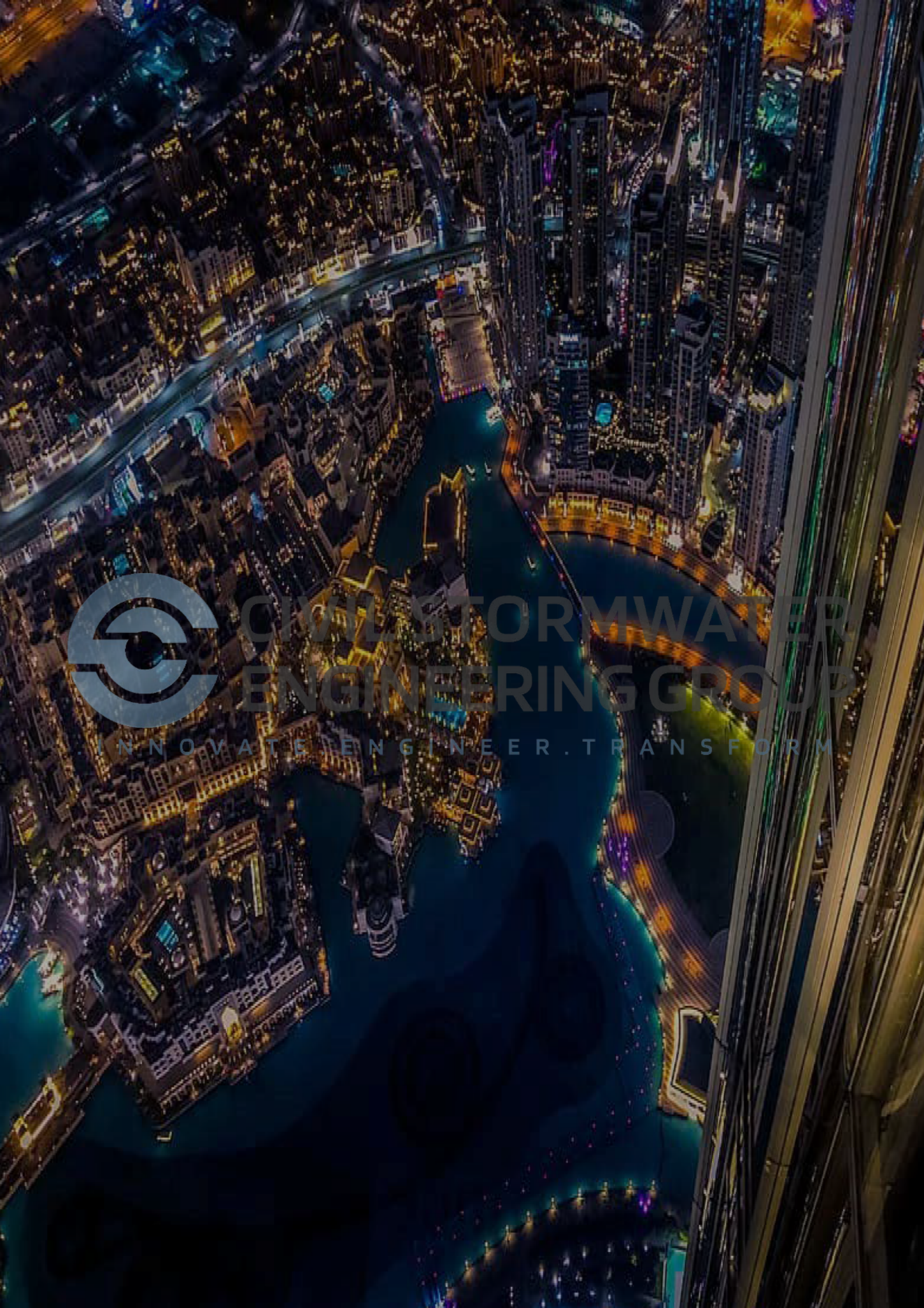
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2/11/2025
CSW2024.27

LETTER OF RESPONSE

To whom it may concern,
Dear Assessment Officer,
PP-2023-1899
IRF24/2481

RE: 310 Terrigal Drive, Terrigal.

In response to the RFI's related to flooding listed in the Gateway Determination report PP-2023-1899, please refer to our comments below:

1. *3.4 Section 9.1 Ministerial Directions, direction 4.1 Flooding;*

Flood hazard: Through this determination letter and within direction 4.1 it is referenced that this site has a flood hazard category of high hazard. Based on the flood model results presented by CSEG™ in the flood impact and risk assessment report reference CSW2024.27.FIA.REV.03, the site is categorized as H4 hazard for flood events up to and including the 500-year post development flood event and the 1%AEP Climate Change 2090. These results correlate to the flood hazard categorization presented in Council's catchment wide Coastal Lagoon Catchments Overland Flow Study (2020), in difference to what has been stated in the Gateway determination report.

Under *the Department of Planning and Environment Flood Risk Management guideline FB03 figure 1 General flood hazard vulnerability curve under section 3 Flood hazard thresholds*, categories H1 to H4 are equivalent to low hazard and H5 to H6 are equivalent to high hazard. This is different from what has been stated in the Gateway Determination Report.

In NSW, when developing on flood affected land, councils typically require developers to address flood risks based on the 1 in 100-year flood level. The general requirement is to ensure that the development is designed to manage flood risk to an acceptable level. The subject site falls under the jurisdiction of the Central Coast Council (NSW) and the controls of the Flood Risk Management Plan. For developments within flood-prone areas, Central Coast Council requires the development to adhere to the 1 in 100-year

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flood event as the baseline for flood planning. Under Council's assessment letter dated 26 of March 2024, Council endorses the draft planning proposal, including the submitted Floodplain Risk Management Plan. The flood risk management plan presents a proposal that expects to unlikely have any significant impact during all storm events up to and including the PMF.

The site is governed by 3 flood functions: floodway, flood storage and flood fringe, with the latter being the predominant based on area of coverage. Despite the site being categorized as a floodway, the development is proposed wholly within the flood fringe and flood storage area. In revision 03 of the FIA presented by CSEG™, the model was reconfigured to ensure the building footprint is located wholly outside the floodway as per the post development flood function map found on page 125 of 135, in contrast to what has been stated in the Gateway Determination Report on page 20.

On page 19 of the Gateway Determination Report, it states: *the supporting Flood Impact Assessment does not provide adequate detail commensurate with the site's flood risk.'* The purpose of a Flood Impact Assessment Report is to evaluate the potential risks associated with a proposed development on flood affected land, assess the impact of the development and ensure that the risks of flooding are minimized and managed appropriately, both for the development site and the surrounding area. The FIA prepared by CSEG™ reference CSW2024.27.FIA.REV.03, successfully address the following:

- The FIA categorizes the site as low risk H4 for the 1%AEP and high risk for the PMF.
- The FIA demonstrates that the proposed development does not change the flood risk categorization within the site and outside of it for all stormwater events.
- The FIA dissects flood behavior by outlining crucial flooding states at certain durations of the flood event. This allowed us to determine suitable timing for horizontal evacuation and shelter in place and associated risks.
- The FIA discusses suitable building construction material that can withstand flood behavior. This proposal was also supported by a qualified structural engineer.
- The FIA outlines a Flood Emergency Response Plan appropriate to site conditions recommending Shelter in Place as the safest method of evacuation during peak flood hours.
- The FIA discusses appropriate flood mitigation measures other than raising the building above freeboard level such as the installation of flood warning sirens, educational seminars for residents, etc.

Moreover, the Gateway Determination Report presents the incorrect flood risk map under Figure 14 page 21. As previously mentioned, in revision 3 of the FIA, the TUFLOW

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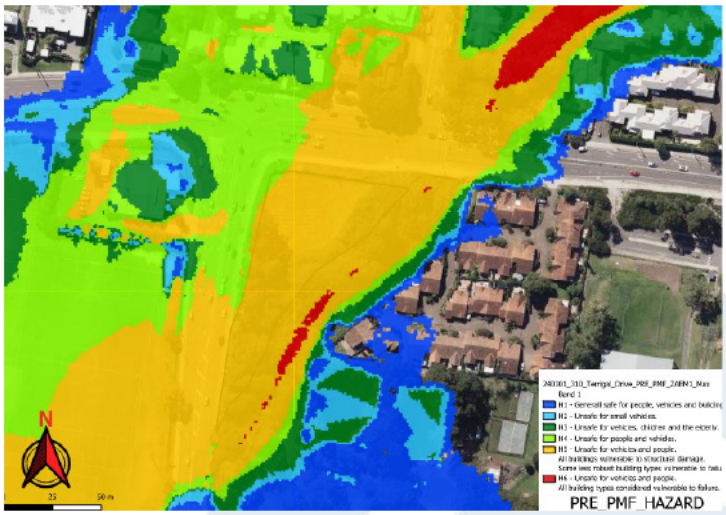
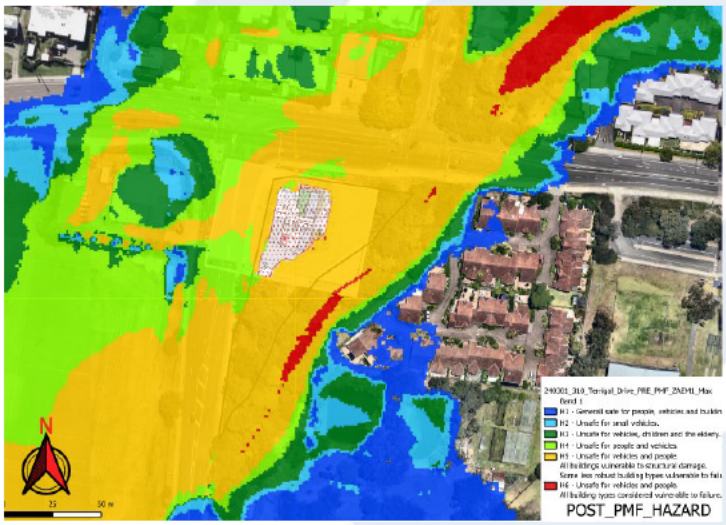
model was updated to ensure risk levels were not increased in all flood events. This was successfully achieved by altering the proposed building footprint. The latest flood hazard map for the PMF post development scenario.





Further, the FIA report prepared by CSEG™ promotes shelter in place evacuation because the flood model demonstrated a rise of flood levels in a short duration, a behavior like flush flooding. Based on this assessment, we concluded that there are greater risks to human lives during horizontal evacuation than shelter in place. Shelter in place offers significant advantages over horizontal evacuation such as:

- Avoiding dangerous floodwaters.
- Reduced exposure to hazards such debris, accidents, etc.
- Prevention of panic and confusion
- Better preparedness for Emergency services

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- Protection from secondary flooding
- Preservation of resources such emergency assistance.
- Reduction in traffic and congestion
- Protection for vulnerable populations

Shelter-in-place is often a safer and more practical response, especially during flash flooding, especially when evacuation routes are compromised, and conditions are transforming. By staying put, people are less exposed to floodwaters, hazardous debris, and chaotic evacuation conditions. It also allows emergency services to focus on targeted rescues without being overwhelmed by the need for mass evacuations. However, it is critical that shelter-in-place plans are well-prepared, and people have access to safe locations that are designed to withstand flooding, along with a clear understanding of when and how to safely evacuate if conditions worsen.

The BCS and Council have supported the FIA, FERP and Shelter in Place. Noting that shelter in place is proposed for a maximum duration of 44 minutes compliant with the maximum acceptable duration of flood inundation of less than 6 hours as per the Draft Shelter in Place Guideline – Preamble prepared by the Department of Planning and Environment.

Moreover, the BCS claims the following:

"The Flood Emergency Response Plan (FERP) does not adequately convey the magnitude of flood conditions on surrounding roadways and the risk to life associated with attempting to drive through them. Section 6.5 also refers to an Evacuation Plan which has not been included in the report".

Under section 6 *Flood Emergency Response Plan* of the FIA prepared by CSEG™ reference CSW2024.27.FIA.REV.03, subsection 6.1 "Risk assessment" describes the risks associated with the 1%AEP and PMF event outlining the following for each event:

1. Flood risk category.
2. Flood depths within the site and adjacent roads.
3. Road blockages due to flood depths and associated risks claiming to be unsafe for people and vehicles.

Further, under section 3 "*Flood Assessment*" subsection 3.6 *"Flood Risk & Behavior"* each storm event from the 20%AEP up to the PMF flood event is dissected based on critical flood durations. For each duration, the flood behavior is described based on flood

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depths, flood category, flood velocity and risks. The method of evacuation is also recommended based on the magnitude of risk at each duration.

For a horizontal evacuation plan, refer to Appendix A of this letter.

In our professional opinion, the FIA report prepared by CSEG™ provides an adequate assessment and understanding of the flood behavior and associated risks, especially for the post development scenario. The FIA report is structured to describe each flood event and associated characteristics based on the proposed development. The FIA adequately identifies and assesses risk and provides feasible solutions in accordance with local and national standards.

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Kind Regards

Samir C Hakim,

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Appendix A

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