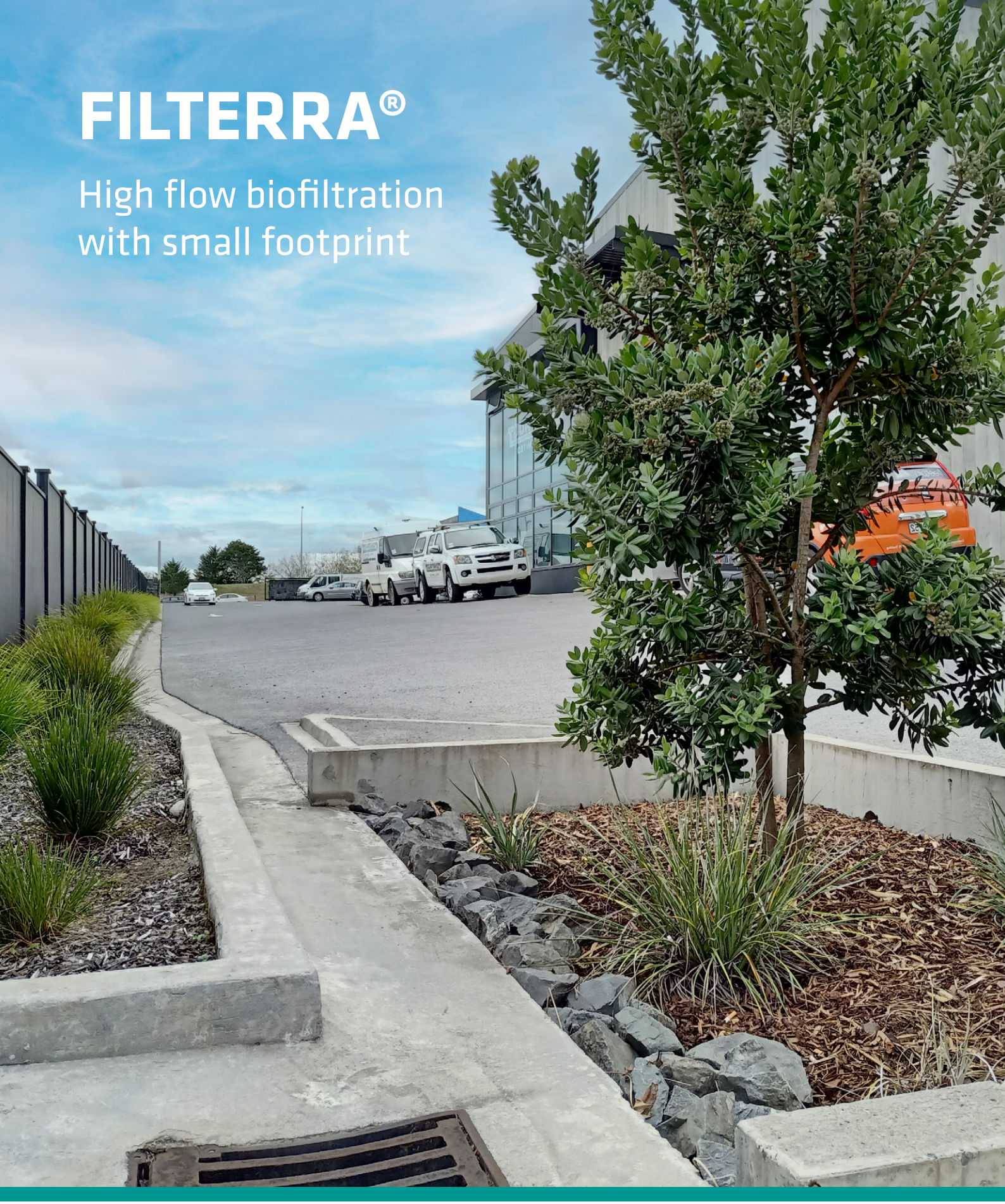
FILTERRA®

High flow biofiltration with small footprint



www.stormwater360.co.nz

Stormwater360®
BETWEEN SKY AND SEA

WHAT IS FILTERRA®?

Green infrastructure uses natural processes to treat stormwater and provides environmental benefits. Developed after decades of research, Filterra® is a next-generation biofiltration solution, designed to provide enhanced treatment outcomes while requiring as little as 10% of the footprint of traditional rain gardens.

Filterra® is a pre-engineered and manufactured plug-and-play micro biofiltration system that removes TSS, metals and nutrients using natural, biological processes. Designed to treat up to 4450mm/hr and with a maximum treatable flow rate of 7000mm/hr the Filterra® media has been optimised to operate under high flow rates while maintaining high pollutant removal performance. The Filterra® engineered media is designed for low maintenance and does not need replacing under normal conditions, making it one of the most cost-effective treatment devices to maintain.

APPROVALS:

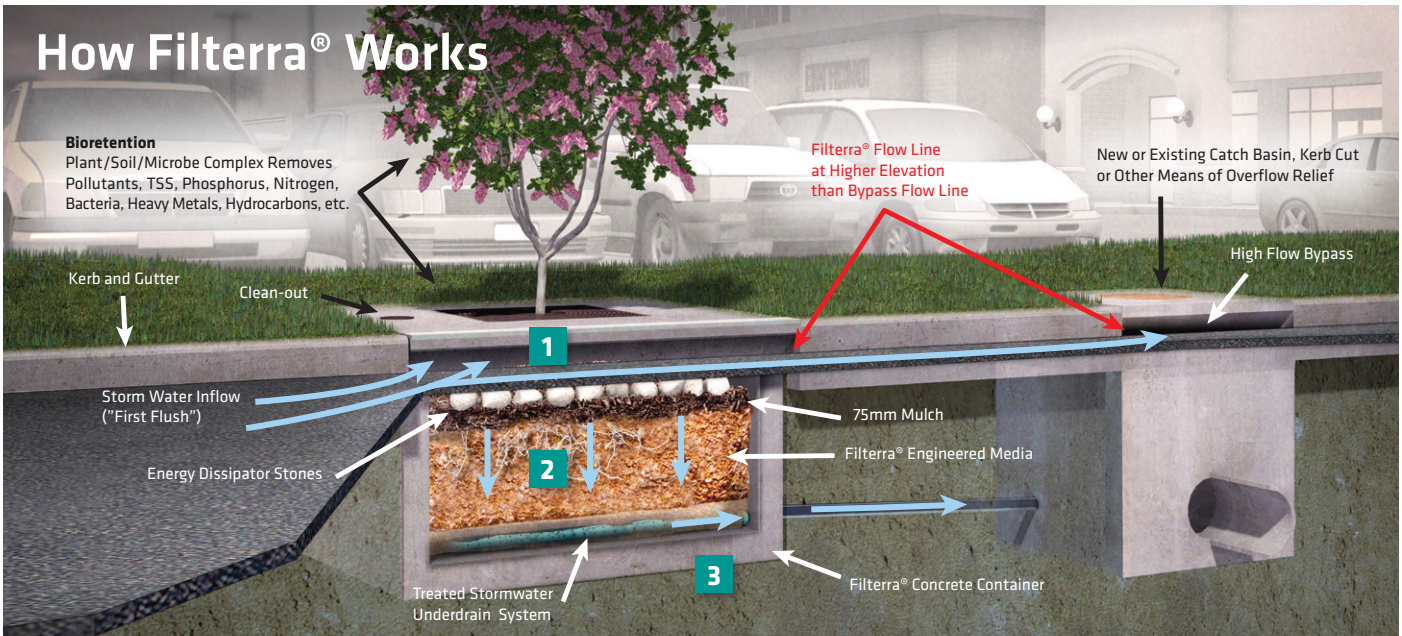
- Auckland
- Christchurch
- Accepted throughout New Zealand

Application

Ideally suited to land development projects, where economical treatment of large catchment areas is the main priority, Filterra® can provide treatment in a range of applications:

- » **Subdivision roading**
- » **Local roads**
- » **JOAL/accessway treatment**
- » **Car parks for schools, commercial and retail**
- » **Industrial sites with elevated metals** (specialist design may be required)

How Filterra® Works



1 Stormwater enters the Filterra® through an inlet, energy dissipator rocks minimise scouring and flows spread evenly across the device footprint.

2 The mulch and media capture and immobilise pollutants in the runoff. The pollutants are decomposed, volatilised and incorporated into the biomass of the Filterra®.

3 Stormwater runoff flows through the media and into an underdrain, where treated water can be directed to a stormwater network.

BENEFITS OF FILTERRA®

Smaller Footprint

Stormwater360 work with the consultants and other project members to develop a preliminary design and functional green infrastructure design.

Increased Biodiversity

Manufactured in New Zealand from locally sourced materials, the Filterra® complements Low Impact Design (LID) principles. New Zealand native plant species promote biodiversity, community and cultural outcomes.

Easy Maintenance

Only the mulch layer needs to be replaced every 6-12 months, sourced from an approved third-party supplier. Under normal conditions the media and plants should not need replacing. Planting, commissioning and 12 months of maintenance are included in the supply of the Filterra®.

Cost Savings

A plug-and-play device with fewer, smaller units Filterra® can offer a substantial capital cost saving when compared to bespoke rain garden designs. Additionally, with no confined space requirements and off road solutions, there are further cost savings for stakeholders.

Independently Verified Life Cycle Cost data available on request.

Proven Performance

Filterra® engineered media undergoes at least 25 quality assurance assessments to ensure pollutant removal, hydraulic conductivity and performance over time. Each batch takes over a month to produce, and is guaranteed to not leach or transform contaminants such as phosphorous or copper. Plant trials have established successful plants for long term health of the system, and rigorous third-party tests in New Zealand, Canada, USA and Australia are available to demonstrate its TSS, metals and nutrient removal capabilities.

Based on a catchment area of 2000m² in Auckland, a 2% rain garden is at least 50m². The Filterra® required to treat all flows is 8.4m²: 4m x 2.1m

DESIGN

Filterra® shifts the boundaries of what was previously possible with green infrastructure. Stormwater360 can provide a customised solution for your project considering the design infiltration rate and safety factor for your land-use.

Our service includes all approvals, calculation sheets and drawings, and a range of tools are available to assist with your Filterra® design, contact us today for further information.

Planting, Operation and Maintenance

High flow bioretention plants are sourced and supplied with a 12-month warranty ensuring healthy and robust vegetation. Stormwater360 operate and maintain the Filterra® for the first 12 months.

UNITS ARE AVAILABLE IN A RANGE OF STANDARD SIZES AND CONFIGURATIONS:

MANHOLE FILTERRA®

The proven Filterra® technology is combined with the simplicity and ease of installing a manhole to create a versatile treatment solution that can easily be integrated into wider landscaping. Available in DN1050 and DN1200 options, Manhole Filterra® can be used where the supply of a precast vault is impractical or not required.

VAULT FILTERRA®

Standard Filterra® supply ranges from 1.2m x 1.2m, up to 4m x 2.1m. The treatable catchment area is up to 2,500m^2 in most locations, or 5,000m^2 in Christchurch. Vaults are supplied to the site pre-filled with media, the contractor simply needs to place the unit and connect to the network.

TREATMENT OUTCOMES

Stormwater treatment device efficiency is highly variable from site to site, and storm to storm. Particle size distribution, speciation and contaminant mix all influence pollutant removal efficiency and subsequent percentage removal.

Stormwater360's approach is to provide transparent independent test reports from New Zealand, Canada, USA and Australia, with third party verification, certification and approvals over a range of land uses and applications. Full test reports are available from Stormwater360.

Some field study highlights are as follows:

Washington Department of Ecology: Bellingham Study
90% TSS and 70% TP removal

Canterbury University Filterra® Roof Study
99% Total and Dissolved Zinc Removal

Washington Department of Ecology - ARMCO study
Total Copper 88.3%, Dissolved Coper 48.7%,

University of Western Sydney Study
89% Total phosphorus and 47% Total Nitrogen Removal

PLANTING PALETTE

Plant health is essential for the long-term performance and sustainability of biofiltration systems, and high infiltration rate soils can restrict plants' ability to grow.

With over 50 plants comprehensively tested by Stormwater360, we are confident that the New Zealand native species proposed by us will be successful in Filterra® installations. Our plant guide features a range of grasses and trees that align with local authority bioretention plant lists.

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