

19 June 2018

Vicas & Swapna Sharma
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Hydraulic engineering design for the proposed alterations and additions at 12 Naree Road.

Dear Vicas and Swapna

Stellen Consulting was engaged to assess the proposed alterations and additions at 12 Naree Rd in reference to stormwater drainage. This assessment supports the development application for a change of use from residential to health consulting rooms.

The site falls naturally away from the kerb in Naree Road. A charged system is proposed to drain the roof areas from the existing dwelling; no drainage infrastructure is proposed to drain the pervious car parking area at the rear of the site. The proposed stormwater system has the following key design components:

- The existing dwelling is charged to an open grated boundary pit with two gravity lines to kerb. An open grated pit was used to provide a visual indication of the presence of blockages in the kerb outlet lines.
- To minimise any overland flow entering neighbouring properties, eaves gutters and the piped stormwater system have been designed for the 100yr ARI stormwater event. Leaf gutter guards and an additional kerb outlet have been proposed to reduce the risk of blockage (refer Exceptions, item 1 below).
- An absorption / level spreader to treat stormwater flows from the impervious portion of the driveway (33m²) at the site entry/exit was considered but deemed unnecessary. Stormwater from the proposed driveway ramp will disperse (sheet flow) onto a pervious surface and hence act in a similar manner to that of a level spreader.
- Stormwater disposal (for the site) utilising an on-site absorption system was dismissed due to the presence of stiff clay and Hawkesbury sandstone in the local area.

Stormwater disposal in the form of a level spreader at the rear of the site was considered but eliminated due to the carparking facility at the rear and the availability of a charged outlet the kerb in Naree Road.

The stormwater management plan for the proposed alterations and additions at 12 Naree Rd, Frenchs Forest is described in the following Stellen Consulting drawings:

DR-000 Revision 0 Legend

DR-001 Revision 0 Pipe Layout & Details

DR-002 Revision 0 Roof Layout & Site Areas

The stormwater management plan conforms to the relevant requirements of the following with noted exceptions:

- i) National Construction Code (2016)
- ii) Australian Standard AS3500.3 – Plumbing and Drainage: Part 3 Stormwater Drainage
- iii) Northern Beaches Council (Warringah) – Pol 136 – Stormwater Drainage from Low Level Properties Technical Specification
- iv) Northern Beaches Council (Warringah) – On-Site Stormwater Detention Technical Specification ^(1, 2)

Exceptions:

1. Gravity drainage for surcharging stormwater flows from the boundary pit to the kerb is not possible due to the surface levels and grade of the site. To address this, an additional 200x100 galvanised steel RHS section is proposed to provide redundancy and function as an emergency overflow in the event that one outlet becomes blocked. Each pipe is capable of servicing the 100yr flows generated by the roof independently.

2. The application of an on-site detention (OSD) system for the site was investigated and found to be impractical and is not recommended for the following reasons:
 - a. The size of the OSD ($\approx 22\text{m}^3$) was approximated using the simplified method (outlined in council's On-Site Stormwater Detention Technical Specification). Based on the surface RL's at the front of the site (RL 135.6) and minimum gutter invert (IL 138.12), in order to provide a minimum of 1.5m available head required by council's policy the maximum tank height is 1m. The only possible location on site where the OSD can drain via gravity to the kerb is the southeastern corner. Given the OSD size and the available head restrictions, locating an OSD system on this site is not feasible.
 - b. The proposed development has an impervious area of 33.3% and proposes a net impervious area reduction of 191.6m^2 when compared with the pre-developed conditions and reduces peak stormwater runoff from the site.

We recommend the stormwater design (as described in the drawings) as a safe and practical solution to support the development.

Please contact me if you have any inquiries.

Kind regards,

Stuart Steinle-Davies



Engineer

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Drawing List

Architectural Plans by Perfect Practice
Date: 18/05/18
Job Number: E1688
Drawing Number:
101
102
103
104
105