

Our Ref: ID 2843  
Your Ref: PP-2022-1940 Ref-3387

14 January 2024

Dialina Day  
Goulburn Mulwaree Council  
184 Bourke Street  
Goulburn NSW 2580  
Via Planning Portal

email: [dialina.day@goulburn.nsw.gov.au](mailto:dialina.day@goulburn.nsw.gov.au)  
CC: [amanda.pollock@ses.nsw.gov.au](mailto:amanda.pollock@ses.nsw.gov.au)

Dear Dialina,

### **Planning Proposal for 515 Crookwell Road, Kingsdale**

Thank you for the opportunity to provide comment on the Planning Proposal for 515 Crookwell Road, Kingsdale, which proposes a 24 large lot residential subdivision. To achieve this, the planning proposal seeks to rezone land from C3 Environmental Management to R5 Large Lot Residential and part C2 Environmental Conservation, amend the minimum lot size from 100 hectares to 2 hectares (a minimum lot size is not proposed for land to be rezoned to C2 Environmental Conservation), and include the Site (Part Lot 103 & 104 DP 1007433) together with the land at 407 & 457 Crookwell Road (which is south of the site and subject to a separate Planning Proposal PP-2023-414 to rezone the land for residential development<sup>1</sup>) as an Urban Release Area (URA).<sup>2</sup>

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.

It is understood that a Gateway Determination for this Planning proposal (PP-2022-1940) has been issued on 26 August 2024.

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<sup>1</sup> NSW DPHI. 2024. Gateway determination report – PP-2022-1940 Crookwell Road, Kingsdale, page 2

<sup>2</sup> Goulburn Mulwaree Council. 2024. Planning Proposal to rezone and amend Minimum Lot Size at 515 Crookwell Road Kingsdale, page 9

In summary, we:

- **Support** the proposed C2 Environmental Conservation zoning for the portions of the site affected by water courses and overland flood prone land and **recommend** excluding any high flood risk areas from developable land (and not just the building footprint), to minimise the risk to life and property.
- **Emphasise** that shelter-in-place for greenfield development is not supported, according to the Shelter-in-place guideline for flash flooding.<sup>3</sup>
- **Recommend** considering the cumulative impacts of increased development in this area, including any evacuation constraints, noting that shared access is being proposed with a larger 277-lot proposed residential subdivision located immediately south of the subject site.<sup>4</sup> Any emergency management constraints (such as risk of isolation, evacuation capacity for the broader area and emergency access/egress) *must be addressed before consent is granted*.
- **Note** access/egress to the proposed development is impacted by flash flooding, including Crookwell Road and the proposed internal access roads which experience H5 flood hazard level in a PMF event,<sup>5</sup> giving people little to no time to safely evacuate. The FIRA suggests that *safe access* is maintained on roads categorised H1 – H2 hazard level.<sup>6</sup> We would like to **emphasise** that people should not be encouraged to drive or walk through floodwaters, as it is unlikely for them to correctly ascertain the depth and velocity of floodwater while making their way through it, particularly in likely ongoing poor weather conditions. **Evacuation must not require people to drive or walk through flood water.**
- **Recommend** considering road resilience to flooding and internal roads design to allow rising road access in all flood events up to and including the PMF for the entire development, to prevent isolation and associated secondary risks.
- **Recommend** seeking advice from the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) regarding flooding impacts at the site and the impacts of the proposed development on flood behaviour in adjacent areas, considering the proposed cumulative development in the area.

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](mailto: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

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<sup>3</sup> DPHI. 2023. Shelter-in-place guideline for flash flooding, page 4

<sup>4</sup> Stantec. 2023. Traffic Impact Assessment, page 1

<sup>5</sup> CivPlan. 2024. Flood Impact & Risk Assessment. Appendix B, Figure 12

<sup>6</sup> CivPlan. 2024. Flood Impact & Risk Assessment, page 24

*KWaine*

Kirra Waine  
A/Senior Manager Emergency Risk Management  
**NSW State Emergency Service**

## **ATTACHMENT A: Principles Outlined in the Support for Emergency Management Planning Guideline<sup>7</sup>**

### **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 Plan<sup>8</sup> and the Goulburn Mulwaree Flood Emergency Sub Plan<sup>9</sup>, where evacuation is the preferred emergency management strategy for people impacted by flooding.

### **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. Further, risk assessment should consider the full range of flooding, including events up to the Probable Maximum Flood (PMF). Climate change considerations should also be included, in line with NSW Government Guidelines.

It is understood that the subject Site is located within Precinct 4 of the *Urban and Fringe Housing Strategy (The Housing Strategy)*, Sooley Precinct.<sup>10</sup>

The Site has existing natural water courses traversing the land and it is subject to overland flooding,<sup>11</sup> however it is outside of the PMF extent from mainstream flooding of the Wollondilly River.<sup>12</sup>

It is noted that the Flood Planning Level (FPL) that applies is 1% AEP plus a freeboard of 0.5 metres. Areas of flood prone land up to and including the 1% AEP plus 0.5 metres are proposed to be rezoned as C2 Environmental Conservation and will not be developed for housing, and the Sooley Precinct DCP will contain development controls to locate future habitable development above the PMF.<sup>13</sup>

However, it is unclear if all flood affected land up to and including the 1% AEP + 0.5 metres freeboard was included in the proposed C2 zoning, as illustrated in Figure 5<sup>14</sup> and the flood modelling provided. Post-development modelling shows that 13 lots are impacted by the 1% AEP event, particularly the eastern lots. Five lots have the proposed building envelope flood affected in a 1% AEP event, by mainly shallow (up to 0.2 metres) low hazard flooding,<sup>15</sup> with

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<sup>7</sup> NSW Government. 2023. Principles Outlined in the Support for Emergency Management Planning Guideline

<sup>8</sup> NSW Government. 2024. NSW State Flood Plan. Section 5.1.7, page 34

<sup>9</sup> NSW SES. 2021. Goulburn Mulwaree Flood Emergency Sub Plan. Section 1.6.2, page 6

<sup>10</sup> Goulburn Mulwaree Council. 2024. Planning Proposal – Gateway Version, page 5

<sup>11</sup> Goulburn Mulwaree Council. 2024. Planning Proposal – Gateway Version, page 13

<sup>12</sup> GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan. Appendix A, Figure A-08

<sup>13</sup> Goulburn Mulwaree Council. 2024. Planning Proposal – Gateway Version, page 51

<sup>14</sup> Goulburn Mulwaree Council. 2024. Planning Proposal – Gateway Version. Figure 5: Proposed zoning of subject site, page 10

<sup>15</sup> CivPlan. 2024. Flood Impact & Risk Assessment. Appendix B, Figure 9

the exception of Lot 5 and the farm dam being retained at Lot 1, which can see flood depths in excess of 0.5 metres.<sup>16</sup> A number of these lots affected in the 1% AEP event could become isolated by the overland flow path running across the lot's access to the proposed internal road (this appears to be the case for Lot 11, 12 and majority of eastern lots). Further, in a PMF event 16 lots are impacted by flooding to various degrees with Lots 23, 24, 1, 7, 5, 19, 11 and 12 seeing flood depths in excess of 0.5 metres and even close to 1 metre in some parts.<sup>17</sup> In a PMF event, overland flooding of up to H5 flood hazard level affects parts of Lots 23, 24, 1, 7, 5, 19, 11, 20 and 17, and out of these seven lots have their proposed building footprint affected by flooding.<sup>18</sup> The Council flood map suggests that part of the proposed southern, southeastern lots and proposed internal Road 3 are situated in *most significantly constrained areas* and *next least suitable for intensification of land use or development areas*.<sup>19</sup>

We support the proposed C2 Environmental Conservation zoning for the portions of the site affected by water courses and overland flood prone land, and recommend excluding any high flood risk areas from developable land (and not just the building footprint), to minimise the risk to life and property.

It is noted that the surrounding area is subject to potential rezoning into the future, with *"with a larger 277-lot residential subdivision located immediately south of the subject site at 407 & 457 Crookwell Road."*<sup>20</sup> *"The southern site access to 515 Crookwell Road (subject site) will be shared with the proposed residential subdivision at 407 & 457 Crookwell Road."*<sup>21</sup> The site traffic generations for the subject site *"equates to between 260 and 325 daily trips for the indicative 25 lots to be developed."*<sup>22</sup> We recommend considering the cumulative impacts of increasing development in this area, including the evacuation capacity. If the development proceeds, we recommend site design that permits for rising road access for the entire development, particularly considering the limited warning time due to flash flooding in the area.

Further, post-development modelling suggests increased flooding impacts from the 407 & 457 Crookwell Road proposed development affecting the southern lots of the subject site and the location of proposed Road 3.<sup>23</sup> We recommend seeking advice from the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) regarding flooding impacts at the site and the impacts of the proposed development on flood behaviour in adjacent areas, considering the proposed cumulative development in the area.

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

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<sup>16</sup> CivPlan. 2024. Flood Impact & Risk Assessment. Appendix A, Drawing 20027-428

<sup>17</sup> CivPlan. 2024. Flood Impact & Risk Assessment. Appendix A, Drawing 20027-429

<sup>18</sup> CivPlan. 2024. Flood Impact & Risk Assessment. Appendix B, Figure 12

<sup>19</sup> Goulburn Mulwaree Council. 2024. Planning Proposal – Gateway Version. Figure 14, page 24

<sup>20</sup> Stantec. 2023. Traffic Impact Assessment, page 1

<sup>21</sup> Stantec. 2023. Traffic Impact Assessment, page 10

<sup>22</sup> Stantec. 2023. Traffic Impact Assessment, page 9

<sup>23</sup> Goulburn Mulwaree Council. 2024. Planning Proposal – Gateway Version, page 51

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.

The proposal includes building of internal access roads to facilitate access to Crookwell Road.<sup>24</sup> *“The extent of the overland flood prone land (..) will have impacts on where the connecting roads to Crookwell Road will be located, and therefore ability to access and evacuate the site.”*<sup>25</sup> All roads are proposed to be accessible during a 1% AEP, but this is subject to them being raised 200mm from existing surface levels. However, this will not deem them flood-free in a 1% AEP event, but *“will enable these roads to be within a H1 and H2 hazard category.”*<sup>26</sup>

The FIRA suggests that *safe access* is maintained on roads categorised H1 – H2 hazard level.<sup>27</sup> We would like to **emphasise** that people should not be encouraged to drive or walk through floodwaters, as it is unlikely for them to correctly ascertain the depth and velocity of floodwater while making their way through it, particularly in likely ongoing poor weather conditions.

*“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).”*<sup>28</sup> **Evacuation must not require people to drive or walk through flood water.**

The FIRA notes there are a number of sag points along the proposed internal roads,<sup>29</sup> with proposed Roads 1, 2, and 3<sup>30</sup> being impacted by up to 0.3 metres of flooding in the 1% AEP event,<sup>31</sup> with the modelling suggesting the hazard level across the proposed internal roads remains at H1 – H2 for events up to the 0.05% AEP.<sup>32</sup> In a PMF event, flooding on these roads can be in excess of 0.5 metres<sup>33</sup> and reaching H5 hazard level in multiple areas (adjacent to Lot 5 & 19, Lot 11, south of Lot 7 and adjacent to Lot 24).<sup>34</sup> During a PMF event Road 3 will be cut off for a 2.5 hour period.<sup>35</sup>

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<sup>24</sup> Goulburn Mulwaree Council. 2024. Planning Proposal – Gateway Version, page 6

<sup>25</sup> Goulburn Mulwaree Council. 2024. Planning Proposal – Gateway Version, page 46

<sup>26</sup> Goulburn Mulwaree Council. 2024. Planning Proposal – Gateway Version, page 48

<sup>27</sup> CivPlan. 2024. Flood Impact & Risk Assessment, page 24

<sup>28</sup> GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, page 38 - 39

<sup>29</sup> CivPlan. 2024. Flood Impact & Risk Assessment, page 19

<sup>30</sup> Goulburn Mulwaree Council. 2024. Planning Proposal – Gateway Version, Figure 2

<sup>31</sup> CivPlan. 2024. Flood Impact & Risk Assessment. Appendix A, Drawing 20027-428

<sup>32</sup> CivPlan. 2024. Flood Impact & Risk Assessment. Appendix B, Figure 9 - 11

<sup>33</sup> CivPlan. 2024. Flood Impact & Risk Assessment. Appendix A, Drawing 20027-429

<sup>34</sup> CivPlan. 2024. Flood Impact & Risk Assessment. Appendix B, Figure 12

<sup>35</sup> Goulburn Mulwaree Council. 2024. Planning Proposal – Gateway Version, page 48

Further, Crookwell Rd becomes impacted by overland flooding as frequently as 5% AEP events, at multiple locations adjacent to the site as well as north and south of the proposed site<sup>36 37</sup> and can see flood velocities up to 2m/s in a PMF event.<sup>38</sup> In addition to overland flooding impacts, Crookwell Road gets cut at Marsden Bridge in 0.2% AEP riverine flooding events,<sup>39</sup> with Fitzroy Street (south of Marsden Bridge) being a known flooding hotspot with high hazard flows,<sup>40</sup> which would isolate this area from central Goulburn.

We recommend considering road resilience to flooding and internal roads design to allow rising road access in all flood events up to and including the PMF for the entire development, to prevent isolation and associated secondary risks. 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.

The proposal suggests that *“future occupants will be able to safely shelter in place in the event of a future flood”*<sup>41</sup>, however, according to the Shelter-in-place guideline for flash flooding, shelter-in-place for greenfield development is not supported.<sup>42</sup>

**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.

Continuing research by the Bureau of Meteorology and the CSIRO<sup>43</sup> are predicting more intense, short duration heavy rainfall events which cause flash flooding. The projected increase in heavy rainfall and coastal low weather systems over the NSW coast will increase flood risk in many NSW catchments.

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<sup>36</sup> GRC Hydro. 2022. Goulburn Mulwaree Overland Flow Flood Study Project, Figure 1

<sup>37</sup> Appendix 13a- Flood data- velocity and depth for 5% AEP (Crookwell Road) \_PP-2022-1940

<sup>38</sup> Appendix 13c- Flood data- velocity and depth for PMF (Crookwell Road) \_PP-2022-1940

<sup>39</sup> GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, page 39

<sup>40</sup> GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, page 34

<sup>41</sup> Goulburn Mulwaree Council. 2024. Planning Proposal – Gateway Version, page 49

<sup>42</sup> DPHI. 2023. Shelter-in-place guideline for flash flooding, page 4

<sup>43</sup> Commonwealth of Australia. 2024. Bureau of Meteorology and CSIRO - State of the Climate report 2024



**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.**

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 the area is prone to flash flooding<sup>44</sup>, there will be little to no warning time for the community to respond in a flood event.

**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.

However, it is important to note that the NSW SES is opposed to the imposition of development consent conditions requiring private flood evacuation plans rather than the application of sound land use planning and flood risk management.

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<sup>44</sup> GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, page 9 - 10