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BURELLI INVESTMENT HOLDINGS PTY LTD
C/- ADM Architects

Date
04.09.2024

Job Number
200973

Updated Flood Modelling for Proposed Hotel / Commercial Development [Rev#01]
37-39 Burelli St, WOLLONGONG NSW

Dear Sir/Madam,
Please find following our updated flood modelling for the above site. This report must be read in conjunction with the latest Greenview flood report for the development, being Rev E dated 30/05/2022. We note that the proposed case results in that report are now superseded by the results contained in this revision letter.

The following changes were incorporated into our flood model for the proposed scenario:

1. Minor architectural updates, including locations of solid elements in the subfloor. Refer ADM Architects Project 2021-32 Drawing A-102a Issue A dated August 2024 and Drawing A-211 Issue B dated June 2024.
2. We have specifically modelled the top-of-basement design, which generally mimics existing ground levels, with slight variations. The design levels are attached in the appendices. We note that these levels will be the finished surface levels under the elevated ground floor slab.
3. We have increased the blockage factor for all louvres (i.e. flowpaths into and out of undercroft area) from 50% to 55%. The central portion of the undercroft area has a nominal blockage factor and energy loss factors to account for piers.

The full 2D model results are in the appendices as attached and we highlight that:

- The site itself is subject to shallow inundation during the 1%AEP flood event with typical depths around 150-300mm.
- 1%AEP flow velocities are typically around 0.5-1.0 m/s through the subject site.
- Conveyance impacts are minor as discussed below.
- The worst-case 1%AEP flood level onsite under proposed conditions is +5.0 mAHD.
- The worst-case PMF flood level onsite under proposed conditions is +5.3 mAHD.

Conveyance Impacts

The proposed design has been deliberately designed to mimic the existing solid obstructions and, as such, the offsite impacts on adjacent private lots are less than the allowed +20mm. Several grid cells within the road reserve area in Burelli St and Corrimal St experiences +35-60mm increases but we note that there is no change to the hazard at these locations. Thus, overall, the development has a very minor impact on local flood behaviour.

PMF impacts are mapped in the appendices and are typically limited to the site itself. Some areas of road reserve experience isolated spot-areas of up to +50mm and the McDonalds to the east of the subject site experiences a small increase of +40-80mm along the western wall of the main building and within the carpark, the Greek cultural centre on Stewart St experiences areas at +40mm and a few cells at +50mm. The development to the east of the Greek centre has some impact areas at +40mm along it's western wall. We highlight that the impact mapping and results show that:

- There are no additional lots affected by the PMF extents under proposed conditions.
- We do not have floor level survey of the McDonalds, but PMF flood depths along the western wall are around 200-500mm, which will (under existing conditions) inundate the McDonalds ground floor level by several 100mm. Thus, the extra 40mm along the western wall is not additional over-floor flooding.
- We do not have floor level survey of the Greek Cultural centre, but PMF flood depths along the western side are around 200-300mm, which will (under existing conditions) inundate the ground floor level by several 100mm. Thus, the extra 40mm along the western wall is not additional over-floor flooding.
- We do not have floor level survey of the site to the east of the Greek Cultural centre (Hillsong Church Wollongong), but PMF flood depths along the western side are around 200-250mm, which will (under existing conditions) inundate the ground floor level by several 100mm. Thus, the extra 40mm along the western wall is not additional over-floor flooding.
- We cannot see that there will be any impact on flood warning times or flood evacuation routes, given that the PMF impacts are typically less than 20mm and isolated spot-impacts (rather than large scale swathes of increased water levels that could potentially cut evacuation routes).

Flood Storage Impacts

Loss of floodplain storage can affect hydrograph routing such that there is a corresponding loss of flood attenuation. That is, flowrates downstream may increase due to the loss of storage. Hence Council's requirement to demonstrate no loss of storage within the floodplain.

The subject site is only inundated to a shallow depth during the 1%AEP event and we do not believe that flood storage is a significant issue at this site. Flood storage volumes were approximated in Global Mapper as shown below. There is a slight increase in flood storage under proposed conditions.

Volume 1%AEP (existing):	148m3
Volume PMF (existing):	371m3
Volume 1%AEP (proposed):	223m3
Volume PMF (proposed):	568m3

Yours faithfully,

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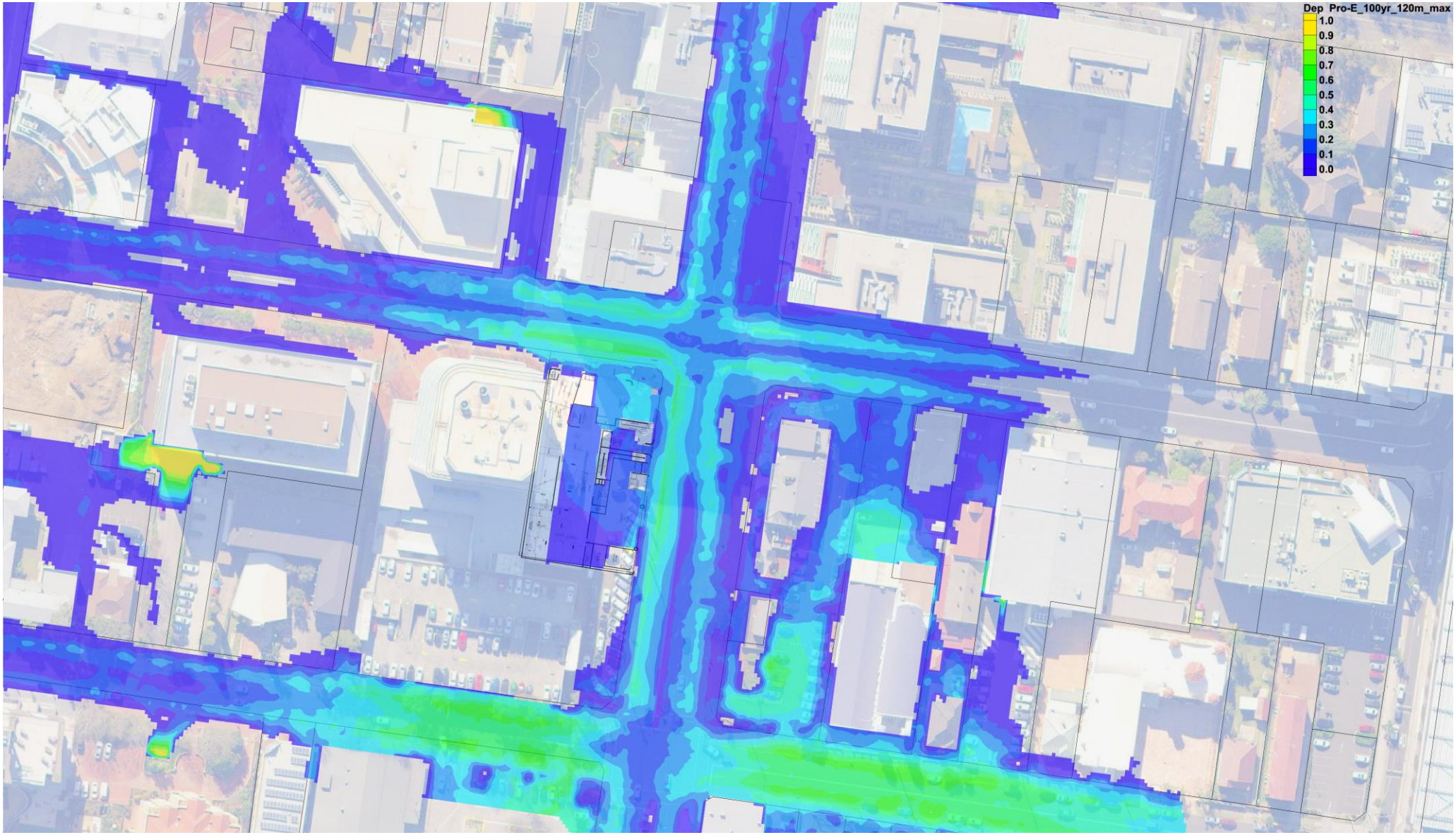

Figure B08: Proposed 100yr ARI 120min depths [m]

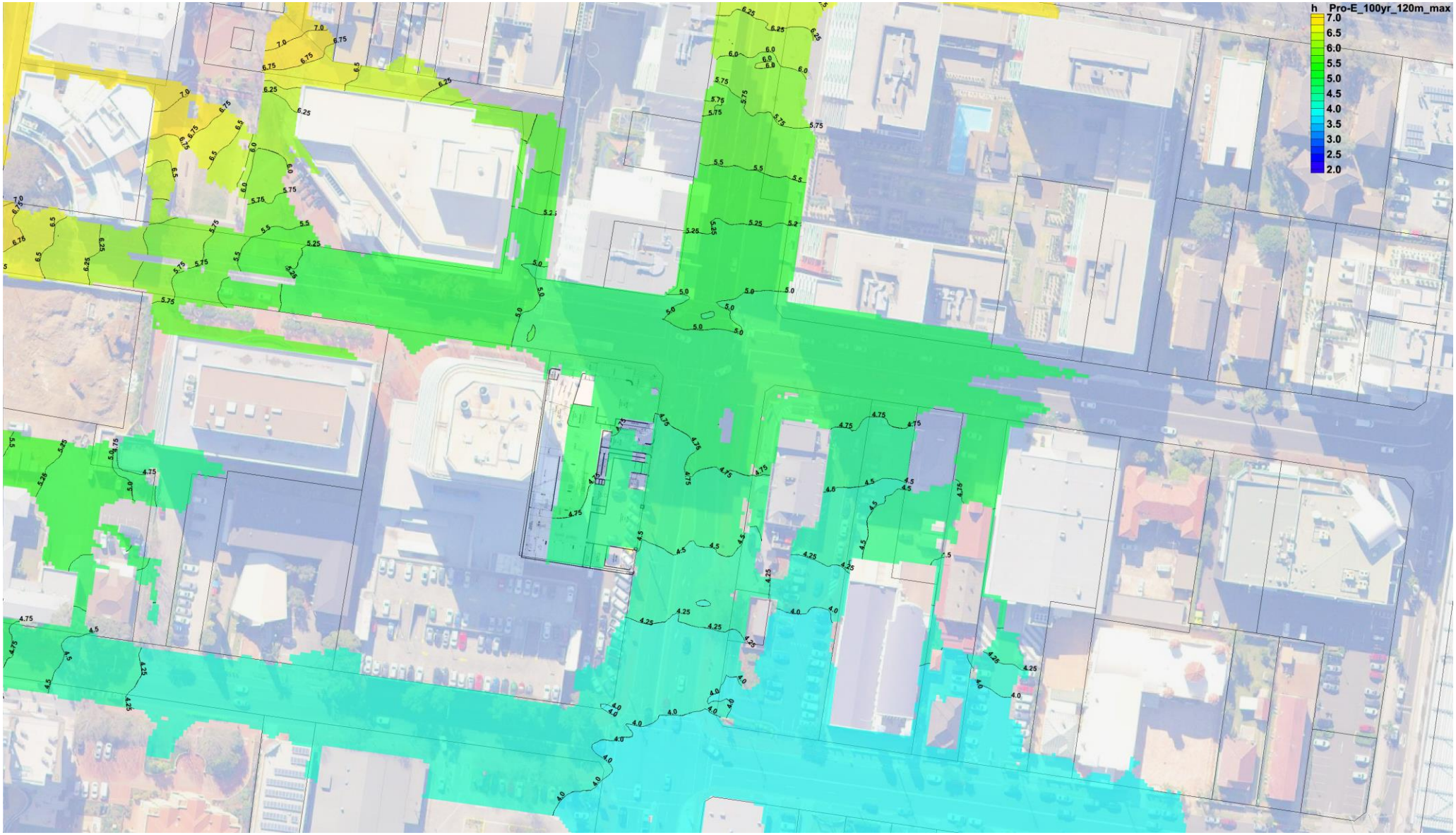

Figure B09: Proposed 100yr ARI 120min water levels [mAHD]

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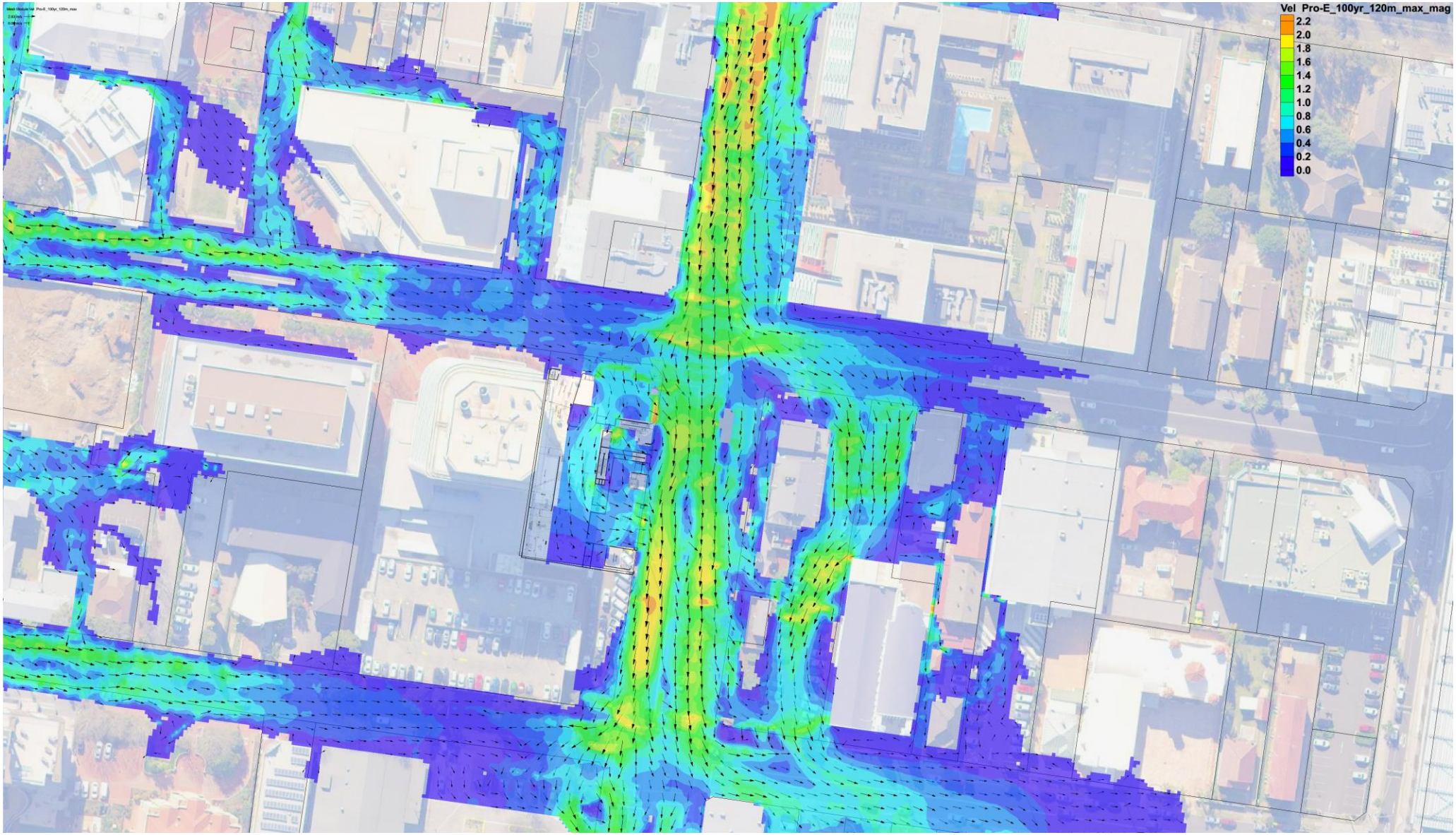

Figure B10: Proposed 100yr ARI 120min Velocities [m/s]

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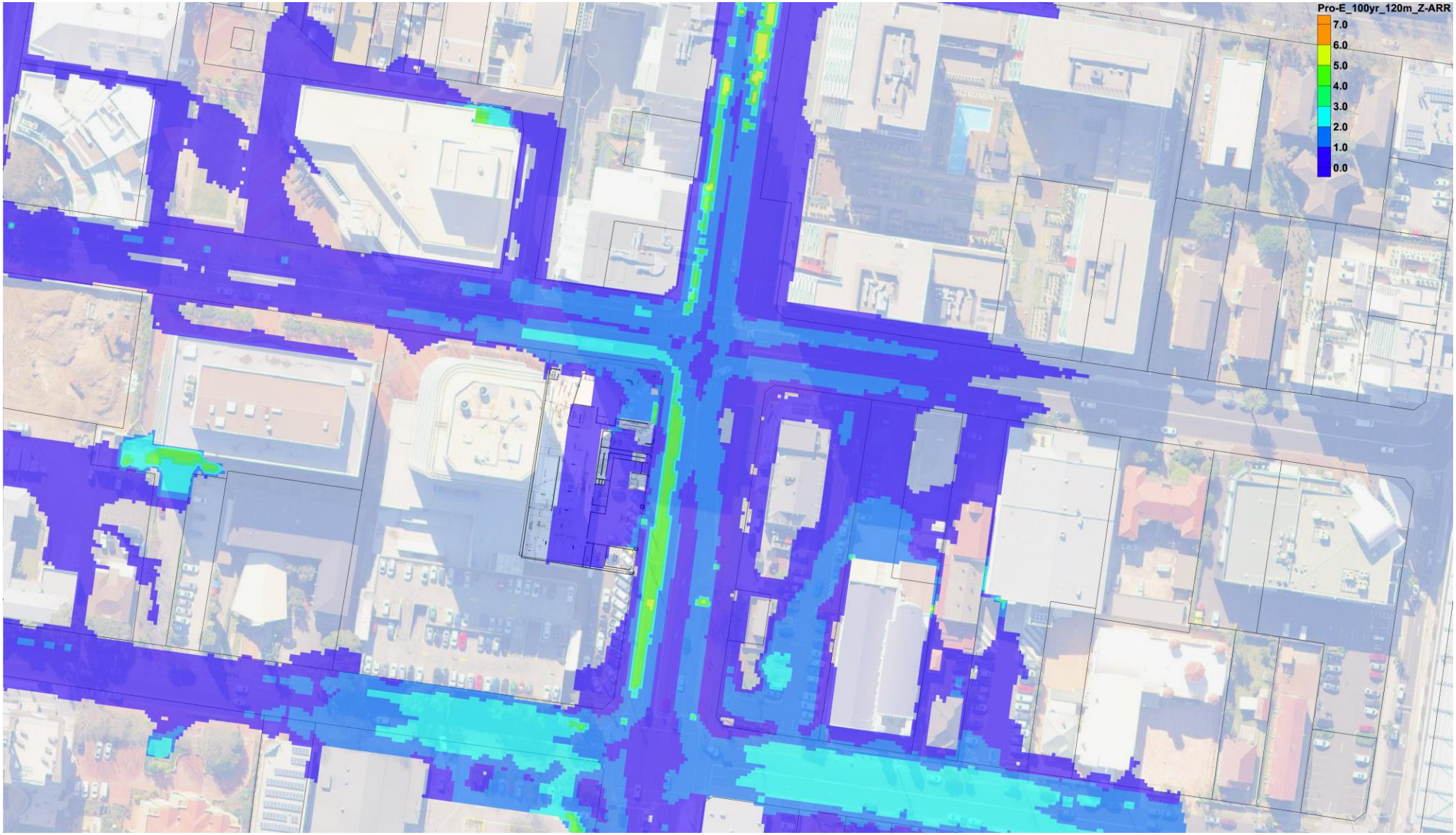

Figure B11: Proposed 100yr ARI 120min ARR2019 Hazard

H1-H6 blue-red gradient

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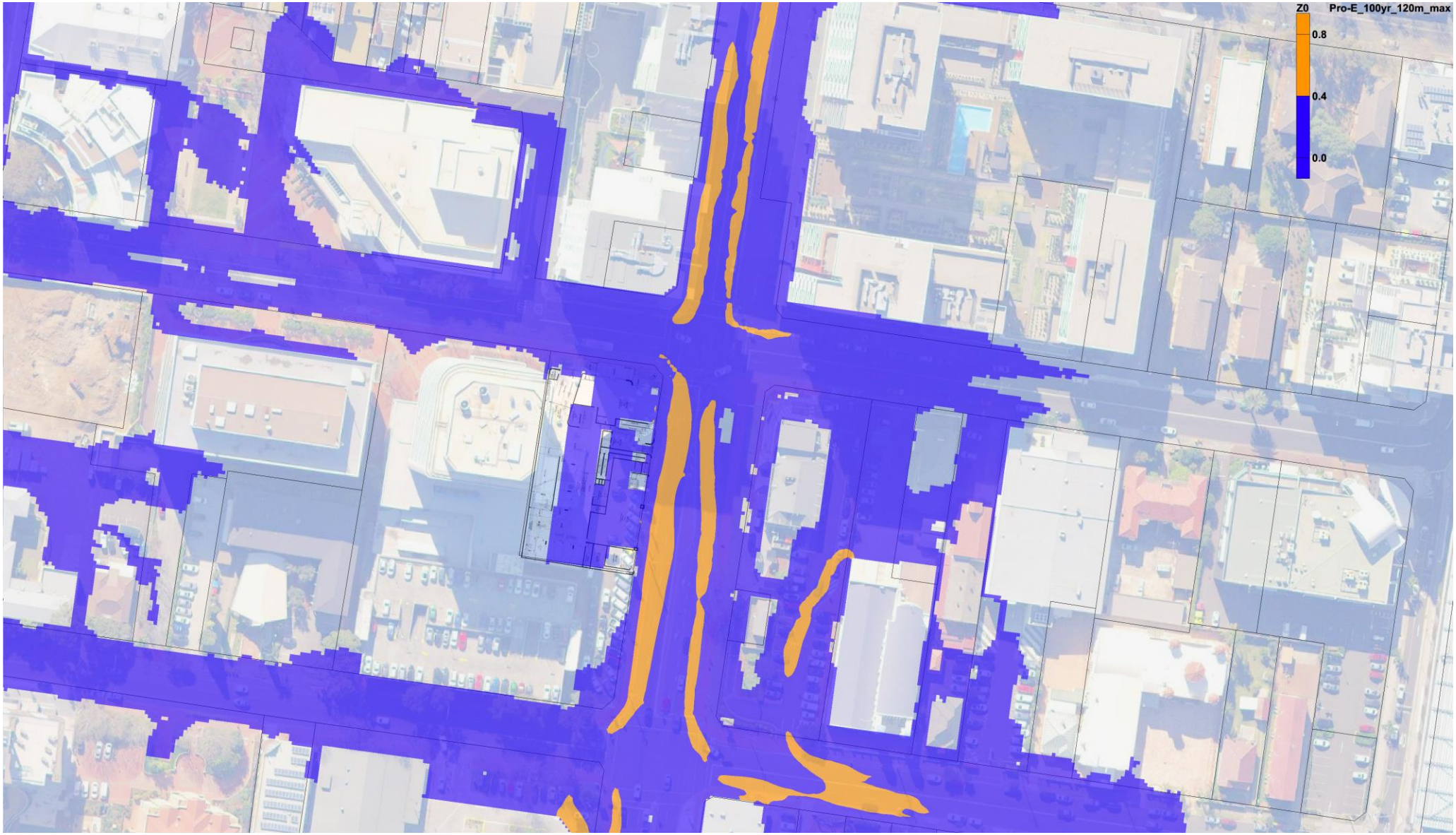

Figure B12: Proposed 100yr ARI 120min V*D Hazard

[blue < 0.4, yellow >= 0.4]

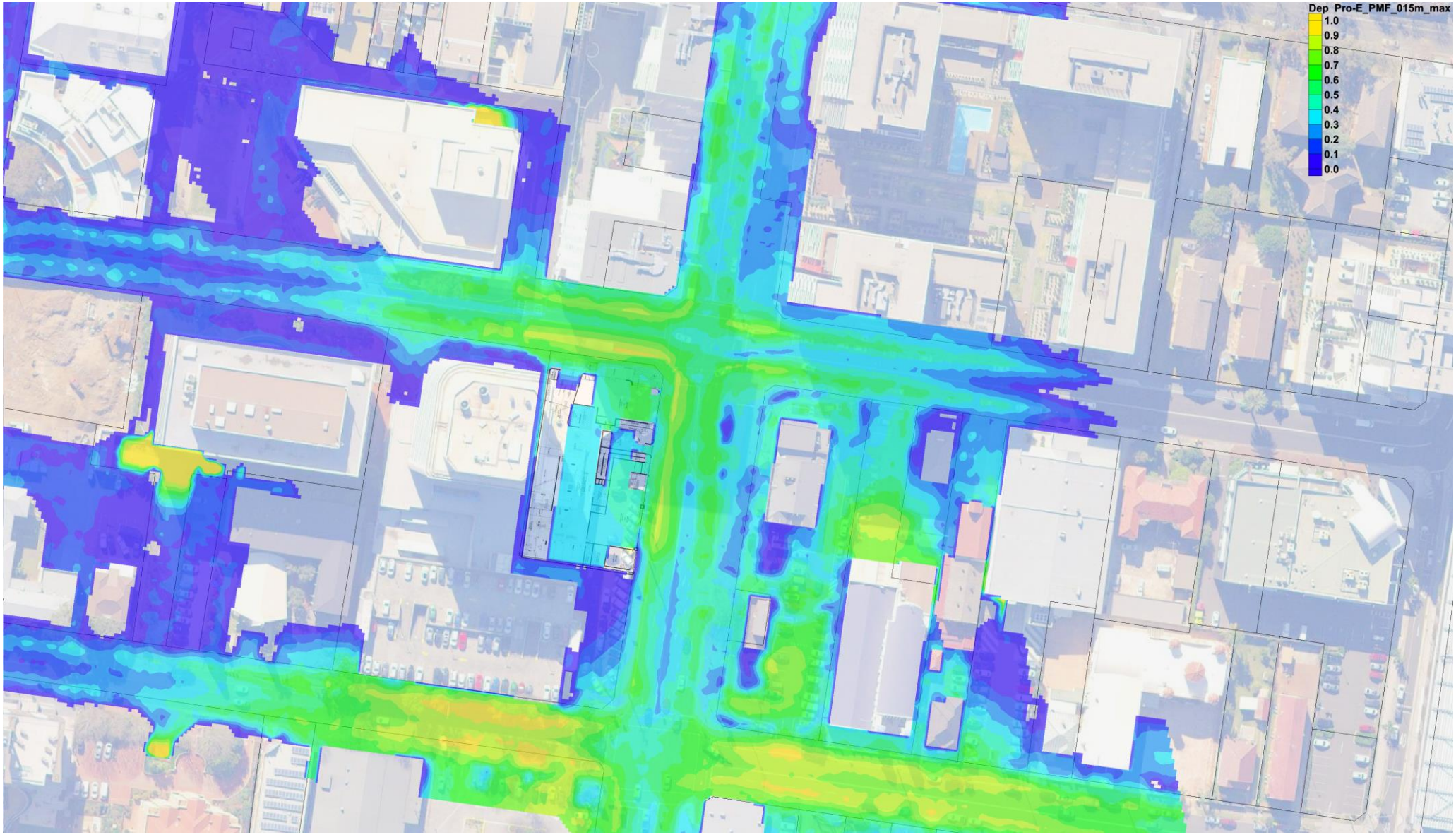

Figure B13: Proposed PMF 15min depths [m]

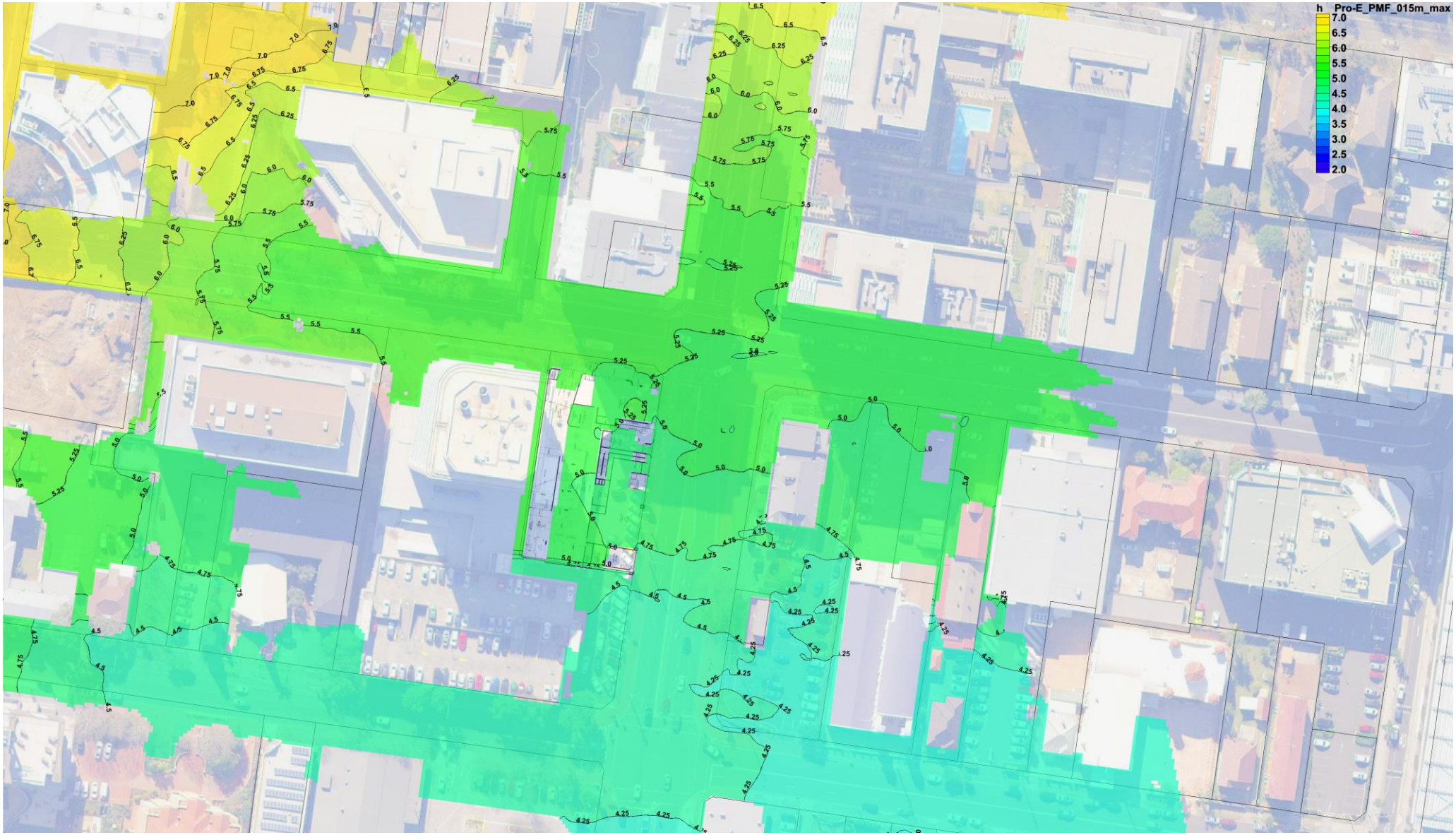

Figure B14: Proposed PMF 15min water levels [mAHD]

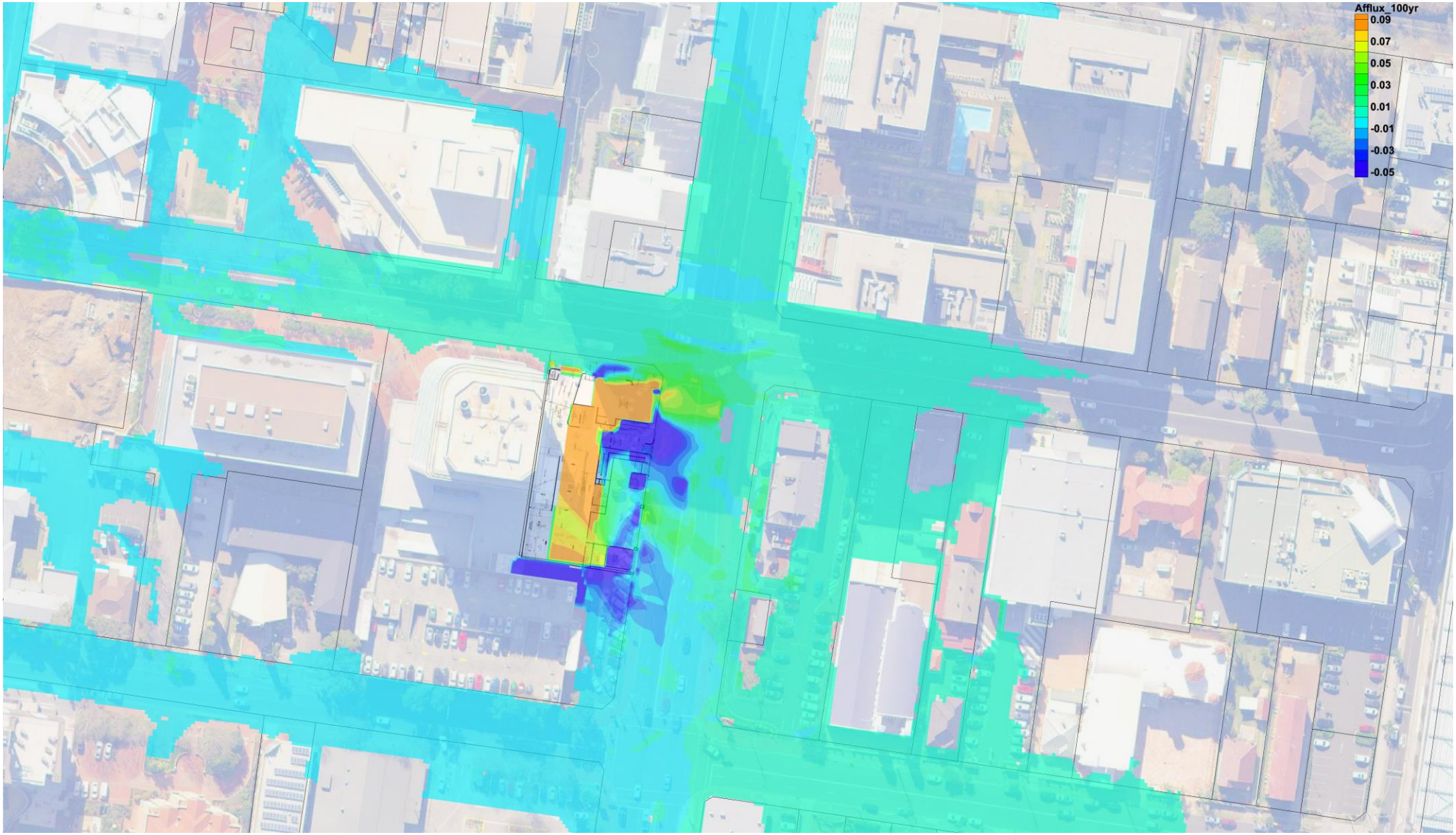

Figure B15: 100yr ARI 120min Afflux [m]

Proposed – Existing Surface levels

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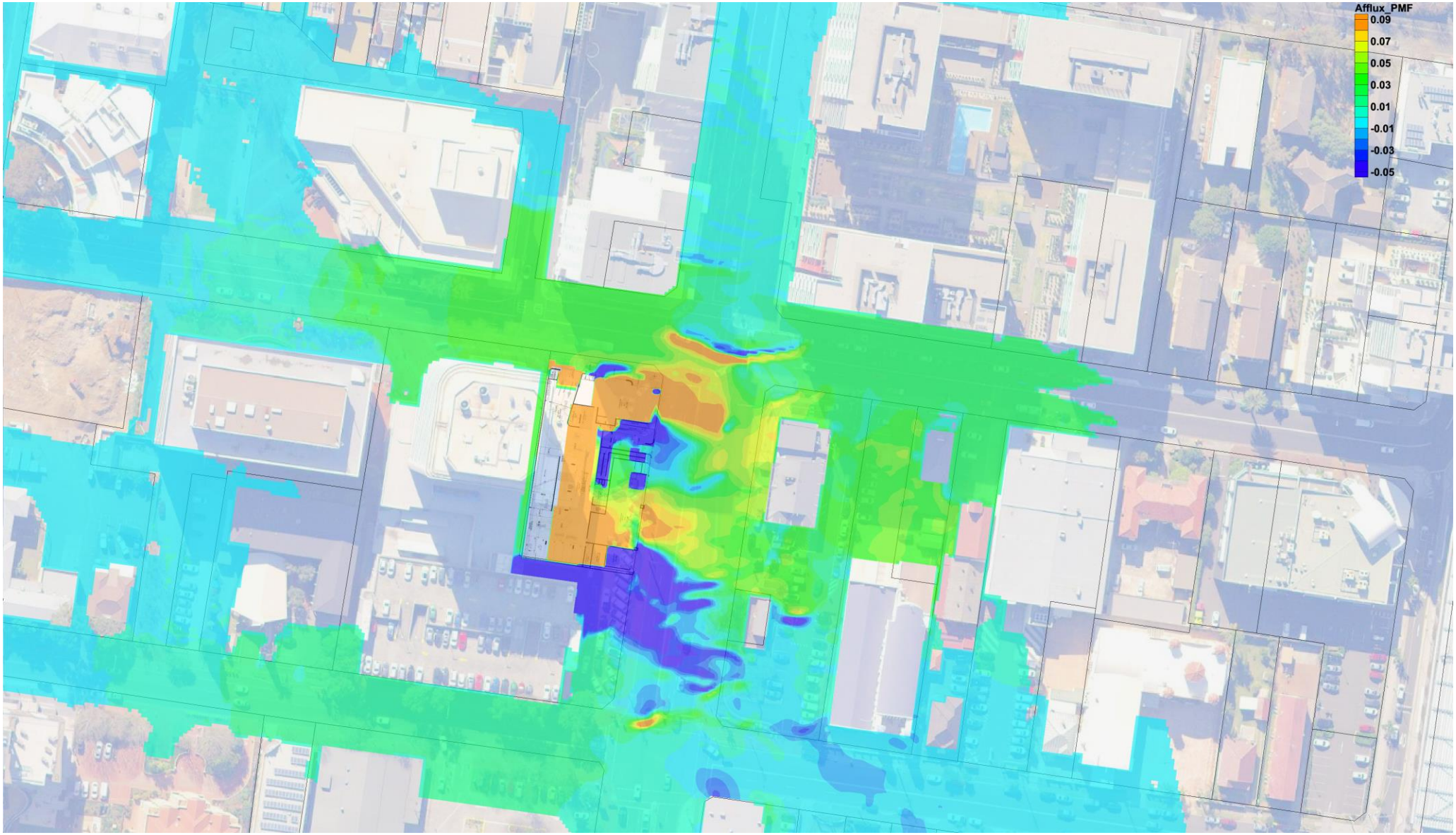

Figure B16: PMF 15min Afflux [m]

Proposed – Existing Surface levels

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