

# 3D analysis of Phoenix Gym SUDS submission for Condition 6

Based on document 667769-REP-SBU-DS - 23rd September 2016

**Swale : 19.62 m<sup>3</sup>**

27 m long, 30 cm deep

## Summary of overall proposed system

- 137.00 m<sup>3</sup> 4 x 30% permeable volumes
- 11.71 m<sup>3</sup> Pipes, chambers, silt traps, gullies
- 316.32 m<sup>3</sup> Swale (large)
- 19.62 m<sup>3</sup> Swale (small)

**484.65 m<sup>3</sup> Total capacity in dry season**

**Swale : 316.32 m<sup>3</sup>**  
110 m long, 80 cm deep

**Pipe and 2 chambers : 6.77 m<sup>3</sup>**  
400 mm diameter  
43.5 m long  
60 cm top of pipe below surface

**SEW pipeline**  
1.2 m diameter  
1.2 m below surface

**4 x 30% permeable areas : 456.93 m<sup>3</sup>**

30% permeable so :  $456.93 \times 30\% = 137.00 \text{ m}^3$

Depths based on penultimate Condition 6 submission - digital model allows 100 mm for porous surface and 200 mm for sub base - a total of 300 mm of 30% permeable volume.

Applicant's plan shows each area drained by an un-dimensioned pipe leading to silt traps along a 150 mm pipe. Digital model uses 150 mm for all 4 of these.

FIFIELD ROAD

13.10.2016

**Surface grid**  
Major divisions = 10 m  
Minor divisions = 2 m

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The bottom will be 200 mm above the water table level at -500 mm

## Capacity in wet season with water table level at -50 cm

484.65 m<sup>3</sup> Total capacity in dry season

**79.37 m<sup>3</sup> Total lost capacity below -50 cm**

**Swale : 316.32 - 71.85 m<sup>3</sup>**

Bottom 40 cm will already be filled reducing capacity to **244.47 m<sup>3</sup>**

**405.28 m<sup>3</sup> Total capacity in wet season**

**0.00 m<sup>3</sup> Capacity when ditch is full !**

**Pipe and 2 chambers : 6.77 - 6.18 m<sup>3</sup>**

The top of the 400 mm pipe will be 100 mm below the -500 mm water table level, reducing capacity to only **0.59 m<sup>3</sup>**.

**SEW pipeline**

1.2 m diameter

1.2 m below surface

**4 x 30% permeable areas**

These and their associated 150 mm pipes will remain 200 mm above water table level at -500 mm. But the 4 silt traps will each have the lower 700 mm filled with water, losing **0.54 m<sup>3</sup>** of capacity.

**Water table in wet season**

This is seen to be about 5.5 bricks below surface. So, with mortar, approx **-42 cm**.

**Surface grid**

Major divisions = 10 m

Minor divisions = 2 m

13.10.2016



FIFIELD ROAD

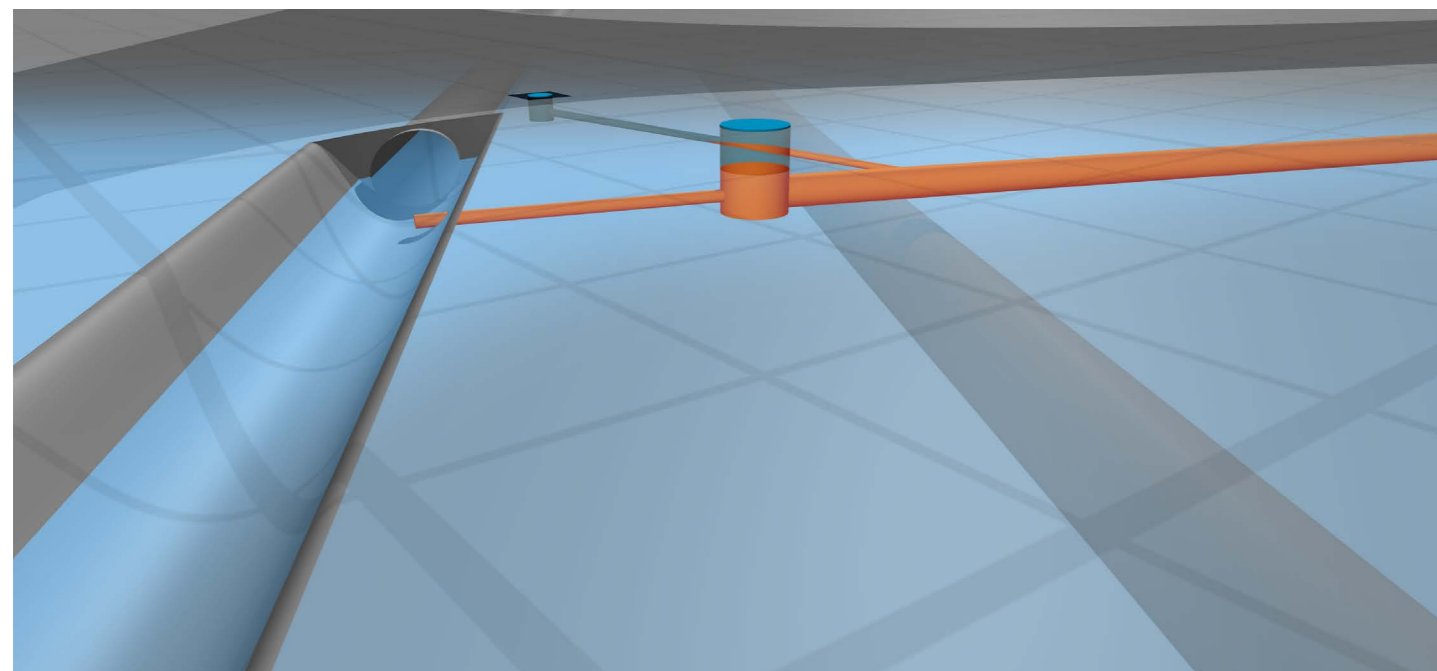
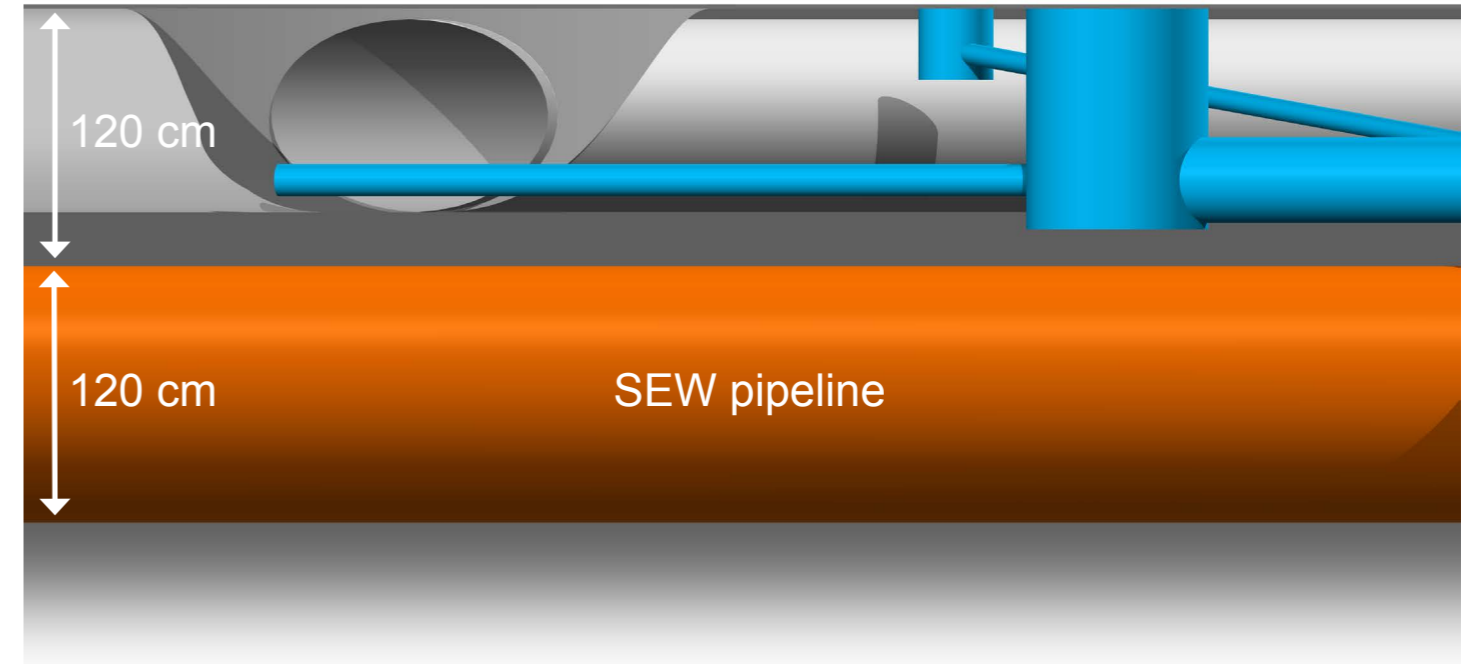
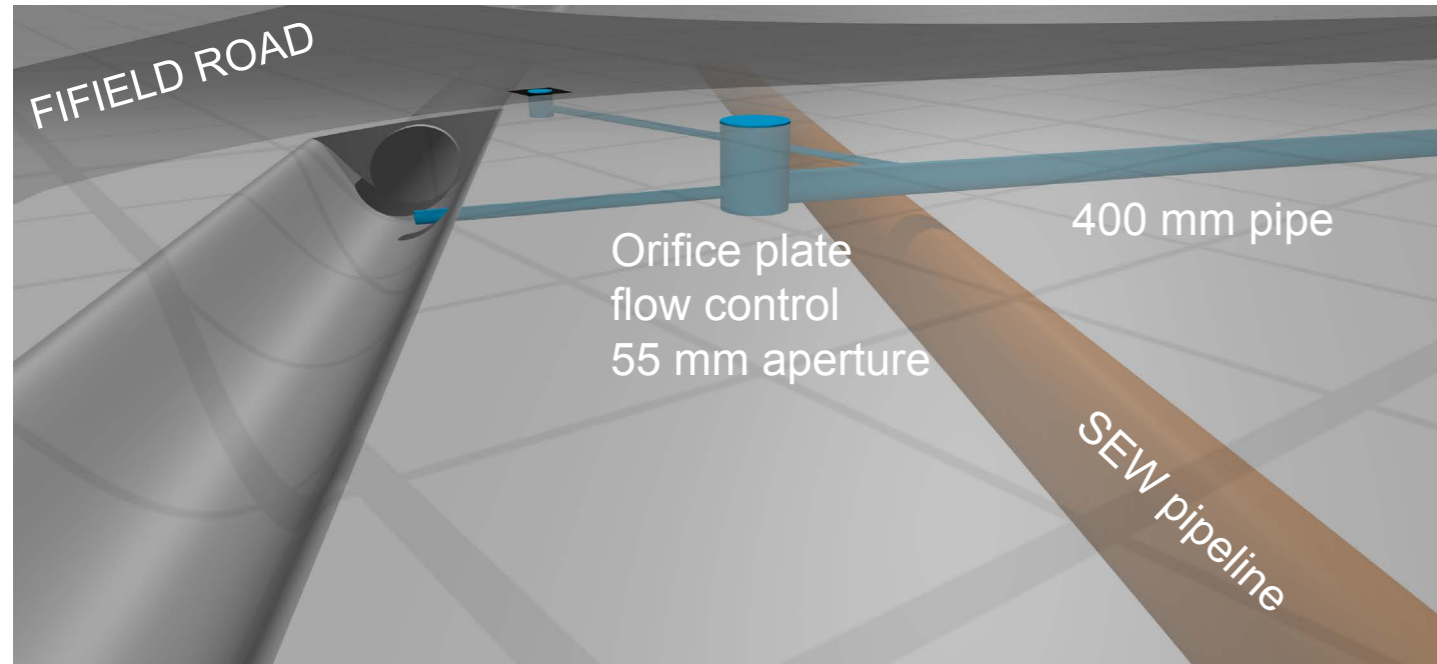
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## Outflow into ditch



The 400 mm pipe feeds into a chamber where an Orifice plate flow control limits the outflow to 5 litres per second through the 150 mm pipe into the ditch. To allow reasonable falls throughout the system the outflow is unavoidably close to the very bottom of the ditch. In the wet season with a water table level of -50 cm this will be under water and considerable system capacity removed. It will not need much water in the ditch to prevent or at least impede outflow. If the ditch is full, as it often is, the entire system will be backed up with nowhere to go but above surface. Just as elsewhere in the area.

