



Opportunities in the Circular Economy

Productivity Commission

Urban Utilities Submission

1 November 2024



Introduction

Urban Utilities welcomes the inquiry by the Productivity Commission into Opportunities in the Circular Economy.

Water and sanitation services are heavily dependent natural material cycles, and it is critical that these material cycles are managed in a restorative and regenerative manner envisioned by a Circular Economy.

This inquiry will bring much needed clarity to Circular Economy concepts, supporting greater understanding and alignment needed to overcome the collective challenges Urban Utilities and other service providers face in continuing to provide effective, equitable and efficient water and wastewater services.

Background

Urban Utilities is a statutory authority and, as the central South-East Queensland Distributor-Retailer Authority, has responsibility for the region's drinking water distribution and wastewater services across the Brisbane and Ipswich City Council areas and Scenic Rim, Somerset, and Lockyer Valley Regional Council areas.

In providing these essential services, we play a valued role in providing sustainable services while also enhancing the liveability of our communities in Brisbane, Ipswich, Lockyer Valley, Scenic Rim and Somerset, and we recognise our role in responding to the challenges and opportunities facing the sustainable management of water.

Priority Circular Economy Opportunities

Recycled Water

Water plays a crucial role in both public health and economic outcomes, yet the traditional reliance on natural water cycles for water and wastewater services is increasingly challenged. Extractive activities linked to population growth and economic development, along with the volatility brought by climate change, are placing significant pressure on these natural systems. There has also been growing awareness and action by industrial and commercial producers, and their consumers, to reduce the environmental footprints of their activities through the use of recycled materials including water.

Advancements in treatment technologies have enabled municipal and industrial wastewater to be processed to various standards for reuse across a range of applications. At less intensive treatment levels, recycled water can be utilized for land application such as urban greening and agriculture, and certain and commercial uses, which can help mitigate the costs associated with higher treatment standards required for discharge into natural environments. At the more intensive treatment levels, wastewater can be transformed into Purified Recycled Water, making it safe for all uses including drinking. This form of reuse enhances water supply security and reduces the need for costly investments in traditional infrastructure such as dams, treatment plants, and conveyance infrastructure.

Nature Based Repair

Water and sanitation services are heavily reliant on natural material cycles, making it essential to manage these cycles in a restorative and regenerative way, as envisioned by a Circular Economy. Urban Utilities cost-effective wastewater treatment processes depend on the health of Moreton Bay and its tributaries. The health of these waterways is under pressure from high levels of suspended sediments and associated nutrients, which result from the erosion of river and streambanks in the upper catchment, driven by land clearing for agriculture and urban development. Urban Utilities is pursuing opportunities to shift our investment from conventional treatment plants to nature-based solutions, such as streambank rehabilitation, which can deliver similar or better environmental outcomes with higher cost effectiveness. To achieve this, Urban Utilities is pursuing projects to improve the understanding in catchment land and water quality science, and advocating for enabling outcomes-focused environmental regulations.

Nutrient Recovery and Re-use

Traditional Wastewater Treatment Plants primarily aim to reduce nutrients, particularly carbon, nitrogen and phosphorus, sediments and pathogens in wastewater to safe levels for discharge into receiving waters, ensuring environmental protection and public safety. This process involves a series of biological treatments, resulting in the production of biosolids, a nutrient-rich sludge. Typically, these biosolids are dewatered to reduce volume and either transported to agricultural areas for land application or transported for use as a compost feedstock. Managing these biosolids presents significant risks for water utilities as opportunities for land application diminish due to increasing concerns over known and emerging contaminants. Urban Utilities produces up to 110,000 tonnes of biosolids per year, at an approximate cost of \$30 million. This volume is projected to increase to over 150,000 tonnes within the next two decades.

Advancements in technology are emerging, offering methods to refine biosolids at lower costs while reducing contamination risks to produce products able to service the demand from the agricultural sector for nitrogen and phosphorus fertilizers and soil conditioners. At present, these nutrients are manufactured, mined and imported through resource-intensive and non-renewable methods. Urban Utilities recognises that a sustainable future planning pathway for biosolids management is not just about technology – it requires an end-to-end solution which will require us to understand, operate, and enhance the circular economy in our local context.

Barriers to a Circular Economy

Management of Known and Emerging Contaminants

The revalorization of materials within a circular economy necessitates the ability to separate and recover reusable materials while effectively managing contaminants that must be prevented from re-circulating. Water and wastewater services can unintentionally serve as pathways for both known contaminants and those of emerging concern. These contaminants include disinfection byproducts, microplastics, and PFAS. To ensure the safe and reliable use of recycled water and biosolids, it is crucial to appropriately manage these harmful substances.

The management of these contaminants has transformational implications for the water utilities that manage wastewater, recycled water and biosolids and their ability to achieve sustainability and circular economy objectives. This issue is best approached through a

nationally aligned, multi-jurisdictional approach that can address both the management of existing CECs and the root cause of their introduction into Australia's urban water cycle. We would encourage the Commission to consider the position of the Water Services Association of Australia (WSAA) on the [Draft Drinking Water Guidelines for PFAS](#) and [submission to the Department of Climate Change, Energy the Environment and Water \(DCCEEW\) on the National Environmental Management Plan on PFAS 3.0](#). Urban Utilities does not support the Draft NEMP 3.0 in its current form and has made a submission to DCCEEW proposing a number of changes and inclusions.

Opportunities to Co-locate Production Assets with Users

Opportunities for reusing water and biosolids within a circular economy are often most feasible when water and wastewater assets are located near potential users and customers. However, the cost of transporting these materials—whether through pipelines or trucks—can significantly raise their price, making them less financially viable compared to conventional materials. While transportation costs are a factor, they are rarely the primary reason behind the decisions made by service providers and users regarding asset locations. Other considerations include land availability, zoning regulations, access to transport and additional services, and, for water and wastewater treatment plants, proximity to water bodies.

While a broad social licence exists to operate waste to resources facilities and precincts to the benefit of society, there is a need to build and maintain local community acceptance through the management of impacts of these activities, such as odour, noise and amenity on surrounding land users. Suitable land for these activities is often limited and increasingly scarce due to the encroachment of land uses that are less compatible with resource recovery facilities and precincts.

Fragmented Jurisdictional Responsibility over Material Cycles

Material cycles, such as those for water and nutrients, often span multiple jurisdictions, including local, state, and federal government departments and agencies. In Southeast Queensland, for instance, the responsibilities for treating and managing wastewater – an input for Purified Recycled Water for drinking – are held by a separate entity to the entity responsible for managing the supply of Purified Recycled Water. Similar complexity also exists with respect to the management of biosolids. This fragmentation can lead to scenarios where an initiative can be economically viable on a regional scale but are unfeasible for any single party due to the benefits and costs accruing to different parties.

We encourage this inquiry to consider the findings of the Productivity Commission's earlier investigation into National Water Reform, and the DCCEEW consultation on a future National Water Agreement, particularly regarding the challenges posed by fragmented and overlapping jurisdictions in water management.

Developing Capabilities to Support Circular Economy Initiatives

As a water and wastewater services provider, Urban Utilities acknowledges the need for new capabilities to develop and operate circular economy initiatives. These capabilities encompass the deployment and operation of innovative technologies, the marketing and retailing of products, and the collaboration with other industries to identify and co-develop products and channels. Developing these capabilities requires significant investment at higher risk appetites than water and wastewater services typically apply to core business investment decisions.

Summary

Urban Utilities would welcome further consultation on this topic and thanks the Productivity Commission for the opportunity to provide a submission. The contact point at Urban Utilities is Rob Fearon (General Manager Servicing Planning)

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