



# RAINSMART®

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## SUGGESTED MAINTENANCE PROCEDURES



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## OVERVIEW

Cirtex Industries Ltd distributes the RainSmart modular stormwater system for effective management of soak away, recharge, detention and attenuation systems. The individual modules can be configured in many ways to suit site specific requirements. The system is capable of withstanding traffic loads when installed according to the manufacturer's specifications, allowing the system to be used under trafficked areas such as carparks and driveways. The system has a 95% void space, compared with 30 – 40% in traditional gravel pits and includes the option of innovative access ports to assist with maintenance.

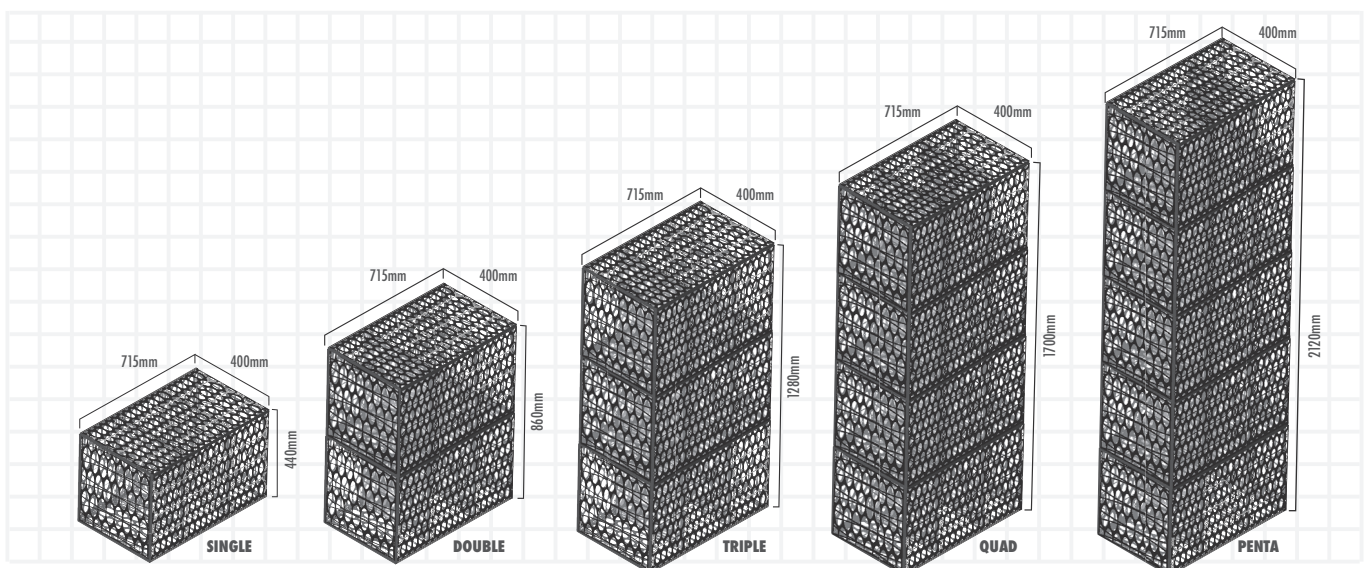
## Background

A number of areas of New Zealand use stormwater recharge pits and retention/attenuation systems to allow for a predetermined amount of each rainfall event to flow directly back into the ground or to manage storm flows on site. Traditionally this has been done with scoria filled pits sized according to the impervious area being treated. These scoria filled trenches have typically been accepted by local authorities, despite being difficult to maintain.

## RainSmart System – The Options

There are typically 3 main types of soakage / recharge pit constructed with the RainSmart system, each having specific requirements for maintenance.

1. RainSmart without access ports, see section 1, this is the economical alternative to the gravel trench option, having the advantage of higher void space and the ability to take heavy loadings without settlement. No specific access is provided except the water entry pipe.
2. RainSmart with access ports, see section 2, this system allows for access to the tank at either end for the purposes of flushing sediment out.
3. RainSmart with linear water entry system. See section 3, this system not only allows access for flushing, but uses a unique water entry system along the length of the module, to allow water entry at low velocity, reducing the volume of water borne sediment entering the modules in the first place.



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# SECTION 1.

## Maintenance of RainSmart system without access ports

RainSmart systems installed without access ports should have a pre-flush filter on the inlet. This is typically a 200 micron mesh screen filter as commonly available from drainage merchants. These filters are effective at screening down to approximately 100 micron particle size. The amount of sediment entering the tanks needs to be ascertained by the design engineer and will vary for each site. The following data is given as an indication.

On a typical hardstand site which is well maintained, it is reasonable to expect that only 0.1 cubic metres of sediment per year will enter a tank system per 1000 m<sup>2</sup> of hardstand area serviced, which is protected by a 200 micron screen filter. A RainSmart recharge pit servicing this area will typically be about 17 cubic metres. Therefore the volume of sediment accumulation over a 10 year cycle would be in the order of 1 cubic metre, or 6% of module volume.

NB: These figures are typical figures only and will vary from site to site. A suitably qualified stormwater engineer must ascertain the values for each application.

In a domestic soak away system, the reduced infiltration due to blinding off of the geotextile layer needs to be considered. In the application of peat recharge this is less of a concern as the intent is to recharge a certain volume of water to ground and this will still be effected through the sides of the lower modules even if the base has reduced flow.

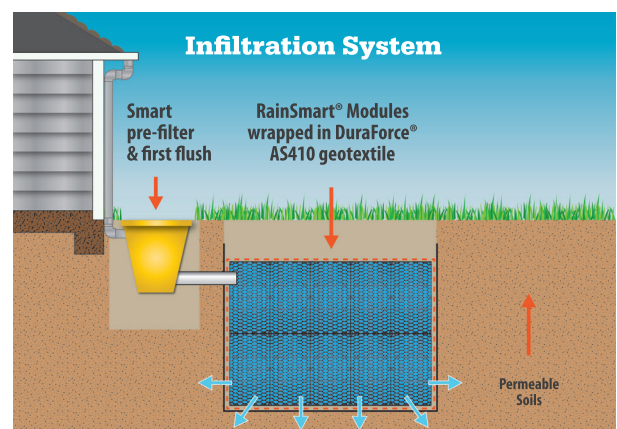
## Suggested procedure for inspection and maintenance

**Inspection:** After a period of time ascertained by the engineer, but not more than one year from initial installation, the module should be inspected to check sediment levels or performance. This can either be done with a CCTV camera or by monitoring the time taken for the system to empty after a storm event and comparing with design criteria. From this an indication can be gained as to the rate of sedimentation and further inspections scheduled.

Further inspections will be as deemed necessary by the engineer, but will be at least annually, and after every heavy rainfall event.

**Flushing:** When the tank is deemed to be ineffective the sediment can be flushed out. This requires identifying the exact location with a metal detector (assumes metallic tape at corners) or from as-built plans and digging a small access trench at each end of the module. This allows access for water to be pumped in at one end and suction cleaned at the other. After flushing the geotextile will need to be patched as per the installation instructions.

NB: For maintainable systems with access ports refer sections 2 and 3 of this guide.

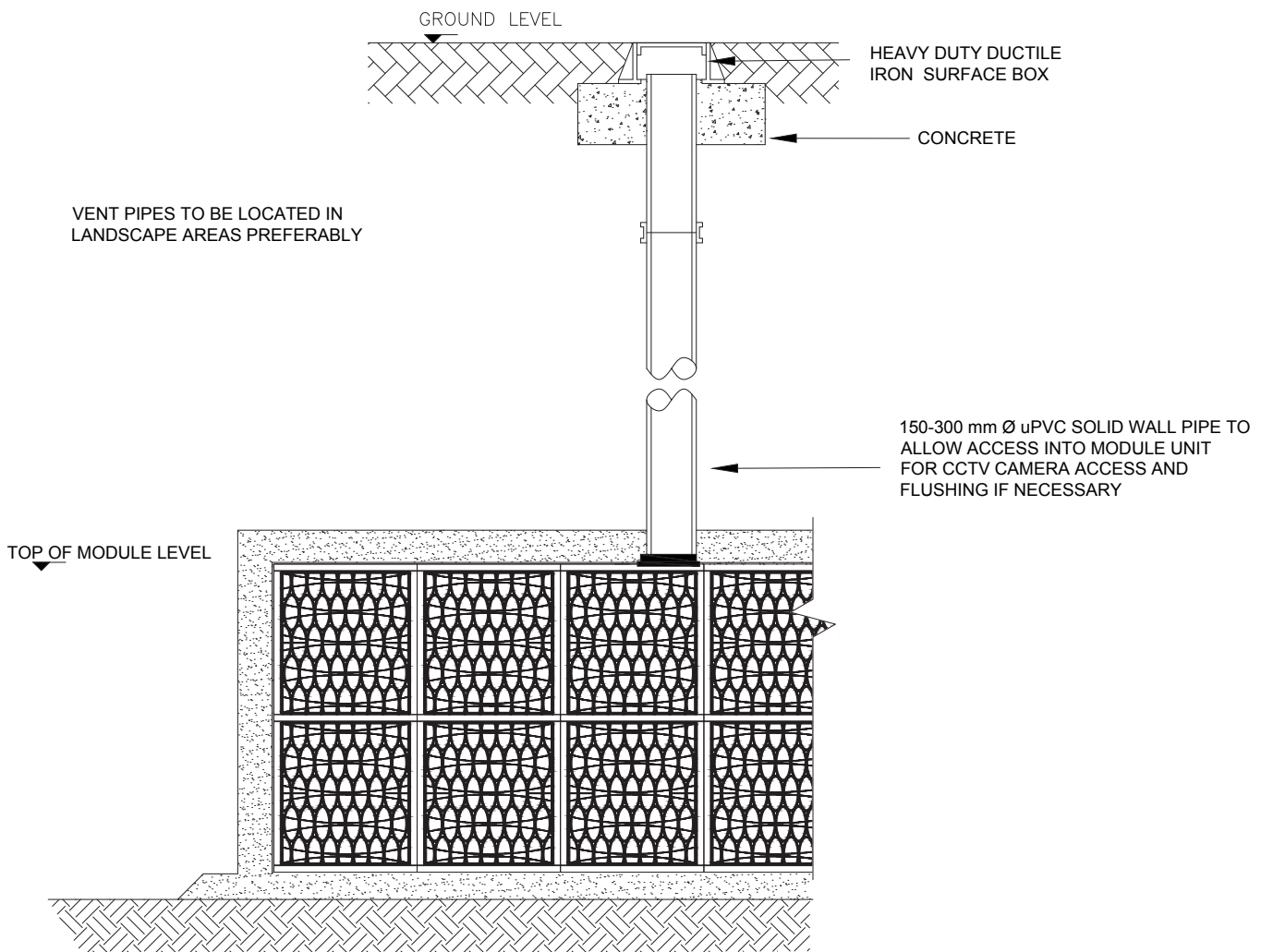


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## SECTION 2.

### Maintenance of RainSmart system with access ports

RainSmart systems installed with access ports and inspection ports can be maintained much more readily and with less cost and disruption. Best practice is to check sediment levels with the vertical access pipe one year after installation to check rate of sedimentation. Then every two to five years depending on the result of the initial investigation, the module can be flushed by simply pumping water into one of the access ports, and suction cleaning the sediment laden water out the other end of the system. The provision of access port modules down the length of the system will facilitate the sediment removal process.



TYPICAL VENT PIPE CONNECTION



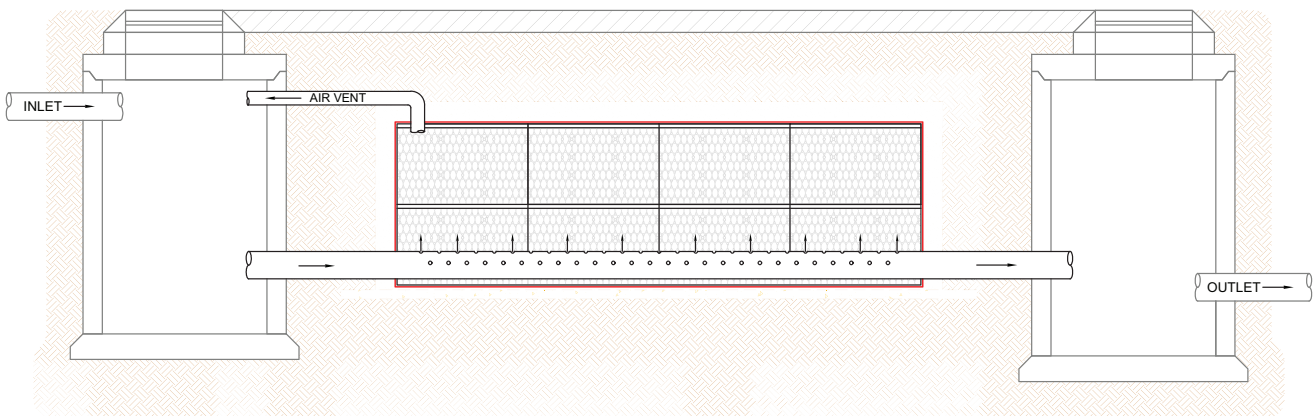
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## SECTION 3.

### Maintenance of RainSmart system with linear access system

The linear water entry system is designed to catch the majority of the sediment within the easily accessible areas of the system. First flush stormwater enters the sump after first flowing through a coarse screen filter, then along the entry pipe at high velocity and into the exit sump. As the water level rises in the sump. The water flows into the RainSmart modules through perforations in the top of the entry pipe at low velocity. Solids either flow into the exit sump or settle in the through pipe.



Maintenance requirements are simplified as the through pipe is self cleaning, due to the flushing effect of the water entry. All that is required is regular cleaning of the sump screen filter and to check and vacuum the exit sump, as required.

It is suggested to check the sumps for sedimentation every 3 months for the first year, and then annually thereafter. It may be necessary to increase the frequency of inspection if the first year checks show a larger than anticipated rate of sediment build up.

Sediment can then be either vacuumed out from the sump or simply cleaned out with a shovel.



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