Dear Paul,

Re: Flood Risk Information Assessment – 93 Wade Street

INTRODUCTION

A subdivision is proposed for 93 Wade Street (the Site) in Crookwell, NSW (identified as Lot 1 DP526480 and Lot 5 DP540808). The site is affected by flooding, due to a flowpath along its eastern boundary (referred to as Cullen Street Overland Flowpath) as well as shallow overland flow on other parts of the site. This letter provides review of flood-related constraints on development of the site by considering the local planning controls, and the results of the recent flood risk assessment for the town (‘The Villages of Crookwell, Gunning, Collector and Taralga Floodplain Risk Management Study and Plan, Lyall & Associates on behalf of Upper Lachlan Shire Council, 2017, hereafter referred to as ‘the FRMS’).

SITE DESCRIPTION AND FLOOD BEHAVIOUR

The site is in a residential area of Crookwell and consists of mostly cleared land with a single existing dwelling. The area of the site is approximately 3.75 ha and it slopes slightly to the east and north, with an elevation range of 896 to 901 mAHAD across the site. There are two small farm reservoirs on the site. The flowpath along the eastern boundary of the site flows south to north and is referred to as the Cullen Street Overland Flowpath in the FRMS, which joins Kiamma Creek around 600 m north of the site. The site is situated approximately 430 m downstream of the Cullen Street Dam, which was highlighted in the FRMS as likely to have a Flood Consequence Category of ‘High C’ based on Dam Safety NSW (previously the Dam Safety Committee) guidelines. Another small farm dam is situated immediately upstream of the property on the adjoining property to the west of the site.

Flooding at the site is a combination of shallow overland flow, and more substantial flow in the Cullen Street Overland Flowpath. For residential subdivision planning purposes, the relevant design flood is the 1% Annual Exceedance Probability (AEP) flood, and so it is described herein. In general, the flowpath has depths of 0.3-0.5 m and width of around 20 m in the 1% AEP, while the
rest of the site, to the west, has shallow depths of around 0.1 - 0.3 m (ignoring the farm dams). During a dam failure scenario, the flood hazard and extent of flooding could be increased, with increases in 1% AEP flood level of up to 1.2 m.

**REVIEW OF PROPOSED SUBDIVISION**

A plan of the proposed subdivision (dated 18 February 2020, see Attachment A) has been reviewed with regard to flood planning controls at the site. The plan shows two roads within the lot, 22 residential lots with a mix of dwelling types and a reserve on the eastern boundary designated for stormwater drainage. The lot layout has been compared to Council’s flood risk zones, as shown in Figure 1. The development spans several categories of flood planning control and so the review has been separated into the following points:

1. Lot 1 has sections of red ‘Main Stream and Minor Tributary Flooding Inner Floodplain’ (red on Figure 1). While development is not permitted in this area, there is sufficient space on the lot to locate any buildings or areas of fill away from the ‘inner floodplain’ area. It is also noted that the zone will likely move to the east if the small farm reservoir is removed as part of development of the site.

2. Lot 1 is also the only lot that extends into the 1% AEP mainstream flood extent. Areas of cut and fill, or construction of above ground structures, in the 1% AEP flood extent may affect flood behaviour. However, restricting development to areas of Low Hazard Flood Fringe (Figure 2) will minimise adverse impacts. The Floodplain Development Manual (2005) notes that ‘development in flood fringe areas would not have any significant effect on the pattern of flood flows and/or flood levels’. Accordingly, changes in flood levels and flow velocities associated with development in these flood fringe areas would be negligible. This means that a flood impact assessment is not considered to be necessary for development in these areas.

3. Lots 1, 10 and 21 have areas of ‘Main Stream and Minor Tributary Flooding Intermediate Flooding’ (dark blue on Figure 1). Dwellings in this zone will require floor levels set equal to or greater than the 100 year ARI flood level plus 500 mm freeboard, and all structures will be required to have flood compatible building components below that level. Similarly, structures will be required to be designed to withstand the forces of floodwater, debris and buoyancy up to the flood planning level. The flood planning level for each lot is dependant on the building location, and for areas of shallow flooding, may change as a result of bulk earthworks carried out at the site.

4. Lots 1 and 21 lie within areas that have slightly higher flood risk due to the previously described dam failure scenario. The additional hazard is not substantial and the lots can be safely developed provided that, as with other lots, the minimum floor level and any bulk earthworks are confirmed to be compliant with the flood planning controls.

5. For the remainder of the site, the proposed roads should be designed to convey the flow in the ‘Major Overland Flow - Low Hazard Floodway Flood Storage’ area (green on Figure 1) creating a ‘major/minor’ stormwater system as recommended in the FDM (2005). During the design phase of the development, the roads and lots can be graded to ensure
the roads convey the majority of flow and there is no increased flood risk within or outside of the lot.

6. Stormwater management including on-site detention is required as part of the development, as per the DCP (see Section 4.5.2).

7. Other lots across the site will require minimum floor levels, set at either 0.3 or 0.5 m above the modelled flood levels. As described previously, the 1% AEP level may change slightly if bulk earthworks are undertaken or if the site is re-graded (in which case the new flood levels will be applied).

CONCLUSIONS
The proposed subdivision layout has adequately considered the existing flood risk at the site and is considered suitable from a flood risk perspective.

Overland flows can be managed through appropriate road and drainage design by implementing a ‘major/minor’ stormwater system as recommended in the FDM (2005).

Bulk earthworks or regrading may impact on flood planning levels and should be reconsidered if these works occur.

Yours Sincerely

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