



Ecosol™ Storm Pit (Class 2)
Maintenance Guide



Restoring our Waterways
to the Way Nature Intended



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The Ecosol™ Storm Pit (Class 2) has been designed specifically for easy on site cleaning and maintenance using a licensed waste contractor equipped with a vacuum truck.

1.0 Introduction

The Ecosol™ Storm Pit (Class 2) is a unique compact at-source or in-line stormwater filtration system designed to carry out multiple treatment processes on stormwater runoff within the one compact underground device. In particular it is designed to remove, at pre-determined treatable flows, particulate, dissolved and in some cases colloiddally bound contaminants.

Typically, the Ecosol™ Storm Pit (Class 2) is designed for trafficable loadings and is located in commercial car parks, high rise residential apartment complexes, hardstand areas in shopping centre car parks and industrial estates.

Typical applications include:

- light industrial estates;
- mining and bulk handling facilities;
- Industrial and commercial sites such as car parks and shopping centres, commercial wash down bays such as truck stops and council depots; and
- high density housing estates.

This system is often a preferred choice in developments where site space constraints prohibit the installation of multiple treatment measures. It also provides an efficient solution for pre-screening of stormwater run-off prior to on site detention or rainwater harvesting systems.

In developing this innovative stormwater treatment system careful consideration has been given to durability, longevity, cost and maintainability. Key commercial technical features include:

- widely available chemically conditioned filter media;
- a system capable of achieving low pollutant discharge levels;
- low visual impact and energy footprint;
- designed hydraulics with proven performance and longevity;
- scalable design; and
- cost effective maintenance regime.

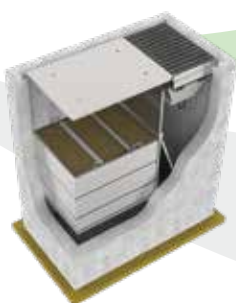
This maintenance guide provides you with important information on the steps to be followed to manage and maintain your installed system.



Ecosol™ Storm Pit (Class 2)
Typical Configuration



Ecosol™ Storm Pit (Class 2)
Typical Configuration



Ecosol™ Storm Pit (Class 2)
Typical Configuration

2.0 Key Dimensions

The Ecosol™ Storm Pit (Class 2) product range has been designed to meet today's stringent water quality objectives. Whether installed at-source, in-line, off-line or end-of-line the system is adaptable to most applications providing a minimum operating head of 300mm and a hydraulic drop through the system is available.

The below table provides key product overall dimensions and information on the pollutant holding capacities of the Ecosol™ Storm Pit (Class 2) product range.

Product Code	Maximum Outlet Pipe Diameters (Assumed 1% Gradient)	Approximate External Unit Dimensions (L x W x D below invert)	Loading classification	Pollutant Holding Capacities		
				Gross Pollutants	Sediment	Hydrocarbons
				(m ³)	(m ³)	(L)
Storm Pit (Class 2) 10L/s	300mm	2700 x 1350 x 1600	D	0.182	0.560	828
Storm Pit (Class 2) 20L/s	300mm	3600 x 1650 x 1600	D	0.243	0.870	1,397
Storm Pit (Class 2) 30L/s	450mm	4500 x 1950 x 1600	D	0.304	1.000	2,400
Storm Pit (Class 2) 40L/s	450mm	4500 x 1950 x 1600	D	0.304	1.000	1,620
Storm Pit (Class 2) 60L/s	525mm	5600 x 2300 x 1600	D	0.364	1.575	2,520
Storm Pit (Class 2) 80L/s	525mm	6500 x 2600 x 1600	D	0.425	2.310	3,780
Storm Pit (Class 2) 110L/s	600mm	7450 x 2950 x 1600	D	0.486	3.240	5,184

The below table provides key product replacement media volumes for the Ecosol™ Storm Pit (Class 2) product range.

Product Code	Maximum Bed Dimensions (Length x Width)	Polypropylene		Clinoptilolite		Laterite	
		Volume	Bed Depth	Volume	Bed Depth	Volume	Bed Depth
		(m ³)	(mm)	(m ³)	(mm)	(m ³)	(mm)
Storm Pit (Class 2) 10L/s	1100 x 900 x 800	0.198	200	0.297	300	0.297	300
Storm Pit (Class 2) 20L/s	1670 x 1200 x 800	0.401	200	0.401	200	0.802	400
Storm Pit (Class 2) 30L/s	2000 x 1500 x 800	0.601	200	0.601	200	0.202	400
Storm Pit (Class 2) 40L/s	2670 x 1500 x 800	0.801	200	0.801	200	1.602	400
Storm Pit (Class 2) 60L/s	3350 x 1800 x 800	1.206	200	1.206	200	2.412	400
Storm Pit (Class 2) 80L/s	3850 x 2100 x 800	1.617	200	1.617	200	3.234	400
Storm Pit (Class 2) 110L/s	4600 x 2400 x 800	2.208	200	2.208	200	4.416	400

Replacement of the multi-barrier, chemically conditioned media is required every 12 months for most typical urban catchments. Replacement media is readily available from your nearest Urban Asset Solutions Pty Ltd branch.





3.0 Monitoring

Under normal weather and operating conditions, your Ecosol™ Storm Pit (Class 2) should be checked a minimum of every two - three months depending on the quality and quantity of the inflow to the unit. Initially, Urban Asset Solutions Pty Ltd recommends that monitoring is undertaken monthly. Once the unit has been in operation for an extended period of time (say, 24 months) then the monitoring schedule can be adjusted to reflect the actual operating conditions specific to the catchment. Under normal operating conditions the Primary Treatment Basket and Sediment Chamber would normally require cleaning approximately every 3 - 4 months and the filter media should be replaced every 12 months.

4.0 Maintenance Summary

As with all stormwater filtration systems, the Ecosol™ Storm Pit (Class 2) should be cleaned regularly. The cleaning frequency, and the cost, depends heavily on the surrounding environment, the unit's proximity to a waste facility and the concentration and volume of pollution conveyed to the system. However regardless of the system configuration the media does require exchange to ensure it continues to perform to its designed specification and is essential in maintaining its operational efficiency.

The figures below give a broad guideline about the number of cleans required annually for each treatment element within the individual Ecosol™ Storm Pit (Class 2) filter.

Product Code	Pollutant Holding Capacities			Optimal Maintenance Frequency			Optimal Catchment Area (Ha)
	Gross Pollutants	Sediment	Hydrocarbons	Primary Treatment Chamber	Secondary Treatment Chamber		
	(m ³)	(m ³)	(L)	Litter Basket Clean	Detention Bay Clean	Storm Pit Filter Media Exchange	
Storm Pit (Class 2) 10L/s	0.182	0.560	828	2	1	1	1.5
Storm Pit (Class 2) 20L/s	0.243	0.870	1,397	2	1	1	1.5
Storm Pit (Class 2) 30L/s	0.304	1.000	2,400	3	1	1	1.8
Storm Pit (Class 2) 40L/s	0.304	1.000	1,620	3	1	1	1.8
Storm Pit (Class 2) 60L/s	0.364	1.575	2,520	3	1	1	2.4
Storm Pit (Class 2) 80L/s	0.425	2.310	3,780	4	1	1	3.0
Storm Pit (Class 2) 110L/s	0.486	3.240	5,184	4	1	1	3.0

Cleaning frequencies are based on typical pollution of 0.280m³ /ha /year for gross pollutants and 0.380m³ /ha /year for sediment generated on a typical fully developed urban catchment

5.0 Cleaning and Maintenance Procedures

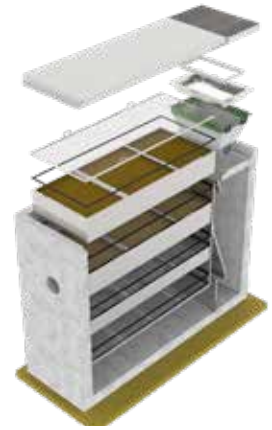
During the first two years of operation it is important to regularly monitor and maintain the system to ensure adequate ponding depth, infiltration rates and to better determine long-term maintenance regimes.

The steps to be followed for cleaning your Ecosol™ Storm Pit (Class 2) are detailed below.

Prior to cleaning day

It is important that prior to commencing a clean, you confirm all plant and equipment is available and operational with service records and pre-start checklists available. It is also recommended that weather conditions for the day of the proposed clean be confirmed as the clean can only be completed in dry weather conditions. Ensure that you:

- Advise all concerned parties of the proposed date and time that the clean is to take place
- Load all required plant and equipment
- If scheduled work includes replacing the multi-barrier, chemically conditioned filter media then please liaise directly with your local Urban Asset Solutions Pty Ltd representative to ensure replacement media is available and Urban Asset Solutions Pty Ltd maintenance representatives are also available to complete these works on your behalf
- Obtain approvals from the appropriate authorities
- Complete a safe work method statement for the work to be undertaken



Site establishment

Review and amend as necessary and sign off the safe work method statement.

- Ensure that all access covers are exposed and accessible
- Ensure that barricades and mesh covers are provided at all working areas and that signs are in place to prevent injuries to public or staff
- Ensure all working areas are safe and all equipment, including hoses and machinery, are in place and ready for operation
- Ensure all plant and equipment is positioned within the area allocated in the car park
- Commence recording cleaning data on the cleaning report provided



Opening access covers

When lifting the covers care should be taken to avoid falling into the openings and lifting should be in accordance with the manual handling code of practice to avoid back injury.

Steps to open the access covers:

- Open all surface access lids to your unit using the lifting keys provided
- Place barricades and mesh over the openings not being used
- Open the inlet primary treatment access cover first to remove gross pollutants from the primary filtration basket



5.0 Cleaning and Maintenance Procedures continued



Removal of gross pollutants, settled sediment and free floating hydrocarbons from the primary treatment chamber.

The primary filtration basket located at the inlet end of the unit is designed to capture and retain gross pollutants. This should be cleaned first.



Access to primary treatment chamber once filtration basket is removed

- Start the vacuum truck and position the vacuum hose over filtration basket
- Lower the vacuum hose into the basket and by moving the vacuum hose over the trapped material commence removal of gross pollutants
- Once all visible pollutants have been removed from the filtration basket lift the vacuum hose and stop the vacuum truck
- Remove the primary litter basket and then lower the vacuum hose into them detention bay (sump) and remove any build-up of settled sedimentation and free floating hydrocarbons from this primary treatment chamber
- Once all debris and contaminated stormwater has been removed from the primary treatment chamber lift the vacuum hose and stop the vacuum truck

Cleaning of the primary and secondary filtration chambers is recommended every 4 months depending on the catchment pollutant loading and rainfall.

Cleaning of the secondary treatment chamber and replacement of the filter media

The frequency of maintenance for the secondary treatment chamber housing the filter media depends on the volume and concentration of the incoming contaminants. However, in general, this media may require a clean out every 12 months to maintain optimal filtration efficiencies. When replacing the filter media it is important to consult with your Urban Asset Solutions Pty Ltd representative to purchase the correct chemically conditioned material for optimal performance.

The steps to be followed for the removal and replacement of the filtration media in your Ecosol™ Storm Pit (Class 2) filter are detailed below.

- Open the access covers directly above the secondary filtration chamber housing the media
- Lower the vacuum hose into the chamber and start the vacuum truck
- Commence removal of all retained contaminated stormwater and media from the chamber
- Once the false mesh floor is visible from the surface, high pressure clean this mesh and again by vacuum method remove this water from within the sump.
- With all chambers to your Ecosol™ Storm Pit (Class 2) filter now clean Urban Asset Solutions Pty Ltd staff that is trained and accredited will commence placing new media. Only Urban Asset Solutions Pty Ltd staff are authorised to undertake these works on your behalf



Secondary Treatment Chamber

5.0 Cleaning and Maintenance Procedures continued

Works completed by Urban Asset Solutions Pty Ltd staff includes:

- Placement and compaction of new chemically condition media
- Media back washing
- Recommissioning of the system by importing clean water to fill to the unit to outlet invert level (Site demobilization)
- Complete the cleaning report accordingly
- Using long handle access cover lifters, reposition all access covers and secure
- Note it is recommended that all access covers and frames should be greased at least once per annum
- The vacuum truck must be packed up and leave site to dispose of all captured pollutants at an approved waste facility
- Load all other plant, equipment and tools ensuring the site is restored to its original condition

6.0 Reporting

The Ecosol™ Storm Pit (class 2) should be cleaned regularly. The cleaning frequency and the cost depend heavily on the surrounding environment, the unit's proximity to a waste facility, the number of units, their location, and the type of pollution collected.



Installed Media

7.0 Monitoring, Cleaning and Maintenance Services

Urban Asset Solutions Pty Ltd has a very competitive cleaning service. After each clean we provide a report detailing the volume and type of pollutants removed. We believe that it is in your best interests for Urban Asset Solutions Pty Ltd staff to clean and maintain the unit, not only because we are specialists, but also because proper monitoring and maintenance enhances the unit life significantly.

Should you use another company to clean the unit, or undertake this work yourself, we request that it be conducted according to Urban Asset Solutions Pty Ltd maintenance guidelines. Otherwise you may invalidate your warranty, as damage caused by inappropriate cleaning procedures is not covered.

The advantages of using Urban Asset Solutions Pty Ltd to clean and maintain your unit are that you get:

- regular inspections of your unit
- a comprehensive cleaning service with removal and disposal of all captured pollutants
- installation of approved replacement filtration media
- a detailed report on completion of each clean
- trained and experienced staff completing the maintenance works
- remedial work completed promptly if required





8.0 Warranty

The Ecosol™ Storm Pit (Class 2) is covered by a twelve-month warranty provided the unit is maintained and cleaned with the frequency and using the method, recommended in this maintenance guide.

9.0 Life Expectancy

The Ecosol™ Storm Pit (Class 2) filters are designed to meet strict engineering guidelines and manufacturers guarantees. The stainless steel components have a life expectancy of 20 years while the pre-cast concrete pit has a life expectancy of 50 years, providing appropriate maintenance practices are employed.

10.0 Supplier and Technical Product Contact Details

For any maintenance or technical product enquiries please contact:

Urban Asset Solutions Pty Ltd

Tel: 1300 706 624

Fax: 1300 706 634

Email: info@urbanassetsolutions.com.au



11.0 Ecosol™ Storm Pit (Class 2) Cleaning and Maintenance Inspection Form

Asset Owner:		Asset ID:	
Unit Location :		Ecosol Ref:	
Date:	Time:	Product Code: Ecosol™ Storm Pit - Class 2	
Inspected By:		Model:	

Visual Inspection

	Good	Fair	Damaged
Primary Treatment Chamber			
Condition of Primary Treatment Basket			
Primary Treatment Basket % of fill (visual inspection)		%	
Condition of Hydrocarbon Baffle (visual inspection)			
Volume of Gross Pollutants retained within the Primary Litter Basket		Kg	
Volume of Sedimentation retained within the Primary Treatment Chamber		Kg	
Presence of free floating oils and grease evident		Yes/No	
Scheduled replacement of Multi Barrier Filter Media (reference 5.0)		Yes	
Secondary Treatment (Filter Media) Chamber			
Condition of chamber components (visual inspection)			
General Items			
Surrounding surfaces (Hardstands) (visual inspection)			
Condition of access covers (visual inspection)			
Hydraulic Conductivity (monitor during an event)			
Average ponding depth during event (visual inspection)		mm/hr	
Infiltration rate (visual inspection)		mm/hr	





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