Our Ref: ID2436

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Elizabeth Kimbell
Department of Planning, Housing & Infrastructure
Locked Bag 5022
Parramatta NSW 2124

Via email

email: elizabeth.kimbell@dpie.nsw.gov.au
CC: shelly.stingmore@one.ses.nsw.gov.au

Dear Elizabeth,

Planning Proposal for Georges Cove Village

Thank you for the opportunity to provide advice on the Planning Proposal for Georges Cove Village. It is understood that the planning proposal seeks to amend the Liverpool Local Environmental Plan (2008) to allow a site specific provision for a retail premises with a maximum 4,000m^2 floor area. We note that retail premises are already permitted on the site up to a maximum 1600m^2 floor area[1].

The NSW State Emergency Service (NSW SES) is the agency responsible for dealing with floods, storms and tsunami 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 29 January 2024 and 29 April 2024 regarding the adjacent site within Georges Cove Marina. The consent authority will need to ensure that the planning proposal is considered against the relevant Section 9.1 Ministerial Directions, including 4.1 – Flooding and is consistent with the NSW 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. Key considerations relating to emergency management are outlined in Attachment A.

The site is impacted by flooding as frequently as a 10% AEP flood event[2]. The increased number of vehicles on site, from the current undeveloped condition, would restrict the number of vehicles able to safely evacuate from surrounding areas posing further risk to life.

[1] Liverpool Council, 2024, Planning Proposal to amend the Liverpool Local Environmental Plan 2008 at 146 Newbridge Road Moorebank - Georges Cove Village, Executive Summary, Page 2
[2] BMT. 2020. Georges River Flood Study - Final Draft Mapping Compendium, Figure A-02

Further, the frequency of inundation and isolation is likely to be disruptive and costly to businesses on site.

In summary, there is the potential for significant property damage associated with the proposed commercial use of the site.

We therefore recommend:

- careful consideration of the location of vehicle entry points. The proposed Newbridge Road entry has historically been the site of numerous flood rescues.
- further modelling is undertaken including time to overtopping of the "*Council drainage channel along the western boundary of the site*[3]", the time to overtopping of roads and the level of hazard on site.
- any electrical, plant or waste facilities are located at or above the proposed level 1, as the ground and elevated ground-level loading docks are affected by flooding as frequently as a 20-year Annual Recurrence Interval (ARI) event[4] [5].
- removal of the statement *"The warnings for the Georges River would be provided digitally via a SMS to the flood wardens on site*[6]*"*.
- further consideration of safety features for proposed lifts, to ensure that floodwater does not enter the lift and ensure people do not exit into flooded areas.
- ensuring that buildings are as safe as possible to occupy during flood events, buildings must be designed for potential flood and debris loadings of the PMF so that structural failure is avoided during a flood.
- careful consideration is given to the role of the flood warden.

The Flood Emergency Response Plan (FERP) provided relies heavily on human behaviour to follow the directions of a flood warden on site. Although NSW SES encourages homes and businesses to be prepared, reliance on a site-specific emergency response plan instead of sound land use planning and flood risk management is inappropriate for managing significant underlying flood risk.

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
- Designing Safer Subdivisions

[3] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Section 3. Site Description, Page 4
[4] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Section 4 Flood Characteristics, Page 4
[5] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Section 5 Proposed Development, Page 5
[6] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Section 16.3.2 Bureau of Meteorology

- Managing Flood Risk Through Planning Opportunities

Please feel free to contact Elspeth O'Shannessy 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.

Yours sincerely,

Peter Cinque
Senior Manager, Emergency Risk Management
NSW State Emergency Service

ATTACHMENT A: Principles Outlined in the Support for Emergency Management Planning Guideline[7]

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 NSW State Flood Plan[8] and the Liverpool City Flood Emergency Sub Plan, evacuation is the primary emergency management strategy for people impacted by flooding[9].

We note that the FERP includes "*a three stage evacuation strategy including vehicle and pedestrian evacuation and an absolute last case option to shelter in place*[10] ". We do not support 'shelter in place' for this site due to the potential duration and flood hazard. 'Shelter in place' strategy is not an endorsed flood management strategy by the NSW SES for future development. Such an approach is only considered suitable for existing dwellings where the risk of staying is lower than the risk of evacuating, without increasing the number of people subject to such risk/s.

A basic principle of emergency management is to separate people from hazards. Given that it is rare to be able to move the hazard, the most widely accepted method of doing so is to implement evacuation. When the option for evacuation is denied and the hazard cannot be moved then a dangerous situation remains that requires the highest level of monitoring and intervention. This will be at a time when resources are in abnormally high demand.

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.

While modelling suggests the site itself appears to remain flood free up to the PMF, with the exception of an isolated area in the northern part of the site (around the site entry), the "*post development ground levels were lowered to RL 3m AHD for the Moorebank Cove Village site (site A) to accommodate flood storage within and below the building void*[11]". As the 20 year

[7] NSW Government. 2023. Principles Outlined in the Support for Emergency Management Planning Guideline
[8] NSW Government. 2021. NSW State Flood Plan. Section 1.6 – Key Principles. 1.6.2, page 5.
[9] Liverpool City Flood Emergency Sub Plan, Endorsed April 2023, Section 5.8, Page 18
[10] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Section 6.4 Flood Emergency Response Plan, Page 9
[11] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Section 3 Site Description, Page 4

ARI flood level for the site has been identified as 4.6m AHD[12] the proposed "Benched Ground Level" located at 3.4m AHD[13] and Newbridge Road entry at 2.5m AHD would be subject to frequent flooding with depths in excess of 1 metre.

The site is also bounded to the west by a council drainage channel, which may also pose a risk of overtopping. We recommend further modelling is undertaken to better understand this risk as well as the level of hazard on site.

Risk to life

NSW SES have responded to numerous flood rescues on Newbridge Road between Brickmakers drive and Riverside Road, immediately adjacent to the site. These include rescuing people trapped in cars in flood water up to 1 metre in depth at the location of the proposed Newbridge Road vehicle entrance. Newbridge Road at the site entry appears to be impacted by minor flooding as frequently as 10% AEP events. However, in a 5% AEP event, the site entry becomes a high hazard area[14], with a flood depth above 2 meters[15] and a flood hazard level up to H4[16].

Flooding on Newbridge Road, between Brickmakers Road and Davy Robinson Drive, resulting in the closure of one lane in each direction has been observed due to overland flows well in advance of the roadway becoming inundated by Georges River Flooding. This may result in the proposed Newbridge Road car park entry becoming unsafe to use. Historic data available from NSW Live Traffic records eight reported closures of this section of Newbridge Road between 1 January 2022 and 1 May 2024[17] due to flooding or water over the road due to rainfall.

We recommend additional site specific modelling is undertaken including time to overtopping of the "*Council drainage channel along the western boundary of the site*[18]" and time to overtopping of roads, particularly at the location of the proposed Newbridge Road entrance.

Risk to property

It is understood that the proposed supermarket loading areas, and parking spaces would be located at the ground level. Noting that the 20 year ARI flood level for the site has been

[12] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Section 4 Flood Characteristics, Page 4
[13] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Figure7, Page 33
[14] BMT. 2020. Georges River Flood Study - Final Draft Mapping Compendium, Figure A-16
[15] BMT. 2020. Georges River Flood Study - Final Draft Mapping Compendium, Figure A-2
[16] BMT. 2020. Georges River Flood Study - Final Draft Mapping Compendium, Figure A-12
[17] Live Traffic NSW | Historical Data Search, accessed 14 May 2024
[18] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Section 3. Site Description, Page 4

identified as 4.6m AHD and the proposed "Benched Ground Level", loading dock, plant room and goods lifts are located at 3.4 m AHD, these areas are at risk of frequent flooding with depths in excess of 1 metre, with more severe impacts expected in a PMF event. This poses a risk to property, potential stock losses and disruption to services and businesses. This may include damage to retail facilities and goods, loss of power and damage to plant and equipment, and potential waste contamination. The frequency of inundation and isolation is likely to be disruptive and costly to the potential retail tenants at the site.

We recommend all ground storage and critical equipment is located above the 1% AEP flood levels, including any electrical, plant or waste facilities. We further recommend that there is no stock storage located below level 3 as the parking and benched ground level are at risk of frequent flooding which may result in stock losses.

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.

Risk assessment should have regard to flood warning and evacuation demand on existing and future access/egress routes. Consideration should also be given to the impacts of localised flooding on evacuation routes. Evacuation must not require people to drive or walk through flood water.

As noted by Liverpool Council "*the Planning Proposal carries the risk of necessitating a substantial boost in government expenditure on both road infrastructure and emergency management services and may contradict with Ministerial Direction 4.1 (Flooding)*[19]*"*

Development strategies relying on an assumption that mass rescue may be possible where evacuation either fails or is not implemented are not acceptable to the NSW SES. We refer to our previous advice regarding the proposed evacuation routes for the development and reiterate that managing evacuations in the Georges River Valley is already complex. Adding additional people and multi-modal evacuation procedures would further result in increased complexity and reliance on human behaviour. If the proposed development proceeded, there would be a substantial cumulative increase in residual risk to life. **This increase requires even more community engagement and preparedness programs along with stretching resources in an already complex response operations environment.** The NSW SES would therefore require a substantial **increase in response capability** and resources and **additional Community Engagement and Safety programs** for the Liverpool LGA, for the proposed development's life span.

[19] Liverpool Council, 2024, Planning Proposal to amend the Liverpool Local Environmental Plan 2008 at 146 Newbridge Road Moorebank - Georges Cove Village, Flooding and Evacuation, Page 13

Decisions on development within the floodplain does not increase risk to life from flooding.

Managing flood risks associated with Low Flood Islands 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.

Sheltering in a building within the flood extent is not safe, as is proposed in the FERP[20]. 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. There is no known safe period of isolation in a flood, though the longer the period of isolation, the greater the risk to occupants. 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 proposed "Benched Ground Level" located at 3.4m AHD[21] is shown to contain goods lifts and plant rooms. This level is located below the 20 year ARI flood level at 4.6m AHD[22] and would be subject to frequent flooding. We recommend consideration is given to the safety features of lifts, to ensure that floodwater does not enter the lift and ensure people do not exit into flooded areas. We also recommend consideration is given to raising the level of any critical electrical, plant or waste facilities to reduce the impacts of flooding.

The role of the flood warden and reliance on site users following instructions given by the flood warden should be given careful consideration. Although NSW SES encourages homes

[20] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Section 6.4 Flood Emergency Response Plan, Page 7
[21] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Figure7, Page 33
[22] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Section 4 Flood Characteristics, Page 4

and businesses to be prepared and has developed a home FloodSafe toolkit and a Business FloodSafe toolkit, even well written plans are dependent on human application and often rely on technical support systems. Most plans will rely on the actions of one or more third parties and all plans require regular maintenance and review, and most importantly an ongoing commitment from all participants. These conditions are difficult to implement and are unlikely to be achieved at all in a private ownership context where there is no external audit or monitoring.

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. Including the transient population visiting for shopping, during holiday periods or utilising an area for an entertainment or tourism event.

Consideration should be given to visitors and pedestrians in the area through the provision of publicly accessible space above the PMF. 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.

Recognise the need for effective flood warning and associated limitations.

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.

NSW SES utilises the Australian Warning System which is a nationally consistent, three-tiered approach to issue clear warnings and lead people to take action ahead of severe weather events. The three warning tiers consist of Advice, Watch and Act and Emergency Warning. These warnings can be viewed on the SES website and the HazardWatch website and app.

Additional sources of flood information including Severe Weather Warnings are available from the Bureau of Meteorology as noted in the FERP, however the statement *"The warnings for the Georges River would be provided digitally via a SMS to the flood wardens on site.*[23]*"* should be removed as this is not a method used to deliver Bureau of Meteorology warnings.

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

The flood risk at the site and actions taken to reduce risk to life should be communicated to all site users (includes increasing risk awareness, community connections, preparedness actions, appropriate signage and emergency drills) during and after the construction phase. However, it is important to note that the NSW SES is opposed to the imposition of development consent

[23] Tooker and Associates, 2023, Flood Impact Assessment and Flood Emergency Response Plan, Section 16.3.2 Bureau of Meteorology

conditions requiring private flood evacuation plans rather than the application of sound land use planning and flood risk management.

Development in a floodplain will increase the need for NSW SES to undertake continuous community awareness, preparedness, and response requirements. Residents and users of the proposed development should be made aware of their flood risk, the Hazards Near Me app (a tool to receive flood warnings as part of the Australian Warning System) and the NSW SES website which contains comprehensive information for the general community about what to do before, during and after floods as well as in-language resources and HazardWatch (NSW SES interactive information and warnings site).

Undertaking regular exercising of a building flood emergency response plan similar to a building fire evacuation drill with the provision to allow people from lower floors and off the street to access refuge areas above PMF. This may also include emergency warning notification (or PA) system to reduce the risks to the itinerant population as well as any occupants moving in and out of the building.