

New water technologies capture investor attention

By Eric Love, Research Director, STAR Water

Climate change and an increasing environmental focus among investors is driving demand for new water treatment technologies. For Sydney-based STAR Water, the global thematic makes it perfect timing for its upcoming initial public offering (IPO) as investors demand tangible action.

In January 2021, the World Economic Forum (WEF) declared that 'clean water is our most valuable and fundamental resource, and ultimately underpins the success or failure of every other challenge that we face. Yet, we are perilously close to 2025, when it is predicted that half of the world's population will not have reliable access to clean water, from California to Jordan to the South Pacific islands'.

Even London, rarely thought of as a place lacking in water, is listed as the ninth global city at critical risk of 'Day Zero,' likely to experience serious shortfalls in the next five years, according to WEF's Madeleine Bell, Strategy and Special Projects, Desolator. Bell notes that by 2040, there will be a 40 per cent deficit in the supply of water compared with demand, with no individual, city or business exempt from the issue.

The United Nations' sixth Sustainable Development Goal aims to ensure the availability and sustainable management of water and sanitation by 2030; however, an estimated 80 per cent of wastewater globally flows back to nature untreated, with serious public health and environmental implications.

The majority of rivers, lakes, and estuaries fail to meet minimum ecological standards for habitat degradation and pollution. Climate change, growing populations and urbanisation are creating further pressures. Recent weather catastrophes have given us a wake-up call to be more proactive about building our resilience to changes in our climate conditions, irrespective of the differing views on the causes.

Having personally experienced the impacts of drought, fires, dust storms, floods, ultra-high temperatures and severe winds has strengthened our resolve to support the proliferation of this climate-responsive technology to improve livability in our communities.

STAR Water (an acronym for stormwater, treatment and reuse) has developed a method of using household recycled materials to manufacture up to 100 per cent recycled content filter systems, which remove toxic pollutants from stormwater run-off and keep waterways clean.

The technology uses plants, soil, porous media, bacteria, and other natural elements and processes to remove pollutants in

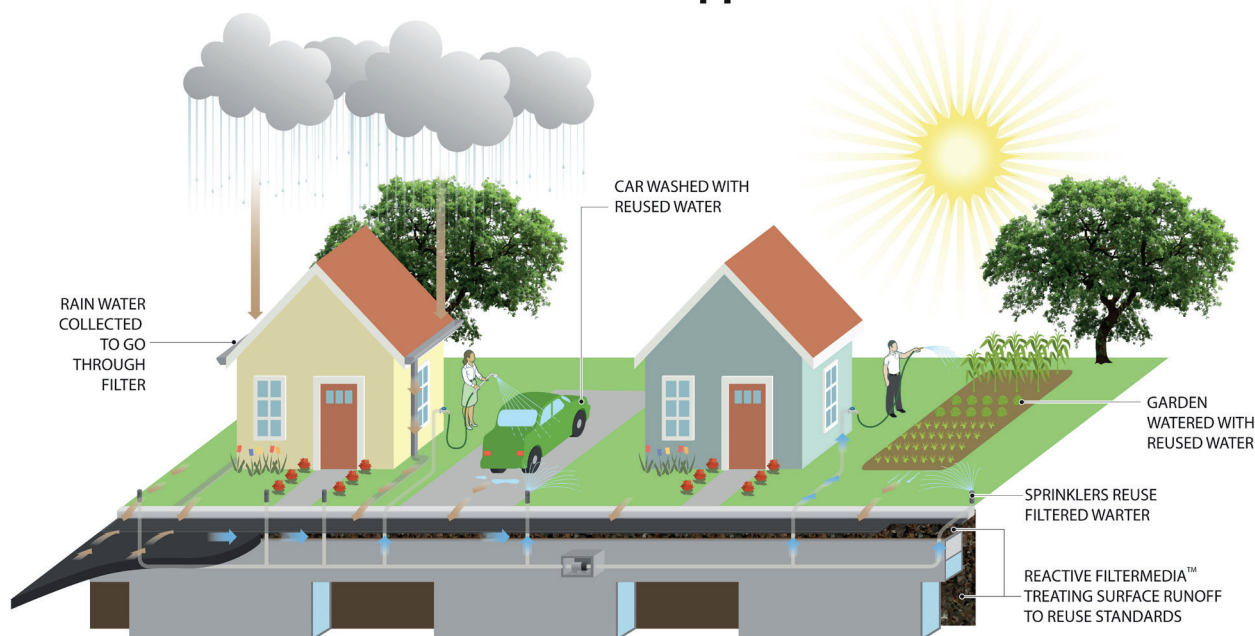


wastewater, including suspended solids, microplastics, nitrogen, phosphorus, heavy metals, petroleum hydrocarbons and pathogens.

Recent applied research has developed the capacity to remove emerging contaminants such as steroid hormones, perfluoroalkyl and polyfluoroalkyl substances, and biocides.

STAR's technologies can also create alternative non-potable water supplies, increase biodiversity and resilience, improve circularity in resource management, and create a more sustainable and livable environment.

Stormwater Treatment and Reuse Systems Residential Applications



Biofiltration technology

STAR holds exclusive worldwide licences for proven, cost-effective and patented biofiltration technology. The circular economy-based technology has formulations that use up to 100 per cent recycled materials, incorporating the use of recycled plastic, glass, and organic and construction materials.

Following meticulous independent testing, selected materials are formulated into filter products that can solve many environmental protection needs. Increased performance efficiency can lower cost while creating more sustainable outcomes.

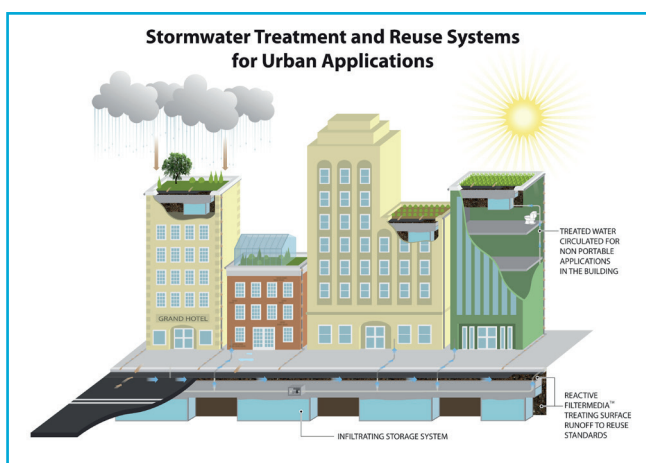
Recycled materials

In a world where natural resources are limited, it is crucial to recycle organic and mineral waste materials for beneficial uses. Currently, in many stormwater management systems sandy loam soils and sand filters are typically used as the treatment substrate in biofiltration devices and roadside swales due to their physical filtration properties; however, these soils are often excavated from areas of productive agriculture and natural waterways such as riverbanks, which is not sustainable.

Recycled organic and mineral waste materials have the potential to provide sustainable solutions, with local economic and performance benefits. Results from local and international scientific studies indicate that many recycled organic and mineral materials may be used as suitable reactive filter media (RFM), particularly considering the pollutant removal, hydraulic performance and biodiversity benefits.

Removing toxic pollutants

Importantly, STAR's technology is capable of removing toxic pollutants, such as sediments, hydrocarbons, microplastics, excess nutrients and heavy metals contained in stormwater run-off. STAR Water's RFM substrate, sourced from recycled organic and mineral material, offers an effective, low-cost means of treating urban stormwater.



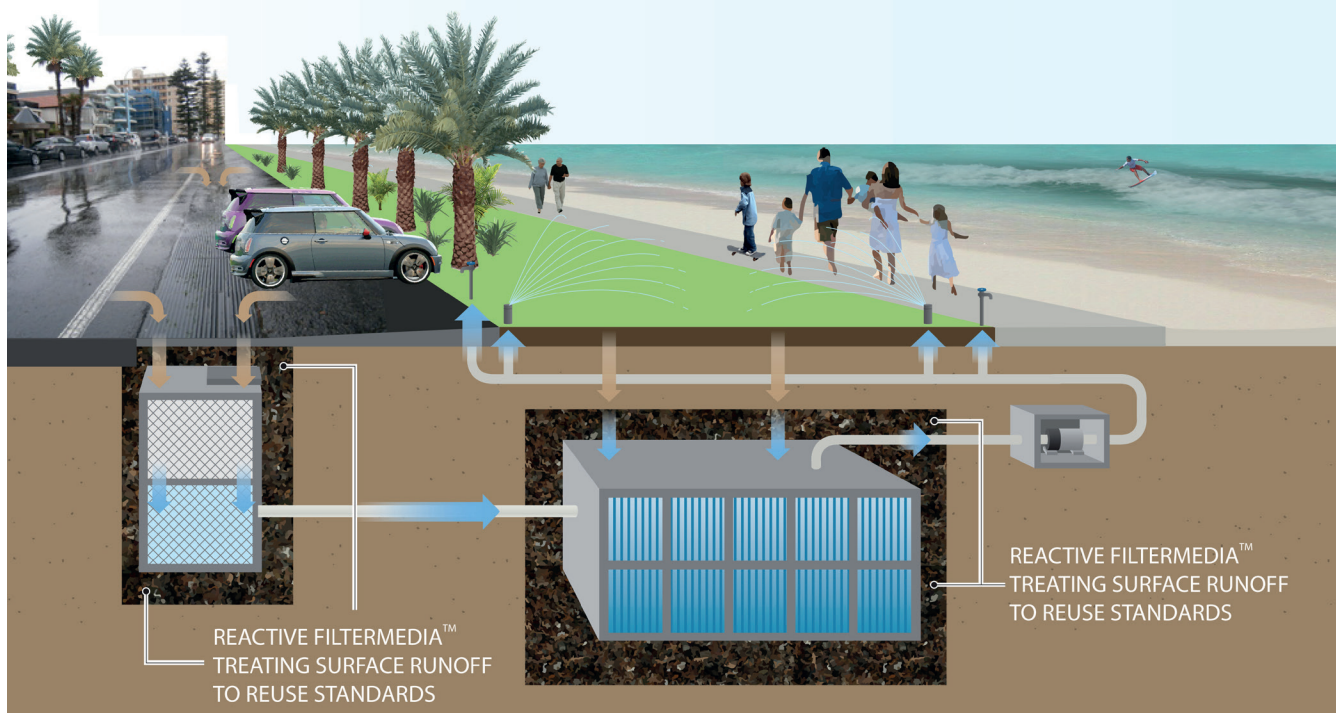
The technology is developed from scientific studies and analysis, including physical and chemical characterisation, such as particle size distribution, saturated hydraulic conductivity (K_{sat}), bulk density, effective cation exchange capacity, lifespan, and pollutant removal performance.

These systems can cleanse stormwater run-off to a quality that can be used in the community, including for activities prohibited by frequently imposed water restrictions. Harvested water can be used for non-drinking purposes, such as watering gardens, washing cars and cleaning pavements, thus supplementing dam water supplies, and reducing our reliance on costly desalination plants.

Water drainage and infrastructure

The recent flood disasters in both New South Wales and Queensland have highlighted the need to improve water drainage and infrastructure. Increasing water stress means additional water supplies are also urgently and vitally needed. The distributed

Stormwater Treatment and Reuse Systems Recreational Water Sensitive Applications



system approach offered by STAR's technology means that it can be installed almost anywhere at any scale, offering water security for local communities.

Technology applications such as kerb gully bypass systems, detention basins and rain gardens offer high infiltration capacity and subsurface storage capacity. This will ensure secure supplementary water availability for regular non-potable use in urban and rural infrastructure. Systems can also be installed along riverbanks and creeks that are the feed systems for major rivers that currently overflow across the typical impermeable surfaces of towns and cities.

Should high-intensity storms be forecast, water stored in these subsurface storage systems could be released downstream, providing empty tanks to accommodate large quantities of the run-off generated in major storms. This may not be designed for biblical-scale floods, but every metre counts.

ESG benefits

STAR Water offers strong environmental, social and (corporate) governance credentials. Its alignment to the United Nations' Sustainable Development Goals concerns reducing the causes and effects of climate change, using recycled materials, cleaning polluted water, and providing alternative water supplies for reuse.

Founding Directors Chris Rochfort and I are the inventors of STAR Water's licenced biofiltration technology, and have spent decades developing innovative products in clean water, sustainability, recycling and environmental technology. The company is now undertaking an IPO on the Sydney Stock Exchange, with the aim of expanding its operations both domestically and internationally, and helping to combat climate change.

Previous projects have ranged from Sydney's Manly Beach to Queensland's Sunshine Coast Airport, with overseas projects including China's Shanghai Botanical Gardens and The Water Council project in Wisconsin, United States. STAR Water has gained international recognition for its technology, including as a finalist in the 2018 Premier's NSW Export Awards and the 2018 Innovation and Fortune China competition, with patent applications lodged in six countries.

'The 2021 United Nations Climate Change Conference highlighted that time is fast running out for action on climate change,' says Rochfort.

'STAR Water's technology offers a proven solution for not only protecting waterways and removing dangerous pollutants, but also providing additional sources of badly needed clean water for the community. I welcome the support from our investors in this IPO, which will enable us to ramp up our global activities and bring the benefits of our technology to the world.' 💧

Eric Love has 30 years' experience in the waste and recycling industry, including in the introduction of wheelie bin systems, collection technologies and processing facilities.

He is currently Chairman of industry association CORE (Centre for Organic Research & Education) as well as Research Director of STAR Water, which is focused on developing innovative products in clean water, sustainability, recycling and climate action environmental technologies. He can be contacted at eric.love@star-water.com. For more information on STAR Water, visit www.starwater.com.au.