

Infiltration / Attenuation
Tank/Flood Mitigation

Project Location Llandudno, North Wales, UK

Project Details John Bright School

Completion Date 2003

Location

Ysgol John Bright, Maesdu Road, Llandudno, Wales, UK

Client

Installed Capacity:

Attenuation tank – 688.50 m³

Offline Attenuation – 204.70 m³

Offline Attenuation – 94.55 m³, 2,000 m²

Application and Product:

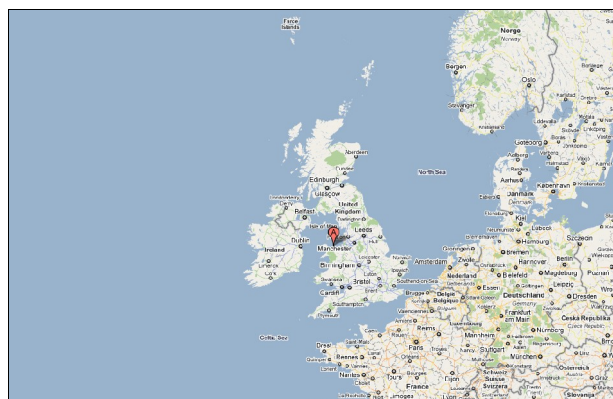
Atlantis Matrix Tanks were used and Infiltration / Attenuation Tanks.

Objectives:

- Flood mitigation
- Ground water recharge
- Point source solution

Details:

Depth of cover: 10,00 to 2,700 mm



The Challenge:

The design for the John Bright School (PFI) development in Llandudno in Wales required that stormwater runoff from the former brownfield site be attenuated prior to entry into the existing stormwater main line system.

The Solution:

The original design was to collect the runoff from the playing field using traditional drains introducing flow into an attenuation tank constructed using concrete. The collection drains ran at the sides of the playing field. The playing field had a minimum slope of 1:100 to drain water into the collection drains.



Engineers Requirements:

The engineering requirements for managing the stormwater were assessed as follows.

- Minimum depth of cover above the tank was high (due to existing network system invert level was deep and the designed network system has to be kept at a considerable depth)
- Restricted flow into the existing stormwater main line system (at Outlet from the tank)
- A high tank storage requirement in a highly restricted limited space

Atlantis Solution:

Atlantis provided solution using Atlantis Matrix Tanks[®] having a void ratio of 95% and high load bearing capacity.

Attenuation Tank – 688.50 m³

(Main Attenuation tank 1 – 20.40 m x 6.20 m x 1.80 m deep)

(Overflow storage Tank 2 – 28.60 m x 12.30 m x 1.31 m deep)

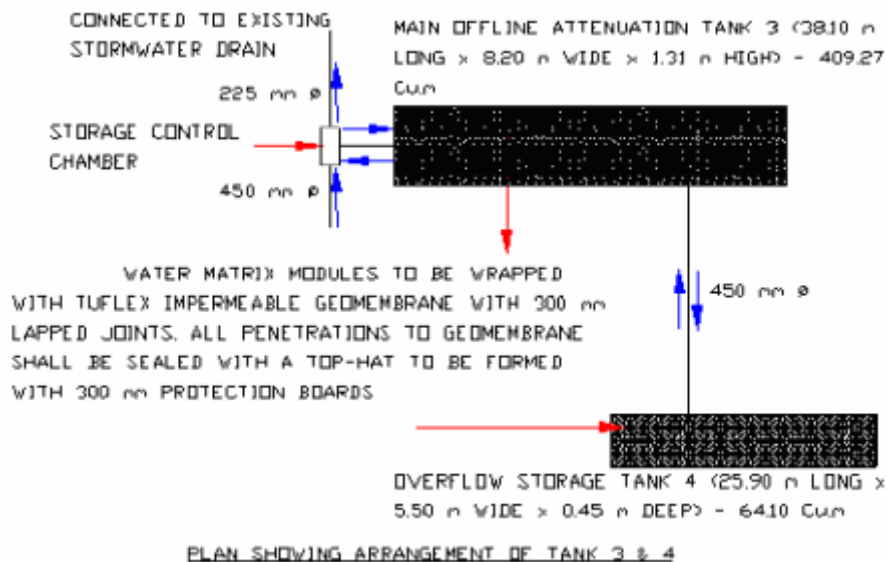
Infiltration Tank Flood Mitigation

The main attenuation tank is made up of double and single Atlantis Matrix Tanks® modules to achieve the required depth with an average cover of 2.65 m connected to an overflow storage tank made up of triple Atlantis Matrix Tanks® modules with an average cover of 2.4 m. The main tank has a 450 mm Ø inlet pipe connected with an oil interceptor before the inlet into the tank. The outlet pipe of 225 mm Ø from the main tank is connected to the pumping station with a valve chamber to reduce the flow into the existing main sewer system.

Offline Attenuation Tank – 204.70 m³

(Main Offline Attenuation tank 3 – 38.10 m x 8.20 m x 1.31 m deep)

(Overflow storage Tank 4 – 25.90 m x 5.50 m x 0.45 m deep)



The main offline attenuation tank is made up of triple Atlantis Matrix Modules modules with an average cover of 1.05 m connected to an overflow storage tank made up of single Atlantis Matrix Modules with an average cover of 1.05 m. The main offline attenuation tank has a storage control chamber at the inlet/outlet pipe to control the runoff into the existing stormwater system.

Offline Attenuation Tank – 94.55 m³

(Offline Attenuation tank 5 – 20.40 m x 10.30 m x 0.45 m deep)

Infiltration Tank
Flood Mitigation



The main offline attenuation tank is made up of single Atlantis Matrix Tank modules with an average cover of 1.10m. The offline attenuation tank has a weir control chamber at the inlet/outlet pipe (225 mm Ø) to control the runoff into the existing main line stormwater system. The inlet stormwater sewer into the storage control chamber has an oil interceptor. The outlet pipe of 150 mm Ø from the control chamber is connected to the existing stormwater system.

Benefits:

- Flexible ideal site solutions (High void ratio and High load bearing capacity)
- More efficient design e.g., several tanks making design simpler
- Less excavation required
- Installation time of each tank reduced from 3-4 weeks to 5 days
- Innovative and Economical solutions