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Flood Review for Proposed Seniors Residential Development at 29-35 Lochinvar Rd, REVESBY NSW

INTRODUCTION

The subject site is located on the southern side of Lochinvar Rd and comprises Lots 52, 53, 54 & 55 in DP 36467; the total site area is approximately 3366m^2. Ground levels range from RL +24.2 mAHD (front boundary) to +22.7 mAHD (south-east corner). The site currently contains 4 residential dwellings. The site is flood free in the 1%AEP (100yr ARI) event and subject to minor inundation in the PMF event; Canterbury Bankstown City Council's flood study for the local catchment ("*Morris Gully Catchment Flood Study*", BMT WBM June 2017) contains flood maps and other pertinent information.

Figure 1: Site Location

ABN: 72 903 080 591 ACN: 142 291 165
Office: Suite 102-62 Harbour Street Wollongong | Mailing Address: PO Box 567 Dapto NSW 2530
| t: 02 4226 5247 | e: info@mslengineers.com.au | www.mslengineers.com.au

The development as proposed consists of a seniors living development. We highlight that:

- There are 19 proposed units over 2 stories.
- The ground floor level is proposed at RL +24.2 mAHD.
- Parking will be externally at the rear of the site.

FLOOD INFORMATION

Extracts from the BMT WBM 2017 study are provided below:

- The site is flood free in the 1%AEP event and well removed from the closest 1%AEP affected lots.
- The site is subject to shallow and minor inundation in the PMF event with a maximum flood level around RL +23.4 mAHD.

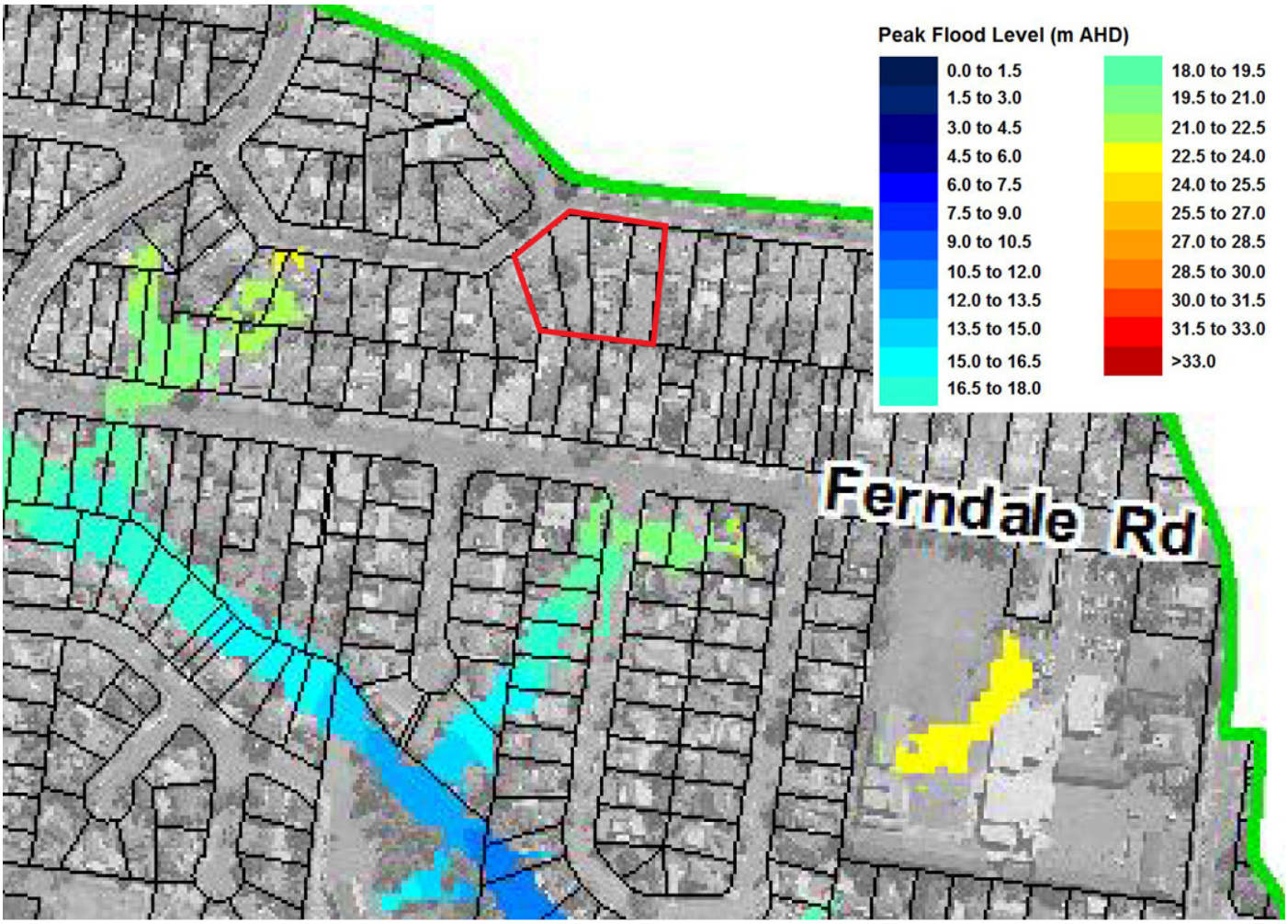

Figure 2: 1%AEP Flood Extents & Levels [extract, BMT WBM 2017]

Flood Hazard

ARR2019 provides updated Hazard curves as described in Table 6.7.3 and 6.7.4 of ARR2019 Chapter 6. These are defined as follows:

H1: Generally safe for vehicles, people and buildings [D<0.3m, V< 2m/s, V*D < 0.3].

H2: Unsafe for small vehicles [D<0.5m, V< 2m/s, V*D < 0.6].

H3: Unsafe for vehicles. children and the elderly [D<1.2m, V< 2m/s, V*D < 0.6].

H4: Unsafe for vehicles and people [D<2.0m, V< 2m/s, V*D < 1.0].

H5: Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust buildings subject to failure [D<4.0m, V< 4m/s, V*D < 4.0].

H6: Unsafe for vehicles and people. All building types considered vulnerable to failure.

The subject site is flood free in the 1%AEP (100yr ARI) flood and thus has no hazard category during this event.

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. Canterbury-Bankstown Council's DCP 2023 Part 2.2 "Flood Risk Management" defines risk precincts as follows (for the former Bankstown LGA, within which the subject site is located):

> **High Flood Risk** Precinct: the area of land below the 100-year flood that is either subject to a high hydraulic hazard or where there are significant evacuation difficulties. Most development should be restricted in this precinct as development in high flood risk precinct is associated with higher risk to life and evacuation difficulties during the event of flood. In this precinct, there would be a significant risk of flood damages without compliance with flood related building and planning controls.
>
> **Medium Flood Risk**: land below the 100-year flood that is not subject to a high hydraulic hazard and where there are no significant evacuation difficulties. There would still be a significant risk of flood damage in this precinct. However, these damages can be minimised by the application of appropriate development controls.
>
> **Low Flood Risk**: defined as all other land within the floodplain (within the extent of the probable maximum flood) but not identified within either the High Flood Risk or the Medium Flood Risk Precinct. The risk of damages due to flood event in low flood risk precinct is low for most of the land uses.

The subject site is predominantly flood free with a small section of Low Flood Risk (the PMF extent depicted in Figure 3).

Flood Planning Level [FPL]

Canterbury-Bankstown Council's DCP 2023 Part 2.2 "Flood Risk Management" Schedule 5 "Catchments Affected by Stormwater Flooding" typically requires:

- Habitable floors to be set at the 1%AEP + 500mm level.
- Non-habitable floors to be set at the 5%AEP (20yr ARI) level.
- Garages and open-air carports / car spaces to be at the 5%AEP (20yr ARI) level.

Given that the subject site is flood free in the 1%AEP event and the nearest 1%AEP affected lots are well removed from the subject site, no flood planning level can be assigned to the site itself.

Flood Storage Losses

We do not believe there will be any flood storage losses in the 1%AEP or smaller noting that the site is flood free in the 1%AEP event.

Flood Conveyance Impacts

We do not believe there will be any flood conveyance impacts in the 1%AEP or smaller noting that the site is flood free in the 1%AEP event.

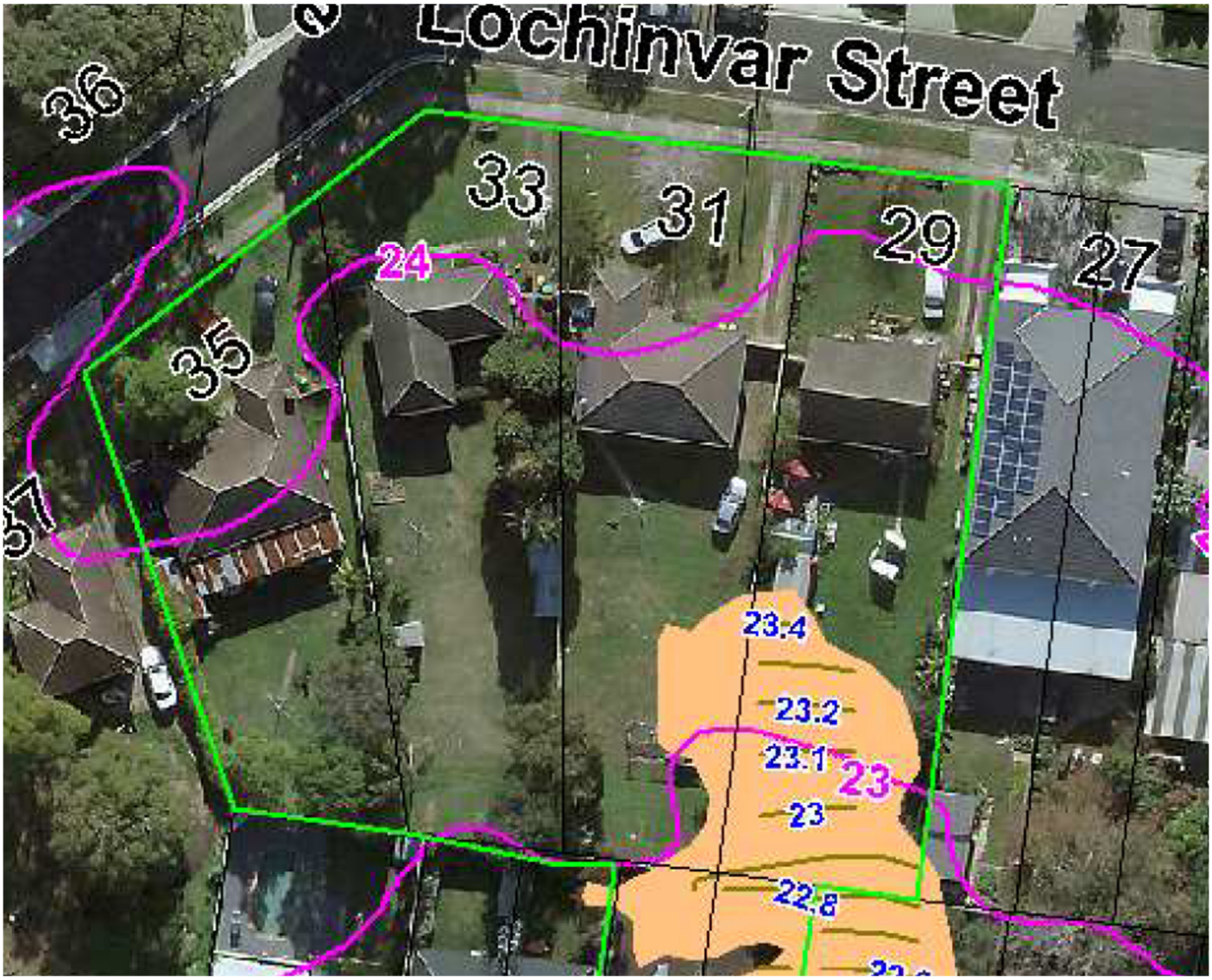

Figure 3: PMF Flood Levels [extract, BMT WBM 2017]

Practical Considerations & Flood Risk Mitigation Measures

The subject site is flood free in the 1%AEP flood event and a combination of Flood Free and Low Flood Risk; on the basis Canterbury-Bankstown Council's DCP 2023 Part 2.2 "Flood Risk Management" Schedule 5 "Catchments Affected by Stormwater Flooding" no specific flood risk mitigation measures are required.

Flood Evacuation

The subject site is almost entirely flood free in the PMF event and all proposed floor levels will be above the highest PMF level onsite; therefore, the proposed dwellings will function as safe refuges during a large flood event and there is no specific requirement for offsite evacuation.

COMPLIANCE WITH COUNCIL LEP OBJECTIVES

Canterbury-Bankstown Council typically require all development to be assessed against LEP 2023 Section 5.21 'Flood Planning' and we provide comment as follows:

(2) Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development—
(a) is compatible with the flood function and behaviour on the land, and
The subject site is a combination of flood free areas and Low Flood Risk and therefore development is permissible.

(b) will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and
Flood storage and conveyance impacts are discussed previously; we believe the development as proposed will not cause any adverse affectation in the 1%AEP or smaller events.

(c) will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, and
The majority of the subject site is outside and above the PMF extents and therefore offsite evacuation is not warranted. We therefore do not believe there will be any negative impact on the ability of site occupants to evacuate or negatively impact on existing offsite evacuation routes.

(d) incorporates appropriate measures to manage risk to life in the event of a flood, and
As noted previously, we do not believe any specific flood risk mitigation measures are required, noting the site is outside and above the 1%AEP flood extents and predominantly outside and above the PMF flood extents.

(e) will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of riverbanks or watercourses.
We do not believe the development as proposed will causes excess erosion, siltation, destruction of riparian vegetation or a reduction in the stability of riverbanks or watercourses noting it is well removed from any river / creek / watercourse.

(3) In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the following matters—
(a) the impact of the development on projected changes to flood behaviour as a result of climate change,
One of the predicted impacts of climate change is an increase in short-duration rainfall intensities. Predicted values for various Representative Concentration Pathways (RCP) are available on the ARR Datahub. As far as we are aware, climate change modelling was not undertaken as part of the 2017 BMT WBM study. Thus, exact quantification of flood level increases are not possible without flood modelling, which is well beyond the scope of this report. Based on our experience on similar sites, a 30% increase in rainfall intensity is likely to cause water levels in the 1%AEP event to increase by around 50-100mm, but this is site specific and dependant on numerous factors such as the underground pipe network, storage volumes, etc. It is our opinion that water levels in the 1%AEP event for RCP8.5 scenario (2090) are very unlikely to inundate the site or proposed ground floor levels.

(b) the intended design and scale of buildings resulting from the development,

No comment as this does not specifically refer to flooding.

(c) whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood,

As noted previously, we do not believe any specific flood risk mitigation measures are required, noting the site is outside and above the 1%AEP flood extents and predominantly outside and above the PMF flood extents; comments on evacuation are provided in the relevant section of this report.

(d) the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.

We see no reason why the proposed buildings will be required to be removed, noting the site is well removed from the coast and riverine flooding mechanisms.

ASSESSMENT AGAINST CANTERBURY-BANKSTOWN DCP 2023 Part 2.2 OBJECTIVES

Canterbury-Bankstown Council would typically require any development to be assessed against its DCP 2023 Part 2.2 "Flood Risk Management" Schedule 5. We believe the proposal meets or exceeds the requirements for a "Residential – Low Risk" development noting that:

- **Floor Levels:** not relevant.
- **Building Components & Structural Soundness:** not relevant.
- **Flood Effects:** not relevant.
- **Carparking & driveway access:** not relevant.
- **Evacuation:** not relevant.

CONCLUSIONS

We therefore conclude that:

A. The site is best classified as Flood Free and Low Flood Risk.
B. There is no specific requirement for flood mitigation measures for the development as proposed.
C. We believe the development meets the requirements of Canterbury-Bankstown Council LEP 2023 Section 5.21 'Flood Planning' and DCP 2023 Part 2.2 objectives.

Please do not hesitate to contact us if you require further information.

Regards,

Andrew Wiersma
BE(Hons) MEng MIEAust CPEng (NER)
Design Engineer

Reviewed by:

Michael Pereira BE MIEAust CPEng (NER)
Senior Design Engineer