CALARE CIVIL
CONSULTING ENGINEERS

2022.0234
8 July 2024 – Original

Dezign
19 John Street
LAWSON NSW 2783
Email: tim.pridham@dezign.net.au

Dear Tim,

RE: Proposed One School Global Campus, Lot 1 DP527491, Magpie Hollow Road, South Bowenfels, 2790

In response to the Request for Information from Lithgow City Council, dated 7 June 2024 please see herein Calare Civil's response to point 3c – item d, and point 3e regarding the stormwater discharge location and the classification of this site as flood prone land respectively. This letter has been informed by a review of aerial imagery, LiDAR survey data from the NSW Spatial Services Portal, Lithgow City Council's Guidelines for Civil Engineering Design and Construction dated February 2012, and the Lithgow Flood Study Review, prepared by Lyall & Associates in May 2017. To resolve Council's concerns, each point has been assessed in detail and our findings and recommendations are provided below.

Point 3c – Item D: The northern stormwater discharge outlet needs to be above the flood level.

- As stated in the Water Cycle Management Plan and as shown in the supporting concept design plans previously prepared by Calare Civil, the stormwater drainage for this site is proposed to discharge into the existing piped drainage network on Kirkely St. From a review of aerial imagery and google street view, it is evident that there is an existing pit and pipe network that appears to discharge into the unnamed tributary of Farmers Creek that has its headwaters in Lot 3 DP 881717.
- A connection into this existing network is proposed via a new stormwater line through Lot 21 DP816671, where a new pit(s) will be provided in the road reserve in front of this lot (or on the northern side of Kirkley St adjacent to Lot 2 DP 1222989 as required).
- It is proposed that this new line will be designed to convey up to and including the 1% AEP event subject to the receiving capacity of the existing stormwater network which will be confirmed during detailed design. It is noted that in the Guidelines for Civil Engineering Design and Construction, an inter-allotment drainage line such as this is only required to convey the 20% AEP event, however given that it will also be required to act as the site's truck drainage network it was deemed appropriate to increase this proposed line's capacity. An easement will be required for this new line across Lot 21 DP816671 which has been arranged separately. It is our understanding that negotiations with the landholder regarding this proposed stormwater line and easement have been successful and they will permit the works.
- The new pit into which this line will discharge will sit outside of the 1% AEP Flood Extents as shown in Figure 6.4 of the Lithgow Flood Study Review. A snippet of this figure is presented below in **Plate 1** which also depicts an overlay of the proposed stormwater line, potential connection location and the indicative location of the existing stormwater line on Kirkley St. It is noted that there is approximately 300mm of ponded water to west of the proposed connection of which is associated with a sag point on Kirkley St; the surface level at this sag point is approximately 940m AHD. The surface level at the proposed connection point is approximately 941.5m AHD meaning there is a 1.5m elevation difference between the two locations, thus the proposed line will discharge freely into the new pit for the design event.

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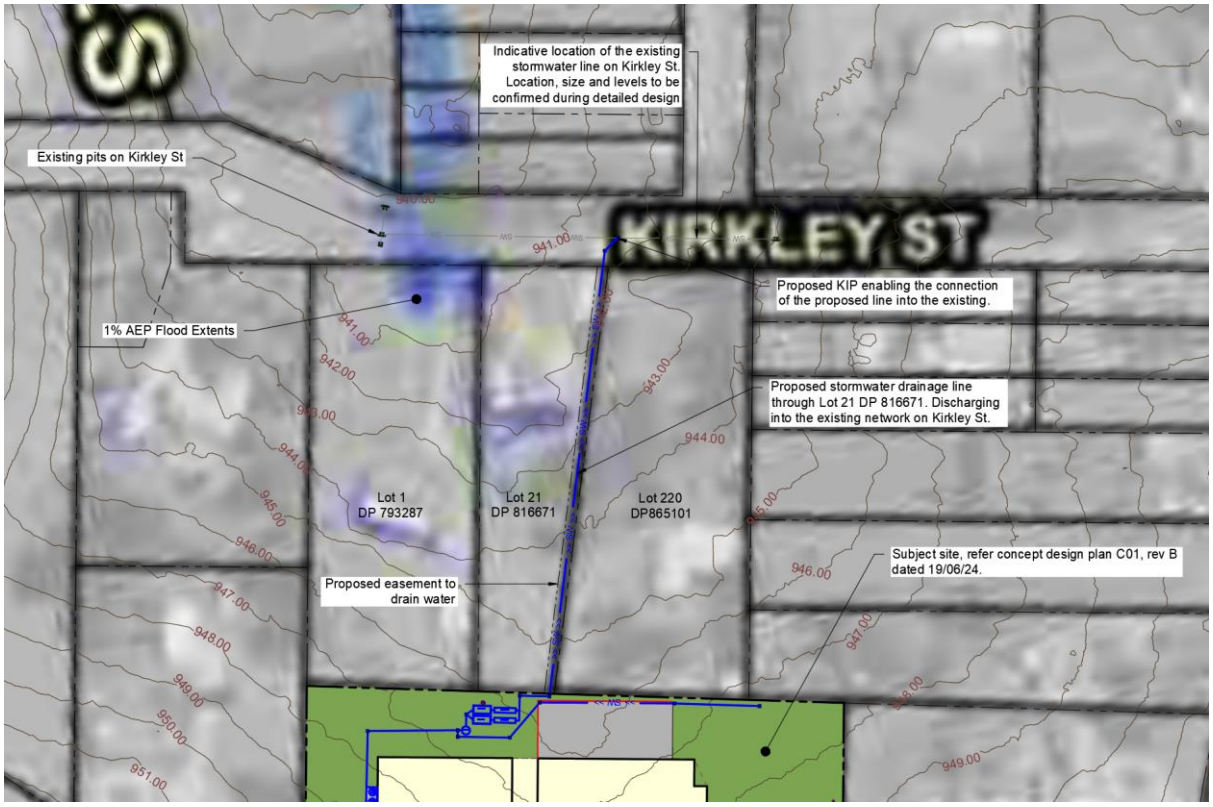

Plate 1: *The 1% AEP Flood Extents as per the Lithgow Flood Study Review (2017) with an overlay of the proposed works.*

Item 3e: – Pursuant to Council's Flood Model 2021, the site is affected by minor flood on the northern boundary. As such, a Flood Impact Statement shall be prepared by a suitably qualified and experienced consultant and submitted to Council for review.

- From Calare Civil's review of the flood mapping provided in Figures 6.1, 6.2, 6.3, 6.4 and 6.5 of the Lithgow Flood Study Review (2017) it is evident that the site is **not** subject to flooding during the respective 20%, 10%, 2%, 1% or 0.5% AEP Events.
- As per clause 3.3.3 of Lithgow City Council's Guidelines for Civil Engineering Design and Construction, the maximum design event for flooding is the 1% AEP Event. These guidelines subsequently say that all habitable areas are required to have a floor level a minimum of 500mm above the maximum water level in the 1% AEP Flood Event. Furthermore, for new subdivisions the lowest point on all allotments is to be located a minimum of 500mm above the maximum water level in the 1% AEP Flood Event; this isn't a subdivision therefore this last condition is not applicable here however it has been considered for completeness. Noting the maximum possible flood elevation is 944m AHD during the 1% AEP Event, as shown in **Plate 1** above, and given that the finished floor level of the proposed buildings is 947m AHD and lowest point on the northern boundary has an elevation of 945.6m AHD, the subject site is not affected by flood waters during the 1% AEP Event and subsequently satisfies the above conditions.
- From Figure 6.6 of the Lithgow Flood Study Review (2017) it is suggested that a very small portion of the site along the northern boundary experiences some minor inundation of up to 200mm in depth during the Probable Maximum Flood Event (PMF), the extent of which is presented in **Plate 2.** With the proposed site grading and construction of the retaining wall to provide a flat surface for the proposed outdoor sports area, this inundation will not impact upon the proposed facility. Furthermore, the PMF is the theoretical maximum flood and is therefore the rarest event, one that will likely never occur; it is only used to define the maximum possible flood extents based on the Probable Maximum Precipitation (PMP) and is not something that can be designed for. As such this possible inundation should be disregarded when considering manageable flood impacts.

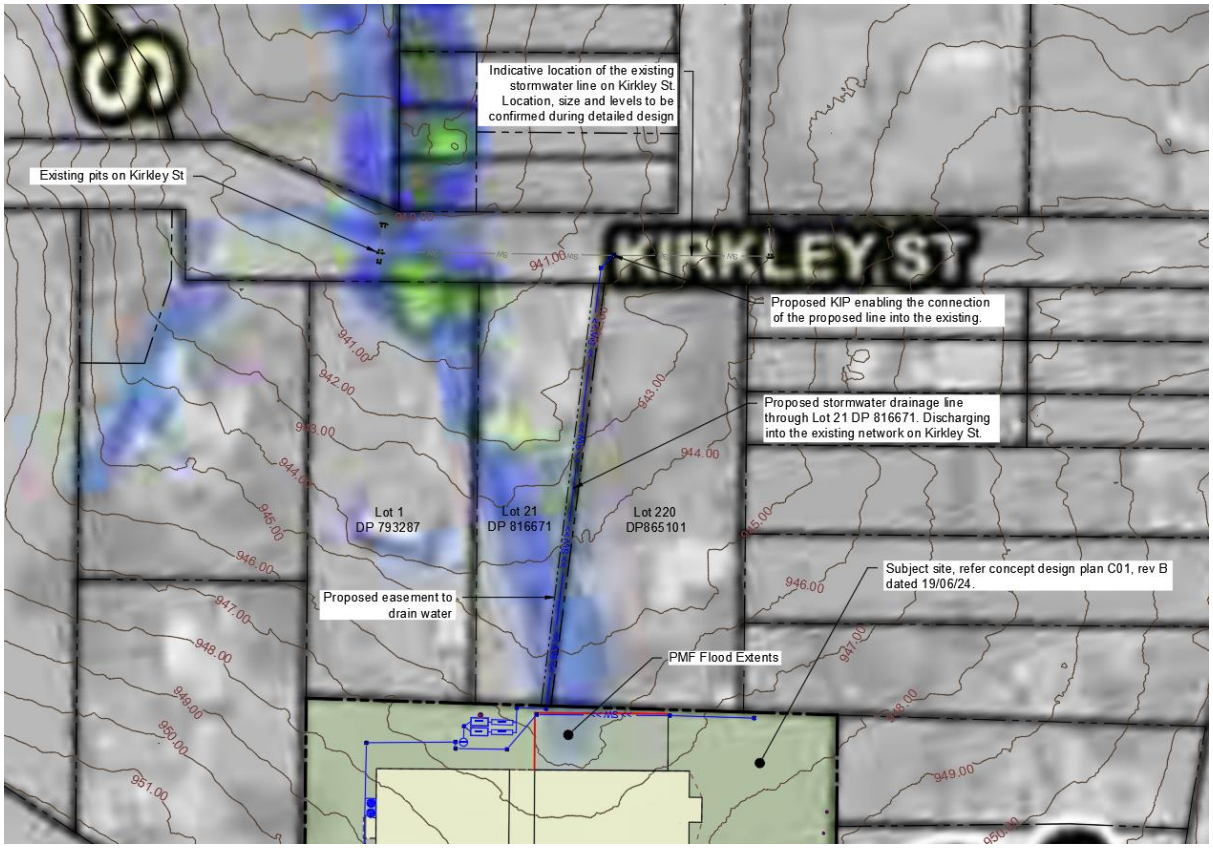

Plate 2: *The Flood Extents for the PMF as per the Lithgow Flood Study Review (2017) with an overlay of the proposed works.*

This letter presents the findings of Calare Civil's review of the potential flood risk and barriers to stormwater management for the proposed development of Lot 1 DP 527491. From this assessment it is clear that the subject site is able to freely drain during the 1% AEP Design Event and is not susceptible to any above floor flooding in any possible flood event. We acknowledge that given the subject site is to function as a school it is considered high risk infrastructure however from the assessment above, we do not believe there is any risk associated with drainage or flooding that would prevent the approval of this facility. As such we trust that this letter satisfies point 3c – item d, and point 3e within the request for additional information provided by Lithgow City Council on 7 June 2024 and should enable the approval of this proposed development. Should you have any further queries please do not hesitate to contact the undersigned.

Yours Faithfully,
CALARE CIVIL PTY LTD

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