

Atlantis®
GREEN CITIES FOR LIFE

Amberley Government Facility

Project Location

Amberley, Queensland,
Australia

Atlantis Application

Stormwater Harvesting

Project Overview

The Amberley project formed part of a AU$331.5 million redevelopment of one of Australia's largest base facilities, incorporating new construction and refurbishment works across accommodation, maintenance, storage, training, mess and physical fitness facilities. The rainwater harvesting system was installed at the playing fields on the south-western corner of Gannet Street and Rosewood Road.

The stormwater strategy combined a vegetated swale, subsurface drainage and a 4,100 m³ underground harvesting tank. Runoff captured around the playing field and water collected by 1,560 m of perforated subsurface drainage pipe are directed to the harvesting tank, with stored water reused for irrigation of the sports field.

Technical Summary

Project	Amberley Government Facility
Location	Amberley, Queensland, Australia
Application	Stormwater Harvesting
Completion	April 2009
Size	4,100 m³
Surface Use	Playing fields
Atlantis System	Flo-Tank®

Design Challenge

The redevelopment required a stormwater harvesting strategy integrated with the new playing fields. The system needed to capture runoff around the sports field and collect subsurface drainage while providing sufficient underground storage for subsequent irrigation reuse.

A vegetated swale surrounding the playing field formed part of the runoff collection strategy. Excess water passing through the soil profile needed to be captured beneath the swale, while a separate network of perforated corrugated plastic pipes collected subsurface drainage. Both flows were directed to the stormwater harvesting tank adjacent to the north-western corner of the playing field.

The system also required overflow management and provision for inspection and pump-out access within the 4,100 m³ underground tank.

01 Provide 4,100 m³ of underground stormwater harvesting capacity.

02 Capture excess water beneath the vegetated swale using Atlantis Flo-Tank® Single modules.

03 Extend the Flo-Tank® Single modules 3 m wide beneath the swale for 110 m.

04 Collect subsurface drainage through 1,560 m of perforated corrugated plastic pipe.

05 Reuse collected stormwater for irrigation of the sports field.

06 Incorporate inspection, pump-out and overflow provisions within the harvesting system.

Solution

A vegetated swale was constructed around the playing field to collect runoff. Excess water moving through the soil profile was captured by Atlantis Flo-Tank® Single modules, extending 3 m wide beneath the swale for 110 m.

Water collected through the swale was directed to the underground stormwater harvesting tank adjacent to the north-western corner of the playing field. The tank also received water from 1,560 m of perforated corrugated plastic subsurface drainage pipes.

The 4,100 m³ harvesting tank was constructed using Atlantis Flo-Tank® Double modules, enclosed by a heavy-duty low-density polyethylene liner and non-woven geotextile. Stored water from the combined swale and harvesting system was used for irrigation of the sports field.

The tank incorporated eight cleanout/inspection ports and an adjacent 1,200 mm diameter wet well with bolt-down lids serving as a pump-out pit. Overflow was managed through a 15 m long × 400 mm deep spillway with scour protection discharging to an adjacent creek.

Benefits

- 4,100 m³ of underground stormwater harvesting capacity provided adjacent to the playing field.
- Runoff collection integrated with a vegetated swale extending around the playing field.
- Flo-Tank® Single modules extended 3 m wide for 110 m beneath the swale to capture excess water through the soil profile.
- 1,560 m of subsurface drainage pipe incorporated into the harvesting system.
- Captured stormwater reused for sports field irrigation.
- Eight cleanout/inspection ports, a dedicated wet well and a protected overflow spillway incorporated into the system.

Considerations

The stormwater harvesting tank was constructed below ground using Atlantis Flo-Tank® Double modules surrounded by a heavy-duty low-density polyethylene liner and non-woven geotextile.

The Double modules were installed in two layers. The first layer was placed over the impermeable liner and geotextile before installation of the second layer, with the tank modules subsequently wrapped in geotextile.

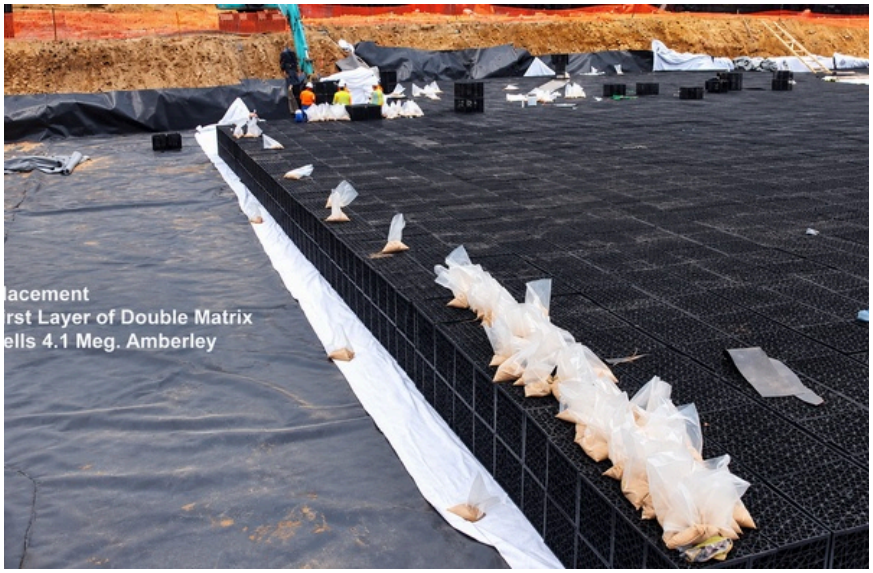
The broader collection system incorporated the vegetated swale, Flo-Tank® Single modules beneath the swale and the 1,560 m subsurface drainage network, all feeding the underground harvesting tank.

Project Outcomes

- 4,100 m³ underground stormwater harvesting tank installed at the Amberley facility.
- Atlantis Flo-Tank® Double modules installed in a two-layer configuration within the harvesting tank.
- Flo-Tank® Single modules installed 3 m wide beneath the swale for 110 m.
- 1,560 m of perforated subsurface drainage pipe connected to the harvesting system.
- Stored stormwater reused for irrigation of the sports field.
- Tank infrastructure incorporated eight cleanout/inspection ports, a 1,200 mm diameter wet well and a 15 m × 400 mm overflow spillway.

Did You Know?

The Amberley stormwater harvesting system combines a 4,100 m³ underground tank with 1,560 m of perforated subsurface drainage pipe and Matrix® Single modules extending 110 m beneath the vegetated swale.


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CONSTRUCTION FOOTPRINT FOR 4,100,000 LITRE TANK SYSTEM
ATLANTIS 4.1 MEGALITRE RAINWATER HARVESTING
INFILTRATION SWALE FOR
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4.1 Million Liters

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Thank You For Your Attention



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