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11 November 2024  
Paul & Connie Ryman  
c/o Swift Planning  
PO Box 4230  
Forster Shopping Village NSW 2428

Attn: Peta Stimson

Dear Peta

**RE: FLOOD IMPACT AND RISK ASSESSMENT FOR PROPOSED SUBDIVISION OF 33 DUNSHEA AVENUE, TEA GARDENS NSW**

## Background

Torrent Consulting was engaged to undertake a Flood Impact and Risk Assessment (FIRA) to assist in the approval process for the proposed subdivision of 33 Dunshea Avenue, Tea Gardens, NSW (the Site). It is understood that a flood assessment is required by Mid-Coast Council, as identified through pre-DA correspondence.

The Site is located beside the Myall River estuary, at the northern side of Port Stephens, as shown in Figure 1. Figure 2 shows the local floodplain topography, based on elevations in the 2012 LiDAR survey dataset. The Site allotment totals some 21 ha, most of which is very low-lying. However, the northern limit of the allotment (where both the existing development and proposed subdivision are located) is up to around 2.5 m AHD, which is consistent with the general ground level throughout Tea Gardens.

The development proposes a one into four lot subdivision, as per the plans dated 4 June 2024. Three allotments are for residential dwellings (including the existing development), being Lots 101, 102 and 103 at 975 m<sup>2</sup>, 4614 m<sup>2</sup> and 4382 m<sup>2</sup> in size, respectively. Proposed Lot 104 will contain the large residual area.

## Existing Flood Conditions

The Site is affected by both fluvial flooding of the Myall River and oceanic inundation from Port Stephens. The current flood risk exposure is relatively low, however, future climate change impacts resulting in sea level rise will increase this risk.

It is understood that Mid-Coast Council uses flood level conditions derived from the Lower Myall River Flood Study at this location. When incorporating future climate change conditions, this provides a 1% AEP (2100) flood level of 2.36 m AHD, as per the pre-DA meeting minutes of 30 January 2024.

## Flood Risk Management

The principal consideration of good practice floodplain risk management is to ensure compatibility of the proposed development with the flood hazard of the land, including the risk to life and risk to property. Requirements within a Council's LEP (Local Environment Plan) and DCP (Development Control Plan) typically consider the management of flood risk. The DCP is typically more prescriptive and aims to ensure

that the overall objectives of the LEP are met. The application of an FPL is the principal flood planning control, particularly for the management of risk to property from flooding.

Mid-Coast Council define the FPL as the 1% AEP Flood Level in 2100 plus a 0.5 m freeboard. As previously stated, the 1% AEP flood level is 2.36 m AHD in 2100, with a corresponding FPL of 2.86 m AHD.

Council's Development Control Plan (DCP) Section 4.2: Flooding provides guidance for the management of development on flood prone land. The following objectives are specified:

- The risk of impacts from flooding on people and assets are avoided or otherwise minimised.
- Development is located in response to the identified flood hazard and designed to accommodate flood conveyance and storage.
- Environmental impacts of development on flood prone land are avoided or otherwise minimised.
- Development on flood prone land does not adversely impact neighbouring properties or visual amenity.
- The potential for financial loss or cost to the community as a result of development on flood prone land is limited.

Development controls are specified in the DCP to meet the planning objectives, and are addressed for the proposed development as follows:

#### **Subdivision Controls**

***(1) New allotments are to be designed to ensure that all proposed building envelopes are located outside the 2100 flood planning area.***

The detailed Site survey indicates that the proposed building envelopes are currently elevated as follows:

- Lot 101: between around 2.3 m AHD and 2.6 m AHD
- Lot 102: between around 2.3 m AHD and 2.4 m AHD
- Lot 103: between around 1.7 m AHD and 2.1 m AHD

The proposed Lot 102 contains the existing dwelling and so this requirement is not applicable. However, for proposed Lot 101 and Lot 103, the existing ground surface levels will require fill material to raise them to the required 2.86 m AHD.

***(2) In circumstances where the location of a building envelope beyond the 2100 flood planning area is not possible a variation may be sought. If supported by Council, building envelopes are to be located at or above the 2100 1% AEP flood level.***

It is understood that the sewer system requires the finished floor levels of future dwellings to be at a level of 3.25 m AHD. It is proposed to fill the building envelopes to a level of 2.9 m AHD to accommodate this. The proposed building envelopes will satisfy the FPL requirement and so no variation is required.

***(3) All lots are to have a continuous and rising vehicle evacuation route.***

This is a constraint that cannot be readily satisfied. However, the constraint is a function of the existing road network servicing Tea Gardens, rather than the ability for the proposed development to provide as such within the Site.

Access to Myall Street from the Site via Dunshea Avenue, Holbert Close and Penn Drive is as low as around 1.9 m AHD, providing sufficient grade to service the local road drainage. Once on Myall Street, the evacuation route along Myall Way is typically above the 1% AEP 2100 flood level, except locally at the Settlers Way intersection, where it dips to around 2.3 m AHD.

However, for a flood event in Port Stephens or on the Myall River, there is a long advance warning time for such conditions. The flood risk is associated with large weather systems such as East Coast Lows, which are forecast days in advance. Inundation of the evacuation route would also only occur intermittently during the peak of high tide cycles, limiting potential isolation periods to a few hours, with opportunity for ingress/egress during the ebb tide conditions.

A continuous rising evacuation route is an important requirement when there is a limited warning time available and the resultant flood hazard exposure of failing to evacuate poses a significant risk to life. This is not the case with the flood mechanism affecting the Site and so Council may consider the merit of the proposed development in this context.

***(4) The filling of land is to limit the impact on adjoining properties and the visual amenity of the location.***

Filling of land to support the proposed building envelopes will occur to a level of 2.9 m AHD. Because the flood mechanism affecting the Site is dominated by tailwater levels in Port Stephens, there is effectively an infinite flood storage volume, and the required fill material will not result in any change to the existing flood conditions that would impact neighbouring properties.

The required fill heights will generally be less than 1 m and so are not expected to result in any significant impacts to the visual amenity of the location.

***(5) Landscaping and vegetated buffers located in flood prone areas must be designed and located to reduce the impacts of flood waters on soil stability and adjoining buildings and structures.***

There is no additional landscaping and there are no vegetation buffers proposed for the development.

***(6) Subdivisions in non-urban zones e.g. large lot residential, rural and environmental zones that create an additional dwelling entitlement, are to provide:***

***a. storage of vehicles, machinery and the installation of septic tanks within the building envelope; and***

Although the Site is zoned C2, the nature of use is expected to be consistent with the adjacent R2 zoning.

***b. an onsite sewage disposal area above the 2100 5% AEP flood level.***

There is a reticulated sewer system servicing the Site, and so onsite sewage disposal is not required.

## **Building Controls**

***Any building partly or wholly constructed below the 2100 flood planning level, must be certified by a structural engineer to demonstrate that the building and associated structures have been designed to withstand flood forces exerted by the 2100 1% AEP flood.***

The proposed building envelopes will be raised to above the 2100 1% AEP flood level and so this requirement will be readily satisfied for future dwellings.

## **New Buildings**

- (1) New buildings are to be designed and located entirely outside of the 2100 flood planning area wherever possible.***

This is not practical for the Site, however, raising the surface elevation of the dwelling envelopes to above the 2100 1% AEP flood level will facilitate the construction of future dwellings with an FFL above the FPL.

- (2) New buildings are to be designed with habitable floor levels above the 2100 1% AEP flood planning level.***

The filled area will allow future dwellings to be readily constructed with floor levels above the FPL.

- (3) In circumstances where construction of a new building at the 2100 1% flood planning level is likely to have an adverse impact on the adjoining property or the visual amenity of the location, a variation may be sought. If supported by Council, the new building may be designed with habitable floor levels above the 2060 1% AEP flood planning level.***

As discussed previously, the construction of new buildings at the FPL will not result in impacts to the neighbouring properties or visual amenity of the location.

- (4) Vehicle access to new buildings is to be designed so that ingress and egress from the site is provided above the 2100 1% AEP flood planning level.***

As discussed previously, this is not possible for the Site, as the existing local road level servicing the Site is lower than the FPL. However, the risk exposure associated with this is not high and so the merits of the proposed development not satisfying this requirement can be considered by Council.

## **Conclusion**

Torrent Consulting was engaged to undertake a Flood Impact and Risk Assessment to inform the approval process for the proposed subdivision of 33 Dunshea Avenue, Tea Gardens, NSW. The NSW Government Flood Risk Management Guideline LU01 has been considered in the preparation of this FIRA. As the applicable flood mechanisms (dominated by elevated tailwater conditions in Port Stephens) cannot be impacted by development, the requirement for considering potential impacts of the development on existing flood conditions is inherently satisfied. As Council's DCP controls also include consideration of future climate change, the potential flood risk exposure of development at the Site is appropriately addressed in line with LU01 through satisfaction of the DCP requirements.

With off-site flood impacts not a concern for the flood mechanism at the Site, only the two remaining key principles of good practice floodplain risk management need to be addressed, i.e. the management of risk to property from flooding and the management of risk to life from flooding.

The satisfactory management of risk to property from flooding can be readily satisfied for the proposed development through the provision of fill material to raise the existing ground surface level within the proposed building envelopes of Lot 101 and Lot 103. The dwellings then constructed on the fill pads will need to have finished floor levels set at or above the FPL. It is understood that the sewage management requires the FFL of future dwellings to be higher than the FPL.

To satisfactorily manage the risk to life from flooding, the flood hazard exposure for events rarer than the flood planning event need to be considered. Council's DCP includes requirements for flood evacuation at

the FPL to account for this. As discussed, these requirements cannot be satisfied by the proposed development, due to constraints associated with the existing road network. However, the flood mechanism applicable to the Site means that the residual flood risk exposure associated with this non-compliance is low:

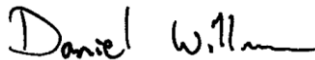
- The risk is a future risk associated with sea level rise and much of the existing development in Tea Gardens faces a similar constraint.
- With the FPL being above the 2100 Extreme Flood level, there is no direct flood hazard exposure associated with a failure to evacuate.
- The flood mechanism applicable to the Site inherently has a substantial flood warning time (i.e. days) associated with it.
- During a flood event large enough to impact ingress/egress from Tea Gardens to the broader region, the impact would be limited to a few hours during the peak high tides, with access available between these peaks, so the potential for extended periods of isolation is limited.

With local fill provision and the low residual flood risk exposure, the risk to property and risk to life from flooding of the proposed subdivision are managed to a satisfactory standard, in line with the Mid-Coast LEP and DCP, and the Flood Risk Management Manual, 2023.

We trust that this report meets your requirements. For further information or clarification please contact the undersigned.

Yours faithfully

**Torrent Consulting**



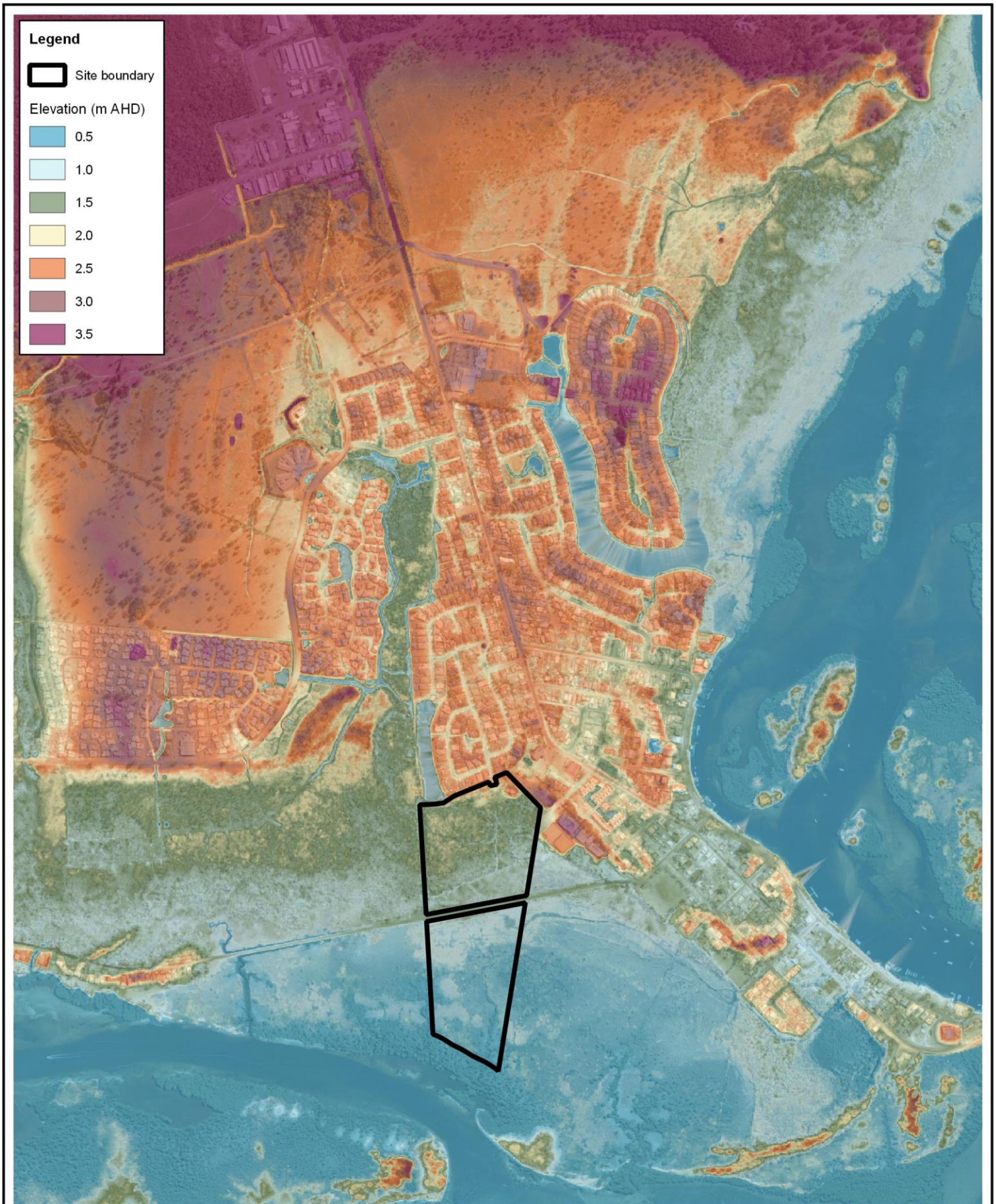
**Dan Williams**  
**Director**





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Title:

## Local Floodplain Topography

0 400 800 m



approx. scale

Figure:

**2**

Information shown on this figure is compiled from numerous sources and may not be complete or accurate. Torrent Consulting cannot be held responsible for the misuse or misinterpretation of any information and offers no warranty guarantees or representations of any kind in connection to its accuracy or completeness. Torrent Consulting accepts no liability for any loss, damage or inconvenience caused as a result of reliance on the information.

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