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BKA Architecture

Date 12th August 2022

Job Number 220372

Flood Review for proposed Residential Development [Rev#1] 2 Martin St, ROSELANDS NSW

Dear Sir/Madam,

Please find following our review of flooding at the above site. The subject site is located on the corner of northern side of Martin St, refer **Figure A** and comprises Lot 3 DP 210492 with an area of 633m². We highlight this flood review is only for 2 Martin St and does not include the adjacent 4-6 Martin St which is subject to a separate DA. Ground levels grade from RL +19.3 mAHD (south-east corner) to +18.7 mAHD(north-east corner); the site contains a drainage easement with d1050mm stormwater pipe and is subject to overland flows during large storm events. The site currently contains a single dwelling and garage. The site is located within the Salt Pan Creek catchment, which has been modelled and described in (former) Canterbury Council's adopted flood study for that catchment, refer further details below.





Figure A: Site Location

The development as proposed consists of a new residential unit development with 4 units, each with garage parking. Some segments of the ground floor will be set on piers such that water can flow beneath. It is currently proposed to relocate the d1050mm pipe such that it is located outside the footprint of the proposed townhouses.

FLOOD INFORMATION

Canterbury Council's currently adopted flood study for the catchment is "*Salt Pan Creek Overland Flow Catchment Study*" [Cardno, 2016] noting this supersedes the 2015 WMA Water Floodplain Risk Management Study and Plan. Council have provided 1%AEP flood levels and depths through the site, refer **Figure B**.

Flood information from the 2021 study as provided by Council indicates that:

- A. The site is subject to shallow inundation in the 1%AEP event, with flood depths typically less than 200mm but some areas around 400-500mm.
- B. The 1%AEP (100yr ARI) level varies from +18.90 mAHD (west boundary) to +19.40 mAHD (east boundary).
- C. 1%AEP velocities are 0.5 m/s or less.
- D. The PMF level varies up to approximately RL +19.60 on the eastern boundary.

Canterbury Council's DCP Section B5.13 "Areas Subject to Possible Flooding" typically requires:

- Habitable floor levels to be set at the 100yr+500mm level as a minimum.
- Garage floor levels to be set at the 100yr+150mm level as a minimum.

Based on these requirements and the 1%AEP depths shown in **Figure B**, we recommend that floor levels be set as recommended in the Flood Mitigation section below.



Figure B: 1%AEP flood depths & levels [extract]





Figure C: 1%AEP velocities [m/s]

FLOOD HAZARD AND RISK

NSW FDM Hazard

With respect to flood hazard, the NSW Floodplain Development Manual (2005) provides guidelines for determining the hydraulic flood hazard. A provisional hazard can be assigned to an area using Figure L2 and the combined impact of flood velocity and flood depth. In general, an area will be (provisionally) assigned High Hazard if any of the following criteria are satisfied:

- The flood depth (D) is greater than 1.0 m;
- The flood velocity (V) is greater than 2.0 m/s;
- The combination of V and D lie in the dark blue region (mathematically this is approximately where V + 3.33D is greater than 3.33).

Hazard mapping as provided by Council indicate that the site is entirely low hydraulic hazard in the 1%AEP event, refer **Figure C** below.





Flood Risk

Some Council's adopt Flood Risk Precinct categories for the purpose of assessing flood risk at a particular site. These typically relate to (but do not necessarily correlate with) the Hydraulic Hazard zones discussed above. Council's in the Sydney region typically define these as follows:

- **High Flood Risk Precinct**: This is often defined as the area within the envelope of land subject to a high hydraulic hazard (in accordance with the provisional criteria outlined in the Floodplain Management Manual) in a 1%AEP flood event;
- **Medium Flood Risk**: This often defined as land below the 1%AEP flood level that is not within the High Flood Risk area. It is land subject to low hydraulic hazard;
- **Low Flood Risk**: This often defined as all other land within the floodplain (ie. within the extent of the PMF) but not identified within either the High Flood Risk or the Medium Flood Risk Precinct.

As far as we are aware, there are no specific risk maps or specific definitions adopted by the former Canterbury Council.



FLOOD MITIGATION MEASURES AND PRACTICAL CONSIDERATIONS

Flood Mitigation Measures

The following flood mitigation measures are required, refer also Figure E.

- A. Floor levels must be set as recommended in this report. The recommended floor levels are based on 500mm of freeboard to the 1%AEP flood levels (habitable areas) and 150mm of freeboard for garages as shown in Figure E.
- B. The eastern part of the proposed development must have open subfloor and be set on piers such that water can flow under. We recommend this area be screened-off so that the area will not be used for storage purposes.

The development as proposed currently incorporates a ground floor level at +19.90 mAHD for all units and +19.80 mAHD for all garages, which is well above the minimums required.

Flood Impacts

The proposed development incorporates an elevated section of slab such that flows may readily pass through the undercroft area; thus, conveyance and flood storage impacts will be minimised. We note that any fencing should be flood compatible to allow flows through.

Flood Evacuation

Upper habitable areas will be above the PMF levels onsite and therefore onsite residents may safely evacuate by via 'shelter-in-place' until floodwaters subside.



Figure D: Flood Mitigation Measures Required



CONCLUSIONS

We therefore conclude that:

- 1. The proposed development area is a new residential 4-townhouse development.
- 2. Flood mitigation measures should be implemented as recommended in this report, including a partially open sub-floor.
- 3. Floor levels and garage floor levels should be set as recommended in this report.

Yours faithfully,

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A.M

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CITY OF CANTERBURY BANKSTOWN

To: Ralph Camilet 531 Kingsway MIRANDA NSW 2228

STORMWATER SYSTEM REPORT 2 Martin Street, ROSELANDS NSW 2196

Date: Ref: Development type: 10-May-2022 WP-SIA-965/2022 Residential Flat Buildings

NO

FLOOD/OVERLAND FLOW STUDY REQUIRED

The site is affected by the following Council stormwater system components:

- 1050mm diameter stormwater pipeline (according to Council records) located within the site as shown in the attached map.
- Overland flowpath for excess stormwater runoff from the upstream catchment and associated with this drainage system.

The site will be subject to stormwater inundation from this overland flowpath during large storm events. Refer to the attached "100 Year ARI Flood & PMF Extent Map from Salt Pan Creek Overland Flow Catchment Study" showing the flood contours to m AHD**. Provision should be made on site, and at boundary fences, for this stormwater runoff to pass unobstructed over the site. Stormwater flowing naturally onto the site must not be impeded or diverted.

The estimated 100 year ARI* flood level at the site is RL 19.2 m AHD**

For this development, a flood /overland flow study to determine the 100 year ARI* water surface level is not necessary provided that the **proposed development** including floor levels, shall comply with the development controls specified in Part B, Section B5 of former Canterbury Council's Development Control Plan 2012-Catchments Affected by Stormwater Flooding.

The proposed development including floor levels, shall comply with the development controls specified in former Canterbury Development Control Plan 2012 - Catchments Affected by Stormwater Flooding.

The proposed development including floor levels, shall comply with the development controls specified in Part B, Section B5 of former Canterbury Council's Development Control Plan 2012- Catchments Affected by Stormwater Flooding.

Habitable floor levels are to be at least 500mm above the 100 year ARI* flood level at the site adjacent to the proposed buildings.

Runoff on the site, and naturally draining to it is to be collected and disposed of to Council's requirements detailed **Part B**, Section B5 of former Canterbury Council's **Development Control Plan 2012**.

All structures and buildings must be located clear of pipelines and easements (existing or required by Part B, Section B5 of former Canterbury Council's Development Control Plan 2012). Proposed structures may require special footings due to their proximity to stormwater easements and pipelines. Refer to Canterbury DCP 2012.

This report is given without the benefit of development plans or a site survey. Council may choose to vary some report requirements following evaluation of detailed plans when they are submitted.

This report relates to the exposure of the subject site to Council's stormwater system, both underground and overland. It does not assess the suitability or otherwise of this site for the proposed development.

- * Average Recurrence Interval
- ** Australian Height Datum
- *** Bankstown Council's *Development Engineering Standards* and *Bankstown's Development Control Plan 2015* is available from Council's Customer Service Centre.
- PMF Probable Maximum Flood

Pushpa Goonetilleke ENGINEER



100yr ARI Flood Extent



100yr ARI Flood Extent with Flood Contours m AHD**



Legend	
	Suburb
	Stormwater Drains MD
	Stormwater Pits MD
	Sydney Water
	Contour Major 5m
	Contour Intermediate 2.5m
	Contour Minor 0.5m
	_25cm Contour Interval (Major)
	_25cm Contour Interval (Basic)
	_25cm Contour Interval (Minor)
	Parcel
	Parcel Associate
Z	Parcel Vinculum
	Jetty
	Easements
	Road Boundaries
	Flooding_PMFEXTENT
SMITH RD	Road Names
	Airport Internal Road
	Water Boundary
	Airport Taxiway



