



## Case Study: Stormwater Contamination Treatment Using Recycled Organics

<b>Location:</b>	Powells Creek East Catchment – Concord West
<b>Participants:</b>	Concord Council, EPA NSW (Stormwater Trust) Atlantis Corporation
<b>Product:</b>	Enviro-media
<b>Market:</b>	Enviro-remediation Segment

**Enviro-media** is a specifically engineered infiltration medium that uses selected organic matter or a blend of selected organic matter and minerals such as sand and soil that is used to physically, biologically and chemically purify or treat contaminated air, soil and water. Treatment and purification is achieved by physically filtering sediments and contaminants, chemically binding contaminants to organic matter and biologically degrading contaminants.

**A**nalyses of stormwater contamination from roads clearly identifies high levels of dissolved pollutants including oil, grease, petrol, metals, nutrients and sediment that are creating a cocktail more toxic than untreated sewage. This contamination is spilling into our rivers, creeks and oceans causing substantial environmental damage.

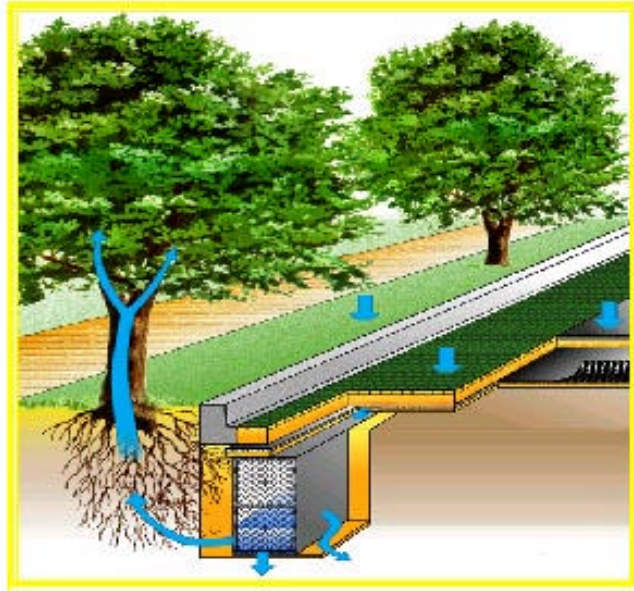
Enabled by a NSW Government stormwater trust grant, the Powells Creek East Catchment Project is a public and private sector partnership (PPP) between Concord Council, Atlantis Corporation and the NSW EPA.

The Concord project demonstrates the use of Enviro-media with the Atlantis infiltration system in an area where the sub-soils are predominantly clay based. The grant project covers the catchment area of five streets in Concord West, Sydney, that run from George Street towards Powells Creek.

The location was selected because of the silting and pollution problems in Homebush Bay, the proximity to the Olympic site and the distributed nature of the catchment, which features a series of small parallel catchments.

“The success of the project is a landmark for achieving sustainable river systems”, said Humberto Urriola, Managing Director of Atlantis. “The future of human survival depends on a sustainable supply of clean water. This project is a great example of where successful collaboration between government and industry can create a more sustainable future”

The stormwater is treated at the source by the construction of a porous road shoulder consisting of grass cells and turf. The runoff filters through the grass cells and then through an amended biologically engineered soil containing recycled organics that underlies this porous road shoulder. From there, the runoff is collected in drainage tanks that continue the purification process and divert the water into nearby retention tanks.



*kerb gully by pass system containing RO used in Concord*

This water is then directed to a balancing tank and used to irrigate a nearby landscape area. Excess filtered runoff that can't be stored in the retention tank will either be stored in detention tanks and absorbed into the surrounding soils, if the soil permeability permits, or purified water will be discharged into Powells Creek.

Being an infiltration project on roads in trafficable areas, many civil engineering considerations are incorporated into the design including achieving suitable compaction of the filter medium to maintain the integrity of the road surface, while maintaining optimum infiltration rates.

The system incorporates the extensive use of physically and biologically engineered filtration media. There are a range of tailored filtration enviro-media formulas that are engineered to suit the specific soil and water properties of the particular site. The bio-remediating enviro-media contain bio-engineered naturally occurring micro-organisms that biologically degrade and remediate toxic chemicals that are the result of daily urban

and industrial activities. Toxic chemicals are transformed in the process into natural, non-toxic elements.

The toxic chemicals treated include PCBS, PAHS, Organophosphates, coal tars, pesticides and herbicides. These toxins are carcinogenic to humans and their accumulation in soils and waterways are a major health and environmental concern.

Some heavy metals such as arsenic, chromium and selenium can also be biologically degraded using enviro-media.

The project won a Gold Rivercare Award in 2000. "Concord Council is delighted to be part of this innovation in sustainable water quality" says Concord Mayor, Clr Peter Woods. "Concord has always been in the forefront of environmental protection, the Rivercare award is a win for the environment and a credit to the people of Concord".

Councils could save through reduced maintenance and cost of stormwater systems and through the re-use of recycled water for irrigating parks and other landscape areas. Water authorities would save through the reduced consumption of mains water. Future use of Enviro-media in stormwater purification will depend on local councils enforcement of quality standards and regulations for stormwater discharge management .

Independent monitoring of the water quality was carried out by Australian Water Technologies. The monitoring includes testing stormwater at surface level, as well as after infiltration and storage in the retention tanks. Ten samples were collected during rainfall events over a six month period. Analysis of the data identifies substantial water quality improvement as shown in the following charts.

