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14 July 2017

Dear

Re: Flood Certificate

Under the SEPP CDC 2008, prior to complying development occurring on a flood control lot, a suitably qualified person must certify certain aspects of the flood affectation (see Section 3.36C of the Code SEPP 2008).

Specifically areas proposed for development within the flood control lot must be certified as not being any of the following:

- A flood storage area
- A floodway area
- A flow path
- A high hazard area; and a
- High risk area.

This certificate is issued by Steve Gray of GRC Hydro Pty Ltd, the CV for whom is attached. Steve has over 20 years experience working in the field of flood hydrology and is an expert in hydraulic modelling particularly.

Central Coast Council (Council) do identify the lot as being a flood control lot. On July 7 2017 Council provided a letter to the applicants which describes a 5% AEP flood level of 4.74 mAHD and a 1% AEP flood level of 4.75 mAHD. Council have not provided lot specific mapping in this case.

Figures 1 and 2 provide the available flood mapping for the site.

Figure 1 indicates the extent of the 1% AEP flood extent as per Council's website (https://maps.gosford.nsw.gov.au/).

Figure 2 indicates the depth at the subject site with green indicating depths of between 0.01 and 0.2 m. Blue indicates depths of between 0.2 and 0.4 m.

The flood study informing both figures is the DHI 2010 Woy Woy Peninsula Flood Study. Note that Figure 1 shows trimmed data whilst Figure 2 data appears to be untrimmed. Hence the discrepancy in inundated extent shown.

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Figure 1: 1% AEP Extent

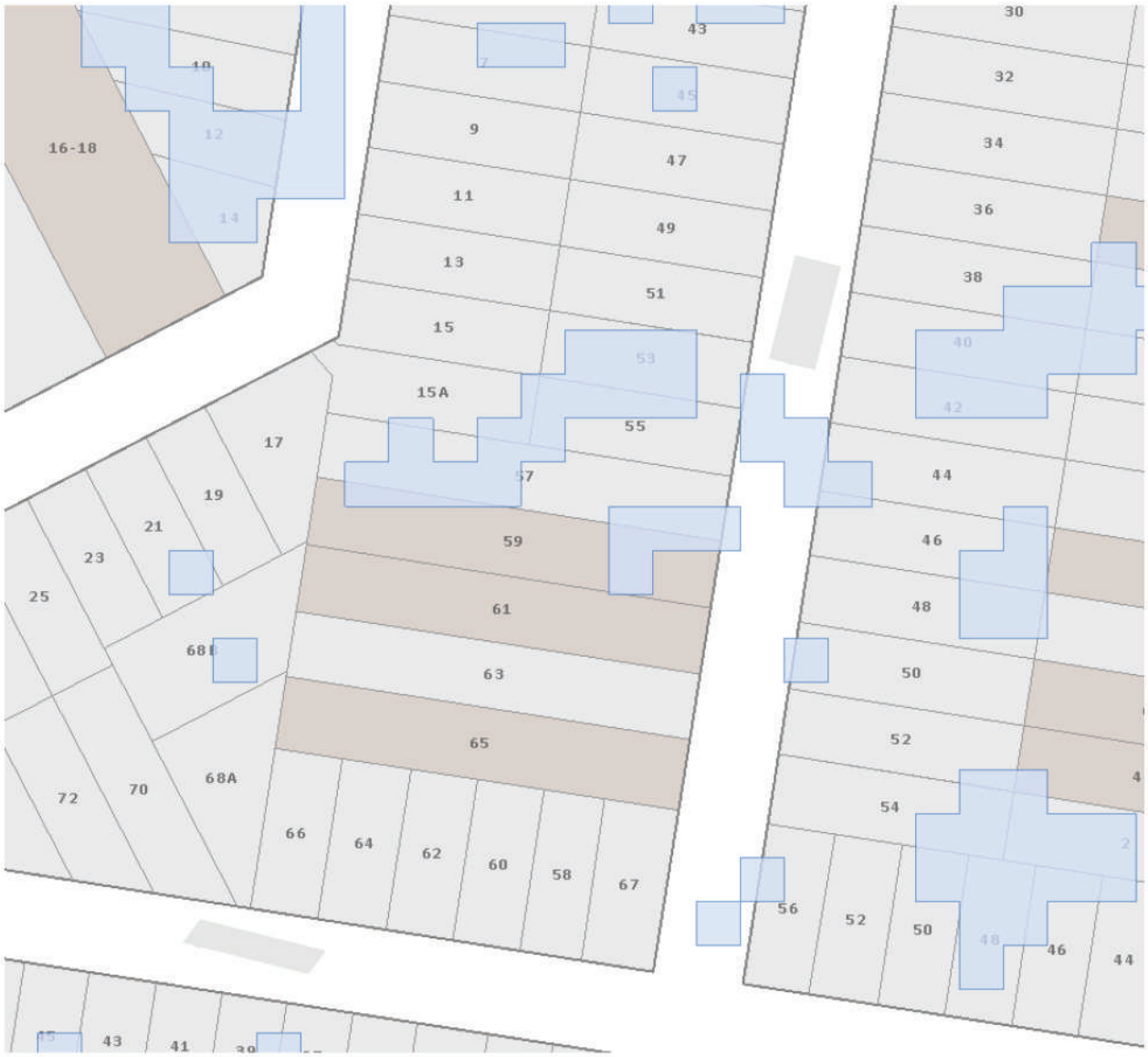

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Figure 2: 1% AEP Depths (DHI, 2010)

Based on these maps the following can be said in regard to the conditions for development as per Section 3.36C(2) of the 2008 Code SEPP. Is then, the proposed development, occurring in a location which is:

- A flood storage area? No, the very shallow flood affectation on the subject site would not be categorised as a flood storage area. Volume on the subject site is very low.
- A floodway area? No, clearly the flooding is shallow and owing to very low gradients in the area barely moving. Hence definitely not floodway.
- A flow path? Again no. The flooding is distributed and diffuse, not concentrated as a flow path would be.
- A high hazard area? No, velocity and depth are low, hence low hazard.
- High risk area? No. As above velocity and depth are low plus scaling is minimal as shown by the difference between the 5 and 1% AEP flood depths.

As such, conditions from 3.36C(3) must be met. Comment is made in regards to these below:

(a) floor level is set at 5.25 mAHD, as specified by Council;

(b) building below 5.25 mAHD to be constructed from a flood compatible material (for example, masonry)

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(c) be able to withstand forces of floodwater (this is a non-issue in this case due to the absence of flow velocity and very shallow depths)
(d) not lead to impacts (based on the very minor flood affectation at the lot and the lack of flow velocity it seems reasonable to assert that proposed development will not cause off-site impacts)
(e) egress to safe refuge – not necessary owing to the low hazard associated with the flood extent and the lack of flooding (see Figure 1) over the majority of the lot;
(f) open car parking at the 20Y ARI level. Not relevant as no change to parking arrangements are proposed for the development;
(g) driveway flood depth of less than 0.3 m. Again as per (f) above no change is proposed to car parking or driveways but in any case no depths exceeding 0.3 m occur on the property.

In summary then a review indicates that from a flooding perspective complying development is possible at the subject site providing that floor levels are built at 5.25 mAHD and that building materials below this level are flood compatible.

Yours Sincerely

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