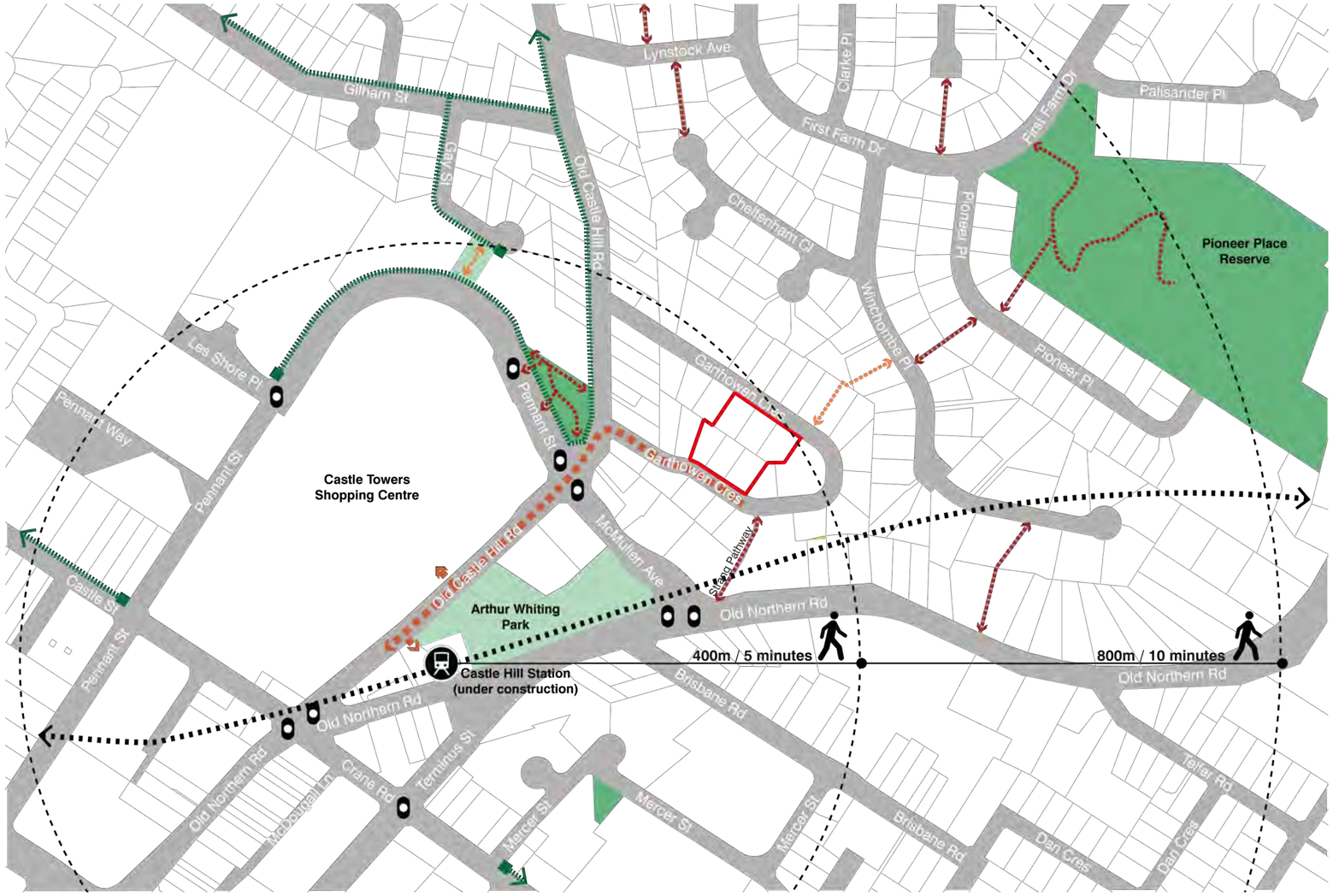
2.3 Pedestrian and cycle connectivity

The site lies within 400 metres (5 minute walk) of the new train station and major town centre within the Castle Hill precinct.

Strang Pathway is an existing pedestrian path that directly links Garthowen Crescent to the major intersection at Old Northern Road and McMullen Avenue.

The most direct pedestrian route from the site to the town centre is currently along a busy major road (Old Castle Hill Road).

There is the opportunity within the site to provide a through site link, improving pedestrian links between Castle Towers Shopping centre and Pioneer Place.



Pedestrian and cycle connectivity

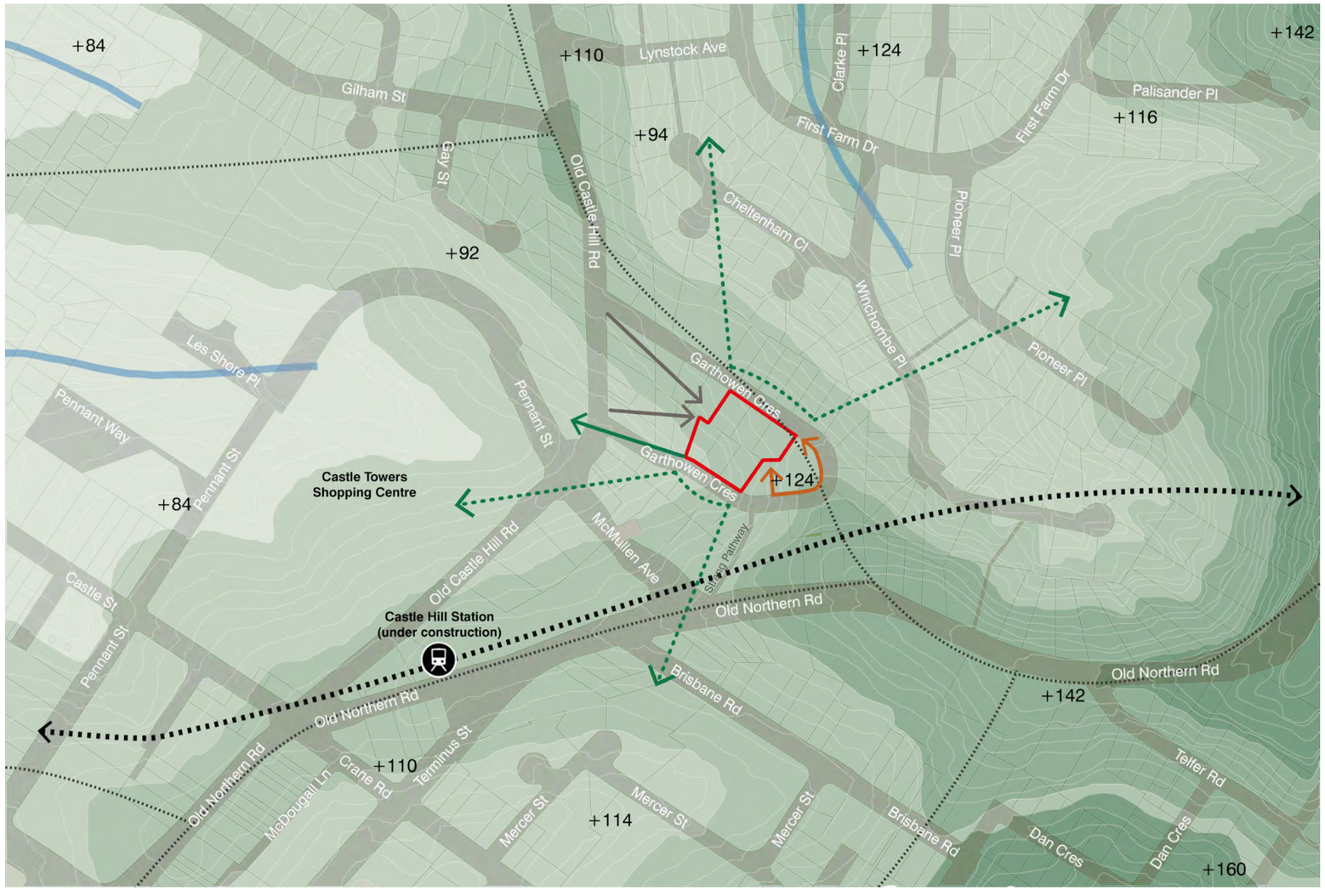
Study area boundary
Major Roads
Proposed rail line
Signalised intersection
Open Space
Open Space - proposed in planning proposal
Existing cycle path
Main pedestrian path from site to centre
Pedestrian link
Pedestrian link -proposed in planning proposal

0 20 50 100 250m

2.4 Topography and views

The topography of the area generally rises in a north-west to south-east direction.

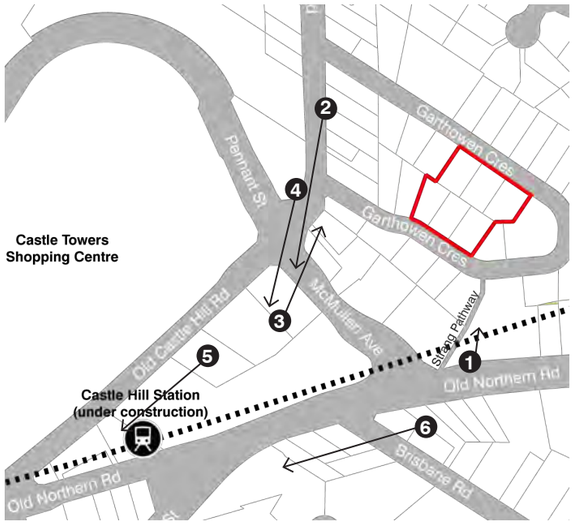
The site sits on a spur, offering views to the distant landscape.



Topography and views

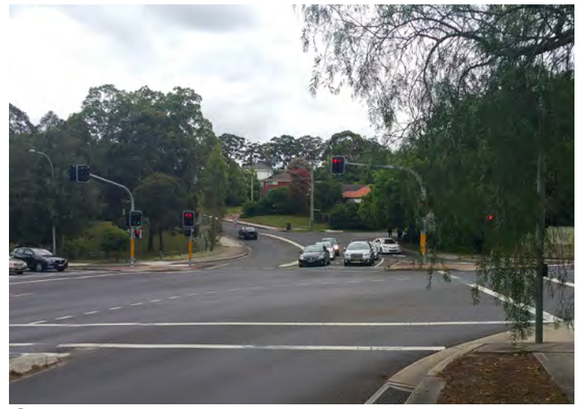
2.5 Site photos

Local context



❶ Strang pathway towards Garthowen Crescent entrance.

❷ View from Garthowen Crescent North down Old Castle Hill Road, towards Castle Hill centre.



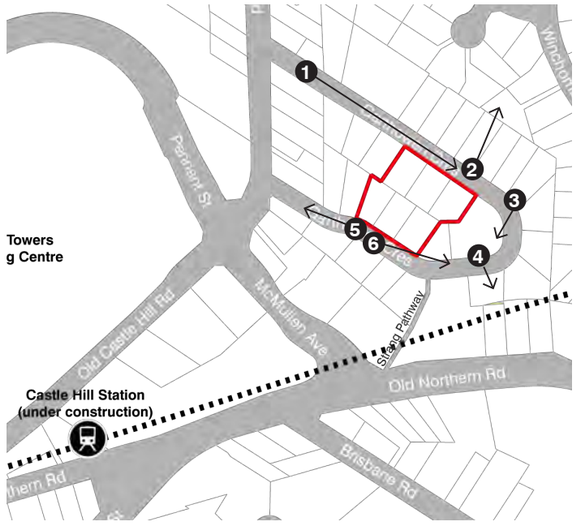
❸ Distant view of site location from edge of Castle Hill commercial centre.

❹ Distant view of Castle commercial centre from Old Castle Hill Road.

❺ Castle Hill commercial precinct.

❻ Site for the Castle Hill Train Station, currently under construction.

Garthowen Crescent



1 North-east edge of site, Garthowen Crescent.

2 Distant landscape view corridor facing north from north-west end of Garthowen Crescent.

3 Heritage site with development under construction visible behind.

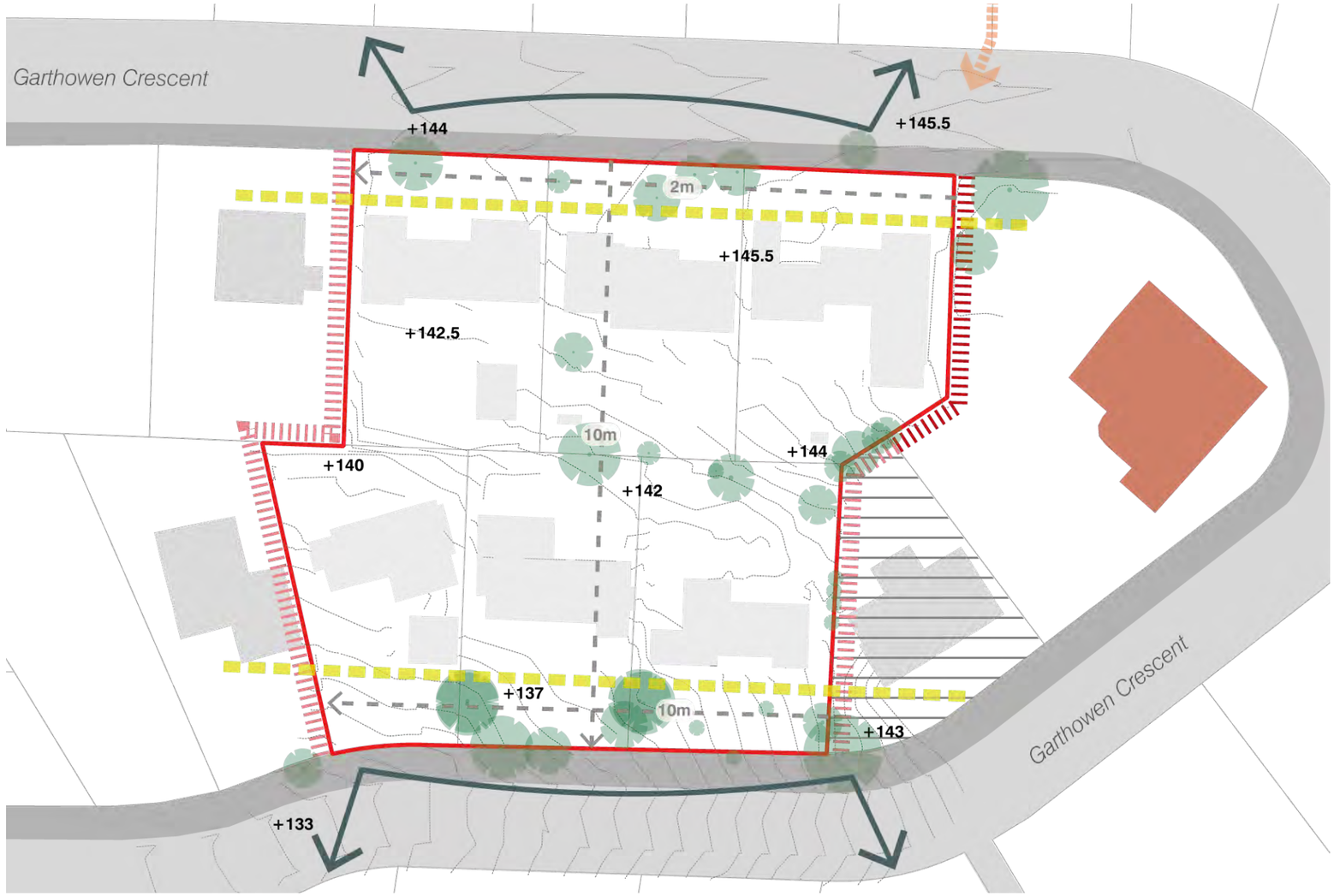
4 Apartment block (6 storeys) currently under construction at 11-13 Garthowen Crescent, Castle Hill.

5 South-east corner of site, Garthowen Crescent.

6 View towards site from south-east end of Garthowen Crescent, with development under construction to the right.

2.6 Opportunities and constraints

Key opportunities regarding constraints for the site are described on the diagram adjacent.



Opportunities and constraints

3 Options

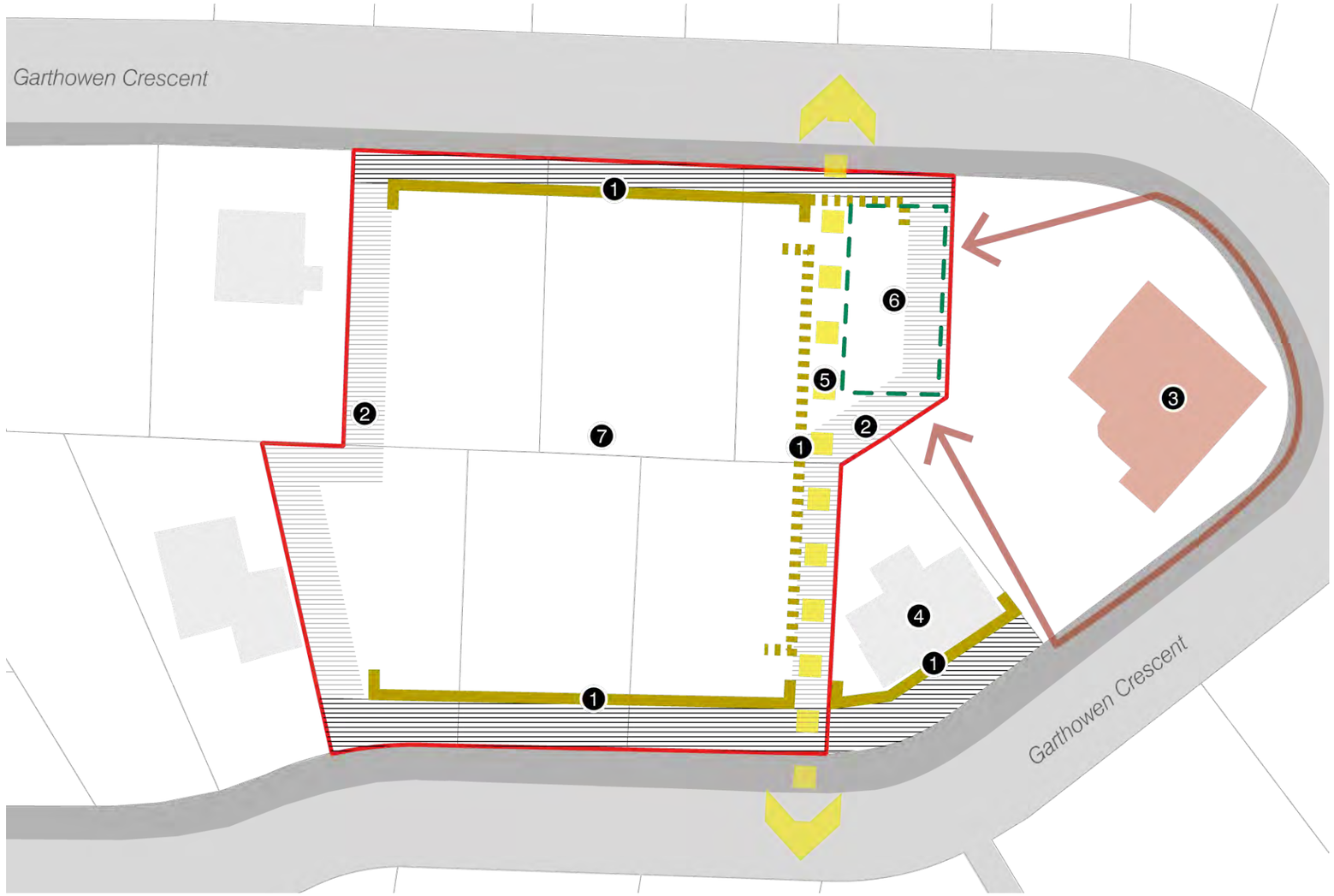
3.1 Design principles

The following principles have been identified for the design of built form on the site:

1. Provide appropriate streetscape response.
2. Provide setbacks from adjacent sites.
3. Respond to views behind heritage item.
4. Allow for appropriate redevelopment of adjacent potentially isolated site.
5. Potential to provide adequate area for built form on site.

The site is also capable of providing the following:

6. Potential to provide through site links and connections to existing and proposed pathways.
7. Potential to provide dedicated open space area.



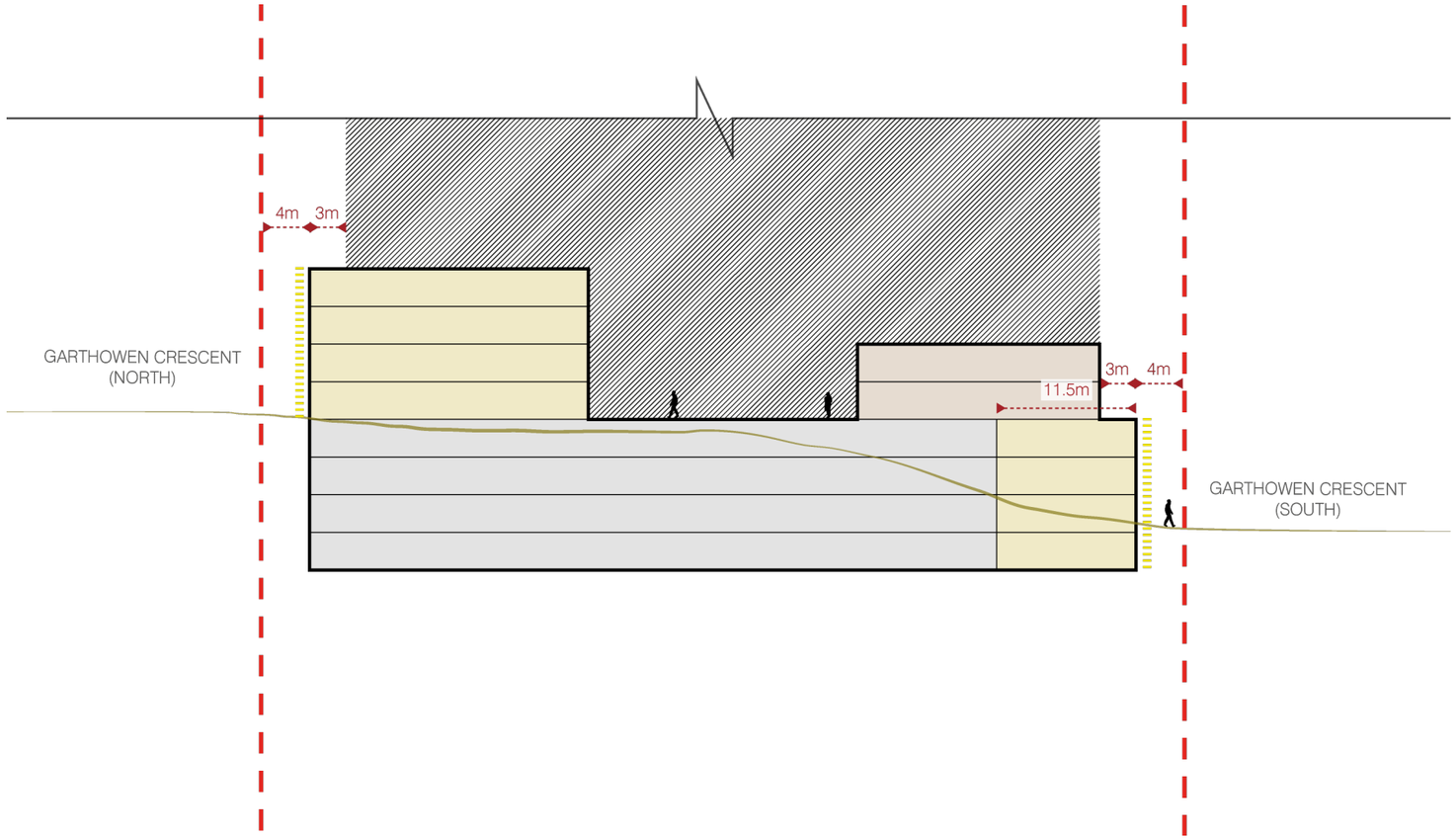
Design principles

3.2 Plan form options and concept section

The plan form options presented overleaf are based on the design principles above, with varying scenarios for built form locations and the provision of through site links and public open space.

The concept sketch provided opposite illustrates the approach to the topography, utilised in all options.

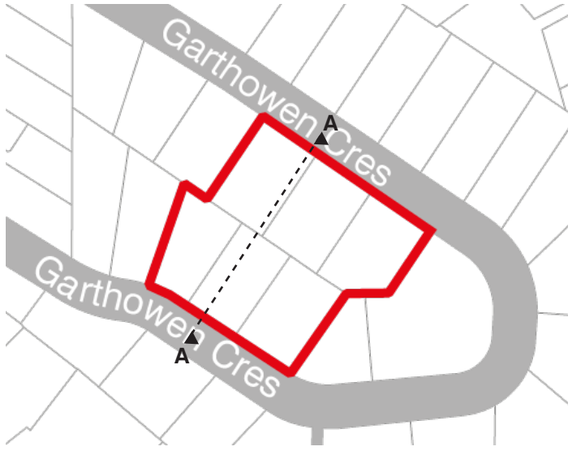
Plan form option 2 is the preferred option for the reasons described.



Concept section AA

Study area boundary
Natural ground line
Podium
Carpark
Potential for other building forms setback from street wall
3-4 storey street wall - 4m setback from boundary

0 2 5 10 25m



Option 1 : 2 towers with through-site link and public open space

Benefits:

– Provides through-site link and designated public open space.

Issues:

– Small tower footprints that are likely to have poor commercial viability.

Option 2 : 2 towers with no through-site link

Benefits:

– Tall building footprints provide good balance of commercial viability and good urban design.

– Highest floorspace per tower level.

Issues:

– No through-site link or public open space.

Option 3 : 1 tower with through-site link

Benefits:

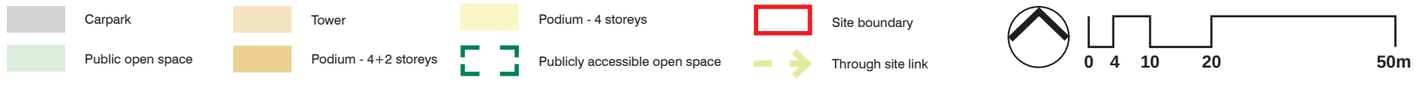
– Strong visual definition of through-site link and visual response behind heritage item.

– Greater tower setback from street.

Issues:

– Bulkier tower.

– Lowest floorspace per tower level.



3.3 Height and density scenarios tested

The scenarios over the following pages describe a range of heights and densities for the site. These are based on the preferred plan form for the site (see previous section) and an indicative development form for the neighbouring sites developed by Architectus.

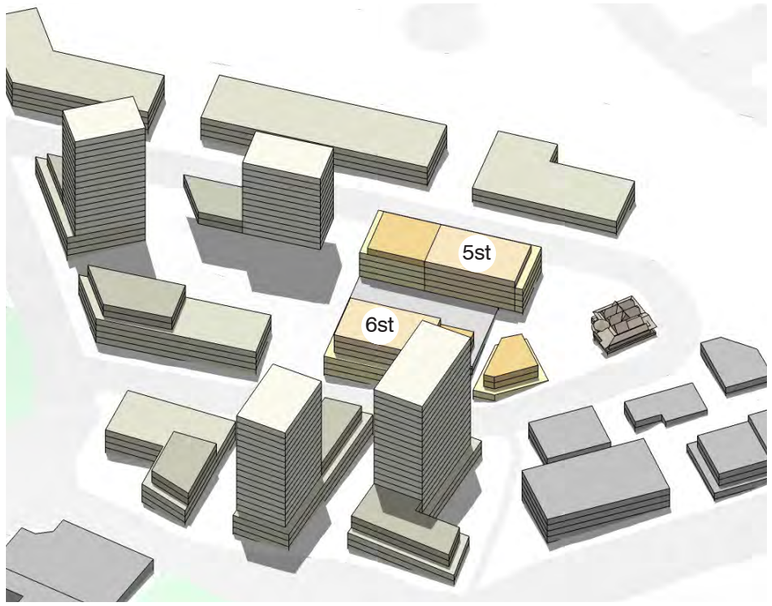
Scenario C (4.5:1 FSR) is considered appropriate for the site as the heights and densities are:

– Consistent with Castle Hill Structure Plan (7-20 storeys).

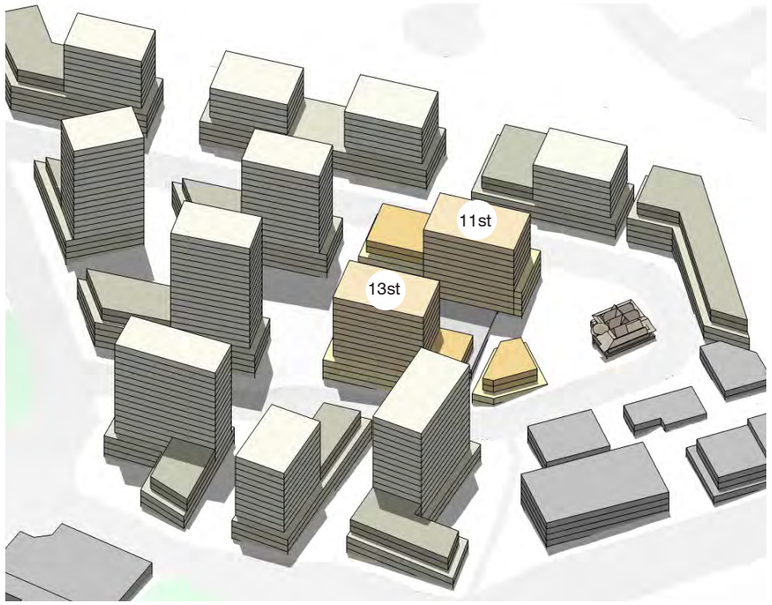
– Similar height to Council's Pennant Street Target Site with significantly less visually bulky towers.

– Similar to that envisaged under the Draft Hills Strategy for neighbouring sites (compare proposal in Scenario C with buildings on adjacent sites in Scenario A).

– Similar to other planning proposals (with Council for review) within the area.



Scenario A : Draft Hills Strategy - The Hills Shire Council



Scenario B : FSR 3:1

Assumptions

Key assumptions behind the modelling of scenarios include the following:

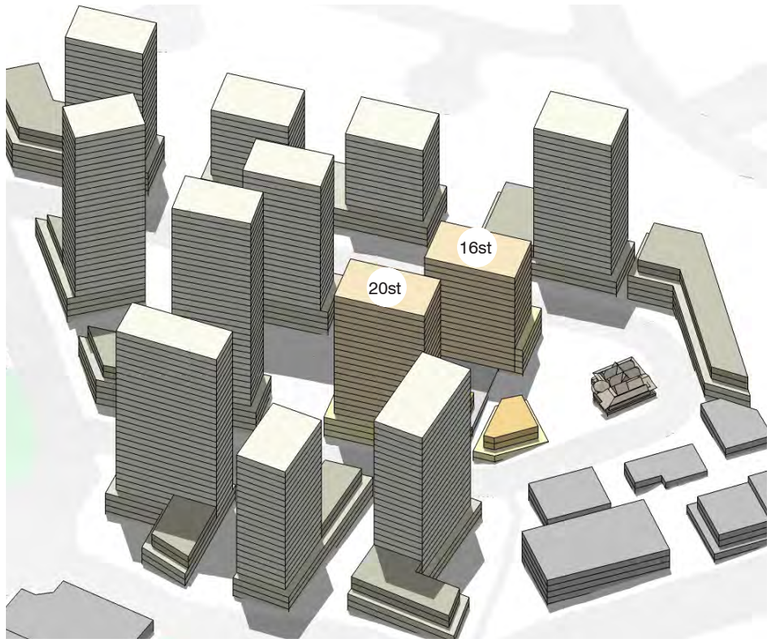
– Adjacent sites have been modelled based on an indiciative amalgamation pattern and floorspspace expectations based on each scenario (Draft Hills Strategy for Scenario A, similar FSR applied to sites to south and west for Scenarios B-D).

– Gross Floor Area (GFA) is calculated at 75% of the envelope footprints shown.

– Apartment sizes are calculated at an average GFA per apartment of:

  – 90sqm for Scenarios B,C,D - where development is assumed to be limited by by GFA/FSR.

  – 100sqm for Scenario A - where development is limited by number of dwellings (per hectare) rather than GFA/FSR the trend will be to larger dwellings.



Scenario C : FSR 4.5:1

Scenario D : FSR 6:1

Scenario A : Draft Hills Strategy

Overview:

– FSR 1.6:1 on site

– Buildings on site of 5-6 storeys.

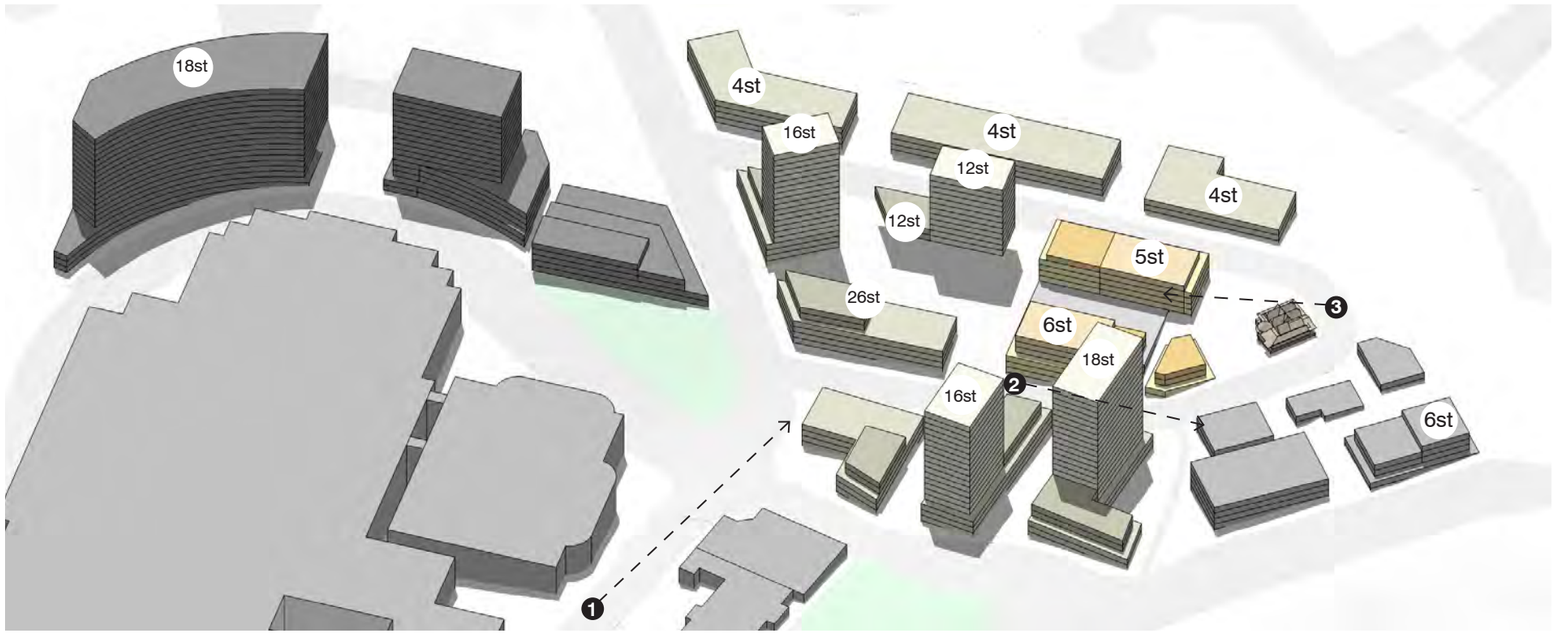
– Approx. 87 apartments (100sqm GFA/apartment)

Key outcomes:

– Site limited to low scale although high density towers provided on adjacent sites (also on Garthowen Crescent).

– Provides a sharp transition in scale, from 26 storeys to 5-6 storeys.

– Low utilisation of strategic potential of Castle Hill Centre with mid-rise strata title (around 4-8 storeys) likely to occupy a large catchment of sites within walking distance to Castle Hill railway station.



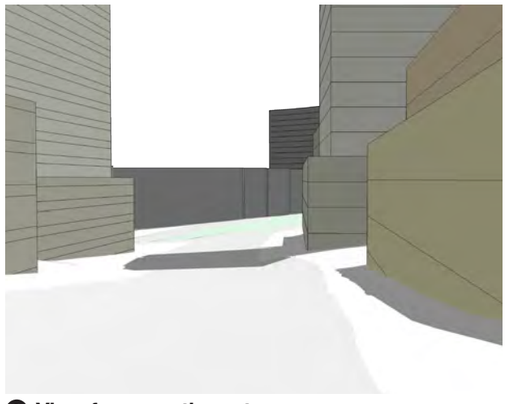
Aerial view from south

Road | Tower | Podium - 4 storeys | Podium (context) - 4+2 storeys | Existing development

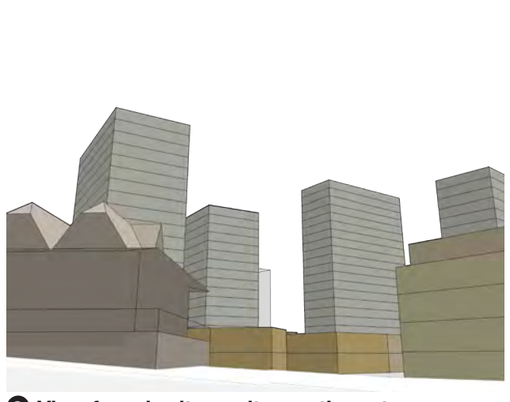
Public open space | Podium - 4+2 storeys | Tower (context) | Podium (context) - 4 storeys | Proposed development

Perspectives

❶ View from town centre, along Old Northern Road



❷ View from south east



❸ View from heritage site, north east

Scenario B : FSR 3:1

Overview:

– FSR 3:1 on site and FSR 2:1-3:1 for proposed context.

– Towers on site of 11-13 storeys.

– Approx. 178 apartments (90sqm GFA/apartment)

Key outcomes:

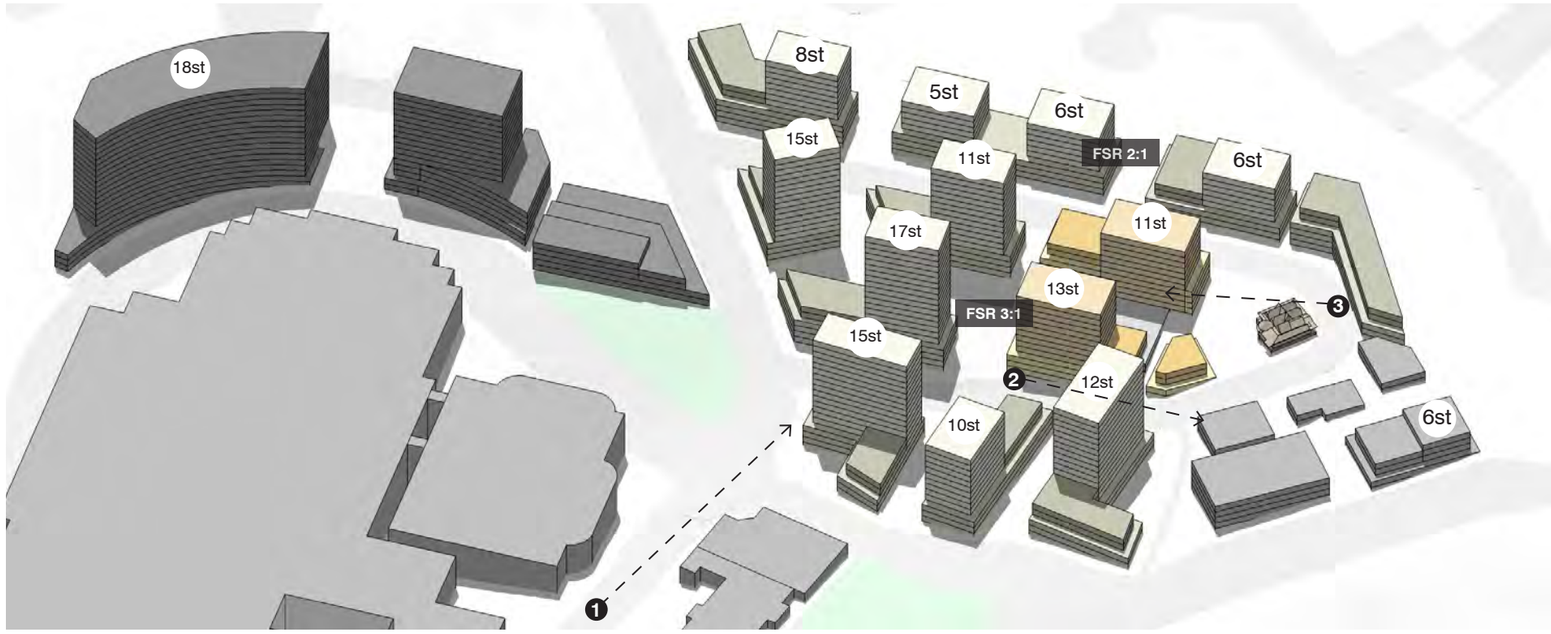
– Local area limited to moderate scale. Low utilisation of strategic potential of Castle Hill Centre.

– Not consistent with heights or density of Council's Pennant Street site for sites closer to the rail station.

– 3:1 remains significantly lower on adjacent sites than the outcomes under the Draft Hills Strategy (compare to previous scenario).

– Some additional overshadowing of streets from the site as compared to Scenario A.

– All sites typically able to provide SEPP65 compliant solar access.

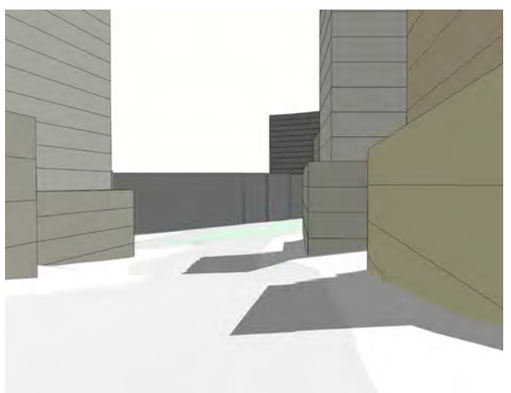


Aerial view from south

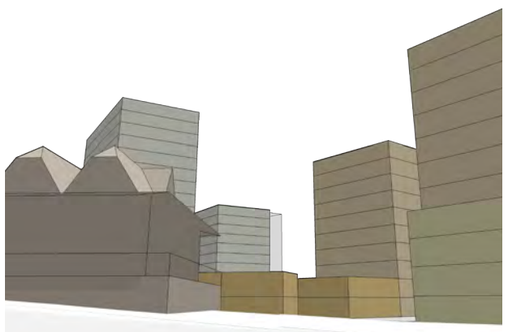
Road
Tower
Podium - 4 storeys
Podium (context) - 4+2 storeys
Existing development
Public open space
Podium - 4+2 storeys
Tower (context)
Podium (context) - 4 storeys
Proposed development

Perspectives

❶ View from town centre, along Old Northern Road



❷ View from south east



❸ View from heritage site, north east

Scenario C : FSR 4.5:1

Overview:

– FSR 4.5:1 on site and FSR 3:1-4.5:1 for proposed context.

– Towers on site of 16-20 storeys.

– Approx. 268 apartments (90sqm GFA/apartment).

Key outcomes:

– Height is consistent with Castle Hill Structure Plan (7-20 storeys).

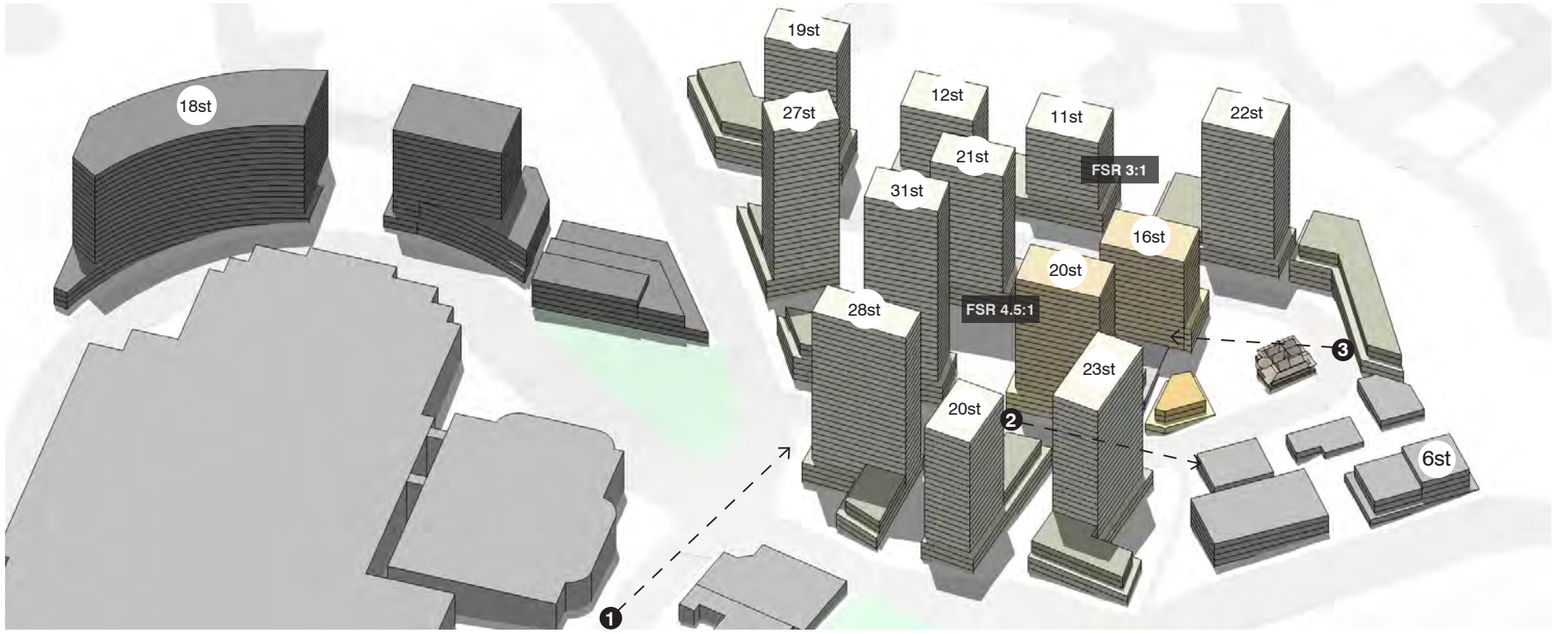
– Similar height to Council's Pennant Street Target Site with significantly less visually bulky towers.

– Similar height and FSR to other planning proposals (with Council for review) within the area.

– The scale of neighbouring buildings to the south and west is likely to be similar to that envisaged under the Draft Hills Strategy (Scenario A) - leading to similar view outcomes from Castle Hill Centre.

– All sites typically able to provide SEPP65 compliant solar access.

– Some increased overshadowing of Garthowen Crescent as compared to scenarios A and B.

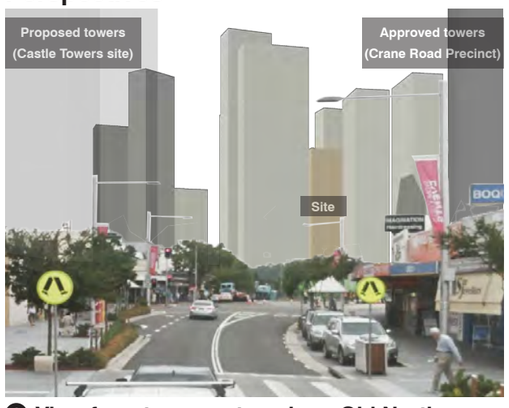


Aerial view from south

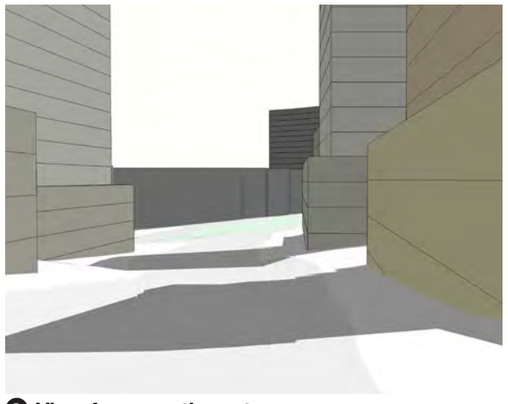
Road | Tower | Podium - 4 storeys | Podium (context) - 4+2 storeys | Existing development

Public open space | Podium - 4+2 storeys | Tower (context) | Podium (context) - 4 storeys | Proposed development

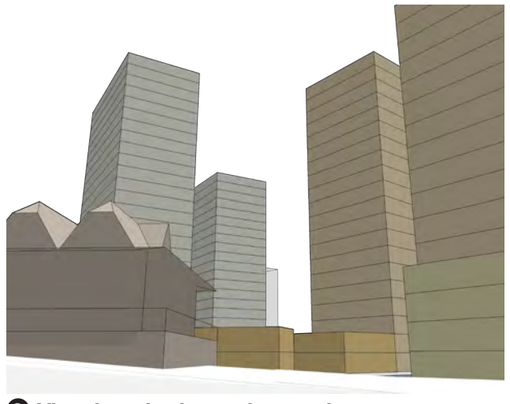
Perspectives



❶ View from town centre, along Old Northern Road



❷ View from south east



❸ View from heritage site, north east

Scenario D : FSR 6:1

Overview:

– FSR 6:1 on site and FSR 4:1-6:1 for proposed context.

– Towers on site of 26-28 storeys.

– Approx. 358 apartments (90sqm GFA/apartment).

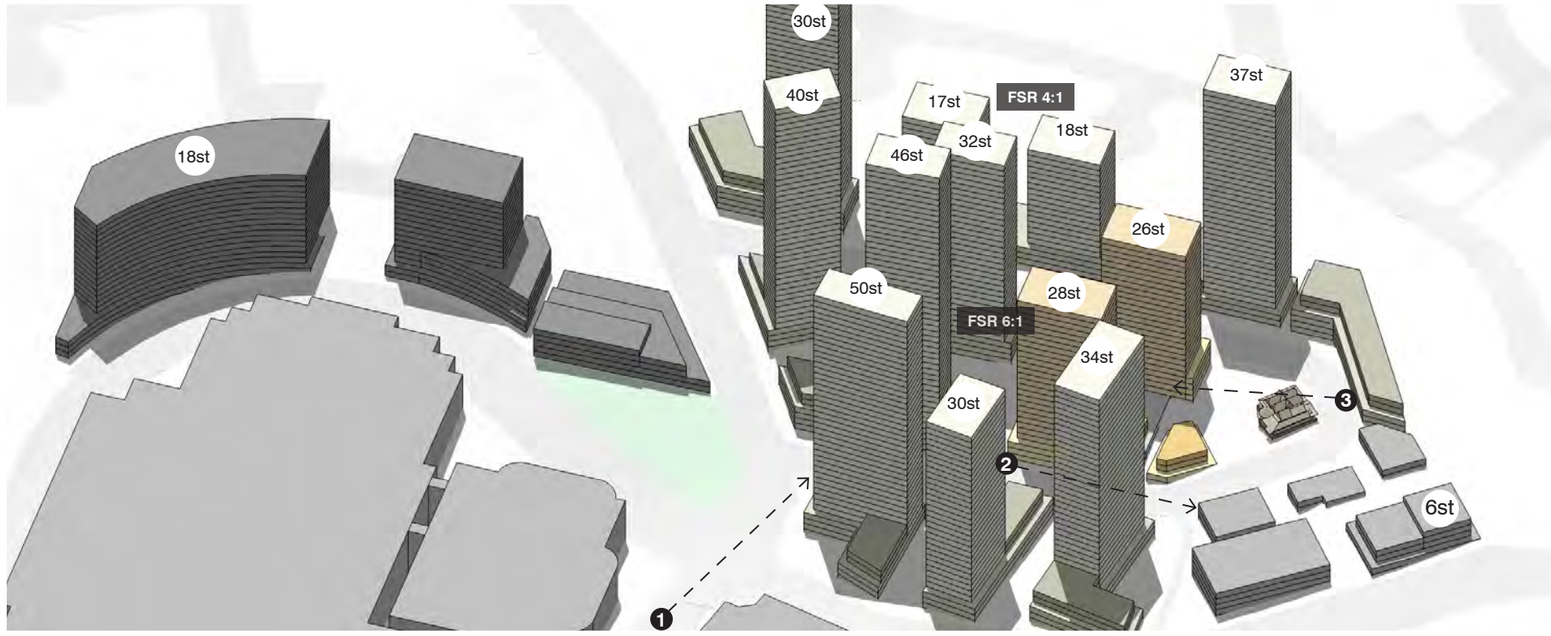
Key outcomes:

– Heights are taller than those proposed or approved for nearby developments (including Pennant Street Target site and other planning proposals currently with Council) .

– Significantly increased overshadowing of Garthowen Crescent.

– Some sites unlikely to achieve SEPP65 compliant solar access.

– Likely to cause difficult transition to sites lower scale sites to north.



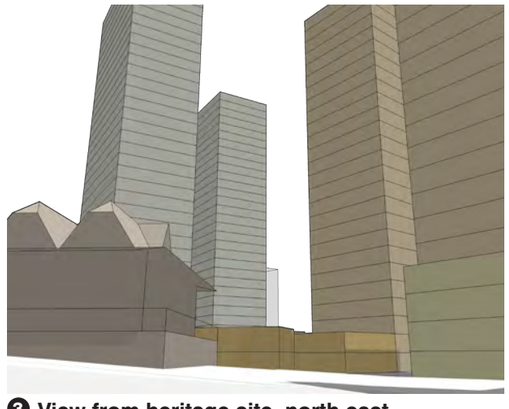
Aerial view from south

Road
Public open space
Tower
Podium - 4+2 storeys
Podium - 4 storeys
Tower (context)
Podium (context) - 4+2 storeys
Podium (context) - 4 storeys
Existing development
Proposed development

Perspectives

❶ View from town centre, along Old Northern Road

❷ View from south east



❸ View from heritage site, north east

4 The Master plan

4.1 Introduction

The master plan is presented in this section. The preferred scenario been developed from the testing of a range of plan form and built form options. This proposal is considered the best outcome from an urban design perspective and responds to the unique conditions of the site's local and strategic context.

Its key features include the following:

– A density consistent with:

  – The site's location within 5 minutes walk to the train station within a Strategic Centre.

  – The Castle Hill Structure Plan.

  – Council's nearby Pennant Street Target Site.

  – The Draft Hills Strategy for neighbouring sites within the same block (allowing transition north and east of Garthowen Crescent).

– An FSR of 4.5:1 and the delivery of approximately 268 apartments (90sqm GFA/apartment)

– An human-scale 3-4 storey street wall as the focus for development, with setbacks to upper level built form.

– Two slim, offset towers (16 and 20 storeys) providing excellent amenity for occupants.

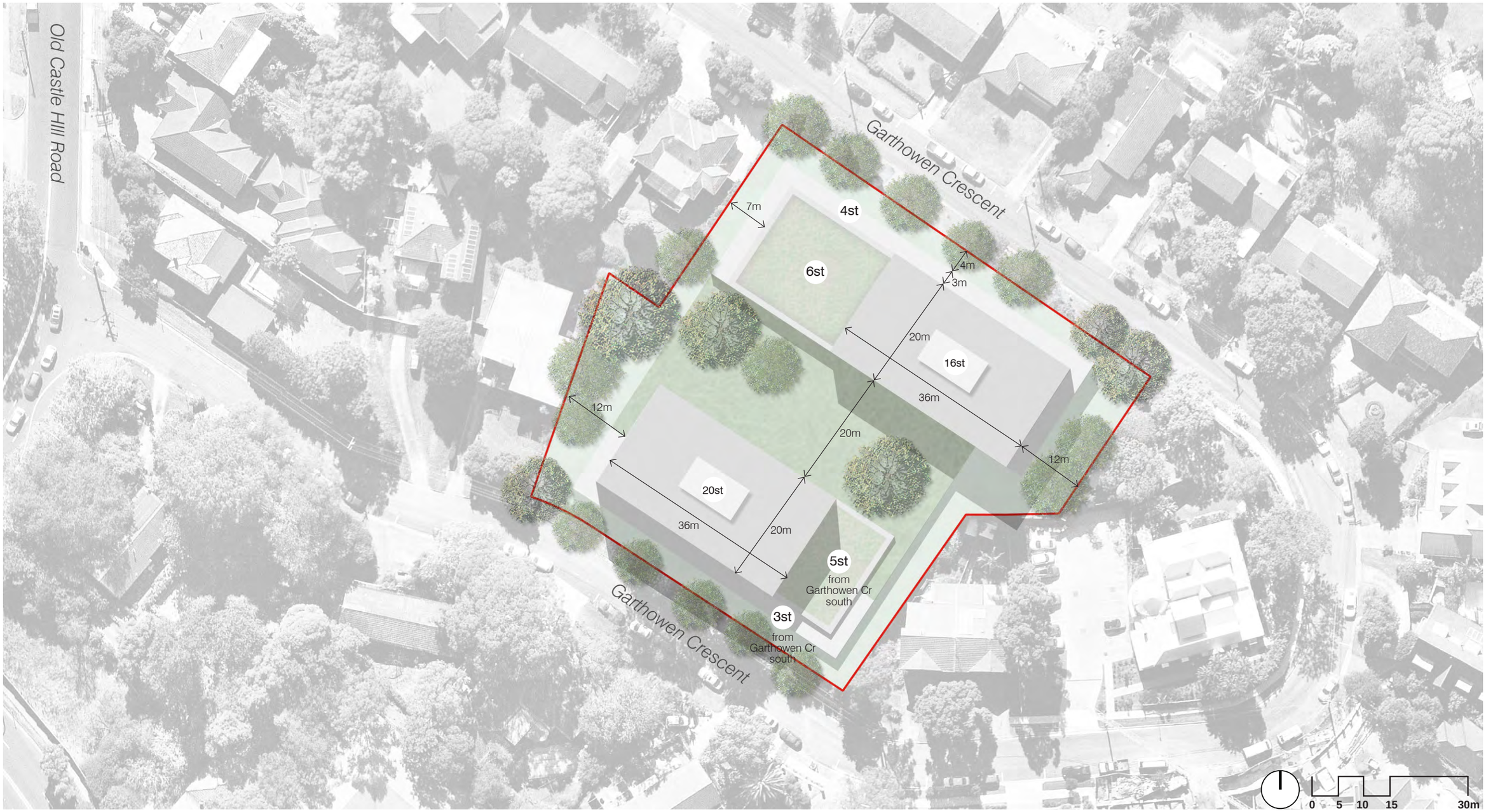
– Built form setbacks from neighbouring residenital and heritage sites.

– A generous communal open space area at grade with the northern side of Garthowen Crescent.

Density Scenario C - 4.5:1 FSR				
Building Envelope	Floor Plate Area	Storeys	GBA	GFA
Podium - Garthowen S (A)	648	3	1944	1458
Podium - Garthowen S (B)	245	2	490	367.5
Podium - Garthowen N (A)	754	4	3016	2262
Podium - Garthowen N (B)	424	2	848	636
Tower - Garthowen S	720	16	11520	8640
Tower - Garthowen N	720	20	14400	10800
Total			32218	24163.5
Site area	5345			
FSR	4.5			
Number of apartments	268			

* Based on 90sqm GFA/apartment

4.2 The master plan



4.3 Photomontage views

Aerial view from the east. The site is within a few minutes walk of the Castle Hill Railway Station (left) and Castle Hill Shopping Centre

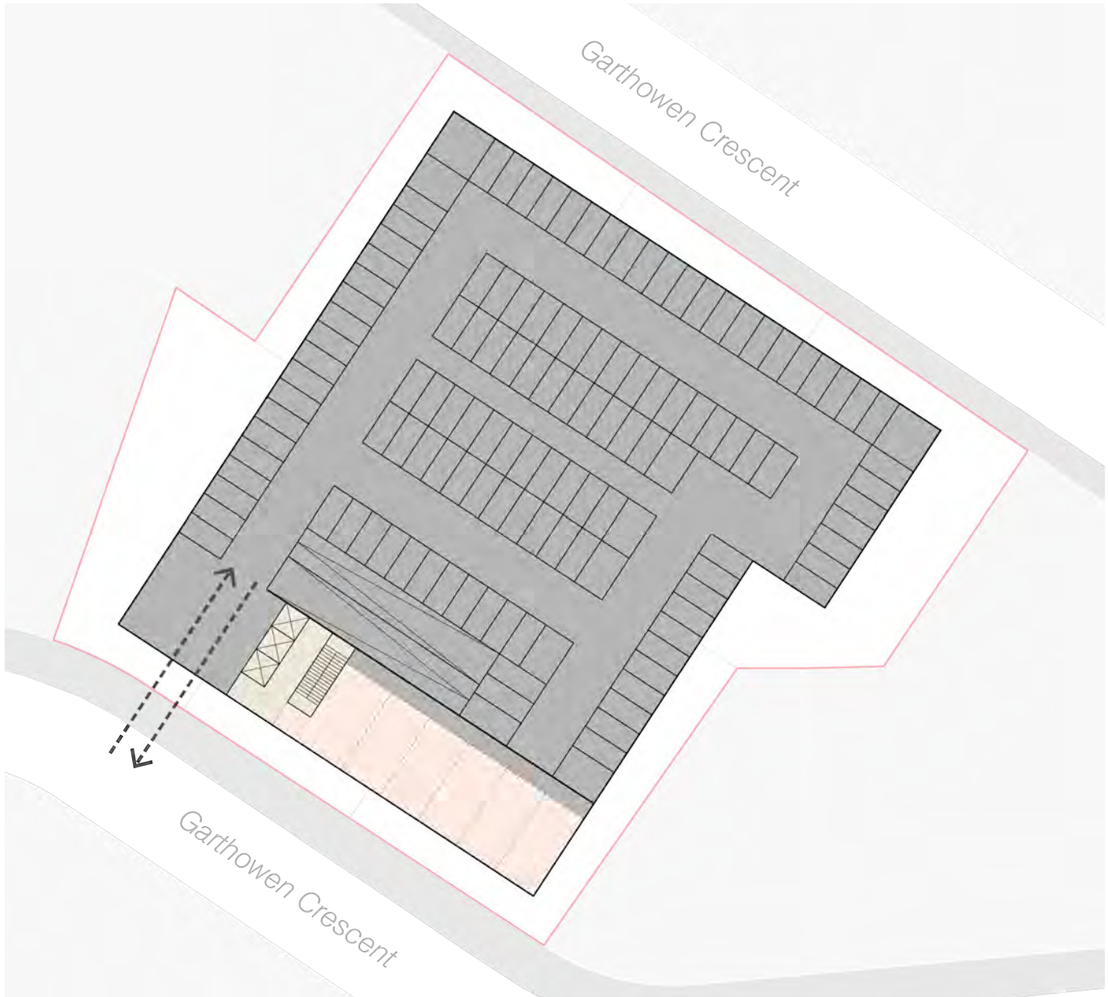
Future context modelled includes adjacent sites based on the Draft Hills Corridor Strategy, Pennant Street Target Site (based on approved DA), and proposed towers over Castle Hill Shopping Centre.

Aerial view from the northeast. The proposal fits within the context of its neighbours and helps to provide a transition to lower densities north and east of Garthowen Crescent

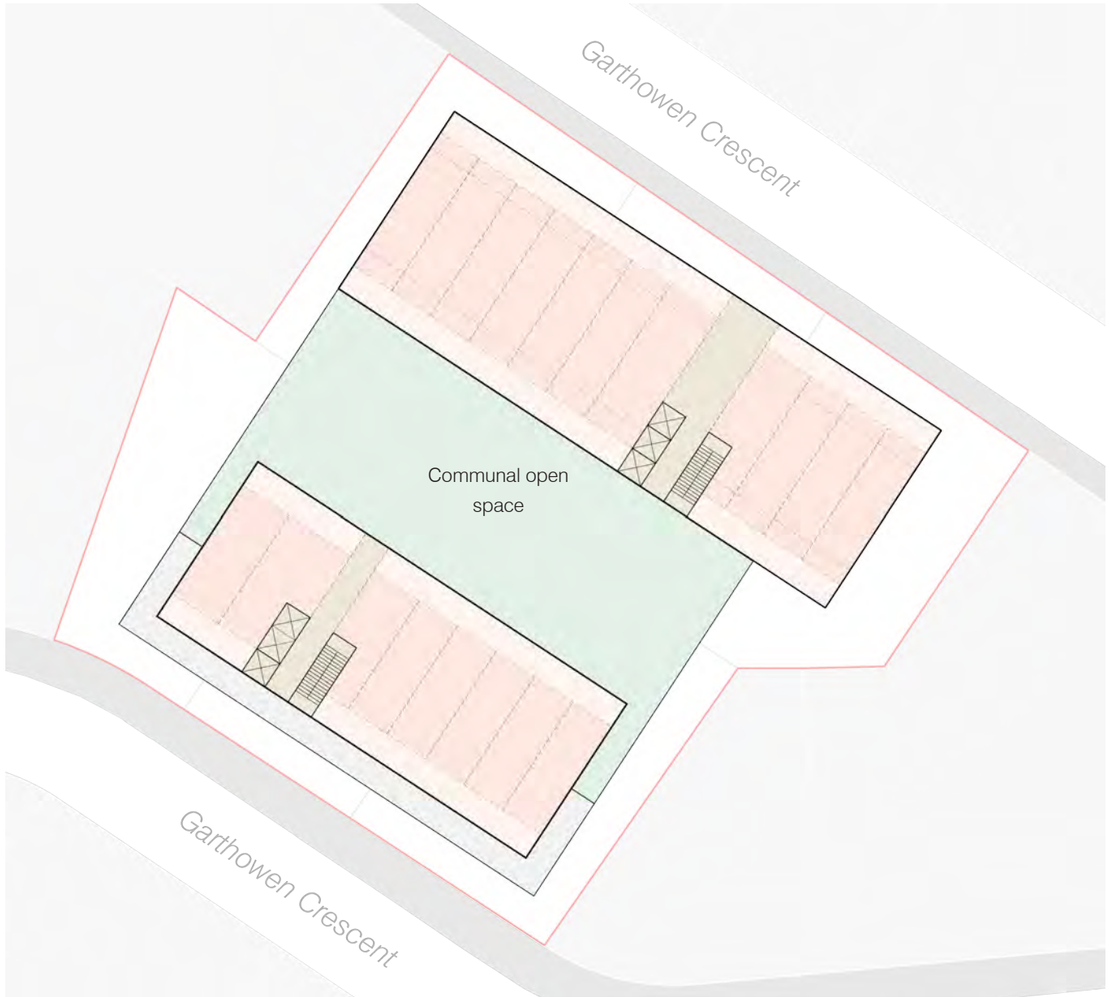
Future context modelled includes adjacent sites based on the Draft Hills Corridor Strategy, Pennant Street Target Site (based on approved DA), and proposed towers over Castle Hill Shopping Centre.

4.4 Indicative floor plans

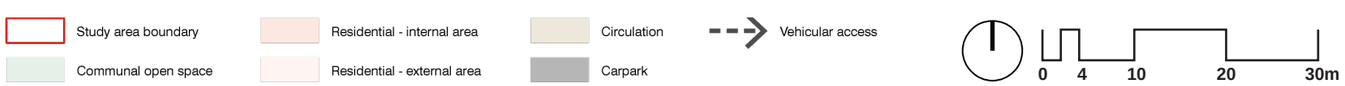
The following plans describe an indicative layout for the masterplan envelopes shown. These describe an indicative layout of the site (including potential site access points, circulation cores and apartment divisions) in order to achieve a high quality of design and comply with SEPP65 Apartment Design Guide requirements. They do not present a detailed architectural design.

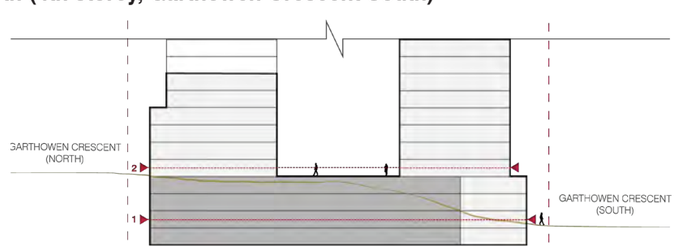


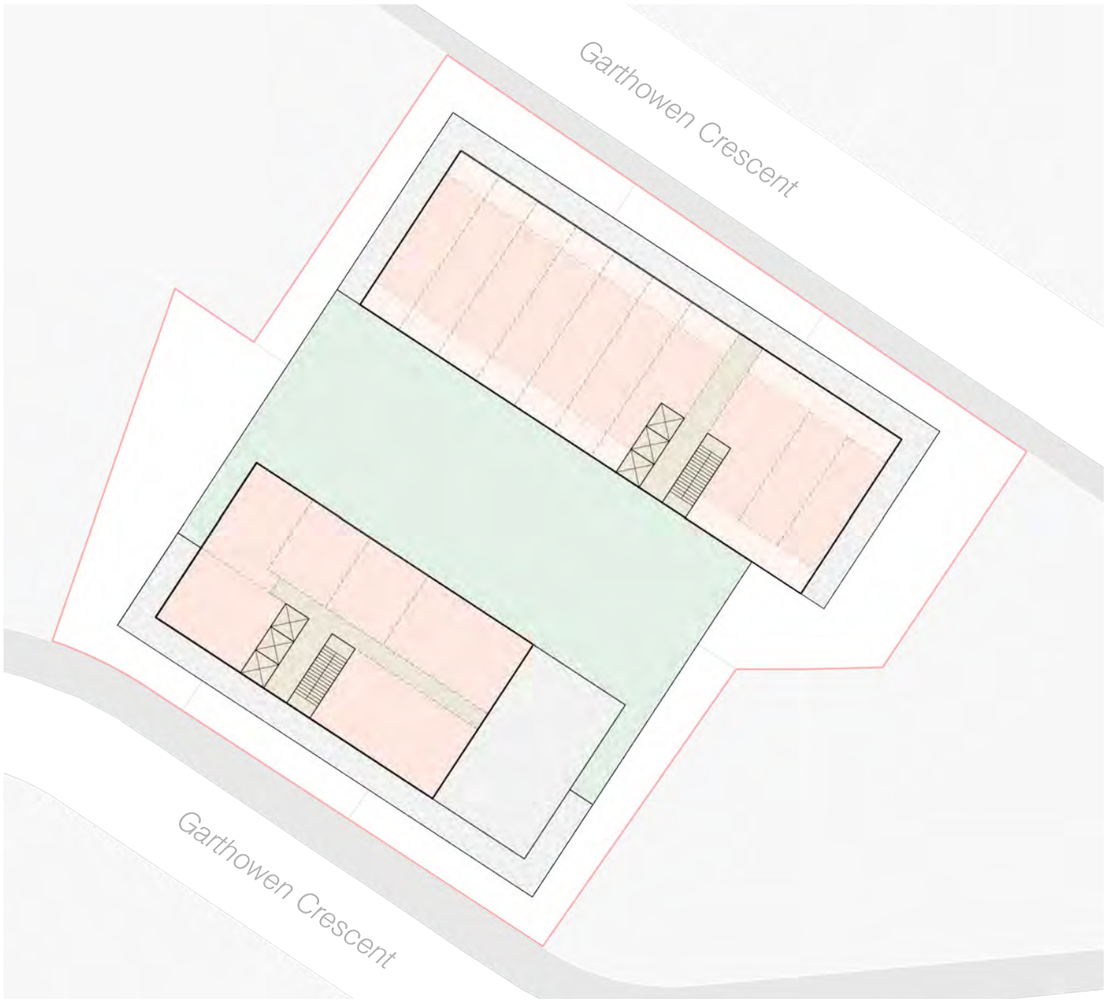
1. Ground floor - Garthowen Crescent South (underground for Garthowen Crescent north)



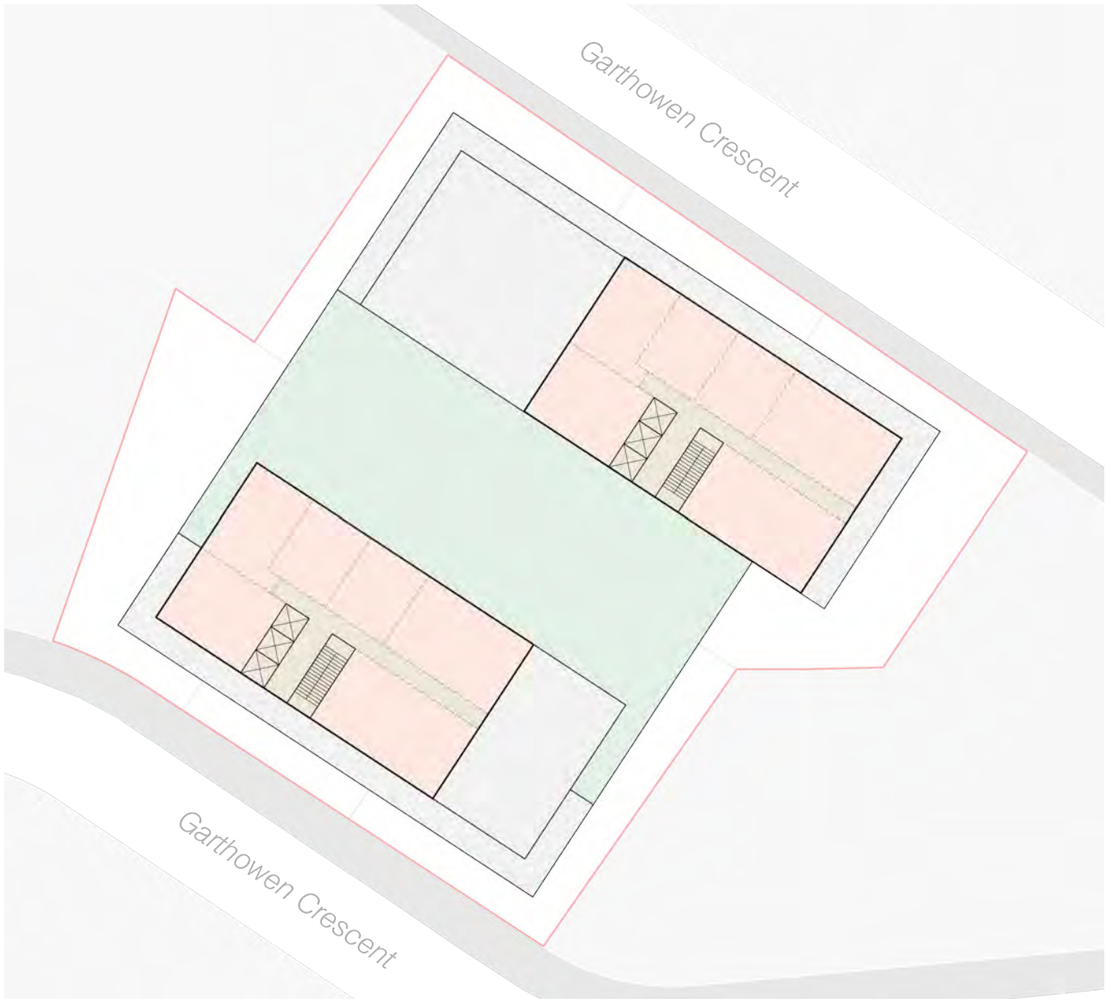
2. Ground floor - Garthowen Crescent North (4th storey, Garthowen Crescent South)







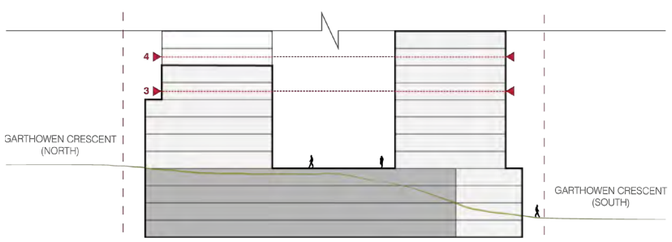
3. Podium - North, Tower - South



4. Towers

Study area boundary
Communal open space
Residential - internal area
Residential - external area
Circulation

0 4 10 20 30m



4.5 Solar analysis

Solar access

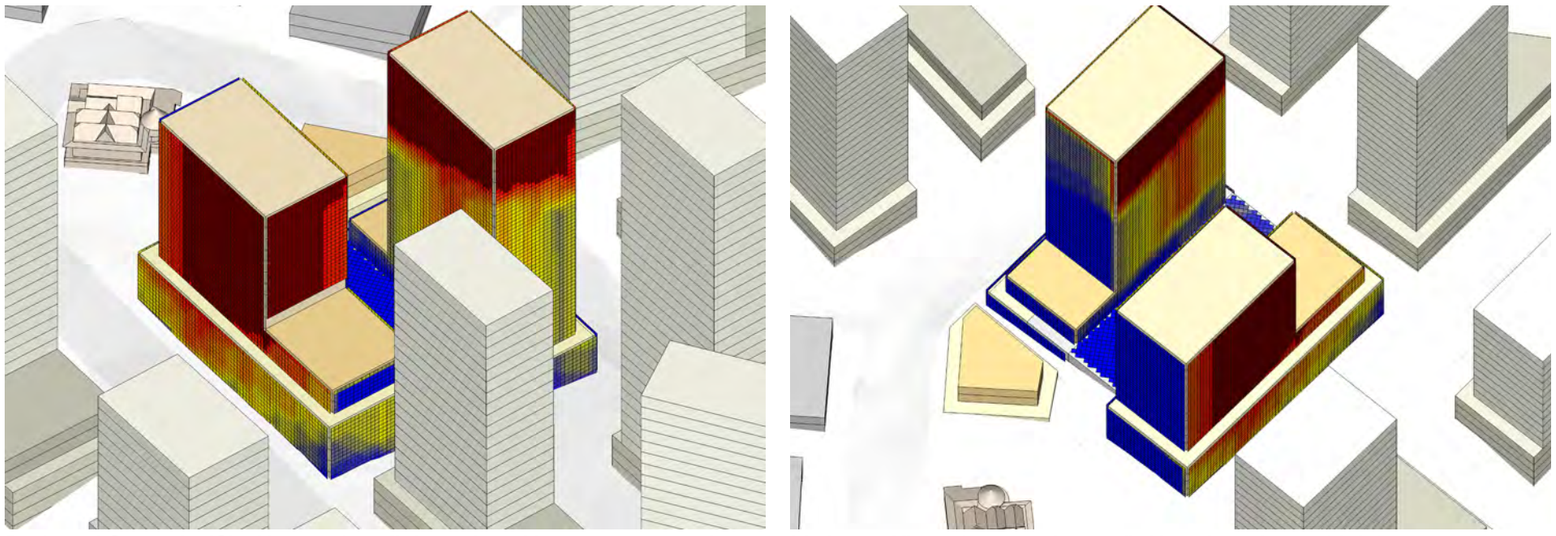
SEPP65 requires “Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and 3pm at mid winter”.

Midwinter solar access diagrams for the proposed apartment buildings are provided below. The proposal for the site is shown within a potential context that has been modelled to reflect a similar FSR across Garthowen Street to the north, to demonstrate a worst case possible future scenario for the site.

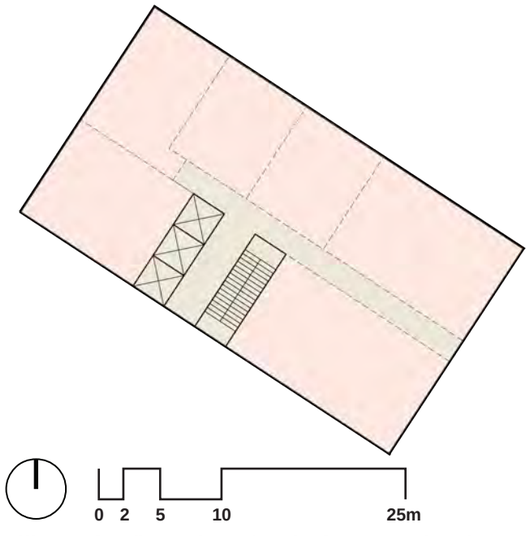
These diagrams demonstrate how the proposal generally achieves 2 hours or more solar access to 2 of 4 faces of buildings within the tower levels.

The indicative floor plan of a typical tower shown below has been arranged to ensure that 5/6 apartments at each typical tower level (83%) can achieve the SEPP65 standard of 2 hours of direct sunlight.

The overall building form is therefore capable of achieving SEPP65 compliant solar access.



Preferred Scenario (C) - Hours of sunlight recieved between 9am and 3pm midwinter - Views from northwest (left) and northeast (right)



Illustrative floor plan of typical tower - showing core to south and 4/6 apartments oriented to the north.

Overshadowing - Midwinter (June 21)

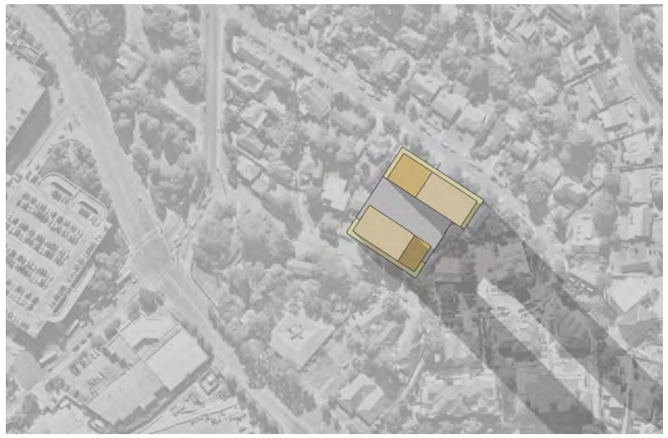
The diagrams below demonstrate the maximum extent of overshadowing from the site that occurs in midwinter (June 21) at 9am, 12pm and 3pm for both the existing context and a potential future context that has been developed based on the strategic plans that propose an increase in density about the Castle Hill commercial centre.

The proposal should not prevent any site from achieving SEPP65 compliant sun access of 2 hours sun access.

Existing context

9am

Midday

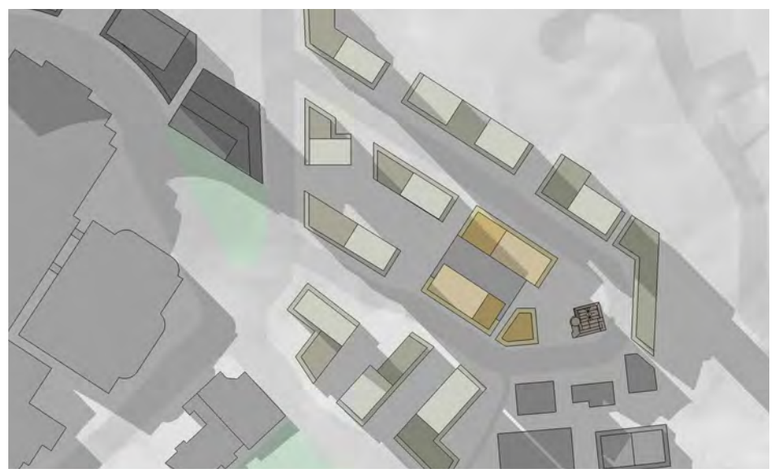


3pm

Potential future context

9am

Midday



3pm

5 Summary and conclusion

5.1 Summary and recommended controls

The site and its strategic context

This document sets out an analysis of the site and its context and presents a range of plan form and height/density design approaches for the site.

The proposed master plan has an FSR of 4.5:1 and heights of up to 20 storeys.

This master plan's height and density are:

– Consistent with Castle Hill Structure Plan (approx. 7-20 storeys).

– Similar height to Council's Pennant Street Target Site with significantly less visually bulky towers.

– Similar to that envisaged under the Draft Hills Strategy for neighbouring sites.

– Appropriate for a site within 5 minutes walk of a railway station and major shopping centre within a site identified as a Strategic Centre in the Plan for Sydney.

This proposal is capable of meeting SEPP65 solar access requirements, even with future development on adjacent sites.

Proposed LEP ammendments

Achieving this preferred master plan will require ammendment of the existing LEP controls.

Consistent with the masterplan for the site described in this document, the following changes are recommended to key LEP controls for the site.

– The site is amended from an R3 to an R4 zone.

– The proposed maxium height is estimated at 72m.

– The proposal recommends the addition of a new category (X2) for the preferred FSR of 4.5:1 across the site.

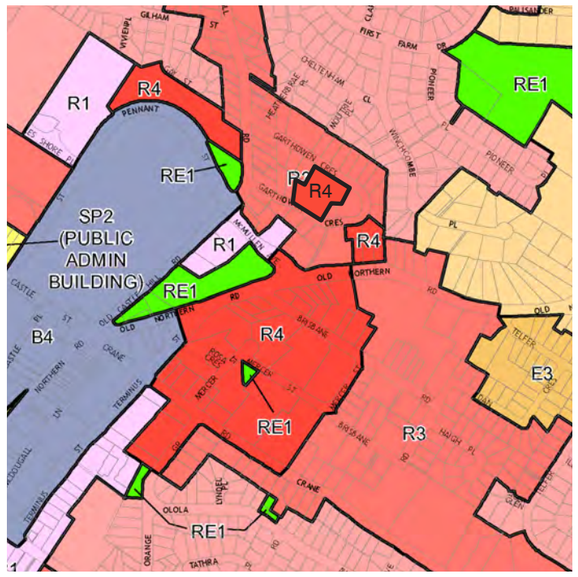
– The site is shown in the key sites map (requested by Caladines Town Planning).

These are shown on the following page.

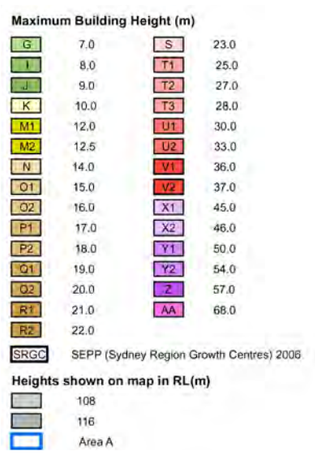
Density Scenario C - 4.5:1 FSR	
Total number of storeys (average for towers)	18
Total GFA	24163.5
Total number of apartments*	268
Site area	5345
FSR	4.5

* Based on 90sqm GFA/apartment

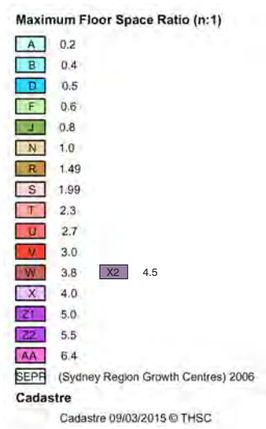
Land use zoning

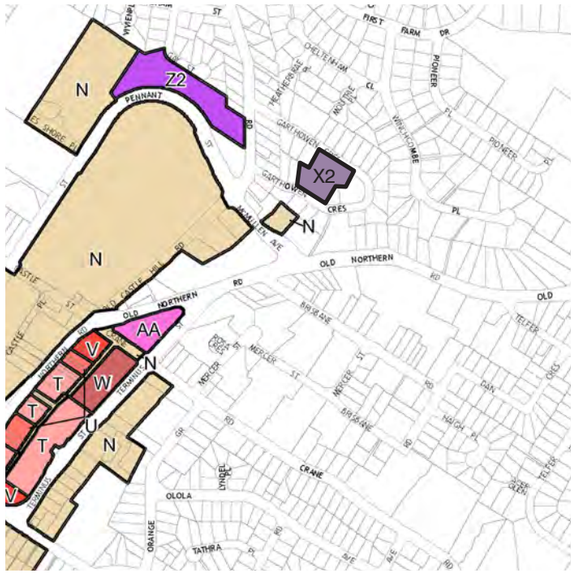


Height of buildings

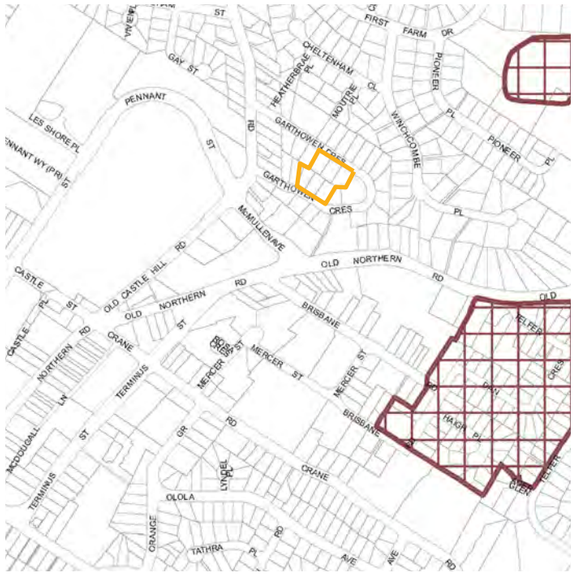


Floor space ratio





Key sites



PLANNING PROPOSAL
PROPOSED RESIDENTIAL DEVELOPMENT ON THE CONSOLIDATED SITE COMPRISING 6-10 AND 16-20 GARTHOWEN CRESCENT CASTLE HILL

TRANSPORT AND ACCESSIBILITY ASSESSMENT

7 June 2016
Ref: 16011

Prepared by

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APPENDIX B RESULTS OF GAP ACCEPTANCE AND QUEUE LENGTH SURVEYS
APPENDIX C RESULTS OF SIDRA ANALYSIS

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FIGURE 2 SITE
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FIGURE 4 EXISTING TRAFFIC AND PARKING CONTROLS
FIGURE 5 EXISTING TRAFFIC FLOWS
FIGURE 6 TRAFFIC ASSIGNMENT

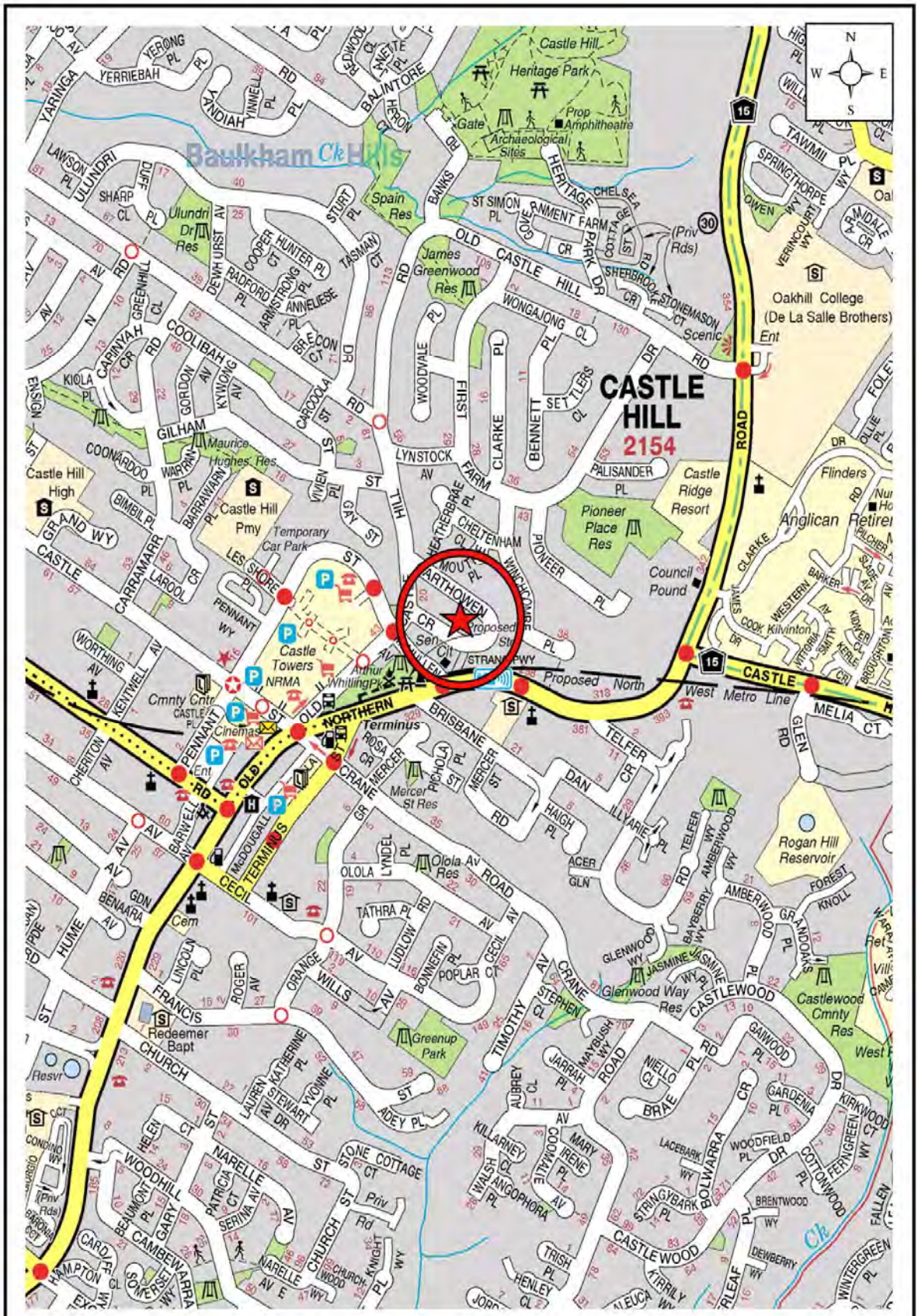
1. Introduction

This report has been prepared to accompany a planning proposal to The Hills Shire Council for a proposed residential development on a consolidated site comprising 6-10 and 16-20 Garthowen Crescent, Castle Hill (Figures 1 and 2).

The consolidated site has a total area of approximately 5346m^2 with frontages of 75.895m to Garthowen Crescent (south) and 50.31m to Garthowen Crescent (north). The site is conveniently located in respect of Castle Hill CBD, and the public transport services which serve the CBD. It is located a walking distance of up to 400m from Castle Towers Shopping Centre, the bus interchange centred on Old Castle Hill Road, and the future Castle Hill Station which will form part of the Sydney Metro Northwest Railway Line.

A concept plan for the proposed residential development is reproduced in the following pages. It makes provision for a total of 268 residential apartments in a number of highrise apartment buildings on the site comprising 67 x 1-bedroom, 174 x 2-bedroom and 27 x 3-bedroom apartments. It is anticipated that the proposed development will be served by a total of 289 off-street parking spaces in basement carparks beneath the residential flat buildings. Vehicular access for the proposed development will be by a combined entry/exit driveway off the Garthowen Road (south) frontage of the site.

The purpose of this report is to assess the accessibility of the proposed development and its traffic and parking implications.



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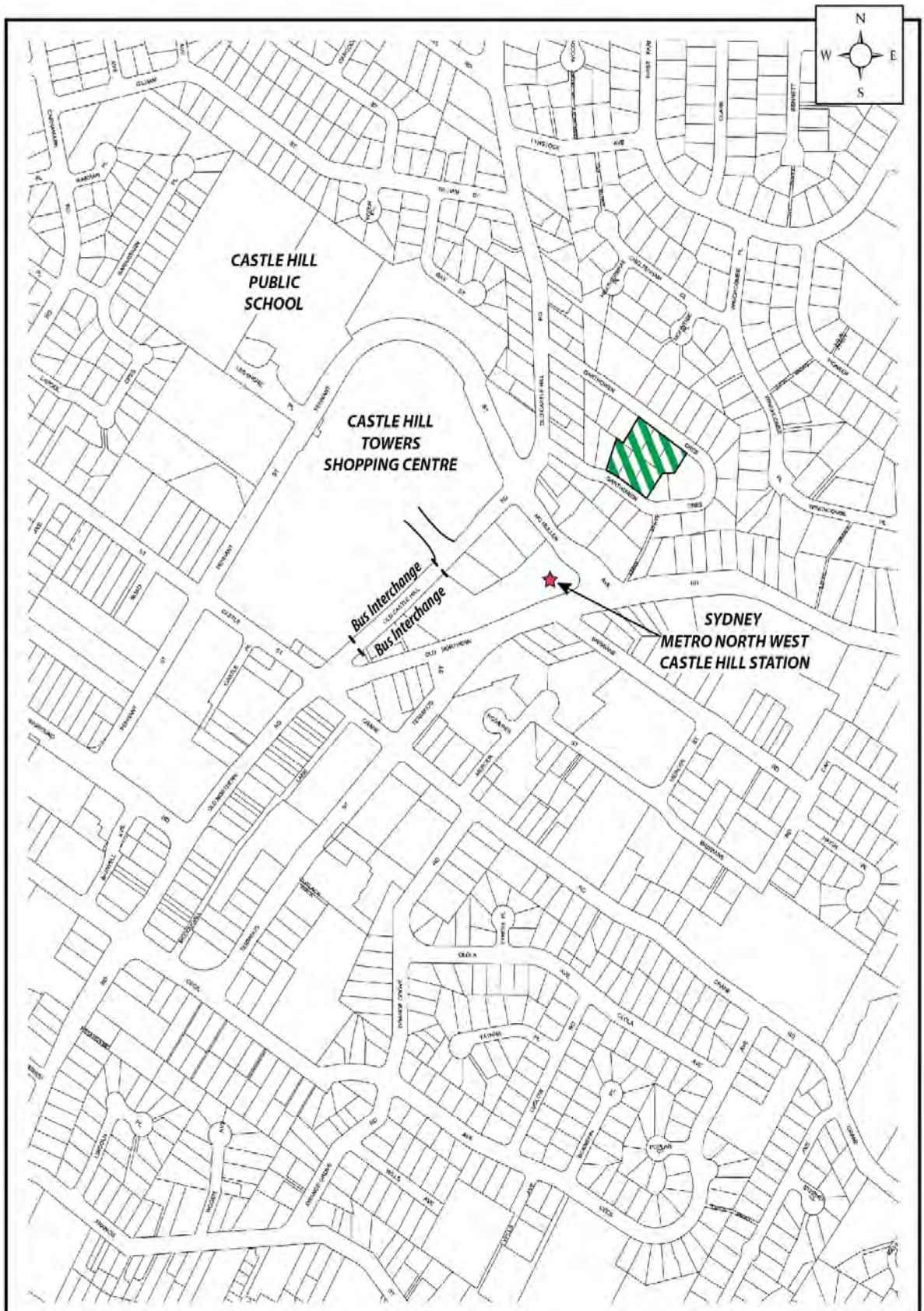
LOCATION
FIGURE 1



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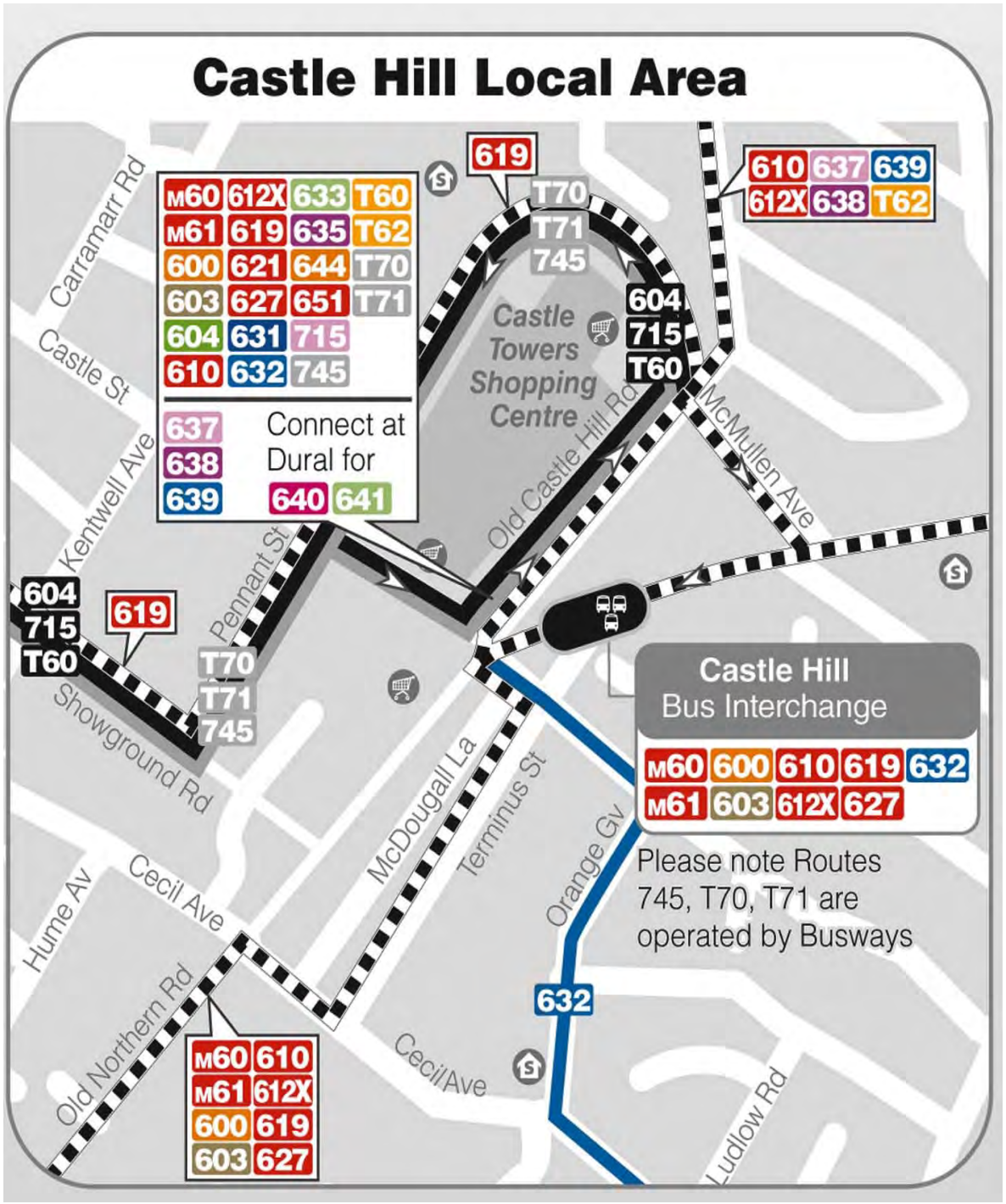
SITE
FIGURE 2

2. Public Transport

The proposed development site enjoys a high level of public transport accessibility via a number of bus services which stop at the Castle Hill Bus Interchange on Castle Hill Road, a walking distance of approximately 400m from the site. In the future, the site will also have public transport service via the Sydney Metro Northwest Railway Line between Chatswood and Rouse Hill which is currently under construction and expected to become operational in mid-2019. Access to this rail system will be via Castle Hill Railway Station which is located adjacent to the bus interchange. The site therefore enjoys convenient access to all of the public transport services, both existing and planned, which currently serve Castle Hill Centre and which will do so in the future.

Bus services operated by Hills Bus and Busways which stop at the Castle Hill Bus Interchange are shown on the schematic map reproduced in the following pages and comprise:

Route M60:	Hornsby to Parramatta Metrobus
Route M61:	Castle Hill to City Metrobus
Route T60:	Castle Hill to Parramatta via Crestwood, Winston Hills and North-West T-Way
Route T62:	Parramatta to Castle Hill via North-West T-Way, Bella Vista and Tuckwell Road
Route T70:	Blacktown to Glenwood/Bella Vista/Castle Hill
Route T71:	Blacktown to Stanhope Gardens/Kellyville/Castle Hill
Route 600:	Castle Hill to Parramatta via Baulkham Hills
Route 603:	Rouse Hill to Parramatta via Glenhaven and Castle Hill
Route 604:	Castle Hill to Parramatta via Winston Hills and Baulkham Hills
Route 610:	Rouse Hill Town Centre to City
Route 610X:	Rouse Hill to City Express
Route 612X:	Kellyville to Milsons Point via Castle Hill, Lane Cove Tunnel and North Sydney
Route 619:	Rouse Hill Town Centre to Macquarie Park
Route 621:	Castle Hill to City via Cherrybrook and Macquarie Park
Route 627:	Castle Hill Interchange to Chatswood via Lane Cove
Route 631:	Castle Hill to Pennant Hills via Castle Hill Road
Route 632:	Pennant Hills to Castle Hill via Anglican Retirement Village
Route 633:	Pennant Hills to Castle Hill via West Pennant Hills
Route 635:	Castle Hill to Beecroft Station via West Pennant Hills
Route 637:	Glenorie to Castle Hill and Pennant Hills
Route 638:	Berrilee and Galston to Castle Hill and Pennant Hills
Route 715:	Norwest Business Park to Seven Hills via Old Windsor Road
Route 745:	Castle Hill to St Marys via Northwest Boulevard and Stanhope Gardens


Castle Hill Local Area
M60 612X 633 T60
M61 619 635 T62
600 621 644 T70
603 627 651 T71
604 631 715
610 632 745
637
638
639
Connect at Dural for
640 641
619
T70
T71
745
610 637 639
612X 638 T62
604
715
T60
Castle Towers Shopping Centre
Carramarr Rd
Castle St
Kentwell Ave
Pennant St
Old Castle Hill Rd
McMullen Ave
Showground Rd
Castle Hill
Bus Interchange
M60 600 610 619 632
M61 603 612X 627
McDougall La
Terminus St
Orange Gv
Please note Routes 745, T70, T71 are operated by Busways
Hume Av
Cecil Ave
Old Northern Rd
632
Cecil Ave
Ludlow Rd
M60 610
M61 612X
600 619
603 627