

21 December 2015

Our Ref:20140438

ARH Warriewood Pty Ltd  
Level 1, 76 Queen Street  
Woollahra NSW 2025  
ATTENTION: JOHN TYREE

Dear John,

**PROJECT: STORMWATER FOR BUILT FORM STAGE [NEW DA APPLICATION]**

**ADDRESS: 53C WARRIEWOOD RD, WARRIEWOOD NSW**

Please find following our assessment of the flooding and stormwater works required for the Built Form Stage works for the above project.

### Preliminary Information

Jones Nicholson have completed a Flood Study and a Water Management Plan for the original Development Application (Council reference N0330/14), refer also associated Jones Nicholson stormwater drawings.

### Staging Plan

It is currently proposed to conduct the development in one stage as follows:

1. Built Form Stage: Subdivision of the lots, associated road and drainage works, construction of the dwellings and unit block; this proposal is now subject to a new Development Application (DA).

### Flood Study

Jones Nicholson's original Flood Study dated 19 February 2015 is still valid for the Built Form DA, noting that there has been no material change in shape or levels of the proposed development (with respect to flooding) compared to the Flood Study prepared for N0330/14. We note that the conclusions and recommendations of this study are still applicable, namely:

1. Minor water level fluctuations were within model error tolerances;
2. The flood modelling indicated that a small amount (34m<sup>3</sup>) of compensatory storage is required in order to maintain flood storage volumes for the 100-yr ARI (and smaller) events. We propose that 60m<sup>3</sup> of additional cut be excavated from the rear of the building platform to achieve this volume;
3. All proposed habitable floor levels will be above the PMF level, and as such no specific offsite evacuation plan is necessary. That is, residents may safely remain in their dwellings during the peak of the PMF event

### Water Management Plan (WMP)

Jones Nicholson's original Water Management Plan dated 27 April 2015 is still valid for the Built Form DA, noting that as far as we are aware there has been no change in overall proposed landuse areas or other

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#### OFFICE LOCATIONS:

SYDNEY-CBD SUTHERLAND WOLLONGONG  
NOWRA GOULBURN PICTON SINGLETON



parameters that may or will affect the results as detailed in the WMP for N0330/14. We note that the conclusions and recommendations of this study are still applicable, namely:

1. Onsite Detention (OSD) is required in order to achieve Council's flowrate and storage targets; a minimum volume of 230m<sup>3</sup> has been provided which achieves or betters the targets;
2. WSUD measures (including Stormwater360 Stormfilter cartridges, Enviropod pit baskets, and a central Rainwater re-use tank of 150 kL) will be provided;
3. The post-development pollutant loads from the subject site are significantly less than under existing conditions provided that the WSUD measures are installed;
4. The adopted pollutant reduction targets for the development area are met or exceeded.

### Summary

In summary we note that:

- Jones Nicholson's original Flood Study dated 19 February 2015 should be referred to for flooding controls and recommendations for the proposed development "Built Form" stage;
- Jones Nicholson's original Water Management Plan dated 27 April 2015 should be referred to for stormwater, WSUD and other water management controls and recommendations for the proposed development "Built Form" stage.

For and on behalf of Jones Nicholson Pty Ltd



Andrew Wiersma

Reviewed by:



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