URBIS

URBAN CONTEXT REPORT

9-11 NELSON STREET , CHATSWOOD

POST LODGEMENT REPORT

MARCH 2021

PREPARED FOR STRATA PLAN #65120

CONTENTS

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EXECUTIVE SUMMARY

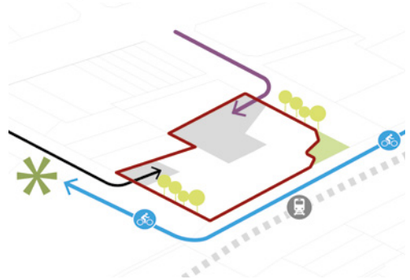
The purpose of this report is to investigate and present the strategic and site specific merit for the redevelopment of 9-11 Nelson St in alignment with the recommendations provided in Willoughby Council's recently endorsed *Chatswood CBD Planning and Urban Design Strategy 2036*.

The CBD Strategy presents Council's latest vision and strategic intent for the area and supports considerable increase in density and building height within the subject site. As this document provides the most up-to-date position for redevelopment in the CBD it was used to guide the urban design and built form outcomes presented in this report.

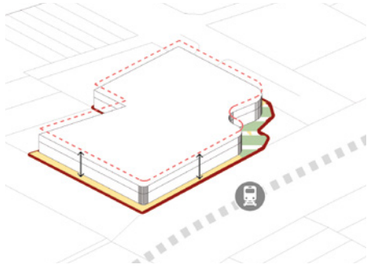
A review of existing strategic planning policy as well as an assessment of the urban context of the site were undertaken to identify the future context and character of Chatswood CBD. This understanding together with an appreciation of immediate site opportunities and constraints was synthesised into the following suite of key directions that informs and shapes the proposed built form outcome.

KEY DIRECTIONS

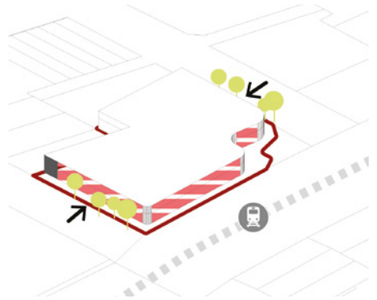
1. Enhance streetscape character by retaining street trees, splitting traffic strategy across two frontages and providing loading and servicing to basement levels .



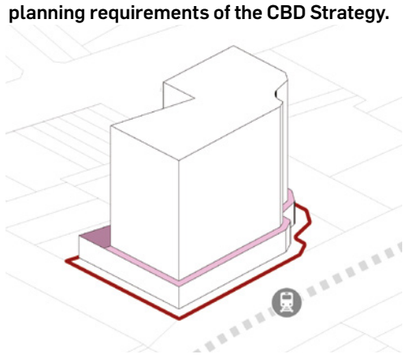
2. Deliver a non-residential podium that considers human scale and meets the planning requirements of the CBD Strategy.



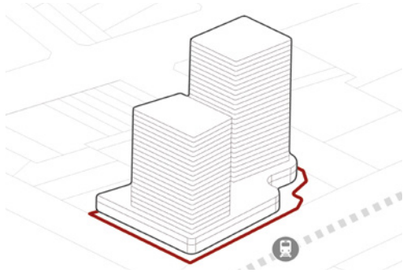
3. Provide active frontages with legible entry points to encourage passive surveillance and improved way-finding.



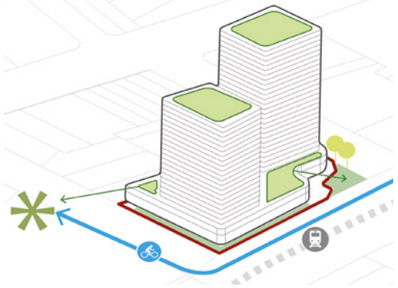
4. Deliver a tower form that meets the planning requirements of the CBD Strategy.



5. Consider the impacts of the tower to surrounding context and reduce its bulk and scale while meeting ADG requirements.



6. Provide communal open spaces to roof top levels and enhance the landscape character through new public domain areas.



REFERENCE SCHEME

Based on the key directions and recommendations provided in the CBD Strategy, the following Reference Scheme was identified as a potential built form outcome with site-specific merit. This scheme is consistent with all 35 key elements identified in the CBD Strategy. The reference scheme provides benefit through the following means:

- Consistency with the broader strategic vision for Chatswood CBD as it meets the requirements provided in the CBD Strategy;
- Meets key requirements provided in the ADG to ensure high quality apartment living with sufficient amenity can be provided, i.e. provision for communal open space and sufficient solar access to living rooms and private open spaces;
- Enhances the landscape character by retaining streets trees, introducing green rooftops, and enhancing both the embellishment and quantum of public domain along the eastern frontage to the shared path and existing pocket park;
- Promotes a vibrant, safe and inclusive development through a mix of non-residential uses within the podium and active frontages to encourage passive surveillance;
- Improves pedestrian experience and way-finding by minimising driveway crossovers, integrating outdoor landscaped spaces fronting the public domain, and articulating building facades with legible entry points.
- Overshadowing impacts to neighbouring sites is considered and minimised so that future development and existing housing can achieve minimum solar access;
- Visual context is considered to reduce the overall bulk and scale of the development and to positively contribute to a visually dynamic future skyline.

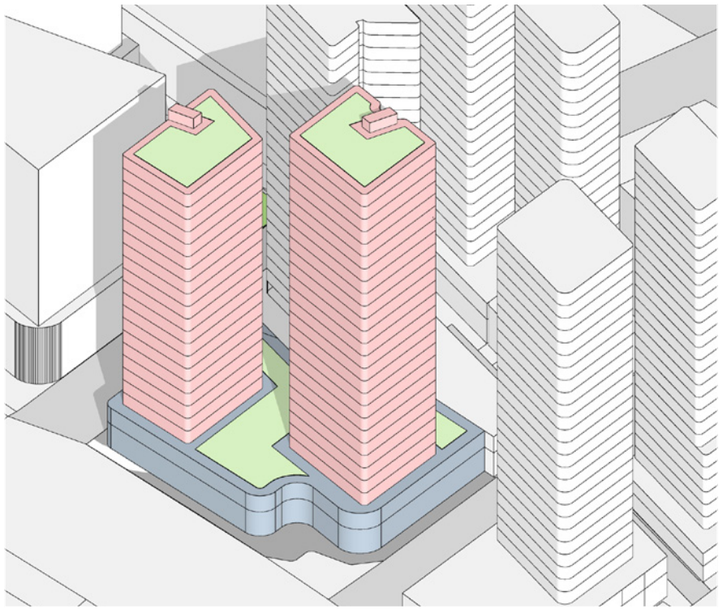


Figure 1 3D View

Maximum Building Height	FSR	Indicative Yield
90M 27 STOREYS or RL 189.5	6.0	258 APARTMENTS

1.0 INTRODUCTION

PURPOSE OF THIS REPORT

Urbis was engaged by the Strata Plan owners of 9-11 Nelson Street, Chatswood to prepare this Urban Context Report in support of the Planning Proposal for the site.

The purpose of this report is to investigate and present the strategic and site specific merit for the redevelopment of the existing asset in alignment with the recommendations provided in Willoughby Council's recently endorsed *Chatswood CBD Planning and Urban Design Strategy 2036* (Chatswood CBD Strategy).

The following Urban Context Report includes:

- A summary of strategic planning policy and intent;
- An understanding of the urban context including consideration of the existing and future local character;
- An understanding of the site specific opportunities and constraints for redevelopment;
- Identification and testing of redevelopment options to identify urban design outcomes and a suitable built form response for the site guided by all of the above analysis; and
- Confirmation redevelopment of the site can be achieved generally in alignment with the proposed new planning controls identified within the CBD Strategy.

SITE LOCATION AND DESCRIPTION

The subject site is located at 9-11 Nelson Street, Chatswood, within the Willoughby Local Government Area. The site is legally described as SP65120 and has a total area of 4,219 sqm.

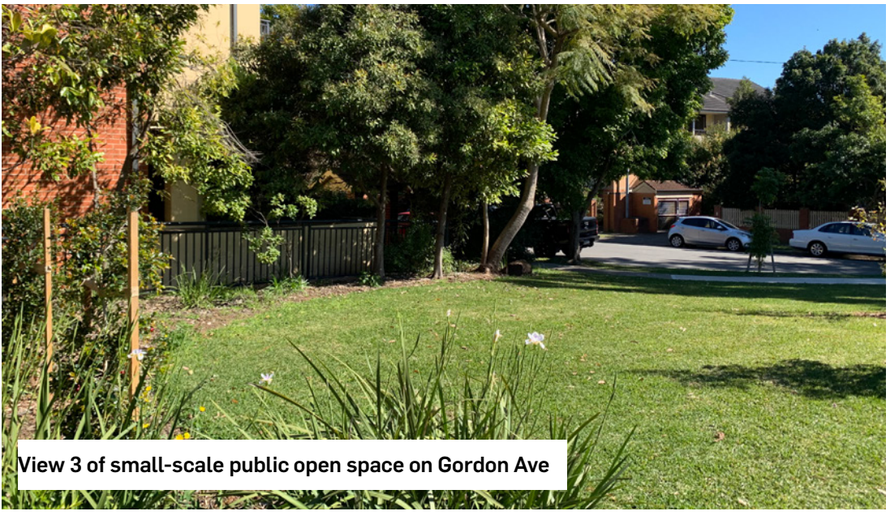
The site currently accommodates a three storey residential complex, with 45 units under a strata plan #65120. Key site characteristics are as follows:

- Located in an urban block between the Pacific Highway and the north-south rail line;
- Dual street frontage to the north (Gordon Ave) and south (Nelson St);
- Eastern boundary adjoins public pedestrian and cycle pathway adjacent to the existing rail line (currently being converted to Metro infrastructure);
- Metro dive site located to the immediate south on Nelson St;
- Residential uses to the north and west with some non-residential uses along Pacific Highway; and
- Existing small-scale open space to the north east corner of the site adjoining Gordon Ave.

The existing built form is consistent with other residential developments of a similar scale in the area, with masonry and cement rendered external elevations. The site contains communal gardens and open space which connect to the shared pathway along the eastern boundary of the site. Dense vegetation is located primarily along the western and southern boundaries, with additional mature street trees on both road frontages.

View 1 along Nelson Street looking to Metro dive site

View 2 of existing shared path adjoining eastern site boundary



View 3 of small-scale public open space on Gordon Ave

View 4 along Gordon Ave

View 5 of Gordon Ave streetscape

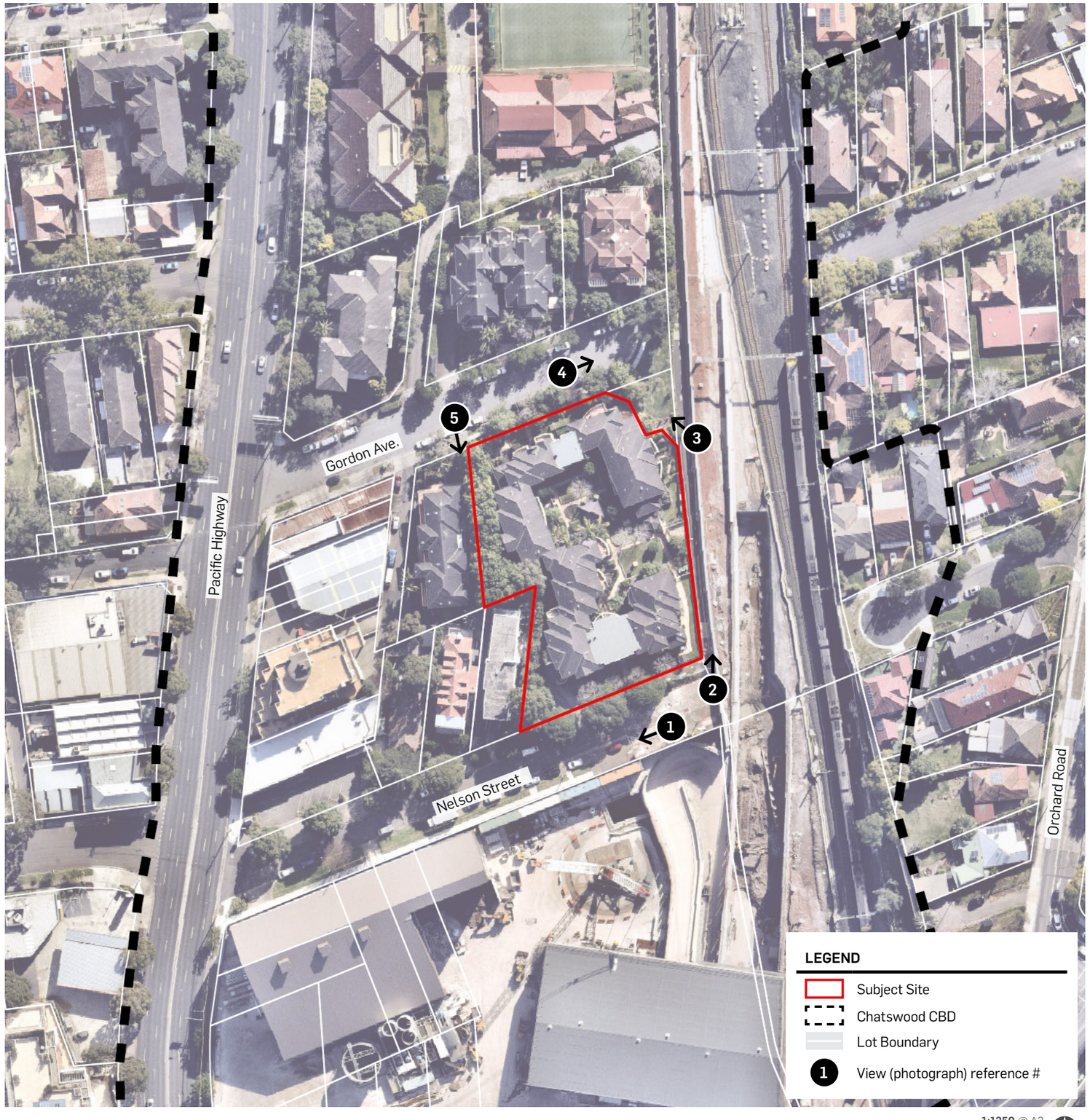


Figure 2 Aerial photograph

PART A
CONTEXT
ANALYSIS

2.0 PLANNING CONTEXT

This section of the document provides a review of existing strategic and local planning policy to understand the future context of Chatswood CBD and key drivers influencing its growth and transformation. Below is a summary of the documents reviewed and key implications for the subject site.

- **Chatswood CBD Strategy:** This document presents Council's latest vision and strategic intent for the area and supports considerable increase in density and building height within the subject site. This document provides the most up-to-date position for redevelopment in the CBD and thus guides the proposed urban design and built form outcomes presented in this report.
- **Willoughby Local Environment Plan 2012:** The WLEP 2012 will be amended in coming years to capture the recommendations of the Chatswood CBD Strategy.
- **-Apartment Design Guide:** This document identifies minimum performance standards to promote comfortable apartment living in NSW. The testing of solar access requirements and impacts to neighbouring sites is required to ensure compliance is achievable.

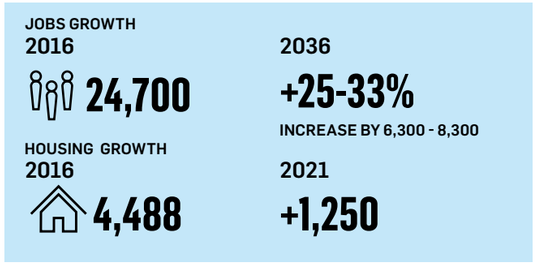
2.1 CHATSWOOD CBD PLANNING AND URBAN DESIGN STRATEGY TO 2036

In September 2020, Council finalised and endorsed the *Chatswood CBD Planning and Urban Design Strategy 2036* (Chatswood CBD Strategy). The Strategy establishes a strong planning and design framework to accommodate and guide future growth and development of a distinctive, resilient and vibrant CBD over the next 20 years. It is anticipated the Strategy will inform changes to Willoughby LEP and DCP.

A key outcome of the Strategy is the expansion of the CBD boundary and the introduction of taller and denser mixed use developments within additional areas of the CBD. This outcome is a response to the identification that Chatswood's office market is 'at risk' and has potential to loose employment to other centres, which would subsequently detract from it's economic role as a strategic centre.

The Strategy proposes changes to planning controls in order to enable the market to meet future demand for jobs growth, and identifies a CBD fringe to accommodate high density residential development. The diagram below highlights the projected jobs and housing growth for the LGA, which is set to increase by about one third over the next twenty years.

Figure 3 Summary of projected growth for Chatswood CBD



The Strategy's vision for Chatswood CBD is underpinned by:

- Seven planning and design principles, summarised as:
  1. Promoting office growth in the core
  2. Residential growth on the periphery of the CBD
  3. Diverse mix of uses
  4. Great public places
  5. Sustainable and active transport
  6. Urban design quality
  7. Greening the centre
- Thirty-five recommendations of future LEP and DCP controls captured in Table 2.

The Chatswood CBD Strategy proposes significant change for the subject site summarised in the table below and the maps that follow on subsequent pages. These recommendations have been used to test built form outcomes presented in Part B.

Table 1 Assessment of the subject site

KEY RECOMMENDATIONS	SUBJECT SITE
■ Extended CBD Boundary	■ Within new CBD boundary
■ Recommended Land Use	■ B4 Mixed Use
■ Recommended Maximum FSR	■ 6:1
■ Recommended Building Height	■ 90 metres
■ Public Domain Projects	■ In proximity to: – New through-site link to the west; – Potential new open space to the south; – Adjoining shared link to the east is maintained.
■ Recommended Street Frontage Height and Setbacks	■ North, south and east boundaries to adopt: – Mixed use frontage with commercial ground floor; – 6-14 metre street wall; – Minimum 3 metre setback above street wall.

The table below provides a detailed breakdown of 'Key Elements of Future LEP and DCP Planning Controls' applied to the built form testing and outcomes for the subject site presented in Part B.

Table 2 Key Elements of Future LEP and DCP Planning Controls applied to subject site

KEY ELEMENT #	KEY ELEMENT DESCRIPTION SUMMARY
1	Map: Chatswood CBD boundary (refer to Figure 4)
2	Map: Recommended land use (refer to Figure 5)
3	The existing DCP limits on office and retail use in parts of the Commercial Core to be removed
4	Serviced apartments to be removed as a permissible use from the B3 Commercial Core zone
5	Planning Agreements will be negotiated to fund public domain improvements.
6	A new Planning Agreements Policy will apply and be linked to a contributions scheme that will provide the public and social infrastructure in the Chatswood CBD
7	All redevelopments in the Chatswood CBD should contribute to public art in accordance with Council's Public Art Policy
8	Design excellence is to be required for all developments based on the following process - competitive designs for developments over 35m high.
9	Achievement of design excellence will include achievement of higher building sustainability standards
10	The Architects for design excellence schemes should be maintained through the development application process and can only be substituted with written agreement of Council
11	Map: Existing RSR under WLEP 2012
12	Minimum site area of 1200sqm for mixed use development in the B4 Mixed Use zone to achieve maximum FSR as shown in Map with urban design outcomes listed.
13	Map: Recommended FSR (refer to Figure 6 and 7)
14	Affordable housing is to be provided within the maximum floor space ratio, and throughout a development rather than in a cluster.
15	Where the maximum floor space ratio of 6:1 is achieved, the minimum commercial floor space ratio sought in development in a Mixed Use zone is 1:1.
16	700sqm GFA for residential towers above Podium within Mixed Use zones.
17	In pursuit of the goal of slender tower forms, the width of each side of any tower should be minimised to satisfactorily address this objective
18	If there is more than one residential tower on a site, sufficient separation is to be provided in accordance with setbacks required in this Strategy, SEPP 65 and the Apartment Design Guidelines,
19	Map: Recommended sun access protection for public spaces
20	Map: Recommended building height (refer to Figure 8)
21	All structures located at roof top level within the height maximums
22	Map: Recommended links and new open space (refer to Figure 9)
23	Any communal open space, with particular regard to roof top level on towers, should be designed to address issues of quality, safety and usability.
24	Public realm or areas accessible by public on private land - is to be designed to respond to context and nearby public domain and should be visible from the street and easily accessible.
25	All roofs up to 30 metres from ground are to be green roofs.
26	A minimum of 20% of the site is to be provided as soft landscaping, which may be located on Ground, Podium and roof top levels or green walls of buildings.
27	Map: Recommended setbacks and street frontages (refer to Figure 10)
28	All towers above podiums in B4 Mixed Use zones are to be setback from all boundaries a minimum of 1:20 ratio of the setback to building height.
29	Building separation to neighbouring buildings is to be in accordance with the Apartment Design Guide for residential uses.
30	At ground level, to achieve the vibrant CBD Council desires, buildings are to maximise active frontages.
31	Site Isolation will be discouraged and where unavoidable joined basements and zero-setback podiums should be provided to encourage future efficient sharing of infrastructure.
32	Controls will be applied to ensure the traditional lot pattern along Victoria Ave east is reflected into the future.
33	Floor space at Ground level is to be maximised, with supporting functions such as car parking, loading, garbage rooms, plant and other services located in Basement levels.
34	Substations are to be provided within buildings, not within the streets, open spaces or setbacks and not facing key active street frontages
35	The CBD Strategy employs a Travel Demand Management approach seeking to modify travel decisions to achieve more desirable transport, social, economic and environmental objectives consistent with Council's Integrated Transport Strategy. In addition, site specific traffic and transport issues are to be addressed.

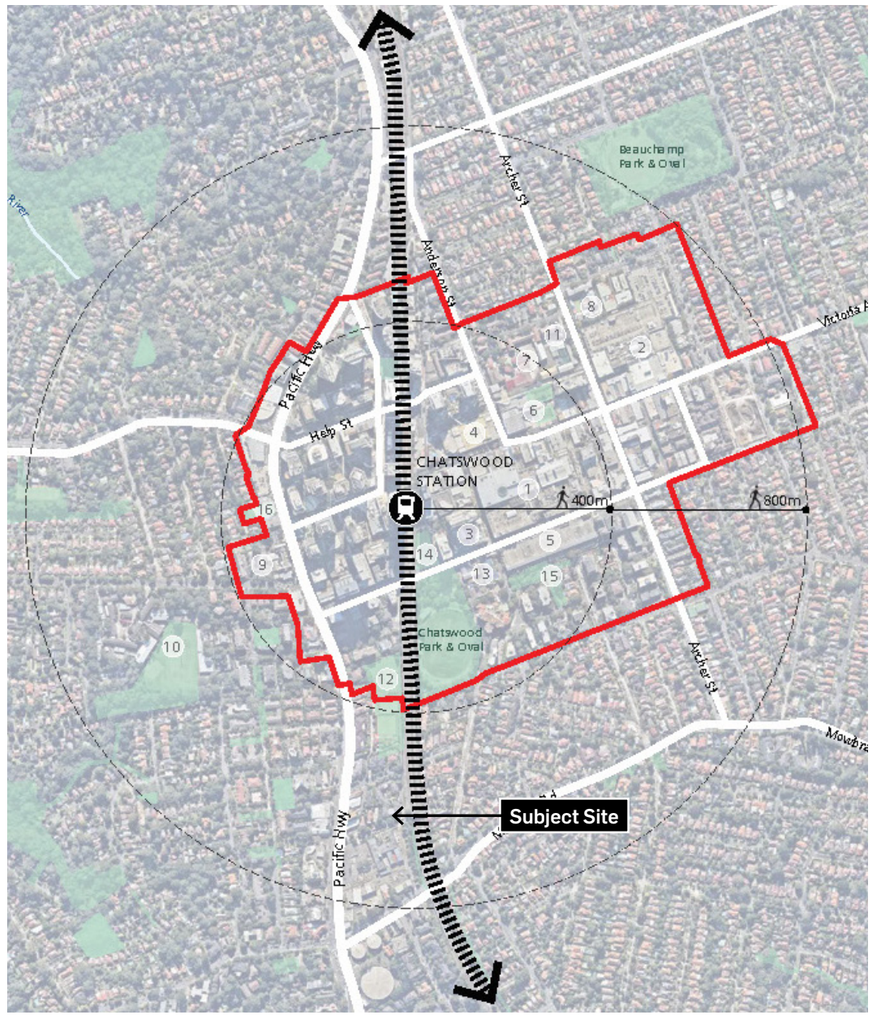


Figure 4 Former Chatswood CBD Boundary

LEGEND

Former Chatswood CBD Boundary

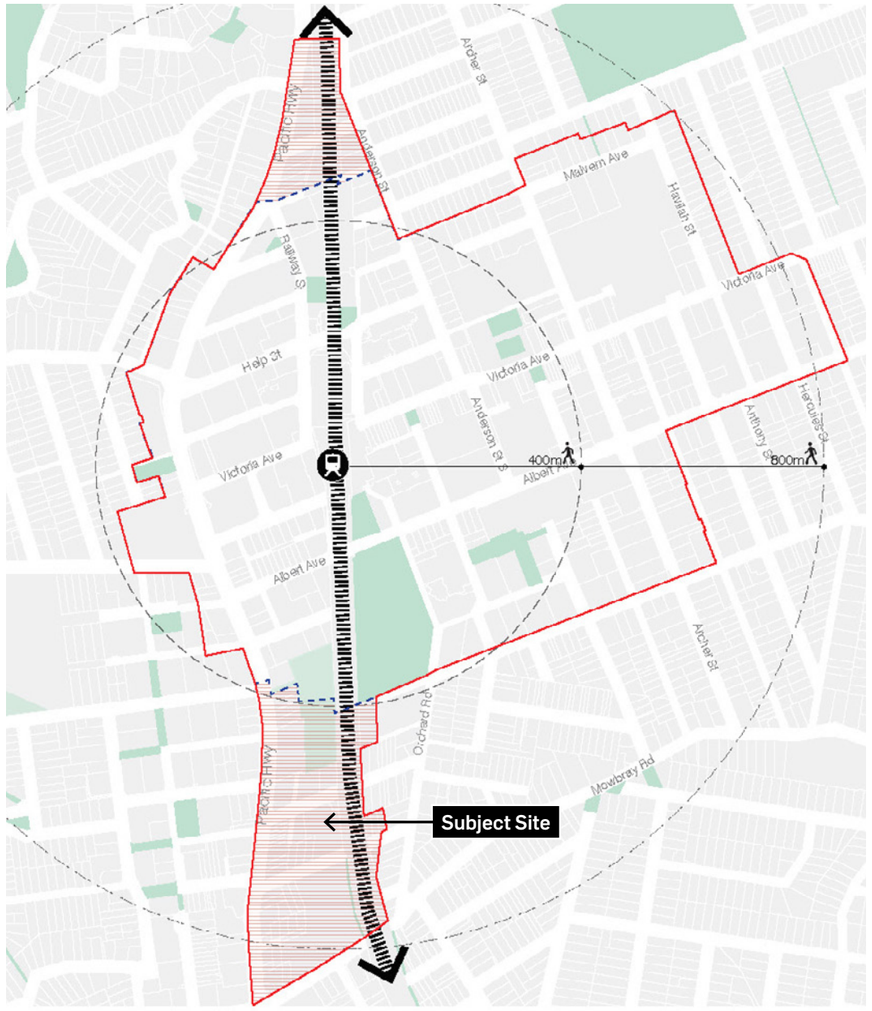


Figure 5 Chatswood CBD Strategy - Extended CBD Boundary

LEGEND

Chatswood CBD Boundary

Additional Extended Areas

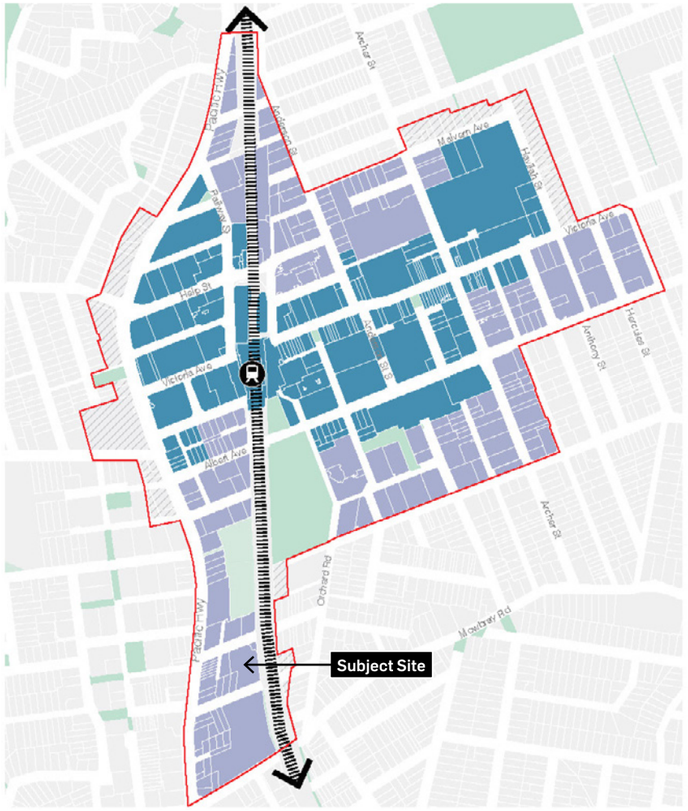


Figure 6 Chatswood CBD Strategy - Recommended Land Uses

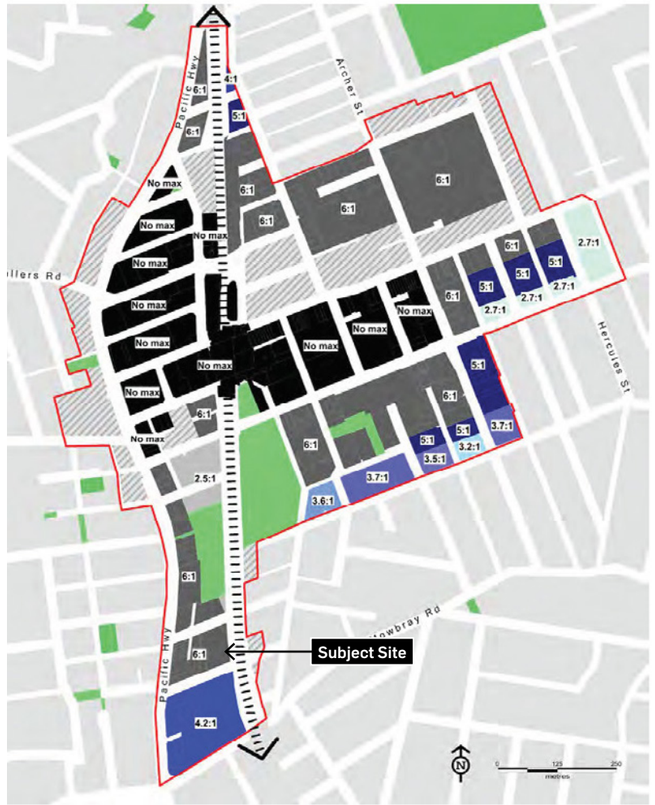
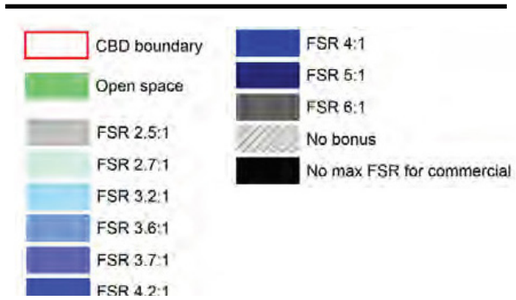


Figure 7 Chatswood CBD Strategy - Recommended Maximum FSR



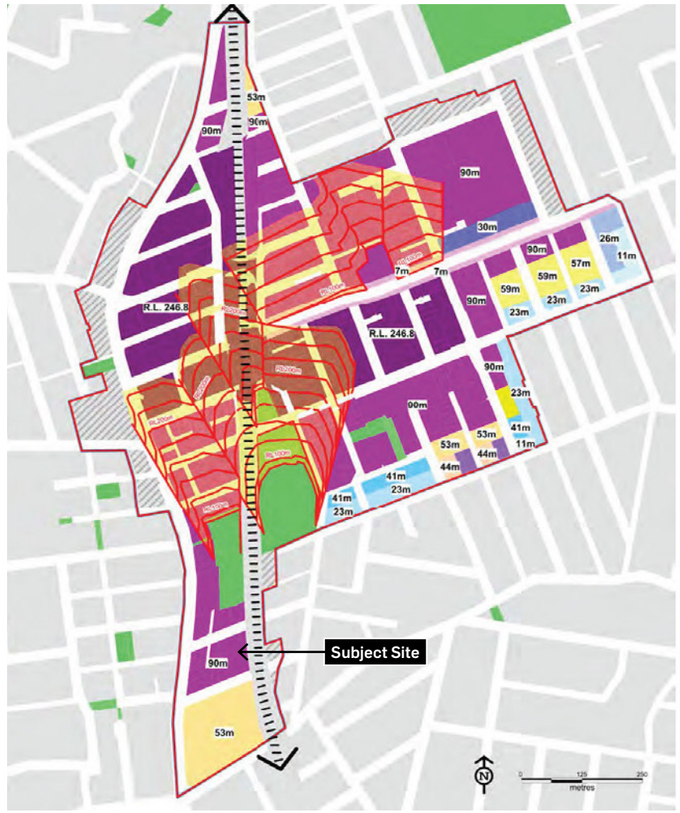
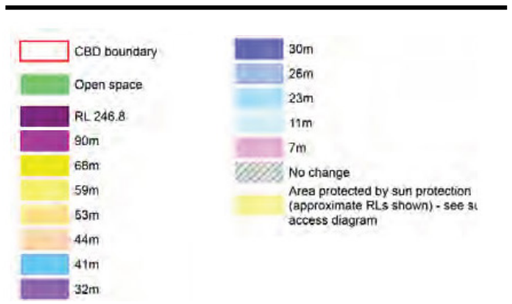


Figure 8 Chatswood CBD Strategy - Recommended Building Height



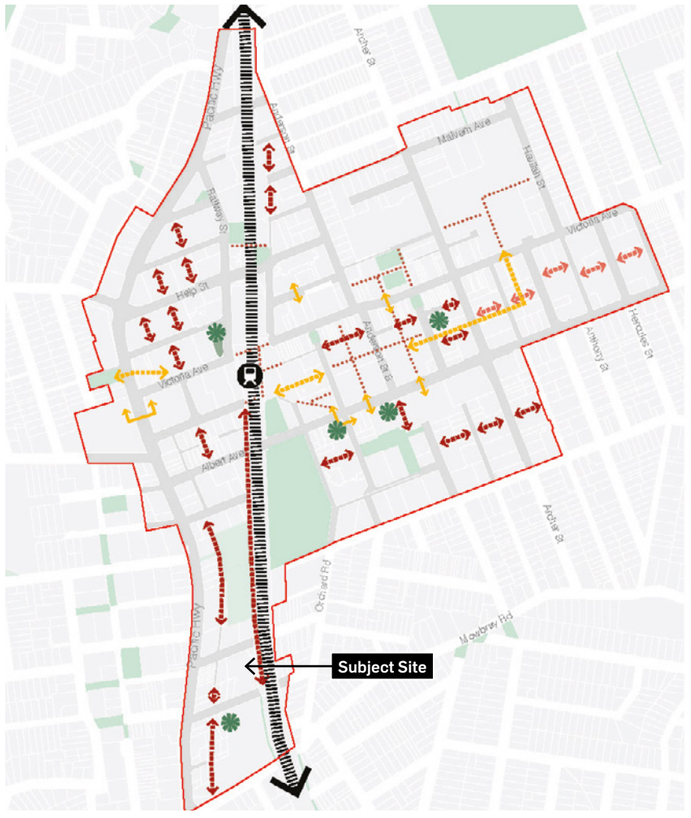


Figure 9 Chatswood CBD Strategy - Potential Public Domain Projects

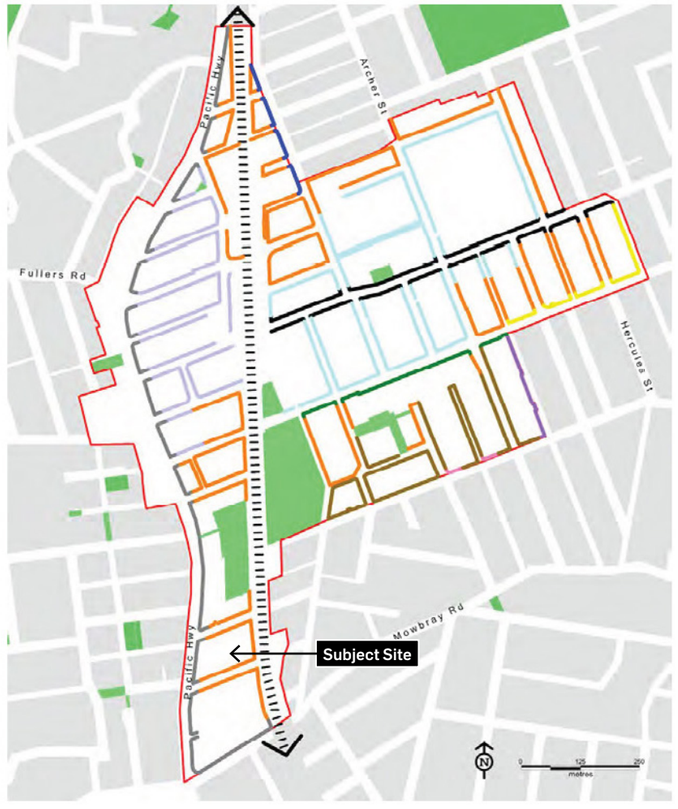


Figure 10 Chatswood CBD Strategy - Recommended Street Frontage Heights and Setbacks

LEGEND

- CBD boundary
- Open space
- New open space
- Open air 24 hour through-site links
- Open air 24 hour through-site links within block
- Through-building links
- Existing upper storey links
- Proposed upper storey links
- Streets and public places

LEGEND

- CBD boundary
- Open space
- Pacific Highway frontage
- Office core frontage
- Urban Core
- Victoria Avenue retail frontage
- Albert Avenue South
- Southern Precinct
- Anderson Street Interface
- Johnson Street interface
- Bertam Street interface
- Albert Avenue north and Olga Street interface
- Mixed use frontage with commercial Ground Floor

2.2 WILLOUGHBY LOCAL ENVIRONMENT PLAN 2012

The following maps depict the site's existing local planning controls as identified in the Willoughby Local Environment Plan (WLEP) 2012. The table below compares the WLEP controls against the recommendations of the CBD Strategy.

Given the status of the current WLEP, it does enable any significant uplift from the existing site condition. As such this study does not consider a compliant outcome as its baseline position. Rather it adopts the parameters of the CBD Strategy as a departure point to inform built form options testing.

Table 3 WLEP 2012 vs Chatswood CBD Strategy Planning Controls

	WLEP 2012	Chatswood CBD Strategy
Zoning	R3 Medium Density Residential	B4 Mixed Use
Height of Building	12 metres	90 metres
FSR	0.9	6
Heritage	Nil	Nil

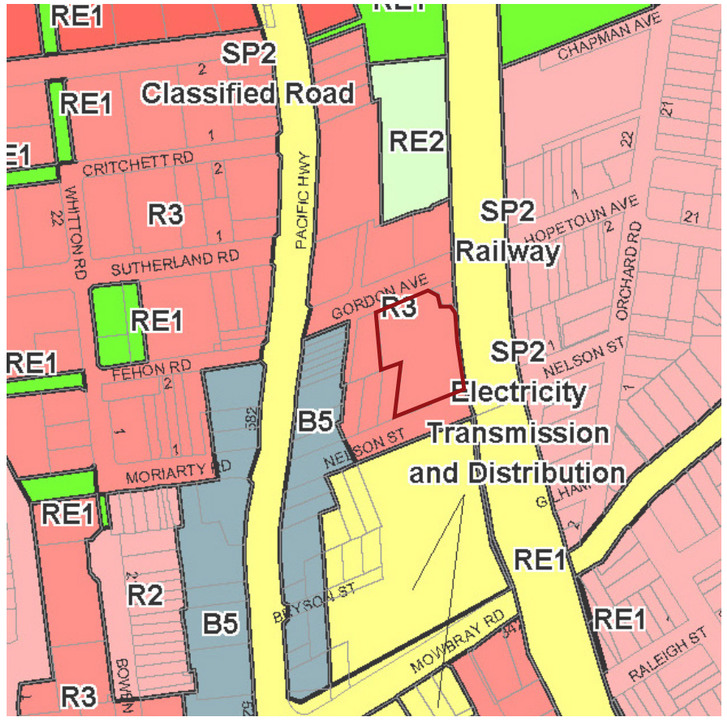


Figure 11 LEP Land Use Zoning Map

Legend

- Subject Site
- B5 Business Development
- R4 High Density Residential
- R3 Medium Density Residential
- R2 Low Density Residential
- SP2 Infrastructure
- RE1 Public Recreation

Figure 12 LEP Height of Building Map

Legend

- Subject Site
- L1:8m
- L2:8.5m
- J:9m
- M:12m
- Q:20m
- S1:24m

Figure 13 LEP FSR Map

Legend

- Subject Site
- B: 0.4
- L: 0.9
- H: 0.7
- S1:1.5
- U1: 2.5

Figure 14 LEP Heritage Map

Legend

- Subject Site
- Heritage site
- Conservation Area

Heritage Overlay

As captured in the adjacent LEP Heritage Map, to the east of the subject site is the South Chatswood Heritage Conservation Area. This means future development on the subject site should have regard to the following heritage principles:

- Significant view lines and view corridors between heritage items and to and from heritage conservation areas should be retained and protected. New development should not adversely affect existing significant views.
- New development should be contemporary in design and should not replicate the traditional design or detailing of historic buildings in the vicinity. Rather, new development should complement the historic character of an area through the appropriate selection of form, scale and materials.
- New development should consider shadow impacts and solar access to heritage conversation areas.

2.3 APARTMENT DESIGN GUIDE

The Apartment Design Guide (ADG) is policy that aims to improve the planning and design of residential apartment development in NSW. It promotes better residential outcomes by providing benchmarks for designing and assessing residential developments The table below summarises key ADG requirements that were considered in the site testing.

Table 4 ADG Key Considerations

Building Separation	Minimum separation distances for buildings nine storeys and above (over 25m): ▪ 24m between habitable rooms/balconies ▪ 18m between habitable and non-habitable rooms ▪ 12m between non-habitable rooms
Building Depth	▪ A range of appropriate maximum apartment depths of 12-18m from glass line to glass line, or up to 22m for the building envelope. This will ensure that apartments receive adequate daylight and natural ventilation and optimise natural cross ventilation.
Communal Open Space & Deep Soil	▪ Communal open space has a minimum area equal to 25% of the site ▪ Developments achieve a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9 am and 3 pm on 21 June (mid winter) ▪ Deep soil zones may not be possible in locations with limited ground floor setbacks (e.g. CBDs) or there are non-residential uses at ground level - as is the case for the subject site.
Solar Access	▪ Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter in the Sydney Metropolitan Area ▪ In all other areas, living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 3 hours direct sunlight between 9 am and 3 pm at mid winter ▪ A maximum of 15% of apartments in a building receive no direct sunlight between 9 am and 3 pm at mid winter
Natural Ventilation	▪ To achieve adequate natural ventilation, apartment design must address the orientation of the building, the configuration of apartments and the external building envelope. ▪ Natural cross ventilation is achieved by apartments having more than one aspect with direct exposure to the prevailing winds, or windows located in significantly different pressure regions, rather than relying on purely wind driven air

3.0 URBAN CONTEXT ANALYSIS

This section investigates local context and provides an understanding of existing, emerging and desired future character. It considers the following overlays:

- Public and active transport
- Topography & building height
- Access & movement
- Open space and public domain
- Built form character and building grain

3.1 PUBLIC AND ACTIVE TRANSPORT

KEY OBSERVATIONS

- The site is within 800m to Chatswood Train and Metro station and Artarmon Train station.
- The site is a ten-minute walk to Chatswood CBD, which offers a range of activities and services including access to jobs. The site is also within walking distance to cafes, retail uses and services along Pacific Highway.
- Proximity to bus routes along Pacific Highway gives the site broader connection within Willoughby LGA.
- The site has direct access the local cycle network, connecting to open spaces and train stations at St Leonards, Artarmon and Chatswood.

INSIGHT

The site is well serviced by both public and active transport. It is within walking distance to Chatswood Train and Metro Station, Artarmon Station, and buses along Pacific Highway.

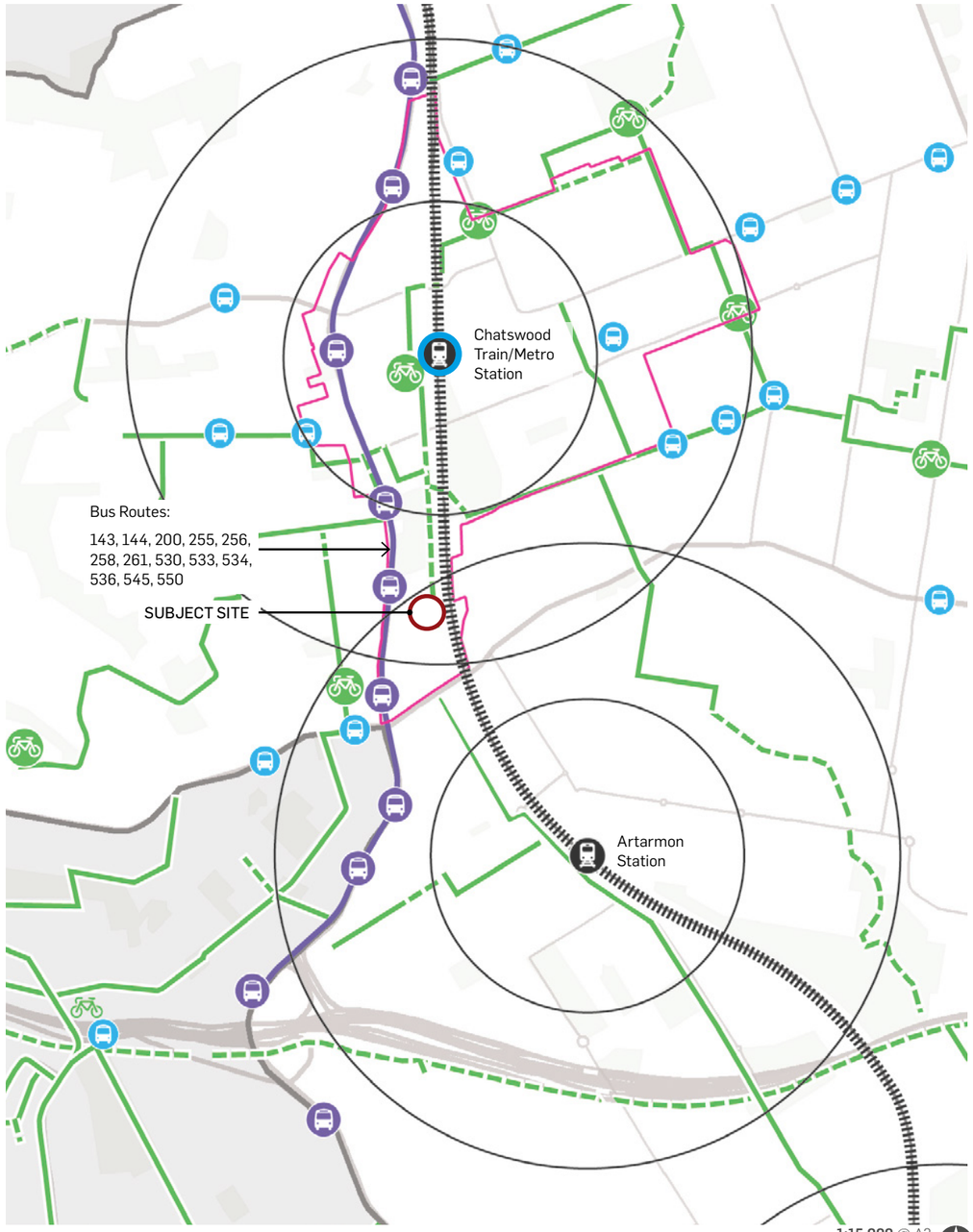


Figure 15 Public and Active Transport

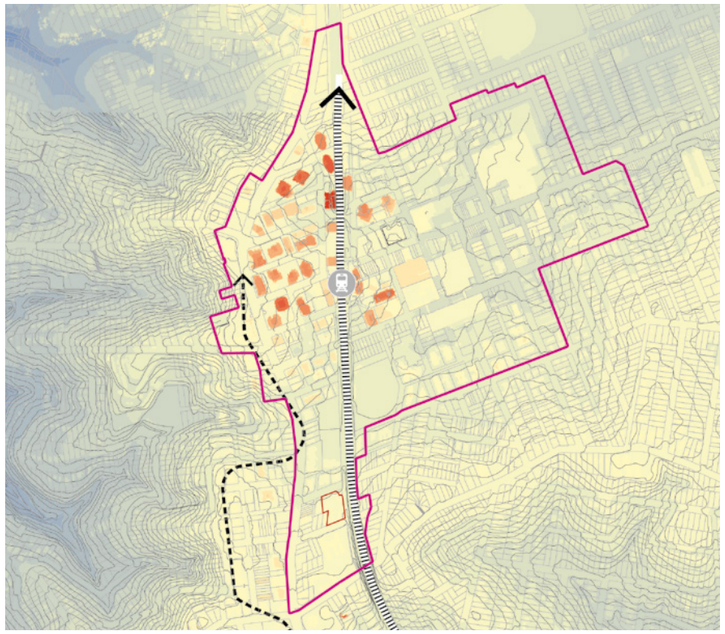
3.2 TOPOGRAPHY AND BUILDING HEIGHT

KEY OBSERVATIONS

- The site's immediate surroundings is on relatively flat terrain. Pacific Highway generally aligns with a natural ridge-line and areas to the west and south east fall away to lower land.
- There is a distinct cluster of tall building forms at Chatswood CBD, which visually highlights the significance of this centre. The relative heights of these tall towers are mapped in the diagram below. These towers act as a visual beacon and assist with legibility and way-finding from surrounding suburbs.
- The proposed change in building height controls in the CBD Strategy are mapped in the adjacent diagram and highlight significant change within the CBD core.

INSIGHT

The site sits within a spine of tall buildings leading to Chatswood CBD, which has the greatest height in the area. Proposed building heights should consider visual and overshadowing impacts to sites on either side of the ridge.



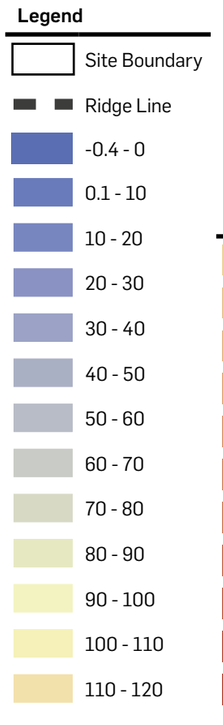


Figure 16 Existing Building Height & Topographical Analysis

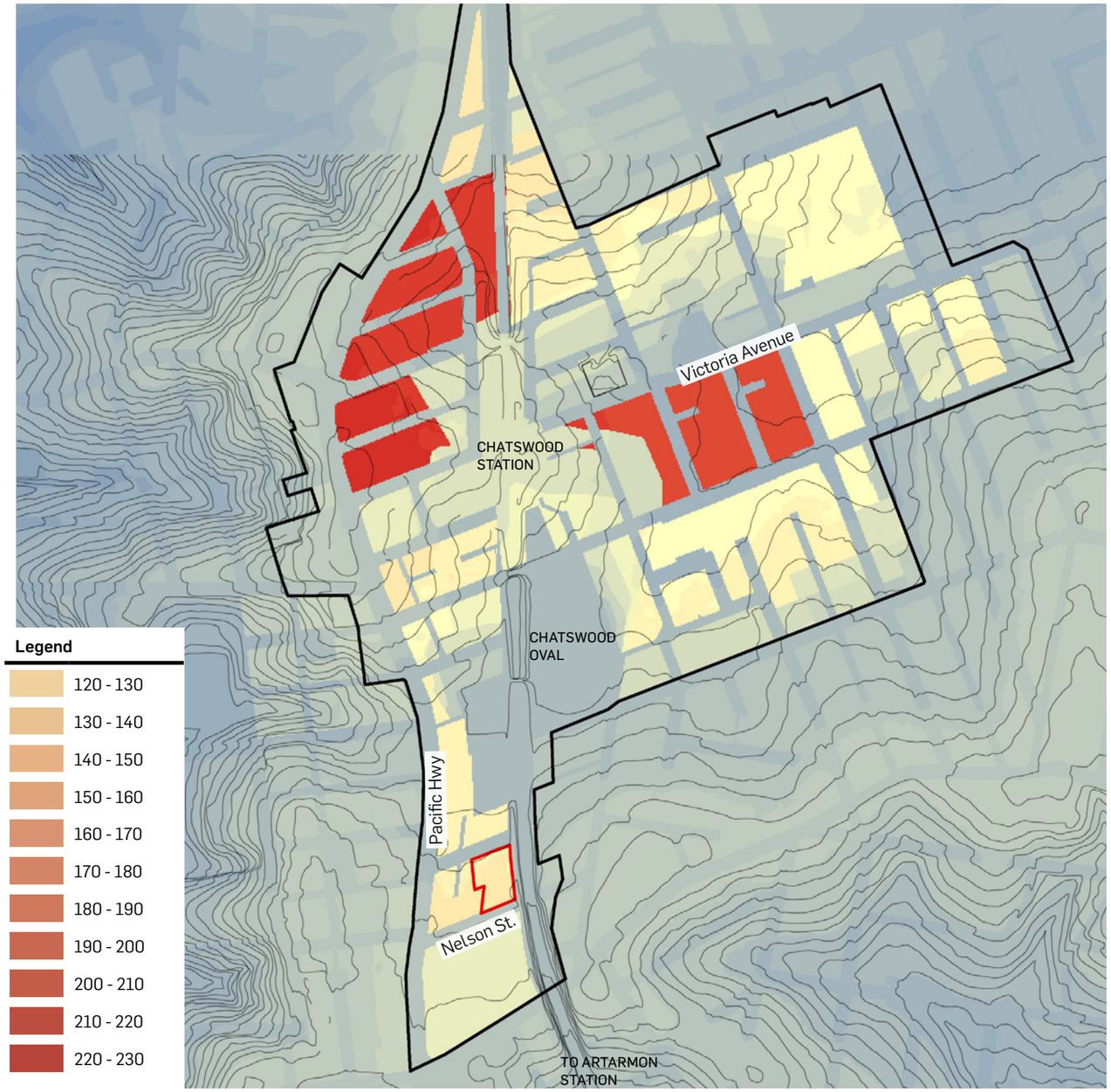


Figure 17 Proposed CBD Strategy Building Heights & Topographical Analysis.

3.3 ACCESS & MOVEMENT

KEY OBSERVATIONS

- Pacific Highway is a main arterial road that connects Sydney CBD with the Central Coast and beyond. It is a major transport corridor and provides a physical boundary to the west of the site. For pedestrians, the closest signalised intersection on Pacific Highway is approximately 300 metres south of the site at the intersection with Mowbray Road.
- Main access to the subject site is off Nelson Street or Gordon Avenue. Both of these streets have limited access off Pacific Highway and are dead-end roads with limited traffic flow.
- Mowbray Road is a local corridor that runs east-west connecting to the M2 and Macquarie Park.
- The CBD Strategy identifies a new north -south pedestrian link parallel to Pacific Highway, connecting the CBD from Mowbray Road to Albert Avenue (Chatswood train station).
- To the east of the site is a shared (cycle and pedestrian) link that also connects the heart of the CBD from Nelson St to Albert Avenue (Chatswood train station).

INSIGHT

- Given the limited traffic access and flow on Gordon Ave and Nelson St, consider separating residential vehicle access (on Nelson St) from servicing and loading (on Gordon Ave).
- Enhance the existing shared link on the eastern side of the subject site by providing an active frontage to increase passive surveillance and safety.

LEGEND

- Subject Site
- Chatswood Town Centre Study Boundary
- Lot Boundary
- Major Signalised Intersections
- Highway/ Arterial Roads
- Sub-Arterial Roads
- Local Roads
- Neighbourhood Road Connectors
- Previous Road Connection
- Pedestrian Crossings (zebra)
- Existing Pedestrian Link
- New Through Site Link Identified in the Chatswood CBD Strategy

Figure 18 Access and movement analysis plan

3.4 LANDSCAPE CHARACTER & PUBLIC DOMAIN CHARACTER

KEY OBSERVATIONS

- The immediate area has an established tree canopy cover from mature street trees, particularly to the west of Pacific Highway. There is opportunity to further enhance the landscape character of the area by protecting streets trees and introducing green rooftops to new development.
- The site is located within 400m walking distance to Chatswood Park and the Bowls Club. Chatswood Park provides active recreation for kids and adults; this includes a large oval, skate park, picnic and gathering area.
- The site has direct access to a shared path that connects to the CBD. While the shared path currently terminates at the site, there is opportunity to extend it along Nelson Street to Mowbray Road, in order to connect with other local cycle networks and open spaces (to the south and west).

INSIGHT

- Enhance the landscape character of the area by protecting streets trees and introducing green rooftops to new development.
- Chatswood CBD Strategy identifies a new future park immediately south of the subject site. This open space can be complemented with the extension of the shared path along Nelson Street and south to Mowbray Road.

Figure 19 Existing Street Trees along Nelson Street,

Figure 20 Existing Street Trees along Gordon Avenue

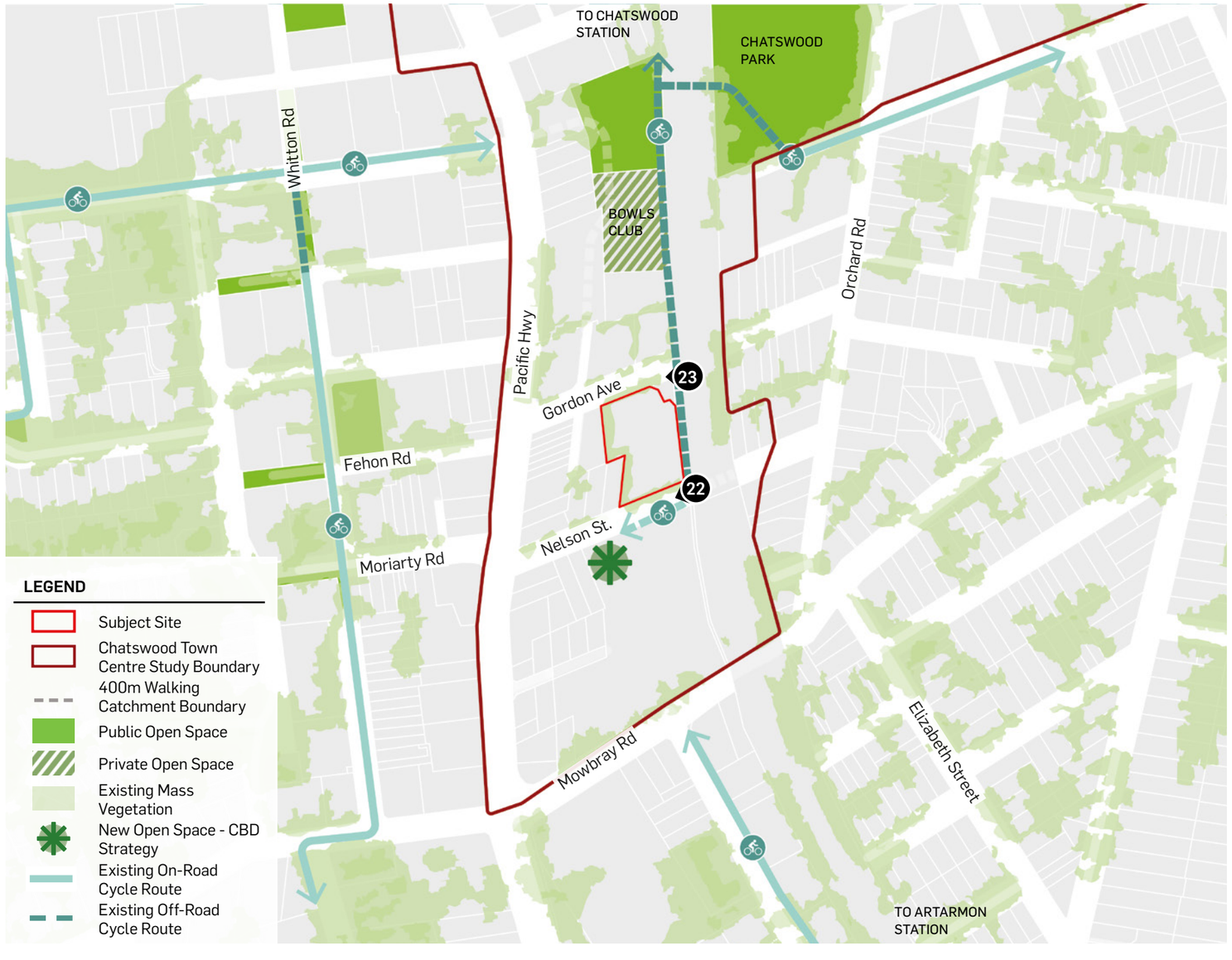


Figure 21 Tree canopy and open spaces plan

3.5 BUILT FORM CHARACTER

KEY OBSERVATIONS

- Chatswood's built form character is defined by different building typologies and land uses, it includes the historical fine grain context to the east of the site, and medium residential density in the form of apartment blocks to the west. There are also large commercial and retail floor plates along Pacific Highway, creating a dense and urban spine.
- The South Chatswood Heritage Conservation Area is a good example of early North Shore residential development. Much of the dwelling stock retains its original detailing and distinctive architectural features. Most retain the original scale and basic form, which, apart from the two storey mansions, is predominantly single storey.
- The Chatswood CBD Strategy will bring considerable change to the local character, with CBD sites transforming into podium and tower forms to create a more urban and dense context.

INSIGHT

- The Chatswood CBD Strategy will bring considerable change to the local character. The subject site and surrounding context will become more urban and dense with podium and tower forms.
- Proposed built form within the subject site needs consider overshadowing and visual impacts to the fine grain conservation area.

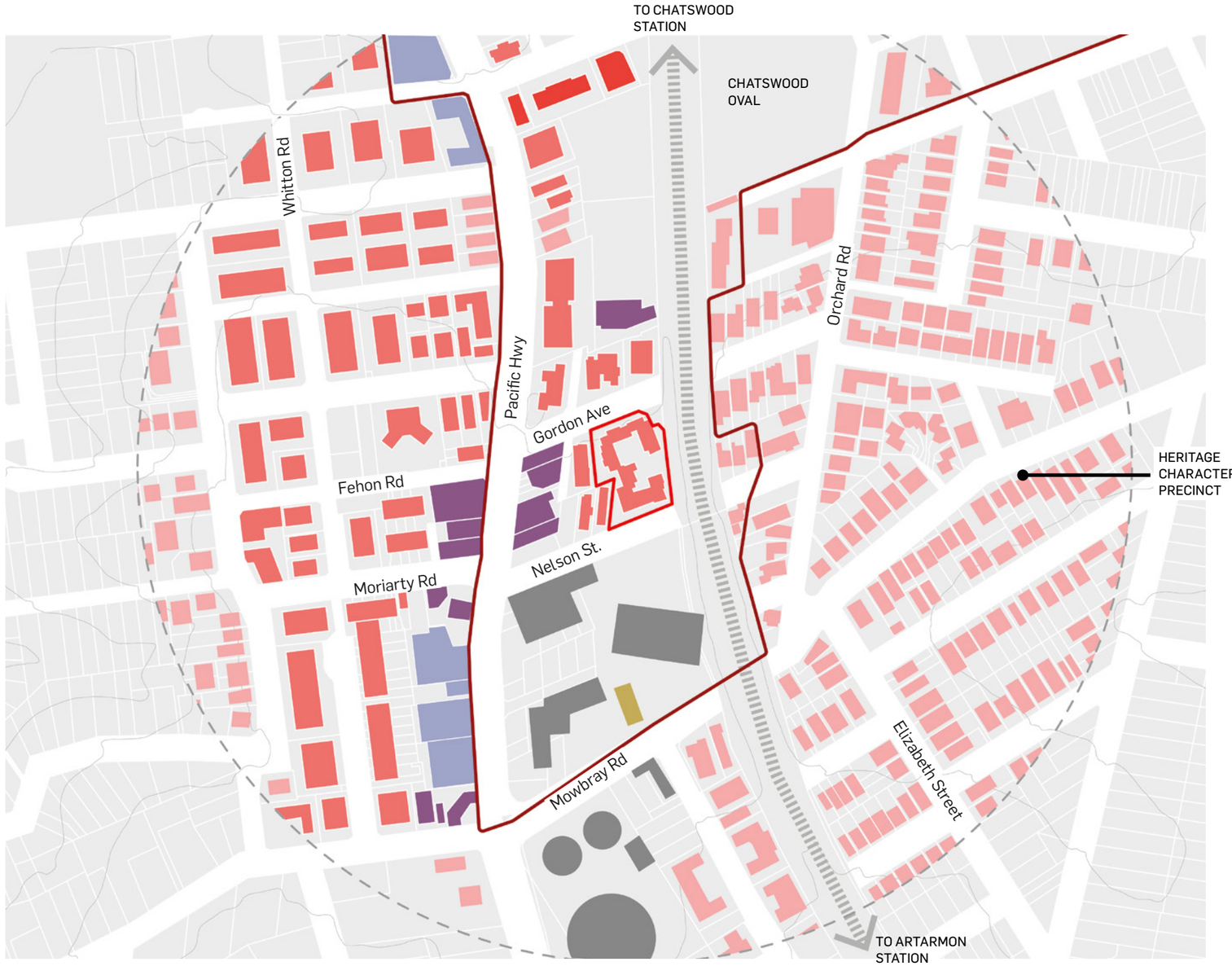


Figure 22 Built form character plan

4.0 SITE ANALYSIS

This section examines current street setback patterns as well as key site opportunities and constraints to inform the design response presented in Part B.

4.1 SETBACKS

KEY OBSERVATIONS

- Existing setbacks in the immediate area surrounding the site vary from zero to ten metres depending on existing trees and built form character.
- Currently the site provides the following setbacks:
  - 5-8-metre front setback along Nelson Street;
  - 0-4 metre setback along Gordon Avenue; and
  - 0-4 metre setback along the existing shared path;
  - 5-8-metre setback on the western boundary
- Chatswood CBD strategy does not identify minimum setbacks for podium levels, rather this is guided by site specific responses. Minimum tower setbacks and building separation distances have been identified in the Strategy, and align with the ADG and promote slender building forms.
- For the subject site this means, the podium can potentially be built to boundary but must have active frontages to north, east and south frontages. It can have a street wall height of 6-14-metre with a minimum tower setback of 3 metres from the street wall. For the western boundary, in order to enable future development to neighbouring sites towers are to be setback 12 metres from the boundary (in line with minimum building separation distances in the ADG).

INSIGHT

- Active ground floor frontages north, east and west boundary.
- Tower form to be setback at least 3 metres from street wall, and 12 metres from western boundary.

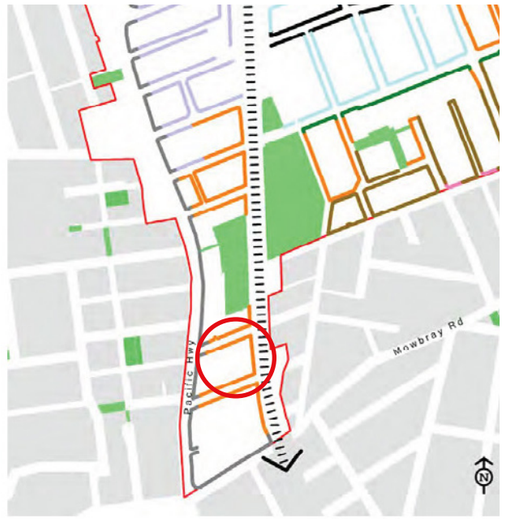


Figure 23 CBD Strategy Recommended Setbacks

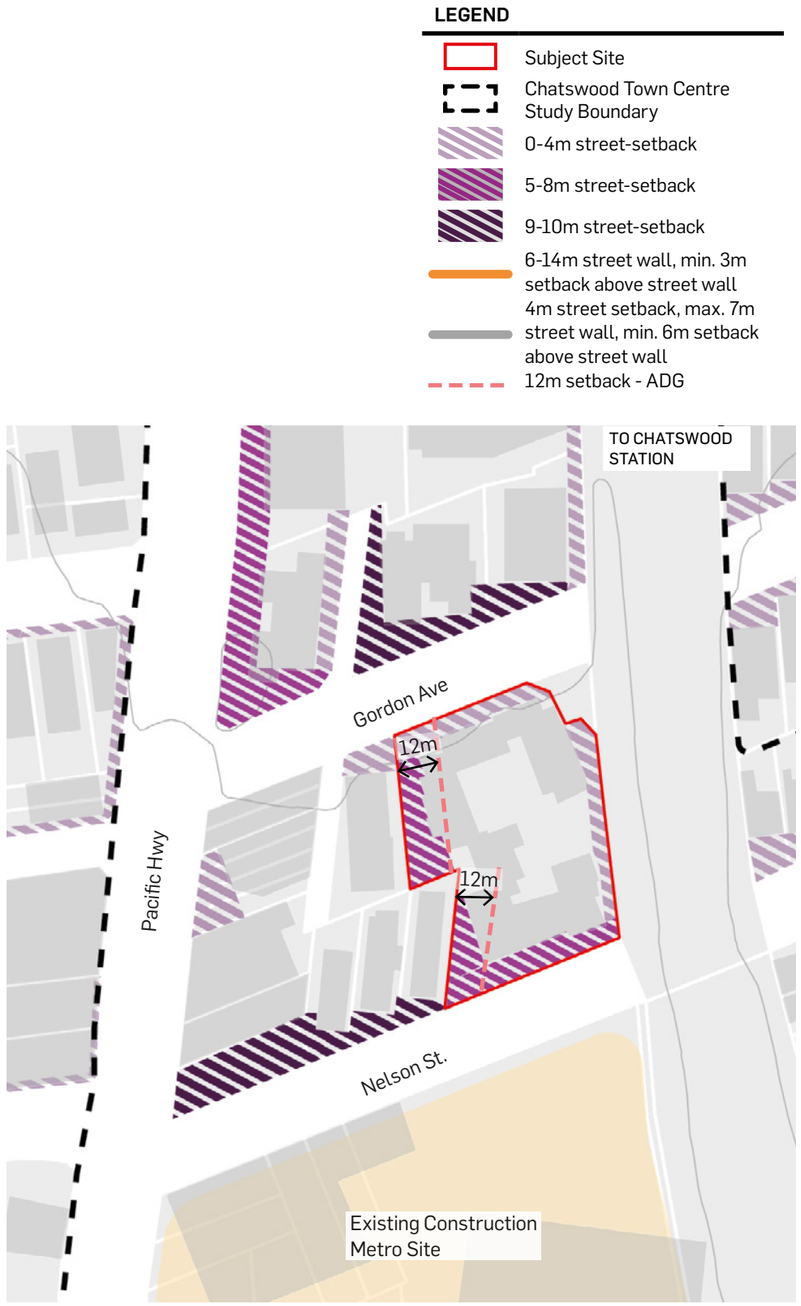


Figure 24 Existing Setback Pattern

4.2 SITE CONSTRAINTS

KEY OBSERVATIONS

1. The site sits between the Pacific Highway and heavy rail corridor, which are major north-south transport corridors. These two corridors generate considerable noise, visual and air pollution in proximity to either side of the site.
2. The site's proximity to the railway corridor also creates potential vibration impacts which will need to be considered in the design and construction of future development. Refer to geotechnical report for minimum separation distances from future metro corridor.
3. While the site is in proximity to Pacific Highway and a high volume of buses, access to bus stops is decreased due to the lack of pedestrian crossings and signalised intersections across Pacific Highway. The closest signalised intersection on the Pacific Highway is about 300 metres south of the subject site and about 600m north.
4. Traffic flow and access to the site is hindered as both Nelson Street and Gordon Avenue are dead-end streets. Additionally, vehicle access coming from the south is difficult as there is no ability to right turn into Nelson Street and Gordon Avenue.
5. To the east of the site is the South Chatswood Heritage Conservation Area. Impacts to this conservation area, including overshadowing and visual impacts will need to be considered in the design of the site.

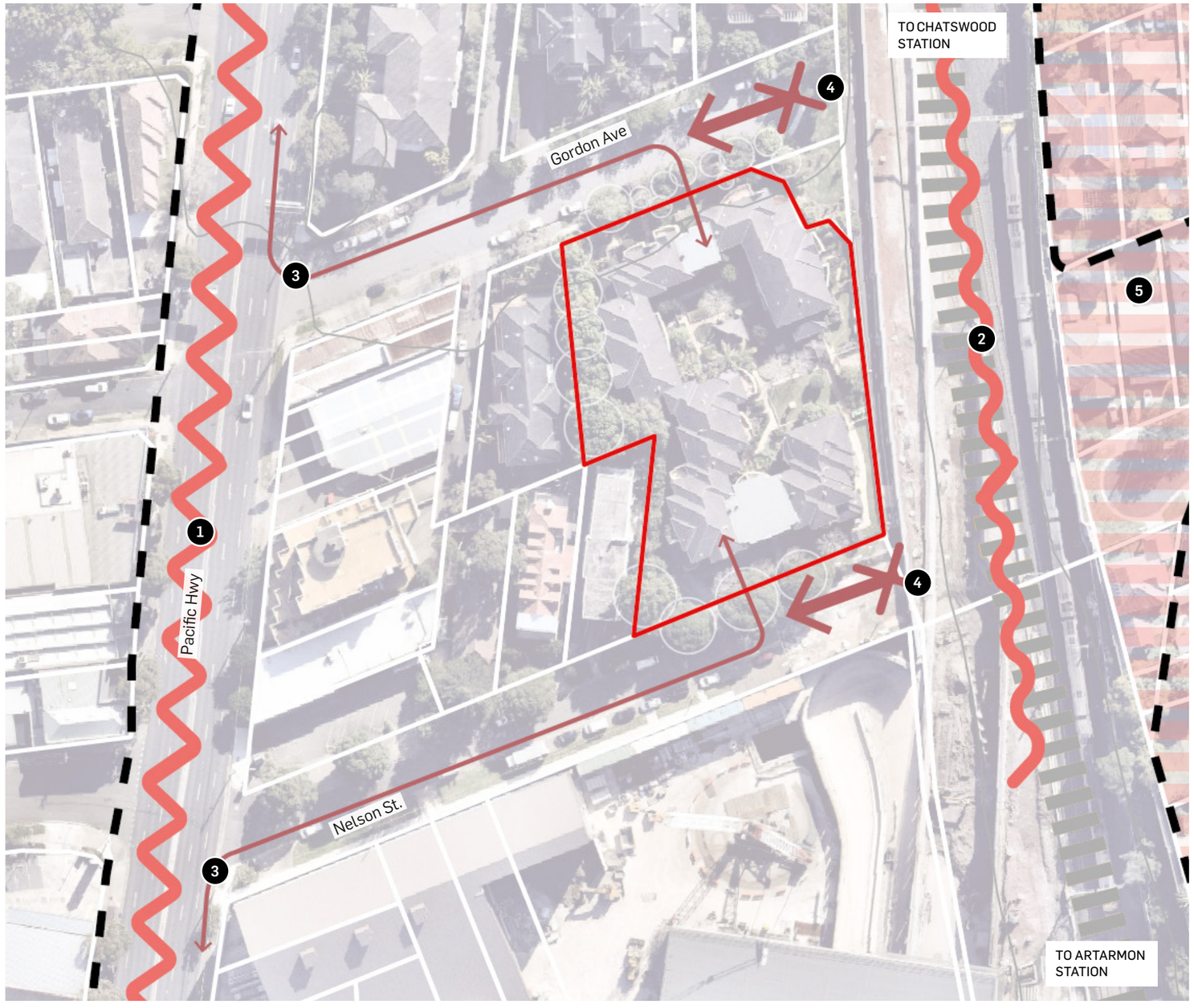


Figure 25 Site Constraints Plan

4.3 SITE OPPORTUNITIES

KEY OBSERVATIONS

1. Based on directions from the CBD Strategy, transform the future character of Nelson Street with a pedestrian and active transport focus. Introduce cycle access on Nelson St to connect with existing shared path.
2. To manage traffic impacts to the immediate area, limit service access to the site via Gordon Avenue, thus minimising heavy traffic movement along Nelson Street.
3. As identified in the CBD Strategy, introduce a new through site connection to Hammond Lane. While this does not directly impact the subject site it highlights Council's vision to promote a vibrant and activated pedestrian experience.
4. To promote a vibrancy, safety and street activation, introduce a range of non-residential uses such as a childcare, gym, health services and retail to ground and podium levels.
5. Preserve existing vegetation where possible within the site. Introduce soft landscaping to enhance the local character and provide amenity for future residents.
6. Extend active transport connectivity along Nelson Street towards Mowbray Road, and where possible enhance the character of the active transport link through active frontages that promote passive surveillance and safety.
7. Respond to the amenity afforded by existing open space to the north east corner through visual and physical connections from the site.

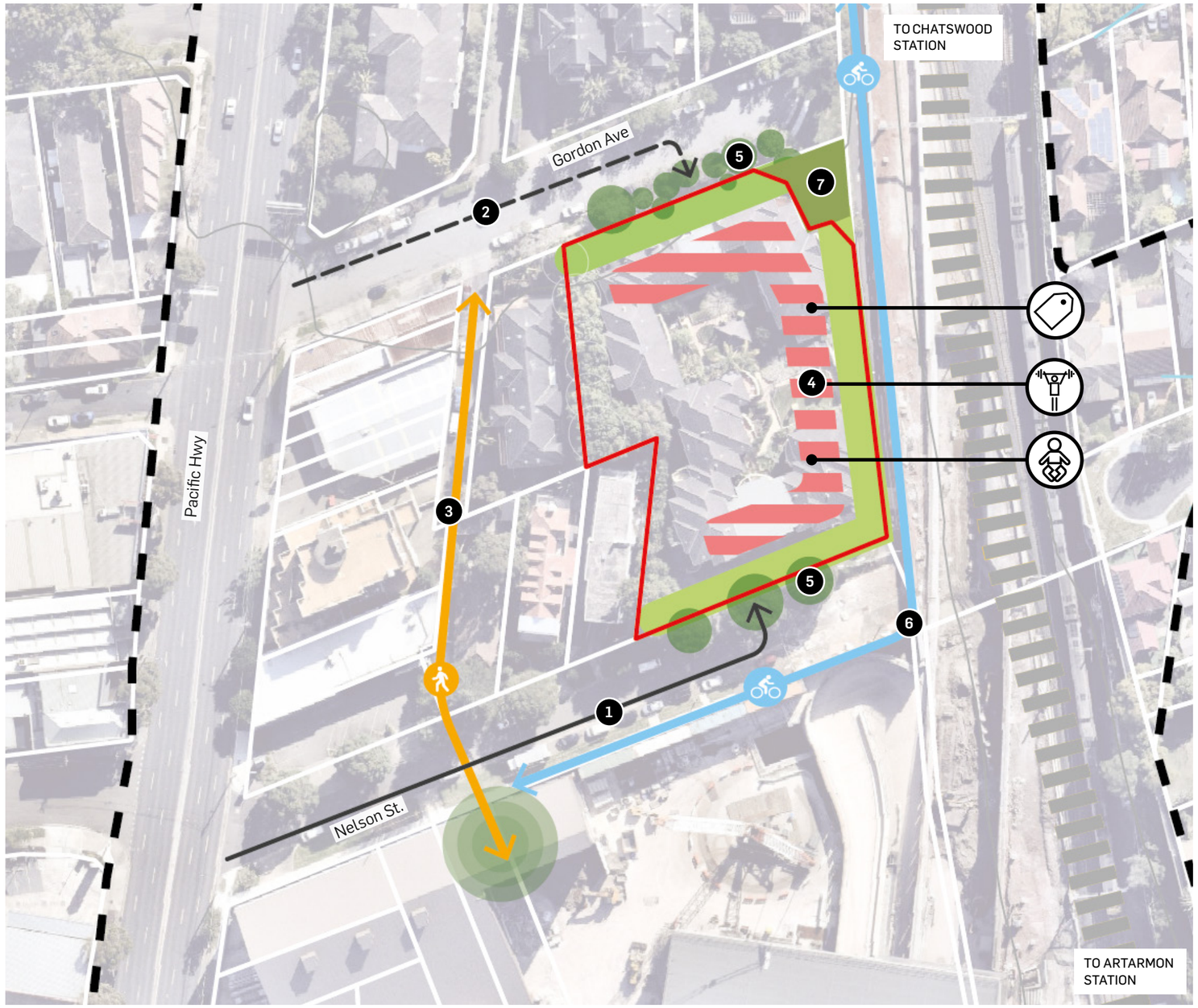


Figure 26 Site Opportunities Plan

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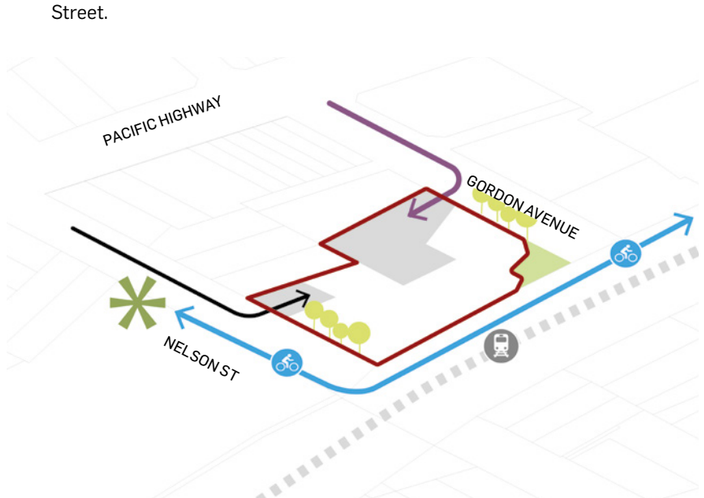
4.4 KEY DIRECTIONS

The following section synthesises the planning context, urban context and site analysis into a suite of key directions that informs and shapes the built form response for the site.

ACCESS AND STREETSCAPE CHARACTER

- Retain existing street trees where possible.
- Split vehicle access with Nelson Street as the main residential access and Gordon Avenue as a service vehicle road.
- Locate loading and servicing to basement levels to maximise ground floor activation.
- Enhance cycle and pedestrian connections and extend along Nelson Street.

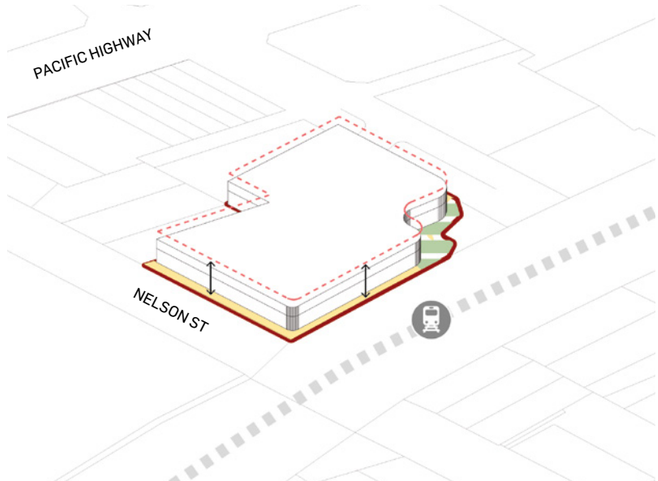


LEGEND

- Subject Site
- Residential Vehicle Road
- Service Vehicle Road
- Pedestrian & Cycle Connection
- Future Public Open Space
- Existing Pocket Park
- Driveway

PODIUM SCALE

- Minimum 3m podium setbacks streets and pedestrian and cycle path to allow for landscape interface and potential deep soil planting.
- Build to boundary on western boundary.
- Explore 2 and 3 storey podium building forms considering human scale outcomes.

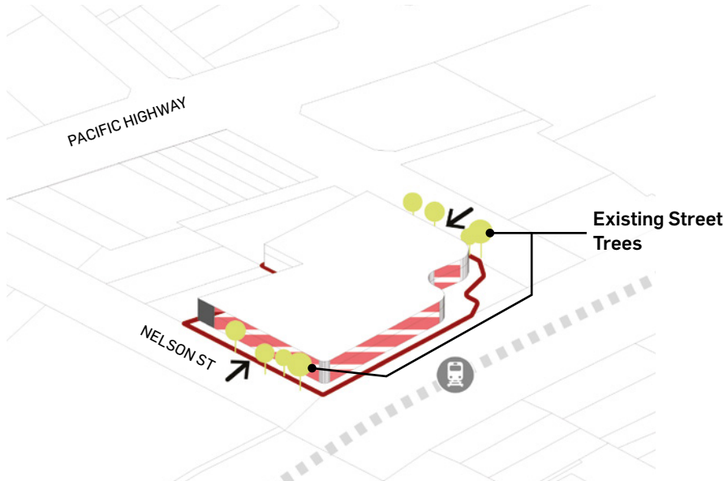


LEGEND

- Subject Site
- Minimum 3m Setback
- Maximum Street Wall (14.5m)
- Larger Setback to Respond to Existing Pocket Park

ACTIVE FRONTAGES & PODIUM USES

- Explore arrangement of non-residential uses to respond to locational characteristics including activation of existing pocket park, pedestrian and cycle link and street frontages.
- Provide residential access from both Nelson Street and Gordon Avenue.

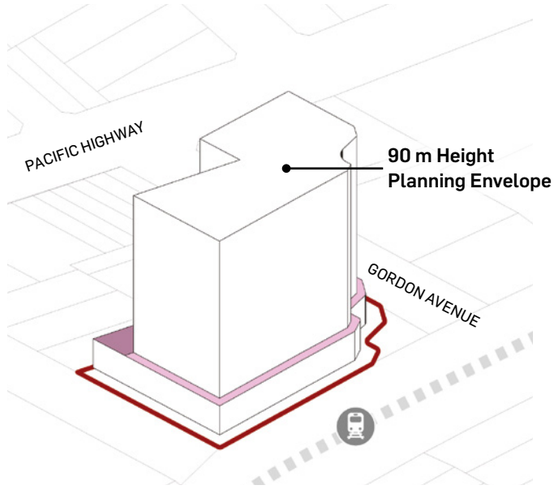


LEGEND

- Subject Site
- Active Frontage
- Access to Residential Tower
- Vehicular Access

TOWER SETBACKS

- 3m setback from podium to streets and pedestrian and cycle link in accordance with Chatswood CBD Strategy.
- 12m setback to western boundary in accordance with ADG requirements.

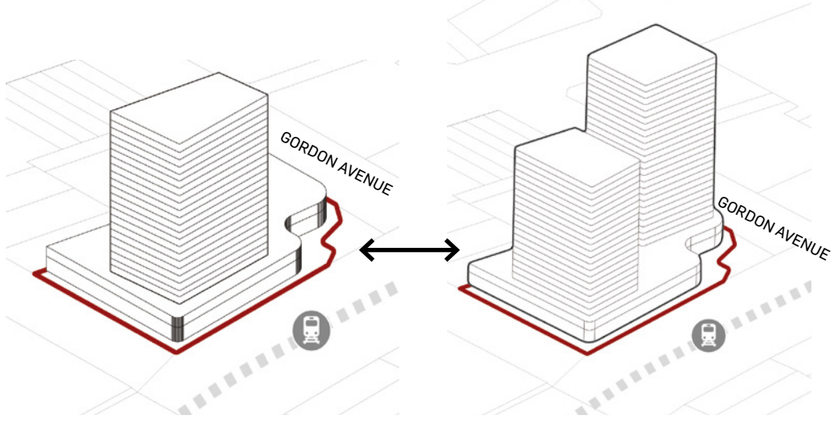


LEGEND

- Subject Site
- 3m Setback (CBD Strategy)
- 12m Setback (ADG)

TOWER MASSING & ARRANGEMENT

- Explore one and two tower options against both Chatswood CBD Strategy and ADG requirements.
- Transition building height down to surrounding context

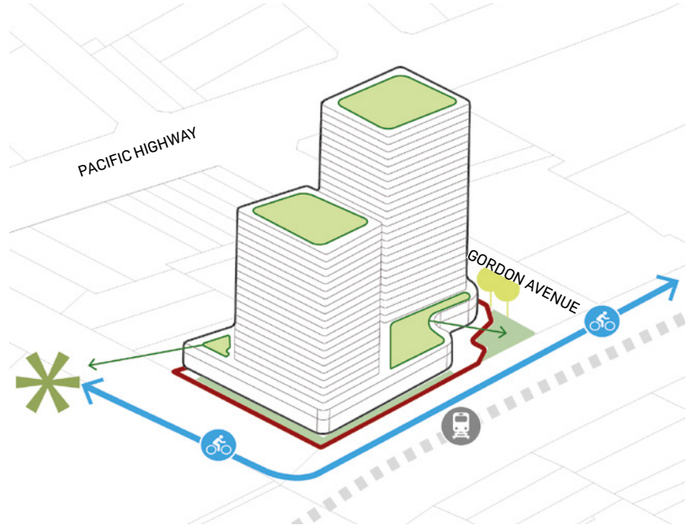


LEGEND

- Subject Site
- Proposed Development

INTEGRATED LANDSCAPE

- Provide podium and tower communal open space and locate to maximise solar access.
- Incorporate landscape setbacks to pedestrian and cycle link.
- Consider stepping of landscape elements and communal open space to respond to existing pocket park.



LEGEND

- Subject Site
- Future Public Open Space
- Existing Pocket Park
- Pedestrian & Cycle Connection
- Communal Open Space

PART B
URBAN DESIGN RESPONSE

Part B investigates built form outcomes for the subject site in alignment with recommendations of the CBD Strategy, the requirements of the ADG, and in response to the urban context and site analysis.

5.0 PODIUM TESTING

The following section tests 2 and 3 storey podiums with a variation of non-residential land uses.

Podium Option 3, a mixed-use 2 storey built form is the preferred solution adopted in the Reference Scheme, as it:

- Satisfies the CBD Strategy's FSR requirement of a minimum 1:1 for non-residential uses;

- Provides active frontages in accordance with the CBD Strategy, i.e. Nelson Street, Gordon Avenue and the shared active transport link;

- Offers a mix of land uses to contribute to the vibrancy of the local area; and

- Creates a human scale, whereby the podium is in keeping with the existing tree line.

5.1 NON-RESIDENTIAL USES MARKET DEMAND ASSESSMENT

Urbis' Property Economics Research team undertook a market gap assessment for potential non-residential land uses. The approach to the market gap assessment considers a two step approach as follows:

1. Identification of a shortlist of possible land uses considering permissible uses in the B4 mixed-use zone of WLEP and identification of those which could realistically attract a tenant at the site location. This eliminated commercial office uses, community facilities a, tertiary education and entertainment.

2. Evaluation of the remaining five (5) land uses against three location success factors and draws implications for the market gap and supportability of these uses at the site. These location success factors are:

- Market Demand: The number of and growth in surrounding residents and workers is a very important determinant of the commercial viability of many potential land uses.
- Competition: Provision, location and quality of offer of competitors can limit market scope to support additional uses.
- Competitive Positioning of the Subject Site: The competitive positioning of the subject site is a key determinant of the type and scale of land uses that are supportable, and is driven by a number of factors. These include:
  - Road Access, Visibility and Exposure
  - Public Transport Access
  - Proximity to Services, Amenities and Economic Opportunities
  - Synergies with Other Proposed Uses at the Subject Site.

The assessment identified and ranked five potential land uses suitable for the subject site.

MEDICAL

Scored 2 out of 5

- Proportion of the current 2km catchment population aged 0-14 (-0.4%) and aged 65+ (-1.0%) is slightly below the Metropolitan average.
- Moderate projected population growth of 1.0% per annum in the 2km catchment to 2031, is below the Metropolitan Sydney average of 1.5% per annum over the same period
- Projected growth in key age segments is low (0.8% per annum for 0-14 aged residents) to moderate (2.3% per annum for 65+ aged residents).

CHILDCARE

Scored 2 out of 5

- Proportion of the current 2km catchment population in the 0-4 age group of 6.8% is 0.4 percentage points higher than the Metropolitan average
- Projected population growth for the 0-4 age group is fairly low at 0.5% per annum, indicative of only ~300 additional residents in this age category by 2031.
- A higher average per capita (+25.4%) and household income (+16.9%) in the 2km catchment also indicates more disposable income to spend on childcare services.

GYM

Scored 3 out of 5

- The population aged 15-39 (+2.5%) is the largest variation in the 2km catchment compared to the Metropolitan average. Coupled with a higher proportion of lone and group households, this indicates strong existing demand for gyms.
- Projected population growth is fairly low at 0.5% per annum for the 15-39 age group, an additional ~1,800 persons by 2031.
- A higher total retail spending variation (+16.9%) and per capita income (+25.4%) in the 2km catchment is also reflective of a higher likelihood to spend on gym memberships.

RETAIL – SPECIALTY AND F&B

Scored 3 out of 5

- Retail spending for the 2km catchment in food catering (+34.2%) and retail services (+35.6%), is significantly higher than the Metropolitan benchmark.
- A higher average per capita income and household income for the 2km catchment also indicates a higher capacity to spend on retail
- Moderate projected population growth of 1.0% per annum in the 2km catchment to 2031, is below the Metropolitan Sydney average of 1.5% per annum over the same period

RETAIL – BULKY GOODS / SHOWROOM

Scored 4 out of 5

- Total retail spending and spending on bulky goods retail in the 5km catchment is well above the Sydney average (+25.6%).
- Strong population growth of 1.4% per annum projected in the 5km catchment to 2031, is only slightly below the benchmark of 1.5% per annum over the same period.
- A higher average per capita income and household income for residents of the 5km catchment compared to the Sydney benchmark also indicates a higher capacity and propensity to spend on bulky goods and showroom retail.

5.2 PODIUM OPTIONS

Based on the property economics research, three different combinations of non-residential land uses with variable floor space ratios were tested. The three podium options are summarised below.

OPTION 01
Mixed Use Podium

- **BUILDING HEIGHT: 3 storeys**
- **FSR: 1.40 : 1**
- **LAND USES**
  - Bulky Goods
  - Small Retail/Specialty/ F&B
  - Childcare
  - Gym
- **Loading Dock to Ground Level**

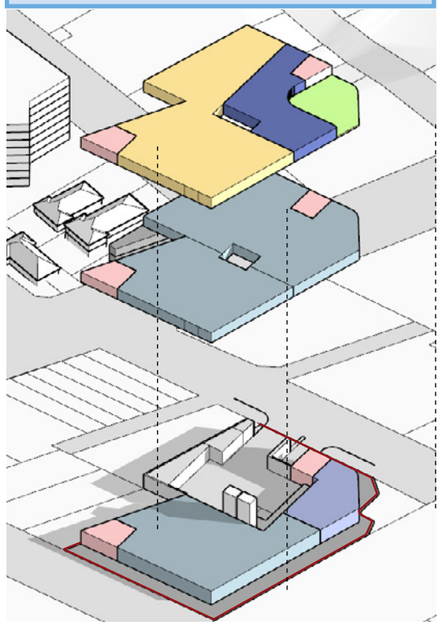


Figure 27 Mixed Use Podium Diagram

OPTION 02
Retail Focused Podium

- **BUILDING HEIGHT: 3 storeys**
- **FSR: 1.61 : 1**
- **LAND USES**
  - Bulky Goods
  - Small Retail/Specialty/ F&B
- **Loading Dock to Ground Level**

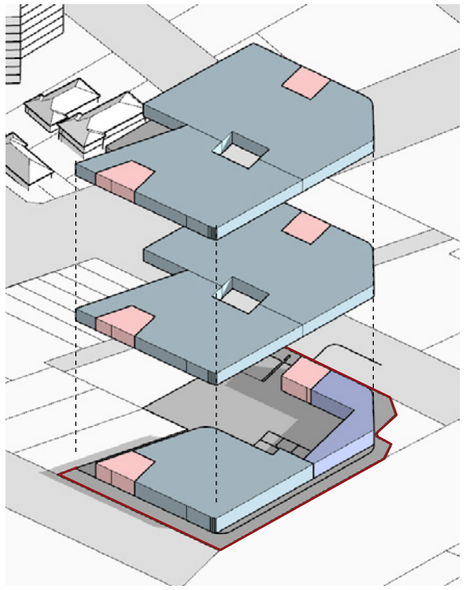


Figure 28 Retail Focused Podium Diagram

OPTION 03 - REFERENCE SCHEME
Condensed Podium

- **BUILDING HEIGHT: 2 storeys**
- **FSR: 1.0 : 1**
- **LAND USES**
  - Bulky Goods
  - Small Retail/Specialty/ F&B
- **Loading Dock to Basement Level**

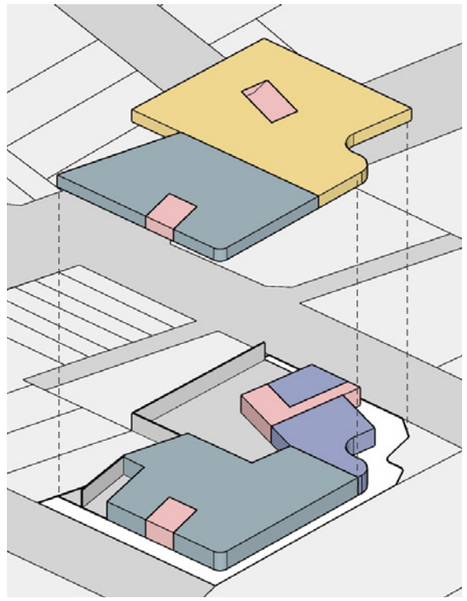
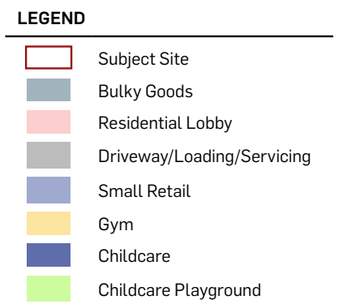


Figure 29 Condensed Podium Diagram



5.3 OPTION 01 - MIXED USE PODIUM

Podium Option 1 is a 3 storey podium with mixed uses including bulk good retail, a gym and childcare. The podium has single vehicle access off Gordon Avenue, with servicing and loading sleeved at ground level and basement car parking below.

Table 5 Option 01 Podium Summary

LEVEL	USE	GFA	FSR
Ground Floor	Small Retail (F&B / Specialty)	371	
	Bulky Goods	1,217	
First Floor	Bulky Goods	1,386	
	Bulky Goods	908	
Second Floor	Gym	1,491	
	Childcare	519	
Total		**5,891**	**1.40**

TRAFFIC & SERVICING STRATEGY

- Gordon Ave provides access for both servicing and loading (for HRV 12.5m vehicles) as well as driveway to basement car parking. Approximately 50% of the Gordon Avenue street frontage is dedicated to driveway access. While this is not an optimal outcome on Gordon Ave, Nelson Street benefits from a dedicated, active, pedestrian-focused frontage.

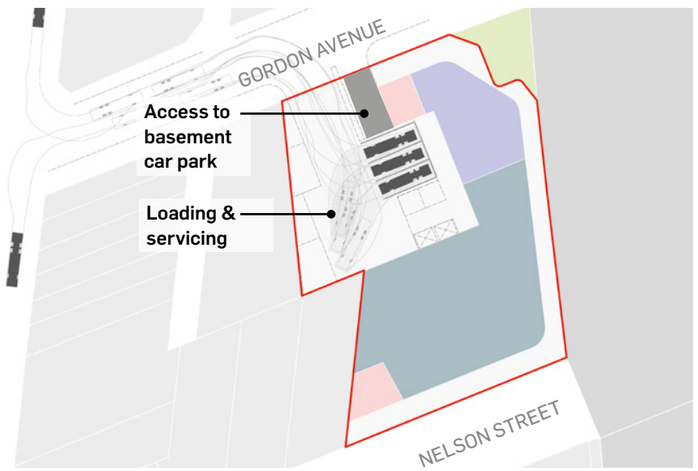


Figure 30 Preliminary Traffic & Servicing Strategy

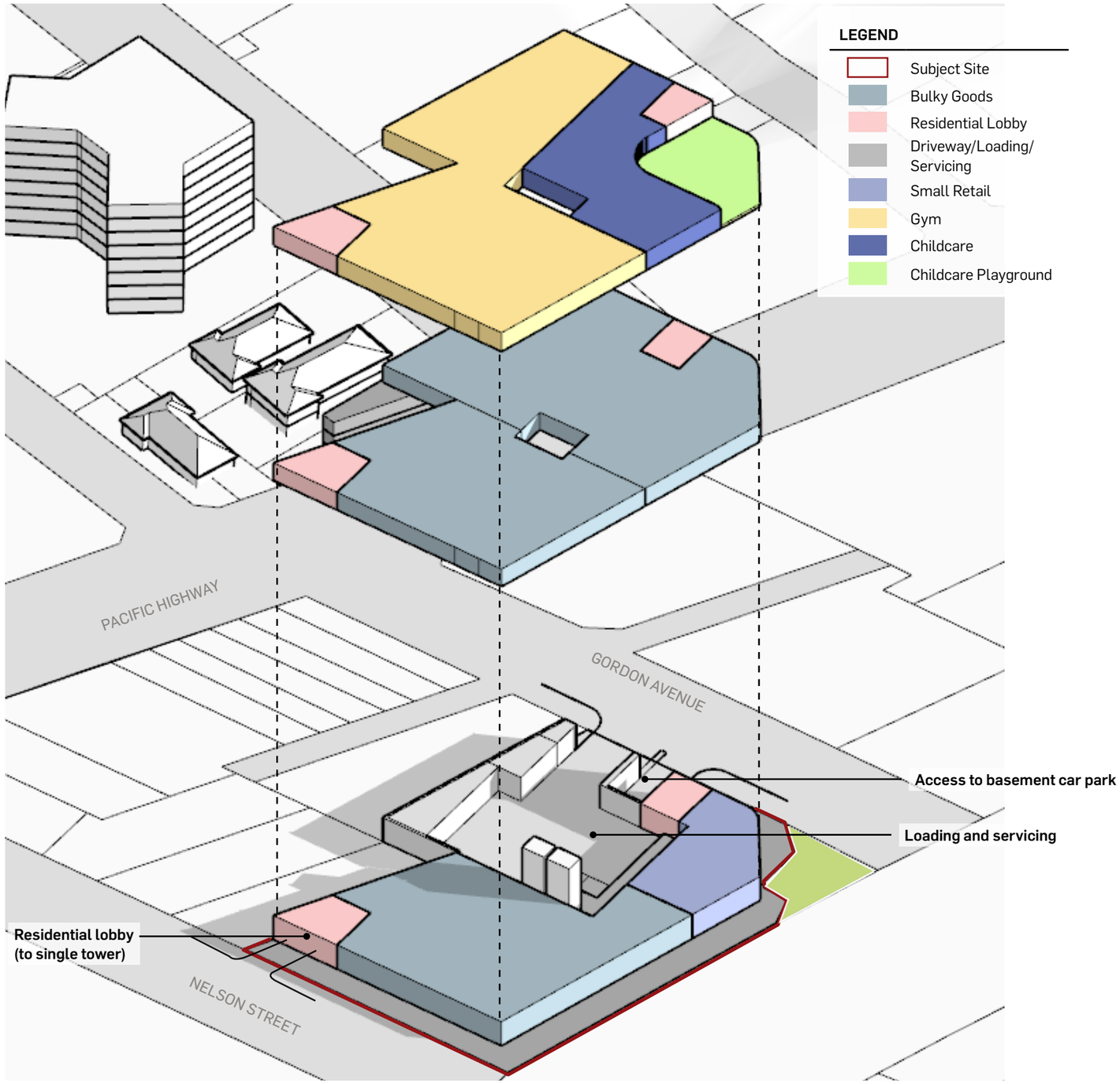


Figure 31 Mixed Use Podium - Exploded Axonometric View

5.4 OPTION 02 - RETAIL FOCUSED PODIUM

Podium Option 2 is a 3 storey podium with retail focused uses. The podium has dual vehicle access with one-way service movement entering from Gordon Avenue and exiting on Nelson Street. Basement car parking is accessed via Gordon Avenue only.

Table 6 Option 2 Podium Summary

LEVEL	USE	GFA	FSR
Ground Floor	Small Retail /F&B / Specialty	300	
	Bulky Goods	950	
First Floor	Bulky Goods	2,780	
Second Floor	Bulky Goods	2,780	
Total		**6,809**	**1.61**

TRAFFIC & SERVICING STRATEGY

- This option provides driveway access to basement car parking on Gordon Avenue, as well as one-way servicing/loading circulation with ingress off Gordon Ave and egress off Nelson Street. This servicing design accommodates both HRVs and AVs (i.e. 12.5m and 19m vehicles) to enable maximum flexibility for future retail tenancies. Compared to the other servicing strategies there is moderate impact to the streetscapes and pedestrian movement.

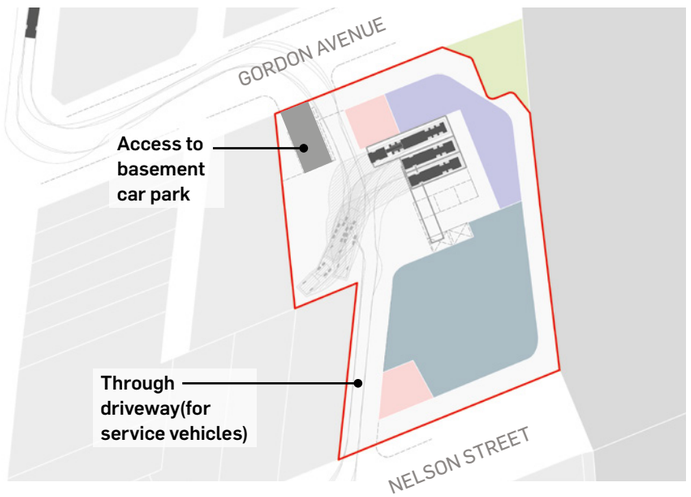


Figure 32 Preliminary Traffic & Servicing Strategy

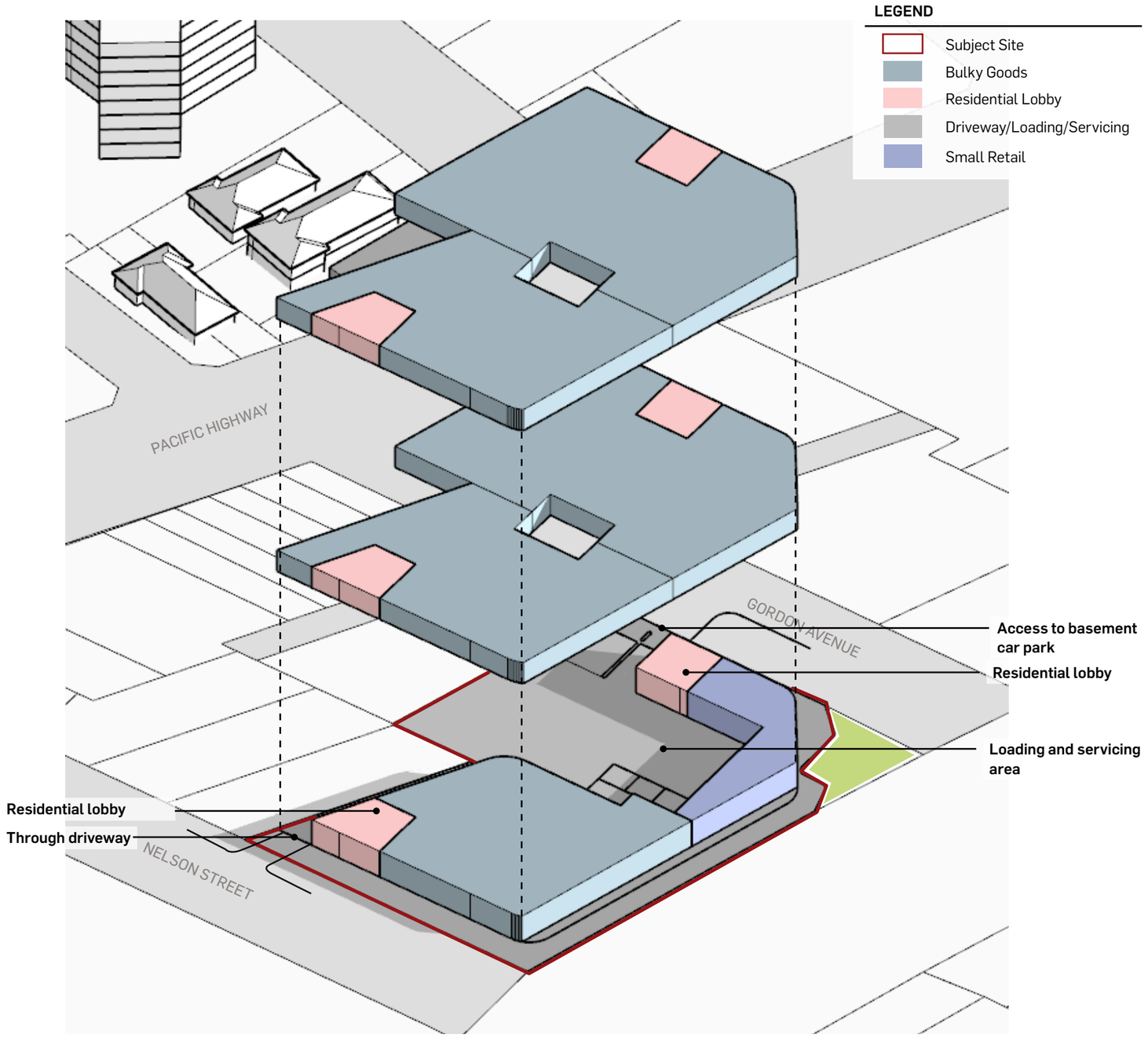


Figure 33 Retail Focused Podium - Exploded Axonometric View

5.5 OPTION 03 - CONDENSED PODIUM (REFERENCE SCHEME)

This option was adopted in the reference scheme as it:

- Satisfies the CBD Strategy's FSR requirement of 1:1 for non-residential uses, as well as requirements for basement servicing and loading;
- Provides active frontages in locations required from the CBD Strategy, i.e. Nelson Street, Gordon Avenue and the shared active transport link;
- Offers a mix of land uses to contribute to the vibrancy of the local area;
- Comprises of a 2 storey 'human scale' podium form, whereby the podium is in keeping with the existing tree line.
- Loading and servicing occurs within basement levels as opposed to ground floor.

Table 7 Option 03 Podium Summary

LEVEL	USE	GFA	FSR
Ground Floor	Small Retail /F&B / Specialty	419	
	Bulky Goods	1,305	
First Floor	Bulky Goods	8,85	
	Gym	1,610	
Total		**4,219**	**1.0**

TRAFFIC & SERVICING STRATEGY

- Gordon Ave provides access to basement servicing and loading (for HRV 12.5m vehicles). Approximately 30% of the Gordon Avenue street frontage is dedicated to driveway access. Residential vehicle access is via Nelson Street. This split strategy reduces traffic impacts to both streets.

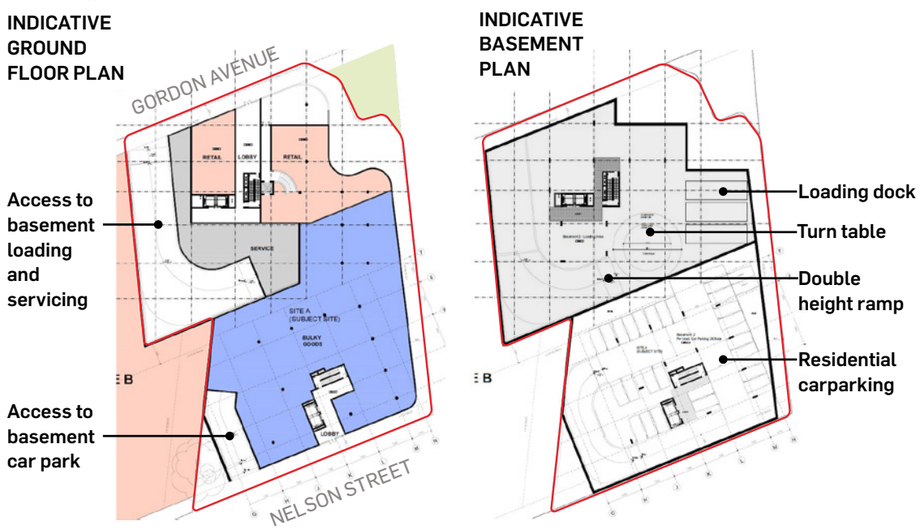


Figure 34 Preliminary Traffic & Servicing Strategy

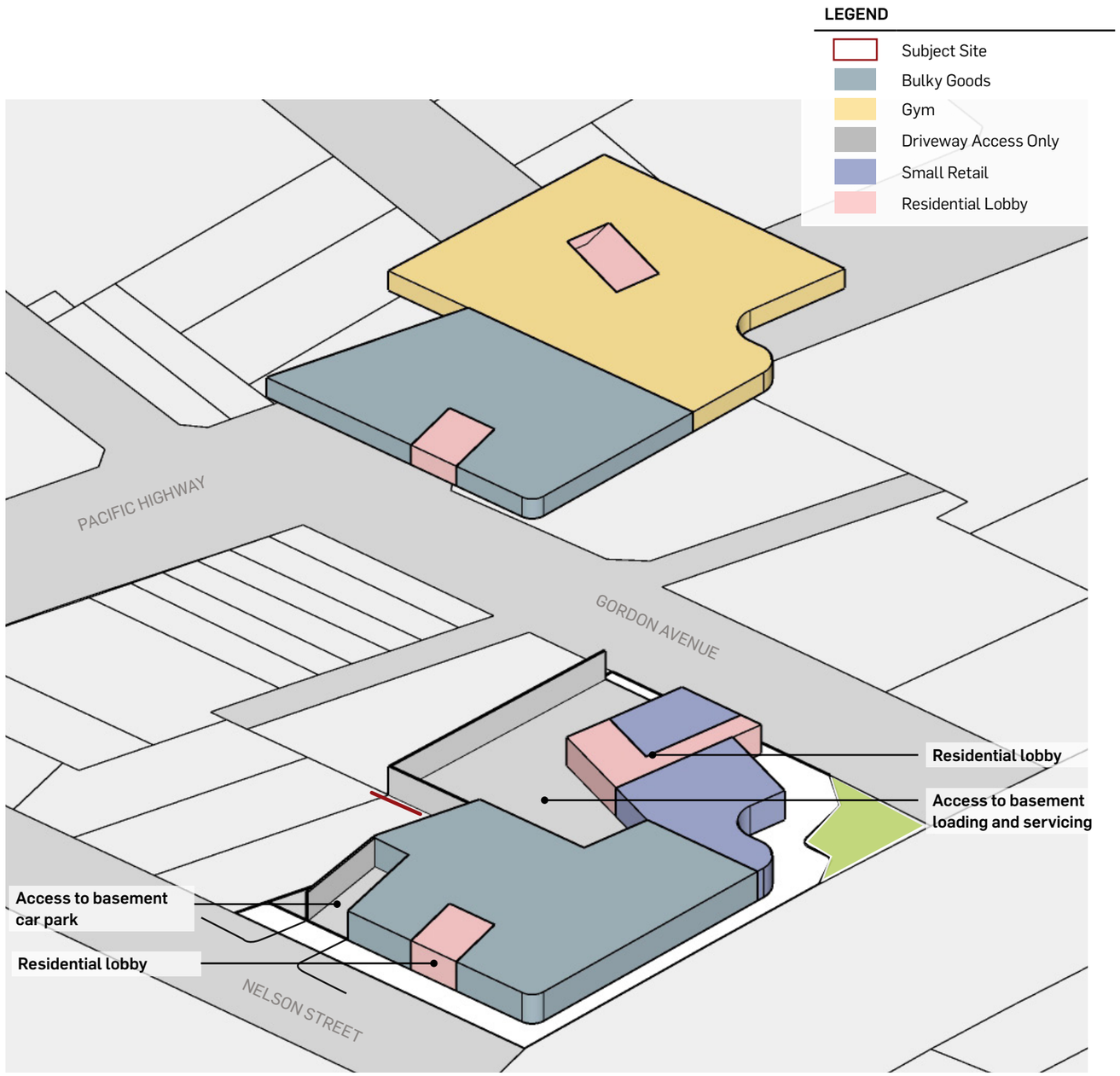


Figure 35 Condensed Podium - Exploded Axonometric View

6.0 TOWER TESTING

6.1 TOWER OPTIONS OVERVIEW

The following section tests a built form option that meets the requirements of the CBD Strategy. Below is an overview of the scheme, which adopts the 2-storey podium design presented in section 5.

REFERENCE SCHEME

Figure 36 Two Tower Option

Maximum Building Height	FSR	Indicative Yield
90M 27 STOREYS OR RL 189.5	6.0	258 APARTMENTS

6.2 DEVELOPMENT ASSUMPTIONS

Below is a summary of key development assumptions and guiding parameters from the CBD Strategy applied to the built form testing.

DEVELOPMENT ASSUMPTIONS

Site Area	4,219 sqm
Floor to Floor Height (Residential)	3.1m
Floor to Floor Height (Commercial)	4.5m
GBA to GFA (Residential)	75%
GBA to GFA (Commercial)	87%
GFA to NSA	90%
Standard Apartment size (sqm)	75
Car park rate per dwelling	1.2
Car park area per dwelling (sqm) - *includes allowance for circulation, bin storage, cycle parking and building structures.*	35sqm
Overall building height includes allowance for rooftop plant, services and lift overrun zone to a maximum height of:	2.5m

CHATSWOOD CBD STRATEGY PARAMETERS

Podium street setback	0m or in response to surrounding context
Tower setback	3m from street wall or a minimum of 1:20 ratio of the setback to building height.
Max. Podium Height	14m
Max. FSR	6.0
Min. FSR non residential uses	1:1
Maximum Building Height	90m

6.3 CONSIDERATION FOR SURROUNDING CONTEXT

To understand the future context and re-development opportunities and impacts to the immediate area, sites to the west and north were considered in the modelling and analysis. Existing planning proposal on Gordon Avenue were modelled and other sites adopted the planning parameters from the CBD Strategy to inform indicative built form envelopes.

For the subject site, towers were setback a minimum 12 metres from the western boundary to enable future residential development on the adjoining property, in line with key requirements of the ADG (including building separation distances). This complies with the 1:20 setback requirement of the CBD Strategy.

Figure 37 Surrounding Context Plan with Indicative Development

6.4 TOWER INVESTIGATIONS: BUILDING SEPARATION

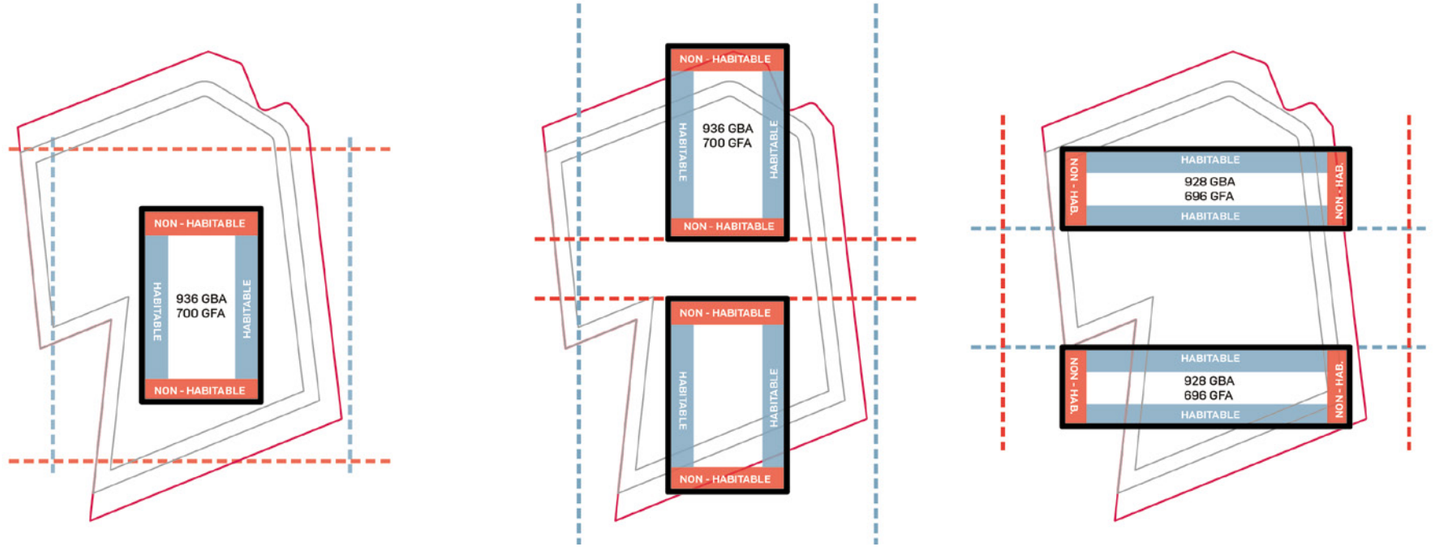
Testing for suitable tower options on the site began with consideration for key requirements of the ADG, in particular building separation and building depth requirements as summarised in the table below.

Table 8 ADG building separation and building depth requirements

Building Separation	Minimum separation distances for buildings are Up to four storeys (approximately 12m): ▪ 12m between habitable rooms/balconies ▪ 9m between habitable and non-habitable rooms ▪ 6m between non-habitable rooms Five to eight storeys (approximately 25m): ▪ 18m between habitable rooms/balconies ▪ 12m between habitable and non-habitable rooms ▪ 9m between non-habitable rooms Nine storeys and above (over 25m): ▪ 24m between habitable rooms/balconies ▪ 18m between habitable and non-habitable rooms ▪ 12m between non-habitable rooms
Building Depth	A range of appropriate maximum apartment depths of 12-18m from glass line to glass line, or up to 22m for the building envelope. This will ensure that apartments receive adequate daylight and natural ventilation and optimise natural cross ventilation.

BUILDING ORIENTATION AND SEPARATION OPTIONS

BUILDING OVERLAY ON SUBJECT SITE



6.5 TOWER INVESTIGATIONS: LOCATION AND ORIENTATION

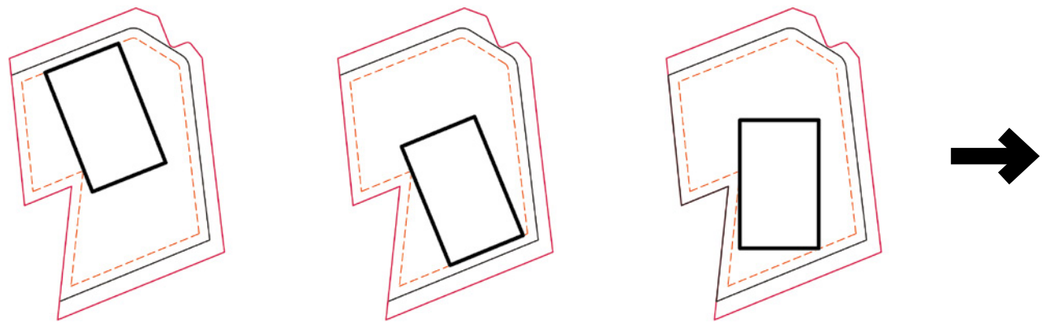
The testing of tower options also considered the location and orientation of buildings, with the following objectives:

- To minimise overshadowing and visual impacts to surrounding context (particularly public open spaces)
- To maximise solar access to the residential units
- To maximise solar access to communal open space and childcare playground
- To realise development potential

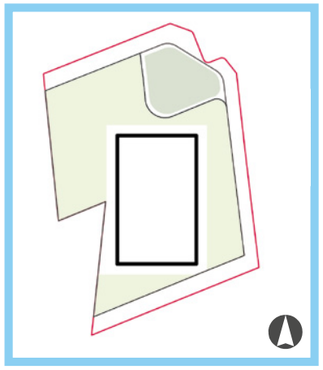
The adjacent images capture a selection of tower locations and orientations considered to inform optimal and suitable outcomes for the site. Two options were identified for further testing and detailed design development.

SINGLE TOWER

1. Single tower options

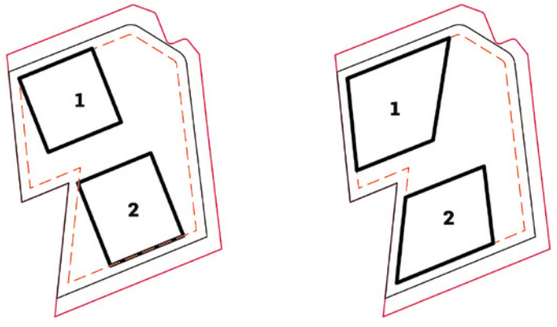


2. Optimum outcome to test further

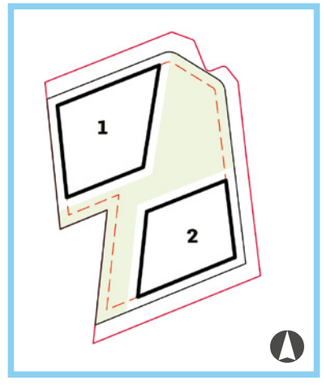


DOUBLE TOWER

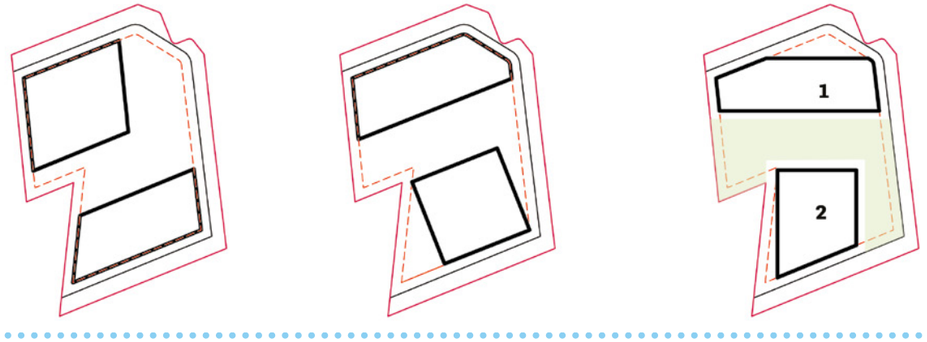
1. Double tower options



2. Optimum outcomes to test further



1. Double tower options - no outcome to test further (due to solar access limitations)



6.6 REFERENCE SCHEME

DESIGN CHARACTERISTICS

- The total building height of the two towers are 27 and 22 storeys. This variation in height is intended to create visual interest in Chatswood's future CBD skyline with transition to the south.
- The two towers are 18 metres apart assuming a habitable to non-habitable interface (between Tower A and B), in line with the requirements of the ADG.
- The towers are setback a minimum 3 metres from the podium (as per the CBD Strategy) and 12 metres from the western boundary.
- The facade of the tower forms are articulated for visual interest and to meet the requirements of the ADG (in particular solar access and natural ventilation).
- The tower floorplates have a GFA of 555sqm and 540sqm, this equates to approximately 6 units per floor plate.
- The first level of apartments have access to private courtyards on the podium rooftop. The remainder of the podium rooftop as well as the tower rooftops are dedicated to communal open space. Refer to *Landscape Concept Report* for further detail.

Table 9 Reference Scheme Development Summary

USE	# STOREYS	MAX. HEIGHT	GFA	FSR	RESI. YIELD
Podium	2	10m	4,219	-	-
Residential Tower - A	25	77.5m	12,215	-	144
Residential Tower - B	20	62m	9,072	-	114
Total Residential	-	-	21,287	-	258
Total	**27 & 22**	**90m (RL 189.5)**	**25,506**	**6.0**	**258**

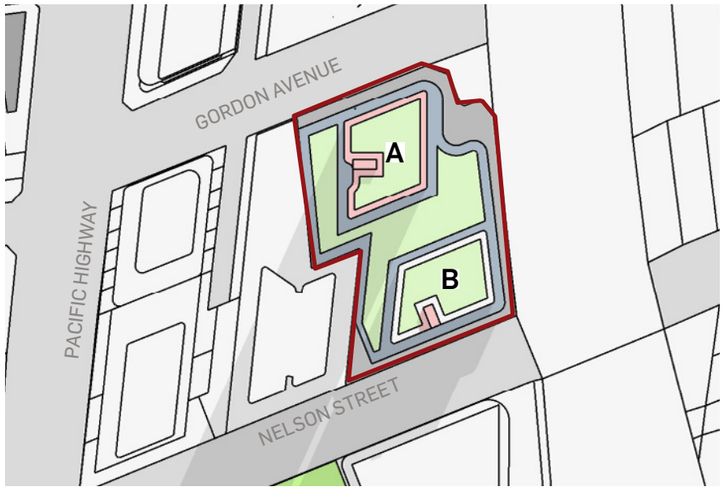


Figure 38 Reference Scheme Plan View

Figure 40 Proposed Podium

Figure 39 Reference Scheme 3D View

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7.0 SHADOW ANALYSIS

The following section identifies overshadowing impacts to surrounding context between 9 am and 3 pm on the 21st of June (mid-winter) in accordance with requirements of the ADG.

KEY OBSERVATIONS

- The proposed towers are predominately north-south orientated with slender forms to create relatively fast moving shadows.

- Sites to the immediate south on Nelson Street are most impacted by proposed development. There is potential that future residential uses (at lower levels) and the future park to the south of the subject site on Nelson Street will not achieve 2 hours of solar access during mid-winter. Relocating the future park to the north east corner of the site would be beneficial for solar access, as well as potentially improve visual and physical connectivity from the existing shared link.

- From 2pm onwards the proposal on the subject site casts shadows over the conservation area. However the locations impacted are expected to get at least 3 hours of solar access during the morning and early afternoon, and are thus likely to still achieve solar requirements for residential uses.

- Future residential towers to the west of the subject site are unlikely to achieve the solar access requirements stipulated by the ADG, due to overshadowing from surrounding future re-development.

SUMMARY

- Overall the uplift afforded by the proposed controls in the CBD Strategy will greatly change the future context of the area with a cluster of tall and slender towers that will cast large and fast moving shadows.

REFERENCE SCHEME

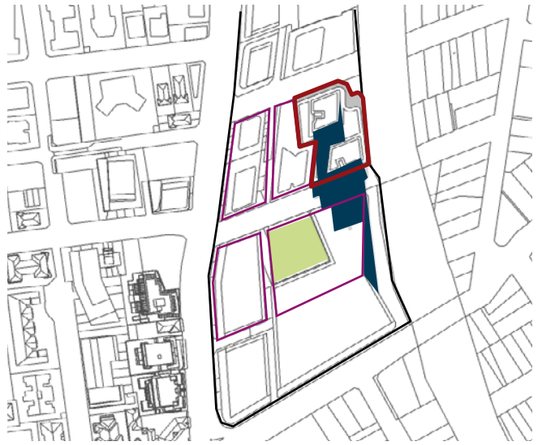
9 AM

10 AM

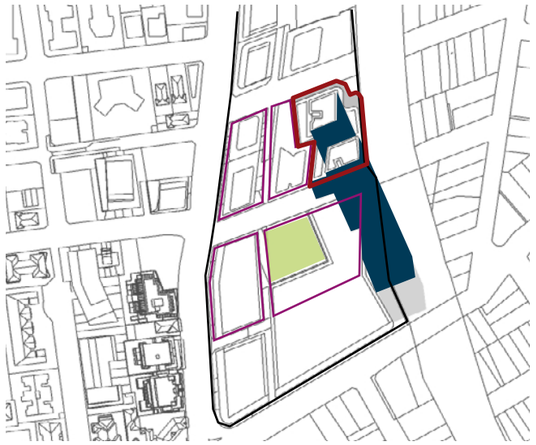
11 AM

LEGEND

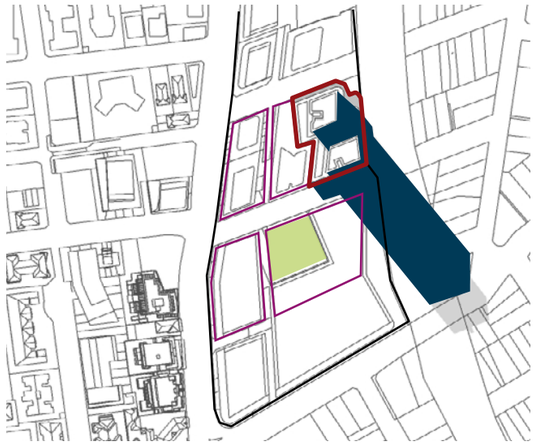
- Site boundary
- Chatswood Town Centre Study Boundary
- Shadows cast by Reference Scheme
- Potential future residential development that get less than 2 hours of sunlight
- Public Open Space



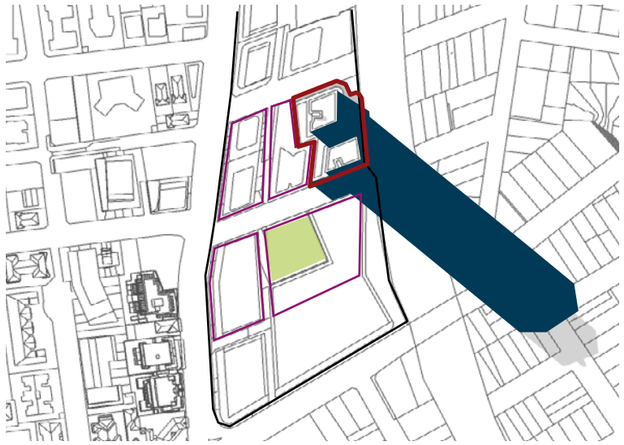
12 PM



1 PM



2 PM



3 PM

8.0 SOLAR ACCESS ANALYSIS

The scheme exceeds the minimum requirements as per the ADG for residential amenity and solar access to communal open spaces, living rooms and private open spaces. The ADG stipulates the following requirements.

For Communal Open Space:

- Communal open space has a minimum area equal to 25% of the site, i.e. 1055 sqm for the subject site
- Development achieves a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9 am and 3 pm on 21 June (mid winter).

Solar Access for Living Areas and Private Open Space:

- Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter
- A maximum of 15% of apartments receive no direct sunlight between 9am and 3pm in mid winter

8.1 SOLAR ACCESS TO COMMUNAL OPEN SPACE

The reference scheme has communal landscaped gardens to the podium and tower rooftop levels that exceeds the minimum area of 1055sqm (or 25% of the site). In addition to this over 50% of these communal areas achieve 2 hours of solar access in mid-winter.

REFERENCE SCHEME

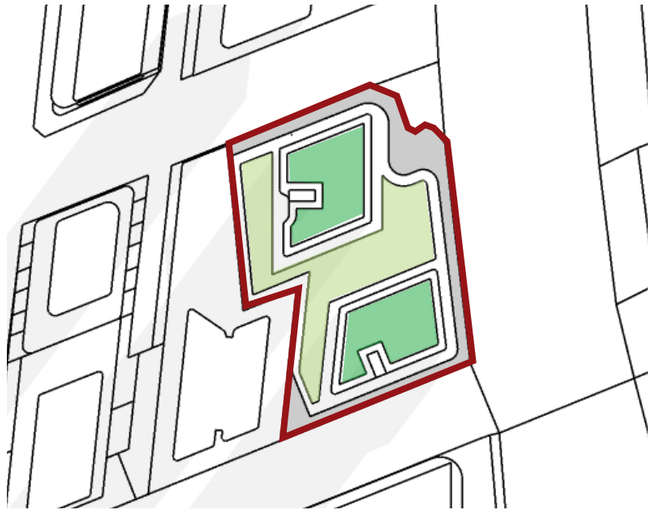


Table 10 Reference Scheme-Communal Open Space Area

USE	AREA (SQM)	% OF SITE AREA
Minimum Requirement ADG	1,055	25%
Podium	997	-
Tower A	436	-
Tower B	406	-
Total Communal Open Space	**1,839**	**44%**

58%
Communal Open Space
Achieves at least 2 hours solar access mid-winter

LEGEND

- Subject Site
- Podium Communal Open Space
- Rooftop Communal Open Space

8.2 SOLAR ACCESS TO LIVING ROOMS AND PRIVATE OPEN SPACE

Testing of indicative floorplate layouts demonstrated the following:

- Tower A: 87.5% of apartments have living rooms and private open spaces that receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter.
- Tower B: 64.9% of apartments have living rooms and private open spaces that receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter.
- Overall Total: 77.5% of apartments have living rooms and private open spaces that receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter. As a total, the two towers exceed the minimum standard of 70%.
- Also, a maximum of 15% of apartments receive no direct sunlight between 9am and 3pm in mid winter

REFERENCE SCHEME

77.5%

of apartments across the two towers achieve at least 2 hours solar access in mid-winter.

TOWER A LEVEL 2 - 20
TOWER B LEVEL 2 - 15

TOWER A LEVEL 21 - 26
TOWER B LEVEL 16 - 21

Table 11 Reference Scheme - Solar Access to Residential Units

		ACHIEVES >=2 HOURS	% OF TOTAL
TOWER A	Level 2 - 19	90	
	Level 20	6	
	Level 21 - 26	30	
	SUB-TOTAL	126	87.5%
TOWER B	Level 2 - 15	56	
	Level 16-21	18	
	SUB-TOTAL	74	64.9%
	TOTAL	200	77.5%

LEGEND

- Subject Site
- Solar Access (>=2 H)
- 1 Bed
- 2 Bed
- 3 Bed

9.0 VISUAL CONTEXT

OVERVIEW

The reference scheme was assessed from a visual change perspective. A detailed assessment of these three views are captured in the *Visual Impact Assessment Report*.

The three viewpoints are taken to the north and east of the site were the future development is most visible from a distance across the rail corridor. Views to the south and west of the site are of less interest as the proposal is masked by future buildings in the foreground.

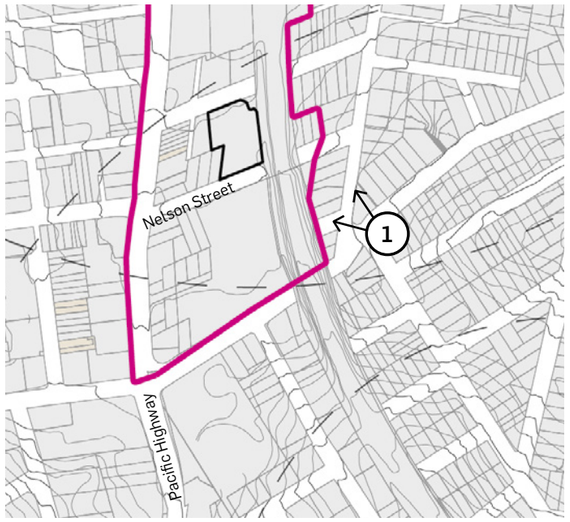
BUILDING HEIGHT STRATEGY

The recommended height map in the CBD Strategy shows a transition in building height at an overall precinct-wide scale to southern and eastern fringes. This means the edges of the CBD will have relatively dramatic variation in building height that positively contributes to the distinctiveness of the urban form.

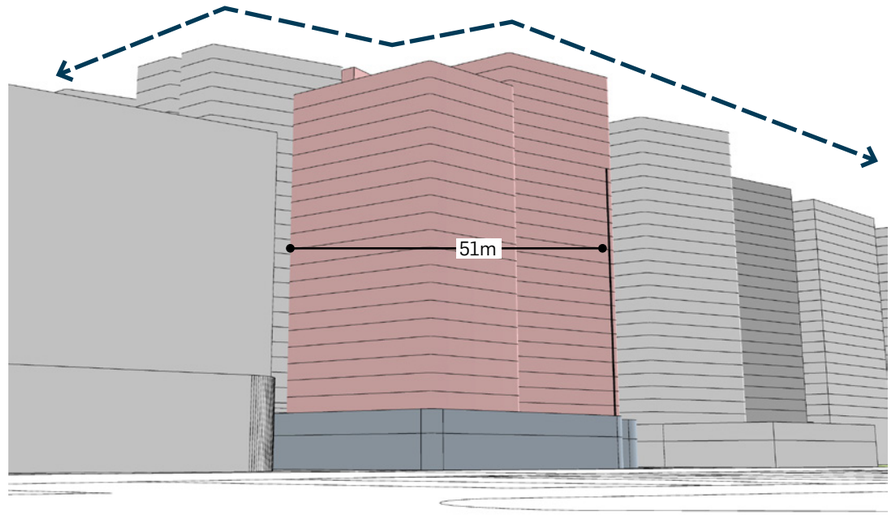
While the overall building height strategy for the CBD provides for flexibility, there is also risk that future towers within the bulk of the CBD core will maximise height controls (i.e. 90 meters or RL246.8) and create a flat and undefined skyline that lacks distinction and form.

To this point, the two towers in the Reference Scheme intentionally distributes height to achieve a 'stepped' building profile that adds variation of height and visual interest to the future CBD skyline. Variation in the future skyline is an important consideration for providing visual identity to Chatswood's urban form.

VIEW 1

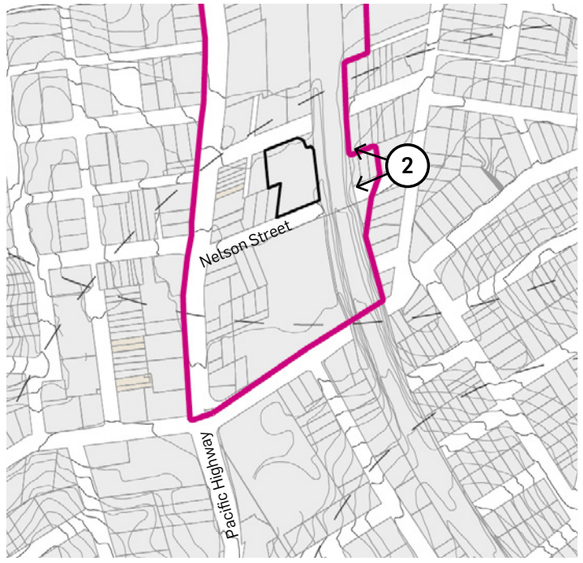


Key Map

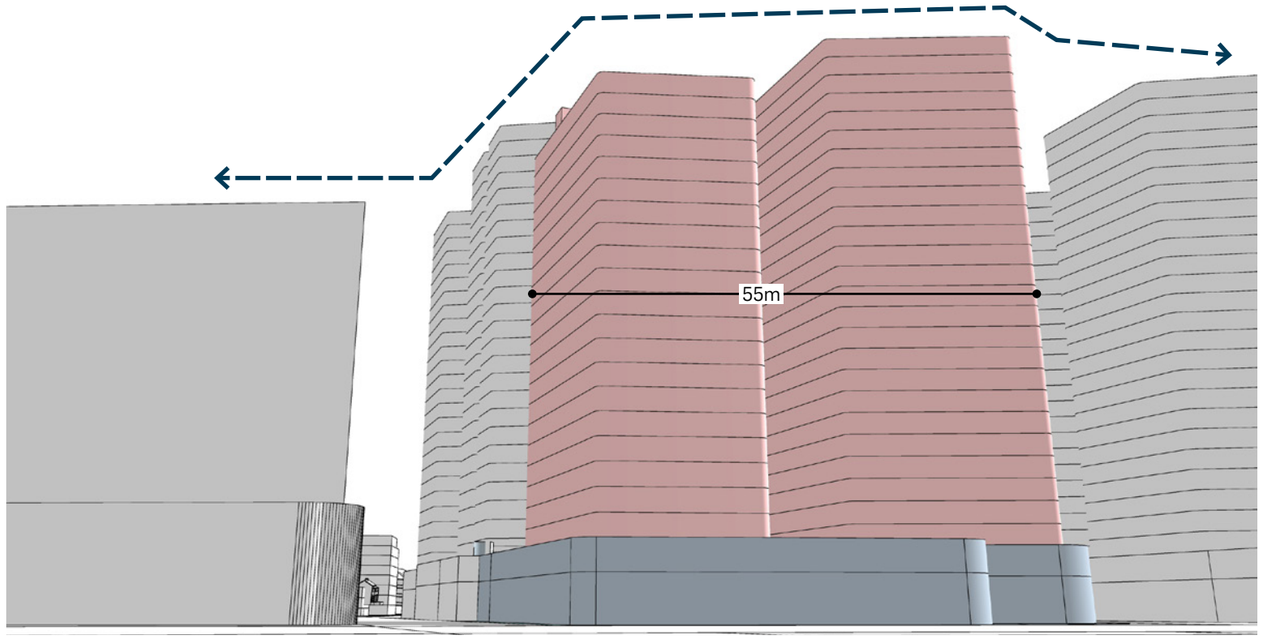


Reference Scheme- View from SE Corner - Mowbray Road and Elizabeth Street

VIEW 2

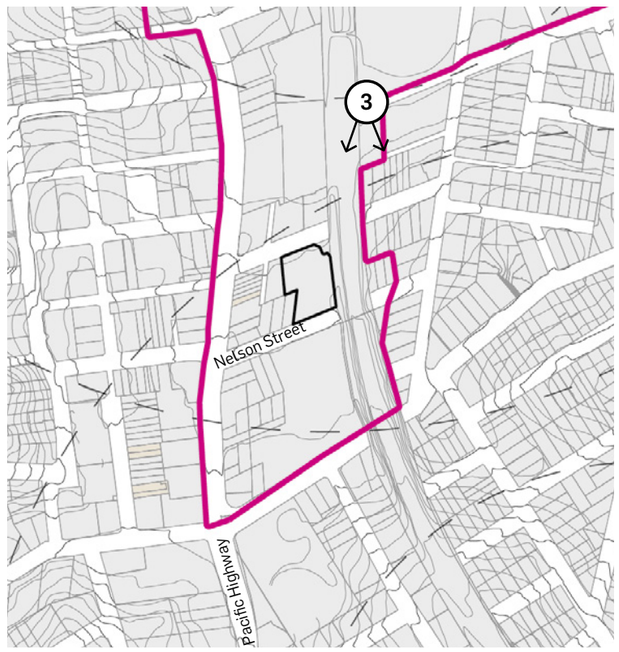


Key Map

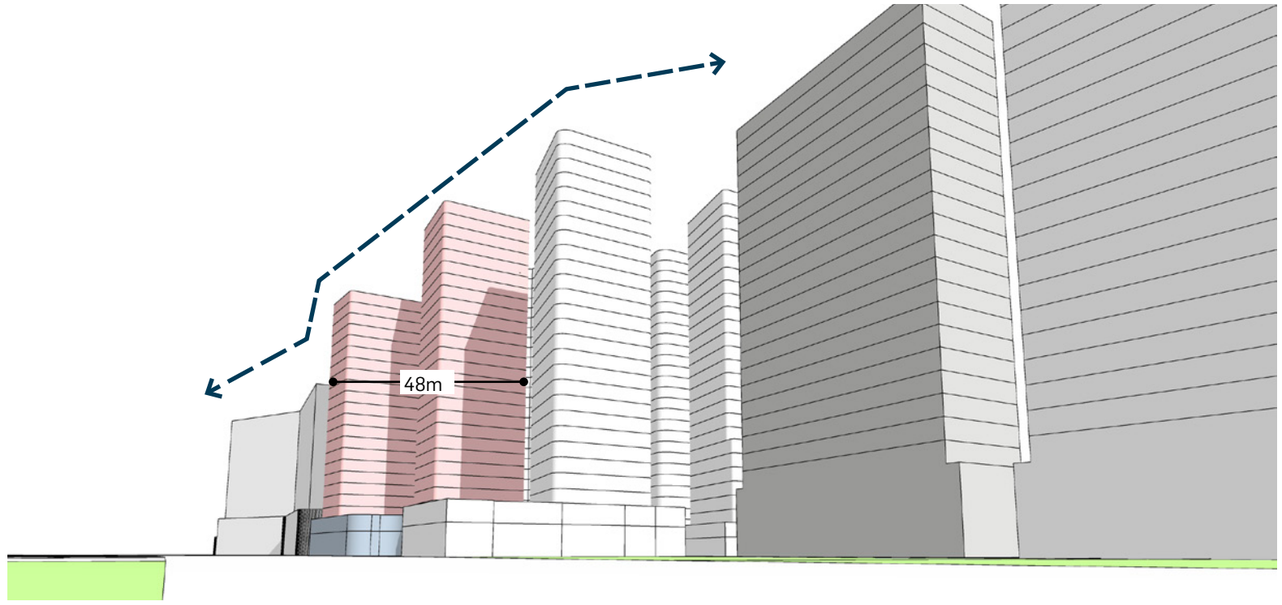


Reference Scheme- View from east end Nelson Street / Berkeley Court

VIEW 3



Key Map



Reference Scheme- View Chatswood Park

10.0 CONCLUSION

In summary this report presents a Reference Scheme that tests the recommendations provided in the CBD Strategy and delivers a potential built form outcome with site-specific merit. The reference scheme provides benefit through the following means:

- Consistency with the broader strategic vision for Chatswood CBD as it meets the requirements provided in the CBD Strategy;

-Meets key requirements provided in the ADG to ensure high quality apartment living with sufficient amenity can be provided, i.e. provision for communal open space and sufficient solar access to living rooms and private open spaces;

-Enhances the landscape character by retaining streets trees, introducing green rooftops, and enhancing both the embellishment and quantum of public domain along the eastern frontage to the shared path and existing pocket park;

-Promotes a vibrant, safe and inclusive development through a mix of non-residential uses within the podium and active frontages to encourage passive surveillance;

- Improves pedestrian experience and way-finding by minimising driveway crossovers, integrating outdoor landscaped spaces fronting the public domain, and articulating building facades with legible entry points.

- Overshadowing impacts to neighbouring sites is considered and minimised so that future development and existing housing can achieve minimum solar access;

- Visual context is considered to reduce the overall bulk and scale of the development and to positively contribute to a visually dynamic future skyline.

10.1 SUMMARY OF THE REFERENCE SCHEME

The table below highlights key characteristics of the scheme based on requirements of the Chatswood CBD Strategy and ADG.

	Criteria/Requirements	REFERENCE SCHEME
CBD Strategy	**Building height - maximum 90m**	Tower A - 74.5m (22 Storeys) Tower B - 90m (27 Storeys)
	FSR - maximum 6:1	6:1
	Tower floor plate - max.. 700sqm GFA	555 & 540 sqm
	Basement car parking and servicing	Basement car parking and servicing/ loading dock
ADG	**Preliminary yield**	258 Units
	Development feasibility	6 units per floor plate
	Residential Units - solar access	Overall total 77.5%
	Communal open space- min.. 25%	1,839 sqm (or 44%)
	Communal open space area solar access - min.. 50%	Approx. 58%
	Neighbouring residential solar access	Site to immediate south (future park and development on Nelson St) unlikely to achieve 2 hours of solar access
	Apartment Mix	Tower A - 31% (1b): 61% (2b): 8% (3b) Tower B - 31% (1b): 59% (2b): 11% (3b)

Figure 41 3D View

10.2 CONSISTENCY OF THE REFERENCE SCHEMES

The table below provides a checklist of outcomes for the Reference Scheme against the CBD Strategy's 'Key Elements of Future LEP and DCP Planning Controls'.

Table 12 Key Elements of Future LEP and DCP Planning Controls Checklist

KEY ELEMENT #	KEY ELEMENT DESCRIPTION SUMMARY	CONSISTENCY
1	▪ Map: Chatswood CBD boundary	✓
2	▪ Map: Recommended land use	✓
3	▪ The existing DCP limits on office and retail use in parts of the Commercial Core to be removed	N/A
4	▪ Serviced apartments to be removed as a permissible use from the B3 Commercial Core zone	N/A
5	▪ Planning Agreements will be negotiated to fund public domain improvements.	Co-ordinated as part of future DA
6	▪ A new Planning Agreements Policy will apply and be linked to a contributions scheme that will provide the public and social infrastructure in the Chatswood CBD	Co-ordinated as part of future DA
7	▪ All redevelopments in the Chatswood CBD should contribute to public art in accordance with Council's Public Art Policy	Co-ordinated as part of future DA
8	▪ Design excellence is to be required for all developments based on the following process - competitive designs for developments over 35m high.	Co-ordinated as part of future DA
9	▪ Achievement of design excellence will include achievement of higher building sustainability standards	Co-ordinated as part of future DA
10	▪ The Architects for design excellence schemes should be maintained through the development application process and can only be substituted with written agreement of Council	Co-ordinated as part of future DA
11	▪ Map: Existing RSR under WLEP 2012	N/A
12	▪ Minimum site area of 1200sqm for mixed use development in the B4 Mixed Use zone to achieve maximum FSR as shown in Map with urban design outcomes listed.	✓
13	▪ Map: Recommended FSR	✓
14	▪ Affordable housing is to be provided within the maximum floor space ratio, and throughout a development rather than in a cluster.	Co-ordinated as part of future DA
15	▪ Where the maximum floor space ratio of 6:1 is achieved, the minimum commercial floor space ratio sought in development in a Mixed Use zone is 1:1.	✓
16	▪ 700sqm GFA for residential towers above Podium within Mixed Use zones.	✓
17	▪ In pursuit of the goal of slender tower forms, the width of each side of any tower should be minimised to satisfactorily address this objective	✓
18	▪ If there is more than one residential tower on a site, sufficient separation is to be provided in accordance with setbacks required in this Strategy, SEPP 65 and the Apartment Design Guidelines,	✓
19	▪ Map: Recommended sun access protection for public spaces	N/A
20	▪ Map: Recommended building height	✓
21	▪ All structures located at roof top level within the height maximums	✓
22	▪ Map: Recommended links and new open space	✓
23	▪ Any communal open space, with particular regard to roof top level on towers, should be designed to address issues of quality, safety and usability.	✓
24	▪ Public realm or areas accessible by public on private land - is to be designed to respond to context and nearby public domain and should be visible from the street and easily accessible.	✓
25	▪ All roofs up to 30 metres from ground are to be green roofs.	✓
26	▪ A minimum of 20% of the site is to be provided as soft landscaping, which may be located on Ground, Podium and roof top levels or green walls of buildings.	✓
27	▪ Map: Recommended setbacks and street frontages	✓
28	▪ All towers above podiums in B4 Mixed Use zones are to be setback from all boundaries a minimum of 1:20 ratio of the setback to building height.	✓
29	▪ Building separation to neighbouring buildings is to be in accordance with the Apartment Design Guide for residential uses.	✓
30	▪ At ground level, to achieve the vibrant CBD Council desires, buildings are to maximise active frontages.	✓
31	▪ Site Isolation will be discouraged and where unavoidable joined basements and zero-setback podiums should be provided to encourage future efficient sharing of infrastructure.	✓
32	▪ Controls will be applied to ensure the traditional lot pattern along Victoria Ave east is reflected into the future.	N/A
33	▪ Floor space at Ground level is to be maximised, with supporting functions such as car parking, loading, garbage rooms, plant and other services located in Basement levels.	✓
34	▪ Substations are to be provided within buildings, not within the streets, open spaces or setbacks and not facing key active street frontages	Co-ordinated as part of future DA
35	▪ The CBD Strategy employs a Travel Demand Management approach seeking to modify travel decisions to achieve more desirable transport, social, economic and environmental objectives consistent with Council's Integrated Transport Strategy. In addition, site specific traffic and transport issues are to be addressed.	✓

11.0 APPENDIX: ALTERNATE SCHEME

11.1 ALTERNATE SCHEME OVERVIEW

As well as the Reference Scheme, an Alternate Scheme with a single, larger foorplate (beyond the maximum florplate area stipulated in the CBD Strategy) was also tested and revealed that a single tower option results in additional benefits in terms of improved ADG performance.

DESIGN CHARACTERISTICS

- The total building height is 27 storeys.
- The tower has a north-south orientation to maximise solar access to apartments
- The tower is setback a minimum 3 metres (as per the CBD Strategy) from the podium and 12 metres from the western boundary.
- The tower form is articulated for visual interest and to meet the requirements of the ADG (in particular solar access and natural ventilation).
- The tower floor plate GFA is 840sqm, or approximately 20% greater than the maximum GFA identified in the CBD Strategy (i.e. 700sqm). This equates to approximately 9 units per level, which is within the ADG range of 8-12 apartments.
- The first level of apartments have access to private courtyards on the podium rooftop. The remainder of the podium rooftop and tower rooftop are dedicated to communal open space. Refer to *Landscape Concept Report* for further detail.

Table 13 Alternate Scheme Development Summary

USE	# STOREYS	MAX. HEIGHT	GFA	MAX. FSR	RESI. YIELD
Podium	2	10m	4,219	-	-
Residential Tower	25	77.5m	21,000		250
Total	**27**	**90m (RL 189.5)**	**25,219**	**6.0**	**250**

Figure 42 Alternate Scheme Plan View

Maximum Building Height	FSR	Indicative Yield
90M 27 STOREYS OR RL 189.5	6.0	250 APARTMENTS

Figure 44 Proposed Podium

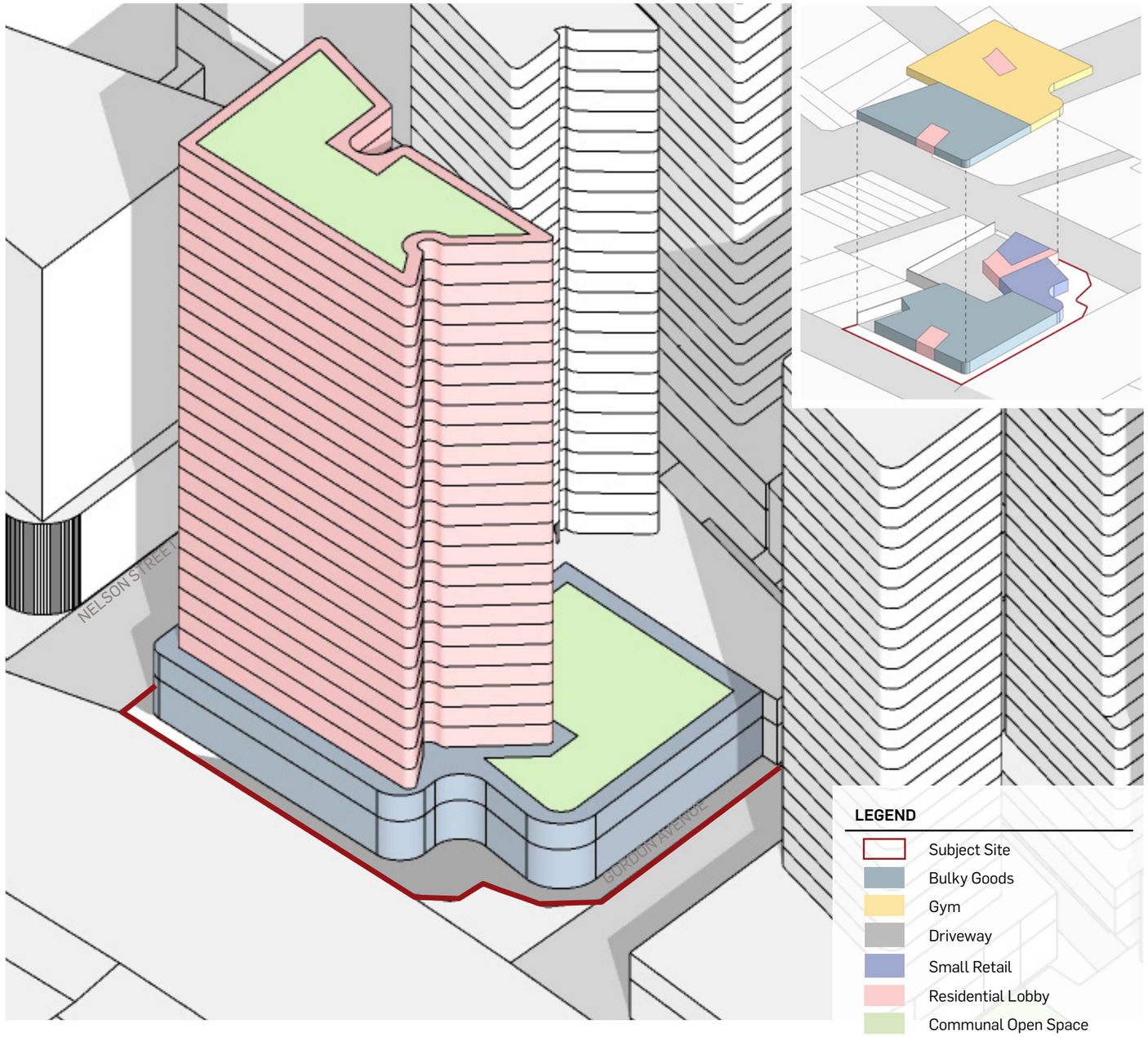


Figure 43 Alternate Scheme 3D View

Prepared by Urbis 47

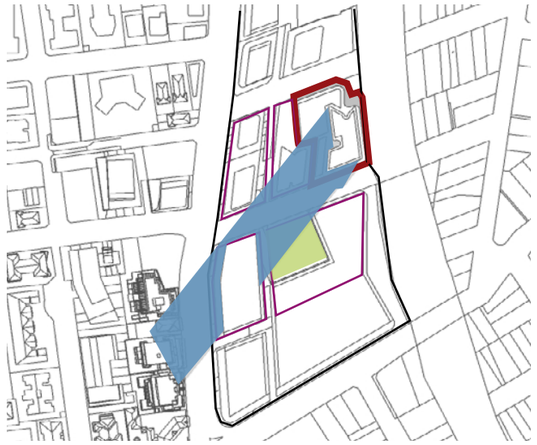
11.2 SHADOW STUDY

The following section identifies overshadowing impacts to surrounding context between 9 am and 3 pm on the 21st of June (mid-winter) in accordance with requirements of the ADG.

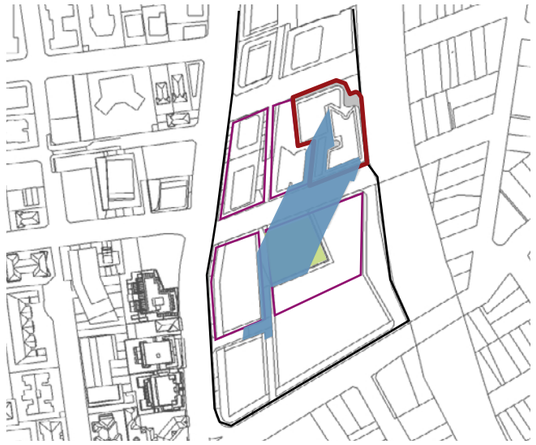
KEY OBSERVATIONS

- The proposed towers are predominately north-south orientated with slender forms to create relatively fast moving shadows.
- Sites to the immediate south on Nelson Street are most impacted by proposed development. There is potential that future residential uses (at lower levels) and the future park to the south of the subject site on Nelson Street will not achieve 2 hours of solar access during mid-winter. Relocating the future park to the north east corner of the site would be beneficial for solar access, as well as potentially improve visual and physical connectivity from the existing shared link.
- From 2pm onwards the proposal on the subject site casts shadows over the conservation area. However the locations impacted are expected to get at least 3 hours of solar access during the morning and early afternoon, and are thus likely to still achieve solar requirements for residential uses.
- Future residential towers to the west of the subject site are unlikely to achieve the solar access requirements stipulated by the ADG, due to overshadowing from surrounding future re-development.

ALTERNATE SCHEME - SINGLE TOWER



9 AM

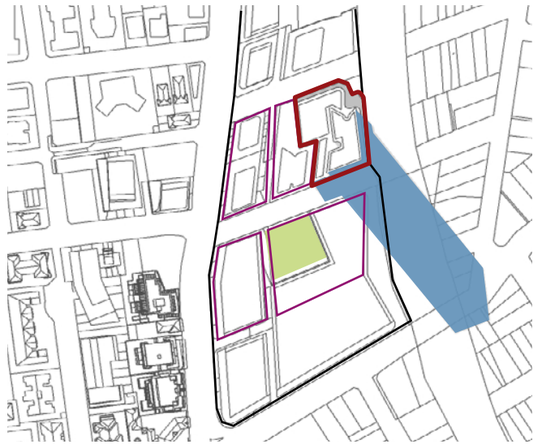


10 AM

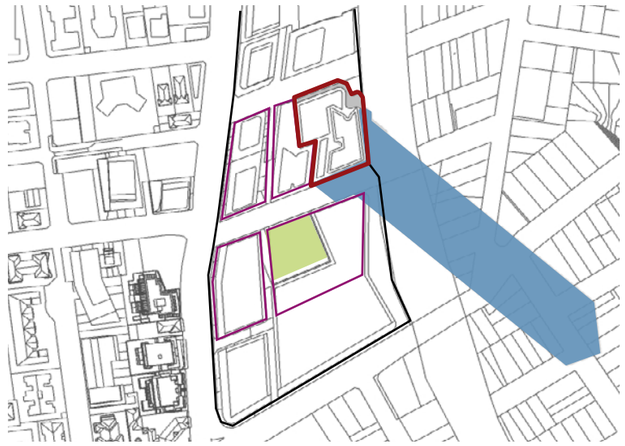
11 AM

12 PM

1 PM



2 PM



3 PM

11.3 SOLAR ACCESS TO COMMUNAL OPEN SPACE

The alternate scheme exceeds the minimum requirements as per the ADG for residential amenity and solar access to communal open spaces, living rooms and private open spaces. The ADG stipulates the following requirements.

- For Communal Open Space:
  - Communal open space has a minimum area equal to 25% of the site, i.e. 1055 sqm for the subject site
  - Development achieves a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9 am and 3 pm on 21 June (mid winter).

Solar Access for Living Areas and Private Open Space:

- Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter
- A maximum of 15% of apartments receive no direct sunlight between 9am and 3pm in mid winter

ALTERNATE SCHEME

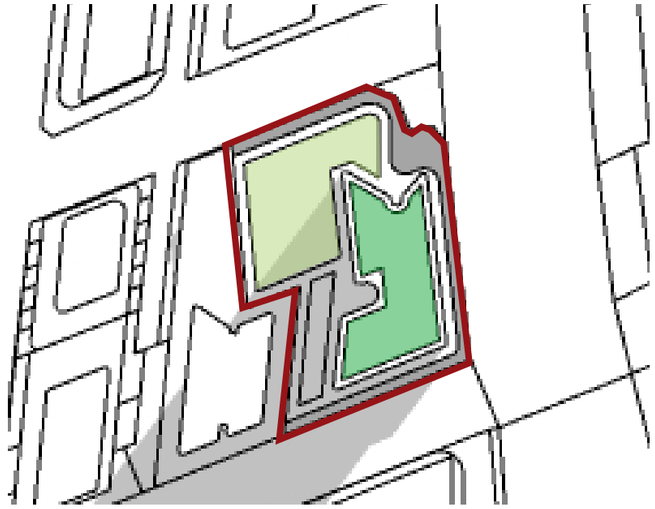


Table 14 Alternate Scheme -Communal Open Space Area

USE	AREA (SQM)	% OF SITE AREA
Minimum Requirement ADG	1,055	25%
Podium	1,190	-
Tower	850	-
Total Communal Open Space	**2,040**	**48%**

70%
Communal Open Space
Achieves at least 2 hours solar access mid-winter

LEGEND

- Subject Site
- Podium Communal Open Space
- Rooftop Communal Open Space

11.4 SOLAR ACCESS TO LIVING ROOMS AND PRIVATE OPEN SPACE

Testing of indicative floorplate layouts demonstrated the following:

Alternate Scheme

- 70% of apartments have living rooms and private open spaces that receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter
- Also, a maximum of 15% of apartments receive no direct sunlight between 9am and 3pm in mid winter

ALTERNATE SCHEME

70%

of apartments achieve at least 2 hours solar access in mid-winter.

Table 15 Alternate Scheme - Solar Access to Residential Units

	ACHIEVES >=2 HOURS	% OF TOTAL
Level 2 - 26	7 apartments per floor	
TOTAL	175	70%

LEGEND

- Subject Site
- Solar Access (>=2 H)
- 1 Bed
- 2 Bed
- 3 Bed

11.5 VISUAL CHANGE

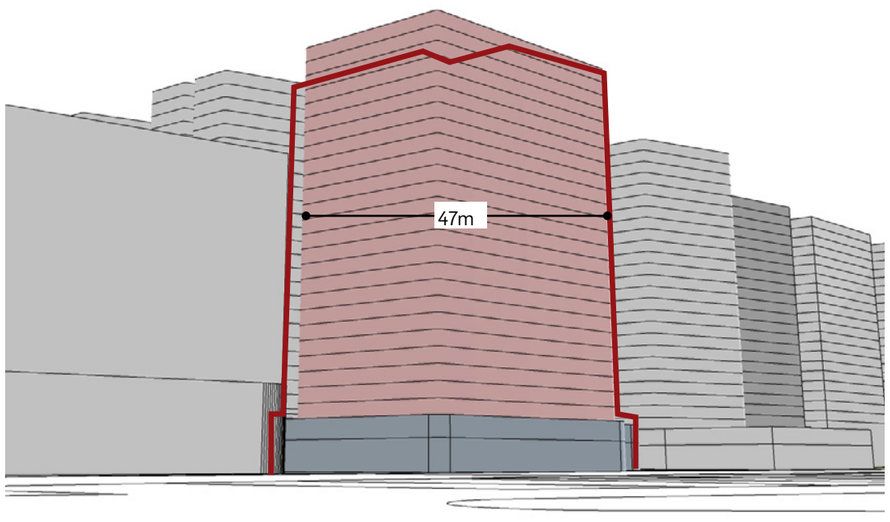
The diagrams below compare the 3 key views of the Alternate Scheme against the Reference Scheme.

Views to the west (refer to View 1 and 2) highlight that the Reference Scheme with two slender towers of varying height reduces the visual bulk and scale of the proposal compared to the larger single tower option. In contrast, View 3 to the north highlights that the single tower appears considerably more slender and with less visual impact framed by the sky. From the north, the two tower option creates a "wall" of buildings with a more imposing bulk and scale created from a dense cluster of tall buildings.

LEGEND

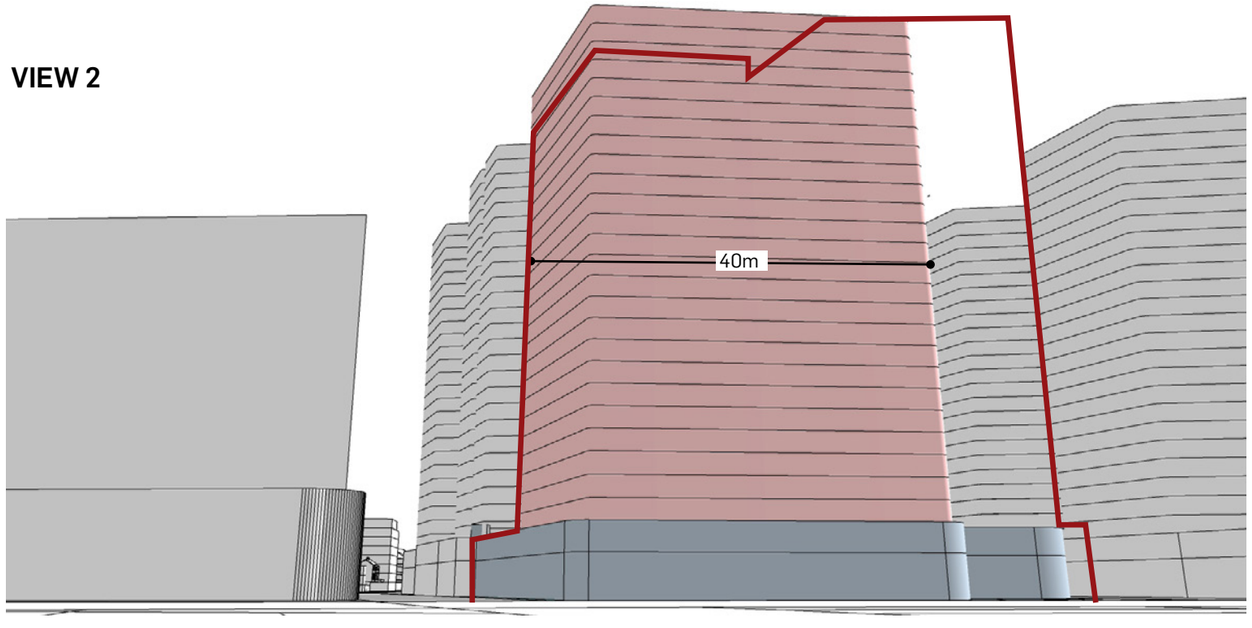
Reference Scheme building outline

VIEW 1



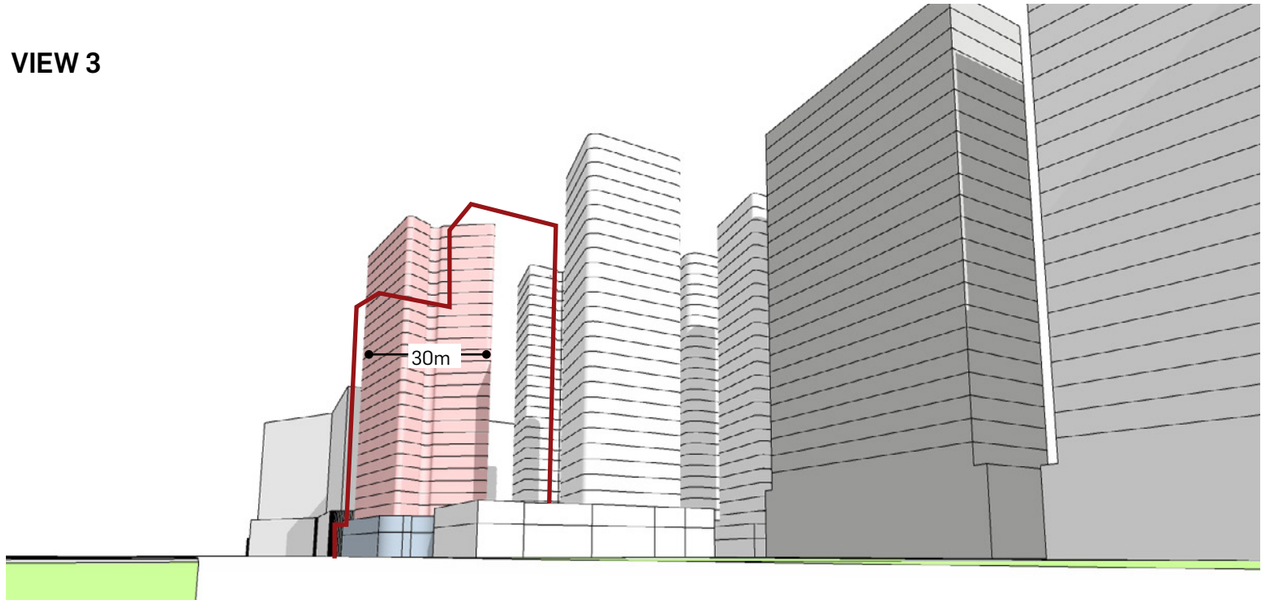
Alternate Scheme- View from SE Corner - Mowbray Road and Elizabeth Street

VIEW 2



Alternate Scheme- View from east end Nelson Street / Berkeley Court

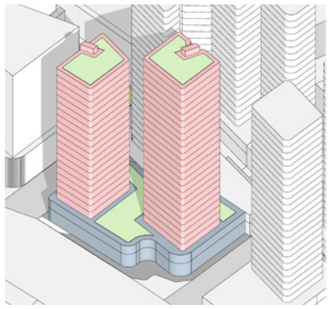
VIEW 3

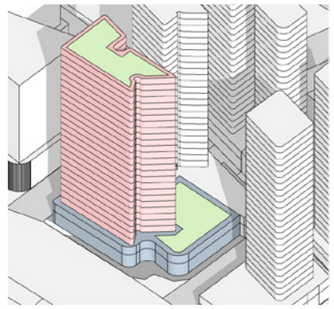


Alternate Scheme- View Chatswood Park

11.6 SUMMARY OF TWO SCHEMES

The table below highlights key characteristics of the two schemes based on requirements of the Chatswood CBD Strategy and ADG.





	Criteria/Requirements	REFERENCE SCHEME	ALTERNATE SCHEME	Comments
CBD Strategy	**Building height - maximum 90m**	Tower A - 74.5m (22 Storeys) Tower B - 90m (27 Storeys)	Tower A - 90m (27 Storeys)	Nil
	FSR - maximum 6:1	6:1	6:1	Nil
	Tower floor plate - max.. 700sqm GFA	555 & 540 sqm	840 sqm	Alternate Scheme - 20% greater than 700sqm requirement but within ADG criteria.
	Basement car parking and servicing	Basement car parking and servicing/ loading dock	Basement car parking and ground floor servicing sleeved by active uses to street frontages.	Alternate Scheme - Provides alternate solution wither servicing and loading at ground level whilst also accommodating 1:1 non-residential FSR in podium.
ADG	**Preliminary yield**	258 Units	250 units	Reference Scheme has 8 more units due to the ability to accommodate 3 bedroom units in the smaller floorplates and shadowing from other tower proposed on site
	Development feasibility	6 units per floor plate	10 units per floor plate	Development feasibility of Reference Scheme may be challenging due to smaller floorplates
	Residential Units - solar access	Overall total 77.5%	70%	Reference Scheme has greater solar access to apartments
	Communal open space- min.. 25%	1,839 sqm (or 44%)	2,040 sqm (or 48%)	Both exceed requirement of 25%. Communal open space delivered across podium and tower rooftop level.
	Communal open space area solar access - min.. 50%	Approx. 58%	Approx. 70%	Additional 12% of Alternate Scheme achieves 2 hours of solar access
	Neighbouring residential solar access	Site to immediate south (future park and development on Nelson St) unlikely to achieve 2 hours of solar access	Site to immediate south (future park and development on Nelson St) unlikely to achieve 2 hours of solar access	Park better located to north-east of site to achieve solar access. Alternate Scheme approx. 25% less overshadowing between 9 - 11am, which benefits neighbouring site to the west.
	Apartment Mix	Tower A - 31% (1b): 61% (2b): 8% (3b) Tower B - 31% (1b): 59% (2b): 11% (3b)	Tower A - 40% (1b): 50% (2b): 10% (3b)	Comparable across the two scheme