

601 Pacific Highway, St Leonards - Flood Impact and Risk Assessment

Prepared for Stockland Development Pty Ltd

March 2026

Project Number S23095

Version F

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Executive Summary

This Flood Impact and Risk Assessment (FIRA) has been prepared to support the State Significant Development Application for the proposed mixed-use development at 601 Pacific Highway, St Leonards. The assessment reviews all relevant flood information provided by North Sydney Council, including available data on flood levels, velocities, hazards, and the applicable provisions of the Council's Development Control Plan.

The purpose of this assessment is to ensure the proposed development appropriately considers local flood planning requirements and incorporates the necessary measures to address Council's flood-related guidelines.

1. Introduction

1.1 Background Information

Stockland Development (Stockland) submitted an EOI for an SSDA and concurrent rezoning proposal on 17th January 2025 through the Housing Delivery Authority Pathway (HDA). At its Briefing on 19th February 2025, the HDA recommended to the Minister that the applicant's project be declared SSD, for the reason that it sufficiently satisfied the objectives and criteria of the HDA. The project was declared as SSD in the State Significant Development Declaration Order 2025 (No 2) (26 February 2025).

A request for SEARs was lodged on the 6th of June 2025 with SEARS received on the 4th of July 2025.

1.2 Purpose of Report

This assessment has been prepared by BG&E with reference to the Flood Risk Management Guide LU01 and is submitted to the Department of Planning, Housing and Infrastructure (DPHI) in support of a State Significant Development Application (SSDA) (SSD-85848713) and concurrent rezoning proposal for a new mixed-use development at 601 Pacific Highway, St Leonards (the site)., Section 4.4 of this report details how these requirements have been addressed. Which outlines the necessary steps and considerations for evaluating flood risks, impacts, and mitigation strategies. The aim of this report is to:

- Understand flood risks to the existing site and identify potential flood risks to the future development;
- Identify key development constraints in regard to flooding;
- Identify and quantify potential flood impacts on adjacent land; and
- Establish any flood mitigation measures required to minimise flood impacts and flood risk to the development itself and the surrounding area.

1.3 Relevant SEARs

This Flood Impact and Risk Assessment has been prepared to address the following relevant Secretary's Environmental Assessment Requirements (SEARs) set out in the Table 1 below.

Table 1 Secretary's Environmental Assessment Requirements relevant to this Report

SEARS	Location in Report
Identify the flood planning area and level as set out in the relevant EPI and other supporting documents to determine; - o The flood extent and velocity up to the Probable Maximum Flood and risk on-site having regard to adopted flood studies and, floodplain risk management studies and plans - o The site access and egress routes - o the potential effects of climate change, - o any relevant provisions of the NSW Flood Risk Management Manual, and any other relevant guidelines Where the development is occurring on flood prone land a flood impact and risk assessment (FIRA) must be prepared having regard to the Flood Impact and Risk Assessment – Flood Risk Management Guide LU01. When determining the scope and category of the FIRA the requirements outlined in the FIRA guide must be considered. Detail any flood risk management measures that are to be incorporated as part of the development having regard to relevant guidelines (including any design solutions, flood modification measures, property modification measures, operational procedures or Flood Emergency Response Plan).	SECTION 4.5

1.4 Terminology

The frequency of a flood event is expressed in terms of its Annual Exceedance Probability (AEP); the probability of an event being equalled or exceeded within a year. Smaller magnitude events are described by Exceedances per Year (EY); the average number of times a year in which the event is likely to be equalled or exceeded. Previously flood probabilities have been described by the Average Recurrence Interval (ARI); that is the average time period between occurrences equalling or exceeding a given value. Some documents, such as Development Control Plans and Guidelines still refer to the ARI terminology.

For example, a 1% AEP event has a 1% chance (i.e. a 1 in 100 chance) of being equalled or exceeded in any one year and is equivalent to a 100-year Average Recurrence Interval (ARI) event. In the same way, a 5% AEP event is the equivalent of a 20-year ARI event.

1.5 Available Data

1.5.1 Existing Flood Model

The proposed development is located within the North Sydney Local Government Area (LGA). North Sydney Council has completed the North Sydney LGA - Wide Floodplain Risk Management Study and Plan (GRCHydro, 2022) which was undertaken adopting Australian Rainfall and Runoff (ARR) 2019 guidelines and considering events from the 20% AEP to the PMF event.

1.5.2 Design Inputs

The preparation of this assessment has utilised the following information:

- Flood model and result for North Sydney LGA 2022 – North Sydney Council
- North Sydney Development Control Plan (DCP) 2025 - North Sydney Council
- Floodplain Management Policy (Interim) 2022 - North Sydney Council
- North Sydney Local Environmental Plan 2013 – NSW Legislation
- North Sydney LGA - Wide Flood Risk Management Study and Plan 2022 - North Sydney Council
- Proposed Architectural plan 2026 – BatesSMART
- Planning Secretary's Environmental Assessment Requirements (SEARs) (SSD-85848713) 4/07/2025 - Department of Planning, Housing and Infrastructure
- Flood impact and risk assessment *Flood Risk Management Guide LU01 2023* - Department of Planning and Environment

2. Site Location and Context

2.1 Existing Site

The site is located on Cammeraygal country at 601 Pacific Highway, St Leonards within North Sydney (LGA). The site is legally described as Lot 71 in DP749690 and has a total area of 2,844m². The site is 4.5 km north of the Sydney CBD, 3 km from the North Sydney CBD, and within proximity to the centres of St Leonards, Chatswood, and Macquarie Park. The site is located 350 metres (walking distance) from St Leonards train station and approximately 400m (walking distance) from the Crows Nest Metro station.



Figure 1: Site Location

2.1.1 Catchment

The subject site is located at a local high point between Lane Cove LGA and North Sydney LGA. Flat Rock Creek is located to the north of the site, while Berry Creek lies to the south (refer to Figure 2).

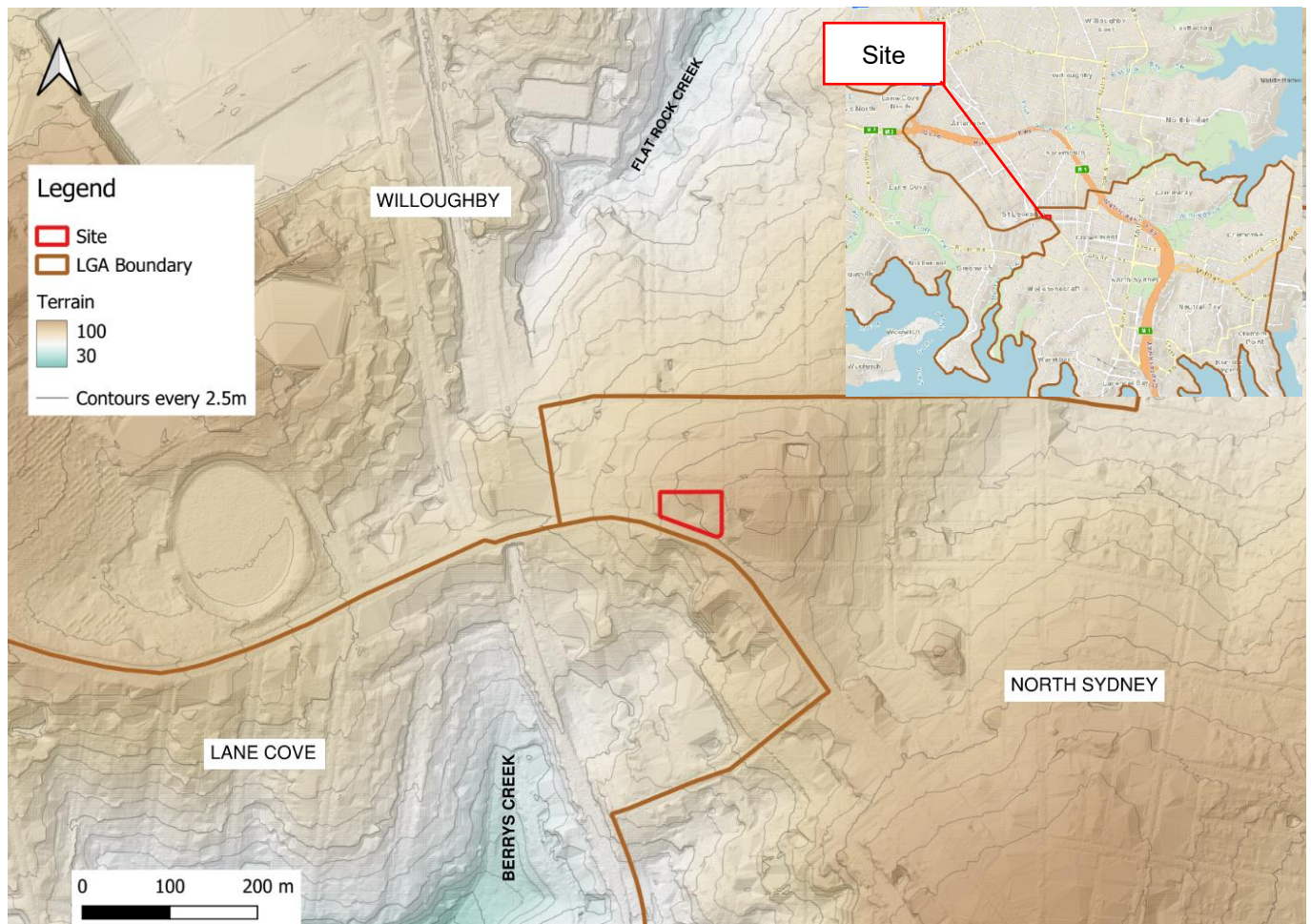


Figure 2: Site Elevation (mAHD)

3. Existing Flood Behaviour

3.1 Flood Behaviour

Based on Council's current flood maps the site is not directly flood affected in either the 1% or PMF events. In larger storm events (e.g. 1% AEP) (Figure 3) no overland flow is present and the development is at least 0.5m above the 1% AEP flood level. Under the PMF events, the site also remains unaffected, indicating that it is located outside the PMF flood extent (Figure 4).

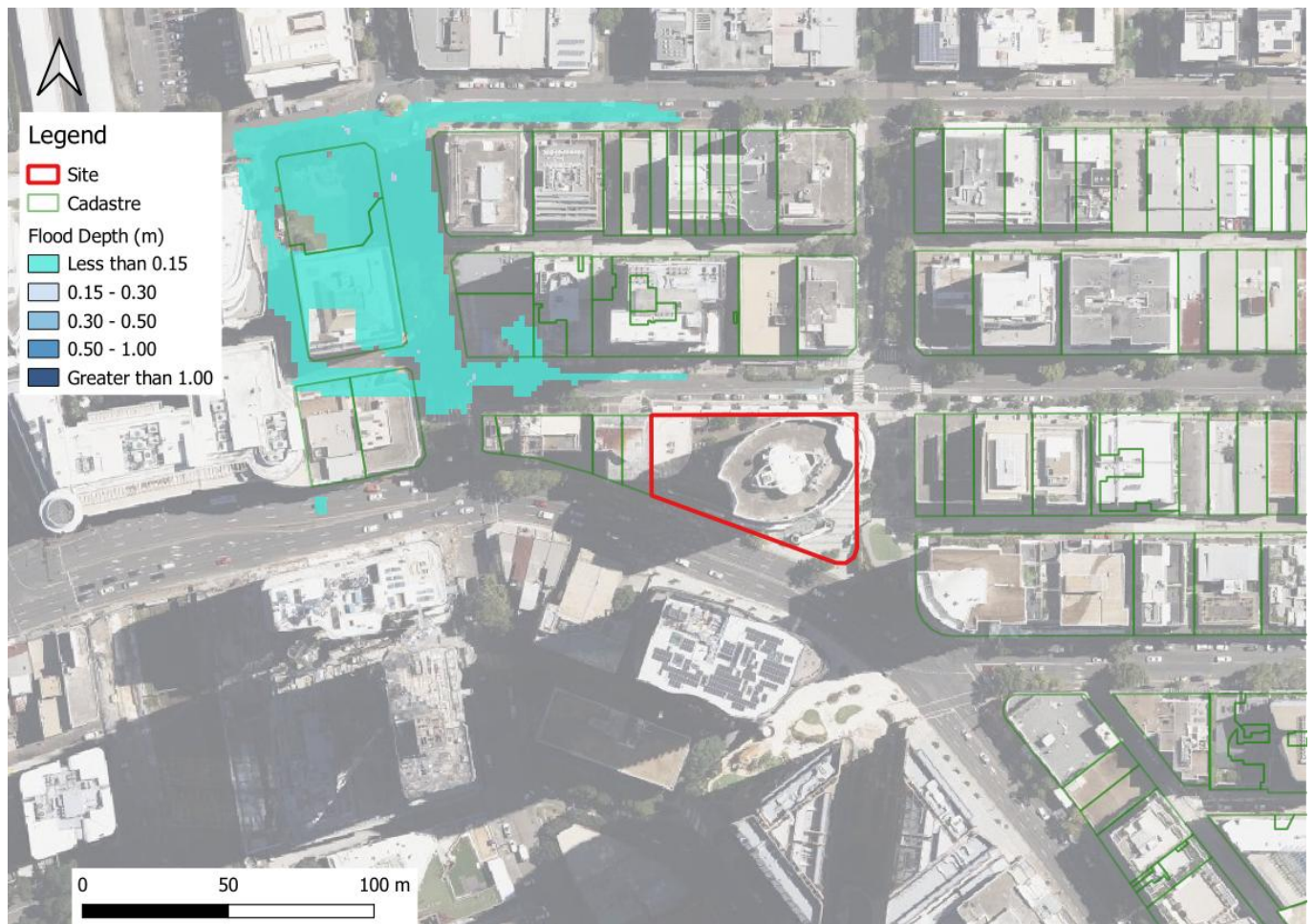


Figure 3: 1% AEP Flood Depth (m)

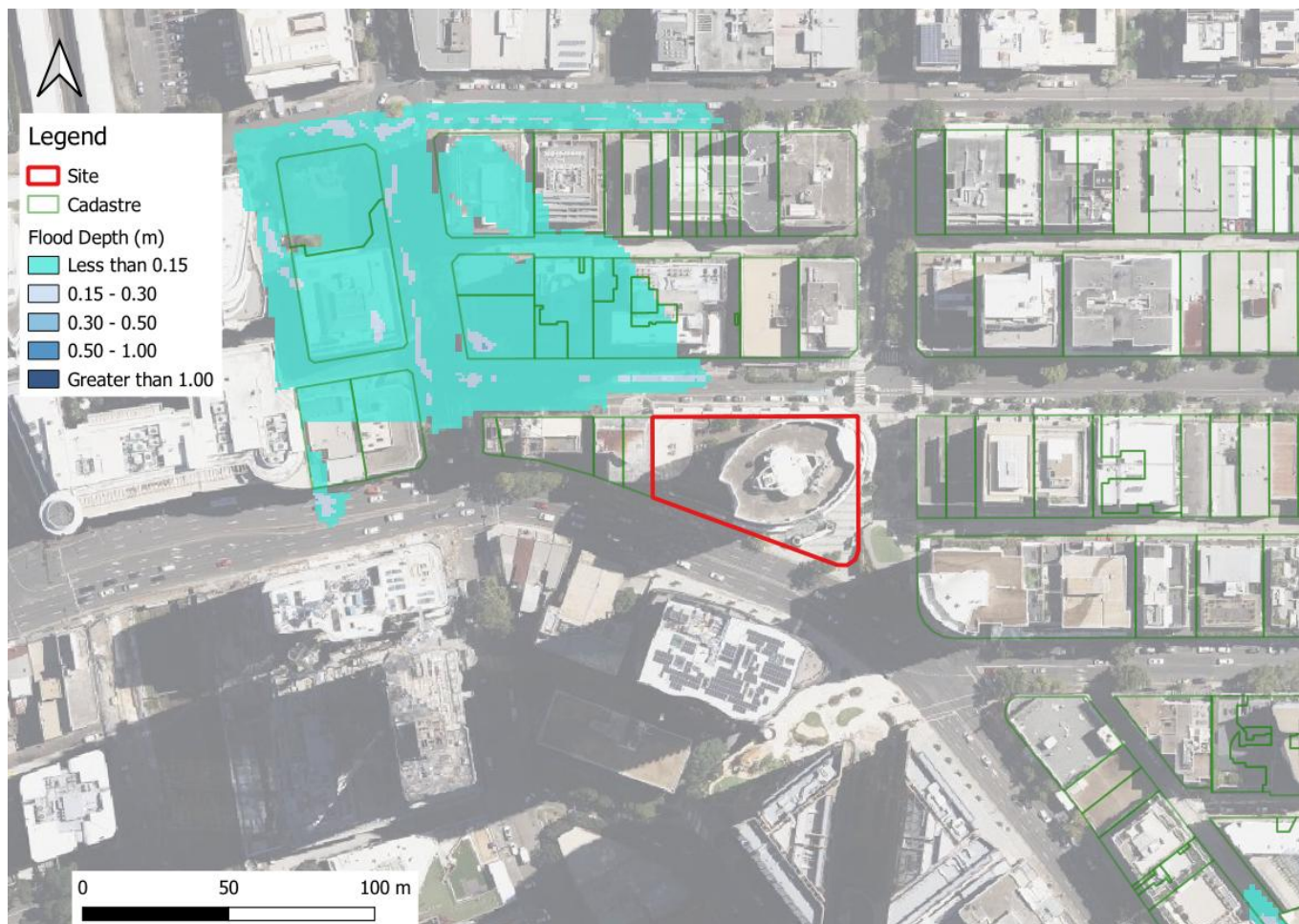


Figure 4: PMF Flood Depth (m)

3.2 Flood Hazard

In a 1% AEP flood event, land to the north-west of the site is subject to H1 category under the Australian Disaster Resilience Handbook 7 Managing the Floodplain (AIDR, 2017). H1 type flood hazard is generally considered safe for vehicles, pedestrians and buildings and can be classified as an area where the flood depth is shallower than 0.3 m and flow velocity does not exceed 2 m/s.

Land where the Site is located and surrounding streets are not subject to flood hazard. In a PMF, high flood hazard (H5) is observed along Atchinson Street, to the north of the site, but is contained with the kerb and gutter corridor. Overall, the site is not subject to any flood hazard for both 1%AEP and PMF flood events.

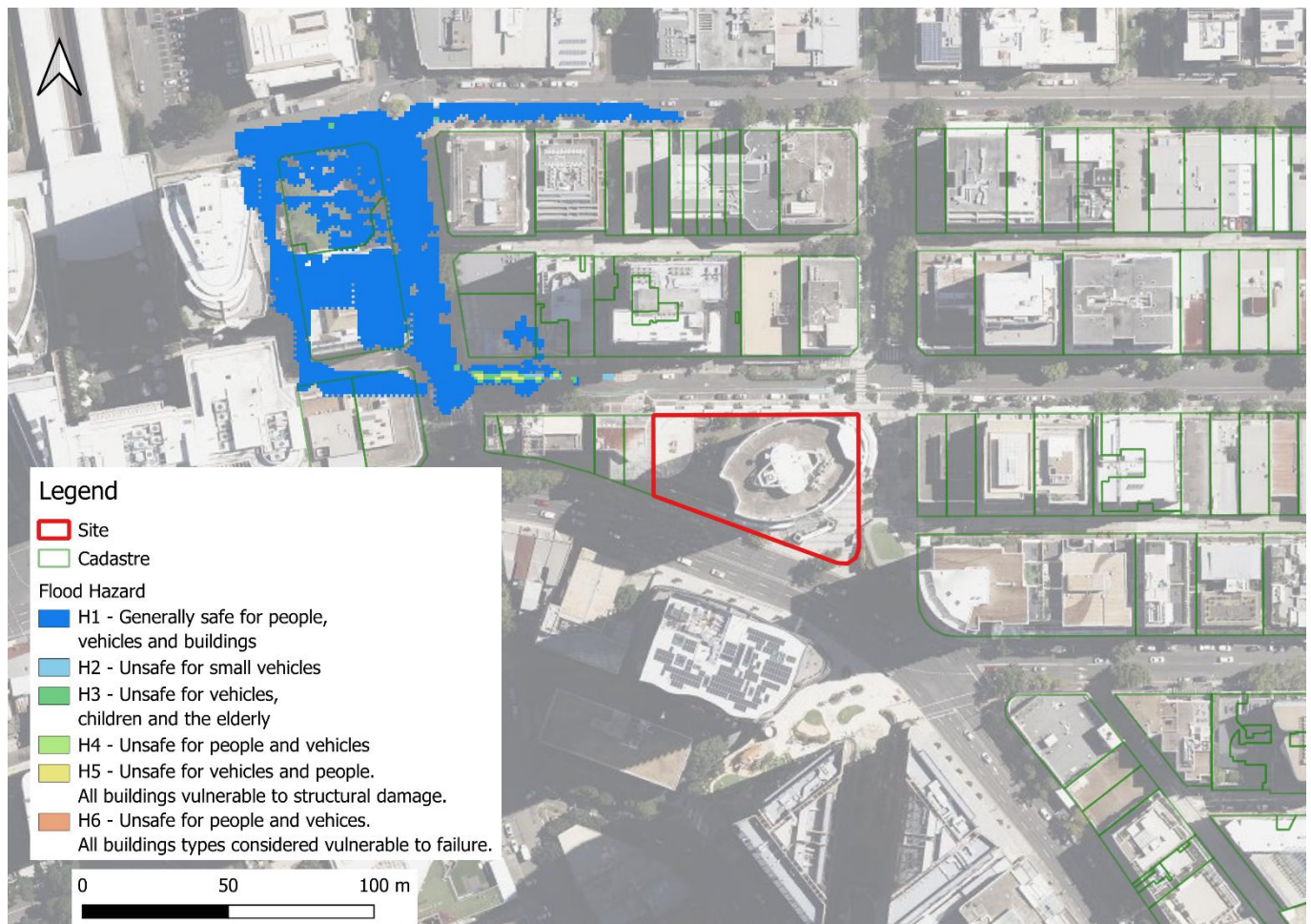


Figure 5: 1% AEP Hazard Classification

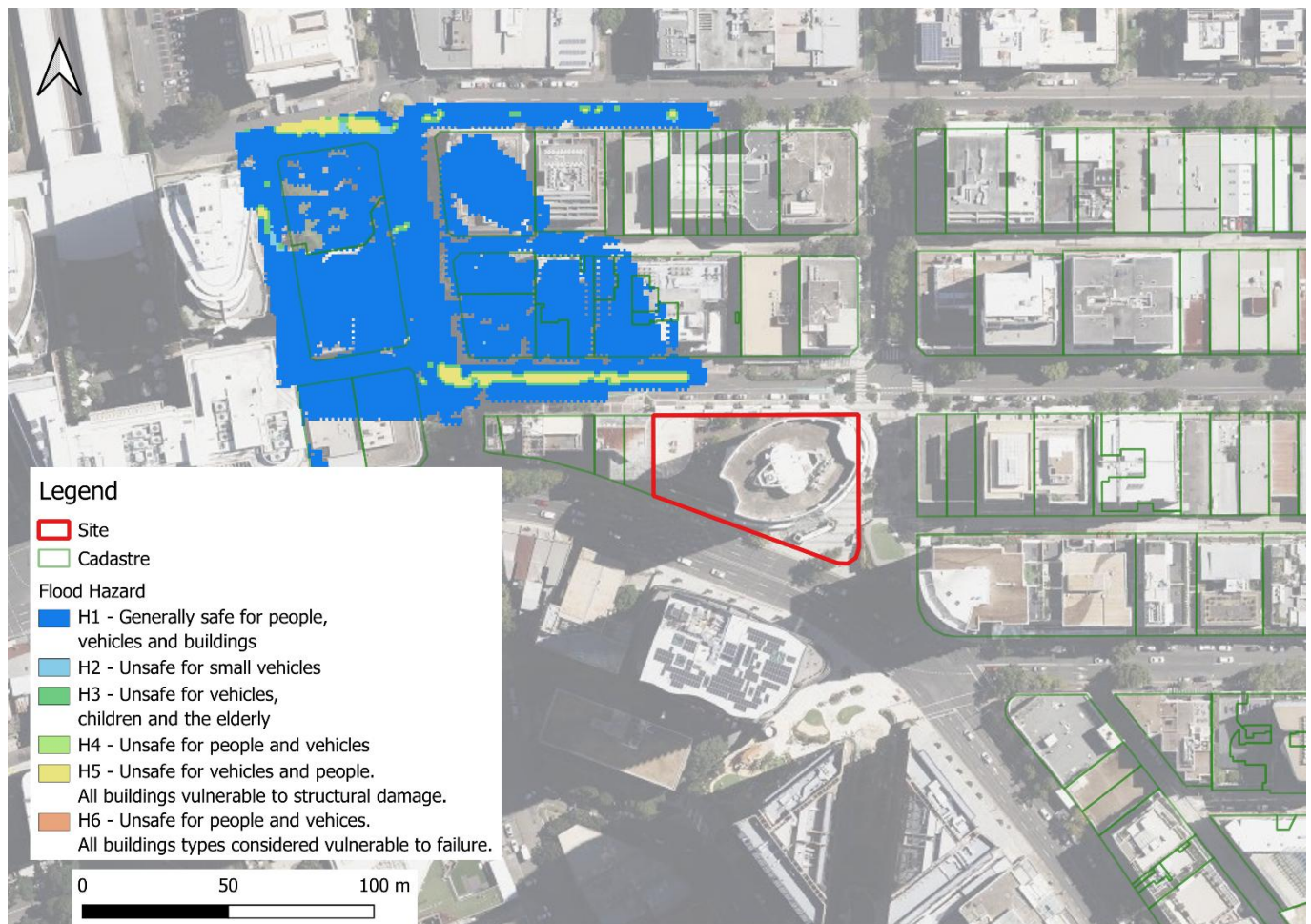


Figure 6: PMF Hazard Classification

4. Flood Impact Assessment

4.1 Proposed Development

The proposal seeks consent for the following:

- An amendment to the North Sydney Local Environmental Plan 2013 (NLEP 2013) to rezone the site from E2 Commercial Centre to MU1 Mixed Use and to amend the minimum non-residential floor space ratio development standard under Clause 4.4A from 20:1 to 1:1.
- Demolition of the existing 14 storey commercial office building that is currently on the site.
- Site excavation, remediation and other preparatory works.
- Construction and operation of a new 52 storey (RL264.50) mixed use shop top housing development, with a FSR of 20:1 (maximum GFA of 56,880m²), comprising:
 - 538 dwellings including 508 Build-to-Sell apartments and 30 Affordable Housing apartments across a mix of apartment typologies.
 - A contribution of 5% of the residential GFA toward Affordable Housing.
 - Retail and commercial land uses at the ground and podium levels.
 - Internal and external residential amenities provided throughout the building.
 - Six levels of basement carparking, comprising a total of 300 car spaces, bicycle parking, loading bays, waste areas, plant, and back of house.
 - Vehicular access to the basement via Atchison Street.
 - Landscaping and Public Domain works.
 - Reticulation of site services and infrastructure (electricity, telecommunication, water, and sewer connections).

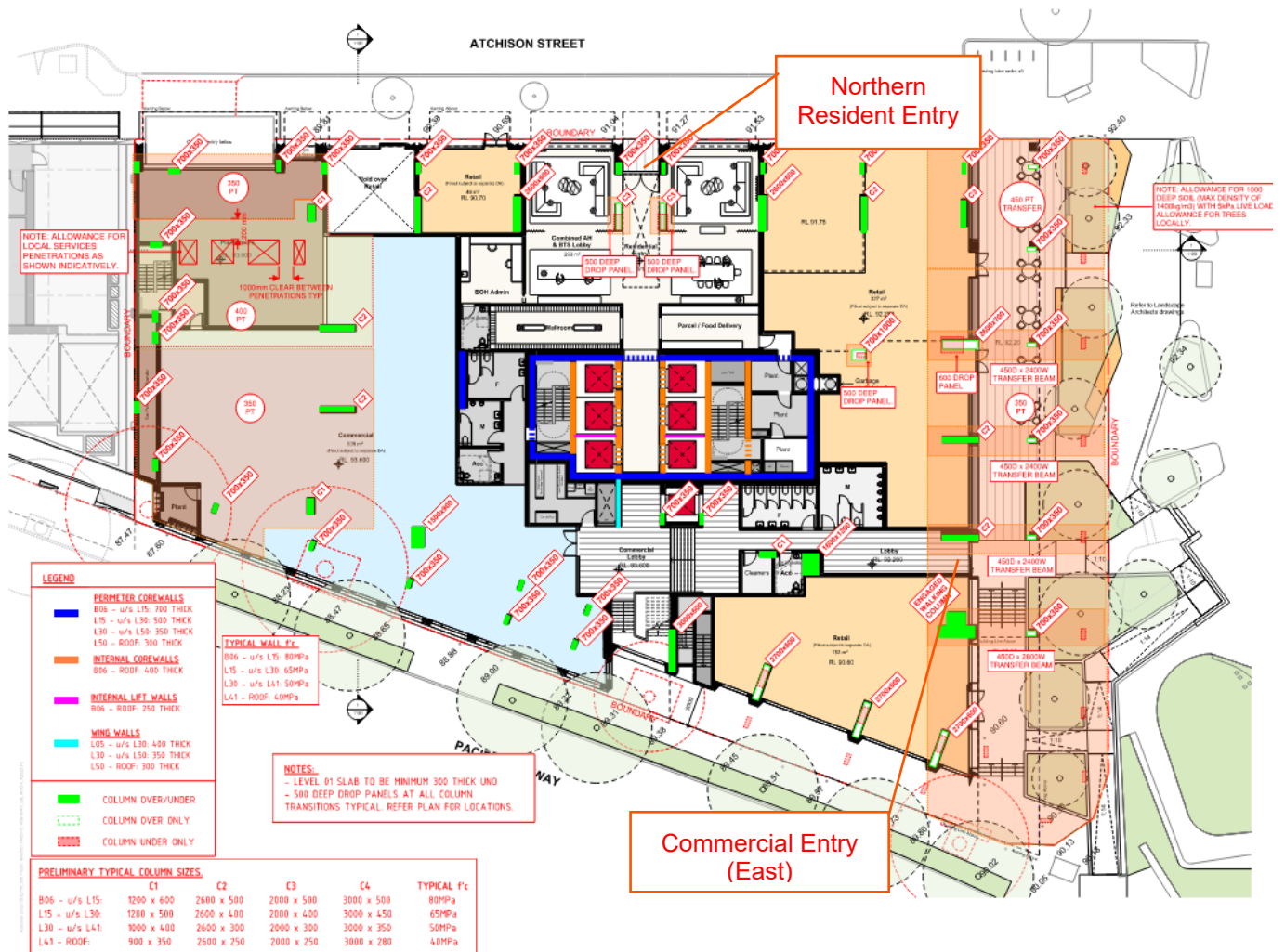


Figure 7: Proposed Development Ground Floor Plan

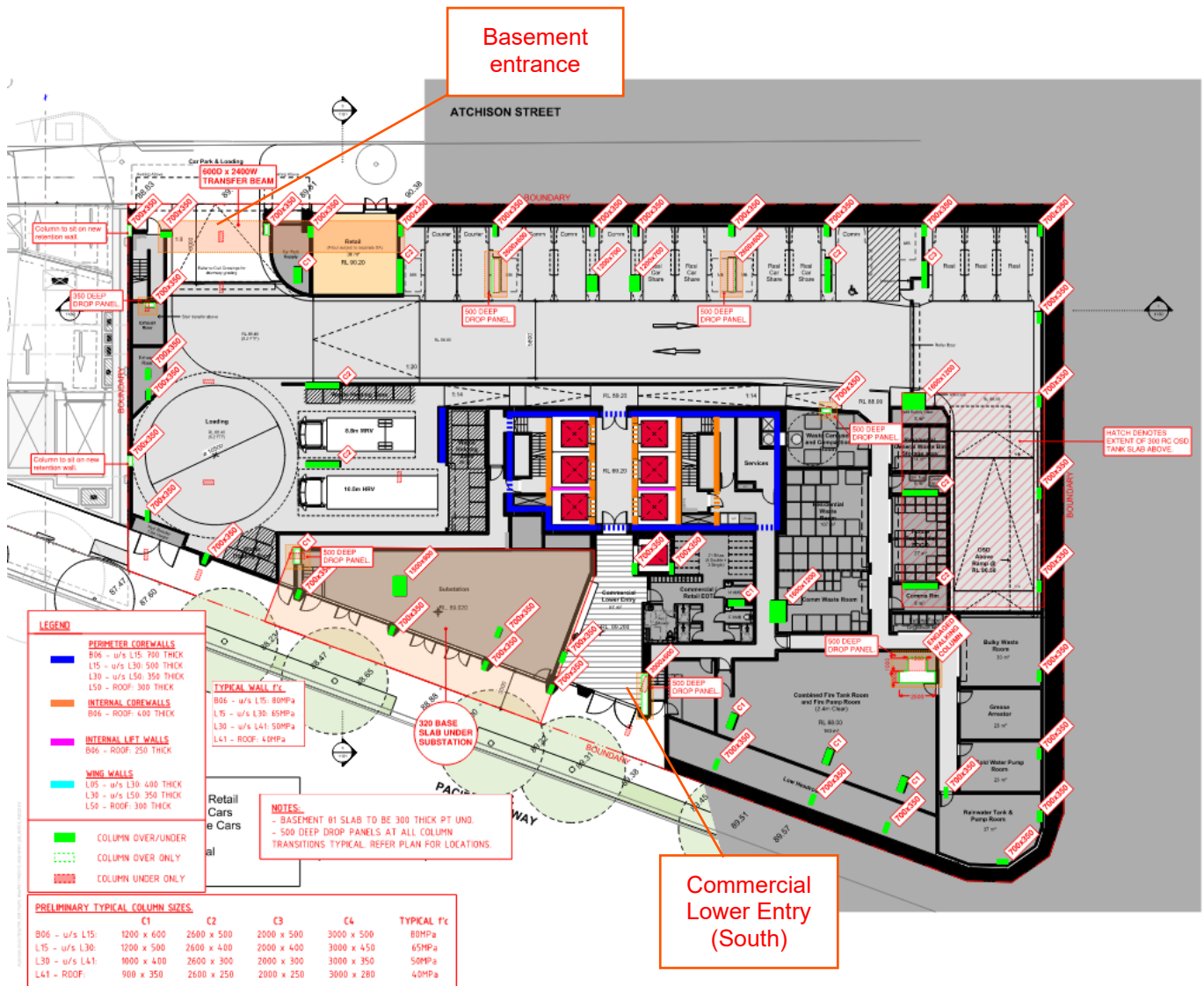


Figure 8: Proposed Development Basement Floor B1 Plan

4.1.1 Consideration of overland flows in design

Under current conditions, the limited size of the external catchment (approximately 0.16 ha) suggests that any overland flow is unlikely to affect the site (refer to North Sydney LGA - Wide Flood Risk Management Study and Plan 2022). Following intense rainfall events, overland flow will drain away from the site through Mitchell Street and Atchinson Street towards the kerb and gutter system. Internal site drainage will be addressed in the stormwater report prepared by BG&E. This report provides further analysis and recommendations for managing stormwater runoff for the site.

4.1.2 Flood Impact on Neighbouring Development

The proposed development footprint is not expected to alter existing flood behaviour within or adjacent to the site. As no floodwaters drain towards the existing building during a 1% AEP or larger events, changes to the site layout or ground levels will not influence flood levels, flow velocities, or hazard conditions on adjoining properties.

4.2 Flood Risk Assessment and Mitigation Measures

4.2.1 Development Finished Floor Levels (FFLs)

The North Sydney LGA Flood model was requested from Council for the site and on 05/09/2025. Council provided the full model which confirmed that the property is not subject to flood affectation in relation to the North Sydney Development Control Plan 2025. Post-development flood levels are presented at key locations within the proposed development and compared against finished floor levels (Table 2).

Table 2 – Predicted flood level and finished floor levels at key location along the proposed development

Location	Flood planning level requirement	1% AEP level (mAHD)	PMF level (mAHD)	FFL (mAHD)	Compliant
Basement entrance	Minimum of 0.3m above the surrounding ground level (existing)	Not flood affected	Not flood affected	89.19	Y No modification is proposed to the driveway entrance, and no flow path is present.
North Resident Entry	Minimum of 1% AEP flood level + 0.3m	Not flood affected	Not flood affected	91.30	Y
Commercial Entry (East)	A minimum of the 1% AEP flood.	Not flood affected	Not flood affected	92.2	Y
Commercial Lower Entry (South))				89.2	Y

As the site is not subject to flooding the North Sydney Development Control Plan 2025 controls for flooding do not apply, and no specific flood risk management measures are required to address the SEARs. Stormwater management is considered in the civil drainage report.

4.2.2 Egress/Evacuation from the Site in a Flood Event

The site is located outside the mapped 1% AEP and PMF flood extents and is therefore not subject to inundation under existing or proposed development conditions. Safe egress is available via the surrounding road network (via Mitchell Street and then Chandos Street). Pedestrian egress is available via Mitchell Street and Pacific Highway as well.

As no flooding is expected to affect the site, residents would be able to evacuate safely if required or alternatively remain sheltered within their dwellings without risk of flooding. Therefore, no specific flood evacuation or emergency management measures are considered necessary.

4.3 Climate Change

The site is situated at an approximate elevation of 90 m AHD, well above any potential influence from projected sea level rise.

According to Section 4.8.1 of the Flood Risk Management Study and Plan (FRMSP), climate change is expected to increase the frequency and severity of flooding across the LGA due to projected increases in rainfall intensity. The analysis presented in the FRMSP indicates that, under a long-term planning horizon to 2090 and a worst-case greenhouse gas scenario, flood depths are generally expected to increase by approximately 0.1 m. Given the small magnitude of this increase and the site's elevated position outside the PMF extent, the projected effects of climate change are not anticipated to alter the site's flood risk classification or require specific mitigation measures.

4.4 Planning Considerations

This report has been prepared in consideration of the NSW Flood Risk Management Manual (2023), NSW Flood Policy, North Sydney Development Control Plan (DCP) 2025 and North Sydney Local Environmental Plan (2013) as well as the requirements of the SEARS.

4.5 SEARs

Compliance with the SEARs for Application No. SSD-85848713 issued 4th July 2025, Item 19 regarding flooding risk is summarised in Table 3.

Table 3 – Compliance with the SEARs

Requirement	Comment
Identify the flood planning area and level as set out in the relevant EPI and other supporting documents to determine; - o The flood extent and velocity up to the Probable Maximum Flood and risk on-site having regard to adopted flood studies and, floodplain risk management studies and plans - o The site access and egress routes - o the potential effects of climate change, - o any relevant provisions of the NSW Flood Risk Management Manual, and any other relevant guidelines	Refer to Section 4.2 and 4.3. The site is not subject to overland flows.
Where the development is occurring on flood prone land a flood impact and risk assessment (FIRA) must be prepared having regard to the Flood Impact and Risk Assessment – Flood Risk Management Guide LU01. When determining the scope and category of the FIRA the requirements outlined in the FIRA guide must be considered.	The development does not occur in flood prone land. A FIRA has been prepared demonstrating this for the site (this document).
Detail any flood risk management measures that are to be incorporated as part of the development having regard to relevant guidelines (including any design solutions, flood modification measures, property modification measures, operational procedures or Flood Emergency Response Plan).	Refer to Section 3 and Section 4. The site is outside of the flood extent and flood risk management measures are not required.

4.6 Floodplain Management Policy (Interim) 2022

As outlined in North Sydney Council's Floodplain Management Policy (Interim) 2022, all development within the Local Government Area (LGA) must comply with the flood-related development requirements specified in the policy. Section 4.4 of the document sets out the applicable Flood Planning Level (FPL) criteria for proposed developments and is summarised in Table 4. The FPL incorporates a fixed freeboard allowance that provides a safety margin for uncertainties in flood modelling and site conditions such as wave action and turbulence. This allowance does not include any provision for climate change impacts.

Table 4 – Compliance with Flood Planning Level

Development	Flood Planning Level	Compliance
Industrial or Commercial - Retail Floor Levels	Merits approach presented by the applicant with a minimum of the 1% AEP flood. The proposal must demonstrate a reasonable balance between flood protection and urban design outcomes for street level activation.	Y
Residential - Habitable rooms outside FPA	Minimum of 0.3m above surrounding ground level (existing)	Y

Development	Flood Planning Level	Compliance
Below ground garage/car park - Below-ground car park outside FPA	Minimum of 0.3m above the surrounding ground level (existing)	Y

4.7 North Sydney Local Environment Plan 2013

Clause 5.21 of the North Sydney Local Environmental Plan (LEP) 2013 establishes the statutory framework for managing flood risk within the LGA. The clause aims to support that new development is compatible with the flood function and behaviour of land, minimises risk to life and property.

For proposed development, the following has been considered to confirm that the site is suitable for the intended land use, will not result in detrimental off-site impacts. A summary of compliance is provided in Table 5 below.

Table 5 – Compliance with Local Environmental Plan

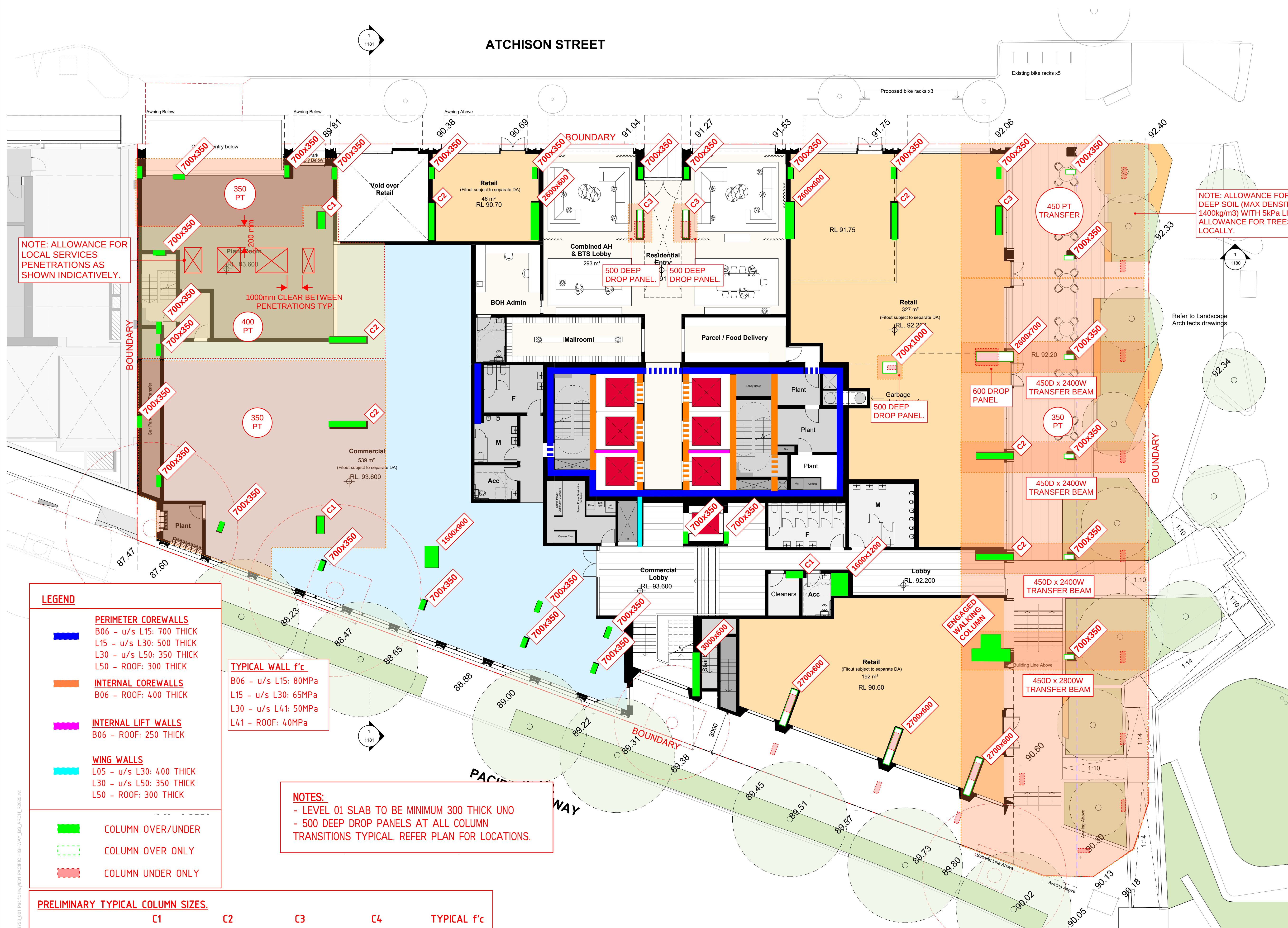
Objectives	Compliance
(1) The objectives of this clause are as follows— (a) to minimise the flood risk to life and property associated with the use of land, (b) to allow development on land that is compatible with the flood function and behaviour on the land, taking into account projected changes as a result of climate change, (c) to avoid adverse or cumulative impacts on flood behaviour and the environment, (d) to enable the safe occupation and efficient evacuation of people in the event of a flood.	Y Refer to Section 4 The site is not subject to overland flows or mainstream flooding.
(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 (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 (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 (d) incorporates appropriate measures to manage risk to life in the event of a flood, and (e) will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses	Y Refer to Section 4 The site is not subject to overland flows or mainstream flooding
(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, (b) the intended design and scale of buildings resulting from the development, (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, (d) the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.	N/A Refer to Section 4

5. Conclusions

A Flood Impact and Risk Assessment has been prepared for 601 Pacific Highway, North Sydney. A desktop review of the available flood information (refer to North Sydney Council's Floodplain Risk Management Study and Plan (FRMS&P)) indicates the proposed development site is not considered as flood prone land as it is outside the Probably Maximum Flood extent. In summary:

- The site's relative elevated location does not pose a flooding concern, and the potential effects of climate change are likely to be negligible.
- The proposed development is located outside the PMF extent and therefore does not result in any change to design flood levels, flood risk, or existing flood hazard conditions on adjacent roads or surrounding properties for the range of flood events investigated, including the 1% AEP and PMF events.
- The proposed development's finished floor levels comply with North Sydney Council's FPL requirements, and the basement entry is situated above the PMF level.
- The site is located outside the PMF flood extent and is therefore not expected to be affected by future increases in rainfall intensity or sea level rise associated with climate change.
- In the event of a major flood, safe evacuation from the site is possible via the surrounding road network, and residents would also be safe to shelter in place within their dwellings due to the elevated site conditions.
- The proposed development is compliant with Flood Risk requirements outlined in the SEARs for this SSDA.
- The proposal complies with North Sydney City Council's DCP and SEARs and supports effective flood risk management.
- This desktop assessment was also undertaken, confirming no anticipated interactions or combined effects with surrounding existing or future developments.

Appendix A - Groundfloor (Level 01) Layout Plan



Appendix B - Basement Floor B1 Layout Plan

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