

1377 Hue Hue Road WYEE Planning Proposal, Probable Maximum Flood Assessment

Author: Christopher Scholes, Senior Civil Design Engineer
Reference 21-0090
Distribution: Olga Masella, TOPA Property
Date: 18/05/2022

Dear Olga,

RE: Memorandum Response to the *Flooding and Flood Risk Planning Proposal* Pre Lodgement Assessment (Ref PLRZ: RZ/1/2022)

This memorandum has been prepared to inform the calculation and assessment of the flooding characteristics of the critical duration Probable Maximum Flood (PMF) for the site currently known as No. 1377 Hue Hue Road WYEE. This is in support of a proposed Planning Proposal for the rezoning to R2 Low Density Residential with a minimum lot size of 450 m².

This memorandum is to be read in conjunction with the associated Integrated Water Cycle Management Report (Orion Consulting, Project Reference 21-0091 and dated 29th November 2021)

The probable maximum flood is defined as the largest flood that could conceivably be expected to occur in a particular location. This relies on the statistical extrapolation of available rainfall data to quantify an event that is unclassified in terms of its Exceedance Probability.

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PMP Rainfall

Probable maximum precipitation for input into the 2D Tufflow model has been calculated based off the Estimation of Probable Maximum Precipitation in Australia - Generalised Short-Duration Method guidelines (Bureau of Meteorology, 2003) within the WBNM Hydrological Modelling Software.

For a catchment area of $>1 \text{ km}^2$ the following parameters were adopted:

Percentage Rough (%)	25
Elevation of Catchment (mAHD)	25
Moisture Adjustment Factor (%)	73

Calculated 2 hour (critical duration) Rainfall Pattern from WBNM:

Time Interval (min)	Intensity (mm/h)
0	0
5	182.1
10	254.9
15	327.8
20	346
25	318.7
30	318.7
35	318.7
40	318.7
45	291.3
50	291.3
55	300.4
60	227.6
65	273.1
70	236.7
75	227.6
80	227.6
85	218.5
90	182.1
95	136.6
100	136.6
105	109.3
110	91
115	81.9
120	45.5

Average rainfall intensity: 227.6mm/hr



2D Tuflow Model Run

The 15 minute to the 180 minute PMF rainfall patterns were run within WBNM to identify the critical (2 hour) duration event for the 2D overland flow assessment. Flood maps from the 2D Tuflow Model have been presented in Appendix A.

A static downstream tailwater level was inserted into the 2D domain at the downstream boundary of Catchment 10/F at an RL of 23.0 m AHD as extracted from the Mannering Creek, Swampy Creek and Wyee Creek Flood Studies (WMAwater, February 2021 Figure J8).

Tuflow Results Assessment:

From the Tuflow model run the following can be observed:

- That the PMF extent partially impacts proposed future lots 47 and 48. Given the minor impacts these lots have both safe and clear evacuation routes via fronting roads.
- That other than the partial impacts to future proposed lots 47 and 48, the proposed site is not impacted by the PMF event. All proposed nominated roads are considered flood free.

Recommendations and Conclusions:

Given the above information and the enclosed flood map in Appendix A we recommend that the planning proposal be supported. Lots that are partially impacted by the PMF event are situated on flood free roads with continually rising grades away from the floodway.

Should you require any further information or clarification, please do not hesitate to contact me on 0499 010 239.

Yours sincerely,

Orion Consulting Engineers Pty Ltd
Christopher Scholes | Senior Civil Design Engineer



Appendix A – Tuflow PMF Flood Map



LEGEND

- 0.05 - 0.1m
- 0.1 - 0.2m
- 0.2 - 0.3m
- 0.3 - 0.4m
- 0.4 - 0.5m
- 0.5 - 0.6m
- 0.6 - 0.7m
- 0.7 - 0.8m
- 0.8 - 0.9m
- 0.9 - 1.0m
- 1.0 - 1.1m
- 1.1 - 1.2m
- 1.2 - 1.3m
- 1.3 - 1.4m
- 1.4 - 1.5m
- 1.5 - 1.6m
- 1.6 - 1.7m
- 1.7 - 1.8m
- 1.8 - 1.9m
- 1.9 - 2.0m
- 2.0 - 2.2m
- 2.2 - 2.4m
- 2.4 - 2.6m
- 2.6 - 2.8m
- 2.8 - 3.0m
- 3.0 - 3.5m
- 3.5 - 4.0m
- 4.0 - 5.0m
- 5.0 - 10.0m

WATER SURFACE
CONTOUR & LABEL

70.00

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01	CF	CS	-	-	17/05/2022	ISSUED FOR INFORMATION							
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