



# Designing Out Waste

Using the Circular Economy to Build  
Sustainability in Landscape Architecture

## INTRODUCTION

The Australian construction industry is among the country's biggest contributors to waste and emissions. According to the National Waste Policy 2018 report, the industry generated 20.4 megatonnes (MT) of waste from construction and demolition.<sup>1</sup> Between 2016-17, 6.7MT of construction and demolition waste went into landfills; almost a third of the total waste deposited in landfills during this period across all industries.<sup>2</sup> Going by 2019 estimates, construction waste is being generated at an even faster pace, increasing by 22% since 2016-17.<sup>3</sup>

This linear "take, make and waste" approach has implications for the future of our planet. Earth is a finite resource – the more natural resources we extract and the more waste we generate, the closer we get to environmental disaster. As time is running out for us to avoid a climate catastrophe,<sup>4</sup> there is a need for a far-reaching transformation in how we approach the built environment to create a more sustainable future.

Landscape design plays a critical role – parks, green spaces and community areas are an integral part of the social fabric, and often designed with sustainability in mind. These outdoor spaces enhance the beauty of the natural environment, the very thing at risk if we continue extracting, consuming and discarding resources at our current pace. Furthermore, landscape design is often a large component of major capital work, creating significant amounts of waste and emissions.

Because of this, conventional approaches to design need to be scrutinised. The majority of architectural products – from street furniture and water fountains to the materials used to build public amenities – are derived from a largely linear process. We purchase products, use them for their useful lifecycle, then they are thrown away and sent to landfill. Soil contamination, excessive use of materials, unnecessary design features and extravagant use of heavy machinery also take their environmental toll.

It is time for council, designers and architects to adopt a new approach to design that keeps architectural products and materials in use for longer and retain their value. The circular economy may be the answer – a new model of economic development that focuses on reducing, reusing and recycling waste materials and creating sustainable landscapes that protect our finite resources and rebalance our ecological systems.

**The goal is to design out the negative impacts of economic activity that cause damage to human health and natural ecosystems, so waste and pollution is not created in the first place.**

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## WHAT IS THE CIRCULAR ECONOMY?

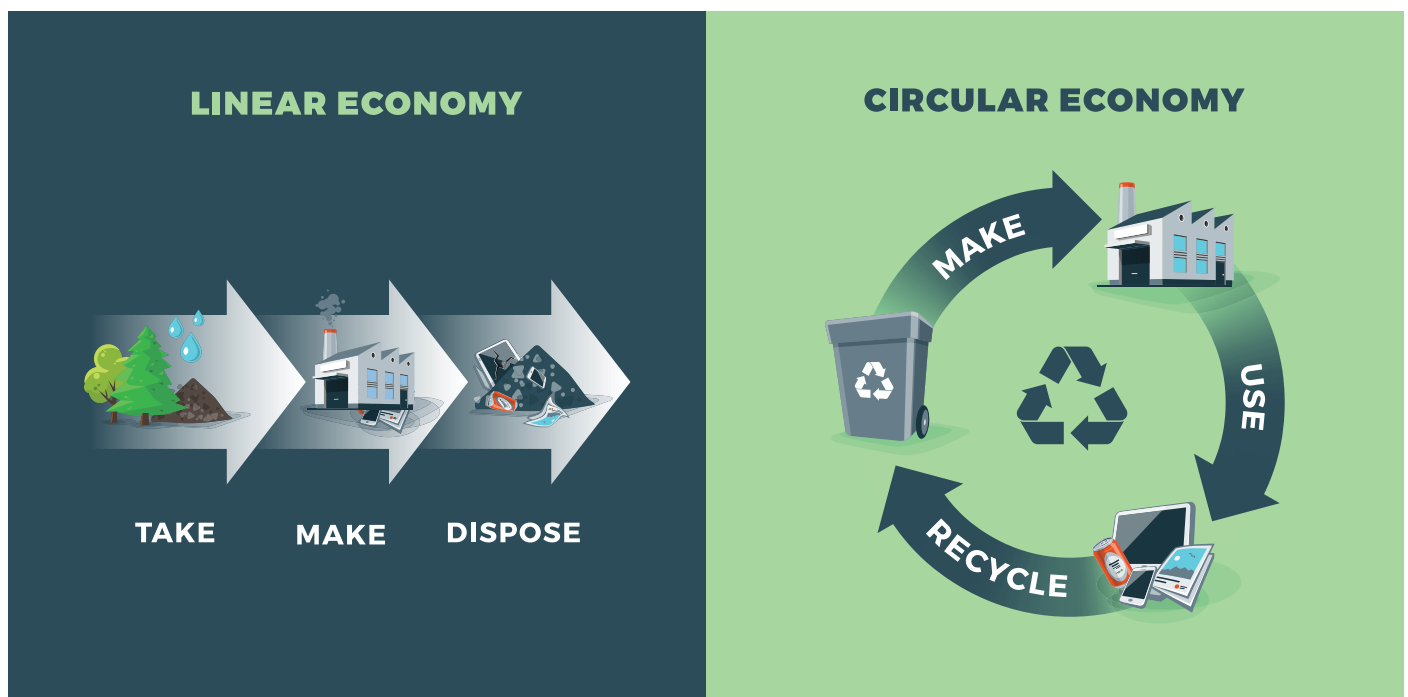
Gaining momentum in the 1970s and with theoretical influences ranging from Michael Braungart and Bill McDonough's "Cradle to Cradle" concept to ideas on regenerative design,<sup>5</sup> the circular economy is a systemic approach to production aimed at eliminating waste and the continual use of resources.<sup>6</sup> Rather than disposing of products, the product or its materials are kept within the economy to be productively used again and again, and waste materials and energy are reused as input for other industrial processes or to create regenerative resources.<sup>7</sup>

The circular economy has several main principles, including:<sup>8</sup>

- **Design out waste and pollution.** The goal is to design out the negative impacts of economic activity that cause damage to human health and natural ecosystems, so waste and pollution is not created in the first place.
- **Keep products and materials in use.** Shift from consumption to use with greater emphasis on durability, reuse, remanufacturing, and recycling to keep products, components, and materials in circulation.
- **Regenerate natural systems.** Avoid the use of non-renewable resources and actively work towards preserving or enhancing renewable ones.

The circular economy sits in stark contrast to the traditional "linear" or "take-make-waste" model. Under this old model, products and materials have a finite life and are then disposed of rather than reused. Products are designed to have a limited lifespan to encourage consumers to buy them again, so large quantities of cheap, easily accessible materials and energy are required to continuously produce new products. After their useful life, products and materials go to landfill and contribute to rising levels of CO<sub>2</sub> emissions and pollution.

In the circular economy, products are designed to be durable; they can be used and reused for a long time and are manufactured with safe, sustainable materials. Product design focuses on modularity enabling products to be easily repaired, upgraded or taken apart and reused. There is also a shift from product ownership to products as services; customers may only require a product for a short period of time so they can "lease" the product then return it the service provider to be reused or recycled, or passed on to a new user.<sup>9</sup>





## WHY LANDSCAPE DESIGN IS BECOMING CIRCULAR

As urban populations grow, communities are seeking greenspaces, parks and other public spaces that deliver community benefits alongside beauty and sustainability. Landscape designers, architects and local councils play a critical role in shaping the urban space; they can influence the future of consumption to become more circular in the way these spaces are used and maintained. Such spaces can also act as tools to educate communities and increase environmental awareness.

The interest in sustainable landscape design is naturally linked to the principles of the circular economy. Sustainable landscapes are typically designed to be attractive, efficient and require minimal resources in terms of cost and ongoing maintenance. Circular thinking can

help projects deliver greater environmental outcomes by systemically identifying and designing out potential waste factors whether that be by, for example, developing methods to harvest, clean and reuse wastewater to leasing or refurbishing outdoor furniture and diverting them from landfill.

These days most infrastructure projects have an explicit sustainability agenda. Consumers are also becoming more aware of the environmental provenance of products and how they will be disposed of at the end of their life. These factors are enabling sustainable product options and “circular” service models to compete with traditional “everyday” products.

## FROM LINEAR TO CIRCULAR

Local councils, landscape designers and architects are uniquely placed to create “circular” landscapes that have a positive long-term impact. This starts with implementing circular thinking at the planning and design stages of landscape projects. Project initiatives may include, for example:

- establishing material reuse and waste reduction targets and identifying specific ways for waste to be designed out;<sup>10</sup>
- identifying long-term community needs and designing adaptable spaces that can be repurposed over time; and/or
- establishing a sustainability energy framework for renewable energy and water conservation.

Product specification can influence the supply chain to become circular. Preference should be given to products that are “circular” across their entire lifecycle. Products that are easily repaired or can be endlessly reused will unlock additional value to customers over time. This practice minimises waste and helps achieve better

environmental outcomes over the life of the project.

Collaboration between designers, specifiers, manufacturers and suppliers across the supply chain is the only way to reap these benefits. Specifiers can choose to build with products made from recycled waste materials, such as refurbished bricks and tiles, and work closely with suppliers to ensure their products do not end up in landfill. In the landscaping market, leading manufacturers are offering restoration programs for outdoor furniture, water fountains and other features to ensure longer product lifespan.

Landscape design can also add value back to the circular economy. Design choices, such as water refill stations throughout a public park or material collection points, can encourage sustainable behaviours among community members. Natural processes can be leveraged to clean water, create new habitats and amenity spaces. For example, an urban forest can be designed to intercept rain, which can reduce stormwater runoff and also offer opportunities for rainwater harvesting and reuse.

## GOING FULL CIRCLE:

### The benefits of specifying sustainable products for landscape projects

#### Reduces your impact on the environment

Circular products will reduce your project's overall carbon footprint as they are, by design, made using processes that have been optimised to reduce emissions and/or use fewer virgin materials. Such products also have a longer lifespan and are often made with recycled or waste materials and thus require less energy to manufacture, transport and install than new replacement products.

#### Improves the livelihoods of individuals and communities

Specifying products for sustainable landscape areas also involves preferring locally-designed and made building solutions. Retaining material value in a local setting reduces dependency on volatile global markets and helps create a market for sustainable building products. As product lifecycles are extended, companies are developing new and innovative reuses and services that create new market demand and job opportunities.

#### Business reputation and demand

Commitment to environmental and ethical principles attract partners, clients and public support. Some larger businesses and public sector organisations will require partners to meet sustainability standards. Against this backdrop, going "circular" is a way to reduce the risk profile of your business as the market preference shifts towards sustainability.

#### Reduce costs over life of product or service

Do circular solutions cost more? Circular solutions may come across initially as being more expensive, but they are cheaper over their entire lifespan from both a manufacturer's and user's perspective.

For manufacturers, reusing or recycling waste materials can reduce raw material and waste disposal costs. Raw materials make up 40% to 60% of the basic costs paid out by manufacturing companies.<sup>11</sup> Manufacturers can reuse waste materials to create new products at a fraction of the cost. They would also no longer be subject to price fluctuations related to raw material scarcity and importation.

The Ellen MacArthur Foundation estimates that in Europe, 600 billion dollars could be saved on primary resources by 2030 under the circular economy model.<sup>12</sup>

Consider the case of Ahrend, an office furniture manufacturer that adopted modularity, disassembly, and life extension as core design principles, and offered customers a furniture-as-a-service model where customers pay a monthly fee and return the furniture when they no longer need it.<sup>13</sup> The potential material savings under this model are immense – Ahrend sold 150,000 deskchairs in 2018, comprising 2400 tonnes of material.<sup>14</sup> During a 30-year period, the potential material savings from keeping such a chair in use, compared to the manufacture and use of three "standard" desk chairs, could amount to over 400 tonnes of material.<sup>15</sup> At the same time, this new service model allows Ahrend to maintain a close relationship with customers for longer, creating potential for greater profits in the future.

For customers, this type of "circular" service model should translate to savings across the entire product lifecycle. Better quality, longer-lasting products pay for themselves in terms of reduced replacement and repair costs. "Unsustainable" solutions tend to cost more; low build quality means more maintenance and the damage to natural resources, ecosystems and human health from toxic materials all come at a cost that is hard to express as a dollar figure.

Leasing rather than owning building assets also reduces the asset management overhead and allows the owner to be flexible if architectural tastes change without the costs of storage or disposal. Customers do not want to see their products end up in landfill, so asset take-back or recycling schemes are attractive due to their environmental and societal benefits.

The benefits of the furniture-as-a-service model is directly applicable to landscape design. Outdoor furniture and services are heavily used and subject to wear and tear and vandalism. A circular service model that enables outdoor furniture to be maintained, refurbished or reused by manufacturers has the potential to avoid the high costs of continuously replacing or repairing such assets. It also gives local councils flexibility should community needs change and certain parks and greenspaces have to be repurposed or updated.

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## **URBAN+ FOUNTAINS & FURNITURE**

### **Driving the circular economy**

The leading specialists in quality, functional and stylish drinking fountains and street furniture, Urban+ believes there is a better way to do business. The company's mission is to support the shift to the circular economy by helping customers with products and services that minimise the impact on the planet. They aim to do this by creating sustainable products that deliver aesthetic appeal, durability and function, and offering unique ownership options that divert waste from landfills and help drive water conservation. The Urban+ product range includes architectural, traditional and pet drinking fountains, refill stations, outdoor showers, tree grates, park benches and the ability create custom solutions for any project.

In a linear economy, drinking fountains are purchased, often poorly maintained, replaced and then the old one placed in landfill. Using circular thinking, Urban+'s subscription, servicing and restoration models create a shift to products that are built to last rather than designed for replacement.

Urban+ have implemented three service programs to help drive the circular economy. This program is being trialed first with drinking fountains but can be looked at for other Urban+ furniture.

- Choose your Urban+ experience (choice of three models). Customers can choose between Subscription, Service & Maintenance and direct ownership models.
  - > The Subscription model enables customers to pay only for the service of using the product while Urban+ takes on the responsibility of making it last a lifetime.

- > Urban+ offer a Service & Maintenance offering whereby the product is regularly checked and kept in full working order.
- > Direct ownership gives customers the flexibility to purchase and own the fountain, with easy access to Urban+ to help maintain it. Urban+ offers the opportunity to refurbish the fountain to ensure owners gain maximum use over its lifetime.
- Restore + Refill. This restoration program allows Urban+ drinking fountain owners to restore their fountain to "like" new once the outdoors have taken their toll.
- Urban+ Conservation: A program targeted at reducing waste by striving for zero-waste manufacturing, developing water conservation solutions, and reducing the need for single-use plastic bottles. How this plays out includes all Urban+ core materials being carefully selected to ensure what arrives through their doors leaves as a core function of the usable product. Water conservation solutions are being developed with industry leaders to help preserve water in any way possible. Urban+ are also committed to campaigning for more accessible drinking fountains and refill stations to eliminate the need for single-use plastic drink bottles.

For more information on Urban+'s range of water fountains and outdoor furniture, go to [urbanff.com.au](http://urbanff.com.au)

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All information provided correct as of April 2021