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## **Stormwater Response**

### **2 Bachell Avenue Lidcombe**

#### Introduction

We have been provided with Council's RFI letter dated 30 July 2024, and the Cumberland Design Excellence Panels meeting minutes from 16 June 2024.

This covering letter seeks to address the relevant items from said RFI and DEP meeting and is to be read in conjunction with the amended stormwater drawing package.

#### COUNCIL RFI

##### General Planning/Comments

##### *Item 8*

*Please ensure that any reports and plans such as but not limited to Acoustic, Arborist stormwater plans, accessibility, landscape plans and so forth are also updated to reflect the matters raised throughout this letter and are consistent with the changes made.*

Updated stormwater plans and an updated MUSIC model accompany this covering letter.

#### Engineering

##### General

##### *Item 2*

*The proposed culvert to be relocated on the eastern side boundary does not appear to have sufficient gradient.*

The culvert is being assessed by Sydney Water and no objections have been received for the gradient of 0.8%. Culverts and larger pipes can have a gradient of 0.5% or steeper (AS3500.1)

#### Stormwater

##### *Item 12*

*The drainage system of basements particularly the basement level 2 needs to be appropriately designed noting that the water table within the site is just around the surface within (the few meter from the surface approx. 2.8m below the ground level). Detailed calculation for subsoil infiltration rate must be provided and the pump-out system provided must have sufficient i) holding capacity to allow for pump failure up to 12 hours and ii) sufficient pumping rate.*

The basement is to be a tanked structure. Refer to the note provided on the basement 2, Basement 1 and Lower Ground Floor updated stormwater plans.

*Item 13*

*The On-site detention(OSD) tank must have overflow chamber incorporated to maintain the top water level. In addition, appropriate measures shall be incorporated to provide emergency overflow escape route and manage emergency overflow.*

The OSD design provided for this development does not require the incorporation of an overflow chamber. The emergency overflows are located in the open loading dock adjoining the northern driveway. In the event of a blockage which may cause the OSD system to overflow, this would be visible to the building users and therefore can be resolved, unlike a system with an overflow chamber when any blockage would not be visible as the overflow is dealt with via the chamber. 3x900x900 grated openings are dedicated to the overflow.

We further note that we can't locate the requirement for an overflow chamber in Councils DCP.

*Item 14*

*The details shown on the cross-section of the OSD tank is insufficient. Additional cross-sections are needed to provide clarity and how the water quality improvement measures are incorporated. In addition, the ODS tank plan showing the invert levels of tank floor slab must be provided.*

A long section through the HED and the OSD, including the overflow grate are added in the updated stormwater plans for the additional information.

*Item 15*

*Sufficient grated opening shall be provided (around each corner of the OSD tank) for improved cross-ventilation.*

Additional openings at or close to the OSD corners have been provided on the updated stormwater plans.

*Item 16*

*The stormwater plan of ground level lacks labelling and clarity. There appear to be few unlabelled components. The layout of the pipelines shall be shown clearly with darker lines on the ground level plan. The layout shall show how the runoff from each of the sub-catchments are directed into the OSD/WSUD system.*

We note that the minor number of elements which were inadvertently unlabelled has been addressed in the updated plans.

In lieu of showing the lines in bold, colour coding of the system has been used to show how each of the runoff (roof and surface) are dealt with.

*Item 17*

*The OSD system must be designed based on the **Tail-water level** at the point of discharge and the OSD storage adjusted accordingly. The tailwater level is either the flood level (or the top of kerb level if the site is not affected by the flood). Since the pit, if proposed to be discharged into a kerb inlet pit.*

*It is noted that the outflow from the OSD tank is proposed to be discharged on to a pit at the proposed to be located on the northern side. The flood level at the location is noted to be approx. 12.6mAHD. Hence, the OSD design shall take account of this flood level. The proposed orifice and the OSD tank will be lower than the flood level and the floodwater is likely to backflow into the OSD tank.*

A tail-water level of 12.54 m AHD has been extracted from the TUFLO model by GRC Hydro. The OSD was initially designed with no tail-water and then checked against the submerged case which resulted in an increased OSD volume. The calculations are shown on the revised stormwater plans.

*Item 18*

*Information on the point of disposal in the public stormwater drainage system (such as the Sydney water stormwater Drainage system (Pipe /pit, channel etc.) on to which the site stormwater is intended to be discharged must be provided by conducting the appropriate survey investigation by a suitably qualified surveyor and the details shown on the Survey investigation plan.*

*No details provided as to how it is proposed to be connected. In addition, the connection into the public drainage system shall be made at a higher level (not to the invert) to prevent the outlet pipe being blocked by the sediments debris and/or to prevent backflow of floodwater due to hydraulic gradient difference.*

The outlet is proposed to be connected to the re-located culvert wall with the invert of the outlet pipe at RL 10.6 m AHD which is 600 mm above the culvert's invert. Refer to the updated stormwater plans.

*Water quality Improvement Measures (WSUD)*

*Item 19*

*In accordance with the **Section 2.5 and 2.7 Cumberland DCP2021 Part G4**, the development must incorporate the **water quality improvement/ Water Sensitive Urban Design (WSUD)** measures to comply with the controls outlined therein and achieve the pollutant removal targets. The **WSUD** measure must accompany a MUSIC model.*

*Arrangement must be made to collect and separate the first flush, i.e., the initial flow that contains high concentration of pollutants such as the initial flow equivalent to approx. 1 in 3 month's flow from each catchment, to be collected and treated fully without being escaped untreated. In this regard, a device known as high-flow bypass chamber (also termed as high-flow diversion chamber) shall be employed to separate the initial flow (first flush) which is allowed to pass through a low level flow outlet into the water quality treatment / filtration system, and the flow exceeding that rate to be discharged through the high level overflow or outlet pipe into the OSD system or rainwater tank if a rainwater tank is provided. However, the overflow from the rainwater tank should be directed into the HED control chamber.*

*The outflow from the filtration system that cannot be directed into HED control chamber due to the hydraulic grade line shall be directed into the overflow chamber and the outflow and the orifice diameter shall be downsized accordingly to account for the outflow from the filtration system that bypass the OSD system.*

*The capture of 1 in 3 month's flow and redirection into the filtration system is illustrated in the diagram below. **(Refer to the illustration diagram below).***

This has been addressed in the updated stormwater plans and updated MUSIC model. The proposed volumes of the first flush tanks are larger than the 1 in 3 months flow volumes of the contributing catchments.

*Item 20*

*The pollution removal targets must be demonstrated with the supporting documents including the MUSIC model with the input parameters and output results. Further, the removal efficiency parameters input in the model must be consistent with the manufacturer's pollutant removal efficiency.*

This has been addressed in the updated stormwater plans and updated MUSIC model. MUSIC model data set will be emailed to the Council separately, because it cannot be uploaded to the portal.

*Item 21*

*The music model must be consistent and reflect the arrangement of each component of the treatment system shown on the stormwater plan. further clarity needed to be shown on the plan and that with regards to the labelling of the MUSIC model components.*

This has been addressed in the updated stormwater plans and updated MUSIC model.

DEP MEETING MINUTES

*Over articulation of the courtyard circulation areas and building mass leads to poor weather protection and maintenance issues. Rain-water to be handled on open corridors – glass balustrades act as water-trap – open balustrades cause linear dripping/flowing of water.*

All rainfall is appropriately captured. The stormwater design does not rely on, nor encourage cascading water cascading water.

*In general the site is overdeveloped, internal arrangement, fire egress strategy and circulation is over complicated and not efficient. Open corridors are not weather protected, creating stormwater management issues. Considering the special shape of the site the FSR increase and the height increase not supported.*

Rely on the previous comment. The proposal ensures stormwater management is not an issue for the proposal.

We trust this meets Councils requirements.

Yours faithfully,



Pavel Kozarovski

Attachments:

Updated stormwater plans

Updated MUSIC model