ETHOS URBAN

7 February 2022

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CONSULTANT ADVICE NOTE	
Project	**New Liverpool Primary School (State Significant Development Application)**
Date	7 February 2022
From	Chris McGillick – Associate Director, Ethos Urban
To	Nicholas Lawler – Senior Project Manager, CBRE
Issue	The Department of Planning have indicated that they are unable to support the proposal's RL9.3m floor level, given the Georges River Probable Maximum Flood (PMF) level of RL 10.88.

Summary

- Council and the Department are seeking the project be built to the Georges River PMF RL 10.8m.
- The DCP requires *sensitive uses* to have a floor level to the PMF, unless justified by a site-specific assessment.
- A site-specific assessment has concluded that building the school to the PMF would have significantly adverse impacts on the school and the local community and would divorce the site from the surrounding precinct, which is not considered the best outcome where an appropriate alternative solution can be implemented.
- The school is instead designed to the 1 in 100 year AEP + freeboard which is the right approach given the site specific assessment. The 9.3m RL also achieves compliance with City Centres PMF, which is the fast moving event.
- Due to the nature of the Georges River Catchment flooding has a very long lead time, meaning there will advance warning of any flood event, and the school would be able to carry out the flood evacuation plan that it has provided.
- SINSW acknowledges and accepts that there is a risk of their asset being at risk from flooding from a PMF event. However, on balance this is considered an acceptable outcome considering the adverse urban design impacts a PMF compliant scheme would result in (described below).
- Accordingly, the project has adopted a balanced asset risk profile in relation to impact from the Georges River PMF event, and conservative life risk profile through the implementation of appropriate evacuation and site mitigations,
- The Department has commissioned a peer review of the flood strategy; however, it is not clear what documents the consultant has reviewed. The email sighted only mentions the Flood Emergency Response Plan – and not the detailed site assessments provided to the Department with the DA and throughout the assessment.
- The peer review is generally conservative but does provide the Department with advice to allow the project to be approved, subject to a range of mitigation measures. Notwithstanding, the Departments planner has stated feedback is 'the flood mitigation will not work for this development'.
- SINSW and its consultant team have acted in good faith throughout the process and have always been up front regarding the difficulties building to the PMF and why the alternative approach was required. Specialist engineering flood mitigation advice provided to the project team supports this strategy.
- Throughout the process, neither Council or the Department has acknowledged that a design can have a floor level where justified by a site specific assessment, per DCP guidance.

Background and Strategy

The site is subject to mainstream flooding from Georges River to the southeast of the site, and overland flooding from the CBD catchment to the south and west of the site. The site is located within the extent of both of these Probable Maximum Flood (PMF) level, but free from hazard during the 1% Annual Exceedance Probability (AEP) extent for both.

Under Part 9 (Flooding Risk) of the Liverpool Development Control Plan 2008 Part 1 (DCP):

- Part 9 of the DCP is consistent with Council's and State Government's "Flood Prone Land Policy" and the Floodplain Development Manual.
- The land is considered *Low Flood Risk Category* as the site is above the 1 in 100 AEP;
- Educational Establishments and Child Care Centre's are identified as a *sensitive use*.
- The site is within the Georges River Floodplain. Georges River Flood Plain requirements at Table 4 and 5 require the floor level of a *Low Flood Risk Category - sensitive use* to be no lower than the PMF level unless justified by a site-specific assessment.

Site Specific Assessment

A site-specific assessment was carried out by Meinhardt Bonacci Engineering at Section 3 of the Civil Design Report provided at Appendix J of the EIS. The Flood Risk Mitigation assessment at Section 3.2 concludes:

> *For this particular development, floor levels are to be no lower than the PMF level unless justified by a site-specific assessment. Setting the Finished Floor Level (FFL) at mainstream (Georges River) PMF level at 10.8m AHD in accordance with the Council DCP has the following complications:*
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> - *The existing ground level around the northeast corner of the site is RL8.8, which is approximately 2m lower than the mainstream PMF level. Appropriate access between the ground floor to the external ground will be difficult to achieve.*
> - *Ramps and stairs may need to be provided. Achieving the Disability Discrimination Act (DDA) compliance would require approximately 45m of ramping into and out of the buildings.*
> - *significant earthworks will be required to fill up to the building pad at RL10.8.*
>
> *It is noted that the peak mainstream flood level from Georges River occurs during the 48-hour storm, this would allow for sufficient time for an evacuation plan to be implemented with advance warning system in place. Based on survey and supplied flood information, it is recommended to set the FFL to be at RL9.30 for the following reasons:*
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> - *As setting the floor levels to be no lower than the PMF level is impractical, it is recommended to have the FFL at no lower than 1% AEP flood level plus 500mm freeboard. As discussed before, the existing the 1% AEP level from the Georges River Flooding is approximated at 8.8m AHD, which results in a minimum FFL at RL9.3.*
> - *As the peak flood level from the overland flooding from the CBD catchment occurs during the 1.5-hour storm, this would allow for sufficient time for evacuation, it is important to protect the buildings from CBD Overland Flow PMF. As discussed in Section 2.5, the PMF level from the Liverpool CBD Overland Flow Flooding is approximated as 9.30m AHD, setting the FFL at RL9.3 can protect the new development from the PMF of the overland flooding of the CBD catchment.*
> - *The development is mostly concentrated in the northern portion of site which has existing ground levels vary that from RL8.8 to RL9.2, use of ramps and stairs can be reduced by setting the FFL at RL9.3. DDA compliance is achievable without major earthworks.*

Further, it is noted that

- Flooding from the Georges River typically occurs after 24-48 hours of prolonged heavy rainfall over the catchment and
- The Bureau of Meteorology provides up to 12 hours warning of an impending flood on the Georges River.

Accordingly, the potential risk to life is very low and the school would either not open or should such a warning be issued, close if during the school day. The project has adopted (and submitted) a Flood Emergency Response Plan, which is typical.

Authority Engagement

I note a proactive meeting was held with Council on 18 February 2021 where the proposed flood planning strategy was discussed, and the project team outlined why a site-specific approach would be undertaken. Council advised their preference was for a PMF design outcome but would review the assessment and justification when the DA was received.

I note that Council did not raise the PMF level in their referral to the DA.

In their post lodgement request for information the Department sought further details why the project would be below the PMF. The response re-affirmed the strategy, and made clear the significant adverse issues adopting the PMF would result, including:

- *Excessive pedestrian access ramps to allow DDA compliant entry to the building - minimum 28m length to achieve RL 10.8 + free board or minimum 33.6m length to achieve RL 11.2 + free board.*
- *Create embankments that will divorce the site from the surrounding precinct*
- *Creates an undesirable experience at the ground plane for students and community members that is inconsistent with the Quality Design Principles established by the State Environmental Planning Policy (SEPP) for Educational Establishments and Childcare Facilities, 2007. A significant disconnect between the building RL and street level significantly compromises the ability to deliver a proposal that is welcoming, accessible and inclusive to people with differing needs and capabilities.*

Accordingly, designing to the PMF level is not considered to result in an appropriate outcome for the school or local community.
…

It is noted that the above approach will ensure the protection of life, not assets. Therefore, the new building structures and other assets may be at risk of flood impact during a PMF event. This approach is acknowledged by the asset owner SINSW as an acceptable outcome that balances the best outcome for the design and users of the site, while ensuring safety of the users via an appropriate Flood Management Plan.

Department Peer Review

The Department has commissioned a peer review of the flood strategy; however, it is not clear what documents the consultant has reviewed. The email sighted only mentions the Flood Emergency Response Plan – and not the detailed site assessments provided to the Department with the DA and throughout the assessment.

The email also has further comments from Council stating that as the floor level is not at the PMF, it does not satisfy the DCP.

Accordingly, the Department has advised the team (4 February 2022) that the flood mitigation strategy will not work for the development.

However, it is noted the peer review provides the Department with advice to allow the project to be approved, subject to a range of mitigation measures.

(i) The Plan considers and relies on projected flood warning times for evacuation during the onset of floods as rare as the PMF using a rate of rise of floodwaters determined for the 1 in 100 AEP flood. This is considered to be inconsistent and potential over estimates the actual warning time that would be available if the flood that triggered the need for evacuation was rarer than the 1 in 100 AEP event. It is recommended that if a decision is made to support flood risk management for the development based on evacuation of the school occupants,

that the warning times be re-evaluated using a rate of rise of floodwaters for the PMF. This is likely to result in shorter flood warning times and therefore should involve a re-assessment of the viability of evacuation as a safe mechanism for flood emergency response.

(ii) Investigations need to be undertaken to identify, assess and mitigate the potential risks associated with parents of children attending the school seeking to "rescue" their children in a flood emergency. This should involve traffic modelling that accounts for the reduced warning times determined from (i).

(iii) Given that it is proposed that the school be multi-level and that the upper levels will have floor levels above the predicted peak level of the PMF, it is recommended that if the compliance issue outlined in Item 1 above can be overcome, that shelter-in-place be considered as a viable alternative to evacuation.