

31 January 2023

212058

GTK Consulting
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Attention: Tom Kennedy

Powerhouse Ultimo Renewal Flooding Conditions

Dear Tom

Ultimo Powerhouse Flooding conditions and proposed development effect

Further to the Department's request for information of 20 January 2023, the following information is provided to clarify information submitted in relation to flooding with the application. The below is in accordance with information submitted with Appendix V- Stage 1 Civil Report to the EIS, Appendix O- Civil Report to the Response to Submissions and subsequent information dated 2 November 2022.

The assessment undertaken for the application (notably the assessment contained in Appendix O- Civil Report to the Response to Submissions) assesses a 'worst case' flood impact scenario whereby the entirety of all zones would be built out (refer to section 5.2). Whilst it is recognised that such a built form scenario is unlikely, any change to only part or none of the zone/s being built would present a lesser impact than that assessed, i.e. the assessed scenario provides the upper limit of flood depth impact.

Further the information provided with the application demonstrated the effect on flood hazard surrounding the site post development. As outlined in this information, there is no change in the flood hazard level surrounding the site as a result of the development.

The powerhouse ultimo site is primarily affected by overland flow which complies with City of Sydney definition of Local Drainage flooding from page 14 of the COS Interim Floodplain Management Policy. This designation of the overland flow through the site on MacArthur Street will determine the treatment required for adjacent building levels and the entry to the basement.

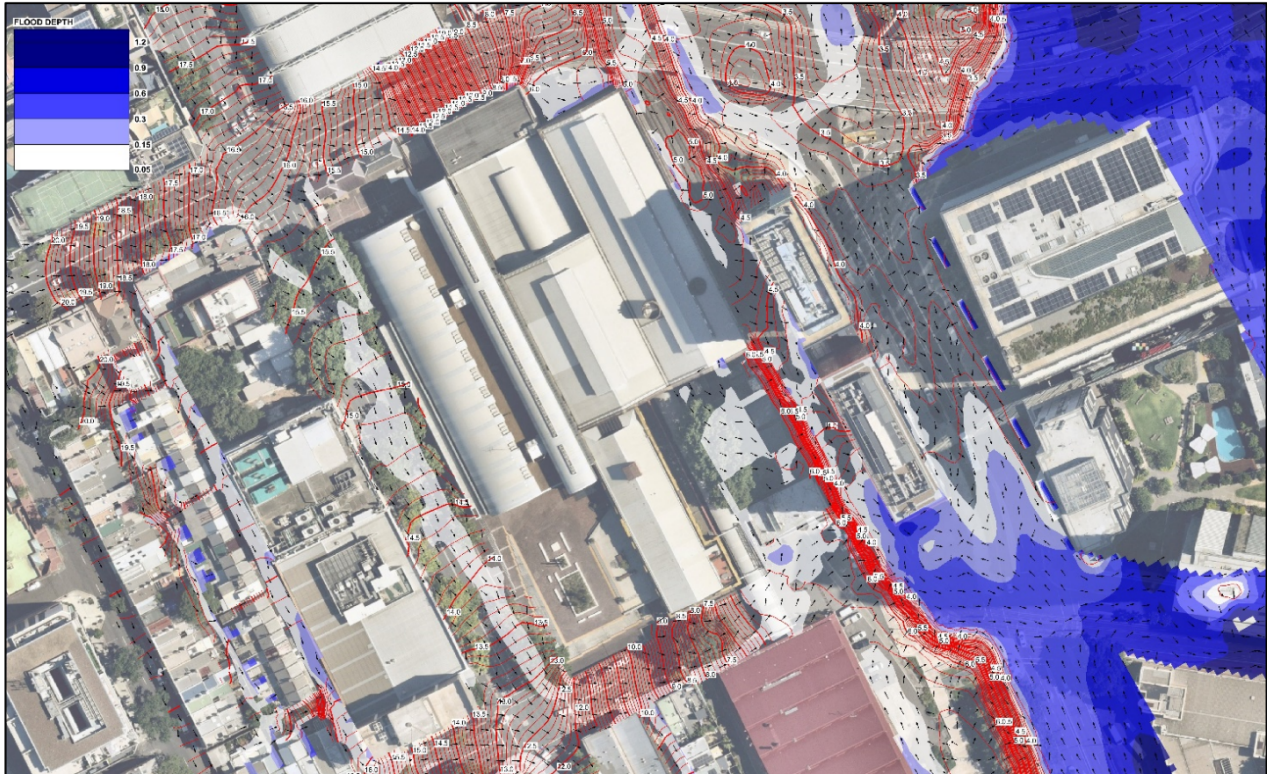
The Mainstream Flooding as defined by the COS Interim Floodplain Management Policy, downstream from the Powerhouse development site, impacts land which is primarily limited to the light rail corridor and Darling Drive.

There are local effects which need to be addressed in the detailed design to ensure compliance with the City of Sydney's Floodplain management policy but there are no significant impacts of the proposed development on the upstream or downstream flood conditions for the 1% AEP flood event or the PMF Flood event.

As per section 5.3 of our stage 1 report, there is local drainage amplification work required to ameliorate these local flood effects.

	Existing 1%AEP (mainstream flood level- RL 3.8)	Existing PMF (mainstream flood level- RL 5.0)	Post Development 1%AEP (mainstream flood level- RL 3.8)	Post Development PMF (mainstream flood level- RL 5.0)
Macarthur Street RL 12.0 -6.0	Local overland flow, less than 200mm in overland flow from Harris St	Local overland flow, less than 250mm in overland flow from Harris St	Local overland flow, less than 200mm in overland flow from Harris St, impact has moved to the south due to local regrading and reduction in ponding	Local overland flow, less than 250mm in overland flow from Harris St, impact has moved to the south due to local regrading and reduction in ponding
Zone 3 inside the site RL 5.8	Local overland flow, less than 160mm	Local overland flow, less than 250mm	New building footprint displacing flooding	New building footprint displacing flooding
Zone 3 adjacent to the site RL 4.5	Local overland flow, less than 150mm	Local overland flow, less than 200mm	Local overland flow, less than 200mm – to be addressed with additional drainage to ensure neutral local impact on flood condition	Local overland flow, less than 200mm – to be addressed with additional drainage to ensure neutral local impact on flood condition
Darling Drive (for comparison) RL 3.0 - 3.7	Mainstream flood RL 3.8	Mainstream flood RL 5.0	Mainstream flood RL 3.8	Mainstream flood RL 5.0

The existing 1% flood condition is as per Figure 18

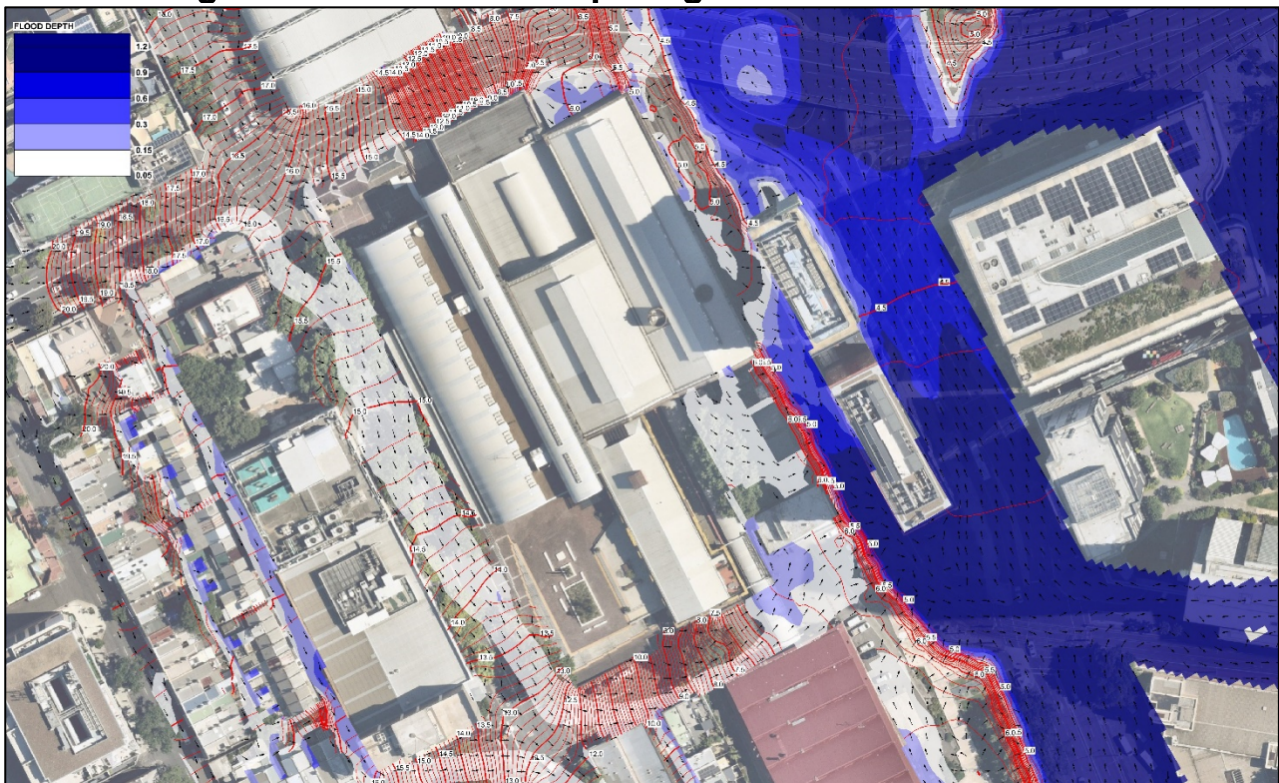


- **Macarthur Street** There is less than 150mm above the existing ground levels of flood or over land flow water depth.

- **Zone 3** inside the site there is 50-200mm above the existing ground levels of flood or over land flow water depth.

- **Zone 3** adjacent the site there is 50-200mm above the existing ground levels of flood or over land flow water depth.

The existing PMF condition is as per figure 19

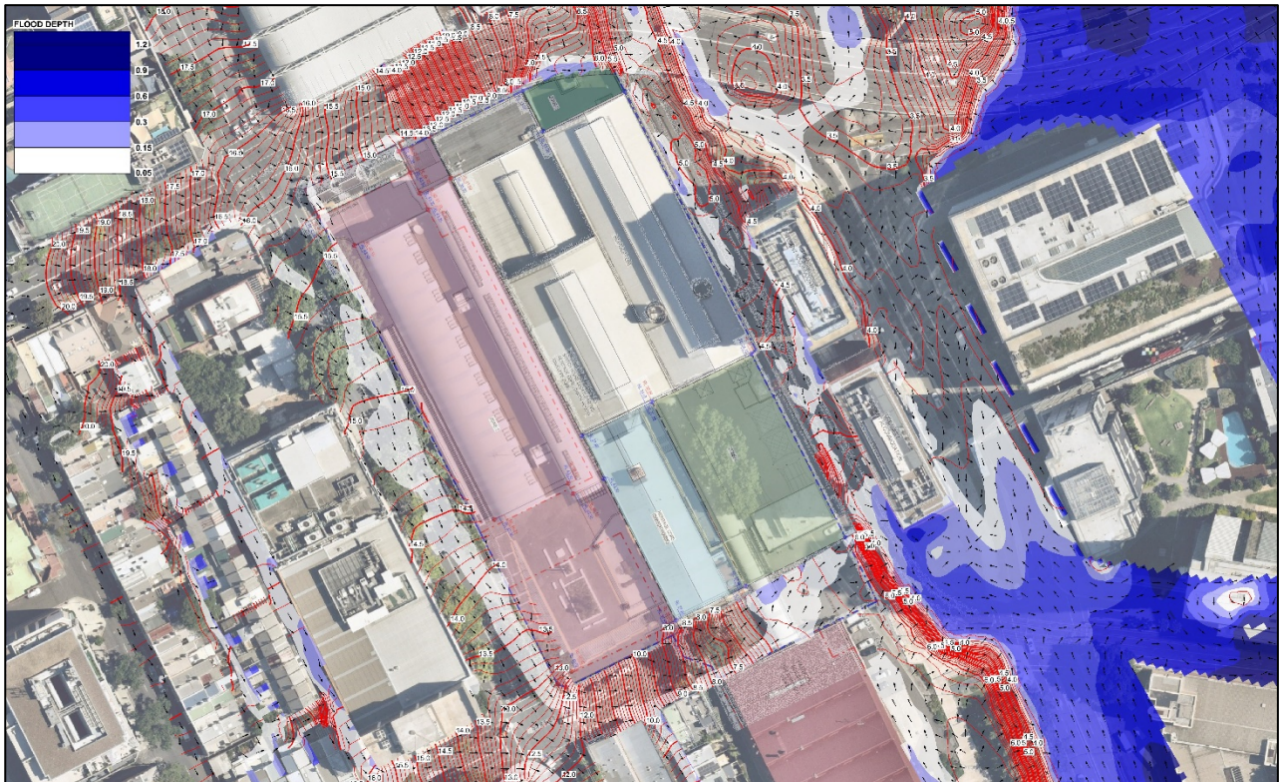


- **Macarthur Street** There is less than 150mm above the existing ground levels of flood or over land flow water depth, the extent is greater than the 1% AEP event but not significantly as these as small catchments. Please note the flooding of the light rail corridor and the Darling Drive are significantly increased.

- **Zone 3** inside the site there is 50-200mm above the existing ground levels of flood or over land flow water depth. the extent is greater than the 1% AEP event but not significantly as these as small catchments. Please note the flooding of the light rail corridor and the Darling Drive are significantly increased.

- **Zone 3** adjacent the site there is 50-200mm above the existing ground levels of flood or over land flow water depth. the extent is greater than the 1% AEP event but not significantly as these as small catchments. Please note the flooding of the light rail corridor and the Darling Drive are significantly increased.

The proposed 1% flood condition is as per Figure 25

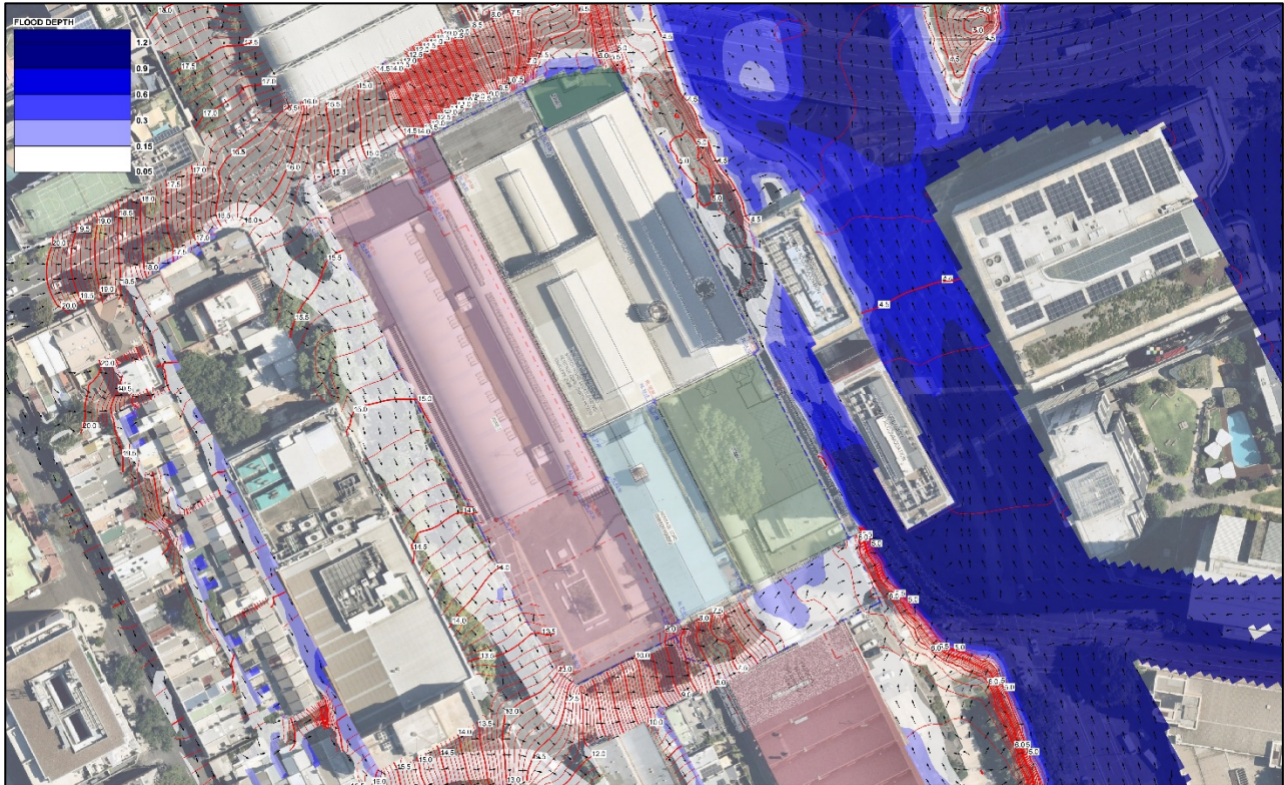


- **Macarthur Street** There is less than 150mm above the existing ground levels of flood or over land flow water depth and flooding has been removed from the new building envelope area.

- **Zone 3** inside the site Flooding has been removed from the new building envelope area.

- **Zone 3** adjacent the site there is 50-200mm above the existing ground levels of flood or over land flow water depth, which is slightly worse than the existing condition but local to the zone adjacent the proposed building. There are no significant upstream effects. Some local drainage infrastructure will be required to address this local flood worsening.

The proposed PMF flood condition is as per Figure 26



- **Macarthur Street** There is less than 200mm above the existing ground levels of flood or over land flow water depth and flooding has been removed from the new building envelope area.

- **Zone 3** inside the site Flooding has been removed from the new building envelope area.

- **Zone 3** adjacent the site there is 150-400mm above the existing ground levels of flood or over land flow water depth, which is slightly worse than the existing condition but local to the zone adjacent the proposed building. There are no significant upstream effects. Some local drainage infrastructure will be required to address this local flood worsening.

City of Sydney Interim Floodplain Management Policy extract:

Development	Type of flooding	Flood Planning Level
All other below-ground car parks	Mainstream or local drainage flooding	1% AEP flood level + 0.5 m or the PMF (whichever is the higher) See Note 1
Below-ground car park outside floodplain	Outside floodplain	0.3 m above the surrounding surface
Above ground car park	Enclosed car parks	1% AEP flood level
	Open car parks	5% AEP flood level
Critical Facilities	Floor level	1% AEP flood level + 0.5m or the PMF (whichever is higher)
	Access to and from critical facility within development site	1% AEP flood level

Notes

1) The below ground garage/car park level applies to all possible ingress points to the car park such as vehicle entrances and exits, ventilation ducts, windows, light wells, lift shaft openings, risers and stairwells.

2) Local drainage flooding occurs where:

- The maximum cross sectional depth of flooding in the local overland flow path through and upstream of the site is less than 0.25m for the 1% AEP flood; and
- The development is at least 0.5m above the 1% AEP flood level at the nearest downstream trapped low point; and
- The development does not adjoin the nearest upstream trapped low point; and
- Blockage of an upstream trapped low point is unlikely to increase the depth of flow past the property to greater than 0.25m in the 1% AEP flood.

3) Mainstream flooding occurs where the local drainage flooding criteria cannot be satisfied.

4) A property is considered to be outside the floodplain where it is above the mainstream and local drainage flood planning levels including freeboard.

Should you require anything further please contact the undersigned.

Yours faithfully,
TTW (NSW) PTY LTD

A handwritten signature in black ink, appearing to read 'S. Brain', written in a cursive style.

STEPHEN BRAIN
Technical Director

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