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Rileys Hill

Flood Planning Advice Report

Felicity Greenway (Chair)

Sheridan Coakes

Peter Williams

1 June 2023



Acknowledgement of Country

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Rileys Hill

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Defined terms

Term	Definition
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
ARI	Average Recurrence Interval
ARR	Australian Rainfall and Run-off guidelines
Council Flood Study	Richmond River Flood Mapping Study (2010) by BMT WBM
Department	Department of Planning and Environment
ETs	Equivalent Tenements
Flood Inquiry	NSW Flood Inquiry (July 2022)
INSW	Infrastructure NSW
Panel	Flood Advisory Panel
PLUS	DPE Planning and Land Use Strategy division
Planning Proposal	Rileys Hill Village Extension - PP-2022-2692
PMF	Probable Maximum Flood
SES	NSW State Emergency Service
Site	Lot 100 DP 1201719
STP	Sewage Treatment Plant
TAG	Flood Technical Advisory Group
TAR	Flood Technical Advisory Report
TfNSW	Transport for NSW
2022 Floods	February 2022 Northern Rivers Region flood event

1 Introduction

1. The Department of Planning and Environment (**Department**) established Flood Advisory Panels (**Panel**) to provide advice regarding the flood risk associated with certain 'high risk' planning proposals and other planning-related matters, in light of the recommendations of the NSW Flood Inquiry 2022 (**Flood Inquiry**). The Panel review process for these matters was intended as an interim measure pending the flood planning work of the NSW Reconstruction Authority, in accordance with the Flood Inquiry recommendations.
2. A Technical Advisory Group (**TAG**) was also established by the Department to deliver expert technical advice to Panels in accordance with the TAG terms of reference (dated 12 December 2022) and at the direction of the Panels. The advice of the TAG is not binding on the Panels or on the Department's Planning and Land Use Strategy (**PLUS**) division, which remains the delegated decision maker for the planning proposals referred to the Panels.
3. On 27 July 2022, Richmond Valley Council (**Council**) lodged the Rileys Hill Village Extension planning proposal (**Planning Proposal**), to the Department for Gateway review. The Planning Proposal seeks to rezone Lot 100 DP 1201719 (**Site**) from primary production to part rural village and part conservation land use (while retaining part of the Site as primary production), providing an additional 35 potential dwellings in extension to the existing Rileys Hill village.
4. On 9 January 2023, the Panel received a request for advice from PLUS (**PLUS Request**) in relation to the Planning Proposal, which is detailed in Section 1.1.
5. The Department's Acting Deputy Secretary Felicity Greenway (Chair), and independent members Peter Williams and Sheridan Coakes were appointed to constitute the Panel with respect to this request.

1.1 Advice Request

6. The PLUS Request sought the Panel's recommendations on how to proceed with this rezoning in relation to flood and evacuation matters, with possible options being:
 - Proceed with the proposal without variation.
 - Proceed with variation to the proposal.
 - Refuse the proposal.
7. The PLUS request also sought advice on the following matters:
 - Whether the Planning Proposal adequately addresses flood risk, including evacuation, having regard to the Flood Inquiry recommendations.
 - Whether the Proposal adopts a tolerable, risk-based flood planning level considering a range of flood scenarios, existing and approved development, and existing and approved evacuation routes, in line with cumulative capacity.

1.2 Material Considered by the Panel

8. In this review, the Panel considered a range of material (**Material**) detailed in Appendix A.
9. The Panel requested the TAG provide technical advice on specific flood-related risks of the rezoning, having regard to the Flood Inquiry and its recommendations as accepted by government (either absolutely or in principle). The TAG was requested to advise whether the rezoning adopts a tolerable, risk-based flood planning level considering the documentation as listed in Appendix A.

10. The TAG’s advice is summarised in the Technical Advice Report (**TAR**) dated 22 May 2023. The TAG advice is a compilation from several independent experts.

1.3 The Panel’s Meetings

11. As part of its advice, the Panel met with various stakeholders as set out in Table 1. Panel’s Meetings.

Table 1. Panel’s Meetings

Meeting	Date
Site Inspection	05 April 2023
PLUS	27 April 2023
State Emergency Service (SES)	27 April 2023
Proponent	28 April 2023
Council	03 May 2023

2 Planning Proposal

2.1 Site and Locality

12. Rileys Hill is located approximately 22 kilometres (km) south of Ballina and 3 km west of Broadwater within the Richmond Valley Council Local Government Area (LGA). The Site is approximately 8.3 hectares (ha) and is a natural extension of the existing Rileys Hill village, which is located to the north-east. The existing township of Rileys Hill has a population of approximately 1081 people, with an average 2.6 people per household, according to the 2021 Census.
13. The site is located approximately 400 metres (m) from the banks of the Richmond River and is separated by an elevated ridge line to the west (see Figure 1). The Richmond River is the primary flood source for the Site.
14. The Site is currently vacant land largely cleared for grazing purposes and zoned RU1 – Primary Production. The Site is characterised by a central depression, ranging in elevation from 4.5 metres Australian Height Datum (m **AHD**) to 14 m AHD.
15. The Site has been identified as an investigation area for greenfield growth in the *Richmond Valley Council Growth Management Strategy* adopted by Council on 18 April 2023. The strategy notes that the development of this land would require the careful mitigation of flood, stormwater, environmental, and infrastructure constraints.



Figure 1. Location of Rileys Hill Planning Proposal (source: Flood Study Report, prepared by Ardill Payne September 2021)

2.2 Strategic Context

16. The Site has been identified for potential future urban growth in local strategic planning documentation and is noted as a potential extension of the existing Rileys Hill Village. Strategies identifying the Site include:
 - *Richmond Valley Local Strategic Planning Statement: Beyond 20-20 Vision* (prepared by the Richmond Valley Council, dated May 2020).
 - *Richmond Valley Growth Management Strategy* (prepared by Gyde Consulting on behalf of the Richmond Valley Council, dated April 2023).
17. The Richmond Valley Growth Management Strategy notes that development of the Site will require careful mitigation of flooding, stormwater, environmental concerns, and infrastructure constraints. This strategy identifies (p.25) '*much of the Richmond Valley is comprised of land that is constrained by environmental concerns and other development factors. As such, this analysis has determined that the majority of required residential land supply to 2041 will be delivered within and around the strategically identified town of Casino*'.

2.3 Background

18. The original Planning Proposal that Council resolved to send to the Department for Gateway Determination in November 2017 proposed to rezone the entire Site to R1 – General Residential with a proposed dwelling yield of 70 lots. However, following several iterations of the proposal (see Table 2), the rezoning was restricted to rezoning only part of the property to RU5 – Village with a potential dwelling yield of 35 with a further lot zoned a mixture of RU1 – Primary Production and C2 – Environmental Conservation. Additionally, the remnant RU1 zoned land was proposed to have a dwelling entitlement via an amendment to the Richmond Valley Local Environmental Plan Dwelling Opportunity Map.
19. Key changes occurred in response to issues raised through the various Gateway assessment processes. Including:

- Excluding flood-prone land at the southern portion of the property from the development footprint.
- Reducing the number of residential lots in response to the findings of an infrastructure servicing report on future upgrades and capacity of the Rileys Hill Sewage Treatment Plant.
- Introducing a C2 – Environmental Conservation zone after a flora/fauna study indicated the presence of Wallum Froglet communities and Koala habitat.

20. Table 2 below provides a brief history of the Planning Proposal to date.

Table 2. Timeline of rezoning

Date	Proposal Stage
May 2017	Proposal presented to Council
November 2017	Council agreed to submit the proposal to the Department
February 2018	Gateway Determination issued
January 2021	Proposal lapsed
Mid-2021	Proposal re-submitted for Gateway Determination
October 2021	Gateway Determination issued
June 2022	Proposal lapsed
Mid-2022	Proposal re-submitted for Gateway Determination
August 2022 - Current	Submitted for Gateway Determination

2.4 Planning Proposal

21. The Planning Proposal seeks to partially rezone the Site from RU1 – Primary Production to RU5 – Village and C2 – Environmental Conservation, to facilitate the development of 35 new residential lots. The proposed rezoning can be summarised in the following ways:

- Approximately 4 hectares (ha) of the Site will be rezoned to RU5 allowing a dwelling yield of 35 lots with a minimum lot size of 800 metres squared (m²).
- Approximately 2 ha of the Site will remain zoned RU1 with a minimum lot size remaining 4 ha.
- Approximately 2 ha of the Site will be rezoned to C2 zoning with a minimum lot size of 2 ha.
- Areas zoned C2 and RU1 form a combined lot in the lowest elevation sections of the Site adjacent to Hill Road (see Figure 2).

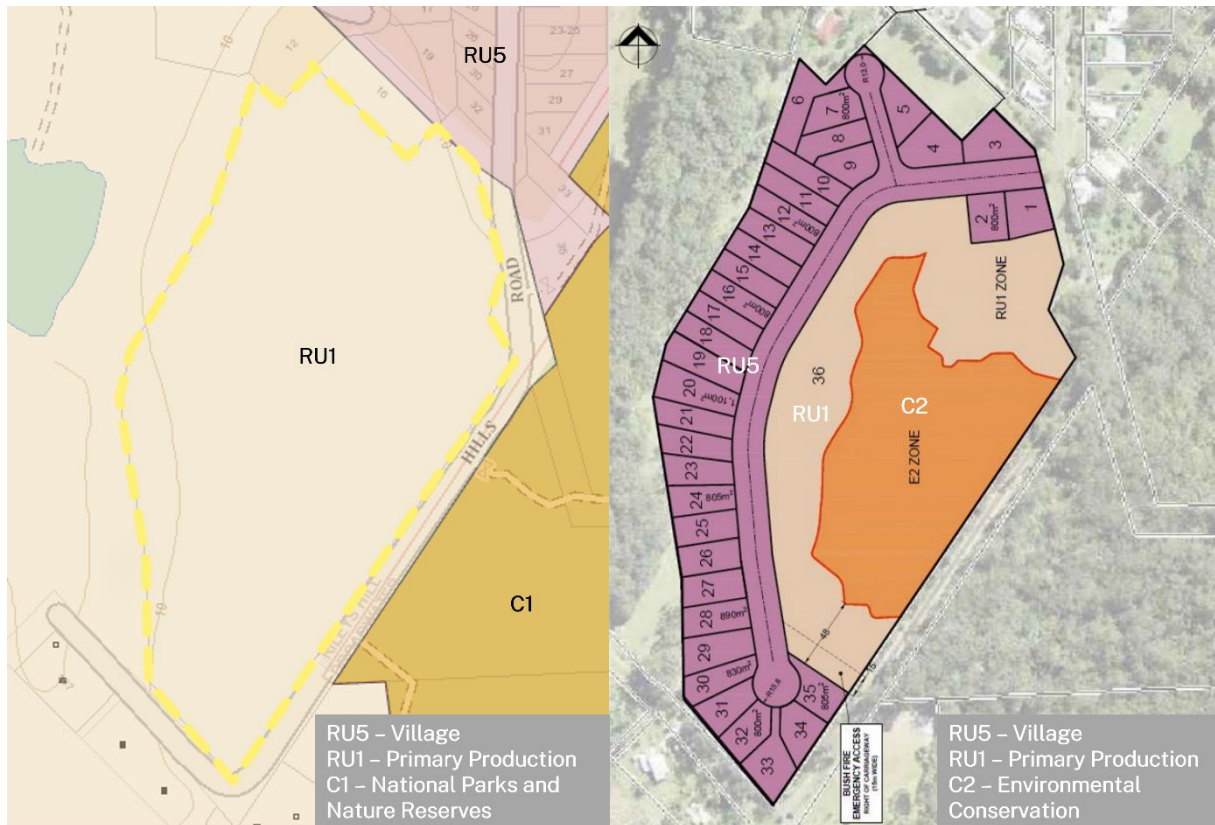


Figure 2. Rileys Hill Site – existing zoning (left – source, ePlanning Spatial Viewer 2023), Rileys Hill Planning Proposal – Proposed Zoning (Right – source, Planning Proposal, prepared by Ardill Payne August 2021)

3 The Panel’s Consideration

3.1 Key Issues

22. The following section provides a summary of the key issues identified and considered by the Panel in response to the PLUS Request.

3.1.1 Flood Hazard and Behaviour

Proponent Comments

23. The Proponent submitted the following document that considers flood hazard and behaviour: *Flood Study Report – Investigations and Emergency Management* (prepared by Ardill Payne, dated September 2021) (**Flood Report**)
24. The Flood Report does not contain any site-specific flood modelling, instead relying on information from Council’s existing Richmond River Flood Mapping Study (2010) by BMT WBM (**Council Flood Study**). The following Table 3 summarises flood mapping from the Council Flood Study as it applies to the Site:

Table 3. Summary of the flood mapping from the Flood Report.

Annual Exceedance Probability (AEP)	ARI (years)	Summary
5%	1 in 20	Flood level onsite peaks at 3.8 m AHD. Hill Road cuts off under a 5% flood event and flood events of lesser frequency.
2%	1 in 50	Flood level onsite peaks at 4.5 m AHD. Access via Hill Road is cut off.
1%	1 in 100	Flood level onsite peaks at 5.0 m AHD (5.1 m AHD when climate change is considered, see paragraph 25). Access via Hill Road is cut off. Approximately 96% of the proposed subdivision is located above 5 m AHD, with more than 50% of the Site located above 5.5 m AHD (flood planning level with free board set out in the Richmond Valley Council Development Control Plan 2015).
0.2%	1 in 500	Flood level onsite peaks at 6.2 m AHD. Access via Hill Road is cut off. Except for five lots, the development footprint is located at or above the 0.2% AEP.
0.02%	1 in 5000	Not modelled or mapped.
Probable Maximum Flood (PMF)	NA	Flood level onsite peaks at 9.5 m AHD. Most of the Site is flooded with the exceptions of small sections of the most north-easterly and western portions of the Site. There is rising access to land above the PMF to the north of the Site.

25. The 1% AEP incorporates the following future climate condition assumptions:
- 900 millimetre (mm) increase in sea level.
 - 10% rainfall intensity increase.
26. The Flood Report notes that a typical flood duration for the Richmond River can be expected to be between five to seven days. During major flood events, larger than 1% AEP, Rileys Hill is expected to be isolated for between two to four days.
27. At its meeting with the Panel on 28 April 2023, the Proponent noted the following:
- During major flood events, flood waters typically pond on the Site due to backwater flow from Richmond River.
 - Sections of the Site that sit below the flood planning level (<5.5 m AHD), such as sections of access roads and some smaller lots, will require fill.
 - Anywhere above the flood planning level (>5.5 m AHD) in the Richmond Valley is largely safe from a 'risk to life' perspective.
 - Regarding the scale of the February 2022 Northern Rivers Region flood event (**2022 floods**). Areas 500 m downstream experienced flood levels above 5.5 m in a location where the 1% AEP is modelled at 4.5 m. This indicates the 2022 Floods were likely beyond the range of common flood events.
 - Council is updating its modelling for the Rileys Hill area which is likely to have greater consideration of climate change for a range of flood events.

Council Comments

28. At its meeting with the Panel on 3 May 2023, Council noted:
- The 2022 floods were likely to be a 0.2% event, as there was water on the property, but it was not completely inundated.

- Reducing the dwelling yield may not have the effect of reducing flood impact on the proposed development. A better option to consider may be to reduce the area zoned for residential development to the northern most section of the property, which is the least flood affected.

29. In response to questions on notice, 15 May 2023, Council provided the indicative results from updated flood modelling for the Site, which includes calibration from the 2022 Flood event. The mapping shows on the leeward side of Rileys Hill there is an increase of 430 mm for the 1%AEP+climate change event, and a 480 mm for the 0.2%AEP event.

PLUS Comments

30. At its meeting with the Panel on 27 April 2023, PLUS noted:

- The 2022 Floods were above the modelled 1% AEP.
- The Department reviewed the Flood Report during the different stages of the Planning Proposal process. While it did not have any issue with the findings or methodology at the time, PLUS acknowledged that following the 2022 Floods, additional flood modelling for the site is warranted.
- Based on the Department's review of the Flood Report, it appears the flood waters affecting the site have slow velocity allowing boat access.

Agency Advice

31. In advice provided to the Panel on 8 May 2023, Infrastructure New South Wales (INSW) noted:

- Overall, the proposal has not adequately considered flood impact or risk to the Site. *'No information was provided regarding risk to life'* (INSW Letter, p.2).
- The Proponent has not undertaken site specific flood modelling to determine the impact of the development on flood behaviour. The flood modelling relied upon by the Planning Proposal was derived from the existing Council Flood Study (INSW Table, p.1).
- Cumulative impacts have not been assessed in relation to the proposed development of the Site (INSW Letter, p.1).
- Climate change has not been considered adequately in the flood impact assessment (INSW Letter, p.2).
- The Flood Report has not adequately assessed risk to life or property in relation to a range of flood events. The Proponent notes the developable area will be raised to the 1% AEP. However, at least five lots are still impacted by the 0.2% AEP flood event (INSW Table, p.4).
- Any further flood modelling needs to consider flood events from the 20% AEP flood event up to, and including, the PMF. Future flood modelling should also consider *'flood hazard, hydraulic categories, flood velocities, depths and levels for all events'* (INSW, p.2).

32. In its meeting with the Panel on 27 April 2023, and in its advice provided on 19 May 2023, the NSW State Emergency Service (SES) noted:

- That the Flood Report is outdated as it relies upon the Council Flood Study. It advises that the *'Richmond Valley Council was awarded a Floodplain Management Grant in 2020-21 to update the Richmond River Flood Study to be undertaken by BMT'*. The process, includes incorporating the 2022 Floods, is anticipated to deliver draft results for exhibition this year (SES, p.7).
- The recent 2022 Floods were likely to have been between a 1% and PMF event in relation to the Richmond Valley Catchment.

- 'Fundamentally, the Planning Proposal increases risk to life for people living and working on the floodplain' (SES, p.4).
- During the 2022 Floods there were significant issues regarding recuses and resupply to the existing Rileys Hill village, which is discussed further in Section 3.1.2.

33. Transport for New South Wales (**TfNSW**) had no comment on flood hazards and behaviours.

TAG Advice

34. *Flood Modelling:*

- The TAG note that no flood modelling was undertaken for the Planning Proposal, rather the Flood Report relies upon the existing Council Flood Study that is now over 13 years old.
- The TAG note that the Flood Report does not model the 0.02% AEP event. The TAG advise that this flood may plausibly occur during the life of the development and warrants consideration.

35. *Climate Change:*

- TAG members note that climate change impacts were not adequately considered in the Flood Report. The TAG advises that the outdated Australian Rainfall and Run-off (1987) guidelines (**ARR**) were used, instead of the updated ARR 2019 guideline. Accordingly, the preceding 30 years of rainfall data have been ignored.
- The TAG recommends that updated site-specific modelling be undertaken, including appropriate references to the latest ARR 2019 guideline.
- The TAG acknowledge that the Council Flood Study does consider climate change to some degree. However, clarification is required to understand the exact nature and sufficiency of climate change considerations to determine if it remains relevant.

36. *Flood Hazard and Behaviour:*

- TAG members note that no hazard modelling has been undertaken and no hazard maps were provided. The TAG note that the Site would likely have high hazard ratings in extreme events. The TAG recommend comprehensive hazard mapping is undertaken for a range of flood events.
- The TAG notes the site would become isolated for days or weeks for extreme rainfall events.

37. *Cumulative Hydraulic Impacts:*

- TAG members note that no modelling has been undertaken into the offsite impacts of the proposed use of fill. The Proponent has provided no information regarding the use of compensatory cut.

Panel Advice

38. The Panel shares the concerns of the TAG, INSW and SES that no site-specific flood modelling for the Site has been undertaken.
39. The Panel also notes that the TAG and SES have identified that the Council Flood Study uses outdated rainfall data from the ARR 1987 guideline. Accordingly, the latest 32 years of rainfall data available in the updated ARR 2019 has not been used.
40. The Panel further notes, while climate change has been considered in the Council Flood Study, the Panel agrees with the TAG that this consideration is limited and does not reflect current practice.
41. Consequently, the Panel shares the concerns of the TAG and SES that the Council Flood Study is no longer accurately representative of the actual flood planning levels, which are likely higher for all flood scenarios.

42. The Panel agrees with the SES and INSW that collectively the Planning Proposal for this site is placing more people at risk (approximately 91 should the Planning Proposal proceed) by placing them in a flood island that is readily isolated, and the current Flood Report does not accurately detail the risk posed to the Site.

3.1.2 Flood Evacuation

Proponent Comments

43. At its meeting with the Panel on 28 April 2023, the Proponent indicated:
- There is no requirement to raise the access roads to the flood planning level. Instead, the roads will be built to the 1% AEP flood level, with the developable areas surrounding to be built to the flood planning level of 1% AEP with an additional 0.5m freeboard.
 - The access roads can be lifted to provide flood free access to the Rileys Hill community centre.
 - Rileys Hill is low in the catchment and would have significant warning periods to evacuate.
 - While the Site has access to adjacent land above the PMF, its evacuation routes become flooded in a range of flood events. This means people must evacuate early or become isolated at the Site.
 - The Site would share the same evacuation constraints as the existing Rileys Hill community as the Site is a natural extension of the Rileys Hill village along the ridge line.
 - Although Rileys Hill was cut-off during the recent 2022 Floods, this is not sufficient reason to withhold development. There was no significant 'risk to life' associated with isolation during that event in Rileys Hill. It is noted, the Proponent was unaware the Rileys Hill community hall was used as an evacuation point during the floods.
 - If development was sterilised below the PMF throughout the Richmond Valley, there would be very few areas left for development.

Council Comments

44. At its meeting with the Panel on 03 May 2023, Council noted:
- Hills Road would require upgrading to support additional development in Rileys Hill. This would include widening and introducing channelised intersections.
 - There would be rising access to the Rileys Hill Community Hall from the Site.
 - The Community Hall is a former school with large grounds and an undercover section which is located out of the PMF and could serve as an ad hoc flood evacuation centre.
 - The closest flood free location during major flood events is Evans Head, which is approximately a 17 km drive to the south.
 - Rileys Hill and the town of Broadwater have only been cut-off through flood events three times in the past thirty years. Any minor flooding that occurs in Broadwater generally dissipates across the floodplain.

PLUS Comments

45. At its meeting with the Panel on 27 April 2023, PLUS noted:
- Based on information provided to date by Council, there is no safe evacuation under flood conditions. Broadwater is not considered a safe evacuation point as it sits lower in the flood plain. Council is of the view that shelter in place is adequate for the Site.
 - The residents of Rileys Hill were isolated for approximately two weeks during the 2022 Floods.

- The flood impact assessment for this site and the shelter in place approach has been designed around the 1% AEP flood event. Prior to the 2022 Floods this was considered an appropriate approach to flood risk consideration. However, following the recent flood events the 1% AEP may no longer be an appropriate approach.
- Following a site visit, the relevant PLUS officers have identified problems with residents being able to safely shelter in place at Rileys Hill.

Agency Advice

46. In advice provided to the Panel on 26 April 2023, TfNSW highlighted the following:
 - Rileys Hill Road is susceptible to inundation under flood events as frequent as 5% AEP as noted in the Flood Report (TfNSW, p.1).
 - *'Any requirements for road upgrades will not have a bearing on improved evacuation routes'* (TfNSW, p.1).
47. In advice provided to the Panel on 8 May 2023, INSW noted:
 - *'The site is a low flood island during a PMF event (and likely smaller events) ... the proposal cannot rely on shelter in place for several days in this location'* (INSW Letter, p.2).
 - It is expected Hills Road will be cut and inundated by 1.2 m of water during a 5% AEP. The Proponent needs to model more frequent events than modelled by Council to determine timing and frequency of isolation (INSW Letter, p.1).
 - The timing of evacuation and isolation as a result of flood waters inundating Rileys Hill road have not been determined (INSW Table, p.4).
 - The Proponent needs to undertake evacuation modelling to justify the evacuation capacity of this site (INSW Letter, p.2).
48. In their meeting with the Panel on 27 April 2023, the SES noted:
 - There is no formal evacuation centre for residents of Rileys Hill. There is no safe route to evacuate people from Rileys Hill during a flood event.
 - There is generally very little lead time to evacuate a village such as Rileys Hill during the onset of a flood event.
 - Rescue boats were not able to access the Rileys Hill community during the recent 2022 Floods, due to the hazardous nature of the floodwaters.
 - People are unlikely to evacuate during a flood event until it is too late to safely leave.
49. In advice provided to the Panel on 19 May 2023, SES noted:
 - *'Rileys Hill evacuation routes are lost in very frequent floods, around 2.8 m AHD at Rileys Hill. This is approximately 20% Annual Exceedance Probability (AEP) flood, i.e. a flood that occurs on average every 5 years but can occur multiple times within any given year'* (SES, p.3).
 - The SES note that sheltering in place is unfeasible stating *'Importantly, a flood impacting Rileys Hill is also going to impact on the broader Richmond and Wilsons River Valleys, resulting in delays in attending to requests for assistance from the community that are not life-threatening. Therefore, Rileys Hill would be evacuated regardless of if the community was above the PMF, and residents would need to evacuate early, prior to the evacuation routes being closed, which is quite frequent'* (SES, p.2).
 - The SES note there is generally low evacuation response throughout the Richmond Valley catchment, with only approximately 30% compliance (SES, p.2).
 - The following statistics summarise the experience of SES with regard to Rileys Hill during the recent 2022 Floods:

- 14 requests for resupply were responded to, including 30 people in Rileys Hill without food or supplies.
- 17 flood rescues recorded across the Broadwater and Rileys Hill community.
- 12 additional assisted evacuations.
- isolation of Rileys Hill for a week.
- loss of power, water, sewer, and telecommunications.
- lack of access to medical treatment.
- incidents of explosion and fire.
- no rescue access due to high voltage power lines in the water ways and flood water velocities.
- loss of evacuation routes from 28 February – 8 March 2023.
- loss of access roads again in late March – early April due to adverse weather and tidal conditions (SES, p.2).

TAG Advice

50. *Evacuation Modelling and Strategy:*

- The TAG note that no evacuation modelling has been prepared by the Proponent regarding the Planning Proposal.
- TAG members note that the Proponent’s proposed evacuation strategy is to evacuate the Site or prepare for three days isolation.
- The TAG members note that there is rising pedestrian access to land above the PMF from the northern section of the site towards the existing Rileys Hill Village.

51. *Evacuation Capacity*

- The TAG identifies that the Site would need to be evacuated before evacuation routes are cut. However, TAG members are concerned the key evacuation centres at Broadwater and Woodburn, are also highly flood prone locations. Adding people to these locations would further strain the resources on local emergency services. Further investigation is required into the safe and timely evacuation of Rileys Hill prior to it being isolated.
- The TAG note that the Site is a low flood island with an evacuation route that becomes inundated during a range of flood events as frequent as 5% AEP. The TAG note the Site could become isolated for days to weeks during extreme rainfall events.
- The TAG advises the community are often ill-prepared for sheltering in place for long durations of time. For shelter in place to be successful there needs to be a concerted strategy for the continuation of essential services (water, power, and sewage). The TAG identify that these issues have not been addressed in the Flood Report.
- The TAG recommends detailed evacuation and shelter in place strategies are needed along with updated flood modelling before risk to life from the proposal can be appropriately determined.
- TAG members do not agree with the Proponent’s claim that warning times would remain unchanged under future climate change scenarios.

Panel Advice

52. The Panel note that the Proponent has not supplied an evacuation or shelter in place strategy for this highly flood prone site.
53. The Panel share the significant concerns of INSW, the SES and the TAG regarding the viability of evacuation from Rileys Hill prior to, and during, a range of flood events. The Panel has identified the following factors that significantly limit the likelihood of safe evacuation from Rileys Hill:

- The key evacuation points for Rileys Hill at Broadwater and Woodburn are located lower in the floodplain and are flood prone locations.
 - Rileys Hill Road becomes cut-off under a range of flood events as frequent as 20% AEP.
 - There is limited lead time to effectively evacuate a town like Rileys Hill ahead of a flood event that cuts the evacuation routes.
 - Evacuation response rates are likely low and people are unlikely to leave until it is too late.
 - Rescue boats cannot access Rileys Hill during a flood event due to flood hazard.
 - Isolation times are lengthy, being days and up to two weeks.
 - People are unprepared to isolate of this length of time and secondary emergency such as the need for food, water and medical treatment are likely.
54. In particular, the Panel considers the SES advice regarding the conditions experienced during the recent 2022 Floods demonstrate that a shelter in place strategy for the site is inappropriate. Residents were isolated for up to two weeks, experiencing a loss of essential services (power, water, sewage, and telecommunications), and lacked access to food. Additionally, the SES were required to undertake multiple rescues and provide food air drops.
55. From the information provided and advice received, the Panel does not consider there is a viable evacuation or shelter in place strategy for Rileys Hill and accordingly the development of the site poses a high risk to life.

3.1.3 Mitigation Measures

Proponent Comments

56. At its meeting with the Panel on 28 April 2023, the Proponent indicated:
- The fill to raise the remainder of the development footprint to the flood planning level is negligible and will not have significant impacts on the surrounding floodplain or properties.
 - The proposed fill required for the Site will be less than was required at a similar comparable location in the Richmond Valley catchment, which required approximately 60,000 cubic metres (m³) of fill to raise the developable area to the flood planning line.
 - There is no requirement for any additional infrastructure to accommodate shelter in place.

Council Comments

57. At its meeting with the Panel on 03 May 2023, Council noted:
- There is currently no planned upgrade of the Community Hall as a potential evacuation centre. However, the community would likely be grateful for any upgrades to the facility, aside from its purpose as a flood evacuation point. Council may ask the proponent to deliver this upgrade as a condition to any development consent granted for the Site.

PLUS Comments

58. At its meeting with the Panel on 6 March 2023, PLUS noted:
- The Flood Report considers that cumulative impacts from the fill of the Site to the 1% AEP would be negligible.
 - Filling the Site to 9.5 m AHD to avoid impacts of the PMF is not feasible.

Agency Advice

59. In advice provided to the Panel on 8 May 2023, INSW noted:
- Filling to ensure all residential properties are above the 1% AEP is the primary flood mitigation works proposed for the Site (INSW Table, p.3).
 - Given the Site evacuates to a low point in the floodplain, there are unlikely to be any risk mitigation measures which will reduce risk to an acceptable level (INSW Table, p.4).
60. In its meeting with the Panel on 27 April 2023, the SES noted:
- Regardless of any mitigation measures, emergency response agencies such as the SES, will always absorb the residual risk of flood rescue and resupply during flood events.
61. In advice provided to the Panel on 19 May 2023, SES noted:
- *'Filling the Site is not going to reduce the risk to life or transferred risk to NSW SES, as the community will still be required to evacuate due to the isolation and associated risks'* (SES, p.6).
 - Surrounding evacuation routes are near the river for a stretch of 20 km. It is unlikely that it would be feasible to provide rising road access for the community (SES, p.6).
62. TfNSW did not have any comment on the flood mitigation measures in the Planning Proposal.

TAG Advice

63. *Balanced Cut and Fill:*
- The TAG notes that the primary flood mitigation measure proposed for the Site is to fill the development footprint to the 1% AEP flood planning level.
 - The TAG notes that additional modelling is required to quantify the impact of the proposed fill on the surrounding floodplain and properties. The TAG notes additional fill may be required to address variations in the flood planning level if the flood modelling was updated to address climate change considerations and the updated ARR 2019 guidelines.
64. *Shelter in Place:*
- The TAG also notes that the proposal relies on evacuation and shelter in place as a key mitigation measure against flood impacts. However, the TAG has significant concerns regarding the viability of evacuation prior to and during a range of flood events due to the flood prone nature of surrounding evacuation points and key evacuation routes.
 - The TAG has significant concerns regarding the risk associated with residents sheltering in place. Any future shelter in place strategies need to consider detail relating to the provision of key services during isolation (power, water, communications, and sewer), including any redundancies in these services, as well as the provision of adequate medical equipment, signage identifying flood prone land, and the provision of adequate shelter above the PMF.

Panel Advice

65. The Panel notes the key mitigation measure is to use fill to raise the height of the lots that are below the 1% AEP plus 0.5 m of freeboard. However, the Panel notes more fill is likely to be required given the Flood Report underestimates the flooding impacts for the Site.
66. The Panel agrees with SES and INSW that the use of fill will not suitably mitigate the risk posed by flood waters to the Site. Further the Panel agrees with INSW that there are no other available mitigation measures that would reduce risks to an acceptable level.

67. The Panel agrees with the agency advice indicating there are no available infrastructure upgrades or mitigation measures which substantially remove the key evacuation constraints or shelter in place concerns.

3.1.4 Strategic Land Use Considerations

Proponent Comments

68. At its meeting with the Panel on 28 April 2023, the Proponent indicated:
- The original proposal from 2017 include a dwelling yield of 70 lots. The dwelling yield has since been reduced to 36 lots (including 1 residual lot for the RU1 zoning) through subsequent iterations of the proposal due to bushfire risk and ecological concerns.

Council Comments

69. At its meeting with the Panel on 03 May 2023, Council noted:
- The Site has been identified in the *Richmond Valley Growth Management Strategy* as an investigation area for future urban growth. The strategy notes that the development of the land will require ‘careful mitigation of concerns including flooding, stormwater, environmental and infrastructure constraints’ (Gyde Consulting, p.28).
 - Council has projected an additional 340 people in the next 20 years for the SA2 block in which Rileys Hill is located. These projections are more conservative than the Department’s population projections for the same area.
 - The subject Site at Rileys Hill is relatively attractive in comparison to other greenfield development in the region. In contrast, development east of the Pacific Highway in the region is unlikely to proceed due to flood or biodiversity constraints.
 - There is strong demand for a variety of housing stock in the Richmond Valley, including the type of properties proposed on this Site.
 - The major limitation on the extent of the Planning Proposal is the existing capacity of the sewage treatment plant (STP). The current STP has a capacity of 100 Equivalent Tenements (ETs) with plans to expand to 220 ETs.
 - There is a maximum capacity of 35 dwellings available on the Site due to the constraints in the sewage infrastructure. For this reason, dual occupancy will be restricted to ensure the maximum number of dwellings is adhered to.
 - There has been some work done to make the Rileys Hill STP more flood resistant. Council wanted to extend this work to further flood proof the infrastructure, however, Public Works Advisory are considering decommissioning the STP and shifting waste from Rileys Hill to Evans Head for treatment. This would further reduce the capacity at Rileys Hill.

PLUS Comments

70. At its meeting with the Panel on 6 March 2023, PLUS noted:
- The Site has been identified as a future urban growth investigation area in the local growth management strategy as well as the Local Strategic Planning Statement.
 - There are limited Sites within the region that can provide future development potential for RU5 - Village zoning. Other sites in the coastal fringe such as the Irons Gate proposal are significantly more constrained.
 - The Richmond Valley region requires an additional 1,400 homes in the next 24 years. The Rileys Hill Planning Proposal will play a role in providing a diversity of housing stock for a growing region.

- PLUS notes that there is an approximate yield of 3,000 dwellings proposed in and around Casino. This is enough capacity to accommodate the anticipated yield from the Site.

Agency Advice

71. In a consultation letter provided to the Department's Gateway Determination process on 22 December 2021, TfNSW noted the following:
 - Upgrades will be required to the Rileys Hill Road and Hills Road intersection to support the rezoning and proposed future developments. *'Council should be satisfied that appropriate road infrastructure can be provided to support the proposed rezoning'* TfNSW recommend that Council obtain strategic plans for the required upgrades *'including any warranted intersection treatments and adjustments to vegetation or existing infrastructure in the road reserve.'* (TfNSW Advice Letter 2021, p.1).
72. INSW did not have any comment on the strategic land use considerations with regard to the feasibility of the Planning Proposal.
73. In advice provided to the Panel on 19 May 2023, SES noted:
 - The Flood Inquiry advocates for a *'planned retreat from areas at most risk on the floodplain. The proposed development is essentially an advance into the floodplain'* (SES, p.6).

TAG Advice

74. The TAG did not have any comment on the strategic land use considerations with regard to the feasibility of the Planning Proposal.

Panel Advice

75. The Panel notes that the development potential in Rileys Hill is currently limited due to the capacity of the Rileys Hill STP. The Panel also notes that the development potential would be further reduced if the Rileys Hill STP were to be decommissioned and sewage services shifted from Rileys Hill to Evans Head.
76. The Panel notes the Site has been identified as an investigation area future urban growth in the *Richmond Valley Growth Management Strategy* and the *Richmond Valley Local Strategic Planning Statement*. The Panel acknowledges the Planning Proposal if realised will contribute marginally to housing stock in the Richmond Valley region that requires growth of 1,400 new homes over the next 24 years.
77. However, the Panel notes from the Council's *Casino Place Plan* (2023), identifies (p.12) that *'There is significant greenfield and infill potential for Casino'* and that there is residential capacity of up to 13,500 new dwellings identified in the plan.
78. Consequently, there is ample capacity to accommodate the predicted demand for housing in the LGA, without the Rileys Hill Planning Proposal proceeding.

4 The Panel's Advice

- 79. The Panel has undertaken a review of the Planning Proposal as detailed in the PLUS Request (see paragraph 6). In doing so, the Panel has considered the Material listed in Appendix A (see Section 1.2 above), meetings with and submissions by Council, the Proponent, and PLUS, as well as the advice provided by the TAG and state agencies.
- 80. The Panel recommends the Planning Proposal be refused. This is based on unacceptably high flood risks and impacts, the inability to evacuate safely, lack of feasible mitigation options, and the lack of strategic planning need. Further reasons are detailed below.

Flood Impact Assessment

- 81. The Panel agrees with the TAG and the state agencies that the Flood Report accompanying the Planning Proposal is outdated, relying on a regional Council Flood Study in place of site-specific flood modelling.
- 82. The information provided does not include a full range of flood events (e.g. the 0.02% AEP), hazard mapping, adequate consideration of climate change, or modelling of the displacement of flood water from using fill.
- 83. Consequently, the flood impacts to a highly flood prone site are underestimated and are likely to worsen once accurately known.

Evacuation

- 84. During a range of flood events residents will be required to shelter in place for excessive periods, which will likely significantly increase the risk to life. The Panel agrees with the TAG and SES that the public are generally unprepared for sheltering in place for extended periods of time.
- 85. The Panel notes that Rileys Hill can become isolated for days to weeks during extreme flood events and becomes cut-off during flood events as frequent as 20% AEP. Information provided by SES on the experience of residents in the recent 2022 Floods demonstrates that the existing Rileys Hill village required substantial assistance during that flooding emergency.
- 86. The Panel notes that the Planning Proposal may result in an increase in the Rileys Hill population of approximately 91 additional residents (a potential 50% increase in population), further exacerbating the need for additional assistance during flood emergency.
- 87. The Panel agrees with the TAG and SES that offsite evacuation is generally not feasible and will likely increase the risk to life. SES noted that there is no feasible evacuation point for residents of Rileys Hill and no safe evacuation route is available during flood events.
- 88. PLUS and TAG also noted that the likely evacuation points at Broadwater or Woodburn are located lower in the floodplain and are themselves flood prone. The Panel notes the Flood Inquiry found that future development should not proceed where satisfactory arrangements for evacuation cannot be implemented (Recommendation 21).

Mitigation Options

- 89. The Panel agrees with INSW that given the Site is highly flood prone, there are unlikely to be mitigation measures that will resolve the key evacuation constraints (i.e. rapidly inundated access roads and flood prone evacuation points) and risks associated with sheltering in place.
- 90. Additionally, the Panel agrees with the SES, which notes the extent of works required to raise evacuation routes surrounding Rileys Hill out of the floodplain is prohibitive.

91. Regarding a potential local flood refuge, no commitment has been made by Council or the Proponent to provide the required upgrades to community facilities to ensure a purpose-built evacuation centre is available to residents during extreme flood events.

Strategic Need

92. The Panel acknowledges the Planning Proposal is an investigation area for future urban growth in the *Richmond Valley Growth Management Strategy* and the *Richmond Valley Local Strategic Planning Statement* (see section 2.2). The Panel also acknowledge the Site has been under consideration since early 2017. However, during the intervening time environmental, infrastructure, and flooding constraints have been identified.
93. While the Site has been identified as having some strategic merit (see section 2.2), the Panel is are mindful that there are other housing supply opportunities elsewhere in the Richmond Valley LGA. The Panel is aware that proposed development surrounding Casino is relatively unconstrained in comparison to the Site and has the capacity to meet the projected growth targets for the LGA.
94. Consequently, the Panel considers there is no current strategic need for the Site from a regional housing supply perspective, given the ample capacity to meet housing targets provided by less constrained land fringing Casino, which is identified in local and state strategic planning documents.

Other Constraints

95. The Panel notes that the development potential in Rileys Hill is currently limited due to the capacity of the Rileys Hill STP. The Panel also note that the development potential would be further reduced if the Rileys Hill STP were to be decommissioned and sewage services shifted from Rileys Hill to Evans Head as indicated by Council.

Conclusion

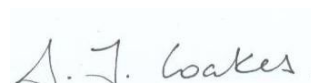
96. For the above reasons, the Panel is of the view that, on the basis of unacceptable flood-related impacts and limited evacuation capacity, the Planning Proposal be refused and not proceed past Gateway.



Felicity Greenway (Chair)
DPE Executive Panel
Member



Peter Williams
Panel Member



Sheridan Coakes
Panel Member

Appendix A - Material Considered by the Panel

Attachment ID / Date	Name	Author
DOC22 1142268 ()	Referral Letter to Flood Advisory Panel - Rileys Hill	Department
DOC22 1142421 ()	Attachment A1 Planning Proposal	Ardill Payne
DOC22 1142428 ()	Attachment A2 Previous Gateway determination	Department
DOC22 1142438 ()	Attachment A3 Alteration of Gateway determination(2)	Department
DOC22 1142455 ()	Attachment A4 Flood Report	Ardill Payne
DOC22 1142471 ()	Attachment A5 Response from Division of Biodiversity and Conservation Division 01-12-21	Department
DOC22 1142482 ()	Attachment A6 Response from Division of Biodiversity 29-06-22	Department
DOC22 1142489 ()	Attachment A7 Council Report 20-10-20	Council
DOC22 1142526 ()	Attachment A8 Post Exhibition responses provided to Council by proponent	Ardill Payne
TfNSW (22.12.2022)	TfNSW Advice Letter 2021	TFNSW
PLUS IN (27.04.2023)	Agency Consultation - PP2016-06 Rileys Hill Village - BCD Response - 20211201_V1_PP-2022-2692	PLUS
PLUS IN (27.04.2023)	Flood Panels Rileys Hill FINAL (002)	PLUS
Council IN (12.05.2023)	Rileys Hill - Draft FS pre+post2022 - peak flood extent mapping	Council
INSW IN (8.05.2023)	INSW Advice	INSW
INSW IN (8.05.2023)	INSW Advice Table	INSW
TfNSW IN (26.4.2023)	TfNSW Advice	TfNSW
SES IN (19.05.2023)	SES Advice	SES