

Atlantis®
GREEN CITIES FOR LIFE

Marsden Primary School

Project Location

Marsden, Queensland, Australia

Atlantis Application

Underground Infiltration Tank

Project Overview

Marsden Primary School required a stormwater treatment system to reduce the load on the existing council stormwater network and limit the discharge of detritus —including leaves, litter and garden waste—into river systems. The project also required treatment of hydrocarbons in runoff from newly constructed car parks and bus turning areas.

A 137 m³ underground infiltration and water purification tank was installed at the school. Runoff from the car park and school roofs was conveyed through Atlantis filtration units before entering the system. The underground installation combined Single Flo-Tank® Modules with a free-infiltrating gravel bed, permeable soil media and hydrophilic geotextile, while Turf Cell® was incorporated at surface level to create a trafficable grassed area.

Technical Summary

Project	Marsden Primary School
Location	Marsden, Queensland, Australia
Application	Underground Infiltration Tanks
Completion	June 2015
Size	137 m³
Surface Use	Trafficable grassed area
Atlantis System	Single Flo-Tank® Modules & Turf Cell®

Design Challenge

The stormwater strategy needed to address both hydraulic and water-quality requirements. Runoff entering the existing council stormwater system needed to be reduced, together with detritus that could otherwise be conveyed into river systems. At the same time, runoff generated by the newly constructed car parks and bus turning areas required treatment for hydrocarbons.

The system also needed to receive runoff from both the car park and school roofs, provide 137 m³ of underground infiltration capacity, and integrate within a low-level area of the school grounds. The surface above the system was required to remain trafficable while limiting compaction of the soil supporting the grassed area.

01 Reduce the load on the existing council stormwater system.

02 Reduce runoff carrying leaves, litter and garden waste into river systems.

03 Remove hydrocarbons from runoff generated by the newly constructed car parks and bus turning areas.

04 Provide a 137 m³ underground infiltration tank.

05 Receive runoff from the car park and school roofs through filtration units.

05 Provide a trafficable grassed surface while preventing soil compaction.

Solution

A 137 m³ underground infiltration/water purification tank was installed within a low-level area of the school grounds. Runoff from the car park and school roofs was fed into the system through Atlantis filtration units.

A free-infiltrating gravel bed was formed within the excavation, with a layer of Atlantis Flo-Tank® Single Modules installed directly over the gravel. This configuration promoted infiltration from the tank modules and bioactivity to assist with the bioremediation of hydrocarbons in the treated runoff.

Above the Flo-Tank® modules, the system incorporated Atlantis hydrophilic geotextile, a thick layer of permeable soil media, a second layer of hydrophilic geotextile and topsoil. Atlantis Turf Cell® was then installed over the topsoil and filled with sandy topsoil before turf was placed above the linked cells.

The low-level positioning of the system, together with the Turf Cell® reinforced surface, also enabled the area to function as a swale for surface water while maintaining a usable green space.

Benefits

- 137 m³ of underground infiltration capacity provided within the school grounds.
- Runoff from the car park and school roofs directed through filtration units before entering the system.
- System configured to reduce runoff containing leaves, litter and garden waste entering river systems.
- Flo-Tank® and gravel-bed configuration used to promote infiltration and bioactivity for hydrocarbon bioremediation.
- Turf Cell® reinforcement provided a trafficable surface while protecting the soil from compaction.
- Low-level system configuration enabled the landscaped area to also function as a swale for surface water.

Considerations

The infiltration tank was excavated within a low-level area of the school grounds, where a free-infiltrating gravel bed was formed. A single layer of Flo-Tank® Single Modules was installed over the gravel bed.

The Flo-Tank® layer was covered with hydrophilic geotextile, followed by a thick layer of permeable soil media, another layer of hydrophilic geotextile and topsoil.

For the surface treatment, Turf Cell® cells were installed over the topsoil and filled with sandy topsoil. Turf was then laid over the linked cells and rolled with a heavy roller to press the roots into the soil contained within the cells while protecting the root zone from compaction.

Project Outcomes

- 137 m³ underground infiltration/water purification tank installed at Marsden Primary School.
- Runoff from the car park and school roofs incorporated into the treatment system.
- Stormwater treatment configured to address detritus and hydrocarbons within the identified runoff streams.
- Single Flo-Tank® Modules installed over a free-infiltrating gravel bed to promote infiltration and bioactivity.
- Turf Cell™ reinforced grassed surface provided above the underground system while protecting the soil from compaction.
- Low-level installation configured to also function as a swale for surface water.

Did You Know?

The 137 m³ infiltration system combines a single layer of Flo-Tank® modules with a free-infiltrating gravel bed and permeable soil profile to promote both stormwater infiltration and bioactivity for hydrocarbon bioremediation.











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Thank You For Your Attention



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