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7 November 2024

Dialina Day
Goulburn Mulwaree Council
Locked Bag 22
Goulburn NSW 2580
Via email

email: dialina.day@goulburn.nsw.gov.au
CC: dylan.whitelaw1@ses.nsw.gov.au

Dear Dialina,

Planning Proposal for 158 Gorman Road Goulburn

Thank you for the opportunity to provide comment on the Planning Proposal for 158 Gorman Road, Goulburn. It is understood that the planning proposal seeks to amend the Goulburn Mulwaree Local Environmental Plan 2009 (GM LEP 2009) to permit rezoning of part of the site from rural land RU6 Transition to R5 Large Lot Residential and change the minimum lot size map from 10 hectares to 2 hectares. The rezoning is to facilitate a future urban residential subdivision, the site having the capacity for approximately 1 additional large lot residential lot. It is understood that the proposal must ensure *“that the existing zone and lot size boundaries remain unchanged for the portion of the site zoned E3 [sic] (C3) ¹ Environmental Management.”²* It is understood that the extent of this land is identified for urban development in Precinct 8 of the Goulburn Mulwaree Urban and Fringe Housing Strategy.

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.

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.

¹ Goulburn Mulwaree Council. 2024. Planning Proposal -Gateway version, page 8-9

² Goulburn Mulwaree Council. 2024. Planning Proposal -Gateway version, page 6

In summary, we:

- **Note** the preliminary Flood Impact and Risk Assessment (FIRA) has analysed a number of selected points at the site and did not assess post-development conditions. We **recommend** seeking advice from NSW Department of Climate Change, the Environment, Energy and Water (DCCEEW) regarding the need to undertake a comprehensive FIRA to include:
 - consideration of flood risk across the entire site from the full range of flooding events up to the PMF;
 - flooding impacts on access/egress routes to include the proposed internal road (and the broader road network) and any risk of isolation;
 - impacts of the development on flood behaviour at the site, neighbouring and downstream properties (include both pre- and post-development conditions);
 - time to onset, duration of inundation, depth, velocity and hydraulic hazard of any flooding;
 - risks from overtopping of the farm dam;
 - climate change impacts.
- **Note** the site can become isolated from essential services (such as hospitals) as access to Goulburn is cut by riverine flooding in 0.2% AEP events³ and the duration can last up to 3 days.⁴ The road network is also impacted by flash flooding making it dangerous to travel in the more frequent events. We therefore encourage site design and stormwater management that reduces the impact of flooding and minimises any risk to the community from travelling along these roads. Any improvements that can be made to reduce flood risk will benefit the community.
- **Recommend** excluding any high flood risk areas from developable land, not just the building footprint, to minimise the risk to life and property.
- **Note** the proposed evacuation route is impacted by flash flooding, with a H5 flood hazard level in a PMF,⁵ giving people little to no time to safely evacuate. The FIRA suggests that *“a depth of 46cms is safely accessible by a large vehicle”*⁶. We **would like to emphasise** that people should not be encouraged to / or attempt to drive or walk through floodwaters, as it is unlikely for them to correctly ascertain the depth and velocity water while making their way through floodwaters, particularly in likely ongoing poor weather conditions. Floodwaters are dangerous and can contain debris and pollutants putting people at severe risk to life and health. **Evacuation must not require people to drive or walk through flood water.**

³ GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, Table 15, page 39

⁴ GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, Table 15, page 39

⁵ Goulburn Mulwaree Council. 2024. Preliminary Flood Impact and Risk Assessment, page 13

⁶ Goulburn Mulwaree Council. 2024. Preliminary Flood Impact and Risk Assessment, page 16

- **Note** the preliminary FIRA proposes future site users to evacuate from the site to a service station at the corner of Sydney Road and Common Street.⁷ We **recommend** that the suitability of any proposed evacuation aligns with the Red Cross Preferred Sheltering Practices for Emergency Sheltering in Australia.² Any proposed refuge location should be above the height of the PMF, and provide appropriate shelter, water supply, waste management, sanitation, food and space management for the entire period people need to take refuge there. Further, it is generally observed that evacuees relocate to family and friends.

You may also find useful the following Guidelines available on the NSW SES website:

- [Reducing Vulnerability of Buildings to Flood Damage](#)
- [Designing Safer Subdivisions](#)
- [Managing Flood Risk Through Planning Opportunities](#)

Please feel free to contact Ana Chitu 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,

A handwritten signature in black ink, appearing to read 'Elspeth O'Shannessy', with a horizontal line underneath.

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

⁷ Goulburn Mulwaree Council. 2024. Preliminary Flood Impact and Risk Assessment, page 12

ATTACHMENT A: Principles Outlined in the Support for Emergency Management Planning Guideline⁸

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 NSW State Flood Plan⁹ and the Goulburn Mulwaree Flood Emergency Sub Plan¹⁰.

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. Climate change considerations should also be included in line with NSW Government Guidelines.

The site appears to be outside the PMF flood extent from riverine flooding of the Wollondilly and Mulwaree Rivers¹¹, however, the site is partially impacted by overland flooding.¹² A couple of non-perennial watercourses traverse the land and there is an existing farm dam at the northern boundary of the site. This area is prone to flash flooding,¹³ with overland flooding typically rising and receding over a short period of time and floodwaters generally relatively shallow but fast moving.

The site itself appears to be impacted by overland flooding as frequently as 5% Annual Exceedance Probability (AEP) events, mainly limited to H1 flood hazard level across the site.¹⁴ In a 1% AEP event, a significant part of the site is impacted by overland flooding, including the proposed internal road and proposed building location at the eastern part of the site¹⁵, with depths limited to under 0.2 metres.¹⁶ From the information provided, in the PMF event flood depth at the site appears to remain below 0.4 metres¹⁷, with the exception of the farm dam - 1.59 metres, which is not being proposed for removal¹⁸. However, the preliminary Flood Impact and Risk Assessment (FIRA) only provided flood depth and velocity at a number of

⁸ NSW Government. 2023. Principles Outlined in the Support for Emergency Management Planning Guideline

⁹ NSW Government. 2021. NSW State Flood Plan. Section 1.6 – Key Principles. 1.6.2, page 5

¹⁰ NSW SES. 2021. Goulburn Mulwaree Flood Emergency Sub Plan. Section 1.6 – Key Principles. 1.6.2, page 6

¹¹ GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, Figure A-08, page 252

¹² Goulburn Mulwaree Council. 2024. Planning Proposal -Gateway version, page 12

¹³ Goulburn Mulwaree Council. 2024. Preliminary Flood Impact and Risk Assessment, page 12

¹⁴ Goulburn Mulwaree Council. 2024. Preliminary Flood Impact and Risk Assessment, Figure 13, page 18

¹⁵ KMJ Surveying Pty Limited. 2024. Plan of Proposed Subdivision – concept layout

¹⁶ Goulburn Mulwaree Council. 2024. Preliminary Flood Impact and Risk Assessment, Figure 14, page 18

¹⁷ Goulburn Mulwaree Council. 2024. Preliminary Flood Impact and Risk Assessment, Figure 11, page 15

¹⁸ Goulburn Mulwaree Council. 2024. Planning Proposal -Gateway version, page 6

selected points and did not consider post-development scenarios. To assess if safe occupation of the land can be achieved, consideration must be given to flooding impacts across the entire proposed development site and safe access/egress.

The site would also become isolated from essential services (such as hospitals) as access to Goulburn is lost when the Sydney Road Bridge gets cut by riverine flooding in 0.2% AEP events.¹⁹ The broader road network also gets cut from more frequent riverine flooding events and the duration of inundation in this area can last up to 3 days.²⁰ The road network is also impacted by flash flooding making it dangerous to travel even in the more frequent events.

To understand the full extent of flood risks at the site, we recommend seeking advice from DCCEEW regarding the requirement for a more comprehensive FIRA to include consideration of flood risk across the entire site from the full range of flooding events up to the PMF, flooding impacts on access/egress routes to include the proposed internal road (and the broader road network) and any risk of isolation, impacts of the development on flood behaviour at the site, neighbouring and downstream properties (include both pre- and post-development conditions), time to onset, duration of inundation, depth, velocity and hydraulic hazard of any flooding, consider risks from overtopping of the farm dam and climate change impacts.

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 access road for the site, Gorman Road also becomes impacted by overland flooding,²¹ while riverine flooding restricts access from the site to central Goulburn during a Probable Maximum Flood (PMF), therefore evacuation of the site to central Goulburn is not likely to be feasible, particularly as there is little to no warning time available²².

The preliminary FIRA provided, proposes future site users to evacuate from the site to a service station (with food and drink premises) at the corner of Sydney Road and Common Street.²³ We recommend that the suitability of the proposed evacuation aligns with the Red Cross Preferred Sheltering Practices for Emergency Sheltering in Australia.² Any proposed refuge location should be above the height of the PMF, and provide appropriate shelter, water supply, waste management, sanitation, food and space management for the entire period people need to take refuge there.

Further, the proposed evacuation route has a number of locations (points) where overland drainage results in flooding of the road, with point B at 0.46m depth and H2 hazard level and

¹⁹ GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, Table 15, page 39

²⁰ GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, Table 15, page 39

²¹ Goulburn Mulwaree Council. 2024. Preliminary Flood Impact and Risk Assessment, Figure 12, page 16

²² Goulburn Mulwaree Council. 2024. Preliminary Flood Impact and Risk Assessment, page 8

²³ Goulburn Mulwaree Council. 2024. Preliminary Flood Impact and Risk Assessment, page 12

point C 0.2m depth and H5 flood hazard level in a PMF.²⁴ The FIRA suggests that “a depth of 46cms is safely accessible by a large vehicle”²⁵.

According to the Goulburn FRMS&P, “Hazardous flooding of roads occurs when there is enough flow to knock over pedestrians or transport cars off the road due to buoyancy and frictional instability. In Australia, vehicles attempting to cross flooded roads is the largest causes of injury and fatality during a flood. The ability of flow to move or completely float a car is often underestimated, with as little as 0.3 m (30 cm) depth enough to move a small car, even at low flow speeds (this corresponds to H2 hazard).”²⁶

We would like to emphasise that people should not be encouraged to / or attempt to drive or walk through floodwaters, as it is unlikely for them to correctly ascertain the depth and velocity of water while making their way through floodwaters, particularly in likely ongoing poor weather conditions. Floodwaters are dangerous and can contain debris, bacteria²⁷ and pollutants putting people at severe risk to life and health. **Evacuation must not require people to drive or walk through flood water**, therefore the proposal does not provide for safe evacuation of the proposed development.

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

Managing flood risks associated with flooding 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.

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.

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

²⁴ Goulburn Mulwaree Council. 2024. Preliminary Flood Impact and Risk Assessment, page 13

²⁵ Goulburn Mulwaree Council. 2024. Preliminary Flood Impact and Risk Assessment, page 16

²⁶ GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, page 38 - 39

²⁷ The University of Queensland. 2024. Bugs in floods - the microbes lurking in mud – article by the Institute of Molecular Bioscience

As there are no formal height time river level predictions for the area, which is subject to flash flooding, there is little opportunity for the community to respond to a flood threat in an appropriate and timely manner.

Principle 7 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.