27th April 2015

Luiza Campos
Architecture Design Studio
43/8 Avenue of the Americas, Newington

Dear Luiza,

RE: PLANNING PROPOSAL – 108 STATION STREET, WENTWORTHVILLE

FLOOD IMPACT ASSESSMENT

We refer to the planning proposal you are preparing for 108 Station Street Wentworthville. This is with regard to the proposed flood impact assessment and management strategy for the proposal. The proposal refers to the following on the subject site:

- Increasing the height and FSR
- No change in permissible use
- Construction and operation of a multi-level development

The existing development is a single level commercial strata building, with a car parking area at the rear.

Both mainstream and overland flooding are to be considered. In the context of this site, mainstream flooding may arise from the concrete lined drainage channel situated approx. 216m to the east. This channel flows in a northerly direction into, and is a tributary of Toongabbie Creek. Overland flow is that stormwater drainage which would exceed the capacity of the drainage system in Station Street, and which would then flow down the road or across properties finding the path of least resistance, i.e. east towards the concrete drain.

Purpose of this Report

This report addresses the NSW Department of Planning and Environment s.117 Direction, Clause 4.3 Flood Prone Land. The objectives of this direction are:

(a) to ensure that development of flood prone land is consistent with the NSW Government's Flood Prone Land Policy and the principles of the *Floodplain Development Manual 2005*, and

(b) to ensure that the provisions of an LEP on flood prone land is commensurate with flood hazard and includes consideration of the potential flood impacts both on and off the subject land

Assessment framework

All building work or any development which is proposed within the floodplain needs to comply with all relevant planning and development controls as outlined in the *Holroyd City Council Development Control Plan 2013*. This document is consistent with the New South Wales

Government Policy and Guidelines as outlined in the *NSW Floodplain Development Manual* on the management of flood liable land, dated April 2005.

A three-step assessment process is outlined, as follows:

1. Identify the land use category of the development: **Determined as Residential Use-Redevelopment**
2. **Determine which floodplain the development is on**:

   Holroyd City Council's website provides flood mapping to assist with Development Assessment. There are four maps showing:

   i. 1% AEP Hydraulic Capacities
   ii. Flood Controls Lots
   iii. Flood Hazard Categories
   iv. Flood Risk Precincts

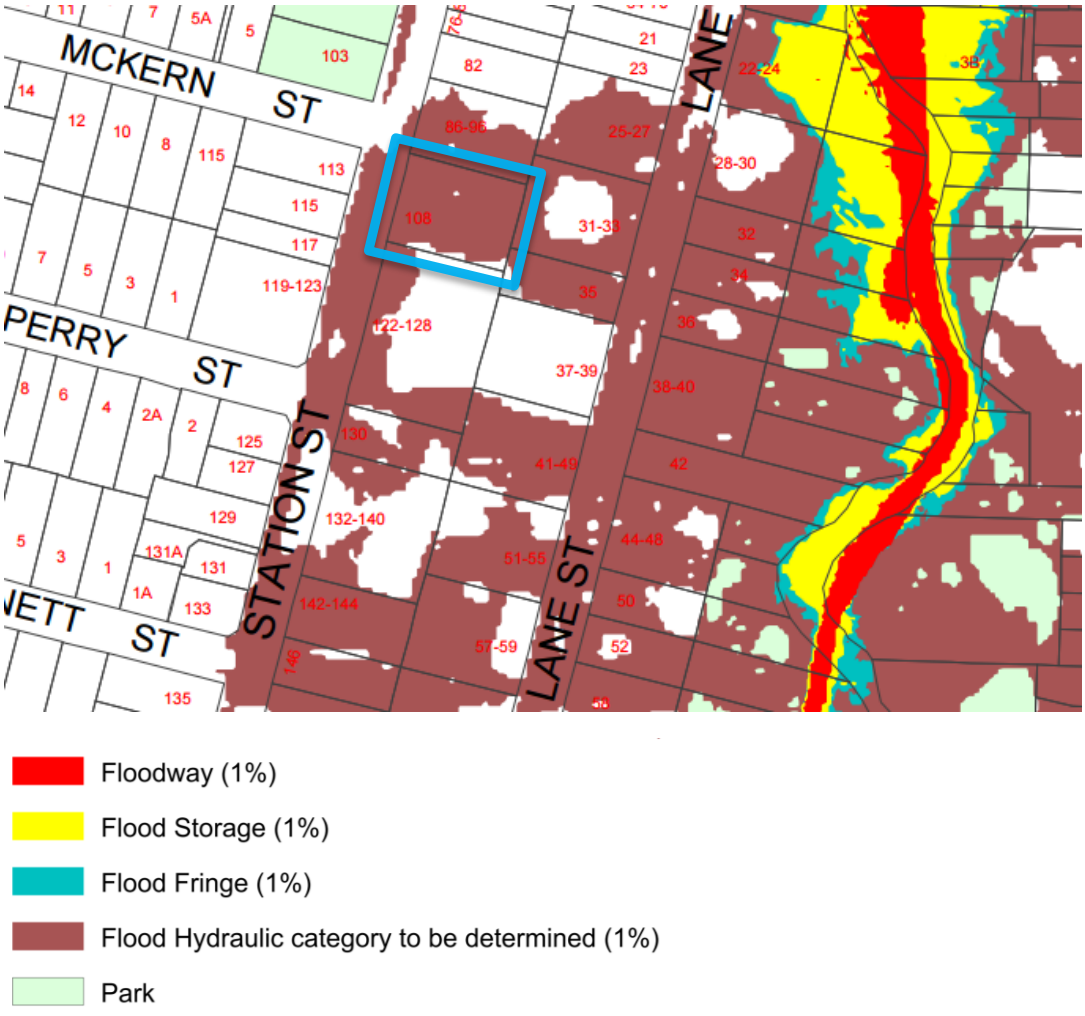


Figure 1: 1% AEP Hydraulic Capacity map from Holroyd City Council Website.

This map shows that the main floodway is located to the east of the site. The area marked brown indicates further hydraulic capacity assessment is required for these areas.

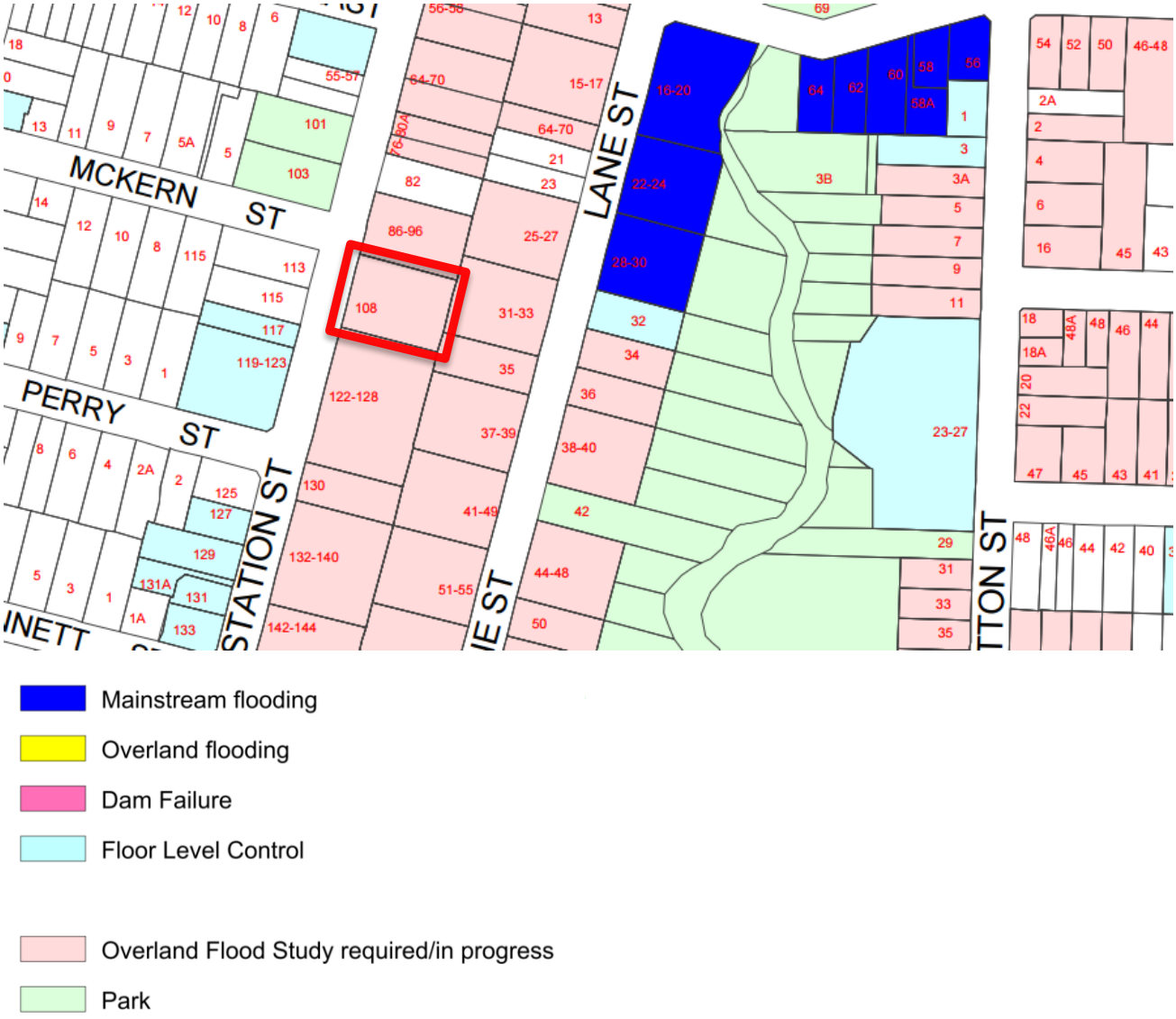
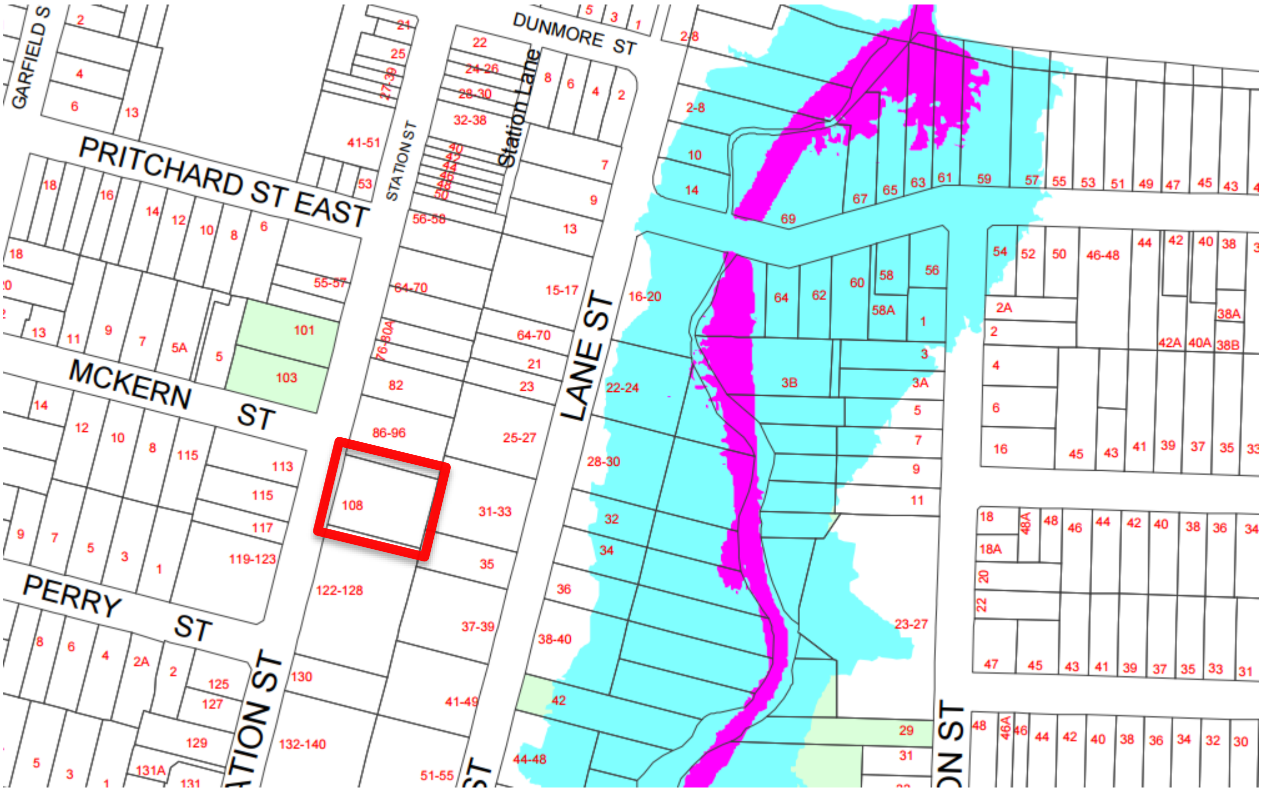


Figure 2: Flood Controls Lots map from Holroyd City Council website.

This map confirms that overland flow is required to be assessed with certification provided by Council or a consulting hydraulic engineer for the proposed development site.



High Hazard (PMF, dangerous flow & depth)

High Hazard (1%)

Low Hazard (PMF)

Figure 3: Flood Hazard Categories from Holroyd City Council website.

This map shows that the proposed development is located well outside both of the High and Low Hazard areas.

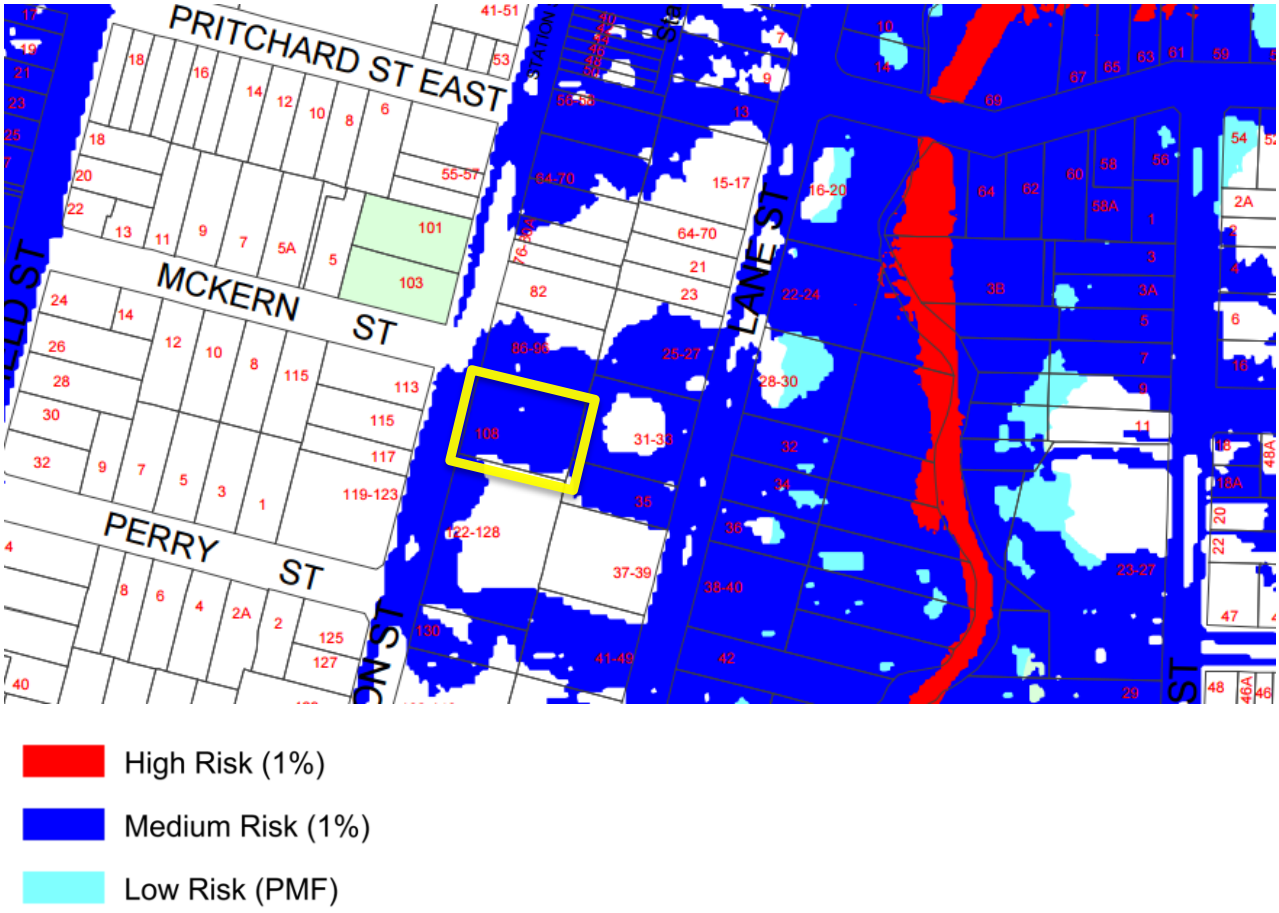


Figure 4: Flood Risk Precincts map from Holroyd City Council website

This map shows that the site has a medium risk of flooding in the 1% AEP flood.

From these maps, we conclude that the development is within the area of medium flood risk (in accordance with the provisional criteria outlined by the Floodplain Development Manual). Development within this Precinct is possible, however appropriate flood management measures must be implemented, to ensure the safety and protection of both persons and property during a critical storm event.

3. Apply relevant controls

The setting of development controls will be guided by the results of hydraulic flood analysis of the proposed development. Specifically, a flood model will be required to determine flooding arising from overland flow on Station Street and how this would likely affect the property. The hydraulic analysis will determine levels of flooding and flow paths for the existing and future development. From this, a range of flood management responses will be derived to inform the design and operation of the development.

Typically, this would include:

- **Freeboard** –
  - 200-500mm minimum (for a contributing catchment area up to 16Ha) **We interpret that the contributing catchment is about 2.5Ha and so Freeboard may be set at 250mm.**
- **Design Floor Level**
  - Habitable floor levels shall be equal to or greater than the FPL (1% AEP flood plus freeboard). **We predict the FPL is approx. 200-500mm above the existing road surface.**
  - Floor levels of any open car parking areas and garages shall be 150mm above the 1% AEP flood. This may be achieved with a suspended floor which allows the continued passage of flood waters or filling (if justified) by a site specific assessment, (subject to "Flood Effects" and other controls below new line). Basement car parking must be protected from the 1% AEP flood plus freeboard of 500mm, except where, in Council's view, it is impractical to do so, but freeboard shall not be less than 150mm. The site sits within an area of potential overland flooding. **The building may need to be designed to sit above ground level allowing unobstructed passage of flood waters beneath it. Access to underground parking will also need to be set at FPL plus freeboard.**
  - Habitable floor levels of residential and commercial re-development shall be protected to the FPL (1% AEP flood level plus freeboard). For Commercial sites where it is impractical to achieve this (and subject to Council approval) the building is to be effectively flood proofed to FPL and the floor level is to be as high as practical
- **Building components & Method**: All structures to have flood compatible building components below the FPL (1% AEP plus freeboard). Table 9 of Council's DCP lists the flood compatible materials requirements**. We interpret that the building will not be inundated by flood waters, rather these will pass through the site as overland flow. Therefore, these requirements are unlikely to apply.**
- **Structural Soundness** – Engineer's report to demonstrate and certify that any structure can withstand the force of floodwater, debris and buoyancy up to and including the FPL (1% AEP plus freeboard). This may not be required, but can be provided nonetheless.
- **Flood effects**:
  - Engineers report required to demonstrate and certify that the development will not increase flood effects elsewhere.
  - The impact of the development on flooding elsewhere shall be considered, incl loss of floodplain storage; changes in flood levels and velocities; cumulative impacts of the development. **We interpret that the development will only have minimal impacts elsewhere, i.e. potential increases in flow velocity across the site and loss of flood storage may have a minor cumulative impact.**
- **Evacuation**
  - Reliable egress for pedestrians required to the lowest habitable floor level is required from the building to an area refuge above the PMF level, either on-site or off-site. **We interpret that the development will not alter existing flood evacuation strategies. However, the intensification of the development may require a flood warning system to allow safe evacuation of pedestrians and vehicles.**

- Applicant to demonstrate that the development is to be consistent with any relevant flood evacuation strategy or similar plan.

- **Management and design**
    - Applicant to demonstrate that area is available to store goods above the FPL (1% flood plus freeboard).
    - No external storage of materials below the FPL (1% flood plus freeboard) which may cause pollution or be potentially hazardous during any flood.
    - The applicant is to prepare an Economic Analysis of Flood Losses. The applicant to submit a Flood Preparedness Loss Minimisation Plan.
    - **We assume that no external storage will be designed into the development, and so this will not apply**
- **Some additional considerations**
    - **On-Site Detention (OSD) for the development may be required which will satisfy Council's requirements. Typically this will be provided in a tank structure.**
    - **Fences – able to withstand flood flows and debris**

4. Summary and conclusion

We conclude from our preliminary review that the site is subject to potential flooding from overland flow. We interpret that this is likely to arise from flooding on Station Street, and which would overflow from this carriageway and flow through the site. Council has assessed the site to be within an area of Medium Flood Risk in the 1in100 year flood.

Various development controls are available to effectively mitigate against this flood risk both on and off-site, and which any subsequent design of the site should take into account. These development controls are prescribed by Council in a manner consistent with the Floodplain development Manual 2005. Therefore, we conclude that there is nothing to prevent this planning proposal from proceeding.

Should the planning proposal proceed, further flood assessment by way of hydraulic modelling will be required to confirm the flood levels and the management of site flooding.

We trust this report satisfies the requirements of the NSW Department of Planning and Environment's. s117 Direction (Clause 4.3 Flood Prone Land), for 108 Station Street, Wentworthville.

Yours faithfully,

NORTHROP

Mal Brown

Senior Environmental Engineer

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