Suite 201, 531 Kingsway
Miranda NSW 2228
w: www.greenview.net.au
Greenview Consulting Pty Ltd
A.B.N 32 600 067 338

Stanton Dahl Architects

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06.02.2024

Job Number
230291

Stormwater Issues for proposed development
70-72 Gordon Avenue, South Granville NSW
Ref: OA2022/0010

Dear Sir/Madam,
Please find following our response to Council's issues raised in their 21st December 2023 letter.

1. The overflow from the rainwater tank is stated as charged line. No information provided for the overflow pipe invert level the pipe from the rainwater tank to the HED chamber.

Greenview note this is a roofwater line connecting TO the rainwater tank and it is not charged FROM the rainwater tank.

2. The section of the HED control pit and overflow pit is insufficient to appreciate the long section profile of the OSD tank, noting that the OSD tank is long and narrow.

The flowrate formula for a rectangular weir $Q = C * L * H^n$
Where;
Q = Flowrate
C = Flow coefficient, used conservatively as 1.3 for concrete weir
L = Length of weir
H = Height of weir
n = Shape of weir (for rectangular n = 1.5)

For the HED weir (3.2m weir length, 0.2m weir height to underside of slab, 1.3 flow coefficient, Q = 149 L/s. Calculating the whole site (conservative as there is bypass) in the 1%AEP event results a max flowrate of 97 L/s. Therefore, this weir can be deemed sufficient.

For the overflow weir (2.7m weir length, 0.1m weir height to underside of slab, 1.3 flow coefficient, Q = 111 L/s. Calculating the whole site (conservative as there is bypass) in the 1%AEP event results a max flowrate of 97 L/s. Therefore, this weir can be deemed sufficient.

3. The runoff from the car parking area and the driveway should undergo treatment. In this regard, the runoff must be directed into the treatment system. However, it is noted that the filtration system (jellyfish) is provided at the downstream side of the OSD system that will result in treatment of flow for whole duration. It is recommended to separate initial flow high in pollutant concentration to be treated rather than the runoff for the while duration.

Greenview notes that the design meets the water quality targets. Additionally, there is a grated drain at the boundary which picks up the driveway bypass and puts it to the Jellyfish unit for treatment.

OceanProtect has provided confirmation that the Jellyfish system can stay online given the low total flowrate.

Please see below email excerpt from OceanProtect:

"*Typically we require Jellyfish systems to be arranged offline with low flow splitter upstream, however the online Jellyfish arrangement is ok in this instance since the treatment flow rate capacity exceeds the 100yr incoming piped flow. The treatment flowrate capacity with the 230mm weir is 11.25L/s. Flow can never over top the internal weir.*

The standard approach in Cumberland LGA is to split flow with the 3mth flowrate diverted to the treatment device. Since this system will never bypass flow, we are overachieving in performance. Should we consider adjusting the design to replicate Councils preference for high flow bypass, the Jellyfish size would need to be reduced. It likely the water quality objectives would not be met."

It is noted that the provision for filtration baskets, however, it is recommended that each of the grated access opening within the car parking area and driveway should be provided with the filtration baskets for removal of pollutants such as the sediments, lotters, Hydrocarbons, oil & grease etc.

Greenview notes that all pits on the site are to have OceanProtect OceanGuard filtration baskets, so these pits do have filtration baskets in them.

4. The details of the Jellyfish including model type, flow rate, invert level of inlet and outlet has not been provided. The submerged orifice condition was mentioned However the tailwater level has not been shown. The OSD calculation using council's excel spreadsheet should be used for the OSD design calculation and to account for the submerged orifice condition. However, noting the inlet and outlive of the "Jellyfish StormFilter" proposed at the downstream side of the OSD system the OSD system does not appear to function as intended.

Details provided on updated plans. Greenview confirms that the submerged case has been checked and the OSD storage is large enough to compensate for the loss in head due to Jellyfish Weir.

5. The OSD storage volume proposed insufficient and less than the minimum required.

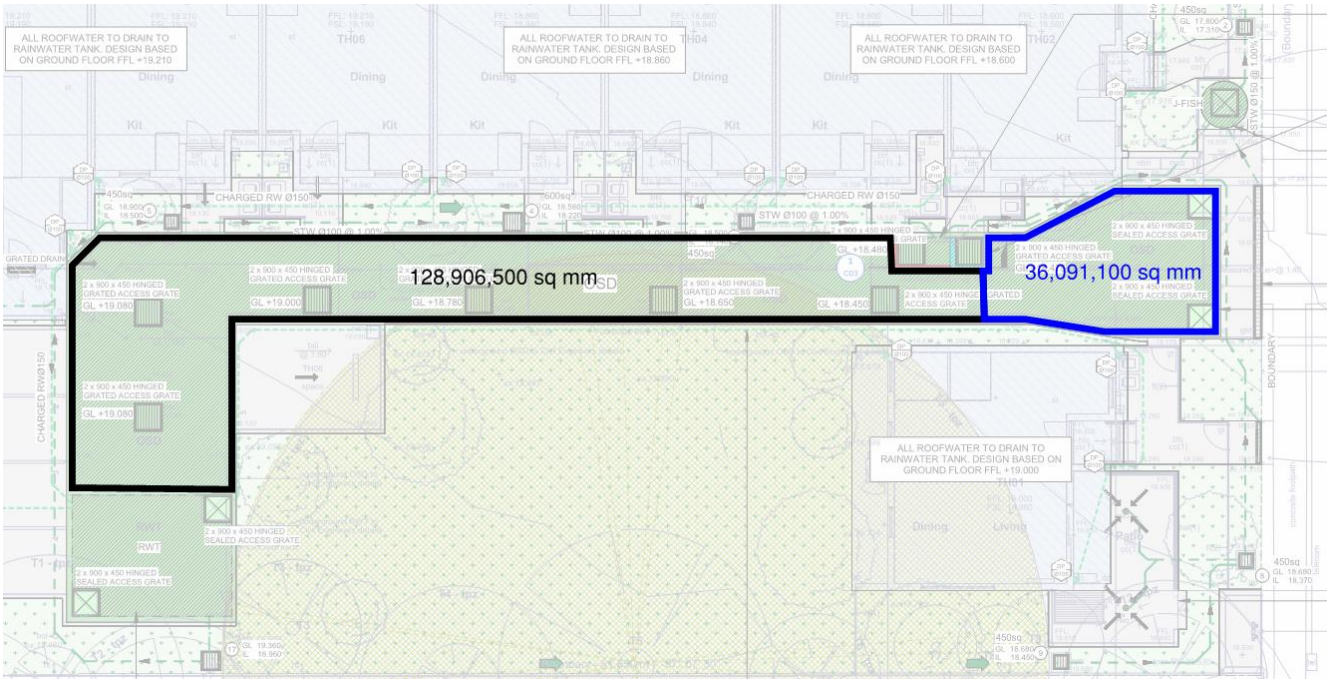
OSD volume has been checked twice and is sufficient even in the submerged case. OSD achieved 90m3 and requires 82.6m3 in the submerged case. Refer detailed volume calcs below.

Black section, 128.9m2 plan area, TWL = +18.175mAHD, longest run = 32.5m, invert level at hed chamber = +17.45mAHD, therefore highest base of tank invert level = +17.45 + 1% * 32.5m = +17.775mAHD. Average base RL therefore equals +17.6mAHD. TWL – average base RL = average depth = 0.575m. Therefore, volume achieved in black section = 74.1m3

Blue section, 36m2 plan area, TWL = average RL of slab – 200mm for slab = +18.1225mAHD, longest run = 10m, invert level at HED chamber = +17.45mAHD, therefore highest base of tank invert level = +17.45mAHD +1% * 10m

= 17.55mAHD. Average base RL therefore equals +17.50mAHD. TWL – average base RL = average depth = 0.423m. Therefore volume achieved in blue section = 15.2m3

Total volume = 74.1 + 15.2 = 89.3m3 > 82.6m3 in submerged case. Design allows for 6.7m3 of structural walls internal.



6. The HED chamber requires a dry platform covering at least half of the bay area and the remaining half a sump of 300mm deep. The sump must have 2 x90mm dia relief drain(weep holes) filled with the 5mm gravel (blue metals) to act as filter media for dissipation of stagnant water into the surrounding ground.

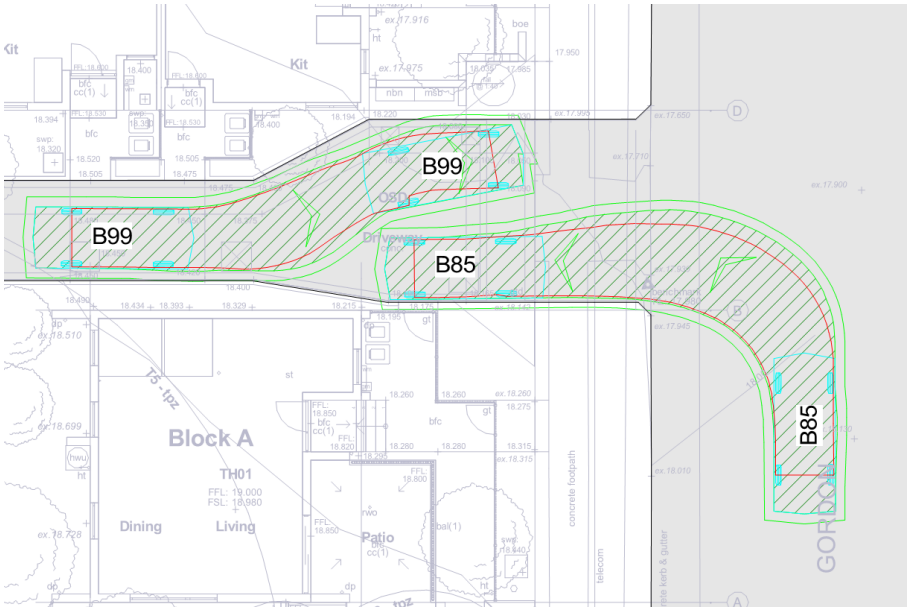
Noted and revised on updated plans.

7. The outlet pipe from the overflow chamber is locate higher than the invert of the pit and results in stagnant water below the invert of outlet pipe. The outlet pipe should be lowered.

Noted and revised on updated plans.

Parking / Access
It is noted that the waiting bay within the property boundary for inbound vehicle will cause encroachment and obstruction to the manoeuvring path of the vehicle exiting the site.

Greenview notes this was addressed previously and swept paths have demonstrated an exiting vehicle is able to pull to the left and exit whilst a vehicle enters. Refer updated swept path analysis on C13 and screenshot below (1 part of the swept path)



Please do not hesitate to contact us if you require clarification or further information on any of the above issues.

Yours faithfully,

For & on behalf of Greenview Consulting,

Prepared by:

Jesse Wilson

Civil Engineer

Reviewed by:

Alistair McKerron B.E., M.I.E.(Aust.), CP Eng., NPER no 2220277

Senior Project Engineer

greenview CONSULTING