

Natural Environment Referral Response - Flood

Application Number:	DA2023/0976
Proposed Development:	Demolition works, civil and infrastructure works, subdivision into 53 lots and one community title road, the construction of 53 dwellings and associated works.
Date:	03/10/2023
To:	Thomas Prosser
Land to be developed (Address):	Lot 1 DP 592091 , 20 - 22 Macpherson Street WARRIEWOOD NSW 2102

Reasons for referral

This application seeks consent for the following:

- All Development Applications on land below the 1 in100 year flood level;
- All Development Applications located on land below the Probable Maximum Flood levels.

And as such, Council's Natural Environment Unit officers are required to consider the likely impacts on drainage regimes.

Officer comments

The development application seeks approval for demolition of existing buildings, construction of 10 detached two-storey dwellings and 43 attached two-storey dwellings, infrastructure, roadworks, landscaping and rehabilitation works for Narrabeen Creek. Earthworks are to include filling to raise the building platform to the FPL and excavation in the creekline corridor for rehabilitation works.

The property is flood affected. The submitted Flood Impact and Risk Assessment Report (FIRA) by Stantec provides results and mapping for the existing and proposed future scenarios, using a modified version of Council's TUFLOW model from the Ingleside, Elanora and Warriewood OFFS (2019).

The assessment of flooding includes consideration of the following documents:

- Pittwater 21 DCP - Sections C6.1, B3.11, B3.12, A1.9,
- Pittwater LEP 2014 - Clauses 5.21, 7.4,
- Warriewood Valley Urban Land Release Water Management Specification (2001) - Section 4.5.

Adverse Impacts

The proposed development results in adverse impacts which are non-compliant with the Pittwater 21 DCP and Pittwater LEP 2014.

In accordance with Control C6.1 of the Pittwater DCP, the building platform is permitted to be raised to the FPL provided that there "there is no additional adverse flood impact on the subject and surrounding properties and flooding processes for any flood event up to the PMF event including climate change impacts". Prior to lodgment of the DA, the Applicant was advised that for all events (which all include climate change impacts), they needed to show that the proposed development:

- Will result in less than 0.02m increase in the 1% AEP, 20% AEP and 50% AEP

- Will result in less than a 0.05m increase in the PMF
- Will result in less than a 10% increase in the PMF and 1% AEP peak velocities

The FIRA concludes that “while the flood impacts of the proposed residential development exceed the adverse impact criteria identified in Section A1.9 of the Pittwater 21 DCP in some of the assessed flood events, that the impact of any exceedances are considered minor and acceptable”. However the impacts are not minor and acceptable, as they are outside of the tolerances allowed within the definition of “adverse impacts”.

The FIRA also implies that adverse impacts don’t matter unless they are on existing dwellings. However this is not true. For instance, Macpherson St is an important evacuation route, so it is important that the roadway is not adversely impacted by flooding.

The FIRA also states that “while the increases in velocity may be of possible concern in relation to scour, it is no more so than elsewhere in the locality, including the creek corridor and Macpherson Street under both Benchmark and Future Conditions and for this reason the exceedances above the DCP impact criterion are considered minor and acceptable”. However these adverse impacts in velocity are outside the tolerances allowed within the definition of “adverse impacts”, and for new development are expected to be satisfactorily addressed.

Impacts on flood levels are shown on the FIRA mapping in Figures D1, D2, D3 and D6 and described in Section 4.2.1. From the mapping, there are no adverse impacts on flood levels within private property in the 20% AEP and 50% AEP events, but there are in the 1% AEP and PMF events.

Figure 14 shows 9 reference points for flood levels and impacts in Tables 5 and 6, but there are not enough reference points to cover all the flood impacted areas, for instance there are no points within the 18 Macpherson St property. However the mapping shows that there are adverse impacts within 18 Macpherson St, particularly in the northern, adjacent corner.

The categories in Figures D1, D2 and D3, should be clarified, as they show one colour category for -0.02 to 0.02m overlapping with another category for 0.01 to 0.05m. Impacts are defined as adverse in the 1% AEP and smaller events when they are more than 0.02m, so the category should be for 0.02 to 0.05m, not 0.01 to 0.05m. It is also unclear from the Legend whether the category for -0.02 to 0.02m is white or no-fill, or maybe an extremely pale and transparent blue. On the figure, it is also difficult to differentiate between the very pale blue and very pale green colours as they are so similar. The colour scheme could be improved.

Some of the text is also unclear. In Section 4.21, it states that “Figure D6 and Table 5” disclose certain impacts within the PMF event, however it is assumed that this is meant to refer to Table 6.

1% AEP Event

In the 1% AEP event (Fig D3), there are patches of adverse impacts on flood levels (ie an increase of more than 0.02m) at the northern adjacent corner of 18 Macpherson St, increasing by “0.2-0.5”m. They also increase by “0.01 to 0.05”m in patches along Macpherson St.

The Figure F9 for 1% AEP future flood extents and levels seems to have been run with existing conditions and should be updated.

In the 1% AEP event (Fig D5), velocity increases by more than 10% in numerous patches including within 18 and 26 Macpherson St and within the Macpherson St roadway.

PMF Event

In the PMF event (Fig D6), there are patches of adverse impacts on flood levels (ie an increase of

more than 0.05m) on neighbouring properties at 18, 24 and 26 Macpherson St and across the road at 163 Macpherson St. The biggest increase is 0.50m, at 26 Macpherson St, near the middle of the adjacent boundary. The increase at 163 Macpherson St is 0.10m. Also, most of the roadway in front of 20-22 Macpherson St is adversely impacted, with the worst patch being in the range 0.20-0.50m increase.

In the PMF event (Fig D8), velocity increases by more than 10% along the creek, and in numerous patches including within 14, 16, 18, 24 and 26 Macpherson St and within the Macpherson St roadway.

Flood Planning Level

The FPLs which are based on modelling of the 1% AEP+CC for the developed case are set out in Appendix F of the FIRA. They are provided only along the creek, where they range from 10.05m AHD down to 8.73m AHD. The filling appears to be above these FPLs and the floor levels for the proposed dwellings appear to be well above these FPLs. For instance, Lot 40 has a floor level of 10.71m AHD (Drawing DA 200, elevation 5).

The longitudinal sections in the Bulk Earthworks drawings show that there is significant filling across the site, right up to the boundaries of the property. For instance, the A-Long Section shows an increase in ground level of 0.6m at the 26 Macpherson St boundary and an increase of 1.87m at the 18 Macpherson St boundary. The D-Long Section shows an increase of approximately 1m (the actual finished ground level is missing from the drawing) at the front boundary with Macpherson St and an increase of 2.09m in the middle of the property.

It seems that the filling will cause the ground levels on this property to be significantly higher than on adjacent properties, potentially with vertical retaining walls on the boundaries. The levels in these sections seem to be shown only within the property. Further information is requested so that this can be properly assessed.

It is difficult to determine whether all of the requirements in Table 4.3 of the Warriewood Valley Urban Land Release Water Management Specification (2001) have been adequately met. It is requested that these requirements are specifically addressed.

Request for further information

Provision of the following additional information is requested to assist with further assessment:

- 1) Additional reference points for flood results, to detail specific values for flood impacts in other flood impacted areas such as at 18 Macpherson St and the Macpherson St roadway.
- 2) Re-mapping of Figures D1, D2 and D3 so that the categories in the legend don't overlap. The range 0.02m to 0.05m would be more appropriate than 0.01 to 0.05m.
- 3) Information on FPLs across the property.
- 4) Clarification regarding the ground elevations on both sides of the front and side boundaries.
- 5) Clarification and discussion regarding the impact of these higher ground elevations, and the corresponding impact on the increased flood levels on the neighbouring properties and roadways. This should include discussion on why the filling and floor levels need to be so high and whether they could be lowered.
- 6) If removal of the adverse impacts is not possible, justification as to why not.
- 7) Mapping of the difference in Velocity x Depth product for the 1% AEP and PMF events.
- 8) Demonstration that each of the requirements in Table 4.3 of the Warriewood Valley Urban Land Release Water Management Specification (2001) has been met.
- 9) If/when the FIRA is updated, improvement of the colour schemes as noted above and with the cadastre boundaries plotted on top of the flooding extents rather than underneath, to make it easier to determine the extent of flooding encroaching across the boundary.

The proposal is therefore unsupported.

Note: Should you have any concerns with the referral comments above, please discuss these with the Responsible Officer.

Recommended Natural Environment Conditions:

Nil.