Stantec Australia Pty Ltd
Level 9, The Forum, 203 Pacific Highway
St. Leonards NSW 2065
AUSTRALIA
ABN 17 007 820 322

6 November 2024

Enquiries: Garry Neville
Project No: 304000938

Scentre Group
85 Castlereagh St
Sydney NSW 2000

Attention: Micha Hinden

Dear Micha

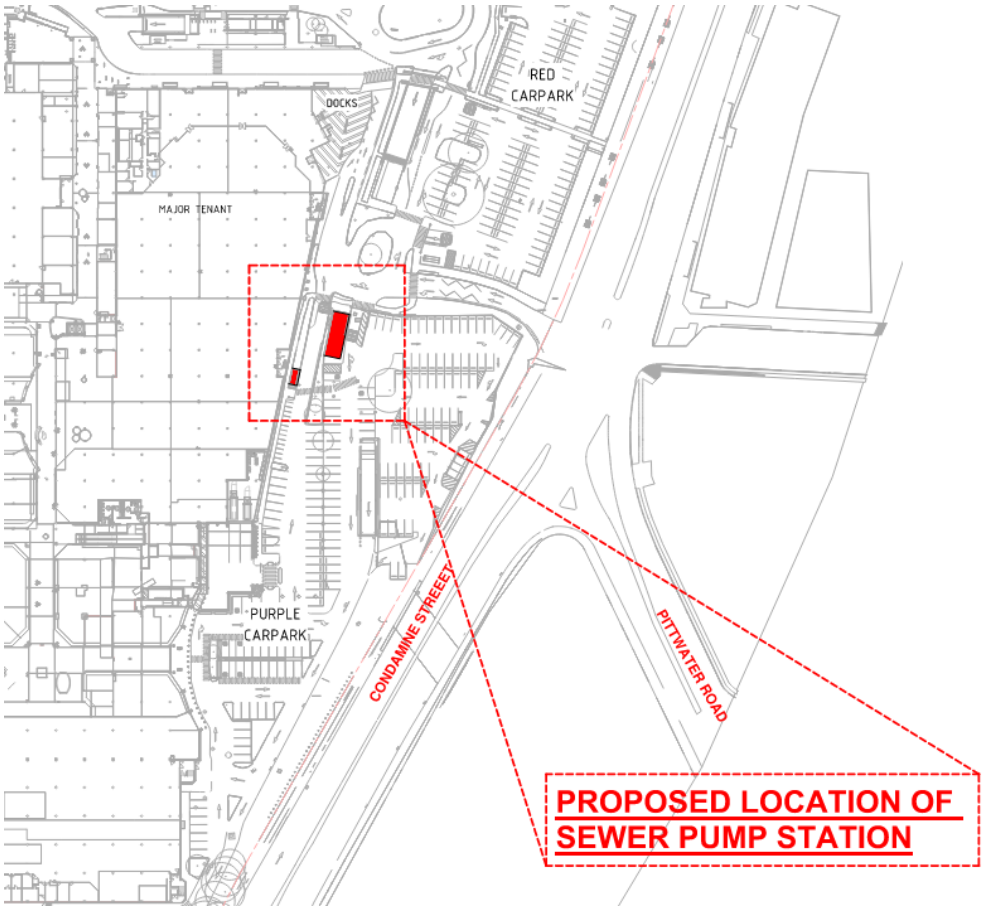
Reference: Warringah Mall - Flood Statement – Proposed Sewer Pump Station

On 31Oct24, Stantec was supplied with the following Pump Station design plans:-

- WML-C130139-DOG-GEO-RPT-54.R.001[0] Report on Geotechnical Investigation.pdf
- WML-C130139-SDC-ARC-42.0000[C].pdf
- WML-C130139-SDC-ARC-42.0001[C].pdf
- WML-C130139-SDC-ARC-42.0002[C].pdf
- WML-C130139-SDC-ARC-42.0003[C].pdf
- WML-C130139-SDC-HYD-00.0000 [B].pdf
- WML-C130139-SDC-HYD-00.0000 [A].pdf
- WML-C130139-SDC-HYG-10.0000 [B].pdf
- WML-C130139-SDC-HYG-10.0000 [A].pdf

It is understood from the supplied information that a sewer pump is to be installed at a location in Dell Street south of Kmart loading dock as shown below:-

Reference: Warringah Mall



Stantec was engaged to undertake a flood impact assessment of putting a AVAC Sewer Pump Station in the above location. This was achieved using the xpswmm hydrodynamic model previously developed for the Warringah Mall Flood Impact Study by Cardno (now Stantec) from 2006 - 2018.

A brief description of the xpswmm model is shown below:-

- Ground level for the **xpswmm2D** model was based on a DTM created from:
  - recent survey undertaken between Clearview Place and Warringah Mall,
  - pervious survey data for Warringah Mall, and
  - ground level contours in areas beyond the detailed survey that was supplied by Warringah Council.

- The current model is based on a 2.5 by 2.5 m rectangular computational grid. The model extent commences from immediately upstream of Allenby Reserve in the west to Condamine Street in the east, and Old Pittwater Street in the south and in the north.

- Separate surface roughness values have been adopted as follows:
  - Overland flowpaths, car parks, loading docks, and driveways (n = 0.06);
  - Streets and roads (n = 0.02); and

  - Stormwater conduits including box culverts and pipes (n = 0.014 to 0.018).
- All factory buildings, warehouses, commercial buildings, and residential houses and units have been “blocked out” in the model to provide a more realistic picture of overland flowpaths.

- The **xpswmm2D** model has been run for the 1989 flood as well as the 100 year ARI design flood.

- The floodplain model was calibrated to a single reported 1989 flood level in Brookvale Creek downstream of Old Pittwater Road.

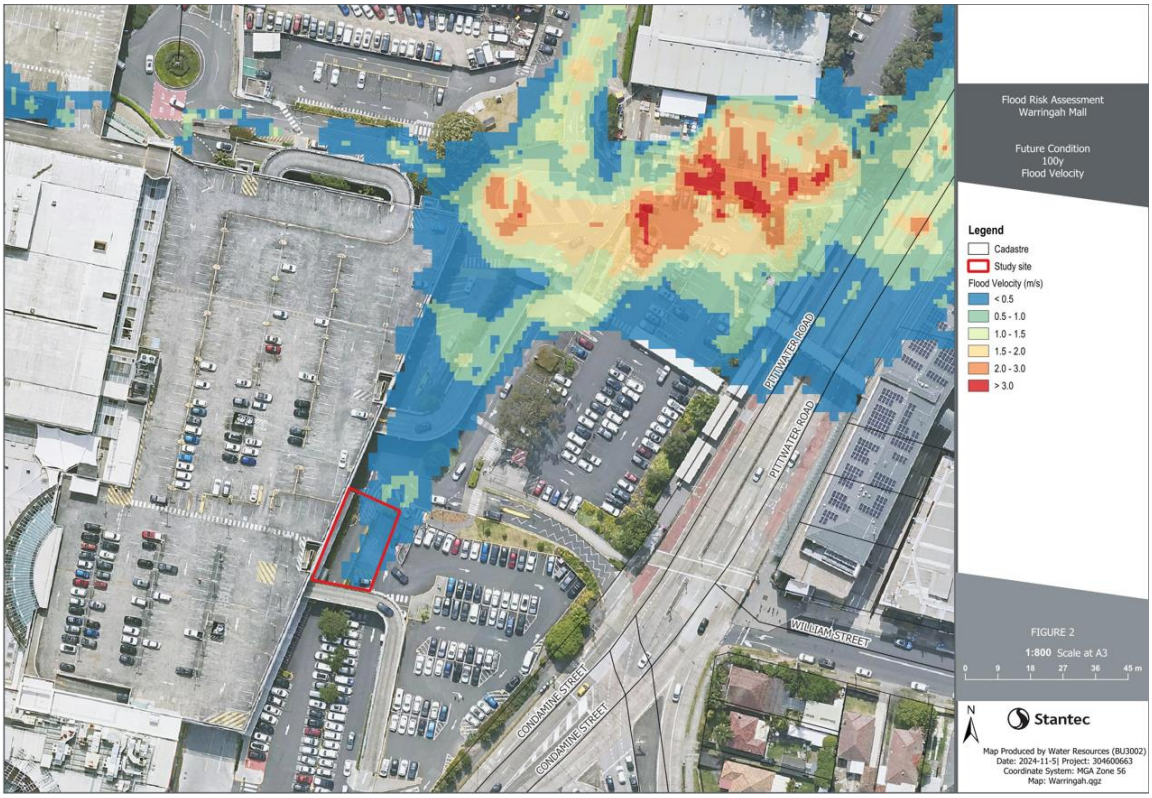
The current xpswmm model which represents the current Warringah Mall conditions has incorporated Warringah Mall’s Stage2 design with augmentation of existing stormwater drainages within and around Warringah Mall, Green Street design, Dell Street design, as well as new entrance area design from Condamine Street.

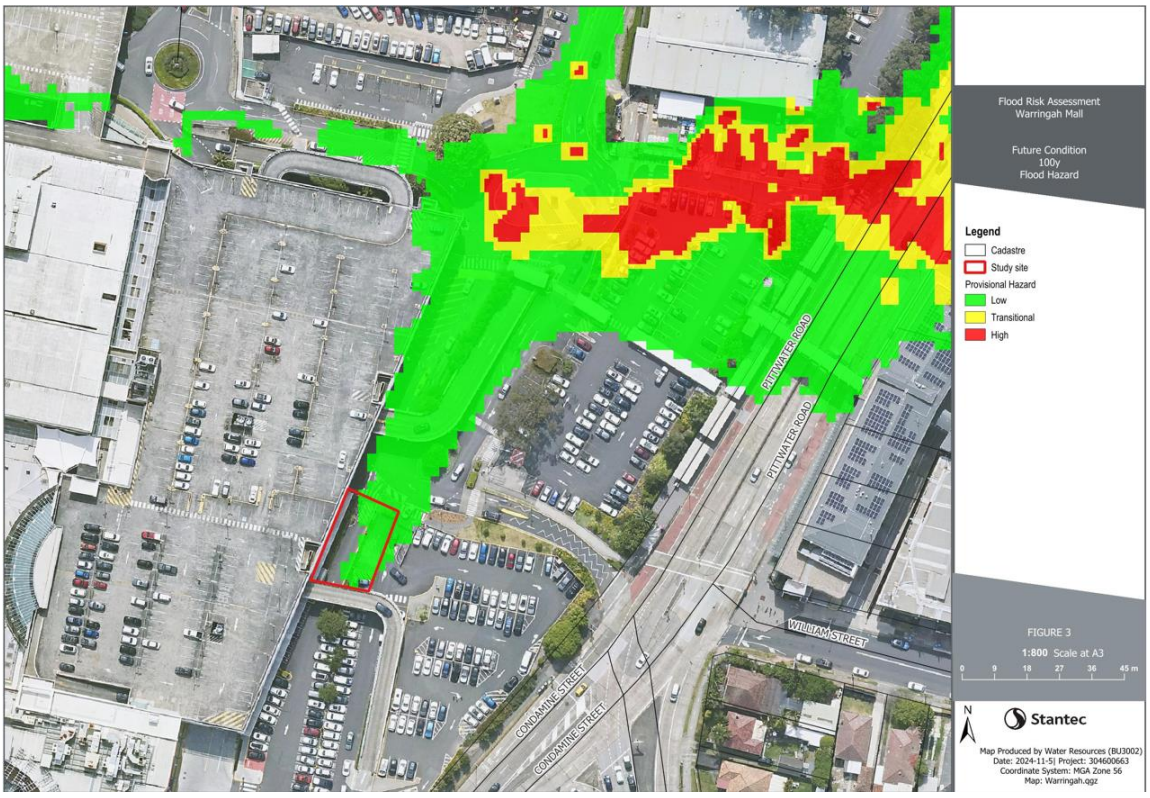
The xpswmm model was rerun based on the current Warringah Mall conditions with results considered as benchmark conditions. Then the model was modified to reflect design ground conditions of the pump station, and then rerun to obtain results under post-development conditions.

The supplied pump design plans show that there is no change in ground configuration at the pump station under post-development. Therefore, the model shows that there is no flood impact caused by the proposed sewer station as the existing ground configuration will be reinstated on completion of the sewer station construction.

In this flood assessment, only the 1%AEP design flood event is modelled. 1%AEP flood results in the areas of the proposed pump stations are shown below in Figures 1,2 and 3:-

Reference: Warringah Mall





Reference: Warringah Mall

Conclusion

The proposed sewer pump station would not result in any adverse impacts in a 1%AEP flood event. The works are proposed in the flood fringe, where modelling indicates that flood depths are generally less than 300mm with very low velocities under 0.5m/s. The subject area has a low flood hazard rating. Therefore, it is recommended that any short term risks associated with construction in a flood zone be managed by adherence to a Safe Work Method Statement prepared by the contractor carrying out the work and approved by Scentre Group.

Please do not hesitate to contact the undersigned if you have any queries.

Yours sincerely

Stantec Australia Pty Ltd

Stephen Yu
Principal Water Resources Engineer
Phone: +61 2 6263 9414
stephen.yu@stantec.com

Garry Neville
Senior Principal Civil Engineer
Phone: +61 2 6263 9414
garry.neville@stantec.com