

Our Ref: 80017026-L06:BCP/bcp
Contact: Dr Brett C. Phillips

25th November 2019

The Manager
Scentre Design & Construction Pty Ltd
GPO Box 4004
SYDNEY NSW 2001

Attention: Mr Anthony Iannuzzi

Dear Anthony,

DA 2018/1514 WARRINGAH MALL– STAGE 2 REDEVELOPMENT

**RESPONSE TO NORTHERN BEACHES COUNCIL NATURAL ENVIRONMENT
REFERRAL RESPONSE – FLOOD DEFERRED COMMENCEMENT CONDITION**

Cardno was engaged by Scentre Design & Construction to assist in the preparation of a DA1514 (2018) for the Westfield Warringah Mall project submitted to the Northern Beaches Council. The project is the second stage of the Westfield Warringah Mall Project comprising of the redevelopment and refurbishment of the existing Westfield shopping complex.

On 10 August 2018 we prepared a Flood Impact Assessment for the redevelopment proposed of Warringah Mall under DA1514 (2018).

We have previously received a copy of an (undated) Natural Environment Referral Response – Flood prepared by Northern Beaches Council. This response recommended the following Deferred Commencement Condition.

Flood Modelling

It must be demonstrated through modelling that the development will not cause an increase in peak water levels of more than 2cm on upstream private lots in the design 1% AEP Flood. The design 1% AEP Flood should have appropriate blockage applied and justified, as per Australian Rainfall and Runoff (ARR 2019) Guidelines or other guidelines/standards if considered to be more appropriate.

Reason: To ensure that the development does not cause significant adverse flooding affects to neighbouring properties (DACNEADC2)

Our response to this recommended condition is provided as follows.

A blockage assessment has been undertaken in accordance with ARR2019 and is attached. The calculated inlet blockage is 10% while the barrel (sediment) blockage is 25%. It is recommended that extreme blockage consequences be assessed based on 2 x assessed blockage = 50% blockage.

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In response to a number of previous referral comments information was collated from the results of the 2018 Flood Impact Assessment and previous assessments of Existing (2008) Conditions and DA1742 (2015) Conditions as follows.

The incremental 100 yr ARI flood level differences under DA1514 (2018) Conditions benchmarked against DA1742 (2015) Conditions for both 0% and 50% blockage of key stormwater inlets have been submitted to Council previously.

At Council's request, DA1742 (2015) Conditions and DA1514 (2018) Conditions have been modelled for 25% blockage of key stormwater inlets.

The incremental impacts of DA1514 (2018) Conditions benchmarked against DA1742 (2015) Conditions are plotted in **Figure 7A**. It is noted that the incremental impacts of 25% blockage are that there are no adverse increases on upstream private lots in the design 1% AEP flood. These results are similar to the incremental impacts under 50% blockage, namely, no adverse increases on upstream private lots in the design 1% AEP flood.

It is therefore concluded that this flood impact assessment demonstrates that the *development will not cause an increase in peak water levels of more than 2cm on upstream private lots in the design 1% AEP Flood* and the Deferred Commencement Condition is satisfied.

Yours faithfully



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Dr Brett C. Phillips
Global Senior Principal
for **Cardno**



Figure 7A 100 yr ARI Flood Level Differences –DA1514 (2018) Conditions less DA1742 (2015) Conditions - 25% Blockage