

## Engineering Referral Response

<b>Application Number:</b>	Mod2014/0285
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<b>To:</b>	Luke Perry
<b>Land to be developed (Address):</b>	Lot 100 DP 1015283 , 145 Old Pittwater Road BROOKVALE NSW 2100 Lot 2741 DP 752038 , 2741 / 9999 Condamine Street MANLY VALE NSW 2093 Lot 2 DP 600059 , 75 Old Pittwater Road BROOKVALE NSW 2100 Lot 30 DP 204107 , 30 / 0 Old Pittwater Road BROOKVALE NSW 2100 Lot 2742 DP 752038 , 2742 / 9999 Condamine Street MANLY VALE NSW 2093

### Reasons for referral

This application seeks consent for the following:

- New Dwellings or
- Applications that require OSD where additional impervious area exceeds 50m<sup>2</sup> or
- Alterations to existing or new driveways or
- Where proposals affect or are adjacent to Council drainage infrastructure incl. watercourses and drainage channels or
- Torrens, Stratum and Community Title Subdivisions or
- All new Commercial and Industrial and RFB Development with the exception of signage or
- Works/uses in flood affected areas

And as such, Council's development engineers are required to consider the likely impacts on drainage regimes.

### Officer comments

Development Engineering have reviewed the submitted engineering plans for the stormwater augmentation works modification and now advise that they are satisfactory subject to inclusion in the consent as follows:

Reference is made to the following plans by Cardno:

<b>Engineering Plans - Endorsed with Council's stamp</b>		
Drawing No.	Dated	Prepared By
W4548-400 Revision 3	5/11/2014	Cardno
W4548-401 Revision 5	31/03/2015	Cardno
W4548-402 Revision 4	31/03/2015	Cardno
W4548-411 Revision 4	31/03/2015	Cardno
W4548-412 Revision 5	31/03/2015	Cardno
W4548-413 Revision 4	7/11/2014	Cardno
W4548-414 Revision 3	5/11/2014	Cardno
W4548-420 Revision 6	31/03/2015	Cardno
W4548-421 Revision 4	31/03/2015	Cardno
W4548-422 Revision 4	31/03/2015	Cardno
W4548-423 Revision 4	31/03/2015	Cardno
W4548-424 Revision 5	31/03/2015	Cardno
W4548-425 Revision 4	31/03/2015	Cardno
W4548-426 Revision 4	31/03/2015	Cardno
W4548-427 Revision 4	31/03/2015	Cardno
W4548-428 Revision 4	31/03/2015	Cardno
W4548-429 Revision 4	31/03/2015	Cardno
W4548-430 Revision 3	31/03/2015	Cardno
W4548-431 Revision 4	31/03/2015	Cardno
W4548-435 Revision 4	7/11/2015	Cardno
CAR-060139 Revision 1	31/10/2014	Cardno
CAR-110126 Revision 1	31/10/2014	Cardno
CAR-060141 Revision 1	31/10/2014	Cardno
CAR-060140 Revision 1	31/10/2014	Cardno

**1.All civil engineering plans the pre-fix “W4548” referred to in condition 2 of the Consent DA2008/1742 are to be deleted and replaced with the above approved plans.**

**2. Additionally condition 17 is to be amended as follows :**

**Physical Model Studies**

A Physical hydraulic model of the large stormwater junction box, (C6 on drawing W4548 – 414 by Cardno) is to be built and accompanied by a report to confirm the hydraulic losses which were assumed in the xp swmm computer model and report ( ref Stormwater Management Plan and Stormwater Report November 2014) by Cadno are appropriate. The physical hydraulic model report is to be submitted to the Certifying Authority for approval. The report is also to provide advice on how the hydraulic losses in the junction box

can be minimised.

The details are to be prepared by a suitably qualified Civil Engineer, who has membership to the Institution of Engineers Australia, National Professional Engineers Register (NPER-3) and is an Accredited Certifier (Category C4).

Details demonstrating compliance are to be submitted to the Certifying Authority for approval prior to the issue of the Construction Certificate for the stage three stormwater augmentation works (Culvert)

**Reason:** To confirm parameters assumed in the flood model

Robert Barbuto  
Development Engineering Manager

Development Engineering have reviewed the proposed modifications to the following Cardno drawings for DA2008/1742 and require additional information as follows prior to further assessment of the application.

Drawing Number W4548-401 Rev 4: This drawing is to be amended to reflect all applicable changes shown on each of the other related drawings detailed on this drawing.

Drawing Number W4548-402 Rev 3: This drawing is to be amended to reflect all applicable changes shown on each of the other related drawings detailed on this drawing.

Drawing Number W4548-411 Rev 3:

This drawing is to be amended to include a note stating that the safety fencing and/or wall to be designed and constructed in accordance with Section 2.4.5.3 of AS/NZS 2890.1:2004.

Drawing Number W4548-412 Rev 4:

This drawing is to be amended to include the following.

- Dimensions of each inlet grate and class type of grate to be specified.

- Confirm whether splay in culvert is proposed.
- It is unclear where existing pipelines draining the site are to be retained or demolished.

Drawing Number W4548-413 Rev 4: This drawing is acceptable.

Drawing Number W4548-414 Rev 3: This drawing is acceptable.

Drawing Number W4548-420 Rev 5: This drawing is to be amended to remove all references to Stage 1 works.

Drawing Number W4548-421 Rev 3:

This drawing is to be amended to include the following.

- Remove all references to Stage 1 works.
- It is unclear whether regrading works to the open channel are proposed and the extent of these works.
- The extent of works to the existing railing and footpath adjacent to the open channel is to be clearly shown.
- It is unclear how pedestrians will enter the site from the western side of the existing roundabout given that a railing is proposed to discourage the use of the proposed hump. Details of the proposed pedestrian access on the western side of the roundabout is to be shown.
- The boom gates shown on drawing 421 are to be shown on this drawing.
- The proposed road marking 'zebra crossing' on the eastern side of the roundabout is to be removed.
- Additional details or cross sections are to be provided for the two pit and pipe works into the open channel. They are to include full extent of works.
- The extent of the push up flood barrier must be clearly shown. It is unclear where and how the barrier connects into the building.

Drawing Number W4548-427 Rev 3: This drawing is to be amended to detail the full extent of the two pit and pipe works into the channel.

Drawing Number W4548-428 Rev 3: This drawing is acceptable.

Drawing Number W4548-429 Rev 3: This drawing is acceptable.

Drawing Number W4548-430 Rev 3: This drawing is acceptable.

Drawing Number W4548-431 Rev 3: This drawing is to be amended to include the following:

- Longitudinal grade of pipeline to be specified between B5-1 and B6-3.
- A note is to be added requiring 'All requirements associated with the adjustment to any underground utility services that conflict with the drainage works are to be borne by the developer'.

Drawing Number W4548-435 Rev 4: This drawing is acceptable.

It is noted the above drawings are not consistent with the plans approved in the activation of consent for DA2008/1741, which may cause some conflict with the future approval of construction certificate applications for this or both consents.

The hydraulic consultants in their report 'Stormwater Management Deferred Commencement Condition No. 1 dated 5 Nov 2014' has stated "Numerical model has indicated that connecting the two new 3.3m wide x 1.8m high culverts into the existing chamber (chamber C6) and lowering the two central culverts under

Condamine St by 1m gives comparable hydraulic performance to the approved scheme."

The report does not detail how the hydraulic performance is comparable or quantifies this statement. A preliminary assessment of the cross sectional area of the upstream inlet pipes and culverts into the existing culverts traversing Condamine St indicates that there is currently insufficient capacity i.e. 20.7m<sup>2</sup> upstream capacity versus 20.1m<sup>2</sup> downstream culvert capacity. The proposed twin 3.3m x 1.8m culverts increase the upstream cross sectional area by 13 m<sup>2</sup> however the lowering of the two central culverts by 1m for the culvert crossing Condamine St only increases the cross sectional area by 5.8m<sup>2</sup>. With the information submitted, there is doubt that the proposal will provide a comparable hydraulic performance. Also the proposed convergence of flows into pit C6 from the twin 3.3m x 1.8m box culverts may result in increased losses at this point which may then result in flooding within the Mall due to backwater effects.

Development Engineers cannot support the proposal for approval due to inadequate information to address stormwater related matters in accordance with Council's DCP C4 Stormwater.

### **Referral Body Recommendation**

Recommended for approval, subject to conditions

### **Refusal comments**

### **Recommended Engineering Conditions:**

## **CONDITIONS TO BE SATISFIED PRIOR TO THE ISSUE OF THE CONSTRUCTION CERTIFICATE**

### **Stormwater Disposal**

Engineering Plans certified by an appropriately qualified and practicing Civil Engineer, indicating all details relevant to the collection and disposal of stormwater from the site, buildings, paved areas and where appropriate adjacent catchments. Stormwater shall be conveyed from the site to [INSERT].

Details demonstrating compliance are to be submitted to the Certifying Authority prior to the issue of the Construction Certificate.

Reason: To ensure appropriate provision for disposal and stormwater management arising from the development. (DACENC06)