14 August 2019

Conor Wilson
Senior Planner
Inner West Council
By email: conor.wilson@innerwest.nsw.gov.au

Dear Conor,

Re: Response to Council's PMF Levels - DA 2018.220 at 74-75 Carlton Crescent, Summer Hill

This letter provides a response to items raised by Council at the meeting on Thursday 18 July 2019 in relation to the Development Application (DA) over land at 74-75 Carlton Crescent, Summer Hill (DA 2018.220).

It is our understanding the Council engineers were not willing to support the proposal on account of a perceived unacceptable risk from flooding when assessed against the Probable Maximum Flood (PMF) level. Council engineers have requested a number of design amendments be made to ensure that each room provides area above the PMF.

It is recognised that the site is flood affected and has land that is below the Flood Planning Level (FPL) as defined under the *Ashfield Local Environmental Plan 2013* (ALEP 2013), being; 1:100 Year ARI plus 0.5m freeboard. Council has acknowledged that the proposed development has provided sufficient response to ensure the future development will not be unreasonably impacted by 1:100 Year ARI as required under Clause 6.2 of the ALEP 2013. This includes confirming that the proposal is;

(a) Compatible with the flood hazard of the land,

(b) Will not significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and

(c) Incorporates appropriate measures to manage risk to life from flood, and

(d) Will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or reduction int eh stability of the river banks of waterways, and

(e) Is not likely to result in unsustainable social or economic. Costs to the community as a consequence of flooding.

The ALEP 2013 does not require the design to consider PMF levels and how they apply to the proposal, only the FPL. Similar to the ALEP 2012 the Ashfield Development Control Plan 2016 (ADCP 2016) requires that buildings be designed to an acceptable risk, being "1% AEP".

The only requirement for a site that is identified as being impacted by a PMF is provided within control DS10 in the ADCP 2012, which states;

> *"DS10.1 A site emergency response flood plan must be prepared in case of a PMF flood.*
>
> *DS10.2 Adequate flood warning systems, signage and exists must be available to allow safe and orderly evacuation without increased reliance upon the State Emergency Service (SES) or other authorised emergency services personnel.*
>
> *DS10.3 Reliable access for pedestrians or vehicles must be provided from the building, commencing at a minimum level equal to the lowest habitably floor level to an area of refuge above the PMF".*

The above controls do not require design modifications to be made to address PMF. Rather, they only require an emergency response flood plan, emergency warning systems and access to an area of refuge above the PMF to 'enable safe and orderly evacuation'. The proposal is a full time managed student accommodation development (and conditioned to include a restrictive covenant limiting the use to this) and not a strata titled apartment building. As such, it is easily capable of meeting the above requirements in the form of enforcement of emergency response plans and warning systems. In order to demonstrate that these provisions are met, a comprehensive Flood Response Management Plan has been prepared and provided in **Attachment 1**.

The key measures outlined in the Plan show that the development can meet the required DCP provisions in the instance of a PMF in the following ways:

- On site managers will be present 24/7, with a minimum of 2 staff on duty at any given time. Staff are to facilitate the maintenance of monitoring and mitigation equipment, educate occupants on risks and evacuation procedures, administer test evacuations, monitor flood levels in major events and coordinate evacuation of lower levels to upper storeys (above PMF) when flood levels reach the 1:100 Year ARI event (noting that all levels of the accommodation are at or above the FPL which is 0.5m above the 1:100 Year ARI event). Ensuring that evacuation occurs at the 1:100 Year ARI means that evacuation will occur well before the PMF levels are reached as the 1:100 year ARI will always occur before the PMF.
- Installation of a flood warning system to all lower level rooms, which is triggered by a sensor at the southern property boundary. The alarm will sound once the water level at the trigger location reaches 300mm depth, commensurate with the 1:100 Year ARI event (which is 0.5m below the FPL and 1.5m lower than the PMF).
- At the confirmation of 1:100 Year ARI event, staff and students will be further alerted by an automated emergency announcement over the PA system (the same approach that is deemed suitable for warning occupants of a fire) for evacuation of lower ground level. The staff immediately commence door to door entry to each accommodation at the lower ground level and evacuation to the level above and confirm that all persons at the lower ground level have been evacuated to a level above the PMF. Evacuation will remain in place for approximately 2 hours or until such time the ponding depth has receded.
- Despite all DDA rooms being located on upper levels above the PMF, the Flood Evacuation Management Plan requires a Personal Emergency Evacuation Plan (PEEP) to be prepared for all persons with a disability to ensure the safety of each student in the case of an evacuation.

Accordingly, the Flood Response Management Plan in **Attachment 1** shows that the proposal meets the requirements of the ALEP 2013 and the ADCP 2016, in that:

- Is provides design solutions to ameliorate the risk from a 1% AEP event or 1:100 Year ARI event on future occupants and on surrounding land uses; and
- Management solutions are in place to ensure no unreasonable risk to people will occur as a result of a PMF. A condition of consent can be applied to ensure that the development at all times has an approved Flood Response Management Plan in place that is approved by Council.

Not only does this approach align with the ALEP 2013 and ADCP 2016, it reflects the intention of identifying PMF as provided within the *Floodplain Development Manual* (ISBN 0 7347 5476 0) published by the NSW Government. Probable Maximum Flood is defined within the Manual as;

> *"The PMF is the largest flood that could conceivably occur at a particular location, usually estimated from the probably maximum precipitation, and where applicable, snow melt, coupled with the worst flood producing catchment conditions. Generally,* ***it is not physically or economically possible to provide complete protection against this event****. The PMF defines the extent of flood prone land, that is, the flood plain. The extent, nature and potential consequences associated with a range of events* ***rarer than the flood used for designing mitigation works and controlling development, up to and including the PMF event should be addressed in a flood plain risk management study****"*(emphasis added).

The above definition of PMF details that this measure is not used for flood design mitigation works or controlling development, nor is it physically or economically possible to protect against. The Australian Rainfall and Runoff (AR&R) 2016 adopts a similar approach with an additional consideration in the latest 2016 version that assesses the serviceable life of the development.

In contrast, the current approach from Council engineers is to assume that a development will remain indefinitely; however, given historical records and development trends, most land uses do not exceed 100 years in one use category. The likelihood that the current proposal will experience a PMF in its serviceable lifetime is a fraction of a percent, hence in accordance with the AR&R 2016, this would be considered an unreasonable design storm.

The proposed development includes a considered design that meets the flood constraints of the site which are detailed in the ALEP 2013 and ADCP 2016, and in particular, manages the risk related to any PMF event in terms of safe evacuation from the at risk locations within the site in such an event.

Council engineers have requested that each room at the lower ground floor be required to provide an area within the room that is above the PMF – assumedly so that each person could seek refuge within their individual room. The solution proposed by Council engineers would have required a loft or mezzanine to be constructed within the lower ground floor rooms at a height above the PMF, which would have a floor level (approximately) 1.5m above the lower ground floor level. The result of this design amendment would require a significant increase in the floor to ceiling height of the lower ground floor rooms, which in turn;

- - Jeopardises the ability to deliver 36 of the rooms at the ground floor level;
- Dramatically impacts the relationship between the heritage building and the balance of the building;
- Encroaches on the zone of influence related to the Sydney Trains' overhead high voltage lines; and
- Obstructs the orderly and economic development on the site.

This request to provide design responses to the PMF is outside of the matters for consideration provided within Section 4.15 of the *Environmental Planning and Assessment Act 1979*. Furthermore, in accordance with the definition of PMF in the *Floodplain Development Manual* (ISBN 0 7347 5476 0), the PMF is not a tool for enforcing a design response. The onerous and

incorrect application of the controls restricts *the orderly and economic use and development of the land* and accordingly conflicts with the Objects of the *Environmental Planning and Assessment Act 1979*.

As required in the ADCP 2016 the proposed development ensures that there is no unreasonable risk to future residents from a PMF event by providing a Flood Evacuation Management Plan in **Attachment 1**. As the proposal includes 24/7 on-site management, the requirements of the Flood Evacuation Management Plan can be enforced to a level that may seem unlikely for other forms of residential development. The Flood Evacuation Management Plan includes the requirement for training of staff and occupants including regular drills as well as implementation of warning systems that are triggered well in advance of water levels reaching unsafe levels; ensuring there is sufficient time for people to refuge in the upper levels. Reasonable failsafes also address the occasion if a PMF event should occur during the night, when occupants may be sleeping. This includes ensuring that 2 x staff members are on premises at any given time to monitor the situation. In addition, an automatic alarm system will sound when water depths in the laneway to the south of the site reach 300mm, which is 0.5m below the Flood Planning Level and 1.5m below the PMF. On account the 1:100 AEP occurs well before the PMF, ensuring the alarm and the building's occupant warning system occurs at the 1:100 AEP gives significant time for the evacuation of rooms that may be potentially impacted.

Not only does the system ensure that two fully trained and qualified staff members are available, but the alarm system will also activate well in advance of the PMF event even if the staff have not previously identified the risk and started evacuation. The earliness of the warning system (at the 1:100 Year ARI level) ensures that evacuation will occur before any water has entered the development and well before any risk from PMF is experienced – allowing sufficient time for evacuation even if occupants are sleeping or one or both of the on-site staff have not already initiated evacuation. Proposed minor design amendments included in the Architectural Plans in **Attachment 2** have ensured that now all aspects of the courtyard are protected from an 1:100 AEP +500mm to further extend the time between the sounding of the alarm and the intrusion of flood water into the courtyard and lower ground floor in a PMF event.

In conclusion, the design measures accompanied by the Flood Response Management Plan provides a suitable response to address the risk to human safety of a PMF event. The proposed development as provided in **Attachment 2**, accompanied by the attached Flood Evacuation Response Management Plan, provides sufficient information to demonstrate that the future occupants and surrounding land uses will not be unreasonably impacted by flooding in accordance with the relevant controls. Council and the Sydney Eastern Planning Panel now have sufficient information to support and approve the application and we request that the Development Application be included on the next available meeting agenda.

Yours sincerely,

Kate Bartlett

Director

- **Appendix 1**: Flood Evacuation Management Plan

Appendix 2: Revised Architectural Plans