are implemented in a timely manner, to reduce free-riders and achieve economies of scale.

Emerging and problematic waste streams

Ambition

A circular economy where industry works proactively to prevent the creation of problematic waste, with nationally regulated product stewardship schemes in place in instances of industry inaction for whole of life product management.

Government commitments

- Advocate for the development of national regulated product stewardship schemes that require producers to take responsibility for their products at their end of life
- Progress waste audits to inform resource recovery strategies

Potential opportunities for the ACT

- Pursue opportunities for the ACT to leverage its knowledge, innovation and collaboration expertise to create solutions to emerging problematic waste streams
- Identify opportunities to work with industry in the design process so that where possible, products are designed to be repaired, disassembled, recycled and use less materials
- Monitor progress at the national level on creating value streams from problematic waste
- Consider opportunities to leverage our market power through procurement to support businesses that solve or mitigate issues with problematic waste
- Continue to collaborate with other jurisdictions to manage the emergence of problematic waste streams
- Identify opportunities to improve textile stewardship in the ACT

Why is it a priority?

Emerging and problematic waste streams refer to waste that is not being diverted from landfill, representing wasted resources that are not cycled through the economy. Many of the challenges associated with these waste streams are linked to the production and consumption of consumer goods.

As new and more complex products continue to enter the market, the challenges associated with maintaining their value in the circular economy are increasing. New products that are coming to market in growing quantities may have high embedded resource value – meaning, that they may contain rare earth minerals, or may present significant environmental impacts at end of life, but there may not be a technically or economically viable pathway to circularity at this time. Materials are often combined to form products, impacting their disassembly and recyclability as it is difficult and sometimes impossible to separate these materials.

Some problematic waste streams are already growing or are anticipated to grow rapidly in future. We already know about the emergence of textiles, e-waste, and end-of-life solar photovoltaic (PV) systems and battery storage systems, and recognise that new problematic waste streams are likely to appear in future.

The Commonwealth's Stewardship for Consumer and Other Electrical and Electronic Products discussion paper presented modelling which indicated that e-waste is one of the fastest growing waste streams in Australia and across the globe. In 2019, solar PV and battery storage systems generated 3,400 tonnes of e-waste in Australia. By 2030, these waste streams are predicted to increase nationally to 62,000 tonnes and account for 9% of national e-waste volumes, which is an 18-fold increase.[29]

According to the Clean Energy Regulator, there were 41,873 small solar generation units installed in the ACT as of 30 June 2022, and this number is growing.[30] Growth in installation and with a typical lifespan of around 20-25 years will lead to an increase in the size of these waste streams in the coming years.

By taking a circular approach to mitigate waste, the creation of unnecessary materials and products can be avoided. Where products are required, they should be designed in a way that supports opportunities for reuse, repair, recycling and resource recovery.

Benefits of a circular approach for emerging and problematic waste streams

- Avoiding lock-in effects from design decisions that impact opportunities to further cycle materials later in their life
- Innovation in product design and manufacturing
- Supports the creation of markets and jobs associated with recovered materials
- Reduced exposure to primary material supply chain shocks

Considerations

Monitoring emerging and problematic waste streams

To identify and understand emerging and problematic waste streams that need to be managed, the ACT will continue to monitor progress with implementation of national product stewardship schemes, as well as waste, product development and consumer trends.

Waste audits provide an understanding of items as they reach end-of-life in the ACT, and we can also assess product and consumer trends through monitoring global consumption data to understand relative material consumption of different sectors, and their needs and activities throughout the value chain. While global data cannot be directly scaled to the ACT, it provides an 'ideal' goal for the ACT and Australia more broadly to work towards in the collection and reporting of material flow data.

The role of government, industry and business

Industry and businesses must turn their mind to options that prolong the life of the products they create and maximise the value of the materials across the lifecycle. Where this is not happening, there may be a role for the ACT Government to facilitate this locally through regulation.

For solar photovoltaic systems, general electrical appliances, and larger energy storage batteries – including batteries used in electric vehicles and household batteries, the ACT Government will continue to pursue and advocate for national recycling solutions by working with Australian governments, and will look at where solutions beyond the ACT border can be leveraged, to achieve the most efficient solutions for emerging and problematic waste streams.

CASE STUDY: Clothing and textiles

Australia is the second largest consumer of textiles per capita in the world, second to the United States.[31]

Problematic waste is produced as consumers adopt trends towards 'disposable clothing' or 'fast fashion'. In the ACT textiles account for an estimated 14,000 tonnes of the waste entering our landfill every year,[32] and the majority of this is made up of clothing and accessories, leather (including shoes), with composite textiles such as tarps, carpets and underlay, making up the remainder.

There are clearly opportunities to ensure a more sustainable clothing and textiles sector by increasing circularity and Canberrans are already enthusiastically engaging with initiatives that promote reuse of clothing and textiles.

- The 2022 Zero Waste Festival included a clothes swap event to support Canberrans to update their wardrobes
- Op shops and second-hand stores, like Vinnies and Salvos, support the donation and purchase of second-hand items
- Fashion markets are held semi-regularly throughout the year at the Fitters workshop in Kingston, where stallholders sell fashion, designer and vintage clothing and accessories
- Online platforms are used for buying, selling and gifting used items
- Koomarri, a leading disability service provider in the ACT and surrounding region, have a partnership with The Green Shed, who recycles and cuts cloth to produce high quality cleaning rags

The Eastern Broadacre area

Creating space to showcase our commitment to the circular economy

Ambition

To take a regional approach to grow circular economy which identifies land for enterprises to establish and innovate close to the source of waste generation in the ACT.

Government commitments

- Progress the ACT waste planning and infrastructure study
- Complete the Eastern Broadacre planning
- Work with the National Capital Authority to identify and rezone land to grow the circular economy

Potential opportunities for the ACT

- Identify land for a circular economy innovation precinct in the ACT that brings together both small and large companies and non-profit organisations and provides a physical presence for innovation ecosystem focused on the circular economy
- Ensure industrial land is appropriately recognised, prioritised and protected
- Work with surrounding councils to explore options for the processing and management of waste

The ACT is a landlocked city state and is the fastest growing jurisdiction in Australia according to the 2021 Census. Unlike the rest of Australia, the ACT does not have an abundance of land, and has a growing need for land use to accommodate new circular economy business and appropriate industrial facilities.

A linear approach to waste currently results in resources going into landfill. While landfills are a crucial component of waste management, a circular economy seeks to minimise the need for them - instead diverting materials into to higher value uses. This in turn helps to extend the life of landfills, reducing future running costs and the use of valuable land resources for new landfill sites.

The broader region is also growing with new developments underway in places like South Jerrabomberra in NSW, which are directly adjacent to heavy industrial zoned areas of the ACT. The growth of residential estates in the ACT and NSW is causing conflicts with necessary land-use for the circular economy. Proposals for the processing of waste material have often been subject to community and business opposition in the ACT, even for new potential activities in sites that permit waste management as a use. Even existing waste facilities that are undertaking legitimate processing of metals and construction waste, may face opposition to their continued operations in both light industrial and heavy industrial areas.

The strengths of a regional approach to the circular economy

Appropriate land is required to put the circular economy into action. The most common request, and for businesses and organisations wishing to establish circular enterprises in the ACT, is land to establish or expand their operations.

Whilst much of the ACT's waste moves into NSW as part of a commodity supply chains, including for remanufacturing, we can do more closer to home. This will leverage our city's strengths as a knowledge economy and help to support circular economy innovation.

Creating spaces for people to collaborate, operate and share knowledge will be instrumental to our transition to a more circular economy in the ACT. Opportunities for government, business and the community to innovate and participate in the cycling of resources needs to take place at all scales, from the co-location of industries with shared resource needs, to small businesses processing goods and materials for reuse in the community.

Whilst Canberra's existing innovation ecosystems and knowledge economy can be leveraged, it is still crucial to have physical space to come together to create and innovate. For the circular economy, physical space is also required to scale-up, collect and store small amounts of feedstock and manage the safe processing of waste resources.

There is an opportunity to identify space for circular economy businesses to cluster, with start-ups, research institutions and established businesses co-located in a hub to promote collaboration and innovation.

However, with no further land in the Hume Resource Recovery Precinct and limited further land release in Hume for industrial uses, it is necessary to take further steps to secure additional land to support the circular economy in a way which also fosters innovation.

The ACT Planning Strategy's Eastern Broadacre corridor in the ACT, including land in the Majura and Jerrabomberra valleys, is one place to look for further land that could be zoned for this purpose. This would need to take account of other potential high value uses.

Additionally, a complementary approach is to look to the immediate region around the ACT which has more room for these types of uses, and presents opportunities to develop a strong regional economy with surrounding councils.

Future innovation opportunities

CBR Switched On outlines our investment priorities for markets and products that embody our commitment to climate action, the environment, sustainable development, and the circular economy. This includes opportunities in our innovation ecosystem to drive effective waste management, and the reuse, recycling, and manufacturing of materials. Future innovation opportunities for each thematic area are identified below.

Food and organics

» Businesses that process food waste from commercial collections

» Development and expansion of the organics value chain through upskilling and education

Built environment

» Transformative thinking to support co-location and multifunctionality of spaces, as well as design for circularity of materials

» Collaboration across the construction and infrastructure sector to demonstrate how we can maximise the reuse of materials and increase the use of recycled content

Consumer goods

» New and existing businesses that identify ways to better recycle, repair, and reuse consumer goods

» Opportunities to grow and promote a shared economy

Emerging and problematic waste streams

» Collaboration between businesses, industries and government to tackle emerging waste issues and plan to keep these resources in the economy

» The research and education sector can help us find solutions to designing out waste

Founded in Canberra, WV Technologies is an innovative social enterprise which provides complete IT Lifecycle services

ACT Government stand at the CBR360 Circular Economy Symposium

Turning the strategy into action

This draft Strategy is only the starting point of the journey towards our longer-term goal of Canberra becoming a circular city.

To translate the Strategy into action, we will develop an action plan in consultation with community, businesses, and industry. The action plan will outline a series of commitments that advance a circular economy rapidly over the next few years, from areas across the ACT Government, business, and industry.

Through this process we will deliver our commitment under the ACT Government's Parliamentary and Governing Agreement of the 10th Legislative Assembly to create circular economy legislation by 2023.

As a circular economy matures in the ACT, in the future we may explore opportunities to expand the focus to other areas of the economy that could benefit from greater circularity, beyond the themes identified in this Strategy.

To monitor our progress, we will explore potential metrics to monitor circularity in the ACT, including development of a future circular economy indicator under the environment and climate domain of the ACT Wellbeing Framework.

The final Strategy and action plan items will consider feedback from the community and relevant stakeholders, and may depend on priorities to be considered by the Government in future budget processes.

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