

POWELLS CREEK STORMWATER HARVESTING PROJECT

Powells Creek Reserve at Concord West is accessed from Victoria Avenue, which borders the Reserve to the north. The Reserve has two playing fields and a carpark.

The purpose of the project was to capture and treat runoff from the carpark and use the harvested water to irrigate the two playing fields. The fields were previously watered from a 60KL above ground concrete tank connected to the water main. Using treated runoff reduces demand on potable water supplies and reduces stormwater flows to Powells Creek.

The carpark, which previously had a gravel surface, was reconstructed with bitumen.

The quality of stormwater runoff from the site was poor, with minimal treatment provided before discharge to Powells Creek. Pollutants consisted mainly of suspended solids generated from the unstabilised carpark surface, litter and pollutants typical of carparking areas ie hydrocarbons, heavy metals etc. Other potential pollutants include fertilizers used on the two playing fields and dog faeces.

The initial proposal for stormwater management and water harvesting involved bio-retention swales with rain water tanks of varying capacities. The option of using permeable paving for the carpark in conjunction with bio-retention swales was also proposed.

An alternative proposal put forward by HydroCon was accepted by Council. The proposal involved a system of stormwater pits and HydroCon permeable pipes installed within a sand filled trench. Runoff from the carpark would be channeled to the base of the pits via a gross pollutant trap (Figure 1).

On entering the pits, water rises to the invert level of the DN500 HydroCon pipe (Figure 2). The bottom of the pipe is sealed to facilitate cleaning but once water rises above the level of the sealed area, it is able to seep through the permeable walls of the pipe into the surrounding sand media.

The bottom and sides of the trench are lined with an impermeable fabric (Figure 3). A perforated or slotted drainage pipe is placed at the base of the trench to collect the treated water and convey it, through the use of pumps, to water storage tanks. Where the discharge pipe passes through the stormwater pit, standard PVC piping is provided. An inverted 'T' pipe is placed within the pit to allow inspection and maintenance of the discharge pipe system. Trenches are interconnected.

The HydroCon design allowed for:

- 4 concrete pits (900 x 600 mm)
- 4 sediment collectors
- 230m HydroCon DN500 pipes
- 240m drain pipes DN125/150/225
- 2 pits for pumps

The final design involved lines 3 & 4 (Figure 4):

Line 4: (double parallel lines)

128 standard DN500 pipes

2 terminating pipes

2 HydroCon 1200 x 1200 mm modular precast pits

Line 3; (single line)

64 standard pipes

1 terminating pipe

1 HydroCon 1200 x 1200 mm modular precast pit

Figure 1

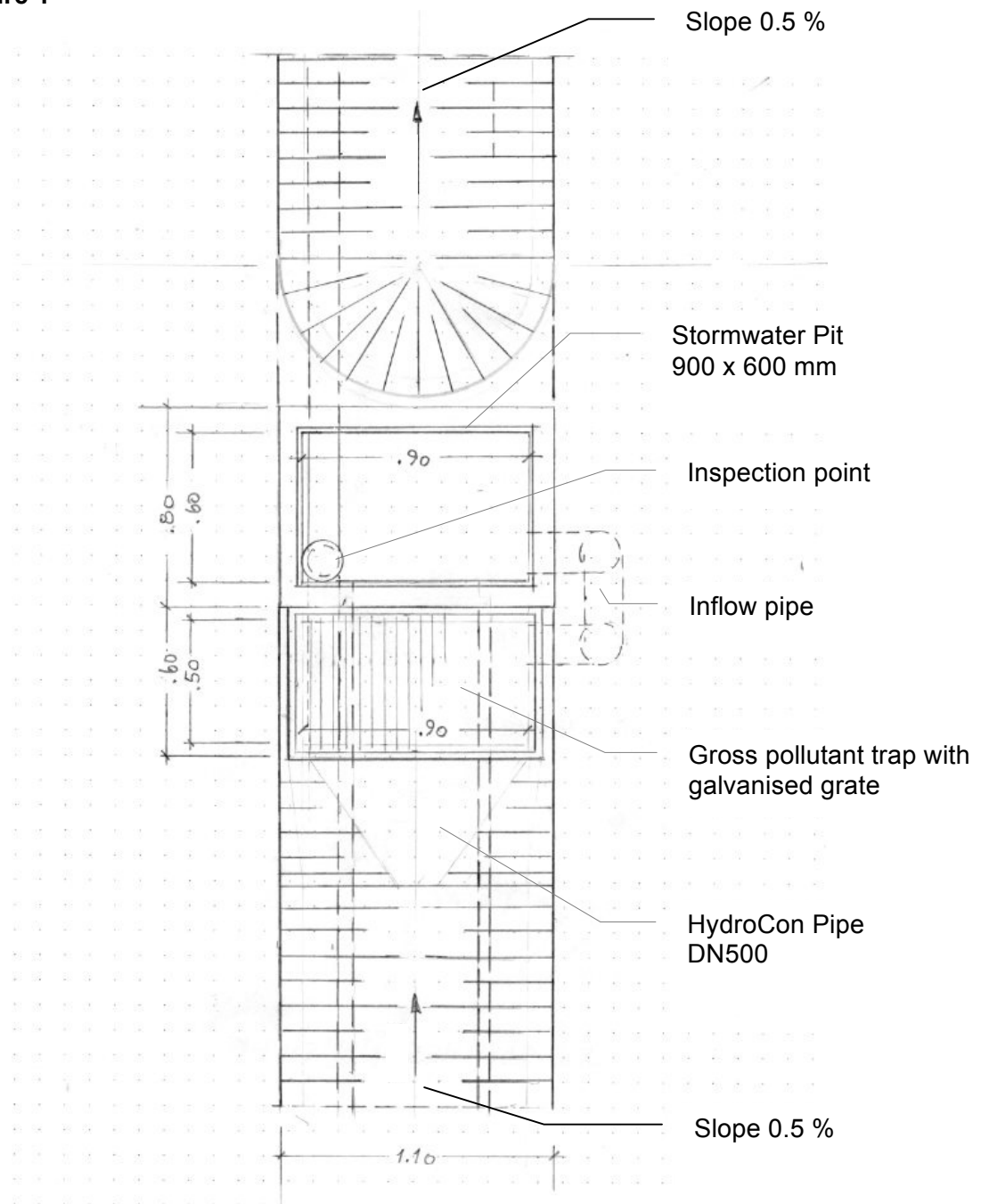


Figure 2

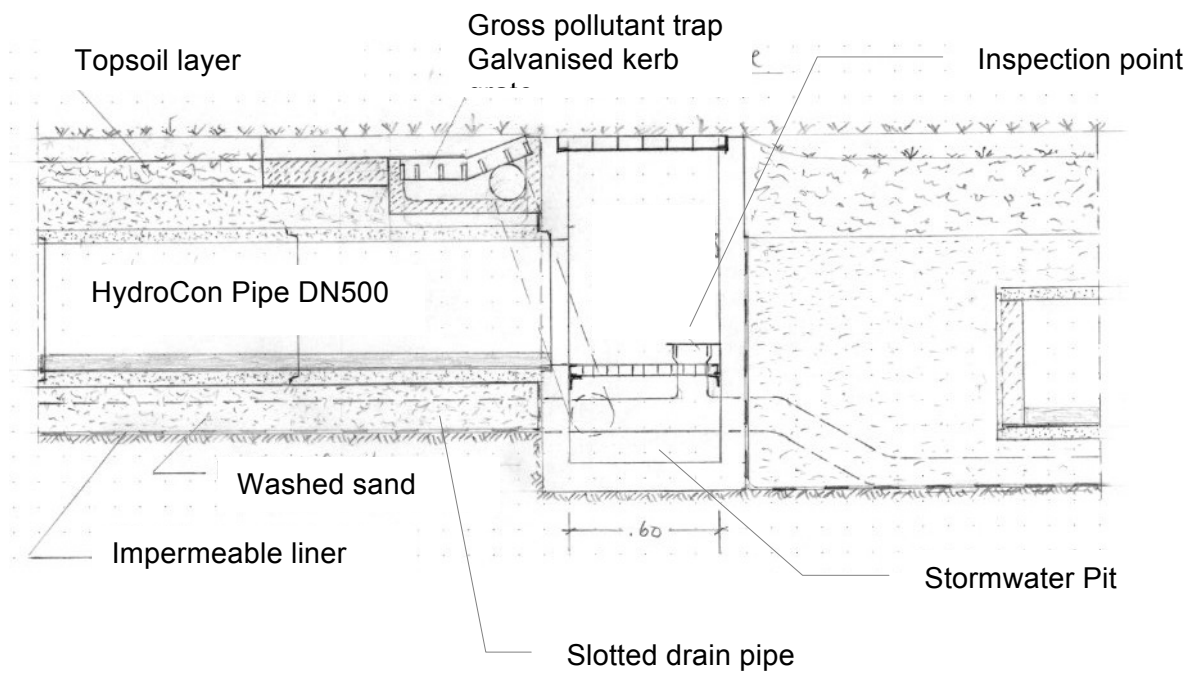
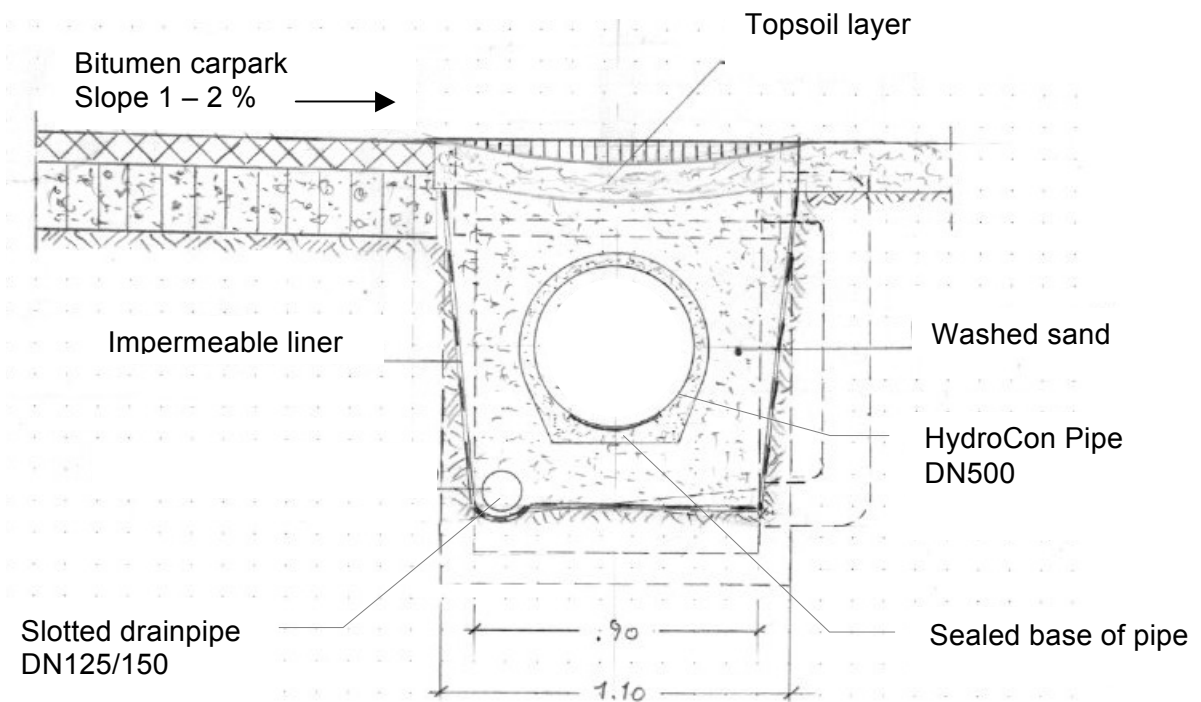


Figure 3



[illegible]

Line	m
1	50
2	50
3	65
4	65