Circular Economy Plan

2023-2026

City of Whittlesea

Acknowledgement of Traditional Owners

The City of Whittlesea recognises the rich Aboriginal heritage of this country and acknowledge the Wurundjeri Willum Clan and Taungurung People as the Traditional Owners of lands within the City of Whittlesea. We pay our respects to elders, past, present, and emerging.

Contents

COVER IMAGE
Children recycling plastic drink bottles

LEFT
Djirri Djirri dance group

Executive summary

The City of Whittlesea's Circular Economy Plan 2023-2026 (Plan) provides direction to transition to a circular economy by supporting and working with business and industry to reuse, recycle, resale and repair. By transitioning to a circular economy, we reduce waste, emissions, pollution, and materials that go to landfill.

The focus of the Plan is to keep materials circulating in the economy for as long as possible and to make the most of their function and materiality.

In doing so, we aim to create more jobs and businesses, more waste is kept out of landfill, and business processes are optimised, generating more potential sources of revenue.

The City of Whittlesea has already started circular initiatives in the wider community – namely using recycled materials for infrastructure projects, introducing glass and food and organics bins, and collaborating with Sustainability Victoria to improve the waste streams of local organisations, such as those in the healthcare system.

The objective of the Plan aims to lay the groundwork in embedding circular principles through collaboration with local businesses and education providers.

Through its relationships with external stakeholders, Council will provide the business community with the support needed to help assist the move to a circular operation.

The circular approach efficiently covers the entire lifecycle of materials and is applicable to a wide range of industries and has the potential to be a strong driver of economic growth in the City of Whittlesea.

Through background research and stakeholder engagement, four key industries were identified due to their potential to become circular, these include:

Healthcare

Construction

Manufacturing

Wholesale

These key industries are crucial in servicing the basic needs of the increasing population and have great potential for businesses to transform their operations and waste into valuable resources that could add significant value to the local economy, through cost savings, new sources of revenue, and job generation. Doing so provides a positive impact on the environment by reducing dependence on extracting raw materials from nature to create new products and reducing waste that ends up in landfill.

By 2046, the Victorian Government estimates that Victoria's use of extractive resources to build infrastructure, provide services, and to make and transport products and food will almost double, and waste generation will increase by about 40 percent. Victorian businesses will be central in the transition to a circular economy, creating new jobs and harnessing opportunities for growth, while reducing waste.

Implementation of the Plan is underpinned by a set of actions to be delivered over the next three years to educate and support businesses to shift from linear to circularity.

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Metals to be recycled at *Deep Hole Drilling Specialist* (DHDS)

About the Circular Economy Plan

The City of Whittlesea will be renowned for its commitment in facilitating a thriving circular economy within the business community.

The Plan outlines the City of Whittlesea's support to transition towards a circular economy as a driver for economic growth. The objective of the Plan is to support business and industry to understand and adopt circular economic principles and encourage environmental and economic outcomes by reducing the volume of resources ending up in landfill, creating a reduction in emissions.

The Plan identifies key sectors that present the greatest potential to become circular.

Healthcare

Construction

Wholesale

Manufacturing

How this Plan supports a Strong Local Economy Strategy

The Plan is identified as a key action in the Strong Local Economy Strategy 2022-2026 to support businesses to shift from linear to circularity and reuse, recycle, resale and repair where possible.

The Plan supports three key directions.

Key direction 1:
Increased local employment

Key direction 2:
Education opportunities for all

Key direction 3:
Successful and innovative local businesses

The Plan directly aligns with the key goal of Council's *'Whittlesea 2040' vision: A Place for All* and aligns with the following strategies and plans.

- **Federal Government National Waste Policy 2018**
- **Recycling Victoria: A new economy**
- **Hume Regional Circular Economy Plan**
- **Sustainable Environment Strategy 2022-2032**
- **Rethinking Waste Plan 2021-2030**

It is worth acknowledging that the Plan will have strong synergies with several actions highlighted and delivered within the Sustainable Environment Strategy 2022-2032 and the Rethinking Waste Plan 2021-2030. Various actions within these documents can be extended to support local businesses, in addition to our residents.

The Circular Economy Plan 2023-2026 will support the longer-term culture of circularity in the City of Whittlesea, by applying a sustainable lens to how Council supports the business community.

How this Plan supports the Environmental Sustainability Goals of the Council

The Plan will support the environmental sustainability goals of the existing Climate Change Plan, Sustainable Environment Strategy, and the Rethinking Waste Plan of the Council. It also complements the Sustainable Subdivisions Framework.

Climate Change Plan (CCP)

The CCP has indicated that in recent decades, the City of Whittlesea has become hotter and drier. While efforts have been made to reduce emissions, this trend is expected to continue. If global greenhouse gas emissions continue to increase, in the 2050s, our city's climate future may look like a 2.3°C temperature increase by 2050s. This would result in the following:

- double the number of heatwave days
- longer fire season.
  More high fire danger days
- more intense downpours.
  Less cool season rainfall.

All these potential climate hazards would significantly disrupt business operations in the municipality. Of the 2.422 million tonnes of CO_2-e (carbon dioxide equivalent) emitted in the City of Whittlesea in financial year 2018-2019, 3% resulted from waste, which is the main issue being tackled by the Circular Economy Plan.

The waste sector contributes significantly to methane emissions, which is a greenhouse gas that is more potent than carbon dioxide. While only representing a minor source of our city's municipal emissions (3 percent of the total municipal emissions), the waste sector is a major contributor to methane emissions.

Methane is a greenhouse gas far more potent than carbon dioxide as its global warming potential is more than 28 times higher than carbon dioxide when averaged over 100 years.

Methane stays in the atmosphere for about nine years, which means that any action taken to reduce methane emissions today would bring rapid and significant results.

The Circular Economy Plan facilitates great mitigation potential by maximising the use of existing assets while reducing dependence on new raw materials and minimising waste.

Sustainable Environment Strategy (SES)

The Plan is in line with one of the priorities of the SES, which is a "low waste and circular economy".

This priority is implemented through the Rethinking Waste Plan, wherein businesses will be encouraged to transition to circular operations.

The Plan contributes to the climate change target of the SES to align with the 1.5°C Paris Agreement temperature goal, which is crucial in achieving net zero emissions by 2036.

This is important because in the 2018-2019 financial year, our entire municipality's community emissions have been 2,422 kt CO_2-e.

Our per capita emissions are 2.4 times higher than the global average. This means that the City of Whittlesea is exposed to a range of climate risks, including extreme heat, fire, and changes in rainfall patterns and storms leading to floods and droughts.

Extreme weather events can also lead to food shortages as a result of interruptions in supply chain, which would significantly disrupt business operations.

Rethinking Waste Plan (RWP) and the Sustainable Subdivision Framework (SSF)

While the RWP aims to change community behaviour towards waste avoidance and minimisation, the Plan aims to educate the business community behaviour about circularity. When it comes to shifting behaviour change towards sustainability, the RWP looks after the demand side (community and customers), while the Plan is involved with the supply side (businesses).

The RWP also advocates towards an organisational low waste policy across the City of Whittlesea Council.

The Plan will support the RWP in enabling Council to lead by example through mandatory waste avoidance, sustainable procurement, and resource recovery at all Council facilities, through improving staff understanding of the challenges and opportunities in transitioning to circularity.

The Plan acts as a guide for both the RWP and the Sustainable Subdivision Framework, whereby Council encourages key stakeholders in the subdivision building industry to use circular materials whenever possible.

What is the Circular Economy and why does it matter?

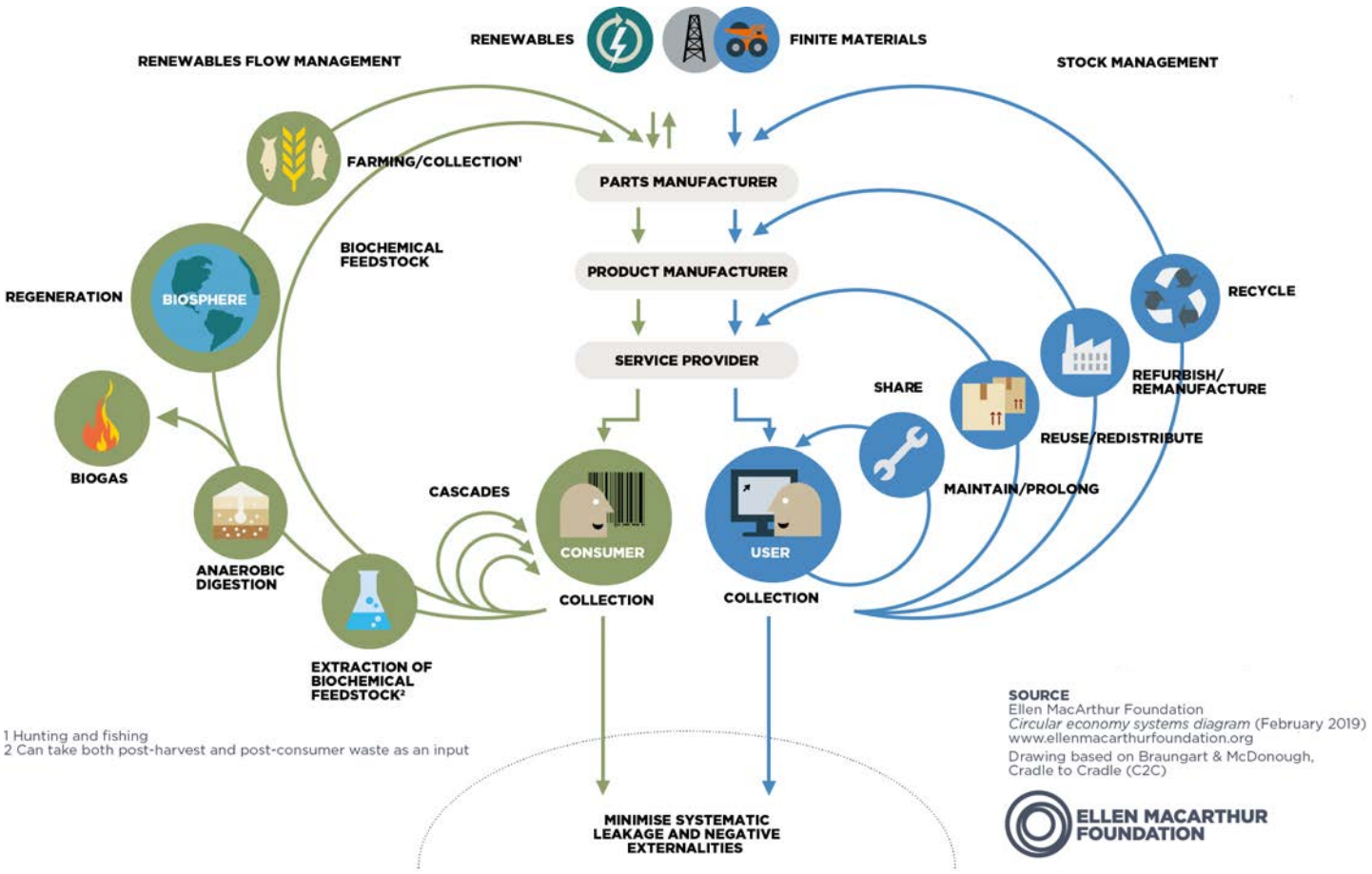
A circular economy is a wholistic system that values materials at every stage, including design, production, use, and disposal. This system makes the most out of the use of materials through reducing, recovering, reuse and recycling them at the end of their intended use.

The goal of the circular economy is to retain products in productive use for as long as possible. It is meant to reduce the environmental impacts by lessening our need to extract materials from nature because we increase our reliance on materials that are already circulating in our economy, or those we would normally regard as waste.

Waste can be further reduced when manufacturers of products design their goods to be easily replaceable, repairable, or recyclable after use, making it easier for consumers to save items from landfill. Businesses can be proactive in helping consumers prolong the lives of their products by introducing repair or replace services, renting out items instead of selling them, or introducing take-back programs where they can collect the packaging or the product at the end of use. By shifting to the circular economy, businesses can increase revenue and profitability, through increased innovation, access to new markets and a reduction in operating expenditure, while minimising their impact on the environment and creating greater social inclusion and social responsibility.

Consumers can also support the shift of businesses to the circular economy by actively taking part in prolonging the lives of the items that they own by taking them to repair shops, recycling facilities, or even by choosing to purchase items that are made from recycled materials.

The butterfly diagram below is the most widely recognised model of the circular economy concept. It was developed by the Ellen Macarthur Foundation, a global think-tank on the circular economy. The diagram describes both the technical and biological cycles of the circular economy. In the technical cycle, products and materials are kept in circulation through processes such as reuse, repair, remanufacture and recycling. In the biological cycle, the nutrients from biodegradable materials are returned to the Earth to regenerate nature. The cascades (smaller circles) demonstrate that it is recommended for users to optimise the use of resources in the same cycle for as long as possible before moving down the waste hierarchy.



Achievements to date and current activities

In developing the Plan, it is important to recognise the activities and work that the City of Whittlesea has undertaken to adopt Circular Economy principles.

Used recycled and suitable material for civil infrastructure projects

such as the trial of an asphalt product in Yale Drive, Epping, that contained 95 per cent recycled materials from kerbside recycling, crushed concrete, and crushed rock.

Provided the pop-up recycling station mobile solution

to recycle and dispose of items usually associated with moving into a new home.

Rolled out over 89,819 glass bins across the municipality in October 2022.

Since the glass bin collections commenced, Council have seen glass tonnages rise steadily as residents gain confidence in using the service. To date Council has collected 2,108 tonnes of glass.

Ensured better waste recycling outcomes for businesses to transition to circular operations through the Sustainability Victoria Circular Economy Council Fund

in a joint application with 14 participating Councils, to work with Reground on projects that aim to:

- decrease the volume of waste going to landfill
- increase the volume of material reused, repaired, repurposed, or recycled
- increase Circular Economy activity, stimulating local employment and economic development, and
- establish scalable circular solutions for business precincts that can be shared amongst councils.

Partnered with local business Repurpose It

to transform its FOGO (food organics and garden organics) into compost which can go back into the soil to grow more plants, fruits, and vegetables.

RIGHT

Processing of construction waste materials for reuse by *Repurpose It*

Circular champions

As one of Victoria's fastest growing municipalities, the City of Whittlesea is home to innovative businesses that are sustainability leaders in their respective industries. These organisations champion circularity by capitalising on the economic value of recovered materials that would otherwise end up in landfill.

Big Group Hug

Big Group Hug (BGH), located in Thomastown, is a local volunteer-run children's charity that utilises the circular economy to respond to the immediate material needs of vulnerable and disadvantaged children and their families. It upcycles, recycles, and rehomes preloved items.

BGH collects donated toys, prams, cots, car seats, books, new toiletries, new infant formula, nappies, towels, face washers, single fitted/flat sheets, doona covers and clothing for children newborn up to 16 years of age.

They also have test and taggers and can rehome some electrical equipment such as breast pumps, sterilisers, and vaporisers.

These items get packaged in cardboard boxes or drawstring bags which are sewn by an army of home-based volunteers from donated or recycled fabric.

In the last year, this amounted to 67 tonnes of salvageable items from entering landfill.

The economic value of all these distributed material aids was $2,476,120. This has supported 6,022 vulnerable and disadvantaged children in the North and West of Melbourne in the past financial year.

Moreover, all toy or book donations that do not meet their screening standards are sent to opportunity shops. All unsuitable clothing is sold to an ethical external organisation that purchases unwanted clothes and recycles them. By partnering with a clothes recycling group, BGH ensures that none of the clothing donated to them ends up in landfill.

LEFT

Processing of clothes, toys, and books for reuse at *Big Group Hug*

Repurpose It

Repurpose It, located in Epping, is a resource recovery business that specialises in diverting resources from landfill and turning them into a wide range of construction and landscaping products including sand, soil, mulch, bark, and soil amendments.

Holding multiple EPA licences, *Repurpose It* can process various waste streams including contaminated soil, street sweeping, timber, concrete, rock and food organics and garden organics (FOGO).

Repurpose It processes these resources through our award-winning resource recovery precinct which is the home of Australia's first Wash Plant. Once tested, these materials can be used by businesses and/or government organisations for their infrastructure and landscaping projects.

With a mission to eliminate waste and pollution through closed-loop resource recovery, *Repurpose It* diverts over a million tonnes of waste, which is the equivalent of 62 Olympic-sized swimming pools, from landfill every year by retaining the value of these materials, ensuring that they remain in the market for as long as possible.

Social Living

Social Living, a social enterprise, manufactures bedding and sustainable furniture in Thomastown. It is a pioneer in the bedding furniture industry in that it aims to embed circularity into all its manufacturing processes and implements extended producer responsibility for all its products. Its goal is to create products that are made from recycled materials that can also be recyclable at the end of its life.

In addition, *Social Living* ensures that all its products are modular and easily repairable so that consumers only need to replace individual components of a product instead of having to purchase an entirely new product, therefore saving as much of the functional materials from landfill as possible. In doing so, it demonstrates extended producer responsibility.

As part of its *Full Cycle Program*, it assigns a barcode to each individual product and offers customers the following services throughout the lifecycle of the product: parts replacement, repair, pickup, and recycling.

Once the product returns to the *Social Living* premises at the end of its lifecycle, staff disassemble the product and save as many of the functioning parts as they can, including wheels, spring coils, and wooden frames, among others, for either reuse or refurbishment into new products, or recycling.

To date, *Social Living* has diverted 1,684,000 kilograms of materials away from landfill. It also proactively offsets its carbon footprint and closes the loop in its manufacturing processes.

Melbourne Market Authority (MMA)

The Melbourne Market Authority is a purpose-built facility in a 67-hectare site in Epping and is one of the largest central fresh produce markets in Australia. It is a key player in the country's fresh produce industry, housing 2,750 businesses which includes 2,000 individual fruit and vegetable buyers. Despite the significant size of its operations, it successfully diverted a total of 86.7 percent of waste from landfill in the last financial year.

Its businesses donated 543,160 kilograms of produce donated to *Food Bank Victoria*, 49,952 kilograms to *Fareshare* and 17,331 kilograms to farm collections and the *Melbourne Zoo*. The MMA's partnership with *Yarra Valley Water*'s waste-to-energy facility continued, with organic waste delivered directly to the facility throughout the year. In May 2023, the market's 2.4-megawatt (MW) rooftop Solar PV System was switched on and began generating green energy, offsetting 1,773 tonnes of carbon emissions annually, the equivalent of planting 34,381 trees every year.

The MMA's ambition is that in the future, the market site will become an environmentally sustainable player in Victoria's agriculture industry, through its commitment to renewable energy and the circular economy. The MMA's cleaning management company, *Quayclean*, has introduced a new initiative where coloured soft plastics based on Polyethylene (PE, HDPE, LDPE) and Polypropylene (PP) are sorted and recycled. They have successfully worked through six tonnes of soft plastic which will now be converted into pure, high-quality resource oil.

Stakeholder Consultation

Engagement was conducted with internal and external stakeholders which has informed the Plan. Engagement included consultation with the City of Whittlesea Business Advisory Panel and Business Network, key industry stakeholders and Local Government peers, whom also had experience working in Sustainability Victoria to understand the challenges and opportunities in a circular economy.

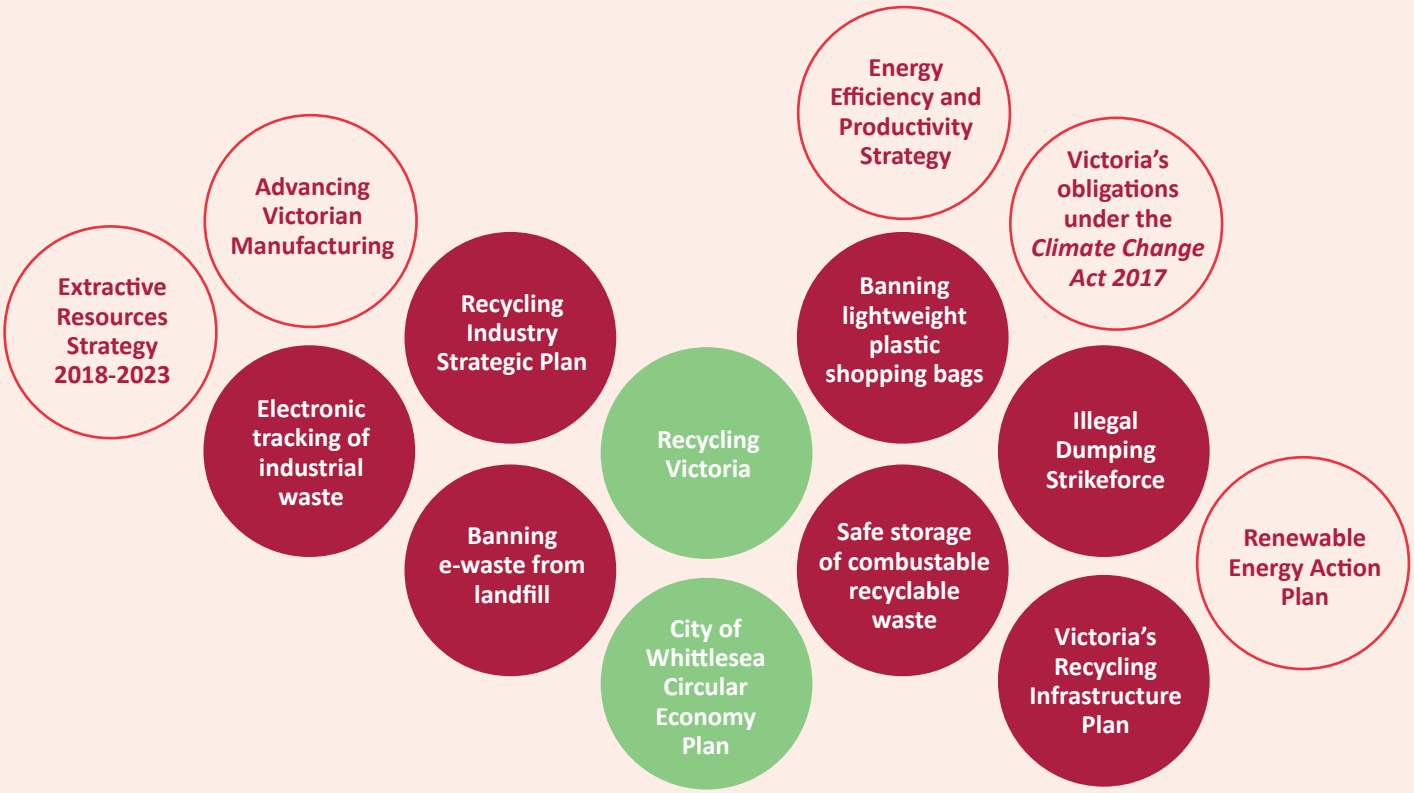
Through stakeholder feedback it was identified that the Plan should consider:

- offering practical in-kind support for businesses to help them transition towards circularity
- embedding circularity in the workplace culture at the City of Whittlesea
- formation of working groups for key industries, and
- strategic engagement with suppliers to encourage them to incorporate circularity in their business contracts.

Challenges identified included education and changing consumer behaviour towards circularity whilst opportunities included recycling drop offs and pick up points, increase recycling and training.

Complementary policies and strategies of the Victorian Government

The Circular Economy Plan of the City of Whittlesea complements a suite of policies and strategies of the Victorian government in environmental sustainability, waste, and manufacturing.



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Business stakeholder and machine operator monitoring the recycling process

Policy context and key drivers

Local

Local government can play an important role in supporting businesses and community to transition to a circular economy. Ways of doing this can include:

- education campaigns to educate community and business owners of the opportunities and benefits of circular economy practices
- advocating towards legislative changes, for example to support the use of virgin materials in capital works projects
- promoting new ways to design out waste when products are manufactured
- preventing unnecessary consumption of virgin materials
- valuing and creating opportunities from waste
- supporting the business community to avoid unnecessary waste to landfill
- improving resource recovery and waste prevention
- minimise waste and using recycled materials in manufacturing
- encourage local partnerships through facilitation opportunities.

Several Councils have implemented programs and policies supporting change that the City of Whittlesea can learn from including:

- Bendigo Circular Economy and Zero Waste Policy – aim to reduce the material footprint (negative environmental impacts) of the City's work to support the residents of Greater Bendigo and use its size to stimulate a market for circular economy solutions in the region
- City of Casey Living Lab Program – enabling businesses, academia, community, and start-ups to collaborate on local challenges using circular principles to trial and validate innovation in response to complex environmental and social challenges
- Baw Baw Shire – through increased awareness and understanding of resource recovery and uptake of circular practices, the Council educates its community to reduce the use of raw materials, support effective resource management and increase economic profitability through changing consumption and rethinking waste

- Hume City Council 'Towards Hume as a Circular City Program' – engaging local business in Circular Economy training programs, providing participating businesses with a bespoke map to adopt the circular economy, increasing awareness in the community of the circular economy and supporting Council in transitioning to the Circular Economy.

State

Released in February 2020, the Victorian Government's circular economy policy and plan, *Recycling Victoria: a new economy*, is a 10-year policy and action plan for waste and recycling. It outlines a plan of reform to establish a recycling system that Victorians can rely on. The Plan transforms how the Victorian economy uses materials and how it reuses, repairs, and recycles at the product's end of life.

Victorian businesses will be central in the transition to a circular economy-creating new jobs and harnessing opportunities for growth while reducing waste.

By 2046, it is estimated that Victoria's use of extractive resources to build infrastructure, provide services and to make and transport our products and food will almost double and our waste generation will increase by about 40 per cent. The *Recycling Victoria* policy identifies four key goals relevant to the circular economy including:

- design to last, repair and recycle
- use products to create more value
- recycle more resources
- reduce harm from waste and pollution.

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Social Living staff working on an easy-to-disassemble and repurpose mattress

Federal

In 2018 the Federal Government enacted the *National Waste Policy*, which is a framework for collective action by governments, businesses, communities, and individuals until 2030 to:

- avoid waste
- improve resource recovery
- increase the use of recycled material and build demand and markets for recycled products
- better manage material flows to benefit the economy, the environment, and human health
- improve information to support innovation, enable informed consumer decisions, and guide investment.

The *National Waste Policy* Action Plan states the following targets:

- ban on the export of waste plastic, paper, glass, and tyres commencing in the second half of 2020
- reduce total waste generated in Australia by 10 per cent per person by 2030
- 80 percent average resource recovery rate from all waste streams following the waste hierarchy by 2030
- significantly increase the use of recycled content by governments and industry
- phase out problematic and unnecessary plastics by 2025
- halve the amount of organic waste sent to landfill for disposal by 2023
- make comprehensive, economy-wide, and timely data publicly available to support better consumer, investment, and policy decisions.

The 2025 National Packing Targets includes:

- 100% reusable, recyclable, or compostable packaging
- 70% of plastic packaging being recycled or composted
- 50% of average recycled content included in packaging (revised from 30% in 2020).

These targets are associated with waste reduction and avoidance strategies, including the reduction of business waste, improving reuse and repairability, encouraging innovation and sustainable design, supporting consumer choices, and improving consumer awareness.

Industry analysis

The Plan aims to focus on the Healthcare, Construction, Wholesale and Manufacturing sectors. These sectors have been identified as they are among the top employers and/or those that have the greatest potential to transform their operations to become more circular and therefore play a critical role in transitioning to a circular economy.

As highlighted in Table 1, these sectors provide the greatest value add to support a strong local economy.

Table 1 Value-add and Employment Statistics Summary of Key Industries in the City of Whittlesea 2022-2023

	Healthcare	Construction	Wholesale	Manufacturing
Value Add ($m)	**$1,091.57**	**$1,191.17**	**$829.64**	**$1,022.95**
Employment (Total)	13,005	10,540	3,957	8,370
Employment (FTE)	9,664	9,250	3,468	7,243
No. of businesses	1,109	4,996	718	841

Source: *National Institute of Economic and Industry Research (NIEIR) ©2023.*

Healthcare

Healthcare is one of the main economic drivers in the City of Whittlesea. It is important to note the Epping Health Precinct is currently expanding and will be the main health precinct in Melbourne's North.

It is crucial for the healthcare sector to be prioritised to embed circularity early on into the operations of the hospitals and clinics in this major health precinct.

One of the most prevalent types of waste in the healthcare sector are composite soft packaging. They are typically composed of paper and plastic, and designed for steam sterilization. Medical packaging, such as these composites, helps preserve the sterility of surgical instruments before use by preventing microbial contamination from the external environment after the sterilization process.

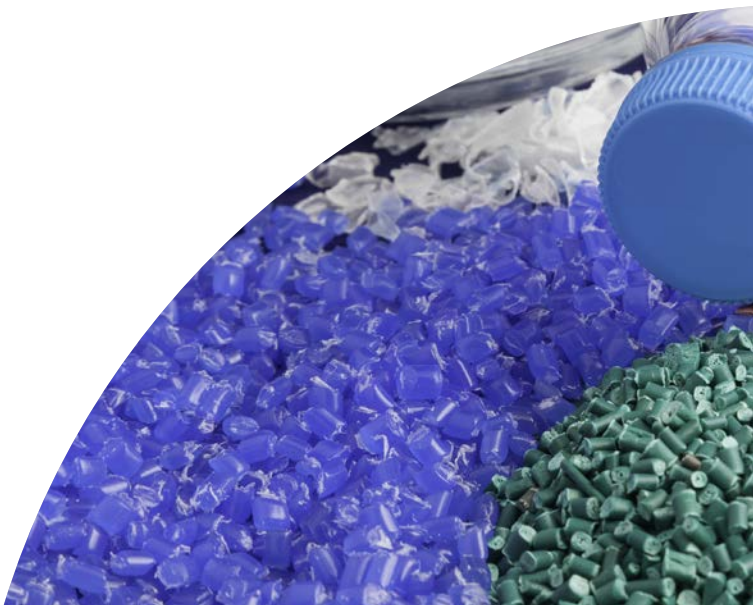
These composites encase individually wrapped and sterile single-use products from producers and manufacturers, but also reusable metal instruments from the hospitals' sterilization departments.

Construction

The construction sector has a huge environmental impact in terms of resource consumption, energy use, and waste generation.

The latest ABS waste account data demonstrates that construction is one of the top waste-generating sectors in Australia. This sector generated 12.7 million tonnes of waste in a year, which comprised of 1.7 million tonnes of hazardous waste (21% of all hazardous waste) and 54,996 tonnes of plastic waste.

Nevertheless, there is significant resource potential with the increased reuse and recycling of construction and demolition waste.



Wholesale

Wholesale businesses require a lot of packaging in the delivery of goods and cover a wide range of businesses in the municipality, namely:

- basic materials
- machinery and equipment
- motor vehicle and parts
- groceries, liquor and tobacco and other goods.

These goods allow the sector to be an impactful industry to focus on in the circular economy. The breadth of scope of the wholesale industry will help make the implementation of the circular economy in the City of Whittlesea faster and more effective.

Furthermore, the Plan will consider the impacts and aim to reduce the amount of soft plastic packaging, pallet plastic wrap, and discarded pallets ending up in landfill coming from this sector.

Manufacturing

The manufacturing industry collectively consumes a significant number of raw materials and/or ingredients and produces a significant amount of waste. The latest ABS waste account data demonstrates that manufacturing is the top waste-generating sector in Australia.

This sector generated 12.8 million tonnes of waste in a year, which comprised of 1.9 million tonnes of hazardous waste (24% of all hazardous waste) and 121,746 tonnes of plastic waste. Like the wholesale industry, manufacturing businesses require a lot of packaging in the delivery of goods and this industry covers a wide range of businesses in the municipality. In addition, manufacturing can also extend to food manufacturing and identifying opportunities in minimising food waste.

LEFT

Recycled plastic granules

Business practices and models

Within the circular economy is a long list of business practices and models. These provide businesses with an opportunity to get more value from the energy, materials, and other resources used. Examples of circular economy business practices include:

Designing for circularity
Design that makes it easy to take apart the components for easier repair or recycling at the end-of-life and improved design so products and be manufactured sustainably.

Participating in product stewardship
Taking responsibility for the product during the use phase (e.g., lifetime repair) or at end-of-life (e.g., implementing or funding a recycling scheme).

Maintenance and repair
Prevent breakages or fix issues to keep things going and extend the lifecycle of the product.

Incentivised return
Customers return used products for an agreed value. Collected products are resold or refurbished and sold.

Refurbishment and remanufacturing
Restoration of degraded products to ‘as new’ condition.

Product as a Service (PaaS) models
Instead of buying products, customers will pay to use them through a lease or pay-per-use arrangement, so the manufacturer will retain ownership of the product so that the business can provide value-added services throughout the product lifecycle, driving revenue and reducing cost. Businesses are less reliant on new product sales and shifts the revenue towards the use phase of the product.

Collaborative Consumption, Sharing Platforms, Product Service System (PSS): Product renting, sharing, or pooling
Enable sharing use, access, or ownership of product between members of the public or between businesses.

Opportunities and Challenges

Optimising the design and use of medical equipment

Medical equipment which are often high-complexity, long-life devices - are retrieved by manufacturers when at the end of or close to the end of their lifetime and put back into service through refurbishment.

Hospitals opt to shift from using disposable towards reusable items, especially for those that pose a low hygienic risk. One example of this is the choice of using reusable surgical gowns and drapes.

Educating medical staff to be mindful of only opening sterile bundles that will be used during a procedure allows the possibility of unused tools to remain unopened and available for reuse. This avoids unnecessary disposal of items which would have been prematurely opened despite not being used in the procedure.

Many products are a hybrid of some parts which enter a patient's body and others which do not. If these pieces are designed to be detachable, they can be hygienically recovered using different methods, and the parts that do not enter a patient's body or that come into contact with fluids may still be sterilised and reused.

Manufacturers have the opportunity to design medical equipment and tools with high quality materials to ensure longevity of product lifespan, keeping them away from landfill for as long as possible.

Reinventing food waste

There is the opportunity to grow the manufacturing sector by value-adding reject fruit and vegetables, therefore improving productivity and value-add. One way to simultaneously add value to fruit and vegetables and reduce food waste is to find a market for imperfect produce that would otherwise be discarded. There are opportunities to work with local manufacturing businesses to create products using imperfect produce (e.g., pre-made mashed potato or chopped frozen vegetables), as well as working with hospitality businesses to supply cosmetically imperfect produce for food preparation.

Food waste takes many forms, and one type of food waste that can be overlooked is the by-products from food processing. When processing food for human consumption, often only certain parts of the crop (vegetables, grains, and fruit and nuts) are used, with the remainder discarded as waste.

Much of this food processing waste is either disposed of, used as animal feed, or turned into compost. Although the latter two are environmentally sound options, there are opportunities to add further value and extend the life cycle of the products, generating added revenue for manufacturers. With some creativity and innovation, almost every part of a crop can have a potential high-value use.

LEFT

Plastic drink containers reused as plant pots

Procurement

There are opportunities for Council and businesses to encourage circular practices through procurement behaviours, supporting those businesses that can provide services and products created through sustainable methods. Council can become a leader by including and increasing the weighting favouring circular economy practices throughout the procurement process, further highlighting the need for its providers to take a circular approach to their business operating model.

Increased awareness and innovation

Council has the opportunity to increase the level of engagement, interest, and knowledge or skills throughout the value chain among the business community. Business may not necessarily be aware of the concepts and benefits that adapting to circular economy models can have to expand their business and/or reduce their waste and costs

Opportunity for advocacy toward regulatory barriers

Council can play an advocacy role when considering encouraging industry to embrace circular economy models. There is an opportunity to develop and implement a uniform circular framework driven by higher levels of Government, to encourage the adoption of circular practices in local businesses that have supply chains that span different locations. There is also an opportunity to advocate to State Government on the need to use virgin materials that are suggested within the major project specifications. For example, allowing the use of recycled products within road bases of major road works.

Deconstructing and re-using construction modules and materials

Moving forward it is important buildings are designed for deconstruction to optimise the reuse and recycling of construction materials. A building that is designed to be taken apart at the end of its life offers greater opportunities for resource recovery and, with time, design for deconstruction principles may be applied further up the supply chain to materials and building components. There is also an opportunity to encourage recycling services that can support builders/ demolishers on smaller projects to reduce and to separate waste on-site.

Recycled plastics – Developing recycled plastics manufacturing

According to the Federal Government's National Waste Report, less than 12 percent of plastic waste is recycled. With new plastic waste export rules in place, innovative technologies are critical for supporting the increased recovery and domestic processing of Australia's plastic waste.

Financial implications

The cost of virgin materials is comparably lower than recycled materials. These higher costs disincentivise businesses to make the transition away from the use of virgin materials, which are perceived as more cost-effective, whether in their manufacturing processes or in the packaging of finished products.

Sectoral barriers

Sectoral barriers refer to the hindrances of the built environment – design, construction, maintenance, modification, ownership, dismantling, disposal and reuse of building materials and infrastructure. Some of these involve material recovery, lack of standardisation for specification of terminology across the board, fragmented supply chains, the complexity of buildings, and split incentives of different stakeholders and decision-makers being divorced from the consequences of their choices.

Restrictions to design

Design restrictions refer to challenges that take place due to the physical aspects of a product. These challenges may include difficulties in recycling milk cartons or repairing faulty mobile phone units, due to the multiple layers of differing materials and/or components. These barriers occur due to the way a product is manufactured and the inefficiencies that arise when users interact with the design. In terms of circularity, design barriers are most prevalent in the use of composite materials because separation of components into singular materials become difficult at the end of life, which hinders the processes of either repair, recycling, remanufacturing, or refurbishment.

Availability of data

Recycling has been the subject of policy focus for many years, and many countries have robust data on recycling flows. In terms of the higher circular strategies for waste valorisation are concerned (reuse, repair, remanufacturing), the circular transition process is in most cases still in an early phase, with interventions until recently receiving far less attention and with limited indicators developed, let alone being applied.

Companies with intentions of measuring circular economy in their operations run into challenges obtaining data across their global supply chain. The use of established databases such as Aspire, businesses can record and keep track of their business waste, while at the same time viewing the waste of other businesses within the area could foster the exchange of material resources among businesses that would otherwise end up in landfill. It also helps address the issue of the lack of available data regarding business waste in the municipality.

Priority areas

The focus areas for the Plan have been identified through research, industry environments and the challenges and opportunities in the circular economy space.

The priority areas have been identified as areas with the greatest potential to create a solid understanding of the concept of circularity within the business community, enable strategies that would foster behaviour change, assist with the shift from linear to circular processes among businesses, and advocate for change that would support the circular economy.

Actions developed as part of the Circular Economy Plan are for Council to:

Increase awareness of the circular economy model and opportunities

through the development and implementation of education programs and awareness campaigns

Changing behaviours toward circularity to create economic opportunities

for businesses to engage in circular practices and support circular products

Support businesses to shift from linear to circular models

by providing businesses with tools that will enable them to transition to more circular operations

Advocate for change to better support circularity

by advocating for the state and federal governments to incorporate circularity into consumer products

Making it happen

The Plan will support actions that will help businesses transition to a circular economy. The Plan will support annual actions in the Strong Local Economy Action Plan over an initial three-year period commencing 2023-2024 and will be measured against the three key directions that is aligned to the Strong Local Economy Strategy.

Key direction 1:
Increased local employment

Key direction 2:
Education opportunities for all

Key direction 3:
Successful and innovative local businesses

RIGHT

100% recyclable and reusable packaging

Glossary

Capital – A resource that can be mobilised in the pursuit of an individual's goals. This can be natural capital (natural resources such as land and water), physical capital (technology and artefacts), social capital (social relationships, networks, and ties), financial capital (money in a bank, loans and credit) and human capital (education and skills).

Circular economy – A circular economy is a systems approach to industrial processes and economic activity that enables used resources to maintain their highest value for as long as possible. An approach to the delivery of projects and services that ensures no waste is created through their use of materials and products. The products and materials used in these projects and services are either recovered for reuse or have been designed to be fully recyclable when no longer required i.e., projects and services result in zero general waste, with only recyclables or organic "waste" being created.

CO_2-e – Stands for carbon dioxide equivalent and is the metric used to measure and compare emissions from greenhouse gases based on how severely they contribute to global warming.

Hazardous waste – A used or discarded material that can damage human health and the environment. Hazardous waste may include heavy metals, toxic chemicals, medical waste or radioactive material.

Linear economy/model – A linear economy is a "take make waste" system wherein raw materials are used to make goods, which are then sent to consumers, and after use, products are discarded. This is the default system in the economy. Not only does it add a significant amount of waste to landfill, but also proves wasteful in terms of time, effort, and resources that went into the production of goods, especially if they are only used once. It also puts considerable pressure on the extraction of raw materials from nature because each time an item is produced, virgin materials are used in manufacturing, rather than recovering materials to be repurposed, remanufactured, repaired, reused, or recycled.

Natural resources – Materials or substances such as minerals, forests, water and fertile land that occur in nature and can be used for economic gain.

Policy – Any form of intervention or societal response. This includes not only statements of intent but also other forms of intervention, such as the use of economic instruments, market creation, subsidies, institutional reform, legal reform, decentralization and institutional development.

Pollution – The presence of minerals, chemicals or physical properties at levels that exceed the values deemed to define a boundary between good or acceptable and poor or unacceptable quality, which is a function of the specific pollutant.

Sustainability – A characteristic or state whereby the needs of the present population can be met without compromising the ability of future generations or populations in other locations to meet their needs.

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