

JN: 193425

8 March 2021

Barney Oros
Hailiang Property Group
By e-mail: barney_oros@Hailiang.com

Re: 445-459 Canterbury Road Campsie – Private Hospital development
Stormwater advice

Dear Barney

I am writing in response to a letter issued to HPG by Council as a response to your planning proposal for a private hospital and associated uses at the subject site. Specifically, my field of expertise is in relation to stormwater.

Introduction

Within Council's letter, the following commentary was provided:

Details on the following is also requested:

- Water Sensitive Urban Design (WSUD) elements were not discussed in the planning proposal report. It is recommended to incorporate WSUD elements where possible throughout the development site. Please provide appropriate WSUD principles and controls to inform the DCP
- It is desirable that the provision of on-site/localised water recycling facility to support sustainability should be considered to provide recycled water for all toilet flushing, clothes washing, irrigation etc. Please provide details for inclusion in the future DCP.
- Demonstrate how the proposal will maximise deep soil provision at 15% of the site and achieve 5% tree canopy cover across the subject site. The DCP should specify minimum deep soil areas and minimum deep soil area widths.

Water Sensitive Urban Design

I note the following in relation to the development and its drainage:

- The site will have three frontages to streets on the south, west and northern sides. The northern street frontage is a proposed laneway which is not yet constructed.
- There is currently no drainage in the adjoining streets – as evidenced by lack of stormwater pits in these locations.
- There is landscaped open space on the northern laneway frontage. This could be incorporated with drainage to allow for detention and infiltration of stormwater, i.e. WSUD
- The site design incorporates a lower ground floor and basement level, both which could be used to house a tank for stormwater treatment.



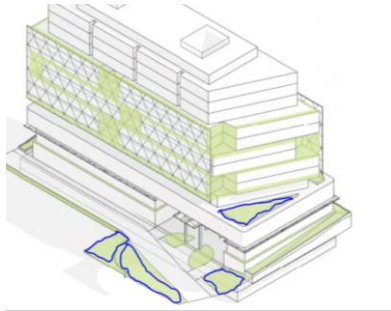
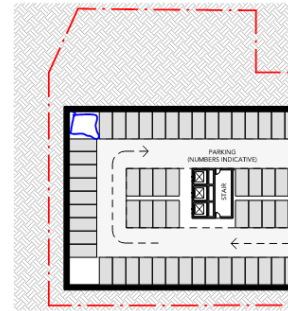
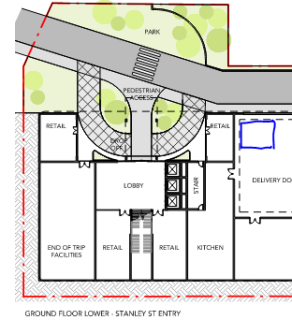
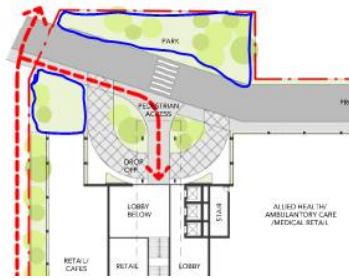


Figure showing potential WSUD locations within the site – shown in blue.

On the LHS is area where drainage can be combined with landscaped areas.



On the RHS is areas within the building where a WSUD tank could be located.



In areas where drainage is combined with landscaping, the result would be a raingarden. This would require the garden to be sculpted as a depression where drainage water can pond and infiltrate into the soil profile. Water in excess of the capacity of this feature would overflow into the local drainage network, i.e. the street.

If the raingarden areas cannot be used due to other constraints, a tanked area would need to be provided in the building – either on the lower ground floor, or in the basement. Within the tank would be located a proprietary water quality filter device, e.g. Oceanguard's Stormfilter. Both are shown below.



Any combination of the above-mentioned methods would be modelled in MUSIC to demonstrate compliance with Council's DCP and/or other Council standards/policies. The next version of the design would incorporate the WSUD devices with the associated modelling results demonstrating compliance.

Water recycling

While the notion of recycling water is supported, the provision of recycled black water (i.e. treated sewage) for a development of this scale is not considered feasible. It requires a substantial investment of capital and operational effort and costs. Licensing of such systems is controlled by the Water Industry Competition Act which requires a proponent to demonstrate through complex compliance reporting that the system is capable of delivering Class A water 24/7. It would require a dedicated and trained staff position to operate and maintain the system. This is not considered core business for a hospital.

Instead, rain water harvesting and reuse is proposed. One or more tanks would be proposed in a/d/or around the building to store this water, which would be used for lower levels toilet flushing and landscape irrigation. The design of such a system would feature on the next stage of design for the proposal.

The WSUD and water reuse measures proposed in this letter would need to be coordinated with deep soil and tree canopy requirements.

I have sought to respond to Council at a high level to demonstrate that their requirements can be achieved with further coordinated design of the development. I would be pleased to provide further advice to clarify any matter, as required.

Yours faithfully,



Mal Brown

Principal | Senior Engineer
M Env't Eng; B Env't Sci (Hons)

On behalf of Northrop Consulting Engineers Pty Ltd