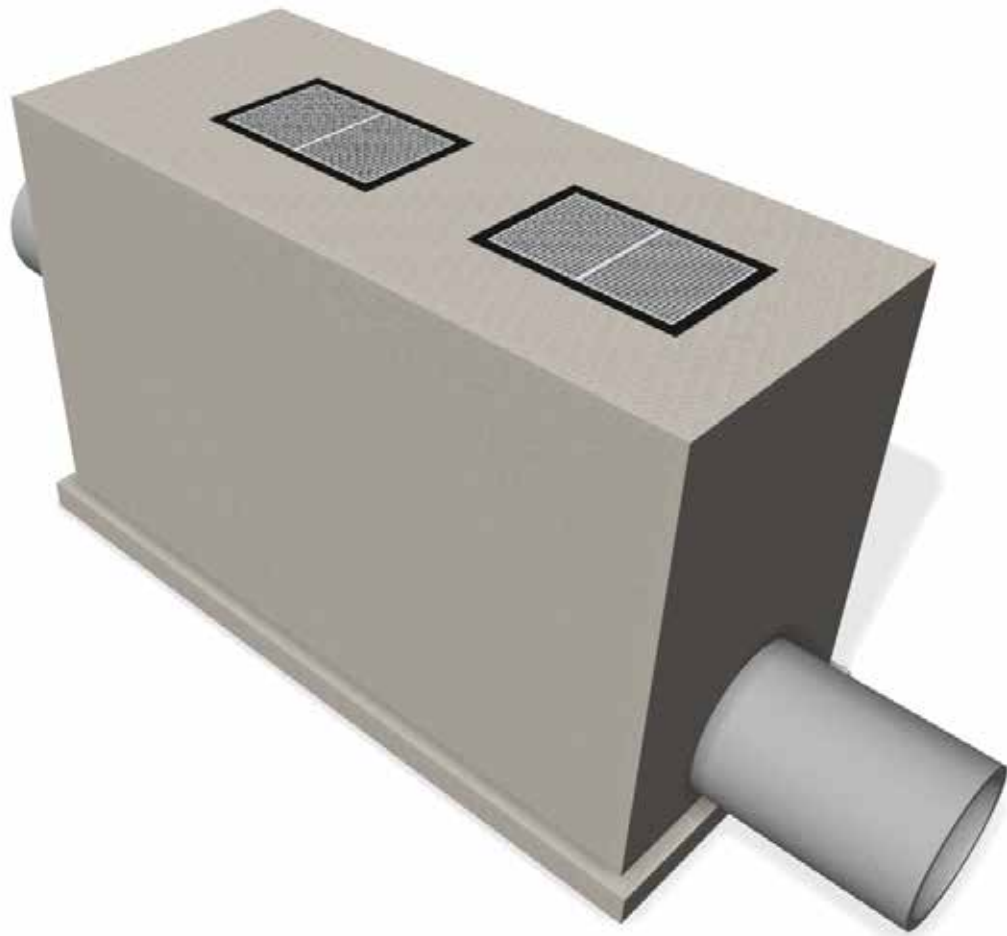


# Ecosol™ Silt Arrestor Technical Specification



environmentally engineered  
for a better future



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## 1.0 Introduction

The range of Ecosol™ Silt Arrestors provide a purpose designed and built underground storage pit where water that is contaminated with suspended sediment is conveyed as runoff to the unit and then released at predetermined flow rates. Using gravitational separation the silt arrestor by design enables suspended particulate matter conveyed to the unit to settle at the bottom of the Silt Arrestor where it is retained until the unit is cleaned.

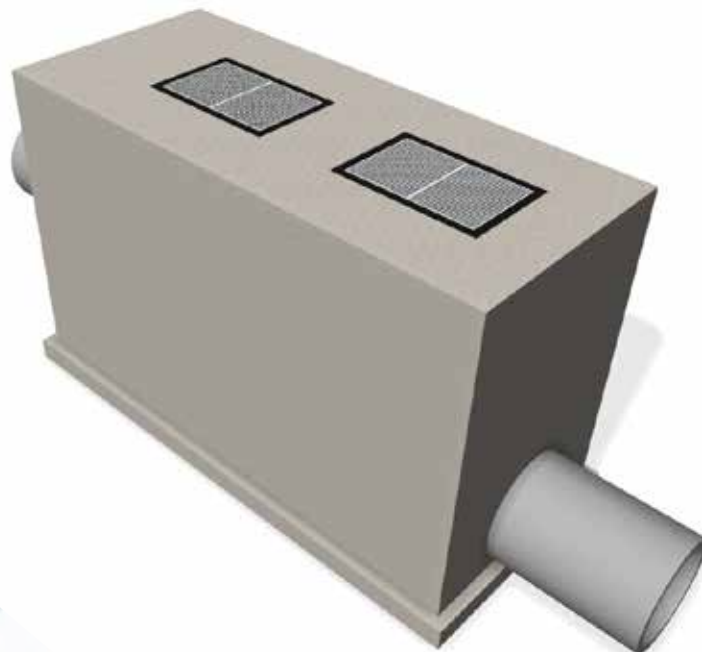
### 1.1 Standard Features:

- All pits are designed to class D (trafficable) loading classifications.
- All pits are supplied complete with gas tight, ductile iron, bolt down, solid top, class D access covers compliant with AS 3996.
- All inlet and outlet pipe penetrations are provided to suit the clients requested pipe size and type.

### 1.2 Available Extras

- Pre-cast access risers are also available for units with greater depths than the nominal unit's standard wall height.
- Internal acid resistant epoxy coating is available on request.
- Vent connections are able to be cast-in on request.
- Step irons available on request.

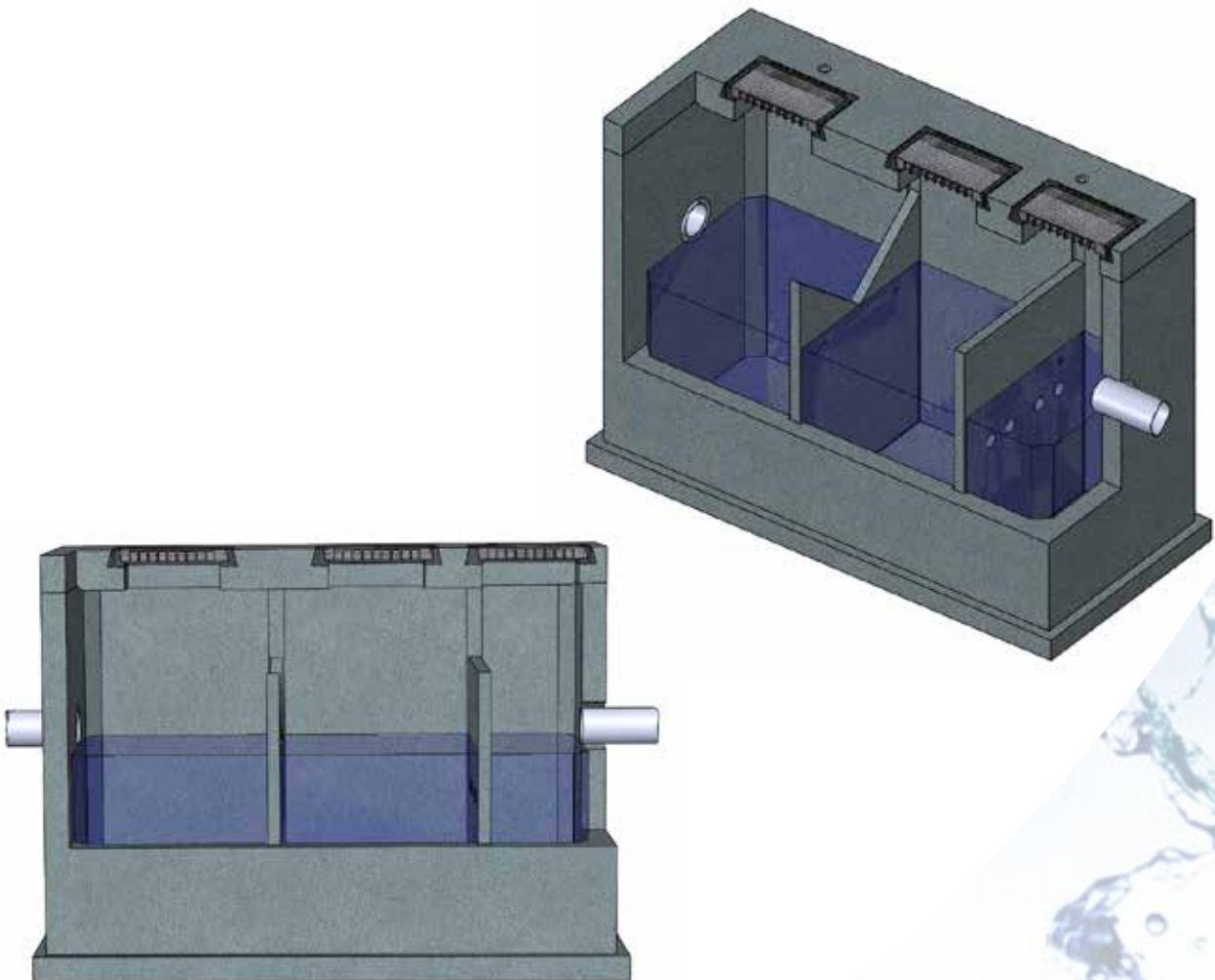
Should a larger capacity or custom built silt arrestor be required for your project please consult with your nearest Urban Asset Solutions Pty Ltd office for a detailed design and quotation.



## 2.0 How the Ecosol™ Silt Arrestor Works

Suspended solids (silt and sediment) from surface run-off is conveyed to the Ecosol™ Silt Arrestor typically by a conventional drainage pipe. Once trapped within the unit baffles slow the flow velocities thereby providing gravitational settling of fine particles entrained within the stormwater flows. Filtered stormwater is then discharged via the outlet pipe back into the drainage network with the solids settled and retained at the base of the unit.

The grading of suspended sediments entering the Silt Arrestor is important in determining settling velocities and to assist you in determining the appropriately sized silt arrestor for your project, the estimated standard settling time of particles ranging from 0.07 - 0.20mm is approximately 5 – 10 minutes. As a guide, traditionally larger units are typically installed in industrial environments where the smaller 1,600 & 4,000, Ecosol™ Silt Arrestors would normally be used in small commercial applications such as wash down bays with significantly smaller catchment areas.



### 3.0 Warranty and Life Expectancy

The Ecosol™ Silt Arrestor has a one-year warranty covering all components and workmanship. Urban Asset Solutions Pty Ltd will rectify any defects that fall within the warranty period. The warranty does not cover damage caused by vandalism and may be invalidated by inappropriate cleaning procedures or where the unit is not cleaned within the recommended frequency. The Ecosol™ Silt Arrestor is designed to meet strict engineering guidelines and manufacturers guarantees and is one of the most durable stormwater treatment systems available. The steel reinforced pre-cast concrete pit has a life expectancy of 50 years providing appropriate maintenance practices are employed.

### 4.0 Safety Considerations

The simple, yet effective design of the Ecosol™ Silt Arrestor reduces OH&S risks as most of the work is undertaken in a controlled factory environment. The unit arrives to site complete and ready for installation reducing significantly on-site time, an important factor given the costs associated with delays that can be caused by inclement weather.



### 5.0 Key Features and Benefits

The range of Ecosol™ Silt Arrestors provides a purpose designed and built storage pit where stormwater that is contaminated with suspended sediment is conveyed as runoff to the unit and then released at predetermined flow rates. The Ecosol™ Silt Arrestors by design enables suspended particulate matter conveyed to the unit in flows to settle to the bottom of the pit where it is retained until the unit is cleaned.

Key Features	Benefits
Hydraulics	<ul style="list-style-type: none"><li>• 100% treatable flow rate up to the designed TFR</li></ul>
Pollutant Capture and Retention	<ul style="list-style-type: none"><li>• Captures and retains suspended solids conveyed in surface runoff</li><li>• No remobilisation of settled particulates</li></ul>
Design and Construction	<ul style="list-style-type: none"><li>• Easily installed with minimal risk to public</li><li>• Simple design with durable, corrosive resistant materials</li><li>• Designed for tafficable loadings</li></ul>
Cleaning and Maintenance	<ul style="list-style-type: none"><li>• Easily cleaned using an eductor truck</li><li>• Pollutants do not need to be handled during cleaning</li></ul>
Environmental Impact	<ul style="list-style-type: none"><li>• Cost effective method for retention of suspended solids.</li></ul>
Tried and Tested	<ul style="list-style-type: none"><li>• Meets all relevant industry standards and guidelines</li></ul>

## 6.0 Key Dimensions and Holding Capacities

The Ecosol™ Silt Arrestor will treat 100% of all flows and have a holding capacity commensurate with the inlet pipe diameter and flows likely to be delivered to the system. The following tables show the Ecosol™ Silt Arrestors dimensions and holding capacities for typical cylindrical pipe applications.

Ecosol Silt Arrestor Product Code	Inlet Pipe Diameters	Total Water Holding Capacity	Total Free Floating Hydrocarbon Holding Capacity	Total Settled Sediment Holding Capacity
	(mm)	Litres	Litres	(m <sup>3</sup> )
1,600L	100 - 150	1,600	540	1.4
4,000L	150 - 225	4,000	1,700	1.8
8,000L	225 - 450	8,000	6,200	3.0
13,500L	450 - 600	13,500	8,000	4.5

Table 1 – Pollutant Holding Capacities for the Ecosol™ Silt Arrestor.

Ecosol Silt Arrestor Product Code	Inlet pipe diameters	Product dimensions (Approximate external dimensions)			Unit weight (Heaviest Lift)
	(mm)	Length (mm)	Width (mm)	Depth below Inlet pipe Invert (m)	Pit and base (T)
1,600L	100	2,700	1,350	1,400	5.5
	150			1,350	
4,000L	150	3,600	1,650	1,650	9.0
	225			1,575	
8,000L	225	4,500	1,950	2,175	18.0
	300			2,100	
	375			2,025	
	450			1,950	
13,500L	450	5,550	2,250	2,150	20.0
	525			2,075	
	600			2,000	

Table 2 – Key product dimensions and indicative weights

## 7.0 Collection Efficiencies

Industry testing of typical silt arrestors (also known as gravity separators) indicates that they can remove between 50% and 60% of Total Suspended Solids (TSS) down to 10 micron when the system is appropriately sized allowing for sufficient particle settling times within the device. It is therefore important to appropriately size your device relevant to rainfall intensities and catchment area. The effective capture of TSS also results in the capture of attached particulates.

## 8.0 Hydraulic Specification

The grading of suspended sediment entering the Ecosol™ Silt Arrestor is important in determining settling velocities. To assist you in determining the most appropriately sized silt arrestor for your project, the estimated standard settling time of particles ranging from 0.07 - 0.20mm is approximately 5 – 10 minutes.

To design a system suitable for your project it is necessary to review the configuration of the stormwater system, the catchment area and hydrology. Please consult with your local Urban Asset Solutions Pty Ltd representative for confirmation of preferred system sizes for your project.

### Designed Treatable Flow Rate

This is the maximum rate of flow that the Ecosol™ Silt Arrestor shall receive to enable sufficient gravitational separation to occur and also to prevent re-suspending already captured and settled solids.

Ecosol Silt Arrestor product code	Inlet pipe diameters (mm)	Treatable Flow Rate (L/S)	Maximum by-pass capacity (L/s)
1,600L	100	3.0	5
	150	7.0	15
4,000L	150	7.0	15
	225	14.0	34
8,000L	225	14.0	38
	300	18.0	94
	375	21.0	150
	450	28.0	245
13,500L	450	28.0	270
	525	32.0	400
	600	45.0	540

Table 3 – System designed treatable flow rates for the Ecosol™ Silt Arrestor.

It is recommended that the units designed by-pass capacity is equivalent to the units designed treatable flow rate as this prevents the re-suspension of settled material. The Maximum by-pass capacities quoted above have been provided as an indicative guide only to assist with the overall drainage design.

## 9.0 Cleaning and Maintenance

### Inspections

The Ecosol™ Silt Arrestor can be easily inspected from the surface using a dipstick method to determine the percentage of fill (volume of settled sedimentation retained within the system).

### Maintenance

It is recommended that your Ecosol™ Silt Arrestor is regularly cleaned out of all sediment and at a minimum should be cleaned before the silt level reaches 70% of its designed holding capacity. Cleaning is by vacuum method using commercial vacuum trucks. Cleaning of the unit is completed from the surface level by moving the snorkel over the retained silts and sediment.

### Safety

Careful consideration to the provision of functional and safe access for plant and personnel for maintenance, replacement and clean-out purposes should be considered as part of the planning phase. The range of Ecosol™ Silt Arrestors has been specifically designed to provide ample access to all areas of the unit for cleaning and maintenance requirements and also incorporates lockable access covers that prevent entry of unauthorised persons.

### Cleaning and Maintenance

One of the key advantages of the Ecosol™ Silt Arrestor systems is that they are easily cleaned from the surface by vacuum truck. This eliminates any risks associated with manually handling captured pollutants or confined space access. The key benefit of this system is its low capital cost along with its low ongoing cleaning and maintenance cost.



## 9.0 Cleaning and Maintenance continued

Ecosol Silt Arrestor Product Code	Indicative Maximum Gross Pollutants Holding Capacities	Optimal Catchment Area	Recommended Cleaning Frequency
	m <sup>3</sup>	Ha	Per Annum
1,600L	1.400	2.5	1
4,000L	1.800	3.2	1
8,000L	3.000	5.4	1
13,500L	4.500	6.0	1

Table 4 – Indicative maintenance regime for the Ecosol™ Silt Arrestors.

Cleaning frequencies indicated are based on typical sediment loads of 0.380m<sup>3</sup>/ha/year for fully developed commercial and light industrial catchments.

### Aesthetic Considerations

As the total system is designed to be installed underground the surface footprint is minimal. Consideration has also been given to ensure the selected access lids are constructed from materials of suitable strength and durability to resist anticipated loads and pedestrian slippage. They are also designed to be removable by hand and include a safe, secure locking mechanism to prevent unauthorised access to the device.

## 10.0 Monitoring, Cleaning and Maintenance Services

Urban Asset Solutions Pty Ltd has a very competitive cleaning service using a vacuum truck for the removal of all captured pollutants. After each clean we provide a full 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.



## 11.0 Turnkey Services

Urban Asset Solutions Pty Ltd design and estimating staff provide a dedicated management approach towards your project. In addition all staff are capable of liaising with the client, the consulting engineer, the contractor, and all other interested third parties to achieve a successful outcome.

## 12.0 Accreditation

Urban Asset Solutions Pty Ltd is accredited to AS/NZS ISO 14001 (Environment) and AS/NZS 9001 (Quality). Our commitment to continuously improving our products and services is demonstrated by our ongoing accreditation for Quality and Environmental Management. Urban Asset Solutions Pty Ltd is also committed to a safe environment for its employees. We are fully third-party accredited to AS/NZS 4801 and OHSAS18001.



## 13.0 Supplier and Technical Product Contact Details

For any maintenance or technical product enquiries please contact:

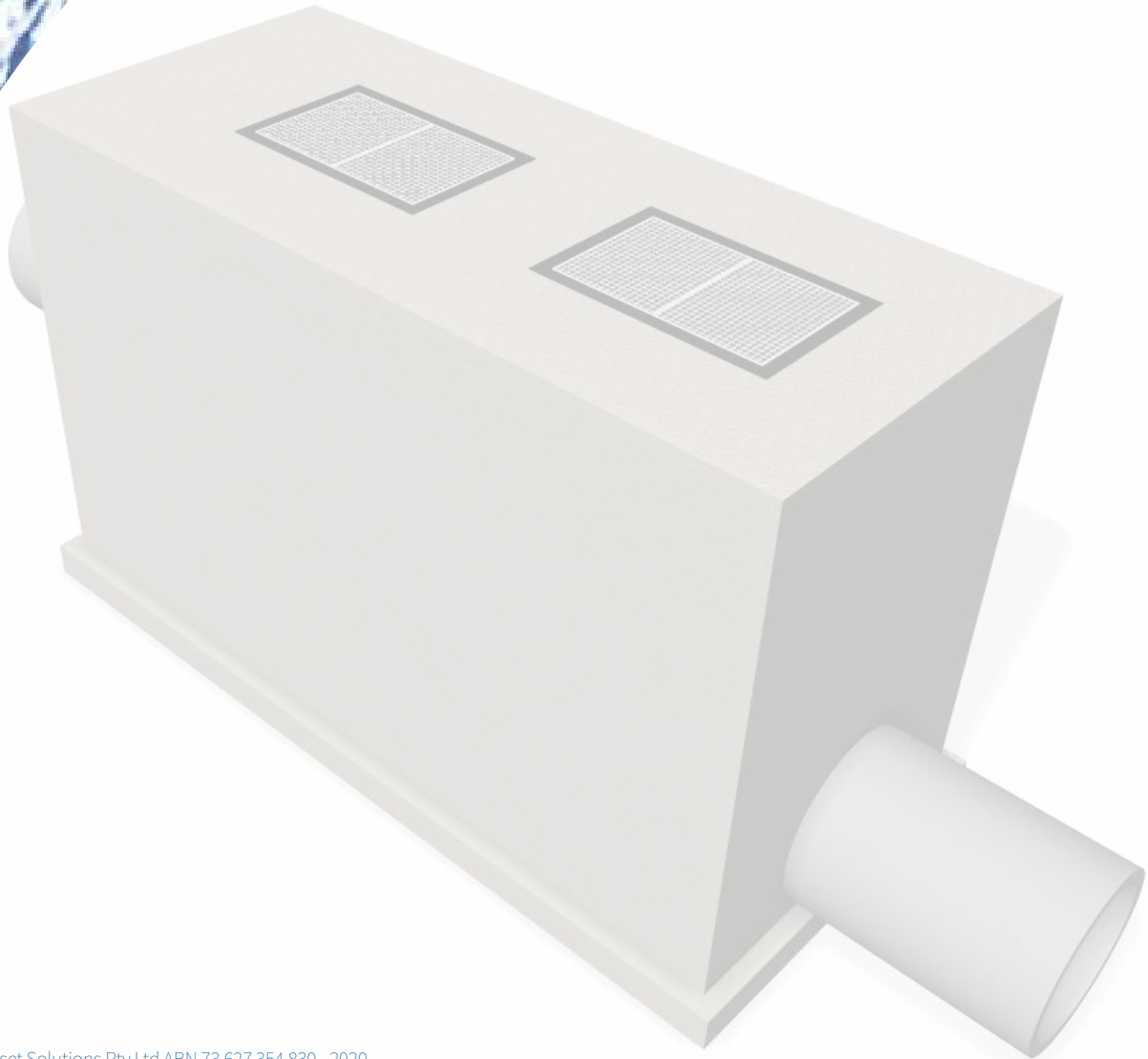
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