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## RE: 28 McPHERSON STREET, BANKSMEADOW 2019 – RESPONSE TO SUBMISSIONS ON FLOODING ISSUES

This letter report provides responses to submissions received following the exhibition of the Environmental Impact Statement (EIS) for the proposed Warehouse and Distribution Development at 28 McPherson Street, Banksmeadow (SSD 9691). Specifically, the response issues related to the flooding assessment. BMT prepared the "*Flood Impact Assessment for Lot 9, 28 McPherson Street Banksmeadow*" (ref: R.S20352.001 dated 29 January 2019) to support the preparation of the EIS are addressed.

Table 1-1 summarises the flood related issues raised by the agency responsible, and the response/additional information provided by BMT.

Ref	Issue Raised	Response	
А	Department of Planning, Industry and Environment		
A1	• Clarification is required whether the Flood Impact Assessment has considered the impacts on flooding of the proposed barrier/capping layer across the site and the implications of the flood detention basin being permanently covered by the proposed concrete platform.	The barrier/capping layer was included in the modelling of the developed site condition as discussed in <i>Section</i> <i>3.2.2.2 Topographic modifications</i> of the flood impact assessment report. The underside of the concrete slab (platform for development buildings at RL 6.4 AHD) is well above the 1:100 year flood and is also above the PMF level as reported in <i>Section 5.2 Design Flood Results</i> . Accordingly, the concrete platform does not impact on the design level or the PMF.	
	• The Department notes the comments from Randwick City Council regarding the potential for the proposed development to reduce the volume of the flood detention basin on site and requests further details in this regard.	Noted issue and addressed in Randwick City Council responses, however we note that both the proposed barrier layer and the concrete piers that support the proposed deck have been included in the flood modelling. These two items are the only elements that will reduce flood capacity as the suspended deck is elevated at a level of RL 6.4 which is above both the 1:100 event and the PMF. Accordingly, it is our view that the proposed development is designed, and can be built, in such a way that does not	

## Table 1-1 Summary of Responses to Flood Related Issues

Ref	Issue Raised	Response
		interfere with or affect the maintenance of the Land for the purposes of a flood detention basin.
	• Further details are required as to which surrounding lands rely on the site as a flood detention basin.	The Site is located within the Springvale and Floodvale Drains catchment (per Section 1.2 of our Report) towards the downstream end of the catchment such that there is limited development between the Site and the outlet of Springvale Drain into Botany Bay near Botany Road. Figure A-1 is provided showing the existing (pre- development) peak 1% AEP flood depth and inundation extent between the Site and the Springvale Drain outlet. Figure A-2 provides the corresponding change in peak flood level for the post-development condition. The flood depth mapping indicates no significant existing flood risk to property downstream of the Site. The impact mapping shows that the proposed development works does not increase flood risk.
	• It is requested the Applicant provide details of other development that have adopted a similar built form design response within a flood detention basin and provide details on how impacts of that design on the function of the basin were mitigated.	<ul> <li>Elevated/suspended slabs are a common built form employed to minimise encroachment into existing flow path/flood storage areas. The requirement for additional mitigation is very much a site specific constraint dependent on the nature of the flow environment and identified impacts of proposed works, with each site treated on merits.</li> <li>Examples of this type of development include:</li> <li>35 Davis Road Wetherill Park, where industrial buildings have been built on a deck allowing flood waters under the deck exactly as proposed in this instance;</li> <li>2 South Street, Rydalmere - a warehouse suspended over floodwaters from Subiaco Creek, constructed in the last year;</li> <li>605 Princes Highway, Kogarah – McDonalds adjacent Muddy Creek within the Bayside LGA</li> </ul>
В	Randwick City Council	
	<ul> <li>General commentary was provided on the history of previous approvals and the use of Lot 9 as a compensatory flood storage facility.</li> <li>In particular, from reviewing the proposed plans, the ramps to the raised concrete platform and the piles supporting the platform will be at grade. Council is concerned at the flooding implications of these at grade structures which would reduce the storage capacity of the flood detention basin and may also have an impact on the predicted flow of floodwaters.</li> </ul>	In addition to the barrier layer, the flood storage area retained under the development footprint was reduced and additional losses around piers accommodated in the model through layered flow constriction layer and a storage reduction layer (refer <i>Section 3.2.2.1 Suspended Slab</i> ). Accordingly, changes in the flood storage area as a result of the development have been incorporated into the model. In flood events, flows move in and out of the storage basin in Lot 9 through overtopping along a significant length of Nant Street and McPherson Street. The access ramp location represents only a minor section of this length of flow exchange around the perimeter of the site. Any flow

Ref	Issue Raised	Response
		impedance of the at-grade structure would readily redistribute without impact.
		As discussed further below, the peak flood level conditions both at the site and downstream are influenced by the capacity constraints of the Springvale Drain. Springvale Drain does not form part of the subject site and is owned by Crown lands.
	• Council notes that the majority of flood modelling locations for the proposed development are shown around the perimeter of the site and only one is located in the centre of the site where the flood levels are deepest. Council queries the adequacy of the modelling in relation to the impact on the existing peak water depths and velocities at the site an in relation to the criteria for the extent of the surrounding area that will be impacted by flooding as a result of the proposed development.	This query has been interpreted as the flood level reporting locations identified in Figure 5-1 and the corresponding tables of peak flood level and velocity. The hydraulic parameters within the flood storage area are relatively uniform. Peak water levels are the same across the storage area as there are downstream hydraulic controls (overtopping of McPherson Street and the downstream channel constriction on the Toll Intermodal site) which provide a backwater influence across the site. Whilst there is some variation in peak velocities, they are all relatively low given the flood storage function of Lot 9 rather than a highly convective flow region. Alternative points of reporting would not identify any substantially different result. Additional flood mapping is attached as Figure A1 and A2 which covers a broader area downstream of the site to the outlet of Springvale Drain into Botany Bay. The existing (pre-development) 1% AEP flood inundation extent and peak flood depth distribution is shown in Figure A-1. A similar extent for the flood level impact map for the proposed development is shown in Figure A-2.
		Downstream of the site and McPherson Street, the flood inundation is largely confined to the Springvale Drain open channel prior to the drain entering the culverted reach at the southern end of the Toll site. The minor inundation (typically less than 0.25m) to broader floodplain areas is representative of local catchment runoff and ponding rather than mainstream flow contribution from the Springvale Drain.
		The flood impact map shows no material change in peak flood level conditions downstream of the site through to Botany Bay. The retained flood detention storage within the proposed development provides for similar peak flood conditions as the existing environment. As noted, the capacity of the Springvale Drain downstream of the site represents the main hydraulic control for flood conditions in this reach.

## Conclusion

The development has been designed to allow for the ongoing use of Lot 9 in Deposited Plan 1205673 (Land) as a flood detention basin. It is our view that the proposed development is designed, and can be built, in such a way that does not interfere with or affect the maintenance of the Land for the purposes of a flood detention basin. Indeed, the results of the Flood Impact Assessment indicate that there are no

discernible impacts on existing flood conditions as a result of the proposed warehouse distribution development.

We trust this response adequately addresses the flooding issues raised from the EIS exhibition. Please feel free to contact me on 02 49408882 if further clarification is required.

Yours Faithfully **BMT** 

Darren Lyons Senior Principal Engineer



BMT WBM endeavours to ensure that the information provided in this map is correct at the time of publication. BMT WBM does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.





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