

## CLIMATE ACTION

### 100% Recycled Content Reactive Filter Media Biofilter

#### Inception

Biofiltration is a widespread method used to protect our waterways from storm runoff pollution. Most biofilters currently use extracted natural resources.

In a world first for Australia and the biofiltration circular economy, Newcastle City Council has installed the first 100% recycled content biofilter in a detention basin located at Wallsend west of Newcastle City.

Climate action biodiversity supported by STAR Water's Advanced Biofiltration Technology (ABT) includes soil ecosystem creation supporting an extensive variety of local plants that attract abundant beneficial fauna. Environmental integrity is exhibited by use of maximum local recycled content with no harmful leaching.



**Wallsend Biofilter Plant Diversity**

**Wallsend Bioretention Basin**



**RFM Biofilter vegetation efficacy after 4 months**



**Prior to RFM installation**

#### Project Details

STAR Water Solutions supplied approximately 100 m<sup>3</sup> of Reactive Filter Media (RFM) for the project to replace spent sandy loam media. Established in January 2020, the biofilter exhibits excellent performance functionality including pollutant removal, hydrology, vegetation establishment and growth and distinctive environmental integrity.

The overall bioretention media replacement was carried out by Newcastle City Council. The used media layer of the existing project site was excavated and replaced by 800 mm depth of RFM. Over 2,000 plants consisting of seventeen (17) varieties are planted into the media layer. Consistent with sustainable procurement principles, RFM was manufactured and supplied from the Hunter Region using local accredited component materials.

#### Performance monitoring

The site is established as a long-term research site to monitor the performance of the biofilter over its life span which is expected be over 20 years. The site will be monitored according to the methods described in the Performance & Validation Standards for Organic Bio-filtration Media - CS1510.

Laboratory analysis has already proven the functional characteristics of RFM. Ongoing demonstration research for this site will monitor established field performance factors including:

1. High pollutant removal performance efficiency for Suspended Solids (TSS), Hydrocarbons (TPH, c10–c36 fractions), Nutrients (N&P) & metals (Cu,Pb,Zn,Al,Fe).
2. Hydraulic conductivity performance - Field Ksat, inherent water retention, dispersion, ponding behaviour.
3. Vegetation Efficacy - establishment, growth, health, height, girth, extreme weather resilience, plant varietal options, attrition, root:shoot ratios.
4. Environmental Integrity - Biodiversity, recycled content, circular economy practices & leachate emission safety
5. Lifespans - estimated at 15-20 years.

ABT advances the art of biofiltration by improving genetic biodiversity such microbes, fungi, worms and increasing plant species and wildlife biodiversity, and incorporating recycled materials and other nature based functions that increase resilience to the impact of climate change while achieving improved functionality, lower lifecycle cost and increasing sustainability.

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