

6 August 2024

Perception Planning
 By email
joseph@perceptionplanning.com.au

Dear Joseph,

RE: 256 Lennoxton Road, Vacy – Flood Assessment Report

This Flood Assessment Report has been prepared for 256 Lennoxton Road, Vacy (Lot 8 DP739338 and Lot 94 DP788016). The property is currently zoned R5 - large lot residential and C3 – Environmental Management, and has a land area of about 61 ha, and currently has one dwelling located within the centre of the property, as shown in Figure 1.

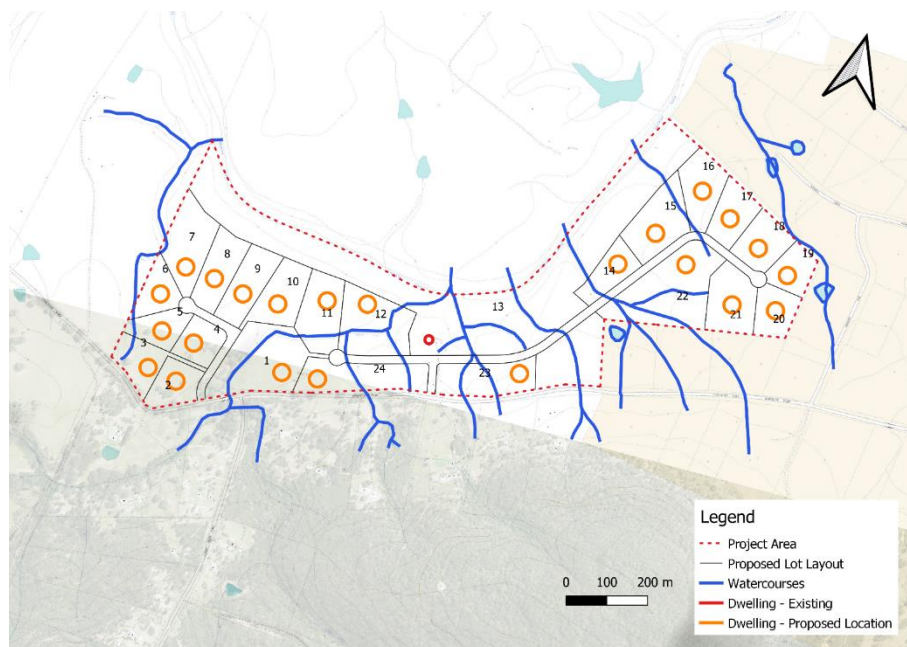


FIGURE 1: PROPOSED DEVELOPMENT (SOURCE: NSW SPATIAL SERVICES, PERCEPTION PLANNING)

Proposed development

The proponent is seeking a 2-into-24 subdivision of the site, that would ultimately allow for up to 24 dwellings, comprising one existing and 23 new dwellings.

The proposed development is expected to include:

- Internal road network, connected to Lennoxton Road at two locations.
- Nominated building sites within each newly created lot.

It is noted that this assessment only covers the aspects of the proposed development that are explicitly included in the development application, that is, the rezoning application. No consideration of future development within any and all of the newly created lots, including residential dwellings, is included and will need to be assessed separately as part of any future development application.

FLOOD ASSESSMENT

Planning Levels

Flood data for the Paterson River (north of the site) was obtained from Dungog Shire Council (Council) (attached). This data was used to infer flood extents within the vicinity of the proposed development for a range of design storm events (Figure 2). The Development Control Plan (DCP) also includes minimum finished floor levels for a range of developments, with the site-specific levels included in the Council flood data. These design levels are summarised in Table 1.

Access for proposed lots 2-12 is within the inferred flood affected area for the 5% Annual Exceedance Probability (AEP) event (Figure 2). This includes the proposed internal road, as well as a short section of the adjacent Lennoxton Road.

Similarly, access for proposed lots 1, 14-22, and 24 is within the inferred flood affected area for the 5% AEP event (Figure 2). However, the section of the adjacent Lennoxton Road is not affected by flooding (Figure 2).

It is noted that the proposed dwelling location for proposed lot 1 is also within the inferred flood extent for the 5% AEP flood event, and the proposed dwelling location for proposed lot 24 is within the inferred flood extent for the 1% AEP flood event (Figure 2).

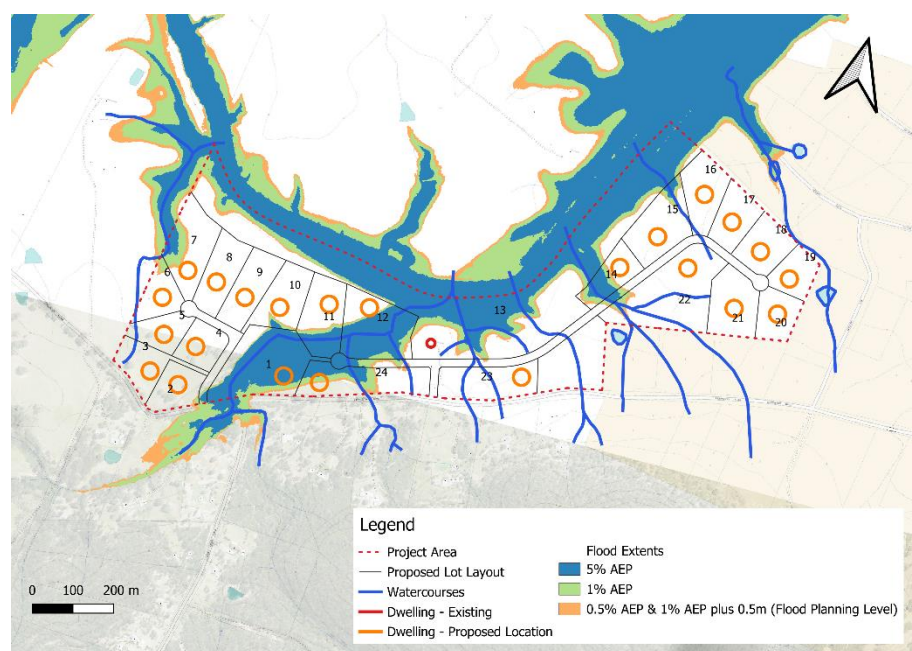


FIGURE 2: INFERRED FLOOD DEPTHS AND EXTENTS

TABLE 1: MINIMUM FINISHED LEVELS

Level		Details	Applicable design elements
Flood planning level	22.7 mAHD	<ul style="list-style-type: none"> 1% AEP level plus 500 mm freeboard Same as 0.5% AEP level 	<ul style="list-style-type: none"> Habitable rooms
1% AEP level	22.2 mAHD	<ul style="list-style-type: none"> 1% AEP flood level 	<ul style="list-style-type: none"> Driveways and access ^A Garage, carports, and parking spaces

^A Minimum of the 1% AEP flood level or the flood immunity of the connecting road

Hazard Assessment

No flood hazard or velocity data are available however as flood hazard is a function of flow depth and velocity (Figure 3), an estimate of the potential flood hazards can be derived using the inferred flood depths (Figure 2) and an estimated flood velocity. Even assuming a relatively low flood velocity (0.5 m/s), potential high hazard (H5) within the vicinity of the proposed dwelling location for lot 1, and the access route for proposed lots 1, 11, 12, and 24 (Figure 4) is inferred during the 1% AEP. As indicated in Figure 3, a flood hazard of H5 is “unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust building types vulnerable to failure”.

The assessment of hazard is supported by the estimated flood fringe and flood way (Figure 5), which was derived based on the descriptions of “flood way” and “flood fringe” included in the DCP (Figure 6), which indicates that Lots 1, 11 and 12 include floodway.

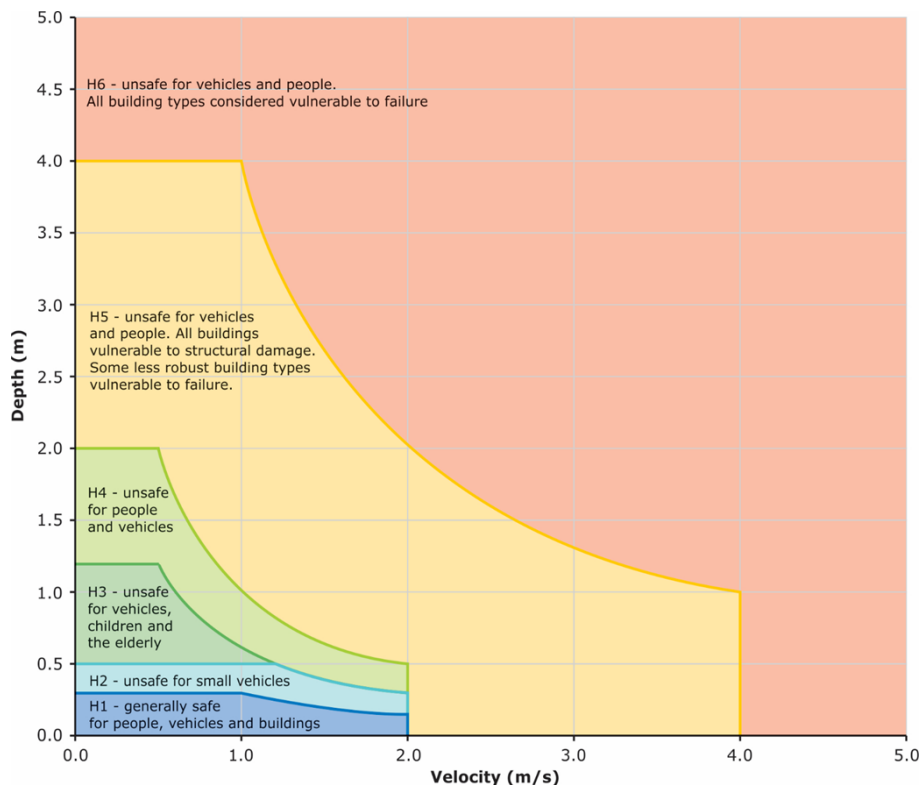


FIGURE 3: FLOOD HAZARD (ADAPTED FROM ARR 2019 FLOOD HAZARD RATING)

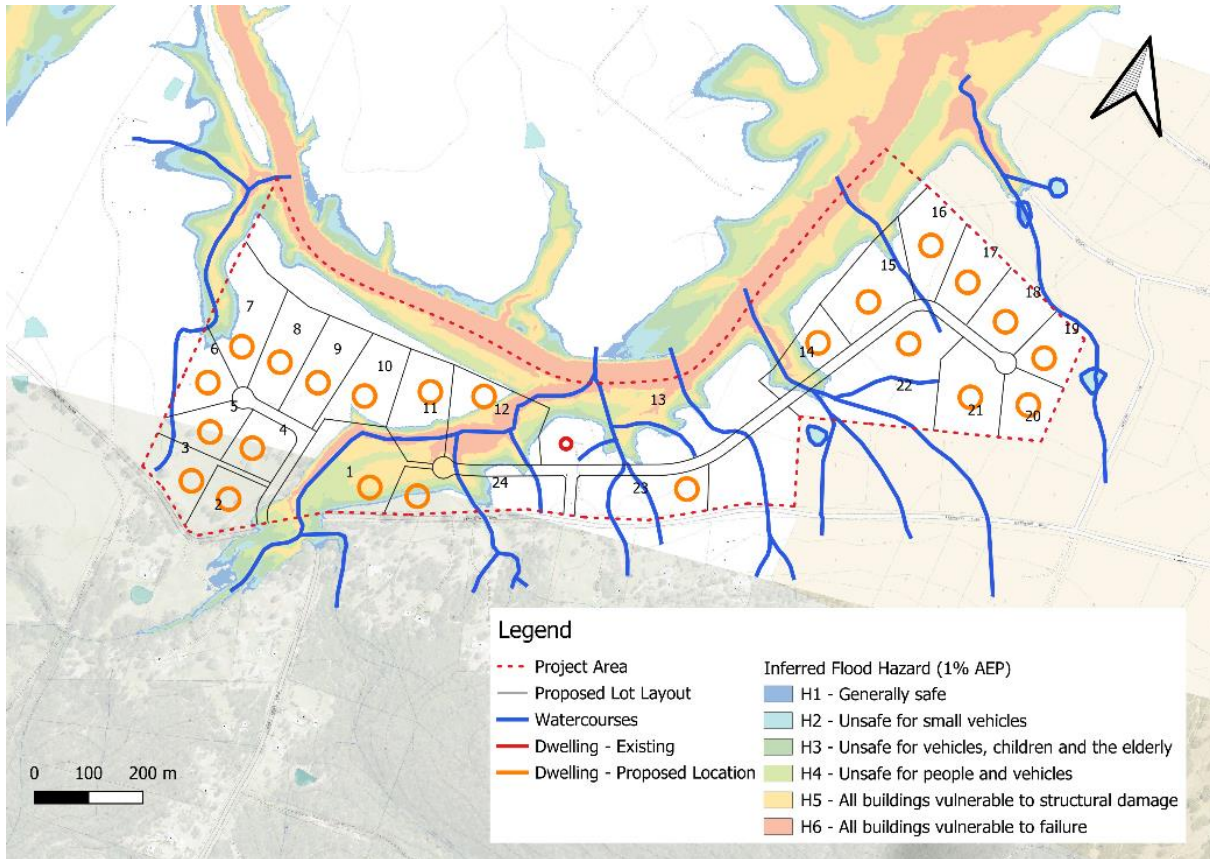


FIGURE 4: INFERRED FLOOD HAZARD RATING (1% AEP)

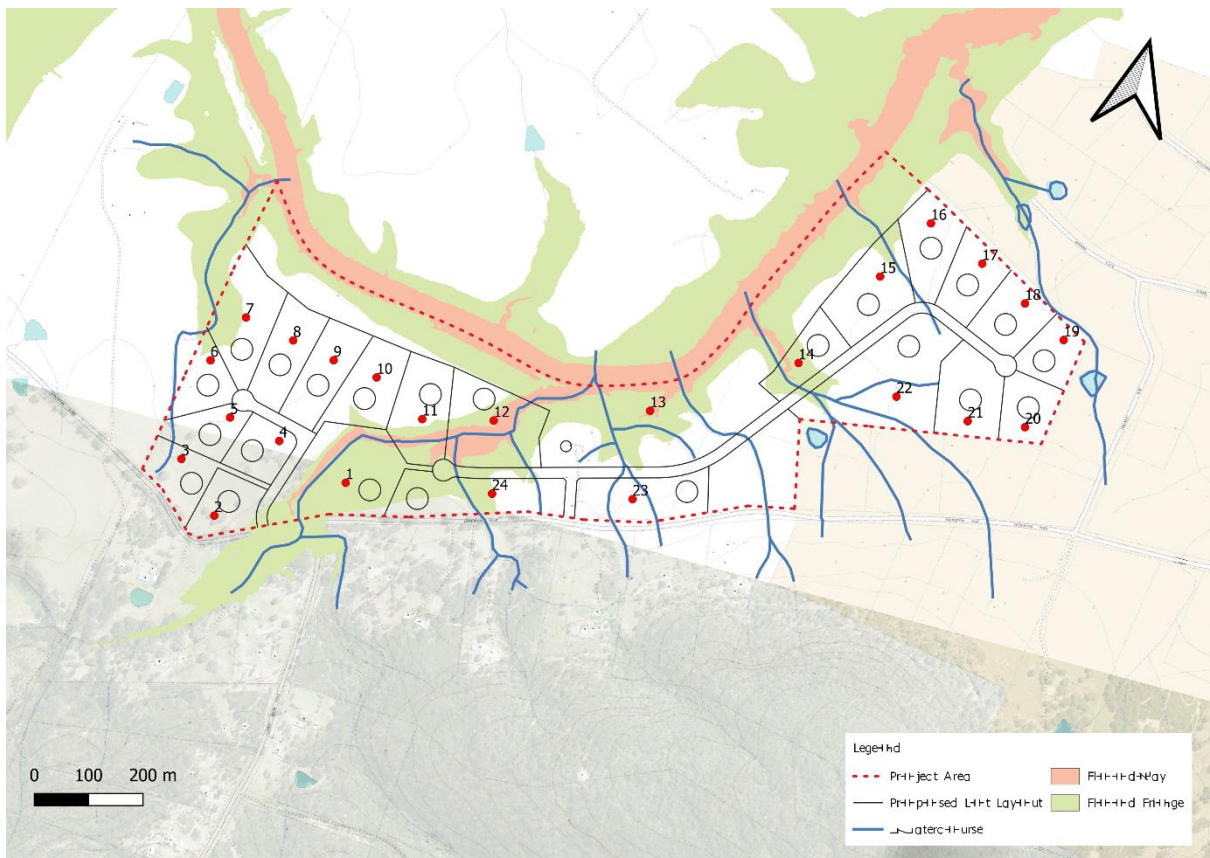


FIGURE 5: INFERRED FLOOD WAY AND FLOOD FRINGE

FLOODPLAIN MANAGEMENT ZONES	CRITERIA
1. Floodway –High Hazard area	Classified as Floodway or flood storage in a flood study or has depth > 4m in 1% AEP event. Areas which are responsible for conveyance of flood water or temporary storage of floodwater during an event. Change in these areas has the potential to affect flood levels and flood behaviour
2. Flood fringe	Part of flood planning area outside of the floodway which is between the Flood Planning Level and the High Hazard area.
3. Outer Floodplain	Remaining part of the Flood Planning area which is above the Flood Planning level but below the EF(extreme flood level)

FIGURE 6: FLOODWAY MANAGEMENT ZONES DERIVATION (DUNGOG SHIRE COUNCIL DCP)

APPLICABLE PLANNING LAW

As consent authority, Council will consider the following.

Local Environment Plan 2014

Clause 5.21 2 and Clause 5.21 3 of the Dungog Local Environmental Plan 2014 outline the assessment requirements that are to be considered by the consent authority. These requirements, and how they are addressed, are included in Table 2.

TABLE 2: LEP REQUIREMENTS

LEP requirement	How addressed
5.21 Flood planning	
(1) The objectives of this clause are as follows—	
(a) to minimise the flood risk to life and property associated with the use of land,	All lots except Lots 1, 11, 12, and 24 include an access and building site located outside of flood affected areas. Development of Lots 1, 11, 12, and 24 may be possible with further assessment and design.
(b) to allow development on land that is compatible with the flood function and behaviour on the land, taking into account projected changes as a result of climate change,	The flood planning levels include a 0.5 m freeboard above the 1% AEP flood levels, allowing for potential future flood increases.
(c) to avoid adverse or cumulative impacts on flood behaviour and the environment,	The development is of relatively low density, with a hardstand area comprising of the proposed roads. It is expected that runoff from each lot would be mitigated with on-site detention methods typical of residential developments.
(d) to enable the safe occupation and efficient evacuation of people in the event of a flood.	All lots except Lots 1, 11, 12, and 24 include an access and building site located outside of flood affected areas. Development of Lots 1, 11, 12, and 24 may be possible with further assessment and design.
(2) Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development -	

LEP requirement	How addressed
(a) is compatible with the flood function and behaviour on the land, and	All lots except Lots 1, 11, 12, and 24 include an access and building site located outside of flood affected areas. Development of Lots 1, 11, 12, and 24 may be possible with further assessment and design.
(b) will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and	The development is of relatively low density, with a hardstand area comprising of the proposed roads. It is expected that runoff from each lot would be mitigated with on-site detention methods typical of residential developments.
(c) will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, and	All lots except Lots 1, 11, 12, and 24 include an access and building site located outside of flood affected areas. Development of Lots 1, 11, 12, and 24 may be possible with further assessment and design.
(d) incorporates appropriate measures to manage risk to life in the event of a flood, and	All lots except Lots 1, 11, 12, and 24 include an access and building site located outside of flood affected areas. Development of Lots 1, 11, 12, and 24 may be possible with further assessment and design.
(e) will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.	A soil and water management plan is expected to be required as part of the environmental management plan for the construction of the proposed development. This would include controls for erosion and siltation, monitoring requirements for riparian vegetation and bed and bank stability, and rehabilitation of areas affected by construction activities.
<hr/>	
(3) In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the following matters—	
(a) the impact of the development on projected changes to flood behaviour as a result of climate change,	The proposed subdivision is unlikely to have an appreciable impact on flood levels within the adjacent Paterson River.
(b) the intended design and scale of buildings resulting from the development,	No buildings are proposed as part of this development. Future development applications for dwellings within each lot would be assessed separately.
(c) whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood.	All lots except Lots 1, 11, 12, and 24 include an access and building site located outside of flood affected areas. Development of Lots 1, 11, 12, and 24 may be possible with further assessment and design.

Development Control Plan (DCP)

The requirements of Schedule 2 of Part C.8 of the DCP are presented in Table 3.

TABLE 3: DEVELOPMENT CONTROLS

Directive	How addressed
A land parcel with floodway categorisation is unsuitable for residential development.	All lots except Lots 1, 11, 12, and 24 include an access and building site located outside of flood affected areas. Development of Lots 1, 11, 12, and 24 may be possible with further assessment and design.
<p>A land parcel with flood fringe categorisation are suitable for residential development (the balance of lots), provided that:</p> <ul style="list-style-type: none"> Habitable floor levels are no lower than the flood planning level (RL22.7 mAHD). Building components below the flood planning level are to be of flood compatible materials. Certification by a suitable qualified engineer that the structure subject to a flood up to and including the 1% AEP or 0.2% AEP (as applicable) flood level can withstand the force of flood water, debris and buoyancy. The impact of the development on flood affection elsewhere to be considered. The development must not obstruct or divert flood waters to or from neighbouring properties. Consideration required regarding an appropriate flood evacuation strategy & pedestrian / vehicular access route for both before and during a flood. 	<p>No residential dwellings are proposed as part of this stage of the proposed development, however any proposed dwelling would be subject to the minimum floor level and building material requirements.</p> <p>It is expected that future residential dwellings would incorporate on-site detention to mitigate the potential flood impacts (due to increased stormwater discharges) to the surrounding areas.</p> <p>All lots except Lots 1, 11, 12, and 24 include an access and building site located outside of flood affected areas.</p>

Ministerial Directive 4.1

The requirements of ministerial directive 4.1 are addressed in Table 4 below.

TABLE 4: DEVELOPMENT CONTROLS

Directive	How addressed
<p>(1) A planning proposal must include provisions that give effect to and are consistent with:</p> <ul style="list-style-type: none"> (a) the NSW Flood Prone Land Policy, (b) the principles of the Floodplain Development Manual 2005, (c) the Considering flooding in land use planning guideline 2021, and (d) any adopted flood study and/or floodplain risk management plan prepared in accordance with the principles of the Floodplain Development Manual 2005 and adopted by the relevant council. 	<p>The proposed rezoning would be in accordance with Council requirements, which have been developed with consideration of these manuals and guidelines.</p> <p>The potential flood impacts of any future development would be assessed as part of the development application, which consider the relevant sections of these policies, manuals, and guidelines explicitly. These impacts would be assessed against the NSW Flood Risk Management Manual (2023), which replaces the Floodplain Development Manual (2005).</p>
<p>(2) A planning proposal must not rezone land within the flood planning area from Recreation, Rural, Special Purpose or Conservation Zones to a Residential, Employment, Mixed Use, W4 Working Waterfront or Special Purpose Zones.</p>	<p>All lots except Lots 1, 11, 12, and 24 include an access and building site located outside of flood affected areas. Development of Lots 1, 11, 12, and 24 may be possible with further assessment and design.</p>

Directive	How addressed
<p>(3) A planning proposal must not contain provisions that apply to the flood planning area which:</p> <p>(a) permit development in floodway areas,</p> <p>(b) permit development that will result in significant flood impacts to other properties,</p> <p>(c) permit development for the purposes of residential accommodation in high hazard areas,</p> <p>(d) permit a significant increase in the development and/or dwelling density of that land,</p> <p>(e) permit development for the purpose of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate,</p> <p>(f) permit development to be carried out without development consent except for the purposes of exempt development or agriculture. Dams, drainage canals, levees, still require development consent,</p> <p>(g) are likely to result in a significantly increased requirement for government spending on emergency management services, flood mitigation and emergency response measures, which can include but are not limited to the provision of road infrastructure, flood mitigation infrastructure and utilities, or</p> <p>(h) permit hazardous industries or hazardous storage establishments where hazardous materials cannot be effectively contained during the occurrence of a flood event.</p>	<p>Addressed throughout this document.</p> <p>No earthworks or development are proposed at this stage, however further development would require a flood impact assessment.</p> <p>All lots except Lots 1, 11, 12, and 24 include an access and building site located outside of flood affected areas. Development of Lots 1, 11, 12, and 24 may be possible with further assessment and design.</p> <p>Future use of the site is expected to be residential. No hazardous materials are expected to be stored on site.</p>
<p>(4) A planning proposal must not contain provisions that apply to areas between the flood planning area and probable maximum flood to which Special Flood Considerations apply which:</p> <p>(i) (a) permit development in floodway areas,</p> <p>(j) (b) permit development that will result in significant flood impacts to other properties,</p> <p>(k) (c) permit a significant increase in the dwelling density of that land,</p> <p>(l) (d) permit the development of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate,</p> <p>(m) (e) are likely to affect the safe occupation of and efficient evacuation of the lot, or</p> <p>(n) (f) are likely to result in a significantly increased requirement for government spending on emergency management services, and flood mitigation and emergency response</p>	<p>The local floodway has not been defined, however the proposed development is located away from the main flow path of the Paterson River.</p> <p>The current rezoning and subdivision proposal would not result in changes to flooding. Any further development of the site would require a flood impact assessment.</p> <p>All lots except Lots 1, 11, 12, and 24 include an access and building site located outside of flood affected areas. Development of Lots 1, 11, 12, and 24 may be possible with further assessment and design.</p> <p>Future use of the site is expected to be residential. No hazardous materials are expected to be stored on site.</p>

Directive	How addressed
measures, which can include but not limited to road infrastructure, flood mitigation infrastructure and utilities.	
(5) For the purposes of preparing a planning proposal, the flood planning area must be consistent with the principles of the Floodplain Development Manual 2005 or as otherwise determined by a Floodplain Risk Management Study or Plan adopted by the relevant council.	The Floodplain Development Manual 2005 has been superseded by the NSW Flood Risk Management Manual 2023 – see below.

NSW Flood Prone Land Policy 2023

The relevant section of the policy states: requires that the consent authority adopt “a merit-based approach for all development decisions in the floodplain, taking into account social, economic and ecological factors, as well as flooding considerations”.

NSW Flood risk management manual 2023

Section 4.2 of the manual notes that the effective management of flood risk involves:

- understanding flood risk and associated uncertainties with existing management measures and practices in place
- understanding how flood risk will increase with new development and redevelopment with existing land-use planning practices in place
- understanding the impacts of climate change on flood risk to the existing community and to future development
- considering the need for changes to existing management measures and practices to manage flood risk now and into the future
- examining options and making informed decisions on changes to management measures and practices considering the associated uncertainties
- implementing changes in management measures and practices to manage flood risk to the community
- considering environmental and cultural issues when recommending and implementing management measures.

Recommendations

To manage flood risk, it is recommended that the development of the site:

- Modify the layout to provide safe egress during flooding to proposed lots 1, 11, 12 and 24.
- Modify the lot layout to provide a proposed dwelling site for Lot 1 with a lower flood hazard category, or ideally outside of the flood planning area.
- Undertake a detailed flood impact assessment to identify the potential impacts of the proposed development, in particular proposed earthworks and building pads.

Regards,



Dr Adam Wyatt
Principal Engineer

Enc. *Dungog Flood Level Information*

Author
AW

Reviewer
SES

Project Manager
AW

Project Director
SES

NTL00595_0004-LTR-001-1-Vacy_FloodAssessment

ATTACHMENT 1 – DUNGOG FLOOD LEVEL INFORMATION



Dungog Shire Council
PO Box 95
DUNGOG NSW 2420
T: (02) 4995 7777 F: (02) 4995 7750
E: shirecouncil@dungog.nsw.gov.au
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ABN 62 610 350 056

Ref: TPA024552414781

8 May 2024

Attn: Joseph Murphy
Perception Planning Pty Ltd
PO Box 107,
CLARENCE TOWN NSW 2321

c/-joseph@perceptionplanning.com.au

Dear Joseph,

**Request for Flood Level Information – LOT: 8 DP: 739338 and Lot 94 DP 788016
– 256 Lennoxton Road, VACY.**

Reference is made to your request for flood level information dated 11th April 2024 for the abovementioned property. The property is identified as being flood prone land impacted by Council's adopted Paterson Flood Study.

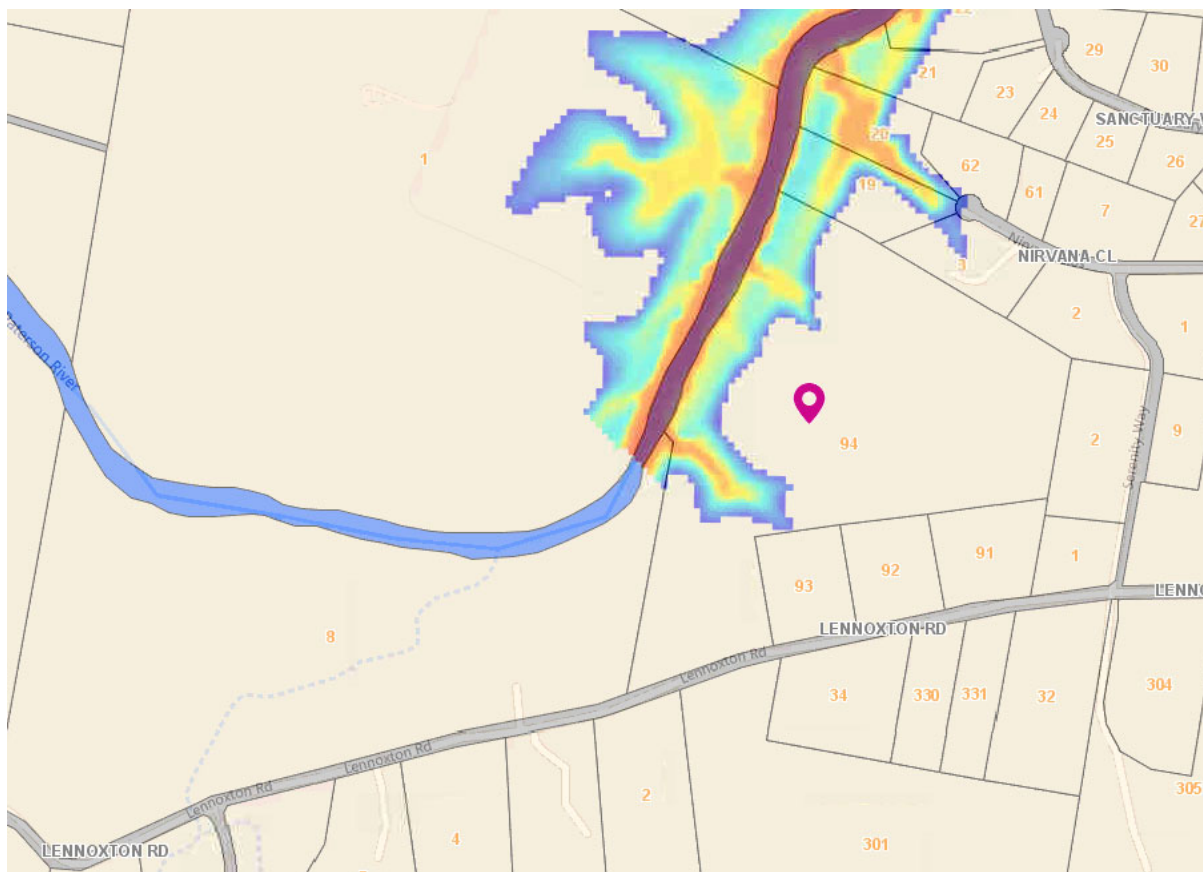
Council can advise:

- The adopted 1% Annual Exceedance Probability (AEP) flood level for Lot 8 DP 739338 and Lot 94 DP 788016 is RL 22.2m AHD.
- The adopted 0.5% Annual Exceedance Probability (AEP) flood level for Lot 8 DP 739338 and Lot 94 DP 788016 is RL 22.7m AHD.
- The adopted 5% Annual Exceedance Probability (AEP) flood level for Lot 8 DP 739338 and Lot 94 DP 788016 is RL 21.0m AHD.
- The flood planning level for Lot 8 DP 739338 and Lot 94 DP 788016 is RL22.7m AHD, being the 1% AEP flood level plus 0.5 metre freeboard.

For controls relating to flood prone land please refer to Council's Development Control Plan (DCP) – Part C8: Managing our Floodplains.

Council's Managing our Floodplains Policy is to be read in conjunction with Dungog Local Environmental Plan 2014 Clause 5.21 – Flood Planning.

A map showing the approximate area of inundation during the 1% AEP flood is shown below.



1% AEP Flood extent – Paterson Flood Study.

Should you have any further questions regarding this matter, please contact Council's Planning Department on 4995 7777 between the hours of 9:00am to 12:00 noon.

Yours faithfully,

Jenny Webb
Section Manager Development Services