Halgan Environmental

First Defense® High Capacity Stormwater Treatment

Environmentally Sustainable Treatment Solutions

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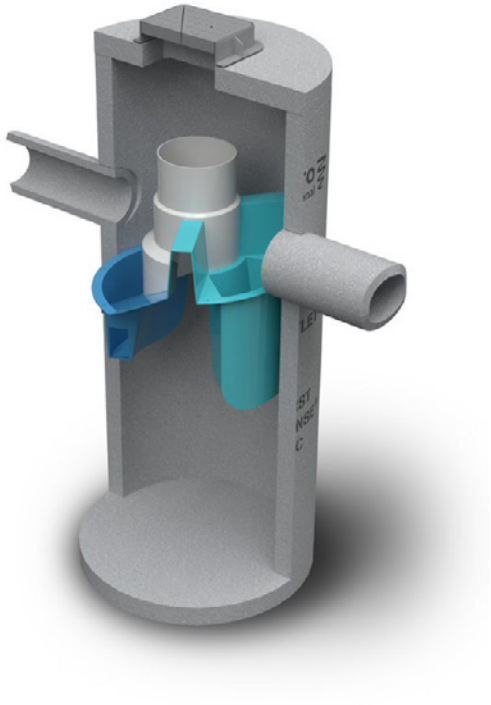
Halgan Environmental provides innovative stormwater solutions through the latest technology to achieve sustainability goals. Halgan's latest range of products simplifies installation and treatment of stormwater, whilst satisfying Water Sensitive Urban Design (WSUD) principles.

Installed in a lightweight Halgan polyethylene or high density polyethylene vessel, the First Defense® High Capacity is a stormwater treatment device that combines a high-capacity stormwater treatment chamber with an integral peak flow bypass to efficiently capture and remove pollutants. Through its enhanced vortex separation, sediment total suspended solids, litter and hydrocarbons are removed from stormwater runoff without washing out previously stored and captured pollutants.

The First Defense® High Capacity is available in multiple model configurations and sizes, and customizable to accommodate a wide range of pipe sizes and peak flows.



Applications

- Stormwater runoff treatment at the point of entry into the drainage line
- Pretreatment for filters (Up-Flo Filter®), infiltration and storage
- Water Sensitivity Urban Design Projects (WSUD)

Advantages

- Pre-assembled to facilitate ease of installation
- Integral high-capacity bypass diverts large peak flows without the requirement for offline systems
- Enhanced vortex separation generating a long flow path to ensure capture and retention of pollutants

Approvals

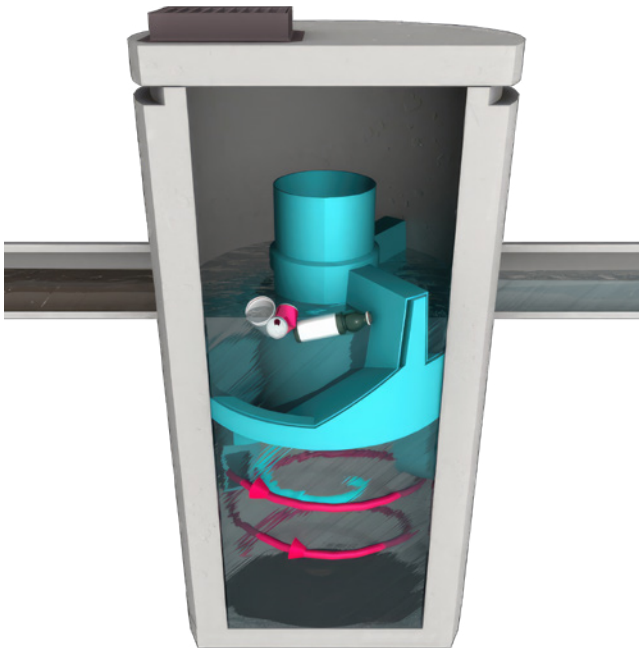
- Variety of sizes accommodating for site specific requirements
- MUSIC Modelling to provide appropriate removal efficiencies to meet council requirements
- Retrofit installations

How it works

The contaminated stormwater runoff enters the device through an inlet chute. The inlet chute allows the flow to enter the chamber at a tangent to the internal structure, creating a low energy vortex that directs sediments to the sump, while oils and floating litter and debris rise to the surface and are retained by the bypass.

The enhanced vortex separation, forces the flow from the inlet to travel in a rotational motion within the vessel to generate the longest pathway possible for the flow, enabling efficient pollutant capture and retainment. The treated stormwater exists through a submerged outlet chute.

A high-flow bypass system prevents turbulence and washout of captured pollutants from high flow rates, and a floatables draw off slot diverts floatables and debris into the treatment chamber prior to bypass. This eliminates the need for external bypass structures or an off-line flow.

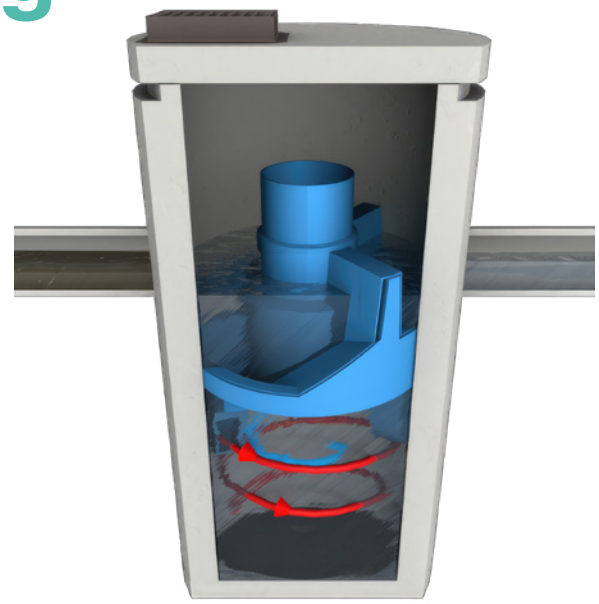


Design and sizing

Sizing for the First Defense® High Capacity is determined by design flow rates to meet a water quality objectives. Each device has a maximum treatable flow rate and a maximum peak flow rate.

Halgan supplies a variety of designs for the First Defense® High Capacity, catering for: variable depths to invert, required treatable flow rates, WSUD MUSIC Modelling requirements.

The First Defense® High Capacity is also frequently paired with the Up-Flo Filter® for best practice and results.



Model and size table

Model	Diameter (mm)	Maximum Treatable Flow Rate (L/s)	Peak Online Flow Rate (L/s)	Maximum Pipe Size (mm)	Sump Capacity (L)
HFD900	Ø: 900mm	23.7	424	450	825
HFD1200	Ø: 1200mm	42.4	510	600	600
HFD1800	Ø: 1800mm	95.7	906	600	3400

Operation and maintenance

The First Defense® High Capacity is designed to operate on vortex separation. It is a self-activating device, that has no moving components or require any external power and has been fabricated with durable and corrosion resistant material.

Maintenance for the First Defense® High Capacity is limited to periodic inspections, and pollutant removal (sediment and floatables).

Further details for operation and maintenance guidelines can be found in the First Defense® High-Capacity Operation and Maintenance Manual.

Operation and maintenance summary table

Activity	Frequency
Inspection	Regularly during the first year of installation. Every 6 months after the first year of installation.
Oil and Floatables Removal	Once per year with sediment removal. Immediately if there is a contaminated spill in the drainage area.
Sediment Removal	Once per year or as required. Following a contaminated spill in the drainage area.
Sediment Removal	Once per year or as required. Following a contaminated spill in the drainage area.
NOTE: For most clean outs, the entire volume of liquid is not required to be removed from the manhole. The first few centimeters of oils and floatables from the water surface may be removed to reduce the total volume of liquid removed during the clean out.	

FAQs

Q: What maintenance is required?

A: Maintenance is simple and safe and can be carried out using a vactor truck, without any need to physically enter the space. Maintenance and inspections consists of clean outs removing sediments from the sump and floatables, oil, grease, litter and other debris from the capture zone.

Q: What are the removal efficiencies?

A: Precise removal efficiencies are dependent on particle size, specific gravity of the pollutant and multiple other variables. Please contact Halgan Sales Representative to discuss your specific removal requirements. Halgan also produces MUSIC Models to demonstrate the achieved removal efficiencies.

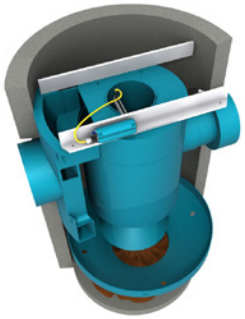
Q: Can multiple inlets be incorporated into the design?

A: Yes, in some instances it may. Please contact Halgan Sales Representative to discuss your specific requirements.

Other Products

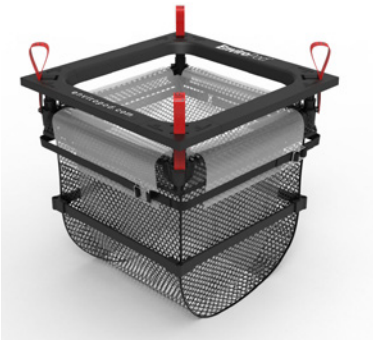
Up-Flo Filter

Installed in a lightweight Halgan polyethylene or high density polyethylene vessel, the Up-Flo Filter® is a multistage stormwater treatment system that combines pre-treatment and media technology for effective pollutant removal for stormwater runoff. Suitable for all catchment types, the Up-Flo Filter® consists of configurable modules to meet stormwater treatment requirements.



Downstream Defender

The Downstream Defender is an advanced hydrodynamic vortex separator designed to treat high peak flows. It provides reliable capture and retention of fine and coarse particles, hydrocarbons and floatable debris from stormwater runoff. Installed in a lightweight Halgan Polyethylene or high density polyethylene vessel the Downstream Defender has been carefully engineered so that the internal components isolate pollution storage areas, ensuring the captured pollutants are retained, even during high flows.



Enviropod 200

The Enviropod is an easy to install and operate, pre-treatment device that removes gross pollutants, debris and other associated nutrients and pollutants. It comes in varying sizes and is most practical for retrofits, requiring no alterations to the drainage

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