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Your Ref: SSD-59006709

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Dear Megan,

State Significant Development Application for Alexandria Health Centre Detailed Design

Thank you for the opportunity to provide advice on the State Significant Development Application for Alexandria Health Centre Detailed Design at 28-32 Bourke Road, Alexandria. It is understood that the proposed development seeks to undertake:

- Site establishment and earthworks
- Construction of the 7 storey Alexandria Health Centre comprising:
 - Mental health hospital at levels 5-7
 - Medical centre occupied by allied health providers at levels 1-4
 - Ground level lobby and pharmacy
 - Basement parking
- Associated utility infrastructure and stormwater management
- Laneway for vehicle and pedestrian access along the western site boundary

The NSW State Emergency Service (NSW SES) is the agency responsible for dealing with floods, storms and tsunamis in NSW. This role includes, planning for, responding to and coordinating the initial recovery from floods. As such, the NSW SES has an interest in the public safety aspects of the development of flood prone land, particularly the potential for changes to land use to either exacerbate existing flood risk or create new flood risk for communities in NSW.

We refer to our previous correspondence dated 4 October 2022, 18 November 2022, 14 February 2023 and 16 January 2024, and note that previous advice has not been incorporated into this version of the proposal.

The NSW SES recommends that consideration of flooding issues is undertaken in accordance with the requirements of NSW Government's Flood Prone Land Policy as set out in the [Flood Risk Management Manual 2023](#) (the Manual) and supporting guidelines, including the [Support for Emergency Management Planning](#) and relevant planning directions under the

Environmental Planning and Assessment Act, 1979. Some of the key considerations relating to emergency management are further detailed in Appendix A.

In summary we:

- **Note** that the site itself is prone to isolation by flooding around the 10 year ARI event¹, with depths in excess of 2m during a Probable Maximum Flood (PMF) event².
- **Recommend** carefully considering the proposed use for the site for “*both inpatient and outpatient services*”³, as the maximum duration of isolation being and up to 12 hours during a PMF event may pose significant secondary hazard risks for patients, staff and visitors on site.
- **Recommend** consideration is given to access/egress routes, particularly the proposed Bowden Street egress route, as the FERF states Bowden Street is “*a known flooding hotspot. During a short duration 100-year ARI storm (90 minutes), Bowden Street is non trafficable for a period of approximately 20 minutes*”⁴
- **Recommend** consideration is given to preventing egress from basement parking into flooded streets.
- **Request** that references to ‘Evacuation Warning (SES)’ are removed for the Operational Flood Emergency Plan. The Australian Warning System uses three categories of hazard warnings: Advice, Watch and Act, and Emergency Warning. These categories replace the previous terminology such as Evacuation Warnings and Evacuation Orders. In addition, due to the short timeframe available prior to the onset of flooding and that there is no official flood warning service for the area, orderly evacuation is unlikely to be feasible from the site. Further information can be found on the NSW SES website at <https://www.ses.nsw.gov.au/about-us/our-warnings/>.
- **Emphasise** NSW SES does not have statutory authority to endorse or approve Flood Emergency Response Plans.

You may also find the following Guidelines, originally developed for the Hawkesbury Nepean Valley and available on the NSW SES website useful:

- [Reducing Vulnerability of Buildings to Flood Damage](#)

Please feel free to contact Kate Dawes via email at rra@ses.nsw.gov.au should you wish to discuss any of the matters raised in this correspondence. The NSW SES would also be interested in receiving future correspondence regarding the outcome of this referral via this email address.

¹ Cardno, 2014, Alexandra Canal Catchment Flood Study, Figure 6.4

² Enstruct, March 2023, Civil Engineering Flood Report, Section 4.3, Figure 7 Flood Model Results – PMF – future conditions

³ Urbis, 2023, Environmental Impact Statement, Section 1.4 Project Objectives, Page 16

⁴ Enstruct, March 2023, Civil Engineering Flood Report, Section 5.2, Site Access and Egress

Yours sincerely



Elspeth O'Shannessy
Manager Risk Assessment Emergency Risk Management
NSW State Emergency Service

ATTACHMENT A: Principles Outlined in the Support for Emergency Management Planning Guideline⁵

Principle 1 Any proposed Emergency Management strategy should be compatible with any existing community Emergency Management strategy.

Any proposed Emergency Management strategy for an area should be compatible with the evacuation strategies identified in the relevant local or state flood plan or by the NSW SES. As per the City of Sydney Flood Emergency Sub Plan⁶, evacuation is the primary Emergency Management Strategy.

Principle 2 Decisions should be informed by understanding the full range of risks to the community.

Decisions relating to future development should be risk-based and ensure Emergency Management risks to the community of the full range of floods are effectively understood and managed. It is noted that *“The site is located near a sag point on Bourke Road and is located in a high flood risk zone with major overland flow expected at or near the site”⁷*. The site itself is prone to isolation by flooding around the 10 year ARI flood event⁸, with depths in excess of 2m during a PMF event⁹.

NSW SES has responded to flood related incidents on surrounding streets, including rescuing persons trapped in vehicles in floodwater as recently as this year (2024). We recommend considering the risks associated with placing more people within the floodplain at this location, noting that the site is proposing to provide both inpatient and outpatient services on the site¹⁰. Placing additional people at risk in this area is likely to result in an increase in the number of incidents NSW SES respond to.

Driving through floodwater is the number one cause of flood related fatalities in Australia¹¹, with more than 100 fatalities across Australia since 2002¹². Near misses are not recorded in

⁵ NSW Government. 2023. Principles Outlined in the Support for Emergency Management Planning Guideline

⁶ City of Sydney Flood Emergency Flood Plan, Endorsed February 2023, Section 5.8, Page 16

⁷ Enstruct, December 2023, Alexandria Health Care Operational Flood Emergency Management Plan, Section 2 Flood risk, Page 7

⁸ Cardno, 2010, Alexandra Canal Catchment Flood Study, Figure 6.4

⁹ Enstruct, March 2023, Civil Engineering Flood Report, Section 4.3, Figure 7 Flood Model Results – PMF – future conditions

¹⁰ Urbis, 2023, Environmental Impact Statement, Justification of the Project, Page 14

¹¹ Haynes, et al. 2016. An analysis of human fatalities from floods in Australia 1900-2015, s.l. Report for the Bushfire and Natural Hazard Cooperative Research Centre

¹² Peden. 2016. Royal Life Saving Drowning Data: Presentation 15 February 2016, Sydney: Royal Life Saving Australia.

these statistics, however as an example, NSW SES attended 3823 flood rescues in 2022, and a significant proportion of these were people trapped in cars after driving into floodwater.

Principle 3 Development of the floodplain does not impact on the ability of the existing community to safely and effectively respond to a flood.

The ability of the existing community to effectively respond (including self-evacuating) within the available timeframe on available infrastructure is to be maintained. It is not to be impacted on by the cumulative impact of new development.

Principle 4 Decisions on redevelopment within the floodplain does not increase risk to life from flooding.

The preferred Emergency Management approach is evacuation, where evacuation capacity and capability has been demonstrated as the most effective strategy to manage Emergency Management risks (i.e. a strategy that enables the users of development to self-evacuate to an area outside the floodplain that has adequate services to sustain the community in an orderly planned outcome).

Managing flood risks requires careful consideration of development type, likely users, and their ability respond to minimise their risks. This includes consideration of:

- Isolation – There is no known safe period of isolation in a flood, the longer the period of isolation the greater the risk to occupants who are isolated.
- Secondary risks – This includes fire and medical emergencies that can impact on the safety of people isolated by floodwater. The potential risk to occupants needs to be considered and managed in decision-making.
- Consideration of human behaviour – The behaviour of individuals such as choosing not to remain isolated from their family or social network in a building on a floor above the PMF for an extended flood duration or attempting to return to a building during a flood, needs to be considered when adopting any Emergency Management strategy.

Evacuation of hospitals and aged care can be complex and is known to be associated with an increased rate of mortality in patients.^{13 14 15} We recommend carefully considering the use of the site as an inpatient facility due to the risk this poses to patients, staff and visitors on site.

¹³ Terui, T., Kunii, Y., Hoshino, H., Kakamu, T., Hikada, T., Fukushima, T., Anzai, N., Gotoh, D., Miura, I., Yabe, H. 2021. Long-term observation of mortality among inpatients evacuated from psychiatric hospitals in Fukushima prefecture following the Fukushima nuclear disaster. *Science Reports* 11, 14651.

¹⁴ Rojek A, Little M. Review article: evacuating hospitals in Australia: what lessons can we learn from the world literature? *Emergency Medicine Australasia*.

¹⁵ NSW Government. 2016. Evacuation Decision Guidelines for Private Health and Residential Care Facilities.

Further, sheltering in a building within the flood extent is not safe, as is proposed in section 10 of the FERP. Sheltering in buildings where entrances and exits may become flooded in the larger floods may result in isolating people potentially without food or water for several hours or more depending on the weather system/s. Isolation also increases the risk of fire or medical emergencies.

When evaluating potential impact, the risk of isolation, secondary risks and human behaviour should be considered. Risk to occupants may be compounded by secondary risks such as fires or medical emergencies. There is also the risk that people will not follow emergency management plans, for example they may refuse to remain isolated from family for an extended duration.

The development has the potential to become isolated for durations of up to 11.5 hours during a PMF event¹⁶ with surrounding streets un-trafficable for as long as 14.55 hours¹⁷ during extreme events. It is stated in the FERP *“In general, staff remaining on site should continue to provide patient care”*¹⁸, however we note this may result in staff who have already potentially worked a full shift at the onset of flooding being required to continue working for an additional 12 hours. Both the duration of isolation for staff, patients and visitors already onsite, and any attempts by staff due to start their shift to access the site via flooded roads, pose significant risks to the health and safety of people at (or accessing) the site.

Principle 5 Risks faced by the itinerant population need to be managed.

Any Emergency Management strategy needs to consider people visiting the area or using a development. Consideration should be given to visitors and pedestrians in the area through the provision of publicly accessible space above the PMF, with adequate infrastructure to enable the physically impaired to access such space, that is easily accessible 24 hours a day for seven days a week, which is clearly identified for this purpose with associated directional signage.

We strongly recommend early closure of the services if there is the potential for flooding on the adjacent roadways. This should be based on realistic and clear triggers, that would avoid false alarms. However, due to the limited warning time available and lack of official flood warning services for the area, this is likely to be difficult.

Principle 6 Recognise the need for effective flood warning and associated limitations.

¹⁶ Enstruct, March 2023, Civil Engineering Flood Report, Section 4.5, Table 2 Potential periods of isolation for various storm events

¹⁷ Enstruct, March 2023, Civil Engineering Flood Report, Section 4.5, Table 1 PMF peak levels and isolation duration

¹⁸ Enstruct, December 2023, Alexandria Health Care Operational Flood Emergency Management Plan, Section 10 Shelter In Place, Page 11

An effective flood warning strategy with clear and concise messaging understood by the community is key to providing the community an opportunity to respond to a flood threat in an appropriate and timely manner. As there is very little warning time available prior to the onset of flooding, there will be limited opportunity for the community to respond appropriately.

Principle 7 Ongoing community awareness of flooding is critical to assist effective emergency response.

The flood risk at the site and actions that should be undertaken to reduce the potential risk to life should be clearly communicated to all site users, for example through signage and emergency drills, during and after the construction phase and for the lifespan of the development.