

M Projects  
Suite C2.08, Level 2  
22-36 Mountain Street NSW 2007

Job No. FG486

Attn: Mr Miled Akle

18 November 2020

**Re: Melrose Park North – Freeboard Provisions for VRS Stage 4 (Lot AB)**

Dear Sir

This letter sets out the reasoning supporting the request to reduce the freeboard requirement for the buildings that are proposed as part of Stage 4 of VRS (i.e. within Lot AB) from 0.5 metres to 0.3 metres.

## 1. Background

Freeboard is defined in the NSW Government's *Floodplain Development Manual* as follows:

*"Freeboard provides reasonable certainty that the risk exposure selected in deciding on a particular flood chosen as the basis of the FPL [Flood Planning Level] is actually provided. It is a factor of safety typically used in relation to the setting of floor levels, levee crest levels, etc... Freeboard is included in the flood planning level."*

Presently City of Parramatta Council (**Council**) is requiring a freeboard of 0.5 metres to be adopted for setting the minimum floor levels of habitable rooms within the proposed buildings. Council is also requiring that this freeboard be added to peak water levels that would be generated by a storm that has an Annual Exceedance Probability (**AEP**) of 1% (1 in 100) assuming that the existing and proposed stormwater drainage system is 100% blocked.

Refer below for current wording under Conditions 58 and 59.

### **DESIGN TO WITHSTAND FLOODING**

**58.** *The building must be designed and certified by a registered structural engineer to ensure the building does not fail due to floodwater forces, debris and buoyancy effects from flooding events up to the 1 in 100 year level plus 500mm freeboard.*

*Reason: To ensure the structure can withstand flooding impacts.*

### **FLOOR LEVELS**

**59.** *The finished floor levels of all habitable rooms/floors including but not limited to residential and commercial uses shall be a minimum of 0.5m above the 1% AEP overland flow water surface level in the adjacent roads assuming 100% blockage of the piped road drainage system as modelled by Lyall Associates October 2020. These minimum finished floor levels shall be in accordance with drawing SK120 'Level 1 Flood Contours' and SK 121 'Levels 2-3 Flood Contours' by AJ+C filed by Council on 26.10.2020 under D07716655. If the finished floor levels shown on drawings SK 120 and SK 121 are higher than those shown on other architectural drawings at the same location, the levels on SK 120 and SK 121 shall take precedence.*

*Details demonstrating compliance are to be submitted to the satisfaction of the Certifying Authority prior to the issue of the relevant Construction Certificate(s).*

*Reason: To ensure adequate protection of life and property from flooding.*

## **2. Patterns of Major Overland Flow in the Vicinity of Lot AB**

Detailed hydraulic modelling that has recently been undertaken for the VRS development site shows that under the abovementioned conditions, depths of overland flow along the boundary of Lot AB are less than 0.05 metres deep (refer **Figure 1** attached which shows the indicate extent and depth of inundation bordering Lot AB for a 1% AEP storm event under 100% blocked conditions).

Detailed hydraulic modelling also shows that the depth of flow along the boundary of Lot AB does not exceed 0.05 metres during a Probable Maximum Flood (**PMF**), noting that this flood has a probability of less than 1 in a 1 million and represents the upper limit of potential flooding bordering the site (refer **Figure 2** attached).

## **3. Reasons Supporting the Proposed Amendment**

The detailed hydraulic modelling that has been undertaken for the VRS development site shows that the depth of flow bordering Lot AB does not increase significantly with an increase in the rate of flow. This is due to:

- a) the hydraulically steep and efficient nature of the roads and parkland which border Lot AB; and
- b) the site being located in the upper reaches of the catchment where rates of flow are relatively minor.

As a result of the above, the provision of a 0.5 metres freeboard is considered to provide an overly conservative factor of safety on the design storm event for which the development is required to protect against (i.e. from a storm with an AEP of 1 per cent), noting that even in a PMF event the depth of flow along the boundary of Lot AB does not exceed 0.05 metres.

While wave action could be present in the flow due to say the passing of a motor vehicle, a freeboard of 0.3 metres is considered to be sufficient to protect the development against this eventuality.

We note that the 0.3 metres freeboard would be added to the peak 1% AEP water surface level assuming 100% blocked conditions. This in itself would provide a greater level of protection to the proposed development as the impact that a complete blockage of the drainage system would have on the behaviour of major overland flow would normally be incorporated in the freeboard allowance.

We trust that the above provides adequate reasoning for the request to reduce the freeboard requirement for the buildings that are proposed in Lot AB from 0.5 metres to 0.3 metres. However, please do not hesitate to contact the undersigned should you have any queries or wish to discuss any aspect of the above.

Yours faithfully

**Lyall & Associates Consulting Water Engineers**



**Scott Button**  
**Principal**

## List of Figures

- Figure 1      Indicative Extent and Depth of Inundation - Post-VRS Development and Complete Blockage Conditions – 1% AEP
- Figure 2      Indicative Extent and Depth of Inundation - Post-VRS Development Conditions - PMF







