North West Rail Link
Castle Hill Station
Draft Structure Plan
A Vision for Castle Hill Station Surrounds

NSW GOVERNMENT Transport | NSW GOVERNMENT Planning | Hill PDA | COX

Prepared by Hill PDA &
Cox Richardson
March 2013

Castle Hill Draft Structure Plan
Table of Contents

Castle Hill Draft Structure Plan
1. Introduction

1.1 CONTEXT

The North West Rail Link (NWRL) is a priority transport infrastructure project for the NSW Government. The NWRL will include eight new stations and services as part of a 23 kilometre link, running from Epping to Cudgegong in north-west Sydney, connecting with the Epping to Chatswood Rail Link (ECRL) and Sydney's wider rail network.

The north west of Sydney is expected to experience high growth with the need for new dwellings and additional jobs to meet demand. To sustainably manage this growth, metropolitan planning aims to provide for a more compact, accessible city, capable of supporting more jobs, homes and lifestyle opportunities within close proximity of public transport.

The delivery of a new rail line in the North West is a significant investment in public infrastructure and represents an opportunity to carefully consider the wider implications of rail and to comprehensively plan for the future. The North West has great potential to become a major transport-oriented corridor, delivering a significant amount of housing and employment, high levels of self-containment and an unrivalled level of amenity and lifestyle within a desirable residential community.

The NWRL will meet the challenge of future growth, by:

- **Providing rail access** between North West Sydney and Epping, Macquarie University, Macquarie Park, Chatswood, St Leonards, North Sydney and the Sydney Central Business District (CBD), including new rail services to existing centres in the Hills District, such as Castle Hill, Rouse Hill and Norwest Business Park.
- **Reducing vehicle trips**, when rail is introduced to the North West all modes of public transport will become a more attractive and accessible alternative to the private motor vehicle.
- **Improving travel times** from, to and within the North West and delivering a reliable, dependable service.

1.2 REPORT STRUCTURE

The following report is a study to determine the challenges and opportunities the new station will present to the Castle Hill locality. This study will culminate in a collective vision and Structure Plan for the station precinct, to guide the future character of the study area and to reinforce the delivery of the NWRL and a new station at Castle Hill. In preparing the Draft Structure Plan, consideration has been given to the following:

1. **Role of the Study Area in the NWRL corridor.** Consideration is given to the role the Study Area will perform within the rail corridor and the North-West.

2. **Analysis of the physical characteristics**. A comprehensive site analysis has been undertaken to ascertain the natural and physical opportunities and constraints of the Study Area. Please refer to *Section 2: Opportunities & Constraints Analysis*.

3. **Analysis of the existing planning controls in the Study Area.** The key planning controls that apply to the Study Area have been examined to determine their ability to respond to a new rail link and station. Please refer to *Section 3: Current Planning Controls*.

4. **Identification of Opportunities for Growth**. Sites that may contribute to the growth of the Study Area in response to a new rail link and station have been identified. Please refer to *Section 4: Opportunities for Growth*.

5. **Vision for the Study Area.** The overall vision for the Study Area is informed by the above analysis. This vision will be realised through the Structure Plan which provides an overall guide to the future character of the Study Area. Please refer to *Section 5: Vision and Structure Plan*

6. **Actions and Implementation.** To achieve the overall vision for the Study Area, a series of actions to be undertaken, have been identified. Please refer to *Section 6: Actions and Implementation*

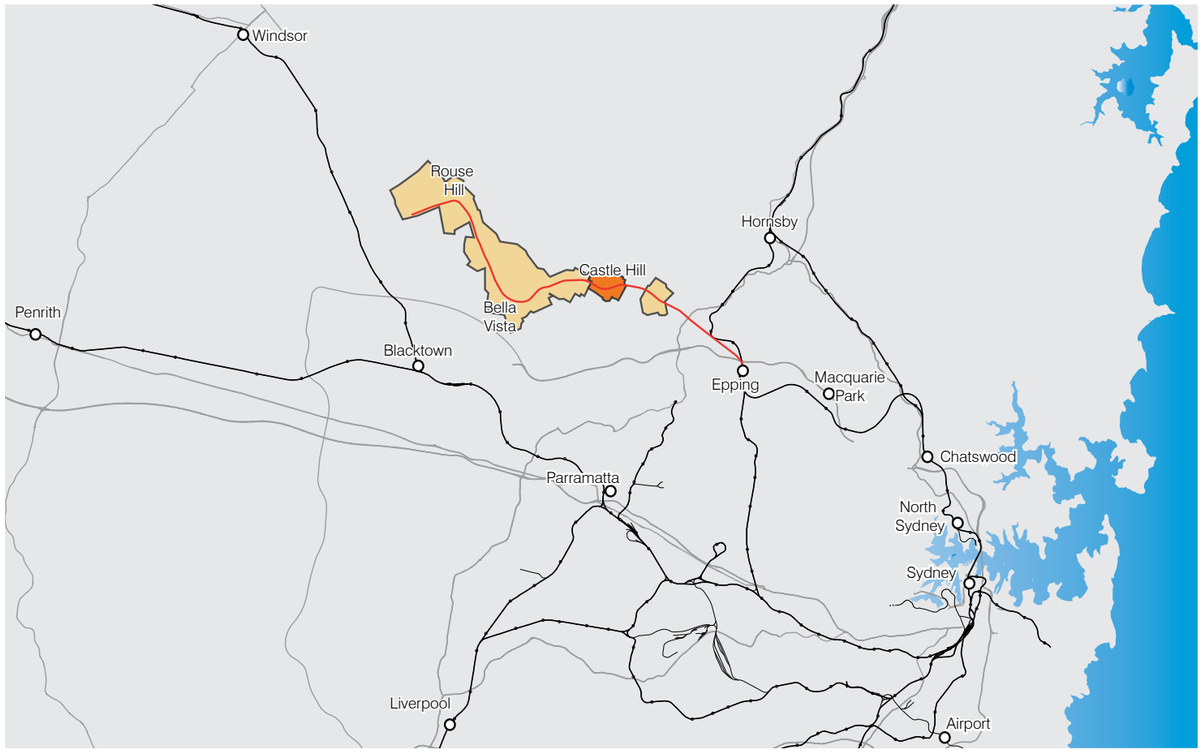

Figure 1: North West Rail Link in the context of Metropolitan Sydney

1.3 STUDY AREA LOCALITY & CHARACTER

The NWRL includes a new underground station at Castle Hill. The new train station will be located beneath Arthur Whitling Park, near the existing bus interchange, in the centre of Castle Hill.

Castle Hill is identified as a Major Centre for the North West under metropolitan planning. A Major Centre is an important retail and business centre for the region, containing community facilities and higher density residential development within 1km of the centre. Metropolitan planning supports residential intensification within the walking catchment of the train station and recognises that any forward planning for the Castle Hill study area and its surrounds will need to consider the future requirements for office buildings, retailing opportunities, education, community and cultural facilities.

The NWRL has the potential to strengthen Castle Hill's role as a Major Centre, by supporting growth in and around the centre. This will also help achieve metropolitan planning goals to locate 80 per cent of all new housing within walking distance of centres, like Castle Hill, that have good public transport. This will assist in reducing car dependence and make walking, cycling and public transport more viable for residents.

The boundary of the Study Area is based on the nearest road boundary within a radius of 800m from Castle Hill Station, which is a distance normally considered to reflect a 10 minute walking trip. The boundary has also been defined by taking into account the existing character, predominant land uses, built form and natural elements of the area.

The Castle Hill Study Area is an established residential and retail/commercial centre that covers approximately 237 hectares and is entirely located within the Hills Shire Local Government Area (LGA).

The study area extends to Greenup Park, Cecil Avenue and Pioneer Place Reserve to the east, Purser Avenue to the south, Fishburn Crescent and Britannia Road to the west and Bert Parkinson Reserve, Tuckwell Road and First Farm Drive to the north.

The Study Area comprises the existing Castle Hill commercial/retail centre at its core, which includes a main street, Castle Towers shopping centre, and Castle Mall Shopping Centre. The general built form of the mixed commercial/retail buildings along Old Northern Road comprise 1 to 2 storey developments. Castle Towers is an internalised shopping centre, with over 100,000m2 of retail space adjoining Pennant Street and Old Castle Hill Road in the north of the core. Castle Mall Shopping Centre is located in the east of the core, adjoining Terminus Street. The core also includes a bus transport hub located at Arthur Whitling Park, the main public open space within the core.

Outside the core, the Study Area comprises largely residential development. Housing stock consists of 1-2 storey detached houses set on large blocks, with strong landscaped settings and extensive vegetation, interspersed with pockets of 3-4 storey apartment developments, such as on Cecil Avenue. A 10 storey apartment building exists on Castle Street, to the west of the core.

The Study Area contains four schools, Castle Hill Primary School and Castle Hill High School, in the west, and Hills Adventist School and St Bernadettes Catholic School, to the east of the core. The area also includes Castle Hill RSL, Castle Hill Bowling Club and a number of parks, play areas, reserves and community facilities.

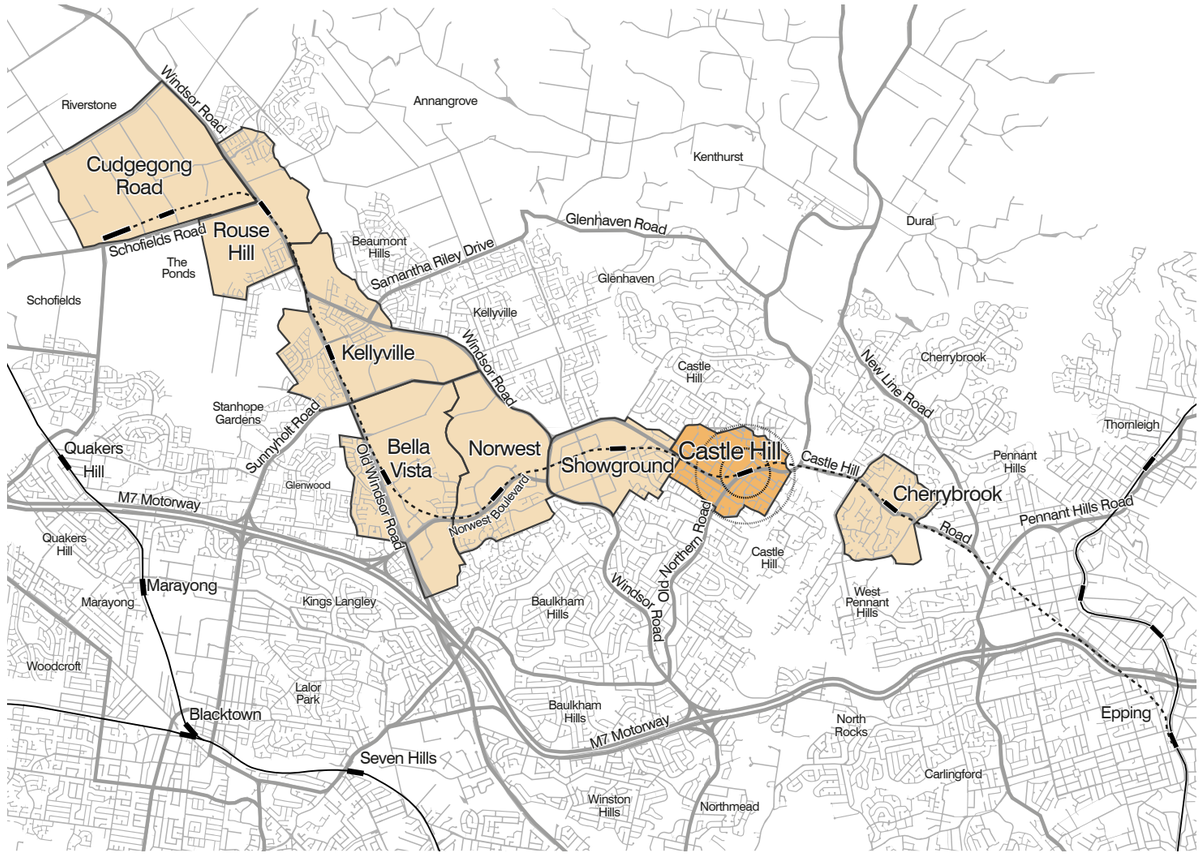

Figure 2: Castle Hill Study Area, in the context of the North West Rail Link.

Castle Hill Draft Structure Plan
2. Opportunities & Constraints Analysis

2.1 INTRODUCTION

This section is an assessment of the opportunities and constraints within the Study Area. The physical characteristics of the Study Area have been mapped and analysed to identify the Study Area's physical constraints and opportunity sites. These characteristics include; transport, traffic and accessibility; open space networks and ecology; topography and landslip; drainage and hydrology; bushfire risk; and infrastructure easements. Constraints related to recent development, heritage, and community strata-title have also been examined.

The combination of these elements will reveal the overall level of constraint within the Study Area and highlight those sites which have the opportunity to change in response to a new rail link and station at Castle Hill.

The analysis of the information contained within sections 2, 3 and 4 of this report have been drawn from a number of sources including:

- The Hills Shire Council
- Department of Planning and Infrastructure
- Land and Property Information Division of NSW
- Transport for NSW.

Figure 3: Castle Hill Station precinct, showing station location, study area boundary and Key Land Uses
Source: Google Maps 2012

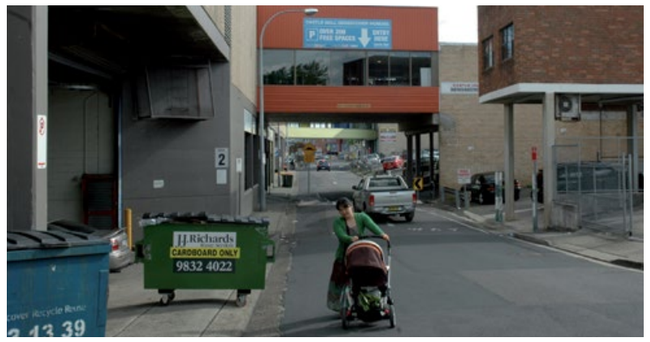

Figure 4: Images of the existing built form and character within the Study Area
Source: TfNSW

Castle Hill Draft Structure Plan
2. Opportunities & Constraints Analysis

2.2 TRANSPORT, TRAFFIC & ACCESSIBILITY

The study area is accessible from three principle routes – Old Northern Road from the south, Castle Hill Road from the east, and Showground Road from the west. Old Northern Road traverses the study area in a north-south direction, linking Castle Hill to the CBD (via the M2) and important employment centres in the east, such as Macquarie Park. Showground Road provides the main arterial road linking the study area to the Hills Centre and Norwest via Old Windsor Road.

Internally, local traffic benefits from a ring-road/bypass around the commercial core of Castle Hill comprising Pennant and Terminus streets. Permeability for all transport modes outside the study area core is undermined by a poorly interconnected road layout, featuring a multitude of residential culs-de-sac.

The local bus network connects Castle Hill Interchange to the CBD/Macquarie Park and Parramatta (via Old Northern Roads, to the south), Norwest and Kellyville (via Showground Road), and Cherrybrook (via Old Northern Road, to the north).

Figure 5 below demonstrates the 5, 10 and 20 minute walking catchments from the proposed station location. Pedestrian and cycling accessibility is restricted by barriers associated with crossing the major arterials routes of Showground Road, Pennant Street, Old Northern Road and Castle Hill Road. Similarly, there is a lack of street network permeability due to the number of culs-de-sac which back on to the major arterial road network and the large landholdings of the schools and Castle Towers.

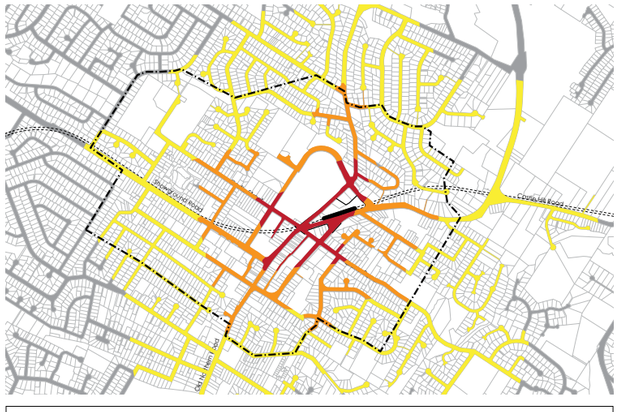

Figure 5: Walking Catchment within the Study Area

Figure 6: Access & Movement within the Study Area

2.3 OPEN SPACE & CONSERVATION

Key open spaces within the study area are typically zoned RE1 (Public Recreation) under *The Hills Local Environmental Plan 2012*. These spaces include;

- Arthur Whitling Park, the location of the proposed train station;
- Maurice Hughes Reserve, north-west of the commercial core;
- Bert Parkinson Reserve north of Castle Hill High School.

Despite its highly urbanised character, there remain areas of biodiversity importance within the Study Area. Dispersed pockets of significant vegetation are located in the north and north west of the study area. Of these, the largest concentration is located around the intersection of Carramarr Street and Gilham Road north west of the core and forming the north west boundary of the Study Area. These areas comprise Sydney Turpentine Ironbark Forest, which is classified as a Threatened Ecological Community and as a Endangered Ecological Community under the *NSW Threatened Species Conservation Act 1995*, and as a Critically Endangered Ecological Community under the *Environment Protection and Biodiversity Conservation Act (EPBC) 1999*. Further isolated stands of Sydney Turpentine Ironbark Forest are located north of Pennant Street.

An isolated stand of Shale/Sandstone Transition Forest (High Sandstone Influence), classified as a Threatened Ecological Community and as an Endangered Ecological Community under the *Threatened Species Conservation Act 1995* and under the EPBC Act 1999, is located north of Showground Road.

Detailed ecological studies will be required to identify impacts on native vegetation and threatened flora and fauna as part of any future rezoning investigations within the Study Area.

Figure 7: Open Space & Conservation within the Study Area

Castle Hill Draft Structure Plan
2. Opportunities & Constraints Analysis

2.4 HERITAGE & SPECIAL USES

Figure 8 shows that a number of sites are identified as special uses within the Study Area. These include Castle Hill High School and Castle Hill Public School, Castle Hill Library and Community Centre, on Castle Street, St Bernadette's Catholic School, on Old Northern Road to the east, Castle Hill Adventist School and McDonalds Baptist Church to the south. The site on the north corner of Pennant Street and Castle Street is zoned SP2 (Public Administration Building) for the existing Police Station on site.

Six local heritage items are located within the Study Area. The most prominent of these are the Castle Hill Public School, and the former Police Station, which are located on neighbouring sites within the commercial core, immediately south of Castle Towers shopping centre, and include an at-grade car park currently servicing the shopping centre.

There are no heritage conservation areas within the Study Area, however, Gilroy College, St Gabriels School and Castle Hill House are significant heritage items located just to the south of the Study Area on Old Northern Road.

The Structure Plan seeks to retain and reinforce the heritage items identified in *Figure 8: Heritage & Special Uses within the Study Area*.

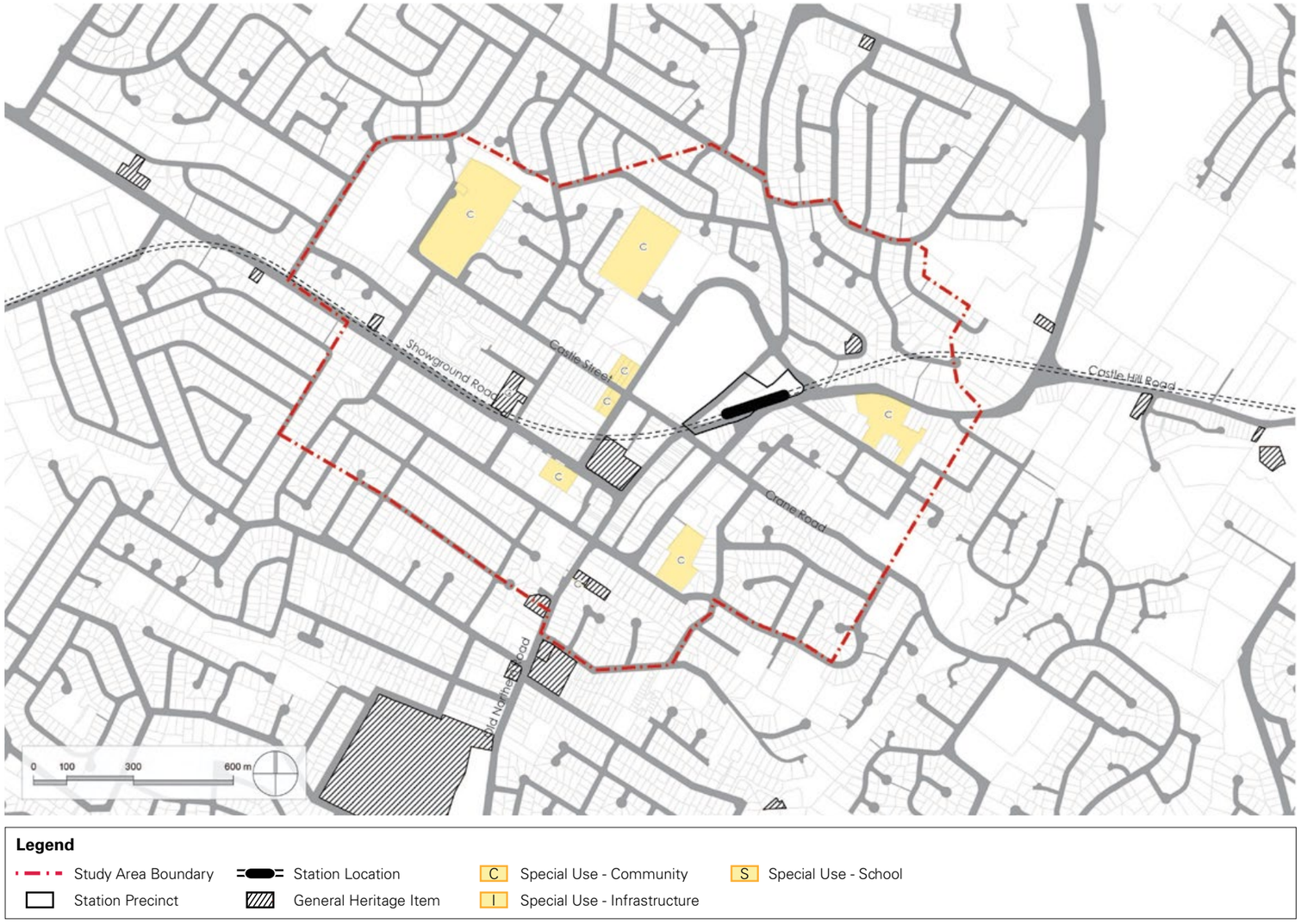

Figure 8: Heritage & Special Uses within the Study Area

2.5 TOPOGRAPHY

The topography within the Study Area is undulating with a ridgeline that broadly runs along Castle Hill Road and Showground Road falls away gradually east to west. This divides the Study Area into three distinct topographical areas. To the north and south west, lie moderately undulating areas. In contrast, to the south east, levels fall steeply south of Castle Hill Road towards Crane Road. The resulting slopes exceed 10 percent. These areas have been nominated as lands at risk of landslip. The development of slopes greater than 10 percent and within landslip risk areas requires alternative development and construction techniques and may limit the types of buildings that can be constructed.

Heights within the Study Area range between approximately 96-170 metres above sea level. The highest point within the Study Area is located east of the proposed station adjacent to St Bernadettes Catholic School.

Figure 9: Topography within the Study Area

2. Opportunities & Constraints Analysis

2.6 DRAINAGE

The station will be located on the top of the ridge between the two major catchments of Sydney; The Hawkesbury River catchment lies to the north and the Sydney Harbour catchment lies to the south.

The major natural drainage channel comprises the upper catchment of Cattai Creek and falls away from the high point in the east to the lowest point at Britannia Road, the western boundary of the Study Area, through Castle Towers, Castle Street and through the Castle Hill RSL site.

The Study Area contains a number of lower order drainage lines. To the north the catchment drains to Castlehill Creek, to the south-east towards Excelsior Creek and to the south-west towards Toongabbie Creek.

While the risk of flooding is low and is not considered to be a major constraint to development, further investigation may be required at any future re-zoning or development application stage to establish appropriate flood planning levels. Similarly, given the Study Area's location at the start of significant drainage catchments, controls governing stormwater capture, treatment and re-use will need to be devised to govern any future growth within the Study Area.

The flooding information captured in this report is preliminary and a detailed flooding study will need to be undertaken at master plan level.

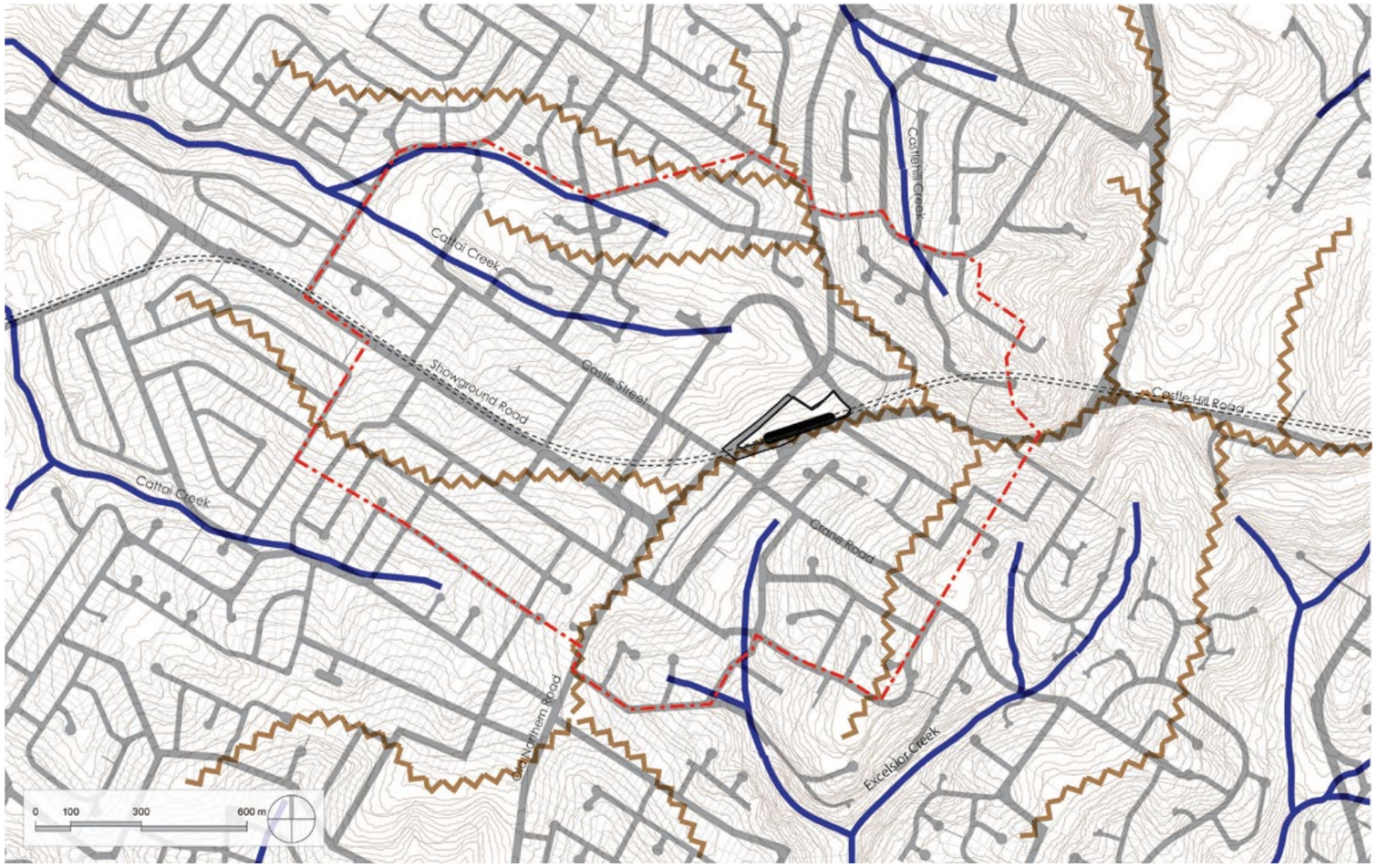

Figure 10: Drainage within the Study Area

2.7 RECENT RESIDENTIAL DEVELOPMENT

The assessment of recent residential development includes development that has occurred over the last 15 years.

An analysis of recent residential development indicates that incremental low density residential development has occurred throughout the Study Area.

Recent development is concentrated in pockets located to the south of Showground Road, east and north of Castle Hill commercial core and predominantly comprises low and medium density housing. Other notable recent development includes Castle Hill Library, on the corner of Pennant and Castle streets.

Consideration has been given to the condition and age of the existing building stock and the impact of these factors on the likelihood of land being redeveloped in the lifetime of the Structure Plan. Recent development is considered a short to medium term constraint to development, as the average life cycle of a building is generally 30-40 years. A proportion of dwellings within the Study Area have been recently built and/or are of sufficient quality to be excluded as potential urban renewal redevelopment opportunity sites in the short to medium term. Refer to section 4 for an overview of the opportunity sites within the Study Area.

Figure 11: Recent Residential Development within the Study Area

Castle Hill Draft Structure Plan
2. Opportunities & Constraints Analysis

2.8 OTHER CONSTRAINTS

There is a single large residential subdivision between Castle Street and Showground Road west of the core that is governed by community title arrangements. In addition, a number of dispersed residential sites are subject to strata title ownership.

Land governed by strata or community title arrangements are considered a constraint to redevelopment, as under current legislation, the approval of all owners and lenders is first required. Accordingly, these schemes are not likely to contribute to the future residential capacity of the Study Area in the foreseeable future.

Figure 12: Other Constraints within the Study Area

2.9 COMBINED CONSTRAINTS

The constraints mapping indicates there are large portions of the Study Area that are constrained.

The steep topography to the east of the Study Area is a considerable constraint comprising of slopes above 10 percent and those sites which have been identified as subject to landslip risk.

Pockets of recent residential development are scattered across the Study Area. These parcels are unlikely to be developed in the short term, however may be suitable for renewal in the longer term.

There are a number of residential subdivisions governed by community title arrangements and apartment buildings governed by strata title that are not likely to contribute to the future residential capacity of the Study Area into the foreseeable future.

Special uses such as schools and community facilities and the areas of open space and significant vegetation are seen as both constraints and opportunities. They may provide the opportunity to increase community facilities, active recreation and passive recreation spaces to contribute to increased levels of amenity for workers and residents of Castle Hill in to the future.

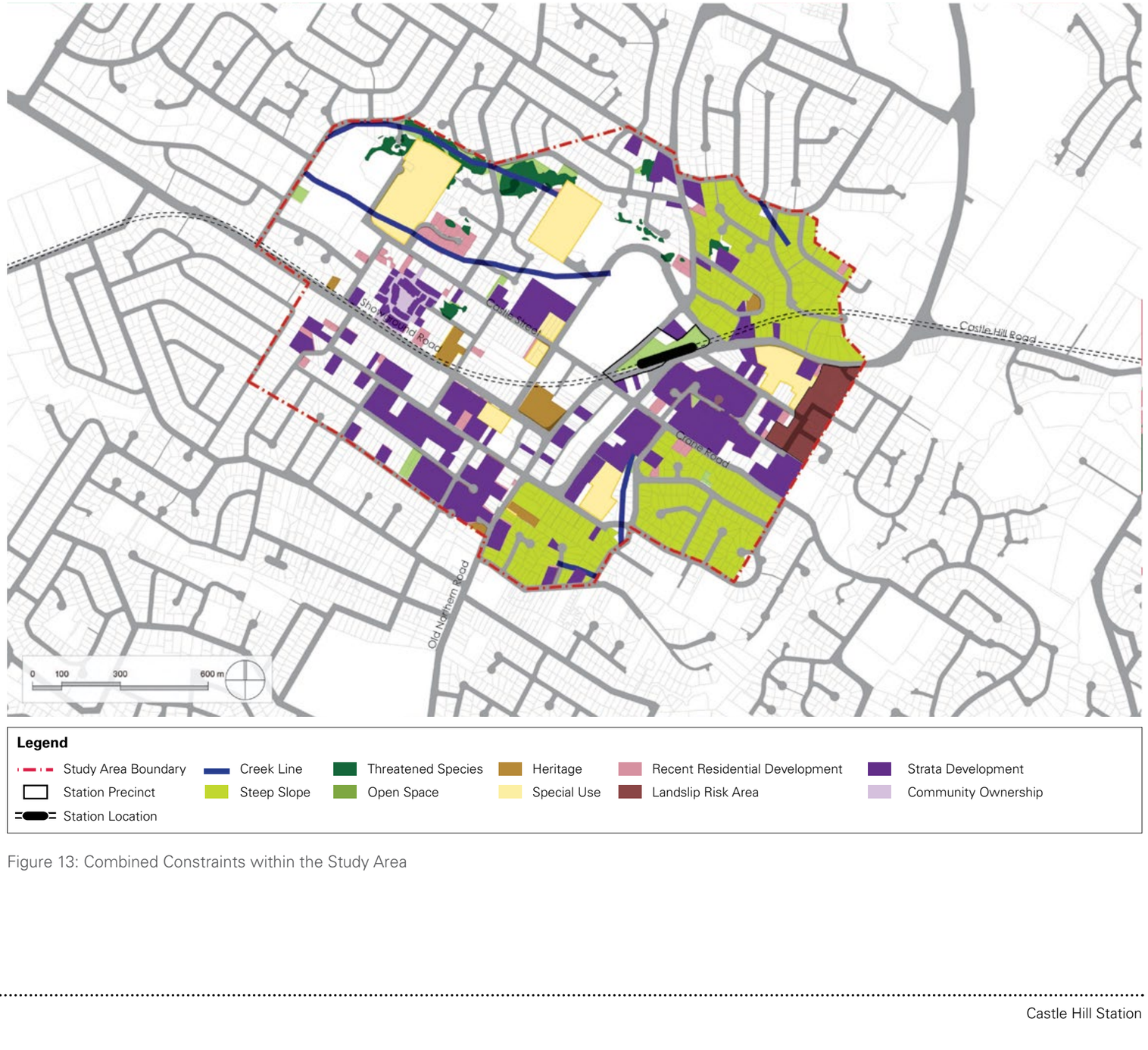

Figure 13: Combined Constraints within the Study Area

Castle Hill Draft Structure Plan
3. Planning Controls

3.1 INTRODUCTION

This section reviews the existing land use, height, floor space and lot size controls that apply to land within the Study Area.

The key planning controls applying to the Castle Hill Study Area are included in *The Hills Local Environmental Plan 2012*.

Additional relevant controls are also contained in *The Hills Development Control Plan 2011*.

3.2 LAND USE

The existing zoning controls generally allow for greater residential densities close to the existing Castle Hill commercial core and transport services, while retaining the low density suburban character of areas to the west and south. Castle Hill centre is zoned to allow for a mix of uses, including retail, commercial and residential uses, including residential flat buildings at a variety of densities.

High density residential development is allowed on lands to the east and south-west of Castle Hill centre. Permitted residential densities gradually decrease with distance from the centre. For example, low density housing is permitted in the north-west, around the Castle Hill RSL.

A plan illustrating the Study Area's existing zoning controls is provided in *Figure 14: Zoning Controls*.

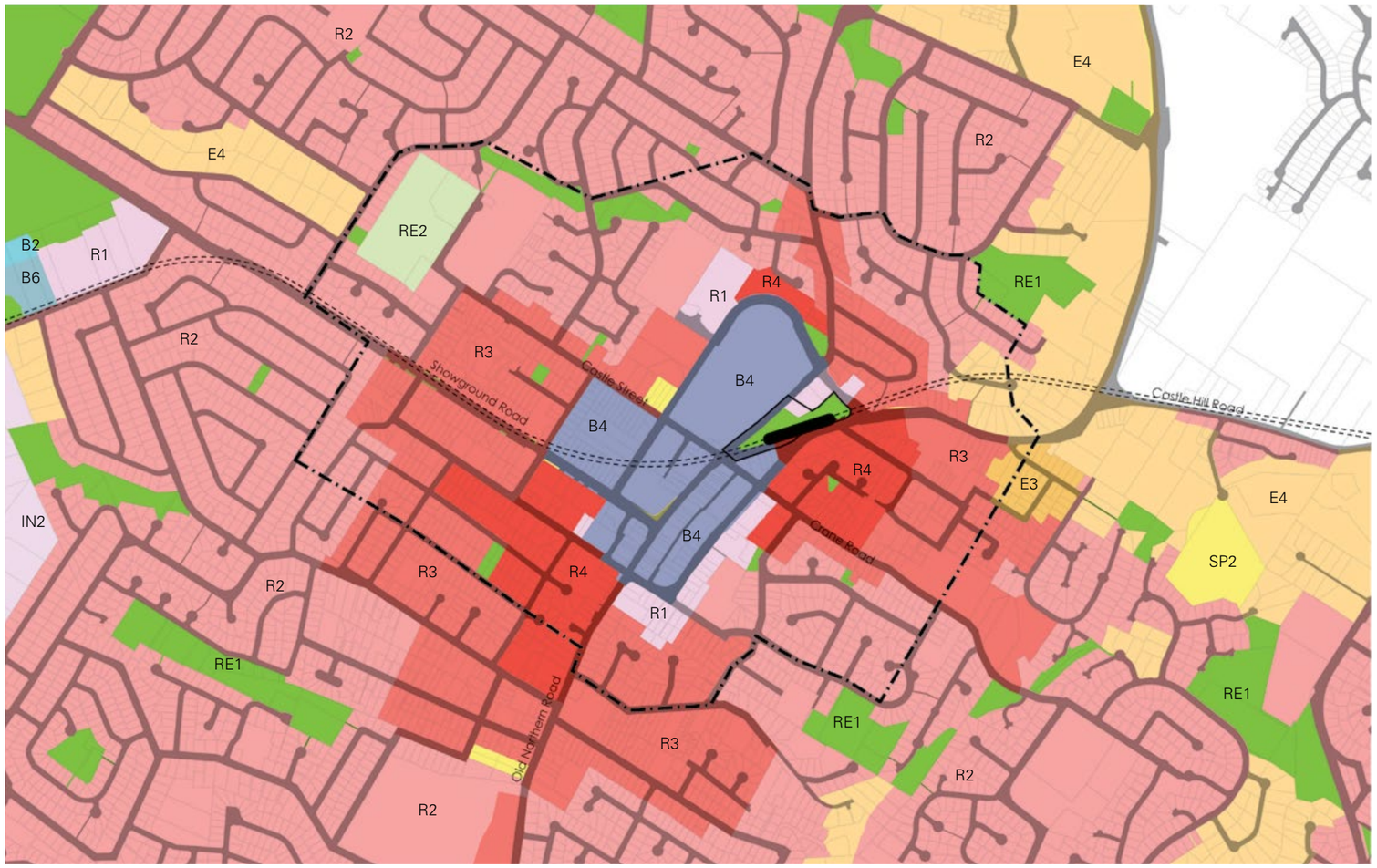

Figure 14: Zoning Controls within the Study Area

3.3 BUILDING HEIGHT

Height controls in the Castle Hill study area vary from 12m in the centre, 16m at the edge of the core, 28m to the west and 45m to the east. The majority of lands outside the commercial core that are zoned for low density residential uses (R2), are restricted to a 9m height limit.

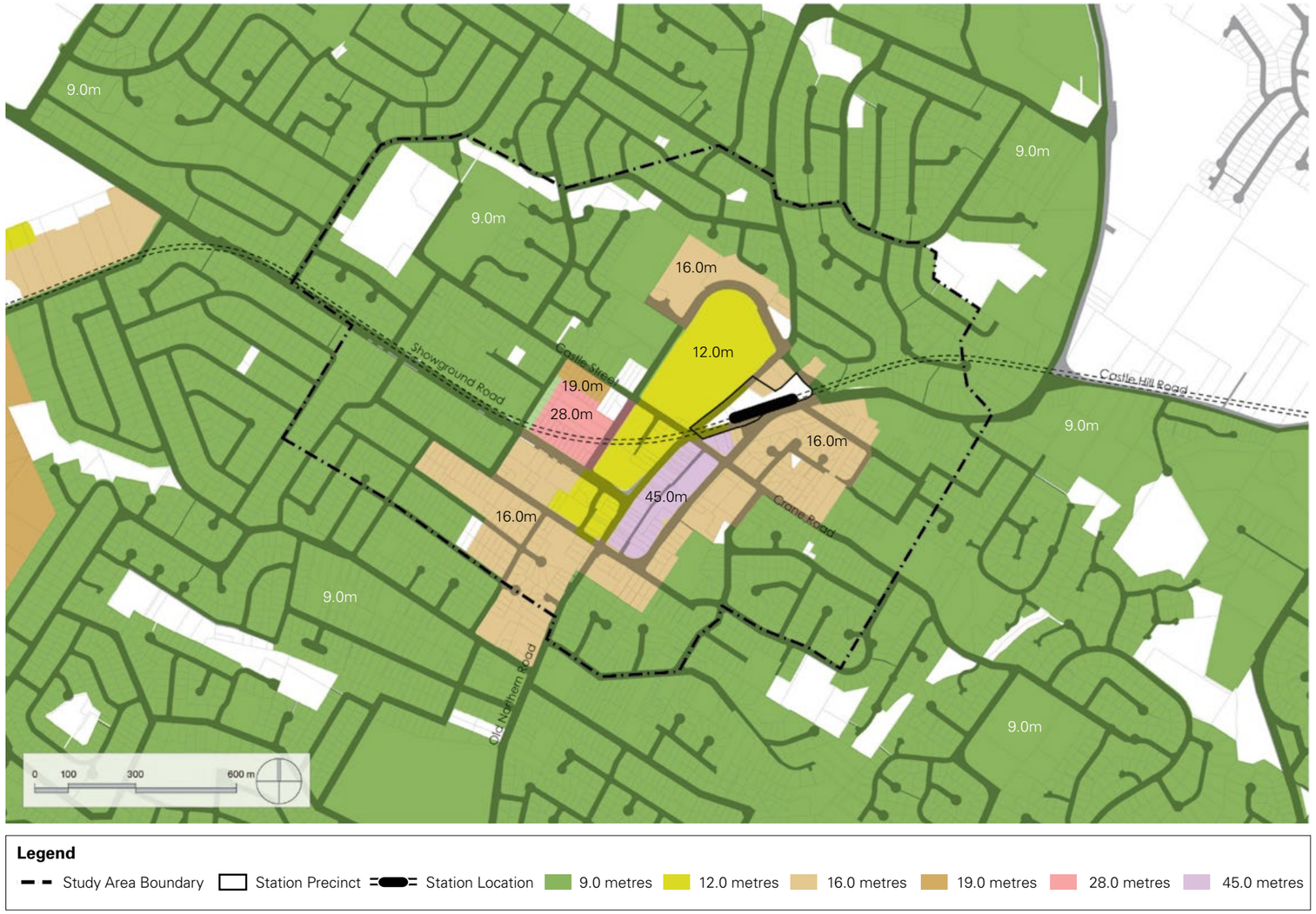

Figure 15: Building Heights within the Study Area

Castle Hill Draft Structure Plan
3. Planning Controls

3.4 LOT SIZE

A large proportion of the land zoned for residential uses (low and medium density) are governed by a minimum lot size of 700sqm. The remaining residential areas zoned for high density are governed by a minimum of size of 1,800sqm.

Within the mixed use and general residential zones, which incorporate the core of Castle Hill, lot sizes are a minimum 600sqm.

Minimum lot sizes on the eastern boundary of the Study Area are set to a minimum 2,000sqm to address the steep topography of the area.

A plan illustrating the existing zoning controls is provided in *Figure 16: Minimum Lot Size Controls*.

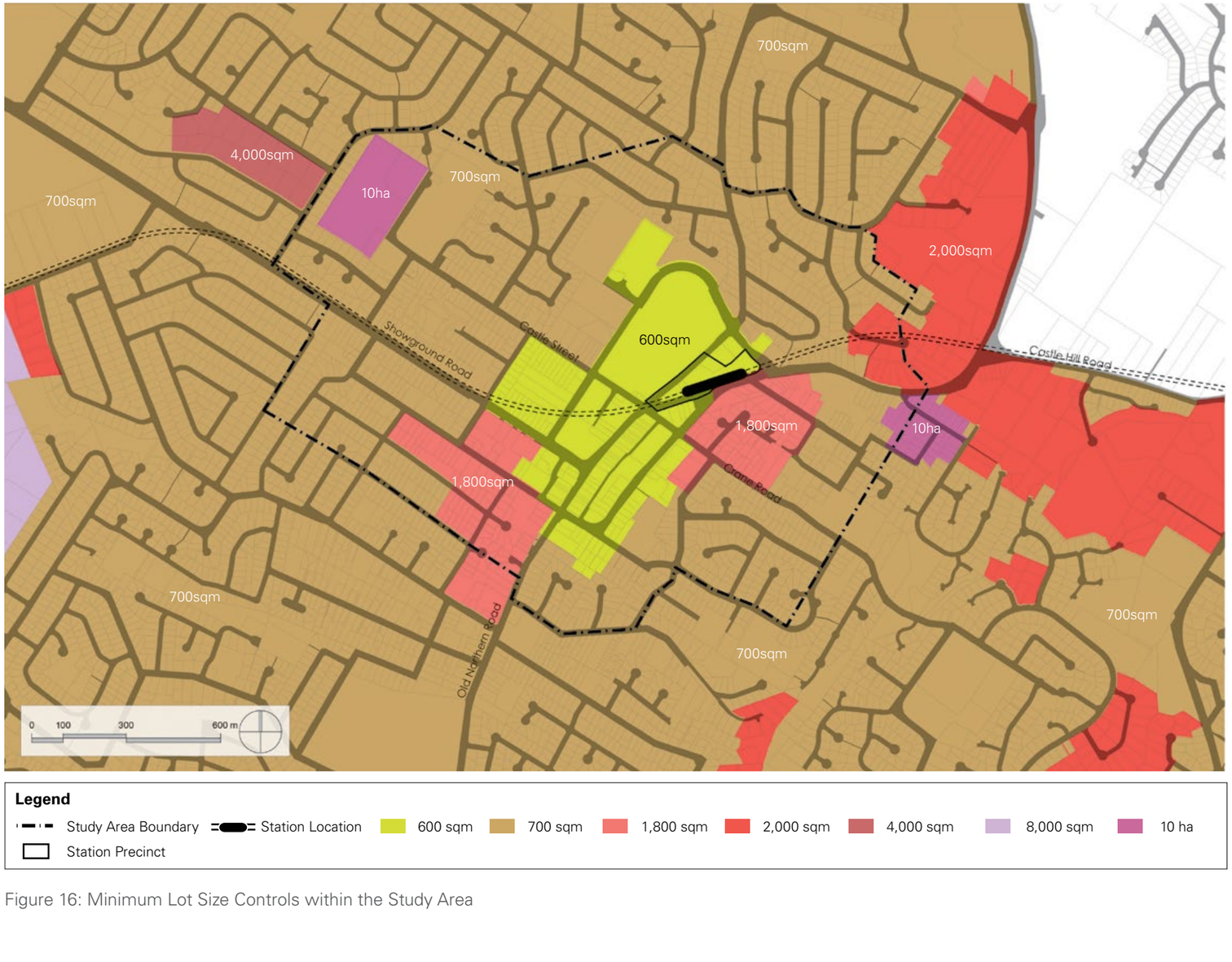

Figure 16: Minimum Lot Size Controls within the Study Area

3.5 FLOOR SPACE RATIO

Floor space ratio (FSR) controls refer to the relationship of the permitted built form to the area of a site.

Under the Hills LEP 2012, the majority of the core of Castle Hill have an FSR of 1:1.

To accommodate higher densities within the core, FSRs in the south-east of Castle Hill core include 2.3:1, 2.7:1, 3.8:1 and 6.4:1.

A plan illustrating the existing zoning controls is provided in *Figure 17: Floor Space Ratio Controls*.

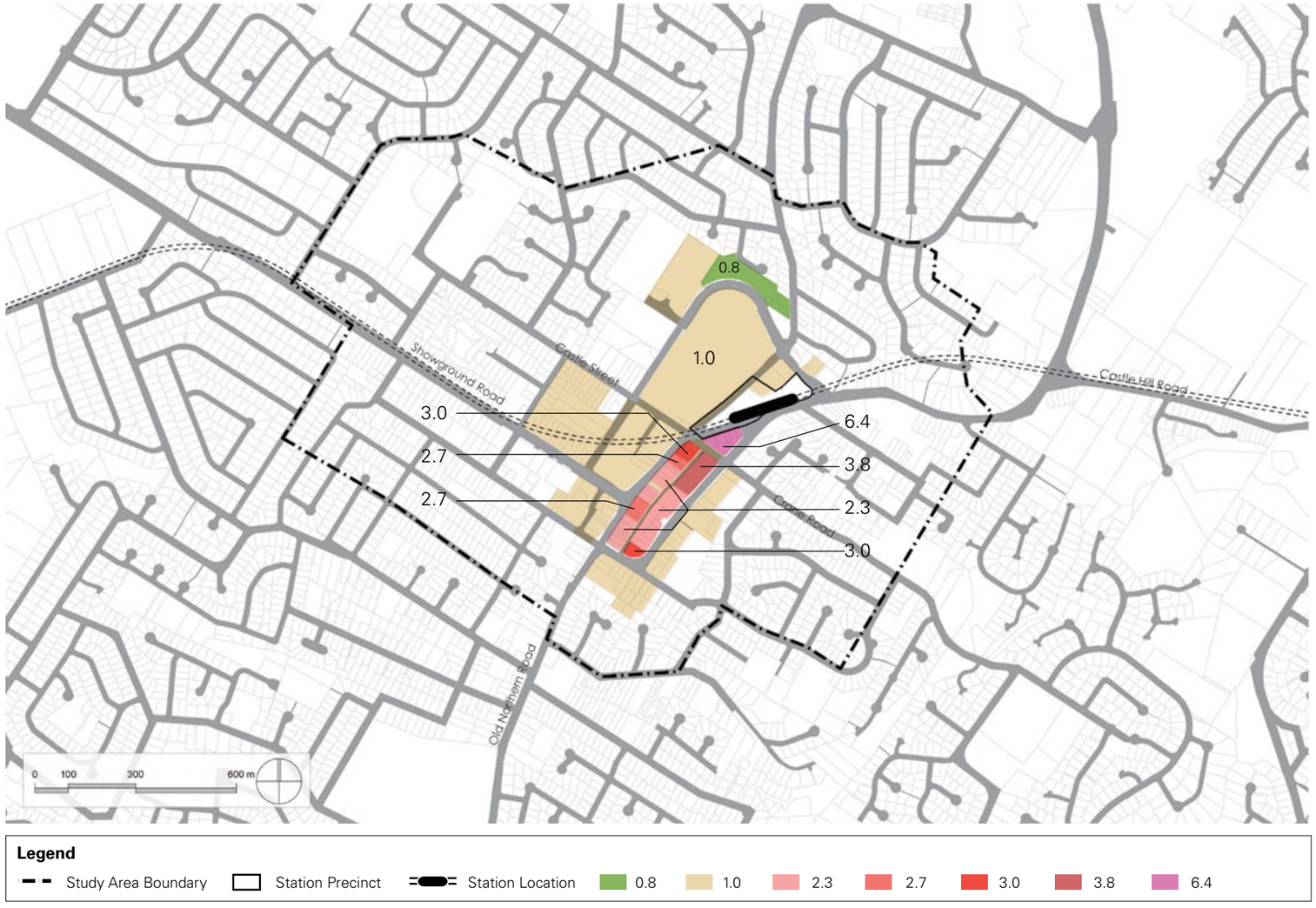

Figure 17: Floor Space Ratio Controls within the Study Area

Castle Hill Draft Structure Plan
4. Opportunities for Growth

4.1 OPPORTUNITY SITES

The outcome of the opportunities and constraints analysis and review of the existing planning controls of the Study Area leads to the identification of sites that could make a contribution to the growth of the Study Area in response to a new rail link and station.

Those sites which are unconstrained present opportunities for renewal within the Study Area. This includes short term opportunity sites that may be renewed prior to 2036 and long term opportunity sites that are subject to recent residential development, however, due to the average 30-40 year building lifespan, may present opportunities for renewal beyond 2036.

The diagram adjacent highlights these opportunity sites, both short and long term. The sites located to the west of the proposed station present the fewest constraints with good connectivity and within walking distance of the proposed Castle Hill station. Contiguous opportunity sites may also allow for the amalgamation of lots in to larger single landholdings.

To the east of the proposed station, the opportunity sites are constrained by poor accessibility, due to an inadequately connected road network, steep topography, landslip and recent residential development. Furthermore, the development of slopes greater than 10 percent and within landslip risk areas, requires alternative development and construction techniques and may limit the types of buildings that can be constructed.

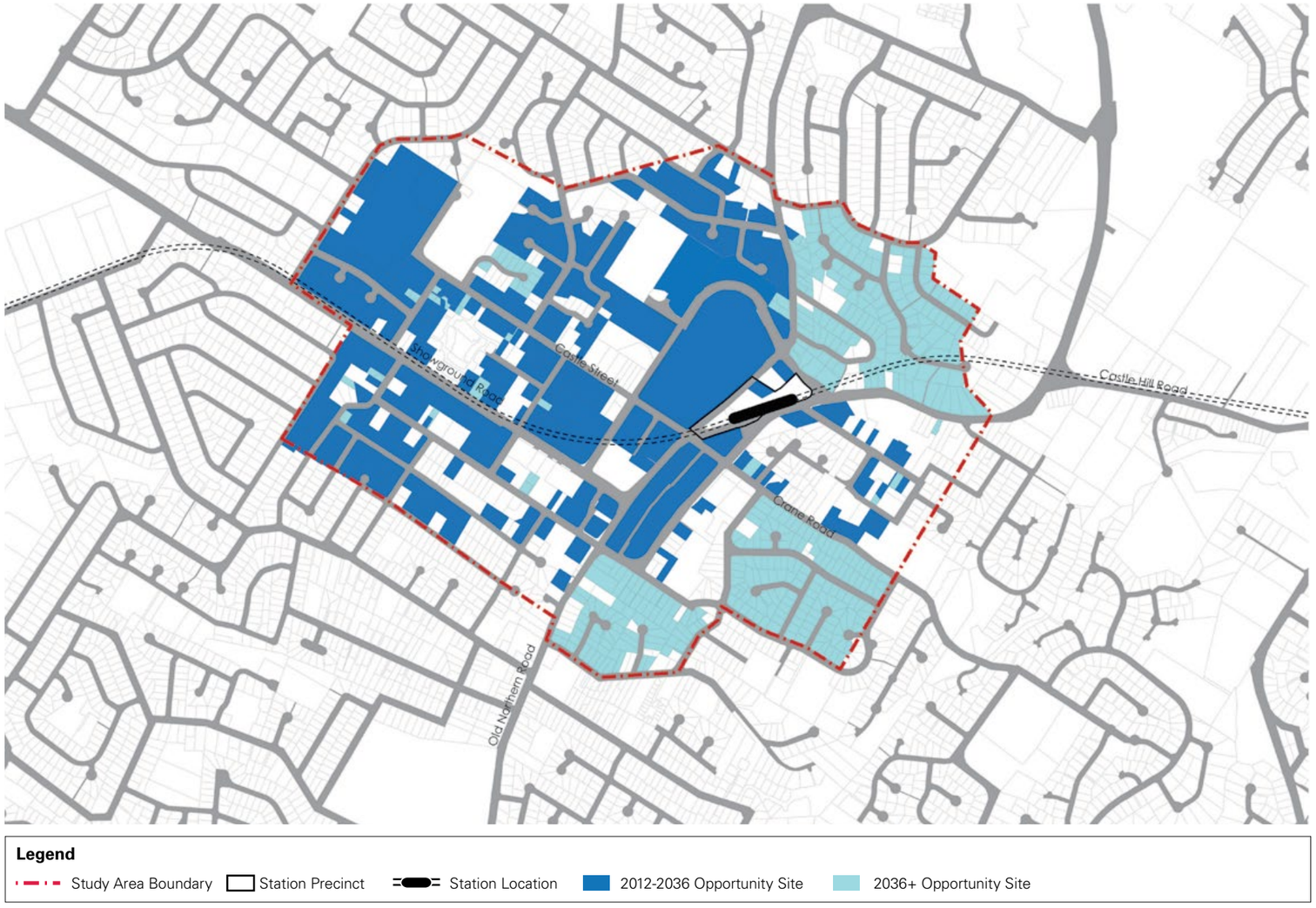

Figure 18: Opportunity Sites within the Study Area

4.2 PROJECTED GROWTH UNDER EXISTING CONTROLS

Under the planning controls contained within the *The Hills Local Environmental Plan 2012*, the opportunity sites within Castle Hill have a variety of land use, height, floor space and minimum lot size controls that apply.

In the core of Castle Hill, the current zoning and planning controls allow for buildings with a mixture of uses including business, office, residential, retail, education and recreational uses. Controls on the Castle Towers permit additional uses to the existing retail (including residential and commercial) however the governing height limit of 12m and an FSR control of 1:1 will maintain the existing built form on the site.

The remaining proportion of mixed use within the core of Castle Hill is governed by a variety of FSRs (from 1:1 to 6.4:1) and heights (from 12m to 45m) on minimum lot sizes of 600sqm. However, minimum lot sizes for developments of residential flat buildings within the mixed use zone are 4,000m2. A number of sites within the core are already developed to their permissible FSRs.

These controls could deliver a variety of uses (including retail, commercial and residential) in buildings ranging from 4 to 15 storeys. However, given current market demand and the high level of amenity and quality of life afforded within the Study Area at present, it is likely that the current mixed use zone would comprise largely of high density apartment buildings with some retail/commercial uses on the ground floor.

The areas zoned for high density residential currently allow for 4-5 storey apartment buildings on minimum lot sizes of 1,800m2, which would require the amalgamation of a number of existing lots to achieve the minimum lot size.

Medium density residential is governed by controls which permit 3-storey apartment buildings on minimum lots of 1,800m2, townhouses on minimum lots of 720m2, or dual-occupancy dwellings on a minimum lot size of 600sqm. Low density residential controls permit 3-storey single detached on minimum lots of 700sqm or dual-occupancy dwellings on minimum lot sizes of 600sqm.

An assessment of these current controls on the opportunity sites reveals that the capacity for future growth within Castle Hill is predominantly within the residential and retail markets, assuming that mixed-use zonings do not prescribe minimum proportions of commercial floor space. The assessment also reveals that parking requirements and minimum apartment sizes are restricting the supply of a variety of apartments.

The current controls for the Study Area could result in an additional 2,200 jobs and 1,000 dwellings.

The existing planning controls require some amendments to reinforce the delivery of such a significant investment in infrastructure such as the NWRL. Current controls do not promote the growth of Castle Hill as a Major Centre, with little additional capacity for jobs outside of retailing and a moderate increase in housing. Therefore, the vision and structure plan contained within this report will detail the desired future character of the area and proposed land uses to complement the new rail link and station.

	RESIDENTIAL		EMPLOYMENT	
	TOTAL DWELLINGS	GROWTH	TOTAL JOBS	GROWTH
2012	1,700	-	7,000	-
2036	2,700	1,000	9,200	2,200

Table 4.1: Projected growth in Housing and Jobs under existing controls

Castle Hill Draft Structure Plan
5. Vision & Structure Plan

5.1 VISION FOR THE STUDY AREA

The introduction of the NWRL and a station at Castle Hill has the potential to further reinforce Castle Hill as the Major Centre for Sydney's North West. A new station, located below Arthur Whitling Park, will provide further impetus for Castle Hill to evolve as a vibrant and active Centre comprising offices, retailing, community facilities, recreation, cultural, education and housing to serve the 500,000 people of the North West by 2036.

To strengthen this status as the Major Centre for the North West, Castle Hill will need to accommodate a higher amount of jobs. This will require a significant amount of commercial floor space, of a variety of grades, to be delivered within Castle Hill over the next forty years.

The NWRL will also provide opportunities to increase residential densities within walking distance of the station, introducing a variety of housing types to ensure there is affordable and appropriate housing for all members of the community.

Castle Hill will remain the major retailing hub for the North West in to the foreseeable future. It is anticipated that expansion of retail offerings within the Centre will occur in line with projected population growth in the catchment. There is the opportunity to integrate expanded retail uses with community and cultural facilities which could address pedestrian streets, plazas and squares.

Similarly, the introduction of the NWRL will enable Castle Hill to become a major transport hub for the region, centred on a new train station and integrated with the bus interchange at Arthur Whitling Park. Castle Hill will become the focus of a high frequency, local feeder bus network that provides direct access to the NWRL and the wider Sydney Rail network.

The study area will provide opportunities for increased employment and housing capacities within walking/cycling distance of the station, while ensuring the local amenity, heritage, open spaces and natural environment are protected. The vision will be achieved by: building on the Centre's assets to enhance the competitiveness of retailing and commercial office employment; identifying and assembling strategic sites within the Centre to attract public and private investment around a compact commercial core; and improving livability and amenities within the Centre by providing a diverse range of dwellings and an enhanced public domain.

Underpinning this vision will be the final Structure Plan, formulated on the principles of Transit Oriented Development (TOD). TODs are generally mixed use communities within walking distance of a transit node that provide a range of residential, commercial, open space and public facilities in a way that makes it convenient and attractive to walk, cycle or use public transport for the majority of trips.

Figure 19: Images depicting the desired future character of Castle Hill


CASTLE HILL

Castle Hill Draft Structure Plan
5. Vision & Structure Plan

5.2 PROPOSED STRUCTURE PLAN

The Draft Structure Plan for Castle Hill has been prepared by The Department of Planning and Infrastructure, Transport for NSW, Cox Richardson Architects and Planners and Hill PDA economic consultants, in consultation with The Hills Shire Council.

The Structure Plan is the framework which will guide future planning within the Castle Hill Study Area. It is the result of assessing the natural and built elements of the Study Area and existing planning controls. It is founded on principles of reinforcing Castle Hill as the Major Centre for the north west, delivering an active and vibrant precinct with a variety of uses, providing greater connectivity by strengthening existing links and providing new links between the station and surrounding uses.

The Draft Structure Plan proposes a commercial core for Castle Hill to ensure the jobs targets for 2036 are achieved and that Castle Hill becomes the true Major Centre for the north west.

The existing retail and commercial premises have been included in a mixed use zone which has been extended to the north and south to provide flexibility within the Draft Structure Plan to respond to market demands for a variety of uses over the short to medium term.

Suitable locations for high density residential of between 7 to 20 storeys, have been identified surrounding the commercial/retail core, which will benefit from direct access to the bus and rail transport interchange and the mix of uses and facilities in the core. Medium density living comprising of 3-6 storey apartments will be located within the residential areas on the periphery of the core still within an easy 10 minute walk of the station. Beyond this, townhouses, duplexes and single-detached dwellings will deliver a diversity of housing within an attractive and accessible Centre to cater for the growing population of the North West.

New links are proposed in locations within the Study Area where they will increase connectivity and permeability. These links could be either pedestrian or vehicular connections. Drawing on existing significant vegetation and parks, a green link is proposed between Britannia Road and Gilham Street. This will become a significant pedestrian and cycle link between the Centre and Castle Hill High School, Castle Hill RSL and the residential areas to the north-east. It will also provide significant ecological and drainage corridor within the Study Area.

The Old Northern Road and the detour link of Terminus Street is proposed to remain the primary north-south thoroughfare within the Study Area. Showground Road will remain significant to connect the Hills Centre and the Norwest and Bella Vista Business Parks with the Castle Hill centre. Pennant Street is proposed as a secondary link. Significant upgrades of the streetscapes on these major thoroughfares will be required to provide attractive and accessible pedestrian connections between the Centre and the adjacent uses.

The Queensland Investment Corporation landholdings within the core have been identified as significant sites and a potential future land use has been nominated. These sites will be subject to further consideration and collaboration with stakeholders, to determine their likely role in the future in light of the NWRL being delivered.

The redevelopment of sites within the Study Area, and the establishment of a new station and transport interchange, will provide significant opportunities to improve the Study Area's public domain.

The primary public domain initiative nominated within the Draft Structure Plan is the upgrading of the streetscapes in and around the proposed station precinct. The creation of new and widening of existing footpaths, providing barrier-free access and introducing attractive and appropriate street furniture will be required to reinforce the introduction of the NWRL and a new station at Castle Hill.

Upgrading the public domain of Castle Hill can be achieved through a number of initiatives:

1. The creation of new open space linkages, streets and connections between transport, new and existing housing, commercial, retailing and civic spaces.

2. The protection of existing green spaces within the Study Area which form part of the Castle Hill identity, such as the Arthur Whitling Park, Maurice Hughes Reserve, north-west of the commercial core; and Bert Parkinson Reserve north of Castle Hill High School.

3. The provision of additional urban plazas, parks and open spaces for the amenity of existing and future residents and workers, particularly within the station precinct and the core of the Centre.

A Public Domain Strategy will be required to detail the delivery of the above initiatives and to guide the broader character of the public domain within the Study Area. The core is a vehicle-dominated domain and will benefit from a public domain strategy. Council have identified improvements around the proposed new bus interchange and train station to improve access, including footpath widening/provision and a paved interchange plaza with café/retail facilities, passenger waiting areas and a covered walkway that is integrated with Arthur Whitling park. This Strategy will also address preservation of ecological corridors, pedestrian and cycling linkages, built form response to public and private open space, signage and wayfinding, street furniture, lighting and public art.

To complement the introduction of the NWRL to the study area a number of transport, movement and accessibility initiatives will need to be delivered to ensure safe and attractive movement to, from and within the Study Area.

Within Castle Hill, the key connectivity issue is pedestrian access across Showground Road, Old Northern Road, Pennant Street and Castle Hill Road to and from the core of Castle Hill and the proposed station location. The anticipated growth within the Structure Plan and increased activity around the new station will require a number of pedestrian priority measures, such as signalised crossings and potentially overpasses, to provide safe and attractive pedestrian and cycle access to the station from the south.

Complementing these connections within the core will be a number of new links through the revitalised areas of high density living directly adjacent to the station and Centre. The existing large blocks will be renewed and deliver a network of mid-block connections, linking the gardens and plazas of the apartment buildings with the parks, main street and transport interchange of the Centre. These mid-block connections will primarily occur around Garthowen Cr, Mercer St, Cutlack Walk, Benaara Gdn, Cheriton Ave, Worthing Av, Kentwell Av and around Castle Hill Primary School.

Within the medium density residential, upgrades of existing connections and provision of new connections will link the new townhouses and low-scale apartments to the new connections of the high density residential and to the retail, commerce, civic and transport core.

As documented in the Environmental Impact Statement (EIS) for the station precinct, to improve access and provide for ease of movement around the station and bus interchange, the NWRL project proposes to relocate the bus interchange to near the intersection of Old Northern Road and Crane Road, provide kiss and ride spaces, bicycle parking, taxi ranks, bus layover facility, and pedestrian crossings at Castle Hill and Old Northern roads. Old Castle Hill Road will become a two-way road between Eric Felton and Crane roads.

These links could be either pedestrian or vehicular connections and would be subject to more detailed analysis to determine the most appropriate location and configuration.

Local road widening may also be required within the station precinct and broader Study Area to accommodate increased movements associated with the introduction of a new rail station at Castle Hill and the evolution of the Centre. These requirements are to be determined through further investigations by the relevant government agencies and authorities.

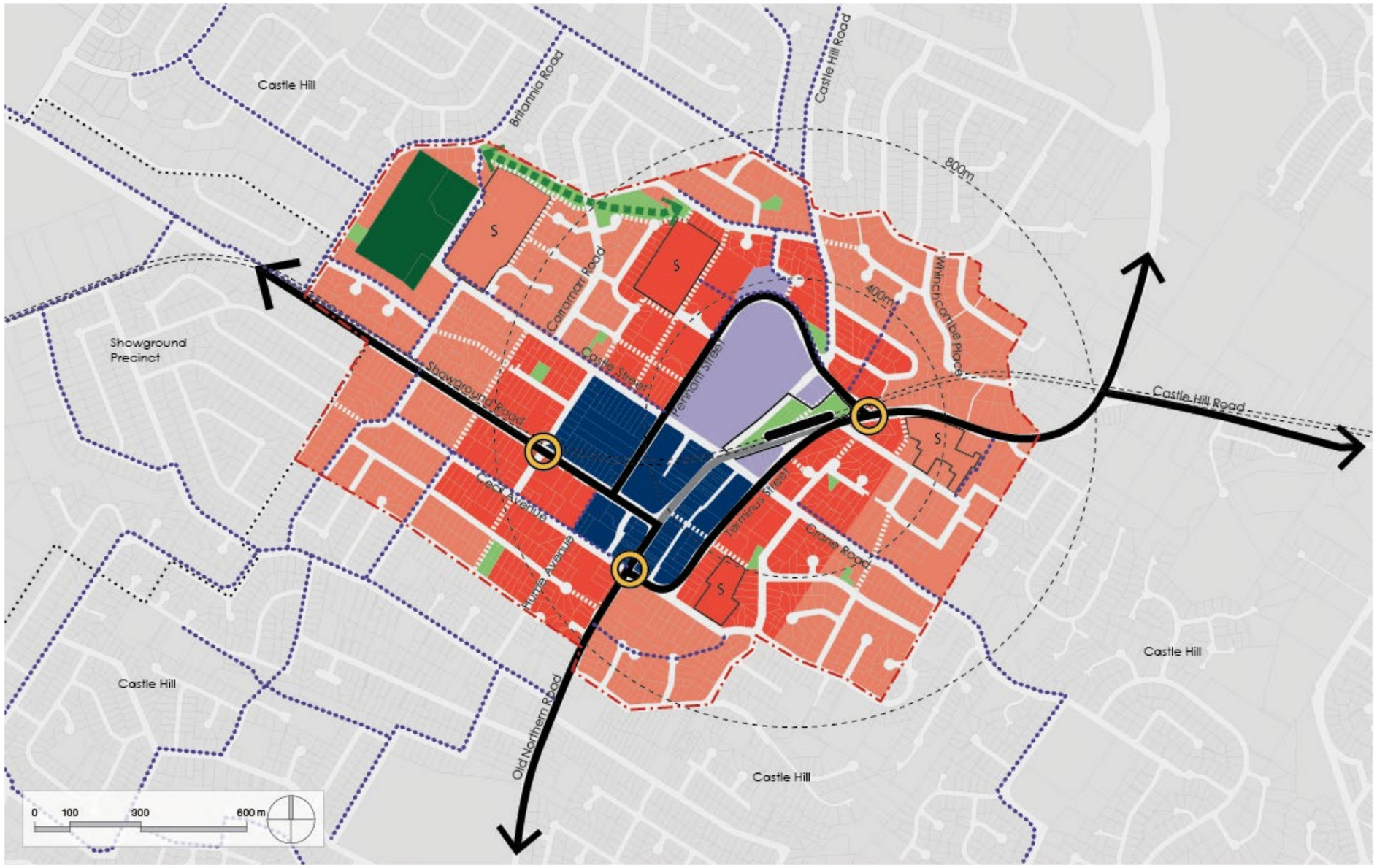

Figure 20: Structure Plan for the Castle Hill Study Area

Castle Hill Draft Structure Plan
5. Vision & Structure Plan

5.3 FUTURE PRECINCT CHARACTER

The following diagrams and images demonstrate the desired future character for the opportunity sites which may contribute to the growth of Castle Hill in the future.

Station Precinct

Objectives: To provide a precinct that contains a flexible mix of uses that suit the surrounding character and are located in close proximity to the proposed station. To provide for an enhanced public domain, with improved cycle and pedestrian connectivity. To create an efficient, safe and convenient major public transport interchange and create a gateway to Castle Hill that reinforces a sense of identity.

Character: It is anticipated that under the vision and structure plan this precinct could accommodate uses that would compliment the character of the local area and that are carefully designed to integrate into the existing streetscape. This precinct would also provide residents with direct access to the new rail link and station which would be located underground.

Figure 21: Proposed Location of Station Precinct

Public Domain and Open Space

Objectives: To provide attractive open spaces of high amenity for the public. To reinstate Arthur Whitling Park as the premier public space within the Castle Hill Town Centre. The addition of frequent rail services as part of an integrated public transport interchange will enhance the accessibility of Castle Hill as a highly desirable location for future higher density retail, commercial and residential development.

Character: The structure plan identifies green open spaces for residents that are accessible and safe. They should be landscaped appropriately to integrate with the existing character of the area. Recent enhancements of the centre's main street along Old Northern Road has significantly improved the vitality of public areas.

Figure 22: Proposed Location of Public Domain and Open Space

Mixed Use Core

Objectives: To provide for the retail needs of a growing community and to provide retail services within close proximity of the station. The creation of a gateway into the town centre will reinforce a sense of identity and place and ensure a highly visible station and surrounding core.

Character: It is anticipated that under the vision and structure plan, this precinct will evolve to become a prominent retail centre within the north west. The addition of frequent rail services as part of an integrated public transport interchange will enhance the accessibility of Castle Hill as a highly desirable location for future higher density retail and commercial development.

Figure 23: Proposed Location of Mixed Use Core

Commercial Core

Objectives: To make a significant contribution to the employment requirements and self containment of the north west and to encourage the emergence of a prominent commercial core with direct access to the new rail link and station.

Character: It is anticipated that under the vision and structure plan that this precinct could accommodate commercial offices on sites that are carefully designed to integrate into the existing streetscape and character of the Study Area.

Figure 24: Proposed Location of Commercial Core

Castle Hill Draft Structure Plan
5. Vision & Structure Plan

Low/Medium Density Townhouse Living

Objectives: To provide for the housing needs of a growing community and to provide a variety of housing types within close proximity of the station and associated uses.

Character: Under the vision and structure plan it is anticipated this precinct will evolve to become a mixture of single detached dwellings and townhouses. This precinct will serve as a transition between the lower density residential areas beyond the Study Area and the station precinct.

Figure 25: Proposed Location of Low to Medium Density Townhouse Living

Medium Density Apartment Living

Objectives: To provide for the housing needs of a growing community and to provide a variety of housing types within close proximity of the station and associated uses.

Character: It is anticipated that this precinct could accommodate multi-dwelling housing only where the site is an appropriate size to deliver a high level of amenity for the existing and future residents. This could comprise of 3-6 storey apartment buildings, carefully master planned around communal open spaces and incorporating landscaped setbacks to existing streetscapes.

Figure 26: Proposed Location of Medium Density Apartment Living

High Density Apartment Living

Objectives: To provide for the housing needs of a growing community and to encourage an increased residential density in areas with direct access to the new rail link and station.

Character: It is anticipated that under the vision and structure plan that this precinct could accommodate multi-dwelling housing only where the site is an appropriate size to deliver a high level of amenity for the existing and future residents. This could comprise of 7-20 storey apartment buildings, carefully master planned around communal open spaces and incorporating landscaped setbacks to existing streetscapes.

Figure 27: Proposed Location High Density Apartment Living

Areas Expected to Remain Unchanged

Within the Study Area there are areas and sites which are expected to remain largely unchanged through the delivery of the NWRL and the Structure Plan.

This is due to a number of factors including existing uses, varying degrees of constraints, connectivity, accessibility and market demand.

Figure 28: Areas Expected to Remain Unchanged

5. Vision & Structure Plan

5.4 PROJECTED GROWTH

Calculating Projected Growth

The projected growth is a calculation of the amount of residential and employment development that is expected to take place in the Study Area. The projected growth calculations take into consideration the following factors:

- **Development on Opportunity Sites.** Development is projected to occur on the opportunity sites identified in Section 4.1 of this report.
- **The Proposed Future Character and Built Form.** The Structure Plan identifies the future desired character and built form for areas within the Study Area. These character/building types have been applied to the opportunity sites.
- **Assumptions.** A series of assumptions related to the different development types have been applied to calculate the land areas required for each built form. Details can be found in the North West Rail Link Corridor Strategy.
- **Demand.** The amount, and rate of development is influenced by market demand for different types of development within the Study area. Market demand is determined by 'take-up' or 'realisation' rates, which reflect market conditions and has been informed by a high-level feasibility analysis. In Castle Hill, due to the high level of amenity and quality of life afforded within the Study Area at present and the added accessibility delivered by the North West Rail Link, the take up/realisation rate is considered to be 62% for housing and 52% for employment. Take-up/realisation rates have been identified for each development type and these have been used in the projected growth calculations.

Projected Growth in the Study Area

The outcome of these projected growth calculations is provided in the tables below. Total opportunity site area within the Study Area equates to approximately 116 Hectares.

Application of the proposed land uses and typologies within the Structure Plan will result in a total capacity for an additional 7,100 dwellings by 2036. However, it is anticipated that only 62% of this capacity will be realised, delivering an additional **4,400** dwellings within the Study Area.

The proposed Structure Plan will result in an additional employment capacity of 18,500 jobs by 2036. However it is anticipated that only 52% of this capacity will be realised, delivering an additional **9,500** jobs within the Study Area.

RESIDENTIAL

TYPE OF HOUSING	DWELLINGS IN 2012		DWELLINGS IN 2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
SINGLE DETACHED	800	47%	600	10%	-200
TOWNHOUSE	0	0%	100	2%	100
3-6 STOREY APARTMENT	800	47%	2,200	36%	1,400
7-20 STOREY APARTMENT	100	6%	3,200	52%	3,100
TOTAL DWELLINGS	**1,700**	**100%**	**6,100**	**100%**	**4,400**

Table 5.1: Projected Residential Growth in Castle Hill under the Structure Plan

EMPLOYMENT

TYPE OF JOBS	JOBS IN 2012		JOBS IN 2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
COMMERCIAL	1,500	21%	8,500	52%	7,000
RETAIL	5,500	79%	8,000	48%	2,500
BULKY GOODS	0	0%	0	0%	0
INDUSTRIAL	0	0%	0	0%	0
TOTAL JOBS	**7,000**	**100%**	**16,500**	**100%**	**9,500**

Table 5.2: Projected Employment Growth in Castle Hill under the Structure Plan

Demand Analysis

A high level demand analysis has been undertaken to ascertain the demand for potential development scenarios on opportunity sites within the Study Area. The analysis:

- Assessed the proposed future desired character and built form, including densities, as proposed under the Structure Plan, against market conditions and demand;
- Identified take-up/realisation rates for each land use within the Study Area, which informed the calculation of projected growth.

Outcomes of the demand analysis

1. **Demand for Additional Dwellings**. Future demand for additional residential development in the Study Area is estimated to be in the order of **200** dwellings per annum comprised of 68% 7-20 storey apartments, 30% 3-6 storey apartments, and 2% townhouses in addition to existing stock resulting in the total dwelling diversity shown in the adjacent table in 2036. Such demand is related to the high level of amenity and quality of life afforded within Castle Hill, the demand for housing diversity and improved access to social, recreational and employment opportunities as a result of the North West Rail Link.

2. **Demand for Employment Lands**. Future demand for additional employment (commercial and retail) floorspace within the Study Area is projected to increase within the Study Area at a rate of **7,000m2** p.a. of commercial and **3,000m2** p.a. of retail.

3. **Type and Location of Development.** The demand analysis supports the provision for 7-20 storey and 3-6 storey garden apartments within close walking distance of the new train station. These areas of residential uplift and renewal may serve as the catalyst for regeneration within the broader precinct. In particular, future residents will be attracted to these areas for their high levels of amenity, employment opportunities, retail, cultural and community facilities and close proximity to the train station.

   The analysis supports the provision for townhouse development on the periphery of the Study Area where large single lots could accommodate 2-4 townhouses each and the possibility to amalgamate sites into larger contiguous landholdings exists.

   In terms of future employment generating development, the feasibility analysis supports the provision for retail land-use at the mixed use area around the new station to provide for the day to day needs of residents and workers and the broader regional catchment. Future retail floorspace within Castle Hill is expected to increase in line with the growth of the regional population catchment.

   Castle Hill will also provide a significant amount of high-level employment as the Major Centre for the North West with a commercial core supported by standalone and mixed-use retail floorspace.

Castle Hill Draft Structure Plan
6. Actions and Implementation

6.1 INTRODUCTION

The Structure Plans for the NWRL Station Precincts are to be considered at the strategic planning level, similar to that of the Subregional Strategies for Sydney. The Structure Plans will inform, and be implemented through, appropriate zonings, amendments to built form controls and to guide the assessment of major projects and development applications within the Study Area.

To deliver the Structure Plan's projected growth, zoning and planning controls for the study area will require review. Current controls, such as those relating to minimum lot size, height, and floor space ratio constrain intensification of land use and thus should be revisited. Similarly, Development Control Plans, Section 94 Schemes and Public Domain Strategies may also need to be revised in light of the NWRL. Current parking policies and minimum apartment sizes are constricting the type and variety of dwellings being offered within the study area.

The above will be carried out in consultation with relevant agencies, stakeholders and key landholders. Others matters for consideration include public domain, transport, accessibility and infrastructure servicing.

6.2 PUBLIC DOMAIN, URBAN DESIGN & OPEN SPACE

Consideration is to be given to public domain and open space planning for the study area including:

- Streetscapes, open space linkages and connections to transport, new and existing housing and open space,
- The need for open spaces and civic spaces, and protection of existing green spaces,
- Pedestrian and cycle pathways,
- Built form response to public and private open spaces,
- Signage and wayfinding,
- Street furniture, lighting and public art.

6.3 TRANSPORT, MOVEMENT AND ACCESSIBILITY

Consideration is to be given to transport, movement and accessibility planning for the study area including:

- Safe and efficient movement to, from and within the Study Area,
- Improvements to connectivity, particularly for non-vehicular transport modes, to the new station and new centres, including identification and provision of cycle and pedestrian infrastructure along key routes within the study area,
- Identification of improvements to bus networks serving the precinct,
- Parking requirements,
- Local road widening to accommodate increased movements associated with the evolution of the Centre and future growth opportunities.

6.4 INFRASTRUCTURE AND SERVICES

The projected growth in population and employment within the Study Area will require considerations of infrastructure networks, such as water, sewer, electricity and gas to meet projected demand.