TTW Structural Civil Traffic Façade

2 November 2022 212058 CFAA

Mr. Tom Kennedy
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c/o CREATE NSW

Sent by email: tom@gtkconsulting.com.au

Powerhouse Museum Renewal, Ultimo

SSD-32927319 Response to Submissions DPE – Flooding

Dear Tom,

This technical note is made in response to the comments made by the Department of Planning and Environment for the Powerhouse Ultimate Renewal State Significant Development (SSD-32927319). The comments made by DPE were regarding the Flood Impact and Risk Assessment submitted as part of the SSDA (*Stage 1 FIRA and Civil SSDA Report*, *TTW, 14 September 2022)*. This technical note should be read in conjunction with the previously submitted report. The comments by DPE have been replicated below with responses to each paragraph in the following section.

Thank you for your email received 29 September 2022 seeking comments on the response to submissions (RtS) for the above project.

A flood impact assessment has been provided as requested. However, EHG does not consider that the information provided enables a proper assessment. The flood impact assessment only shows impacts greater than '0.05', which is assumed to be in metres. The flood impact assessment must be updated to show impacts greater than 0.01m or 10mm, the generally accepted limitation of accurate modelling.

EHG considers that displaying only impacts of 0.05m or above may hide true impacts. The loss of floodplain storage and conveyance across the southeast portion of the project site may lead to impacts. Considering the serious flood affectation of downstream properties, this should be addressed.

The development of Zone 3 (the northeast corner) is predicted to cause unacceptable flood impacts. Consideration should be given to retaining this area at existing ground levels or reducing the planned extent of the building to avoid impacts. It is not considered reasonable to proceed based on the predicted impacts. The feasibility of any proposed mitigation measure must be shown, noting that stormwater upgrades in this environment even if feasible, would likely be costly.

The flood model does not appear to adequately represent the wall along the eastern boundary of the project site. This type of detail is typically not included in flood studies completed at a regional scale, such as City of Sydney Council's Darling Harbour study. This level of detail should be included in the site-specific assessment for the project flood assessment is based on the previously submitted flood modelling and reports.

The following responses are made in response to the comments raised by DPE.

Response to Paragraph 1.
The flood impact assessment previously completed is deemed to be suitable for a Stage 1 Concept SSDA and provides suitable analysis and assessment of the existing and post development flood behaviour. As discussed in the original report, a more detailed modelling assessment will be included as part of the detailed Stage 2 SSDA. However, the model results have now been updated to show flood impact results within the +/- 10mm range rather than the original +/-50mm, refer to figure 4.

Response to Paragraph 2. Flood model results have been updated to now show flood impact results within the +/- 10mm range rather than the +/-50mm range, refer to figure 4. The updated results show that there is no significant impact downstream or to adjacent properties. There are very localised changes in flood level, but these are most likely due to interpolation at the edges of the flood model grid adjacent to nulled cells. There is no significant impact to flood behaviour outside the development site due to the loss of floodplain storage to the southeast of the development site, there is localised flood affectation within the site boundary that will be managed through appropriate flood planning levels of the development and proposed stormwater during the Stage 2 SSDA. Further detailed assessment will be included in the Stage 2 SSDA and will include more detailed topographical survey, and more detailed investigation of the existing and stormwater within and around the development site.

Paragraph 3.
Development of zone 3 is not expected to cause any significant impact in flood behaviour. There is an existing brick wall that runs along the northern boundary of this area, which would block overland flow entering this area in the existing condition. Refer to survey and site photos shown in figure 1. This existing brick wall has been included in the existing scenario flood model. The development of zone 3 is fully behind this existing brick wall and would not change the overland flow paths which would not enter the zone 3 Area. The existing scenario was updated to include this wall with the results shown in figure 2. The post development flood results with development of the zone 3 area is shown in figure 3.

The post development flood impact map in figure 4 shows localised impacts, but this is due to interpolation at the edges of the flood model grid. Further detailed assessment will be included in the Stage 2 SSDA and will include more detailed topographical survey, and more detailed investigation of the existing and stormwater within and around this area.

Paragraph 4.
The eastern boundary wall has now been included in both the existing scenario and post development scenario. The inclusion of the wall does not cause any significant impacts on flood behaviour outside the development site as there is still an overland flow path to the south of this wall with an open railing fence and steps down to Darling Drive, refer to figure 5.

Conclusion.
The updated flood modelling confirms that the proposed Stage 1 SSD submission does not have a significant impact on flood behaviour or flood levels outside the development site and provides a suitable level of analysis and assessment appropriate for a Concept Stage 1 SSDA.

Should you require anything further please contact the undersigned.

Yours faithfully,
TTW (NSW) PTY LTD

EIRIAN CRABBE
ASSOCIATE DITECTOR

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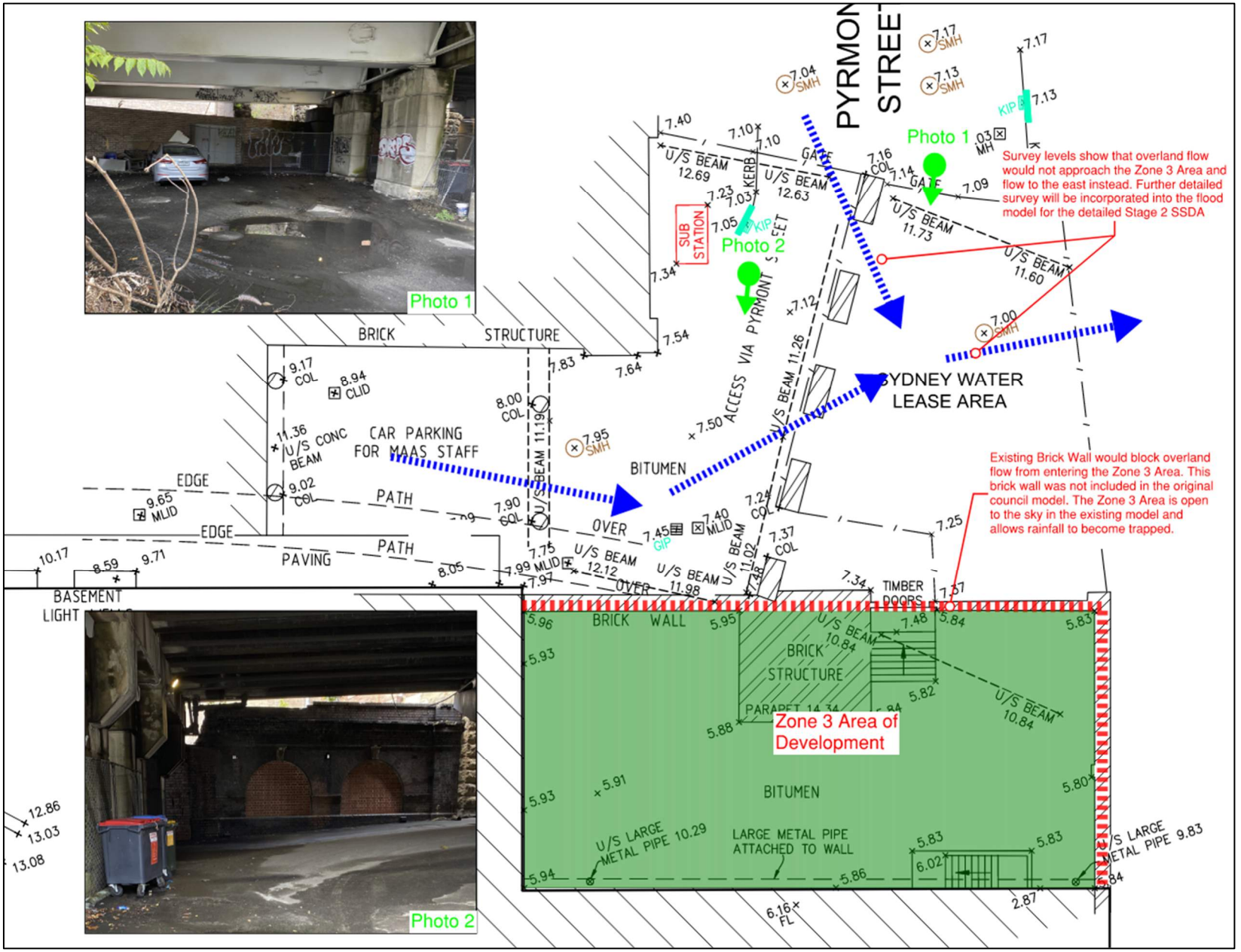

Figure 1. Extract of Topographical Survey Showing Existing Brick Wall And Overland Flow Routes Around Zone 3

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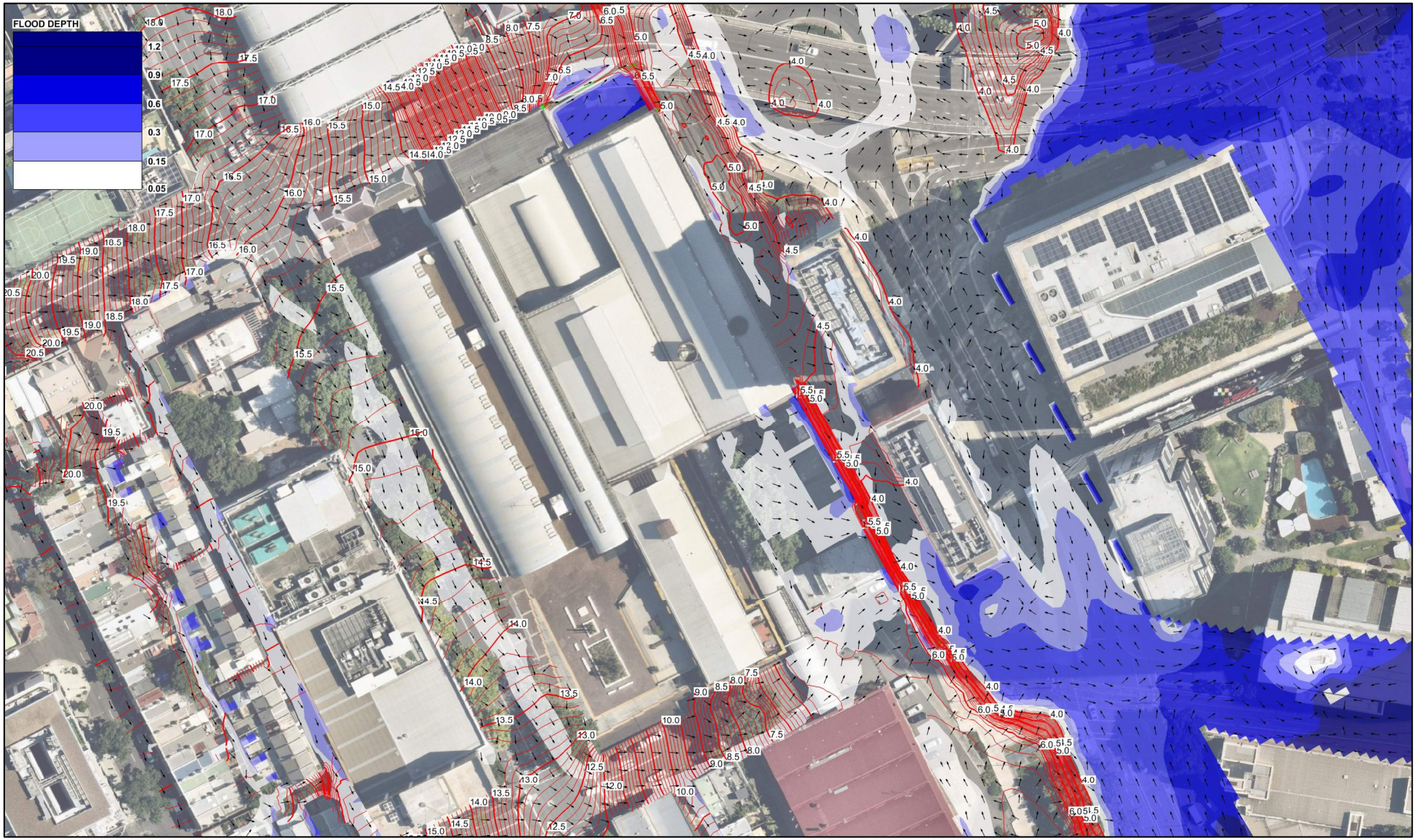

Figure 2. Updated Existing 1% AEP Flood Results (Includes Existing Walls To The North East And East Of The Development Site)

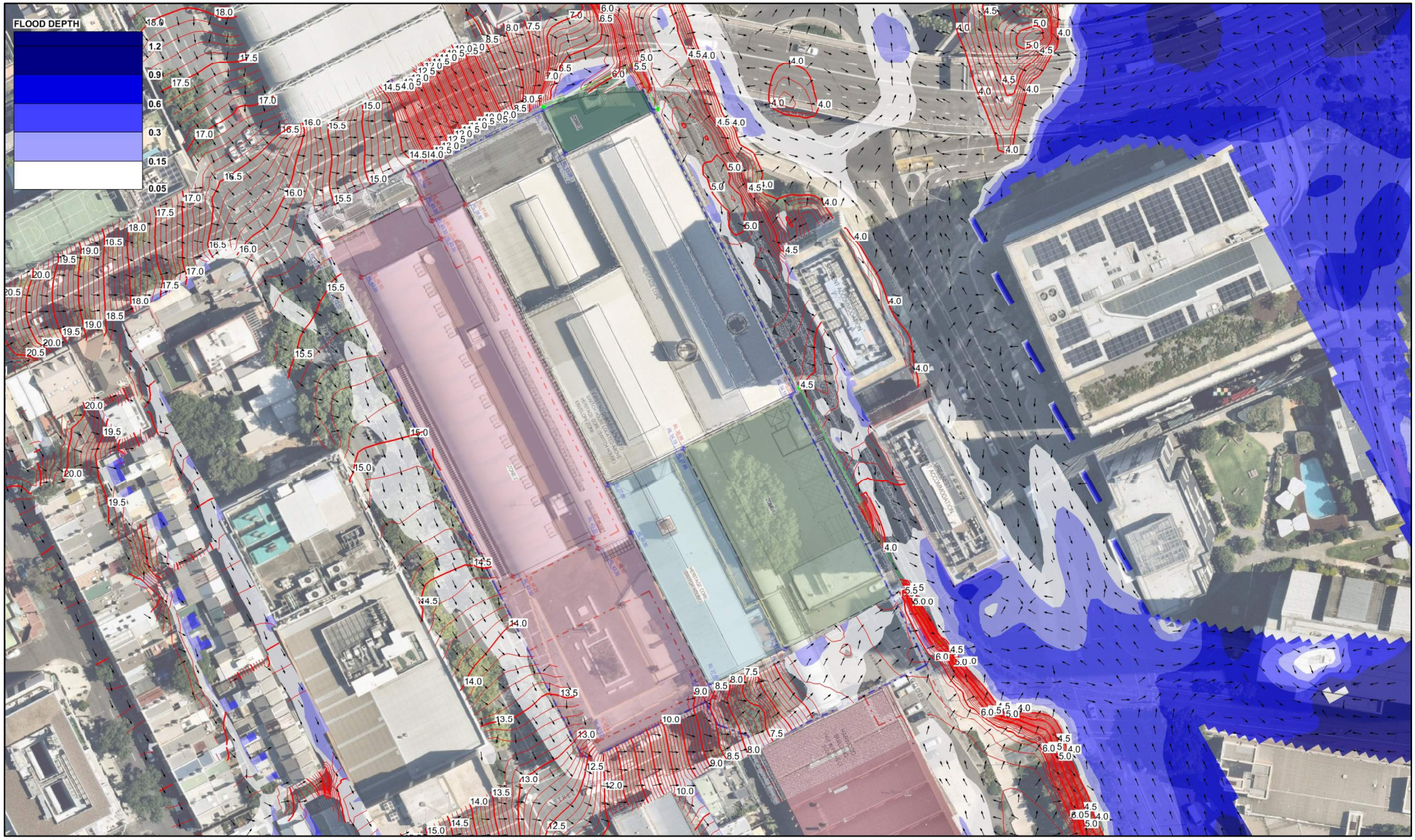

Figure 3. Updated Post Developemnt 1% AEP Flood Results (Includes Existing Walls To The North East And East Of The Development Site)

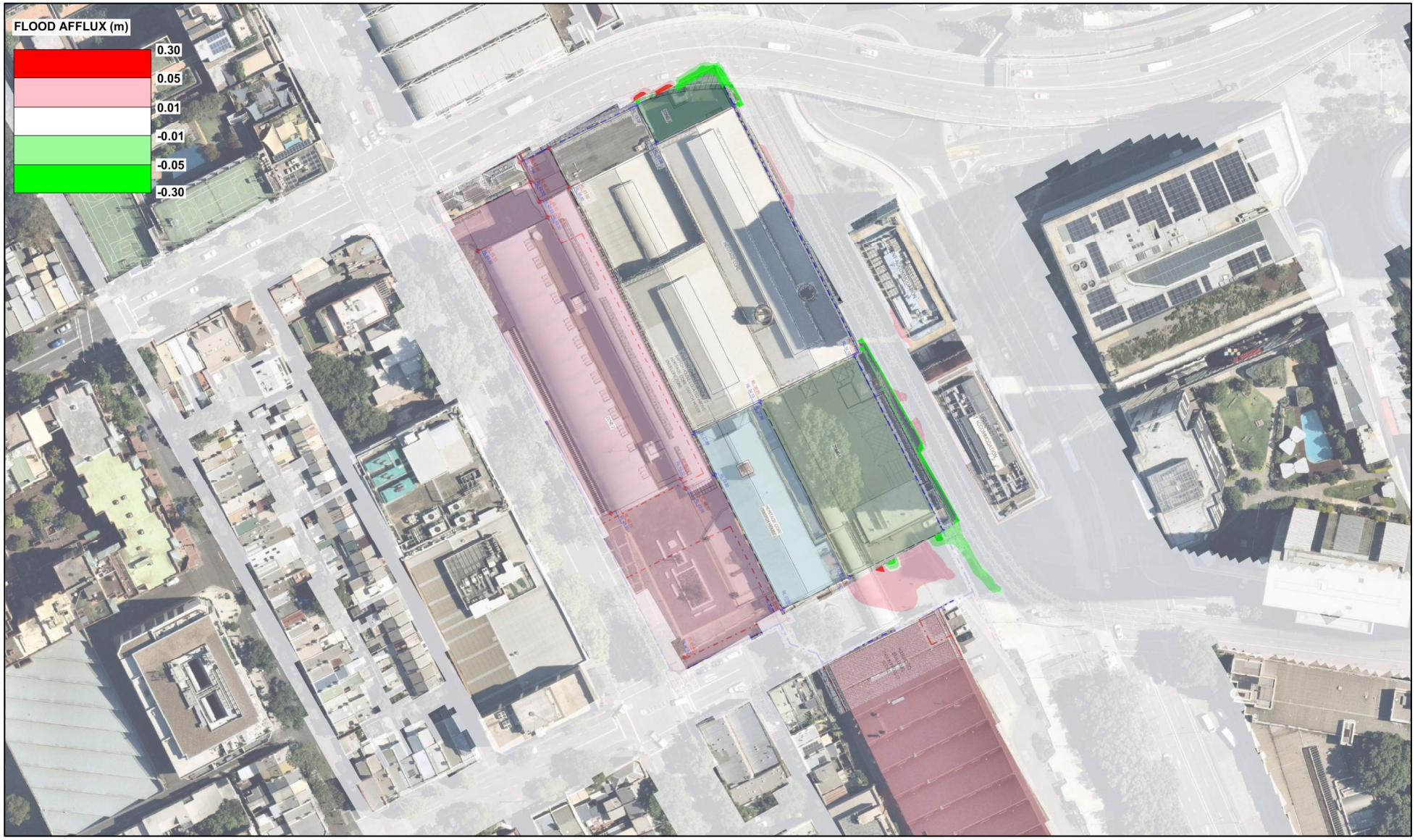

Figure 4. Post Developemnt 1% AEP Flood Afflux (Change In Flood Level)

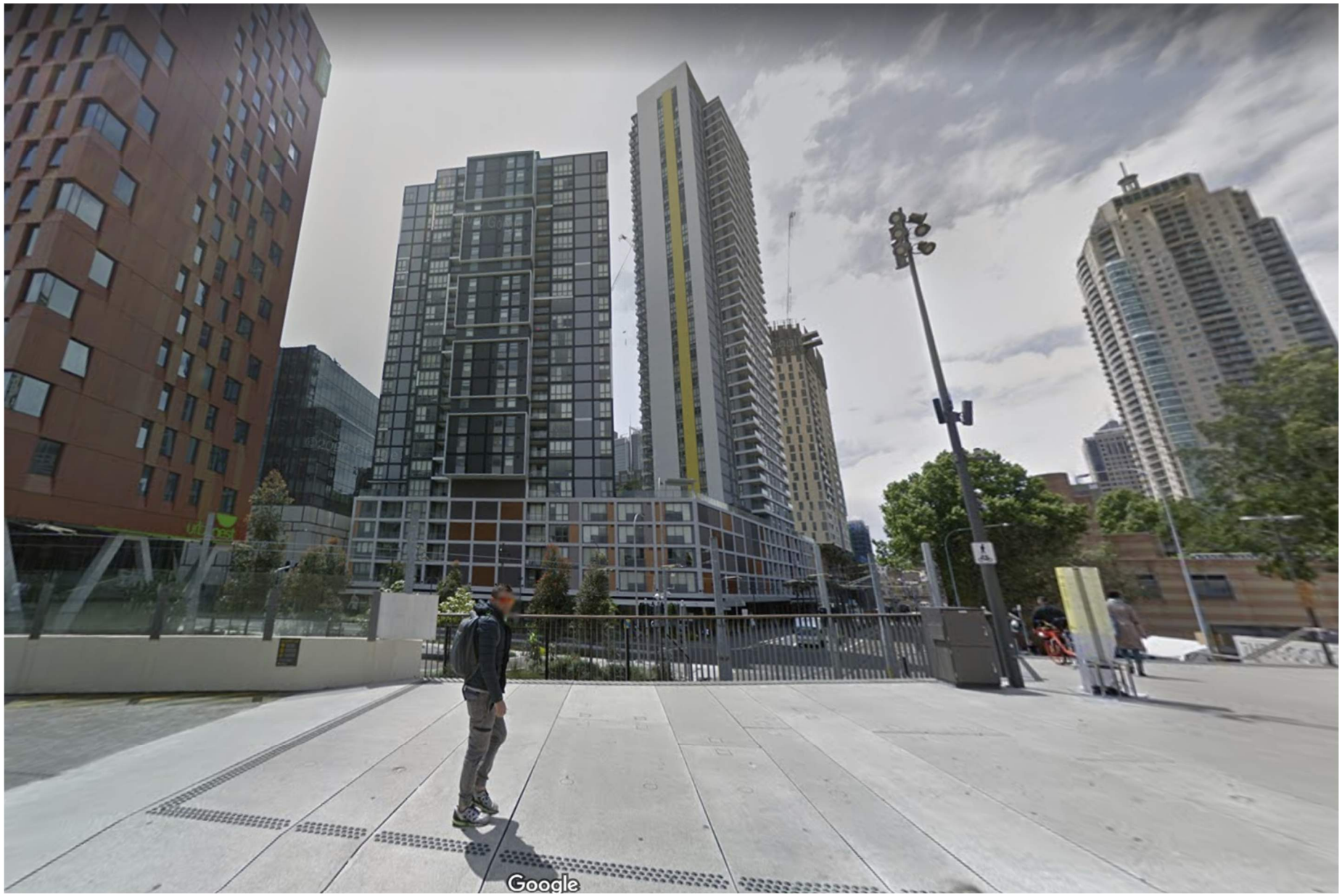

Figure 5. Open Section Of Balustrrade And Stairs To The South Of The Eastern Boundary Wall (Google Maps)