18th September 2020 Orion Ref: 20-0213

Dimitri Roussakis
Development Manager
Longhurst Group
Level 31, Governor Macquarie Tower
1 Farrer Place Sydney NSW 2000

Dear Dimitri,

RE: Edgecliff Centre Planning Proposal
General Advice - Stormwater Management and Flooding

Orion Consulting has been engaged to provide general strategic engineering advice to support Longhurst Group's Planning Proposal to redevelop the Edgecliff Centre (the site) located at 203 New South Head Road, Edgecliff. The proposed development is for mixed commercial and residential use with integrated connections to Edgecliff Station.

Site Location and Topography

Located within the Rushcutters Bay Catchment, the site is situated near a local crest on New South Head Road, just inside the north eastern edge of the catchment boundary (refer to Figure 1). Due to the proximity of the site to the upper reaches of the catchment, there is a comparatively small upstream catchment that drains to the site from the intersection between Ocean Street and New South Head Road.

The landform generally grades to the south and west of the site below New McLean Street with an approximate difference in elevation of 20m from New Mclean Street down to Trumper Oval. From our assessment of both the site survey plan and the available NSW lidar data, the surrounding roads of Ocean Street, New South Head Road and New McLean Street grade away from the site to a sag point in New Mclean Street, discharging via street drainage and overland flow path down to Trumper Oval below.

Figure 1 overleaf shows the site location (blue dashed line) overlayed with aerial imagery and available lidar data.

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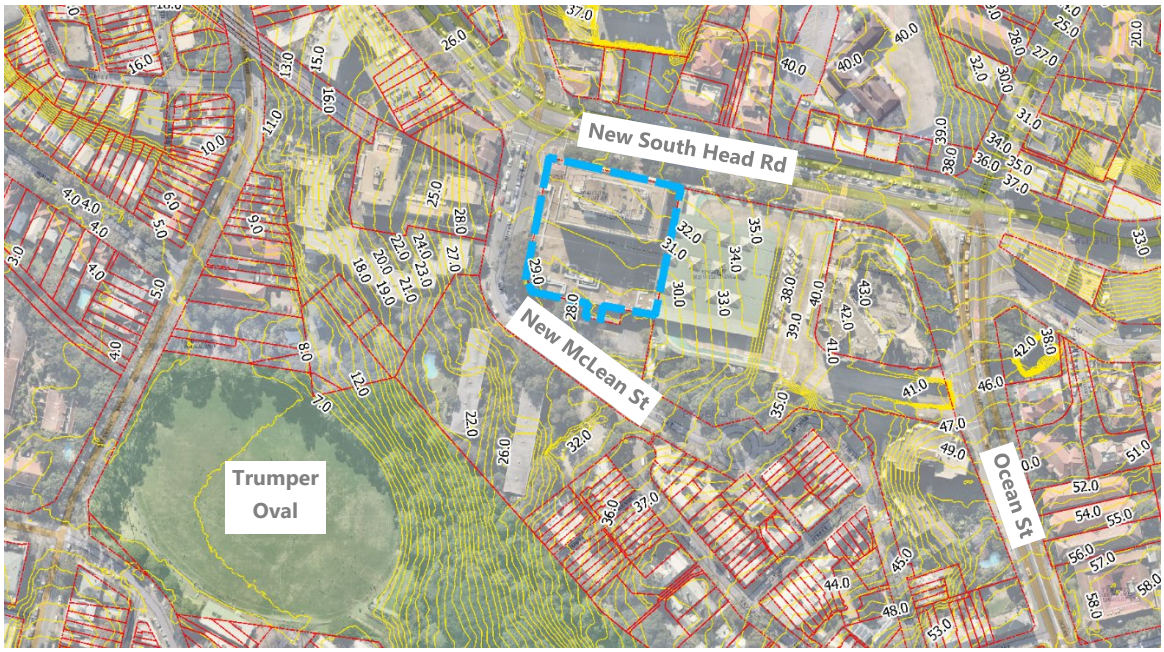

Figure 1 - Site Locality and Topography

(Sources: Nearmap © date 1st Aug 2020, NSW Government Spatial Services Lidar Dated April 2013)

Existing Stormwater Management and Catchment Characteristics

The site sits within the Rushcutters Bay Catchment and is captured within the final report of the Paddington Floodplain Risk Management Study and Draft Plan (prepared by Catchment Simulation Solutions on behalf of Woollahra Municipal Council, revision 5 and dated July 2019).

The report is representative of a detailed, in depth urban floodplain and stormwater management study of the catchment due to the existing flooding constraints. Some of the key points and conclusions of this study and report included:

- Development and implementation of a calibrated computer hydraulic (2D TUFLOW) model to quantify existing flooding issues and to test a number of flood mitigation strategies for the development of the floodplain risk management plan.

- Identification of existing underlying urban drainage issues where underground stormwater drainage networks and hydraulic structures generally exceed their capacity in major storm events leading to overland flow and flooding issues within the catchment.

- Overland flow and flooding occurring during significant rainfall events primarily within the lower elevations within the catchment prior to discharge into Rushcutters Creek, namely the streets and properties around Trumper Park, Trumper Oval, Trumper Park Tennis Centre and Glenmore Road.

- Investigation, with community and Council consultation, into the development of a floodplain risk management plan with a number of proposed structural and civil modifications within the catchment implemented on a priority flood impact mitigation basis. It is noted that no recommendations for any upgrades within the catchment are mentioned for any site, existing infrastructure or locations above New McLean Street.

An extract of the Rushcutters Bay Catchment map and embedded Paddington Study Area is shown in the figure below:

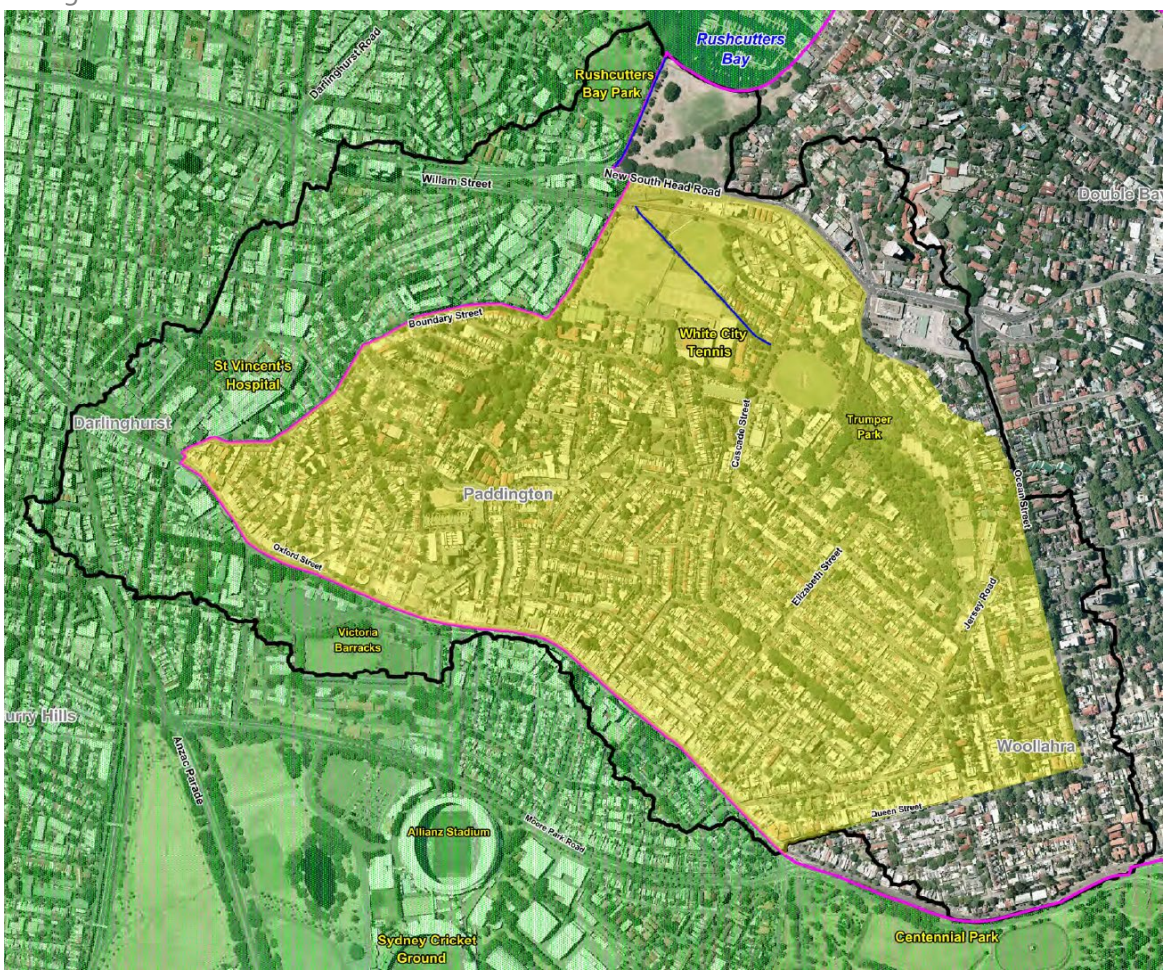

Figure 2 - Rushcutters Bay Catchment (black outline) and the Paddington Study Area (yellow).

(Source: Figure ES1 Extract from *Paddington Floodplain Risk Management Study and Draft* Plan, Catchment Simulations Solutions on behalf of Woollahra Municipal Council Rev 5)

From this study it can be concluded that, whilst there are significant urban stormwater and floodplain issues prevalent within the catchment as identified by the commissioned report, the subject site sits outside of any proposed recommended structural or civil catchment upgrades.

The Proposed Development

Bearing in mind the above and the fact that the proposal is at the conceptual, planning proposal stage of the development lifecycle, it would be more suitable for stormwater design and mitigation elements be detailed at the time the development controls and building parameters are established ie. at the development application stage.

From a stormwater management perspective, it is understood that future development application will be subject to:

- Council's controls for water quality management as identified in Chapter E2 of the Woollahra Municipal Council Development Control Plan (Chapter E2 of the DCP).

- Council's controls and objectives for stormwater quantity management and on-site detention (OSD) as identified by chapter E2 of the DCP. While subject to a detailed assessment at future stages of assessment and approval it is understood that the proposed development will not generally increase the impervious area of the site. It is our opinion that even it is possible that the proposed development will meet the objectives of this chapter without the need for any OSD. This will be subject to discussions with Council and is recommended to be discussed as part of any pre development application meetings.

  Note: This also does not preclude that OSD may be required for the development subject to a more detailed hydrologic and hydraulic assessment of the site and the capacity of the local discharge point in New McLean Street.

- Negotiations and coordination with Transport for New South Wales due to the adjacent road and rail infrastructure.

Recommendations and Conclusions

Due to its location within the catchment and our desktop assessment, it's our general opinion that the development of the site will result in no discernible impact to the greater flooding constraints within Paddington. We believe that the development will have limited impact on the existing drainage system regardless of the introduction of OSD (subject to detailed hydraulic assessment and Council assessment). If OSD or other stormwater drainage management devices are implemented, we believe this would improve on the current discharge conditions.

The application also has the opportunity to introduce some of the following engineering treatments in order to meet the required stormwater management and flood management objectives:

- Rainwater reuse and/or on-site stormwater detention storage tank(s)
- Proprietary water cartridge-based filtration systems and gross pollutant traps
- Green Infrastructure i.e. integrated living/green walls, roofs and planter boxes for stormwater and greywater harvesting as well as nutrient removal and building temperature management. As an example, the planning proposal includes an open, green space podium which could accommodate such infrastructure.

It is our opinion that adherence to Council's requirements and adopting standard best practice for the engineering design of stormwater management to accompany a future development application should be adequate to support this application to amend the site's planning controls.

We encourage open communication with Council to fully appreciate what level of assessment and engineering advice will be needed to support a development application. This is particularly relevant for the potential flooding considerations that Council may request further information on to satisfy themselves that this development will not result in adverse offsite flooding impacts.

Should you have any questions or would like an expansion to any of the general advice provided above, please do not hesitate to contact the undersigned on (02) 8660 0035.

Yours sincerely,

Orion Consulting Engineers Pty Ltd
Christopher Scholes | Civil Design Engineer