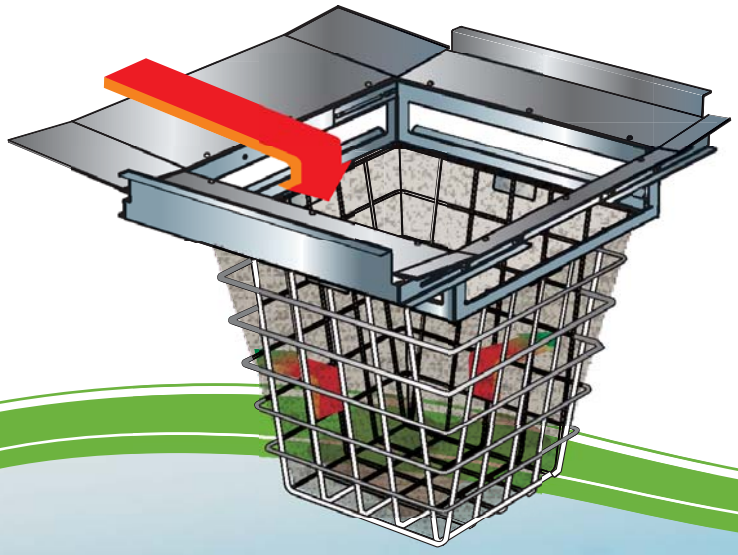
Stormwater360®



EnviroPod® Catchpit Insert
Operations Manual

ENVIROPOD®

ConstructionPod™

EnviroPod®

Cost-effective, easily maintained catchpit/gullypit insert

Stormwater pollution is a leading cause of environmental degradation in New Zealand. Urban existence produces contaminants, which are discharged on to impervious surfaces. When it rains contaminants such as lead, copper, zinc and PCBs are washed from these impervious surfaces into the stormwater system and eventually discharged into harbours, streams, rivers and aquifers.

The EnviroPod® is a proven catchpit insert designed to be easily retrofitted into new and existing stormwater catchpits, requiring no construction or land take. It removes a significant portion of sediment, trash, debris and other pollutants from water entering the stormwater system, and can be installed in either curb inlet, standard pre-cast catchpits or manhole catchpits. Using low-cost passive screening and optional oil-adsorbent media, the EnviroPod® can be customised to meet site-specific requirements with interchangeable polyester mesh screens ranging from 100 to1600 micron pore size. 200micron filter mesh screening bags are supplied as standard (unless specified otherwise). This filter mesh has a moderate/high removal rate and a moderate maintenance requirement.

The EnviroPod® is also effective as a pre-treatment device for use in a treatment train with hydrodynamic separators, filtration devices, ponds and wetlands. In many cases, it is often the most practical solution for retrofits.

Independently trialled and tested by city councils throughout Australia and New Zealand and with installation of over 7,000 units including North America, the EnviroPod® Filter is the premiere pit insert.

How does it work?

As stormwater enters a storm grate or catchpit/gullypit, it passes over the oil adsorbent pads (optional) and into the screening bag. Litter, debris, and other pollutants larger than the screening bag aperture are captured and retained, while oil and grease are reduced by the oil adsorbent pads. If the screening bag is full, or during high flows, overflow is released through the overflow apertures in the frame assembly.

Design and Operation

The EnviroPod® consists of a screening bag supported by a filterbox and structural cage. Modular plastic deflector panels attach to the filterbox and guide the flow of water to the screening bag. The screening bag captures pollutants and allows the water to pass through to the outlet pipe. Optional absorbent material inside the screening bag captures oil and grease. Openings in the filterbox allow water to bypass the screening bag during high flow conditions to prevent surface flooding.

The Curb Entry Manhole EnviroPod® is inserted through the manhole access cover and is supported by Stainless Steel or Galv. m.s. arms fixed to the curb channel/pit wall. Plastic deflector panels are then cut to custom fit specific manhole diameters.

Capabilities

- Captures sediment, litter, debris and other pollutants before they enter the drainage system
- Fits a range of catchpit sizes - ideal for retrofits
- Easy access - maintenance friendly design, generally no confined space entry required
- Bypasses high flows with no moveable parts
- Adjustable panels allow fine-tuning during installation for a perfect fit

Configurations

The Drop-In EnviroPod® is designed to simply insert into the catchpit below the grate and rest on the base of the pit. Plastic deflector panels seal against the pit walls and direct flow into the filterbox and through the mesh screens. There are two standard sizes to fit most pre-cast regular and curb entry catchpits. Custom designs are able to be fabricated for non-standard pits.

Installation/Inspection/Maintenance

Traffic control must be well planned when installing, inspecting or maintaining EnviroPod® Filters. All standard rules and regulations governing Traffic Control and Safety while working on the road must be rigidly followed at all times. All potential hazards must be identified and control methods put in place prior to installing, inspecting or maintaining filters.

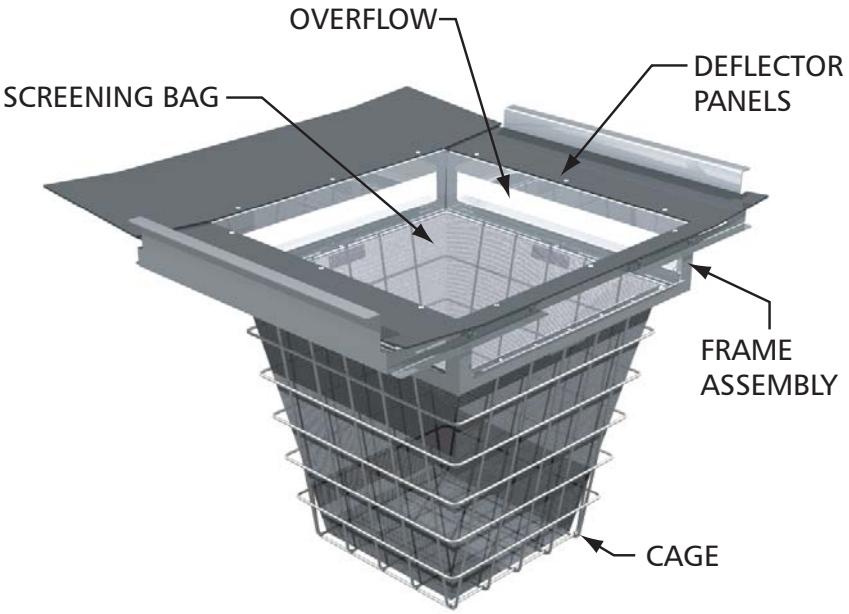
Health and Safety

Contractors should fully comply with current health and safety legislation and adhere to all applicable Laws, Regulations and Standards.

If there is a need to proceed in a confined space, the space shall be inspected for gas/fumes. Safety equipment must be worn where deemed necessary. Non trained staff must not go into confined spaces.

All relevant precautions must be taken to prevent contact with sediment and litter when installing, inspecting or maintaining filters. Stormwater sediments can contain Lead, Copper, Zinc, Mercury and PCBs as well as other harmful constituents. The following Personal Protective Equipment (PPE) should be worn at all times:

- Puncture resistant gloves.
- Steel capped safety boots.
- Fluorescent safety vest.
- Safety apron (optional).
- Overalls or similar skin protection.
- Eye/ear protection if necessary.

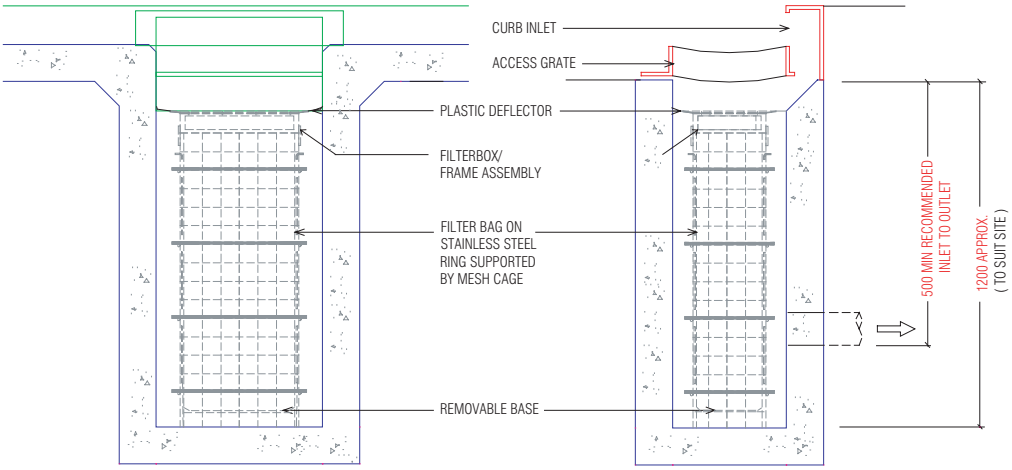


EnviroPod® Components

Screening Bag	- 100-1600micron filterbag with 304 grade stainless steel support ring with catch
Overflow	- Bypass slots designed to prevent surface flooding
Deflector Panels	- Recycled HDPE, U.V. stabilised plastic deflector panels trimmable to seal against pit walls
Frame Assembly	- Recycled HDPE plastic or Fabricated hot dip galvanised mild steel
Cage	- Fabricated 304 grade stainless steel or hot dip galvanised mild steel

Available Models

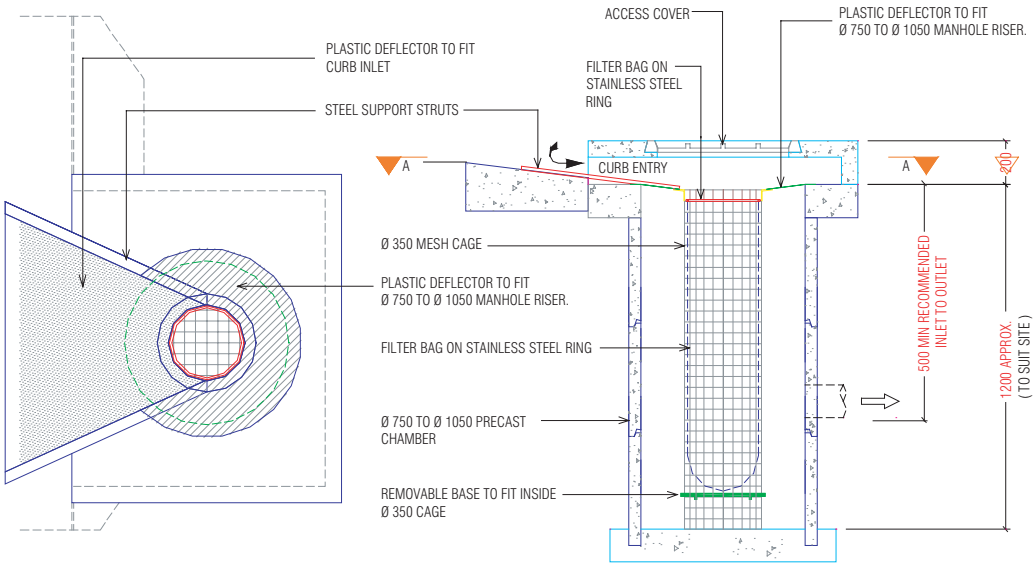
EP675 and EP450 CURB ENTRY ENVIROPOD



FRONT ELEVATION

SIDE ELEVATION

EP750d and EP1050d CURB ENTRY ENVIROPOD



X-SECTION A-A

SIDE ELEVATION

Specifications

Size	EP675x450	EP450x450
Pit Width	600-700	350-460
Pit Length	380-600	400-460
Treatable Flow	up to 10L/s	up to 10L/s
Bypass Capacity	55L/s	38L/s

Filterbag

The standard EnviroPod® filter bag is a polyester 200 micron monofilament material which is precision woven. The filter medium has a smooth and slippery surface which allows filtered sediments to be easily washed from the filtration surface. In a high flow situation, this will serve as a self cleaning mechanism. Other micron pore sizes are available up to 1600micron burnproof trash/litter bags for gross pollutant removal.

Size	EP675x450	EP450x450
Open area	45%	45%
Thread Diameter	105 micron	105 Micron
Weight	75 g per m2	75 g per m2

Head Loss

At 11 L/s	19mm	22mm

* Based on bag @ 2/3 full. Head loss determined by lab testing of filter fabric. (Tonkin & Taylor)

Storage Volume	0.155 m3	0.114 m3
Screening Area	1.848m2	1.488m2

* Figures from ARC 2003 Oakley Creek trial, (Tonkin & Taylor)

Sediment Removal

Particle Range

	4L/s	12L/s	20L/s
500-10,000	100%	100%	99%
100-500	97%	100%	96%
0-100	23%	14%	18%

* Figures from ARC Lab testing 2003 using artificial sediments, (Tonkin & Taylor)

EnviroPod® Materials

Enviropod Cage	Fabricated 304 grade stainless steel or hot dip galvanised mild steel
Filter Box	Moulded Recycled HDPE plastic or Fabricated hot dip galvanised mild steel
Components	Diaphragm seal; Recycled HDPE, UV Stabilised
	Stainless steel bag support ring, Fabricated 304 grade stainless steel

NOTE: For further information relating to the EP750d and EP1050d Curb Entry EnviroPod®s contact Stormwater360

Verification Reports

***Enviro** Pod studies available at: www.stormwater360.co.nz*		
Study Name	**Completed by**	**Objective**
Auckland City Council (Oakley Creek)	Tonkin & Taylor (independent)	Compare sediment removal efficiency of 4 brands of catchpit inserts
Auckland City Council Summary Report	Tonkin & Taylor (independent)	Compare sediment removal efficiency of 4 brands of catchpit inserts
Balfour Street Catchment	Davies Consulting (independent)	Determine pollutant load quantity, make recommendations for product selection and determine appropriate maintenance programs
Contaminant Investigation of Blackbutt Creek	Ingal Environmental	Determine contaminant characteristics in the Ku-Ring-Gai area (north of Sydney, Australia)
Contaminant Source Identification	Ingal Environmental	Study of contents of typical captured debris
ETS Management Plan - Brisbane	Ingal Environmental	Effectiveness of EnviroPods & recommendations for a maintenance plan for this area
ETS Management Plan - Hornsby	Ingal Environmental	Effectiveness of EnviroPods & recommendations for a maintenance plan for this area
ETS Management Plan - North Shore City	Ingal Environmental	Effectiveness of EnviroPods & recommendations for a maintenance plan for this area
Evaluation of EnviroPod Catchpit Insert	Diffuse Systems (independent)	Evaluation of two previously prepared reports (ETS Management Plan - North Shore and Wairau Rd Trial)
Evaluation of GullyPit Inlet litter	University of Southern Australia (independent)	Determine litter capture performance and hydraulic effects on catchpits, of 4 types of devices
Experiences with Stormwater Pit Pollutant Traps	Parramatta River Source Project (independent)	Determine effectiveness and make recommendations for product selection of 4 types of devices
Wairau Rd Trial	Ingal Environmental	Determine contaminant removal efficiency of the EnviroPod

Inspection & Maintenance

The system must be monitored and maintained in accordance with relevant local authority guidelines.

Enviropod® installations vary due to the vast number of catchpit configurations and site conditions. These guidelines should apply to most cases as written. For the remaining cases, follow the general actions of these guidelines, varying them as necessary. Typically 200micron filters should be serviced every three months, depending on local site conditions, pit depth and the number of vehicle movements. The frequency of maintenance services should be reviewed at the completion of each service and modified if pollutant loadings deem this necessary. At the required maintenance interval the contaminants need to be removed from the filterbags and disposed of appropriately. The maintenance crew is responsible for the disposal of debris in accordance with all applicable regulations and is responsible for following all applicable regulations, including confined space entry requirements.

Contact the maintenance department at Stormwater360 for more information or to order EnviroPod® bags and oil absorbent pouches.

Maintenance using a Vacuum Inductor Truck

Maintenance utilising an Inductor truck is the preferred option for cleaning EnviroPod® filters. Hand maintenance is discouraged as it can lead to damage of the filters and has Health and Safety implications with sediments often being highly contaminated. Filters are also capable of storing a large weight of material.

1. Establish a safe working area per typical catchpit service activity

2. Remove grate / access cover

3. Vacuum accumulated debris from the upper portion of the catchpit

4. Remove and inspect the oil absorbent pouches (if applicable) clipped to the inside of the EnviroPod® bag. Replace with new pouches in step 8 if the pouches are dark with oil

5. Vacuum contents from bag. Once most of the material is removed, remove the bag from the EnviroPod® with two lifting hooks through the loops at the top of the bag. Inspect filterbag and repair or replace if damaged

6. Remove stainless steel ring from top of bag and rejuvenate bag by washing using a double cold wash, or waterblast at an approved cleaning site

7. Place rejuvenated bag in EnviroPod®. CRITICAL - Make sure the loose ends of the stainless steel ring are joined together in the connector tube

8. Re-install oil absorbent pouches (if applicable)

9. Replace grate

IMPORTANT: Under no circumstances are catchpit sediments to be backwashed into the catchpit

Maintenance & Removal

Hand Maintenance

1. Establish a safe working area per typical catchpit service activity

2. Remove grate / access cover

3. Remove the bag from the EnviroPod® with two lifting hooks through the loops on the top of the bag. Excess debris should be scooped out first if the bag is over half full

4. Remove and inspect the oil absorbent pouches (If applicable) clipped to the inside of the EnviroPod® bag. Replace with new pouches in step 8 if the pouches are dark with oil

5. Pour contents of the bag into a disposal container. Inspect filterbag and repair or replace if damaged

6. Remove Stainless steel ring from top of bag and rejuvenate bag by washing using a double cold wash, or waterblast at an approved cleaning site

7. Place rejuvenated bag in EnviroPod®. CRITICAL - Make sure the loose ends of the stainless steel ring are joined together in the connector tube

8. Re-install oil absorbent pouches (if applicable)

Spill Procedure

In the event of a spill discharging into any EnviroPod®, all sediment is to be removed from catchpit and the filterbag is to be removed and replaced with a rejuvenated filter bag immediately. Normal maintenance procedures apply to additional cleaning as a result of spills.

Blockages

In the unlikely event of surface flooding around a catchpit fitted with an Enviropod® the following steps should be carried out:

1) Check EnviroPod® overflow bypass. The EnviroPod® filter has been designed with an overflow mechanism built into the filterbox. If surface flooding exists check the overflow slots underneath the rubber seal. If debris is lodged in the overflow slots these can be easily cleared by hand or steel rod

2) If overflow is clear and surface flooding still exists, remove EnviroPod® and check outlet pipe for blockages

3) Removal of the EnviroPod® may be difficult if the filter is clogged and the EnviroPod® is holding water. If the filter is clogged, brush the source of the filter with a yard broom or similar. This will dislodge particles trapped at the interface allowing contained water to flow through the filter

4) If the outlet pipe is blocked, it is likely that an inductor truck will be required to unblock it. Debris should be removed from the EnviroPod® with the inductor truck before removal of the Enviropod® filter

If a vacuum inductor truck is not available and the EnviroPod® needs to be removed by hand, follow the steps below;

- Remove excess debris by hand or brush the side of the filter

- Lift and place filter ring through the filter box and into cage

- Remove Filter box

- Lift cage containing filter bag and ring out of the pit

- Unblock outlet pipe

EnviroPod® Removal

If the EnviroPod® has been in bypass for a long period of time, it may have sediment build-up between the cage and pit wall. This may lead to impeded flow through the system, and in extreme cases blockage of the outlet pipe. In these instances, the EnviroPod® may require complete removal and re-installation. To remove the EnviroPod®, the steps below should be followed:

Standard pre-cast catchpit EnviroPod®

1) Clean all material out of EnviroPod® Filterbag and remove bag

2) Fold plastic deflector panels toward the centre of the filterbox and lift filterbox out of pit

3) Lift cage from pit. [NB. if sediment is lodged between cage and pit wall, mechanical lifting may be required by fastening chain around cage and lifting by Hi-ab or similar mechanical means]

4) Clean out all sediment and debris from the catchpit and re-install EnviroPod® as per Installation instructions

For removal instructions for Curb-Inlet Manhole EnviroPod®s - Contact Stormwater360 at 0800 STORMWATER

Audit Procedures

The maintenance contractor is to provide documentation that all maintenance requirements are being carried out. Attached is an example of documentation to be provided by the cleaning contractor.

Records of maintenance operations for the property are to be kept on site and are to be made available for local council compliance inspections.

Stormwater360®

Maintenance Service Receipt

ENVIROPOD®

Site:

Contractor:

Location:

Job Number:

Receipt Number:

Week Serviced:

Year:

Service Frequency:

Enviropod®s on Site:

Enviropods® Cleaned:

Bags Checked:

Frames and Seals Checked:

Tonnage:

Comments:

This service has been performed in accordance with Enviropod® Management Plan (EMP) for above site. Please file this receipt with EnviroPod® Operations Manual and keep on site for Council compliance inspections.

Signature:

Position:

ConstructionPod™

Adjustable temporary treatment for site run-off

The ConstructionPod™ is a removable, adjustable catchpit insert developed to be placed in a catchpit downstream from a contractor performing minor works, or it can be used as a secondary form of treatment in conjunction with traditional treatment such as silt fencing or ponds during major works.

Nylon 100 micron EnviroPod® filterbags are effective at removing sediment, flakey paint and other construction related debris. ConstructionPod™s are monitored and maintained by contractors on site.

Installation

The ConstructionPod™ fits into most standard large catchpits (675x450) and the telescopic cage can be adjusted to suit the pit depth. The ConstructionPod™ is easy to install.

1) Open/remove the catchpit/gullypit grate and measure the pit depth

2) Adjust the cage height to maximise the pit depth using the adjuster handles

3) Insert the ConstructionPod™ into the pit and adjust the nitrile rubber seal to ensure a complete seal around the pit wall

4) Place the filterbag on the support ring and fit into the cage, resting on the ring support

5) Close/replace the catchpit grate on to the pit

Maintenance

The standard nylon 100 micron EnviroPod® filterbags catch a high proportion of fine sediment, litter and debris and other construction material. It is essential that they are closely monitored to ensure ease of maintenance and continued performance.

If the ConstructionPod™ is being maintained by hand, the bag and support ring are simply lifted from the support cage and emptied into a suitable site receptacle for disposal.

If the bag is too heavy to be lifted by hand, or the weight may cause damage to the bag, the contents must be removed using a vacuum inductor truck. When using an inductor truck to remove the contents, firstly open the pit grate, then vacuum out the bag contents, leaving approximately 200mm of material in the bottom so as to not damage the bag. The remaining contents are then placed in a receptacle and removed by inductor truck.

Periodically the EnviroPod® bag will require cleaning. This is carried out by placing it over an inverted cage and water blasting the bag (using degreasing agent if required) ensuring all contents are contained and disposed of appropriately.

Customer Support

Engineering Design & Technical Support

To ensure optimum performance of our products in residential, commercial, municipal and industrial applications, our dedicated team provides the highest level of customer service and engineering support.

Research & Development

Through CONTECH Stormwater Solutions state-of-the-art laboratories and on-going field testing, Stormwater360's engineers and scientists conduct ongoing research to further the understanding of non-point source pollution and develop practical product solutions.

Our products are continually tested and refined, both in the lab and the field to ensure maximum reliability and performance.

Installation Support

Stormwater360's products are some of the easiest to install in the industry. We provide comprehensive installation details and instructions, as well as full technical support on every project.

Support

- Drawings and specifications are available upon request
- Site-specific design support is available from our engineers.

Stormwater360®

www.stormwater360.co.nz
www.stormwater360.com.au

OFFICES : [AUSTRALIA] (NSW) tel. +61 2 9525 5833 (QLD) +61 7 3272 1872 [NEW ZEALAND] (AKL) +64 9 476 5586