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For the attention of : - Marcus Kraefft

Dear Kraefft,

Glenwood High School - Stormwater Overland Flow Statement

This statement responds to Environment, Energy and Science (EES) section within the NSW Department Primary Industry (DPI) and their request to provide information on overland flow that may affect the proposed development at Glenwood High School.

This report relies on preliminary information received from Blacktown City Council with regards overland flow through the streets. It is believed that this information does not utilise the existing stormwater pipe network, so as to replicate a failed or blocked pipe system. No background on the specific intent these maps is known. Council advises that these maps have been produced from flood modelling undertaken by Catchment Simulations. This statement should be read in conjunction with enstruct's flood report submitted as part of the SEARs.

The preliminary overland flow maps provided include water depth and extent of the 1% AEP, 20% AEP and Probable Maximum Flood (PMF) storm events. These maps can be found as attachments to this statement. These maps indicate that the 1% AEP and lower storm events are contained within the road reserve and does not enter the school property.
Further, the 1% AEP map indicates that the flood depth, along Glenwood Park Drive, is generally less than or equal to 300mm in depth. There is a small area near the bridge, at the watercourse where the depth is reported as being between 300 and 500mm.

As the 1% AEP overland flow is being contained within the road reserve and does not extend to the school campus, including on the proposed development, Council's requirement for a freeboard of 500mm above the 1% AEP is not applicable. As consequence, a 225mm freeboard above natural ground levels for the proposed ground floor Finished Floor Levels, has been adopted.

The PMF flood level for the site has been shown to vary from about RL60.60 to 59.80. These flood heights can be seen in **Attachment 3**, included at the end of this statement. With the Finished Floor Level (FFL) for the proposed building ground floor being set at FFL60.90, the PMF does not create a flood impact.

In addition to the above, the PMF flood map concurs with the enstruct modelling results at the location of the new development as detailed in the SSDA Flood Study Report Section 4.8 'TUFLOW Model Flood Depths and Levels Results' and thus validates the advice provided in Section 4.10.1 'Flood Planning Levels and Finished Floor levels'. Council's and enstruct's PMF extents are included below. Provided below in **Figure 1** is the State Emergency Services (SES) PMF occurrence definition.

> **Probable Maximum Flood (PMF).** The largest flood that could conceivably be expected to occur at a particular location, usually estimated from probable maximum precipitation. The PMF defines the maximum extent of flood prone land, that is, the floodplain. It is difficult to define a meaningful Annual Exceedance Probability for the PMF, but it is commonly assumed to be of the order of 10^4 to 10^7 (once in 10,000 to 10,000,000 years) (10).

Figure 1 - SES PMF Definition

In addition, the enstruct flood report's advice for evacuation during a flood is valid, in that travel away from the watercourse, on Glenwood Park Drive is possible.

Lastly, climate change will increase storm frequency and storm intensity leading to deeper flood depths. As the watercourse downstream is not tidal, no storm surge is applicable. Consequently, should the 1% AEP overland flow height increase and the extent not be contained within the road reserve, the included 225mm freeboard provides added protection to the proposed development.

Please refer to below:

Attachment 1 – Preliminary 1% and 20% AEP overland flow maps
Attachment 2 – Blacktown City Council's Preliminary PMF extent
Attachment 3 – enstruct's PMF extent

Should you have any further queries, please do not hesitate to contact me.

Yours Sincerely,

For **en**struct group pty ltd
Kelvin Holey
Civil and Environmental Engineer (NER CPeng)

Attachment 1 – Preliminary 1% and 20% AEP overland flow maps

Attachment 2 – Blacktown City Council's Preliminary PMF extent

Attachment 3 – enstruct's PMF extent (Refer SEARs report)