

## Stormwater Management Plan Report

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ENGINEERS

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## STORMWATER MANAGEMENT

### Design

This Stormwater Management Plan takes into account the Victorian best practice stormwater performance targets as set out in the Urban Stormwater Best Practice Environmental Management Guidelines (BPEMG). As per the guideline, stormwater discharged from the site to authority's point of discharge should meet the following objectives.

- To improve stormwater discharge quality
  - Suspended Solids – 80% retention of typical urban annual load
  - Total Nitrogen - 45% retention of typical urban annual load
  - Total Phosphorus - 45% retention of typical urban annual load
  - Litter - 70% reduction of typical urban annual load
- To promote stormwater retention and re-use.
- To mitigate the detrimental effect of development on downstream waterways.
- To reintegrate urban water into the landscape to facilitate benefits such microclimate cooling, local habitat and provision of attractive spaces for community use and wellbeing.
- To minimise peak stormwater flows and stormwater pollutants.

To achieve the above objectives, WSUD requirements will be met by rainwater harvesting and by installing Ocean Protect Storm Filter. A MUSIC model has been completed to demonstrate the treatment train effectiveness in meeting those requirements.

It should be noted that MUSIC model has been carried out only for the proposed development works and not for the whole college site.

Based on the MUSIC model, the following are required to meet the above objectives.

- Water runoff from all roofed areas to be collected to a minimum of 15KL water tank.
- The rainwater tank to be connected to all the toilets for reuse of water.
- Rainwater tank collection, storage and distribution to be designed and installed in accordance with plumbing regulations and relevant Australian Standards including AS/NZS 3500.3 and HB230-2008 Rainwater Tank Design and Installation Handbook
- Stormwater runoff from the terrace areas above the basement to be treated via the stormwater filtration with minimum 3 numbers of cartridges unit prior to discharge to drainage network.
- Stormwater runoff from garden area at ground level to be treated via the ocean guard litter basket and then through the stormwater filtration unit prior to discharge to drainage network.
- Rainwater tank overflow and treated runoff from stormwater filtration unit to be discharged to council's legal point of discharge.
- On-site detention (OSD) requirements do not form the part of this report. Any OSD requirements to be confirmed by the council engineer and to be addressed during the detailed design stage.

Figure 1 below provides high level indicative arrangements/model set up of the stormwater management of the site and Figure 2 shows the effectiveness of the proposed arrangement. Figure 3 shows the catchment area modelled in MUSIC.

Figure 1: MUSIC Model Setup

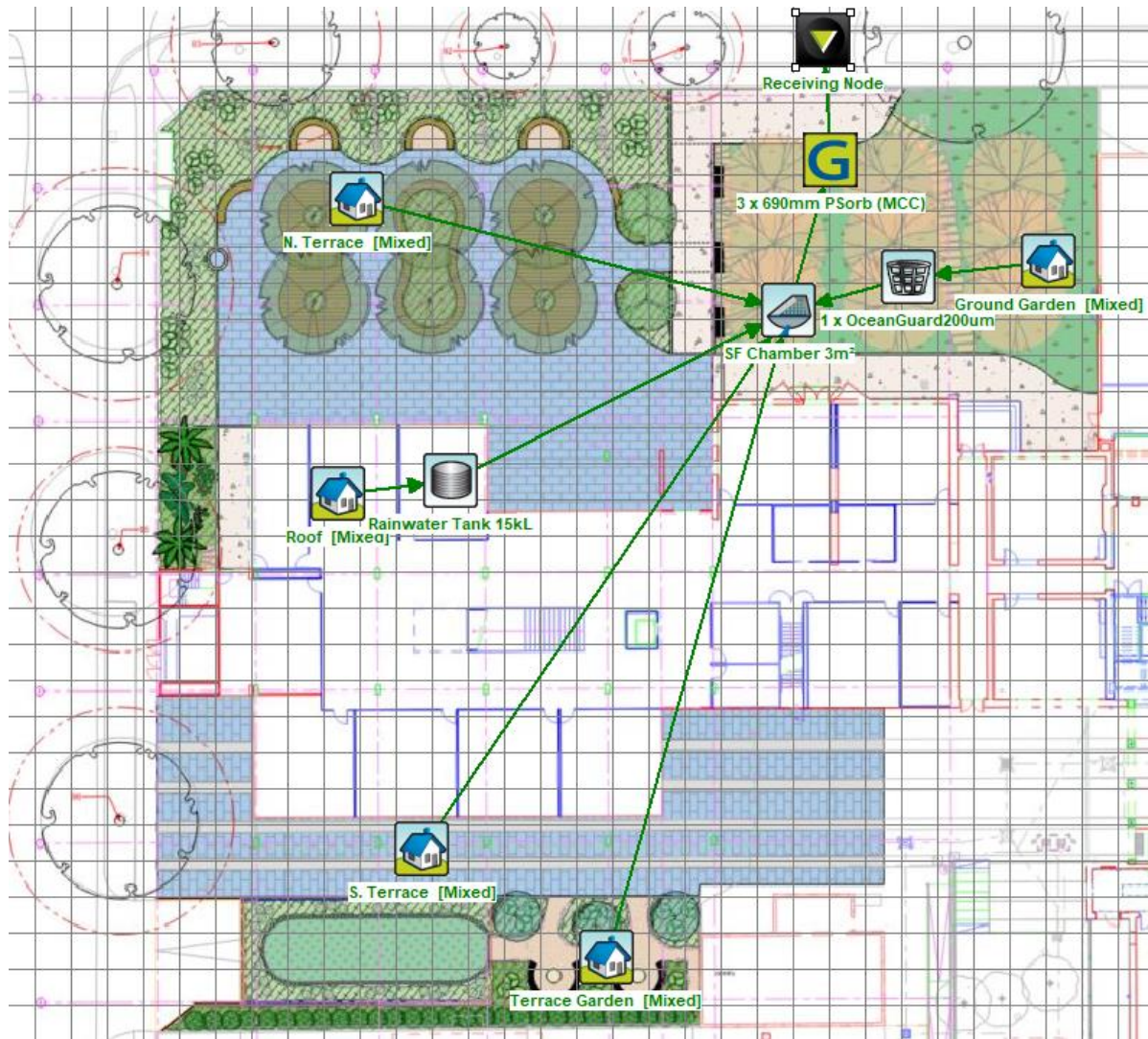
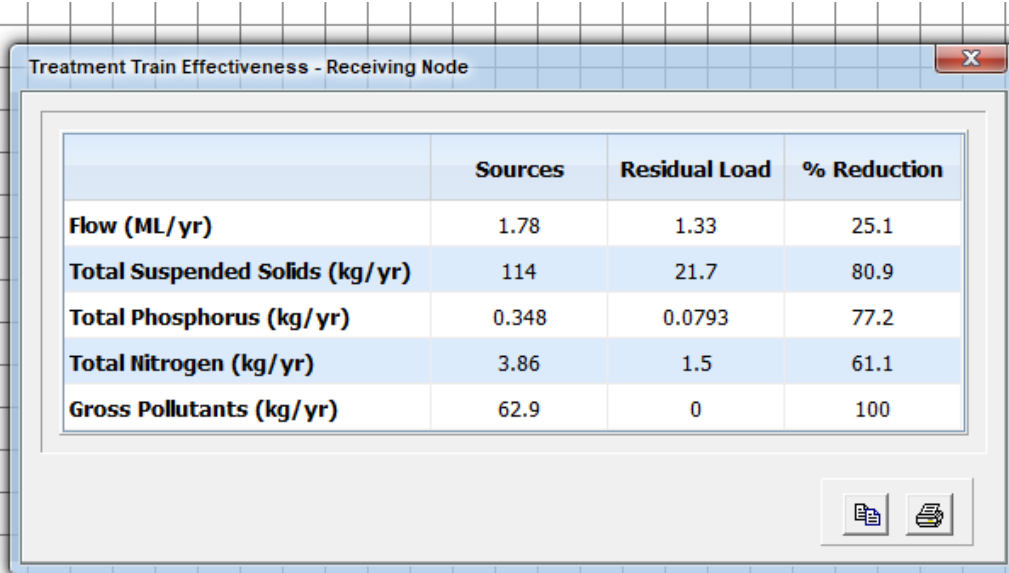


Figure 2: Treatment Train Effectiveness Result from MUSIC Model



	Sources	Residual Load	% Reduction
<b>Flow (ML/yr)</b>	1.78	1.33	25.1
<b>Total Suspended Solids (kg/yr)</b>	114	21.7	80.9
<b>Total Phosphorus (kg/yr)</b>	0.348	0.0793	77.2
<b>Total Nitrogen (kg/yr)</b>	3.86	1.5	61.1
<b>Gross Pollutants (kg/yr)</b>	62.9	0	100

Figure 3: Catchment area modelled in MUSIC



## CONSTRUCTION PHASE

During Construction, the building shall implement best practice stormwater protection by keeping stormwater clean, which can be downloaded via: [https://www.clearwatervic.com.au/user-data/resource-files/Keeping\\_Our\\_Stormwater\\_Clean-A\\_Builders\\_Guide\[1\].pdf](https://www.clearwatervic.com.au/user-data/resource-files/Keeping_Our_Stormwater_Clean-A_Builders_Guide[1].pdf)

At minimum, during construction phase, the contractor shall provide the following works to comply with requirements.

- Manage all construction activities within site boundaries
- Retain vegetation around the perimeter of the site wherever possible throughout construction up until landscaping
- Cover stockpiles, contain litter in bins within the site
- Manage any chemical disposal as per EPA guidelines
- Provide soil and erosion control plan and at all times and remain responsible for compliance with all laws and regulations pertaining to safety and protection of the environment.
- Provide crushed rock at site entrance to provide dry access point to vehicles
- Provide geotextile filter fabric fence along the whole site boundary to prevent any sediment from entering the adjacent lots or downstream stormwater systems
- Wrap the grated pit covers in geotextile fabric during construction works to prevent the council's drainage infrastructure and receiving waters from sedimentation and contamination
- Ensure to keep the access road clean of all construction material during and prior to construction works
- Submit soil and sediment erosion control plan to council prior to construction

Further to above, any specific requirements set by Bayside City Council will need to be complied by the contractor during the construction stage.

If you have any queries regarding the above response, please feel free to contact us on 9885 4335.

Yours sincerely,

Akhil Shrestha

Senior Civil Engineer

**ACOR Consultants (VIC) Pty Ltd**