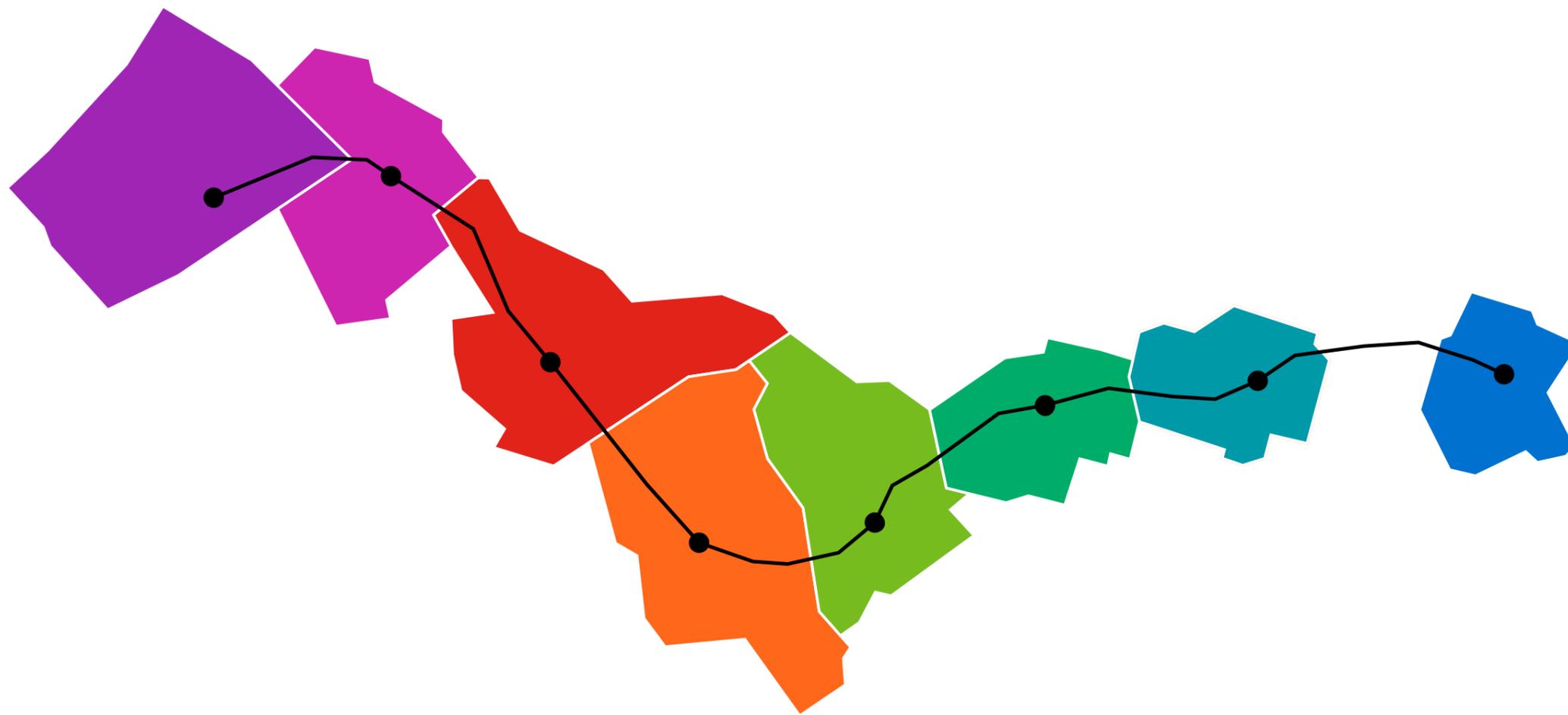


North West Rail Link Corridor Strategy



North West Rail Link Corridor Strategy

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North West Rail Link Corridor Strategy

1. Introduction

1.1 CONTEXT

The North West Rail Link (NWRL) is a priority railway transport infrastructure project for the NSW Government. The NWRL will be integrated with the CityRail network, and will include eight new stations and services over a 23 kilometre rail line from Epping to Rouse Hill in North West Sydney.

The new rail link will make the corridor an even more attractive area to live and work with demand in housing and jobs expected to grow. A Corridor Strategy is required to maintain and improve the lifestyle available in the local area while allowing for well-planned and sustainable future growth.

The NWRL will include:

- Eight new train stations at Cherrybrook, Castle Hill, Showground Road, Norwest, Bella Vista, Kellyville, Rouse Hill and Cudgegong Road;
- A direct underground connection into the existing Epping to Chatswood rail line at Epping;
- An underground section of route comprising 15.5km of two track railway in a twin tunnel configuration between Epping and Bella Vista;
- A 7.5km section of above ground route from Bella Vista to the Tallawong stabling facility, comprising a combination of Skytrain viaduct, embankment, at grade and cutting;
- Services facilities at Epping and Cheltenham and a stabling yard at Tallawong Rd, Cudgegong;
- Bus, pedestrian and cycling access facilities at all NWRL stations; and
- Approximately 4,000 park and ride spaces in total at Cherrybrook, Showground Road, Kellyville and Cudgegong Road stations.

Among the benefits of the project, the NWRL will provide approximately 300,000 residents in North West Sydney with rail access to 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, and future areas of growth planned for the North West.

The NWRL has the potential to improve travel time reliability compared with bus and private car and will provide travel time savings, both for trips within North West Sydney, and from many areas of the region to Sydney's Global Economic Corridor.

The NWRL will also support positive changes in travel behaviour as a result of the transport modal shift from road onto rail. The project will facilitate reduced private vehicle movements, in turn addressing capacity constraints on the road network and reducing traffic congestion, including reduced bus congestion in the CBD in the longer term. The NWRL will also provide increased opportunities for sustainable transport alternatives, through the provision of cycling and walking networks to the NWRL stations.

Planning and construction of the NWRL is being carried out by Transport for New South Wales ('TfNSW'), with a specialised TfNSW project team having been established to co-ordinate and fast track the NWRL.

The Department of Planning and Infrastructure ('DP&I') has worked closely with TfNSW and local councils to ensure future growth along the NWRL corridor achieves the land use planning goals and objectives of NSW 2021 and the Draft Metropolitan Strategy for Sydney to 2031 by co-ordinating the provision of housing and employment in close proximity to a reliable public transport system.

Many residents of North West Sydney have limited transport choices, relying heavily on cars and bus services to get to where they need to go.

These limited transport options mean residents currently travel long distances for work or education. This translates to a high dependence on private vehicles, with suburbs in the North West having the highest car ownership in Sydney, and some of the lowest percentage of journeys to work by public transport.

The NWRL has the potential to be a transformative project, and provides a once in a generation opportunity to fully integrate land use, transport and infrastructure planning in North-West Sydney. It is for this reason it is identified as one of the Draft Metropolitan Strategy for Sydney to 2031's 'City Shapers' because of the unique opportunities it presents for change and investment that are critical for the growth of Sydney. Investment in the NWRL will help drive a more diverse, competitive and sustainable economy and generate substantial and lasting economic, social and environmental benefits.

"The NWRL brings an unprecedented opportunity for North West Sydney to deliver new housing, jobs and business opportunities."

The construction of the NWRL also provides the opportunity to plan for and build liveable centres around each of the proposed new stations, through the creation of sustainable, well designed, higher density mixed use precincts connected by frequent rail and bus services.

This principle of transit oriented development will maximise the benefits of this major rail infrastructure investment, and provide the potential to help deliver dwelling and employment growth for the area. The NWRL will also support the NSW 2021 goals to grow patronage and increase access to public transport, help communities access jobs and services closer to home, build livable centres and to improve housing availability.

Draft Metropolitan Strategy for Sydney to 2031, page 25.



Figure 1. North West Rail Link Corridor in the context of the Draft Metropolitan Strategy for Sydney to 2031



1.2 THE PURPOSE OF THE STRATEGY

A Corridor Strategy, including Structure Plans for each station and its surrounds, has been prepared to guide development over the next 20-25 years.

The aim of this strategy is to engage with the community, land owners, state and local government agencies to identify future visions for precincts surrounding NWRL stations and establish frameworks for managing future land use change. This will allow infrastructure agencies to identify, prioritise and co-ordinate the delivery of infrastructure upgrades in accordance with each precinct's long term growth potential, providing increased transparency about the area's growth infrastructure pipeline.

To achieve this objective, state and local governments have worked collaboratively to identify suitable future growth scenarios for each precinct, including a high level assessment of the economic feasibility of the opportunities identified. DP&I has consulted with key agencies and service providers to establish a framework for infrastructure needs to be delivered as the area grows.

The Strategy is to facilitate community and stakeholder discussion about the desired future character of station precincts and ultimately inform future planning controls and infrastructure requirements.

This document provides a summary of the strategic context and the method in which the Strategy was undertaken, an outline of the developed Structure Plans for each station and projected growth for residential and employment.

IMPLEMENTATION

While the NWRL will provide the largest single investment in public transport infrastructure in the history of the NW sub-region, the potential future growth in the NWRL corridor will nevertheless present challenges for the region's infrastructure.

The precinct planning process will serve to inform further strategic infrastructure planning within the NWRL corridor, to ensure that the long term housing and employment growth can be successfully delivered within the corridor. This includes planning for regional transport and social and utilities/services infrastructure.

The NWRL Corridor Strategy and the Structure Plans for each station are to be considered at the strategic planning level. The Structure Plans are to inform and be implemented through appropriate zonings and amendments to built form controls, to guide the assessment of major projects and development applications within the NWRL corridor.

To deliver the corridor's projected growth, zoning and development controls for the corridor will require review. Current controls, such as those relating to minimum lot size, height, floor space ratios, minimum apartment sizes and parking may constrain intensification of land uses or limit the type and variety of dwellings being offered and thus, in certain cases, should be revisited.

To ensure the adequate and timely provision of social infrastructure like schools within the corridor, the NSW Department of Education and Communities can provide guidance when developing master plan, rezoning, planning proposal or major project applications.

Similarly, Development Control Plans, Section 94 Schemes and Public Domain Strategies will also need to be revised.

Details of the investigations and strategies that would be required for each station and its surrounds have been identified in the Structure Plan reports.

1.3 STUDY AREA DESCRIPTION AND STATION PRECINCTS

The existing level of development around the eight new NWRL stations and Epping Station varies greatly, from urbanised areas of Epping and Castle Hill to the semi-rural environment around Cudgegong Road.

Given this divergence of development, this strategy considers the area surrounding each proposed NWRL station as separate precincts, with the boundary for each precinct roughly based on a radius of approximately 800m from each station. This distance is generally considered to reflect a 10 minute walking trip, although the precinct boundaries have been adjusted to account for lot boundaries, roads, surrounding topography and other local features.

The extent of the Study Area for each station precinct was formulated by a working group consisting of members from the relevant local councils, TfNSW and the DP&I.

The only exception to this relates to the Epping Town Centre station precinct, which was recently endorsed as an Urban Activation Precinct (UAP). The UAP program was announced as part of the 2012-13 Budget and applies to areas in New South Wales that the Minister for Planning and Infrastructure considers have a wider social, economic or environmental significance for the community, or have redevelopment significance of a scale that is important for implementing the State's planning objectives. As such, the Epping Town Centre station precinct will be the subject of a separate process.

Accordingly, the NWRL station precincts considered in this strategy comprise include: Cherrybrook, Castle Hill, Showground Road, Norwest, Bella Vista, Kellyville, Rouse Hill and Cudgegong Road.

A description of the future vision, Structure Plans and growth projections for each station precinct is provided in Sections 6 to 13.

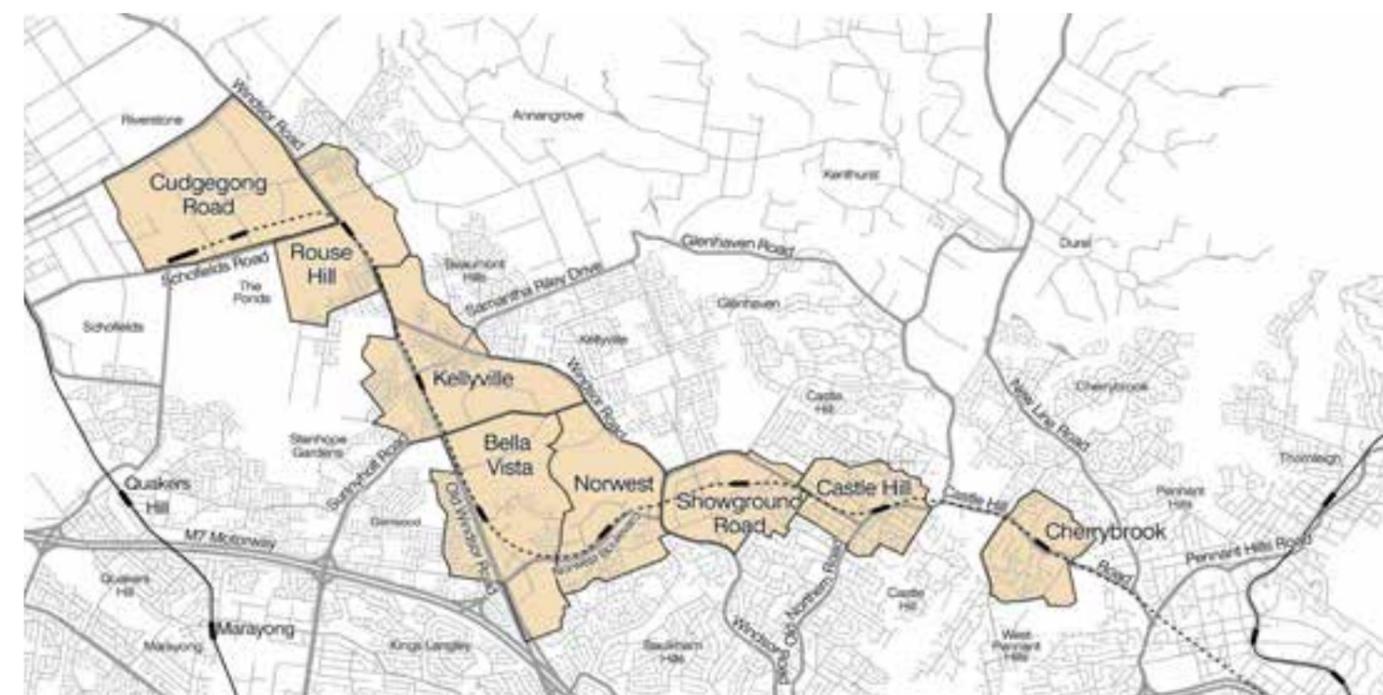


Figure 2. North West Rail Link - Proposed alignment, stations and precincts

North West Rail Link Corridor Strategy

2. Strategic Context

2.1 INTRODUCTION

The policy and project objectives of the NWRL both support, and are supported by, various national, state, regional, sub-regional and local policies that are discussed below.

2.2 NATIONAL PLANNING CONTEXT

In 2009, the cities agenda of Council of Australian Governments (COAG) set out national criteria to ensure Australian capital cities have strong, transparent and long-term plans in place to manage population and economic growth; plans which will address climate change, improve housing affordability and tackle urban congestion.

The NWRL has the potential to implement COAG's cities agenda and objectives as it seeks to integrate land use and transport infrastructure planning and plan for the long term growth of Sydney's North-West.

2.3 STATE AND REGIONAL PLANNING POLICIES

NSW 2021

NSW 2021 is the Government's 10 year strategic business plan to guide policy, Government investment and budget allocation to deliver on community priorities for public services and the provision of infrastructure.

NSW 2021 places renewed emphasis on the importance of public transport provision, particularly in Metropolitan Sydney. There are a number of goals specifically aimed at improving access and transport across Sydney. One of those goals is to grow patronage on public transport by making it a more attractive modal choice, in order to reduce traffic congestion, improve travel times and achieve significant environmental benefits. Within that context, the NWRL is identified as a priority action of NSW 2021 to help deliver the NSW Government's policy objectives.

Draft Metropolitan Strategy for Sydney to 2031

For more than six decades, strategic metropolitan planning for Sydney has sought to provide an integrated, long-term sustainable framework to guide planning and investment decisions. Strategies have focussed on planning for housing, economic development, transport and the need to better connect Sydney's home, jobs, places of education and recreation.

The NSW Government has released a Draft Metropolitan Strategy that will provide the foundation for driving the sustainable growth of Sydney, and ensure planning and environmental outcomes reflect community and business expectations. The growth planned for in the Draft Metropolitan Strategy is fully supported by the Long Term Transport Master Plan and the State Infrastructure Strategy.

The Draft Metropolitan Strategy identifies a number of policies and actions that are of particular relevance to the North West Rail Link corridor. The North West Rail Link corridor will be identified as a key "city-shaper" because of

the scale of opportunities for change and investment that will be critical for the growth of Sydney. Priorities for the North West Rail Link corridor include:

- Create 25,000 new jobs along the North West Rail Link corridor at Rouse Hill, Castle Hill and Norwest.
- Ensure future land uses and transport networks around each new station are well integrated with adjacent neighbourhoods and reflect the best principles of transit-oriented design
- Create liveable centres around each new station that are well-designed with high quality public spaces and a range of community facilities

The new Metropolitan Strategy also identifies the Global Economic Corridor as a key city-shaper. A new priority for the Global Economic Corridor will be to capitalise on investment in the North West Rail Link by extending the northern section of the Corridor towards Norwest, (as well as down to Parramatta). The role of the Global Economic Corridor is discussed in section 2.7.

State Infrastructure Strategy

Infrastructure NSW recently released its 20-year State Infrastructure Strategy that identifies and prioritises the delivery of critical public infrastructure for NSW in sectors such as transport, water, electricity, health and telecommunications. The Strategy presents the NSW Government with strategic options for delivering infrastructure.

NSW Long Term Transport Master Plan

The NSW Long Term Transport Master Plan provides a framework to deliver an integrated, modern transport system by identifying NSW's transport objectives and investment priorities over the next 20 years. Under this plan the NWRL is identified as a priority project for the NSW

Government. The NWRL will not only connect residents in the North West to jobs, education and other services, improvements to the rail network and fleet as a result of the NWRL will have flow on benefits such as relieving congestion of bus services approaching the CBD, savings in travel time, more frequent services and greater reliability.

The Long Term Transport Master Plan recognises that the integration of land use and transport is a critical feature of the planning for the NWRL and TfNSW is committed to working with DP&I to define transport requirements to support better quality development for the NWRL stations and their surrounds.

Subregional Planning

In Sydney, Subregional Delivery Plans will set out the overarching metropolitan policies and objectives in a more detailed way. The Draft Metropolitan Strategy when finalised will introduce new subregional boundaries for Sydney. The North West Rail Link crosses two of the proposed subregions - the North and the West Central and North West subregions. The majority of the North West Rail Link is in The Hills and Blacktown Local Government Areas.

New minimum targets for housing and employment growth for each subregion are contained in the Draft Metropolitan Strategy for Sydney to 2031.

Local Strategic Planning

The NWRL Station Precincts are located within Hornsby, The Hills and Blacktown LGAs. Hills Shire Council's local strategic planning sets out long term framework for planning and management of land use development of the Hills LGA to 2031.

In terms of growth targets, local strategic planning identifies the need to provide an additional 36,000 dwellings and 47,000 jobs by 2031. A Structure Plan for the LGA identifies an 'economic growth corridor, comprising the area along the proposed NWRL between Castle Hill and Rouse Hill stations.



2.4 TRANSPORT CONNECTIONS

The current demand for public transport from North West Sydney to the Sydney CBD and broader Global Economic Corridor is serviced by a combination of rail and bus services. Access to the rail network from the Hills District is poor, with long bus or car trips required to access stations on the Richmond, Western or Northern Lines. As a result, a network of City Express bus services provide direct connections from the Hills District to the Sydney CBD on the M2/Epping Road corridor, with connections to the other centres between Macquarie Park and North Sydney and via the T-Way to Parramatta and Blacktown.

TfNSW has identified the city connection corridor to Macquarie Park and the North West Growth Centre as one of Metropolitan Sydney's five strategic transport corridors that is highly constrained, based on morning peak load factors for the rail network, travel speed and reliability for buses, and the volume and capacity on the road system.

TfNSW has forecast North West Sydney to represent one of the largest areas of train patronage growth over the next twenty years. Figure 3 shows the change in daily train trip demand projected to occur between 2011 and 2031.

There is limited capacity in the regional bus system to cater for increased demand from North West Sydney. Without improvements in public transport, it is predicted that by 2021 road congestion would increase travel times from North West Sydney by more than 50% (in some cases more than 70%). Direct and higher capacity transit connections are therefore required from the North West to the Global Economic Corridor to meet existing and future travel demand.

The demand for M2 Express buses has created substantial congestion problems within the Sydney CBD. M2 Express buses make up a substantial proportion (30%) of buses entering the CBD via the Sydney Harbour Bridge. The requirements for bus stops and bus layover parking contribute to growing congestion in bus terminals and regular long delays to buses on the Harbour Bridge.

TfNSW forecasts an overall increase in buses entering the CBD of some 34% by 2021; with growth in M2 Express buses to account for almost 70% of that growth. The introduction of the NWRL is expected to significantly reduce M2 Express bus flows (some M2 Express services will be retained after the NWRL becomes operational) and help to relieve pressure on the CBD to accommodate buses.



Source: Transport for NSW 2011

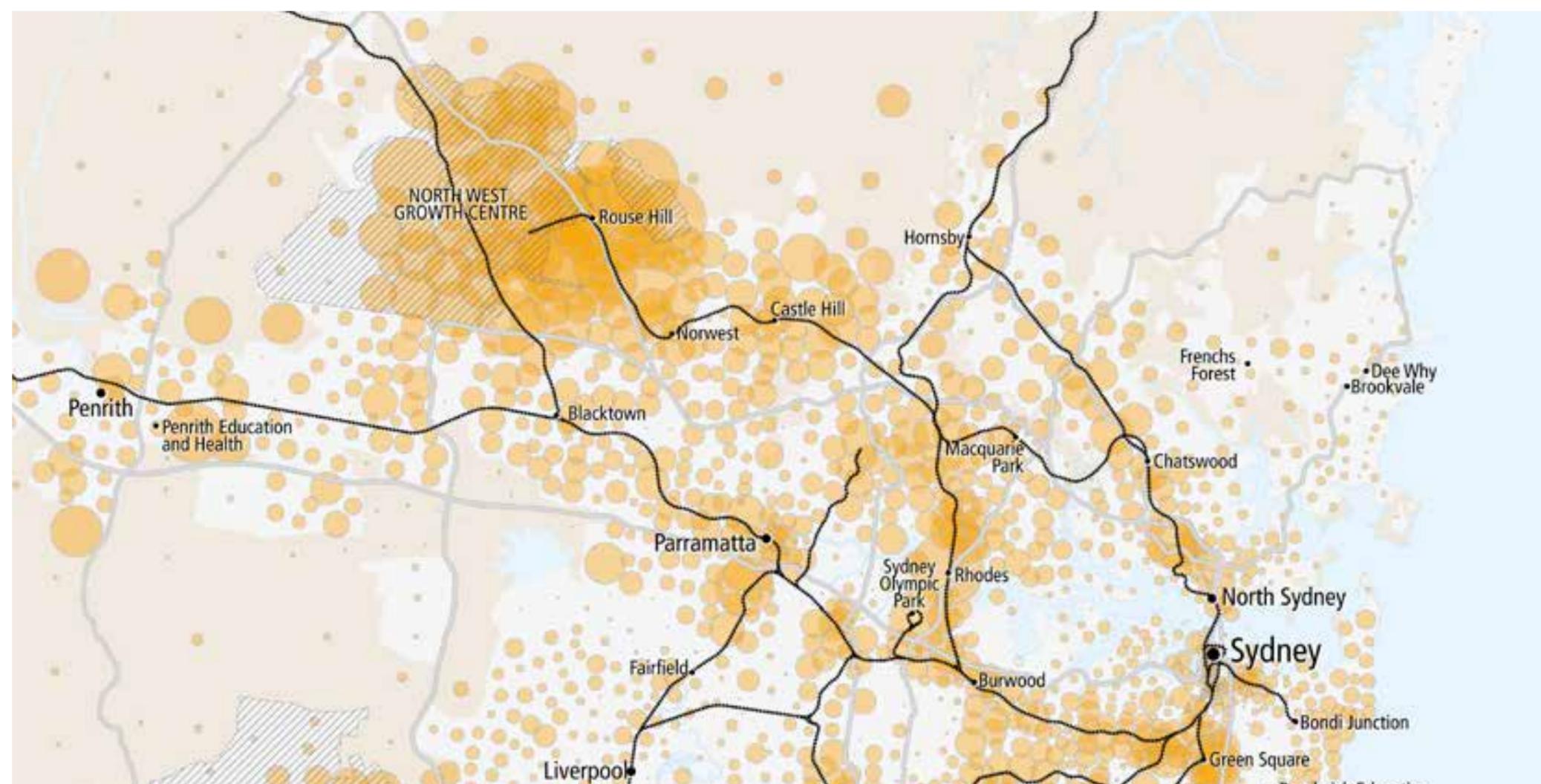


Figure 3. Forecast change in daily demand for trains services by origin zone 2011-2031 (AM peak)

North West Rail Link Corridor Strategy

2. Strategic Context

2.5 EMPLOYMENT IN NORTH WEST SYDNEY

On the assumption that 48% of the population is in the resident workforce, in 2006 there was a deficit of 183,000 jobs in Western Sydney. This is expected to increase to 280,000 by 2031. There is an urgent need to not only make up the employment deficit but to match the growth of the workforce. This is necessary to avoid massive congestion of roads and overcrowding of public transport as the Western Sydney workforce continues to seek jobs in Eastern Sydney.

The fastest growing employment nodes between 2001 and 2006 have been the business parks of Macquarie and Norwest, prompting various State Government policies to encourage more business parks throughout the Sydney Region. A business park that would house knowledge jobs is important to achieve "Sydney as Australia's Global City", however it cannot be easily replicated, in fact there are very few opportunities to do so in the Sydney Region.

It is suggested that the North West is one of the few areas of Sydney which has the necessary characteristics to attract the development of business parks. These include characteristics such as current and proposed infrastructure and its socio-economic profile.

North West Sydney has the potential to provide a large share of Western Sydney's knowledge jobs – particularly as connections with existing employment hubs in the Global Economic Corridor are strengthened. It is therefore proposed that a balance be achieved between the employment targets planned for 2031 and a surplus of employment capacity planned for 2051. This will provide the best chance to reverse Western Sydney's shortfall of local employment opportunities.

A consequence of a strong employment presence in the North West would be to shorten the Journey to Work as the majority of jobs are likely to be filled by those living within a 10km radius. It will also see an increase in Sydney's counter peak travel for the Journey to Work.

North West Employment Lands

Employment lands (including industrial lands and bulky goods areas) support a significant proportion of the Sydney Region's workforce (23%) and will be a major contributor towards meeting the Draft Metropolitan Strategy's job target of 625,000 additional jobs in the Sydney region by 2031.

For the region surrounding the NWRL, existing major employment lands include the Norwest Business Park, the major centres of Castle Hill and Rouse Hill, and the Castle Hill industrial area.

The Hills Council's strategic planning investigations, including the draft Local Strategy 2008, have also identified a number of areas with significant employment growth potential surrounding the NWRL, and particularly within the existing major centres of Rouse Hill and Castle Hill, and the Norwest Business Park specialised centre. In addition, the Box Hill Industrial Precinct (within the North West Growth Centre) and the Balmoral Road Release Area precinct were also identified as having significant additional employment opportunities. The strengthening of these employment areas is desirable to provide jobs closer to home in the area.

Outside of the Hills Shire, the emerging Northern Blacktown will also provide significant employment lands, through dedicated employment precincts in areas such as Marsden Park, which has been identified as a Potential Specialised Centre in the Draft Metropolitan Strategy, and Riverstone West.

Metropolitan Priorities for West Central & North West Subregion

- PARRAMATTA REGIONAL CITY
 - Major Centre
 - Major Centre – Planned
 - Major Centre – Potential
 - ✶ Specialised Precincts
 - ✶ Specialised Precinct – Potential
- City Shapers**
- Global Economic Corridor
 - Parramatta Road Corridor
 - North West Rail Link
 - Western Sydney Employment Area
 - Metropolitan Rural Area
 - Metropolitan Rural Area - National Park
- Transport**
- Motorways – Existing Network
 - Motorways – Potential Expansion
 - Mass Transit – Current & Committed
 - Mass Transit – Intermediate
 - Potential Extension for Transit
 - Investigation for Transport & Urban Renewal
 - Freight Rail
 - Intermodal Terminal
 - Railway Station
- Urban Area**
- Metropolitan Urban Area
 - Growth Centre
 - Industrial Land
- Environment**
- National Park / Nature Reserve / State Conservation Area
 - Waterbody / River / Reservoir
 - Regional Park

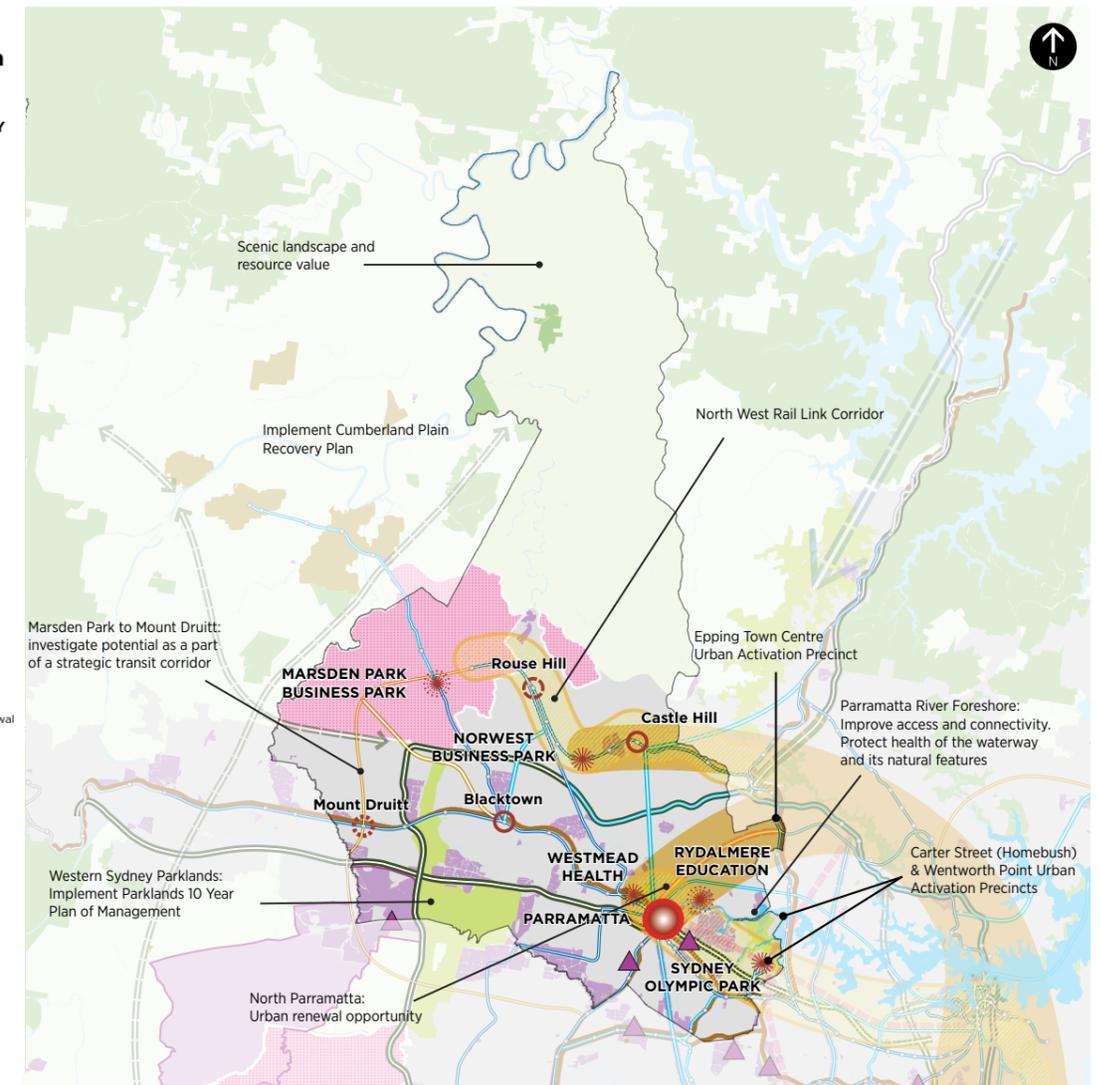


Figure 4. The NWRL in the context of the West Central and North West Subregion



The Global Economic Corridor and the role of North West Sydney

The NWRL connects with, and supports access to, the Global Economic Corridor, which stretches from Sydney Airport and Port Botany in the south through the Sydney CBD and North Sydney to Macquarie Park and Parramatta in the north. The Global Economic Corridor contains around 40 per cent of Sydney's jobs in industries ranging from health and major research facilities, finance and business services, information intensive industries, global and national transport and multimedia, and includes five of Sydney's six universities. About 160,000 additional jobs are forecast in the Global Economic Corridor over the next 25 years, and this key employment area will be critical in supporting Sydney's role as a global city.

A relatively high proportion of residents in the North West work in Sydney's strategic centres, and there is a strong demand for travel east towards the Global Economic Corridor. This pattern is expected to extend to new residents of the North West Growth Centre as up to 200,000 new residents move into this area in the coming decades.

By 2036 for example, over 40% of residents from the North West Growth Centre are expected to travel to the Sydney CBD by public transport in the morning peak period, while a further 15% will travel to Macquarie Park, Chatswood, St Leonards and North Sydney. The NWRL will enable residents from North West Sydney to directly connect with the significant employment opportunities along the Global Economic Corridor. The NWRL will also enable the extension of the Global Economic Corridor to Norwest, as outlined in the Draft Metropolitan Strategy.

The location of business parks and executive housing is reciprocal, particularly as executives often have significant influence on location decisions and prefer to work close to home. The belt of executive residential suburbs stretches from the North Shore, through Lane Cove, Epping to the Hills, hence the success of Macquarie Park and Norwest. The Hills has a similar large proportion of professionals and managers to the North Shore and could replicate its characteristics over the next few decades.

"A large share of jobs are manual and low paid - they are in fact as much a part of globalisation as international finance"

Saskia Sassen, *Cities in a World Economy*.

It is of the utmost importance that North West Sydney has a link into Sydney's global economy, not only for its professionals and managers but for the lower paid workers, who are necessary to maintain the economy of the whole region. These are secretaries, the cleaners, the truck drivers, the technicians and repair workers and all those with jobs related to the maintenance of the buildings where the corporate economy is housed.



Figure 5. Forecast trip volumes from North West Growth Centre by public transport 2036

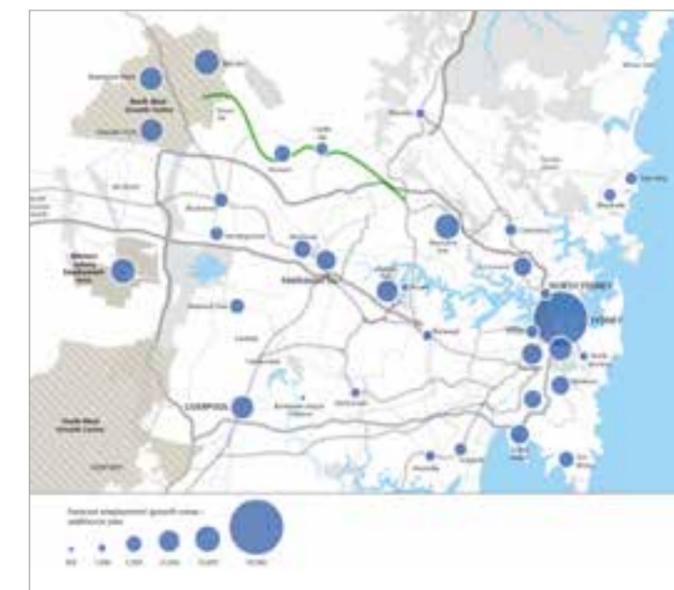


Figure 6. Employment Growth Sydney Metropolitan Area 2011-2036

North West Rail Link Corridor Strategy

3. Centres and Hierarchy

3.1 INTRODUCTION

The NWRL has the potential to assist in the implementation of the Draft Metropolitan Strategy by supporting growth in and around existing Strategic Centres, as well as creating new Centres.

The Draft Metropolitan Strategy and the new Subregional Delivery Plan will identify a hierarchy of centre types ranging from Global Sydney to neighbourhood centres. This will build upon work to define the role and function of centres in previous subregional planning.

A review was undertaken of the existing centres within the vicinity of the NWRL to establish their existing status and relative size, with an aim to forecast their likely change over time and to identify the need for any additional or expanded centres as a result of the NWRL.

Centres within the vicinity of the NWRL corridor are shown in Figure 7. Of the existing centres, the major centres of Castle Hill and Rouse Hill, and the Norwest Specialised Centre are located on the NWRL alignment.

3.2 TRANSIT ORIENTED DEVELOPMENT

Transit Oriented Developments (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.

A new rail line through the North West of Sydney provides significant opportunities for transit oriented development focused on the 8 new NWRL train stations.

A key policy of the Draft Metropolitan Strategy is to plan for housing growth in centres of all sizes. This will assist in reducing car dependence and to make walking, cycling and public transport more viable for residents. The aims for future TODs associated with the NWRL are to ensure that precinct planning around stations achieves these objectives;

- Provide a mix of uses in the centre or core to facilitate a vibrant and active place that reduces the need for residents and workers to make additional trips to meet their daily needs;
- Deliver legible and permeable precincts that promote connectivity and access to the new rail stations, interchange facilities, and key activities and uses;
- Ensure a population density within walking distance of each station (generally within 800m) to provide an appropriate threshold to deliver a range of activities and uses;
- Promote the use of public transport through the implementation of complementary policies such as cycling strategies and parking strategies and that aim to reduce private car use; and
- Facilitate well designed development that adds to the overall quality of existing centres while promoting a sense of place.

For government, TODs have the potential to deliver on core policy objectives and goals, including more compact urban forms, a reduced reliance on private motor vehicles and associated greenhouse reductions. From an industry perspective, TODs promote economic growth and unlock potential for investment in land development and urban renewal. Local communities also benefit from good quality places that provide a range of civic uses and community facilities, employment opportunities and improved recreational and leisure opportunities.

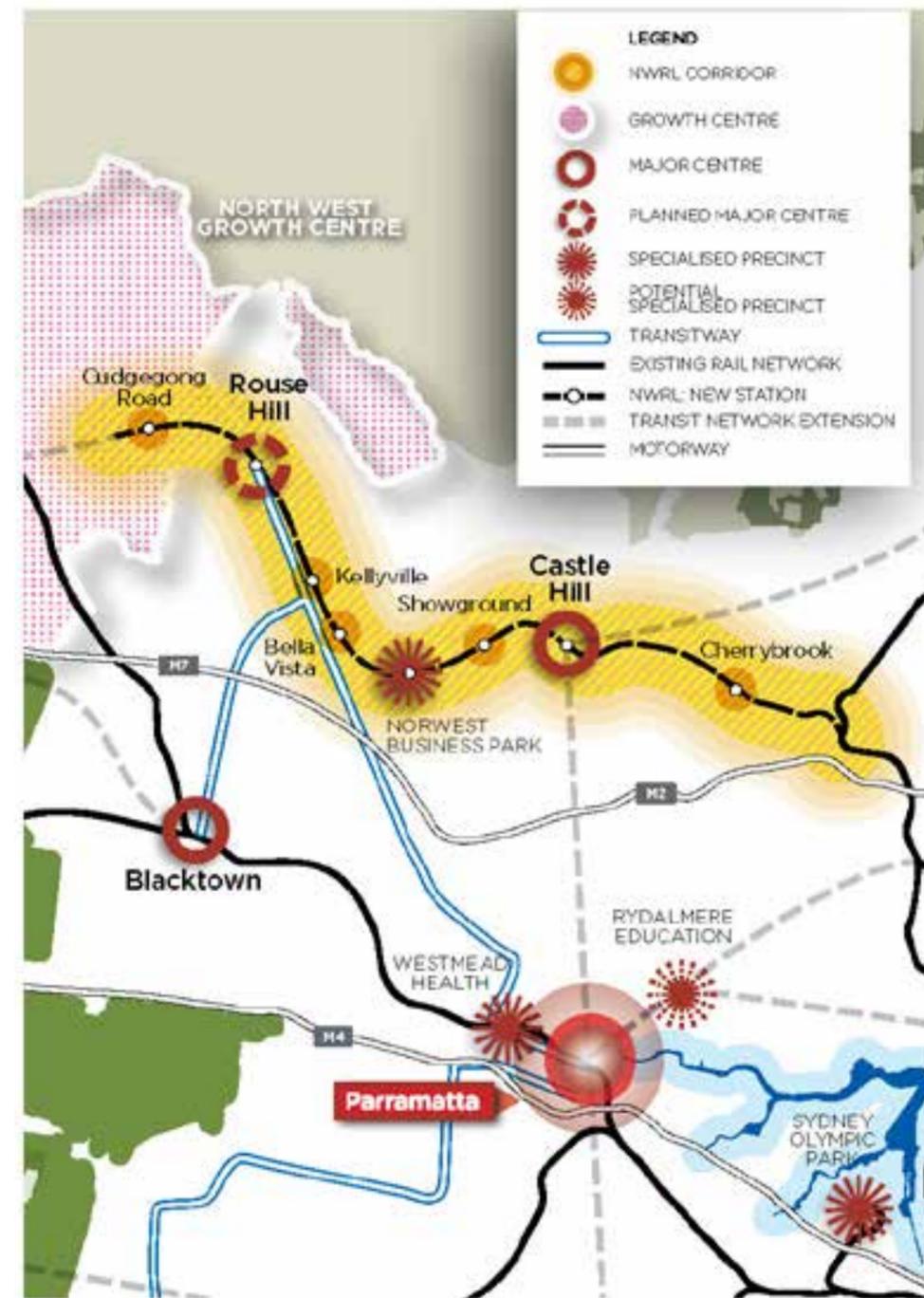


Figure 7. NWRL and surrounding centres

North West Rail Link Corridor Strategy

4. Methodology



4.1 STRUCTURE PLAN METHODOLOGY

1. Identification of Study Area Boundary - The boundaries of the Structure Plans were determined by considering the existing road network, topography, an 800m walking radius from the proposed station location and important land uses.

2. Role of the Study Area in the NWRL Corridor – Determining the role that each Study Area would perform within the context of the rail corridor, the North-West Subregion, and their existing locality and character.

3. Analysis of the Study Area’s physical characteristics – A comprehensive site analysis was undertaken to ascertain the natural and built characteristics the Study Area.

4. Combined constraints analysis – The site analysis led to the identification of constrained sites which are unlikely to make a contribution to the evolution of the Study Area.

5. Analysis of the existing planning controls in the Study Area – The existing controls were examined to determine their ability to respond to the NWRL and station. This included consideration of the strategic planning work undertaken by Blacktown, The Hills and Hornsby Councils.

6. Identification of Opportunities for Growth – The preceding analysis revealed opportunity sites that could make a contribution to the evolution of the Study Area in response to a new rail link and station.

7. Vision for the Study Area – An overall vision for the Study Area was developed, informed by the analysis and realised through the Structure Plan.

8 Structure Plan – A Structure Plan was developed providing a framework to guide the realisation of the vision.

9. Growth Projections – To project the likely growth of employment and dwelling numbers under the proposed land use, typology, FSR and minimum lot sizes nominated within the Structure Plan.

10. Actions and Implementation – A number of actions and implementation strategies were developed to guide the realisation of the Structure Plan.



Figure 8. Methodology for developing the Structure Plan

4.2 POTENTIAL GROWTH AND YIELDS METHODOLOGY

To translate the existing planning controls and the desired land uses and built forms of the Structure Plans, to projected totals of jobs and dwellings, requires a Capacity Study to be undertaken.

The steps for undertaking the Capacity Study are;

1. Map the existing constraints to development; open space and conservation; heritage and special uses; topography; drainage and flooding; (short-term, long-term and indefinite)
2. Identify the unconstrained areas or “opportunity sites”
3. Catalogue the existing characteristics of each of the opportunity sites; site area; existing commercial floorspace; retail floorspace; and number of dwellings.
4. Allocate the opportunity sites a proposed land use, typology, minimum lot size, FSR and mix of uses as nominated under the existing controls and the Structure Plans.
5. Determine the jobs and dwellings provided by each opportunity site. This is achieved through translating the additional commercial, retail, bulky goods retail, industrial floorspace to jobs using a set of assumptions relating to floorspace per job by use. Similarly, to translate the residential floorspace and lot sizes to a number of dwellings a set of assumptions relating to average lot sizes and floorspace per dwelling are required. These assumptions are documented in Table 1.
6. 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; and Identified take-up/realisation rates for each land use within the Study Area, which informed the calculation of projected growth.

ASSUMPTIONS AND VARIABLES		
Commercial floor space per job	25	sqm
Retail floor space per job	35	sqm
Bulky goods/Industrial floor space per job	75	sqm
Single detached dwellings	450-700	sqm lot size
Townhouse	250	sqm lot size
3-6 storey apartments	1:1 - 2:1	FSR
7+ storey apartments	3:1 - 4:1	FSR
Mixed Use residential (80-95%) retail (20-5%)	2:1 - 4:1	FSR
Local centre (splits between retail/commercial/residential based on location)	2:1 - 4:1	FSR
Industry	0.5:1 - 1:1	FSR
Bulky goods	1:1	FSR
Commercial	2:1 - 4:1	FSR
Conversion of Commercial Gross Floor Area to Net Lettable Area	80%	
Conversion of Residential Gross Floor Area to Net Lettable Area	80%	
Residential Net Lettable Area per dwelling	100	sqm avg
Realisation of total capacity by 2036	52% - 100%	

Table 1. Assumptions/dynamic variables utilised when projecting growth for each Study Area.

North West Rail Link Corridor Strategy

5. Corridor Context

5.1 PROPOSED CORRIDOR STRUCTURE

The Structure Plans provide the framework to guide future planning within each identified Study Area. They are the result of assessing the natural and built elements of the Study Area and existing controls which govern development.

Each Structure Plan is founded on principles of providing greater connectivity, by strengthening existing links and providing new links between the station and surrounding uses.

5.2 PROJECTED RESIDENTIAL GROWTH

To determine the likely population and dwelling numbers to be delivered under the proposed Structure Plans, a capacity and demand study has been undertaken.

The result of this study is that an estimate of projected dwelling growth by housing typology, achievable under the Structure Plans, can be provided. These are included in Table 2 adjacent.

The projected growth in dwellings that could be delivered by the Structure Plans for the North West Rail Corridor is an additional 27,000 dwellings. This results in an increase in dwellings from 10,850 in 2012 to 38,750 in 2036.

Single Detached dwellings are projected to increase from 9,200 in 2012 to 10,050 by 2036, an increase of 850 and representing 26% of the total housing stock within the corridor by 2036.

Townhouses are projected to increase from 100 in 2012 to 5,100 by 2036, an increase of 5,000 and represent 13% of the total housing stock within the corridor by 2036.

3-6 storey apartments are projected to increase from 1,450 in 2012 to 16,750 by 2036, an increase of 14,400 and representing 53% of the total housing stock within the corridor by 2036.

7+ storey apartments are projected to increase from 100 in 2012 to 6,850 by 2036, an increase of 6,750 and representing 25% of the total housing stock within the corridor by 2036.

5.3 PROJECTED EMPLOYMENT GROWTH

To determine the likely employment numbers to be delivered under the proposed Structure Plans, a capacity and demand study has been undertaken.

The result of this study is that an estimate of projected employment growth by industry sector, achievable under the Structure Plans, can be provided. These are included in Table 3 adjacent.

The projected growth in jobs to be delivered by the Structure Plans for the North West Rail Corridor is an additional 49,500 jobs. This results in an increase in jobs from 43,100 in 2012 to 92,600 in 2036.

Jobs in the commercial sector are projected to increase from 22,500 in 2012 to 60,850 by 2036, an increase of 38,350 and representing 78% of the total employment within the corridor by 2036.

Jobs in the retail sector are projected to increase from 9,600 in 2012 to 17,750 by 2036, an increase of 8,150 and representing 16% of the total employment within the corridor by 2036.

Jobs in the bulky goods sector are projected to decrease from 8,500 in 2012 to 7,500 by 2036, a decrease of 1,000 and representing 2% of the total employment within the corridor by 2036.

Jobs in the industrial sector are projected to increase from 2,500 in 2012 to 6,500 by 2036, an increase of 4,000 and representing 8% of the total employment within the corridor by 2036.

	2012		2036		GROWTH	
	TOTAL	%	TOTAL	%	TOTAL	%
SINGLE DETACHED	9,200	85%	10,050	25%	850	3%
TOWNHOUSE	100	1%	5,100	13%	5,000	17%
3-6 STOREY APARTMENT	1,450	13%	16,750	42%	15,300	53%
7+ STOREY APARTMENT	100	1%	7,750	20%	7,650	27%
TOTAL DWELLINGS	10,850	100%	39,650	100%	28,800	100%

Table 2. Projected dwelling growth by typology to be delivered by the Structure Plans within the NWRL corridor by 2036.

	2012		2036		GROWTH	
	TOTAL	%	TOTAL	%	TOTAL	%
COMMERCIAL	22,500	52%	60,850	66%	38,350	78%
RETAIL	9,600	22%	17,750	19%	8,150	16%
BULKY GOODS	8,500	20%	7,500	8%	-1,000	-2%
INDUSTRIAL	2,500	6%	6,500	7%	4,000	8%
TOTAL JOBS	43,100	100%	92,600	100%	49,500	100%

Table 3. Projected job growth by industry sector to be delivered by the Structure Plans within the NWRL corridor by 2036.

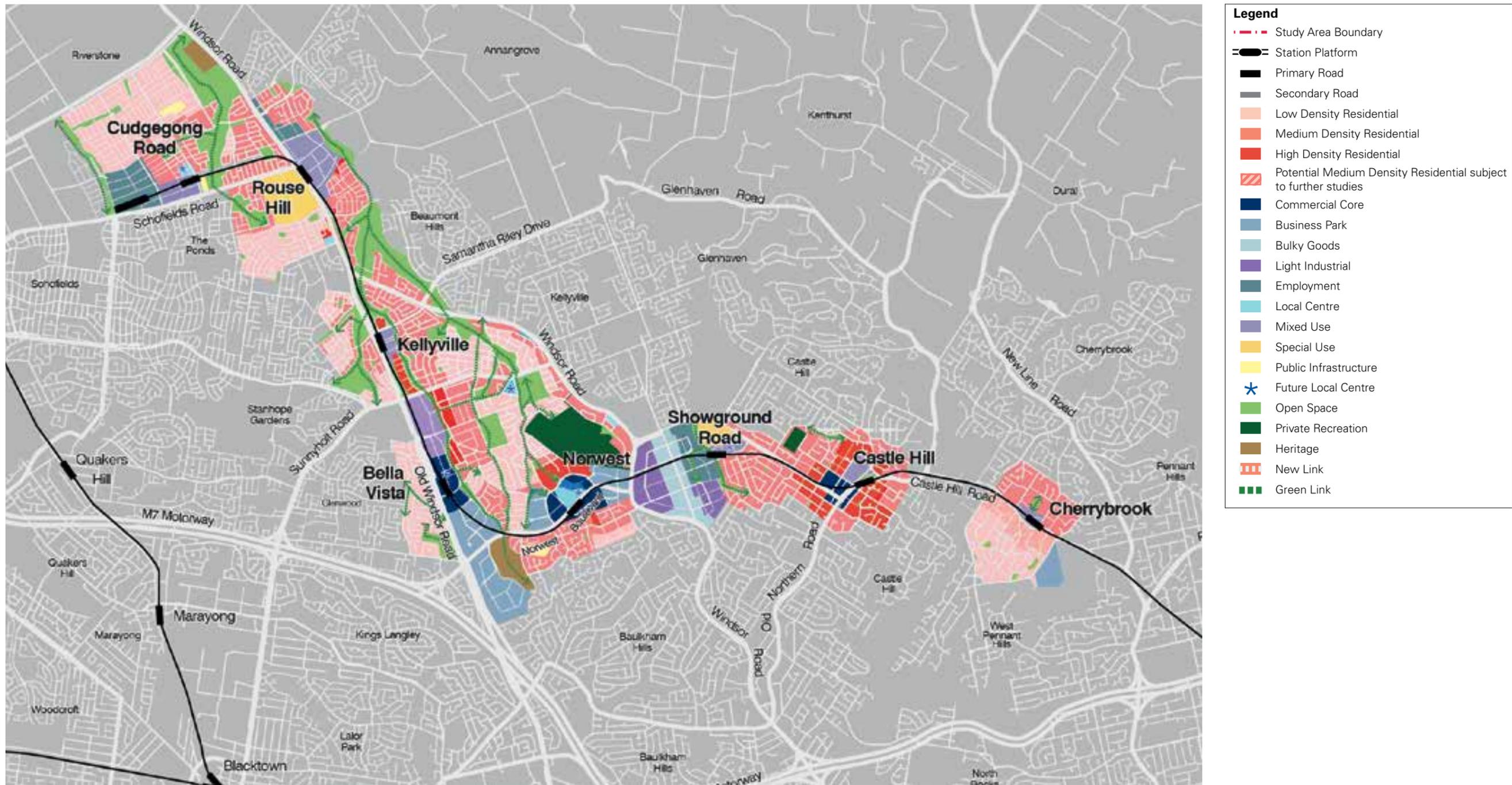


Figure 9. Corridor Structure Plan

North West Rail Link Corridor Strategy

6. Cherrybrook

6.1 VISION FOR THE STUDY AREA

The introduction of the NWRL has the potential to transform the Cherrybrook Study Area by providing a new focal point for the community centred around the station. This is proposed to include a mix of neighbourhood shops and services to provide for the daily needs of the local community.

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

To the north of Castle Hill Road, opportunities have been identified which will benefit from good accessibility to the new station. It is envisaged that the future character of this area will comprise, over the long term, low to medium density residential dwellings, ranging in height from two storey townhouses to six storey apartments, with higher density developments located closest to the station.

The area immediately adjoining the southern side of Castle Hill Road is conveniently located within walking distance of the station and is appropriate for medium density 3-6 storey apartments, subject to geotechnical, vegetation and traffic studies.

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.

6.2 PROPOSED STRUCTURE PLAN

Drawing on the constraints and opportunity sites analysis and existing land uses, the Study Area is proposed to retain its residential character with some uplift north of Castle Hill Road, in close proximity to the station precinct. The Structure Plan integrates this uplift with the surrounding built form through a graduation of height. The area north of Castle Hill Road is proposed to have two distinct sub-precincts. The sub-precinct with direct access to the station is proposed to become medium density residential characterised by 3-6 storey apartments. The second sub-precinct is also proposed to become medium density residential but characterised by 2-3 storey townhouses.

To the south of Castle Hill Road the Study Area will be characterised by medium density 3-6 storey apartments. As this land has significant slope, the area is subject to further geotechnical, vegetation and traffic studies.

New links are proposed to increase connectivity between Edward Bennett Drive, Franklin Road and Robert Road. These links could be either pedestrian and/or vehicular connections. Drawing on existing significant vegetation and parks, a green link is proposed between Robert Park, an area of Blue Gum High Forest and the proposed station precinct. Robert Park is to be protected as it has significant ecological and community value. This link will become a pedestrian and cycle connection between Robert Road and the station. Castle Hill Road will remain the primary east-west thoroughfare within the Study Area, supported by Highs Road/County Drive and Coonara Avenue/Edward Bennett Drive links, which will remain significant in connecting the southern West Pennant Hills suburb with New Line Road.

Gateway or entry demarcation points are proposed at entry points to the Study Area along Castle Hill Road and Highs Road, as well as the intersection of Castle Hill Road and Franklin Road. These are likely to take the form of a change in streetscape, a defined built form and/or artworks/sculpture.

The Coonara Avenue Business Park site and the Inala and Tangara Schools 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.

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

The primary public domain initiative nominated within the Cherrybrook 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 Cherrybrook.

6.3 RESIDENTIAL PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
SINGLE DETACHED	1,100	100%	750	17%	-350
TOWNHOUSE	0	0%	400	10%	400
3-6 STOREY APARTMENT	0	0%	3,150	73%	3,150
7-12 STOREY APARTMENT	0	0%	0	0%	0
TOTAL DWELLINGS	1,100	100%	4,300	100%	3,200

6.4 EMPLOYMENT PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
COMMERCIAL	2,000	100%	2,000	98%	0
RETAIL	0	0%	50	2%	50
BULKY GOODS	0	0%	0	0%	0
INDUSTRIAL	0	0%	0	0%	0
TOTAL JOBS	2,000	100%	2,050	100%	50

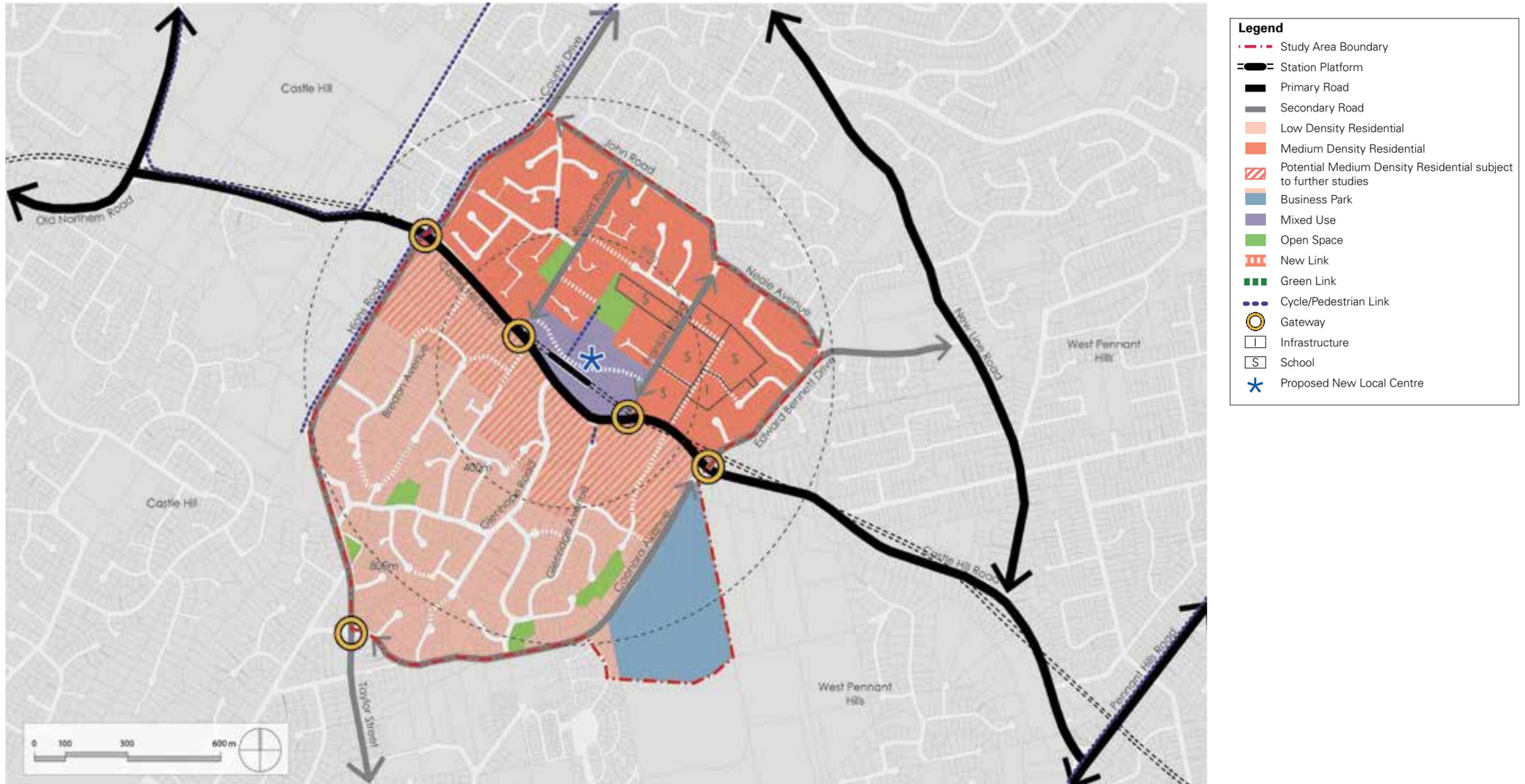


Figure 10. Structure Plan for the Cherrybrook Study Area

North West Rail Link Corridor Strategy

7. Castle Hill

7.1 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

7.2 PROPOSED STRUCTURE PLAN

The 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 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.

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.

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 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.

7.3 RESIDENTIAL PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
SINGLE DETACHED	800	47%	600	10%	-200
TOWNHOUSE	0	0%	100	2%	100
3-6 STOREY APARTMENT	800	47%	1,800	36%	1,000
7-20 STOREY APARTMENT	100	6%	3,600	52%	3,500
TOTAL DWELLINGS	1,700	100%	6,100	100%	4,400

7.4 EMPLOYMENT PROJECTIONS

	2012		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

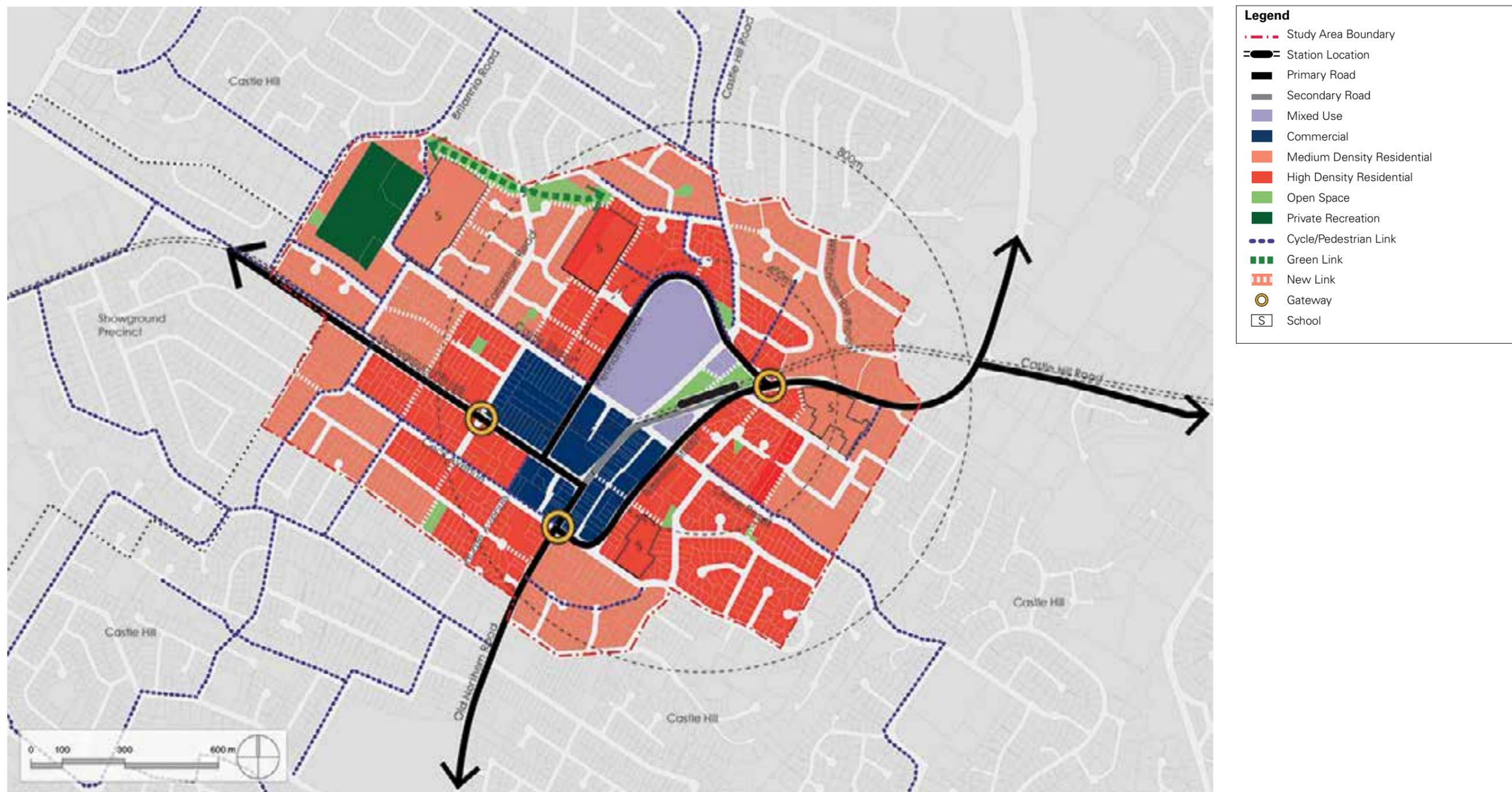


Figure 11. Structure Plan for the Castle Hill Study Area

North West Rail Link Corridor Strategy

8. Showground Road

8.1 VISION FOR THE STUDY AREA

The introduction of the NWRL and a station in the Showground Road Study Area has the potential to provide the catalyst for the development of the area as a mixed use centre with strong public transport links to the city and other centres throughout the north-west region. A new station will provide further impetus for the area to evolve as a vibrant and active Centre comprising offices, retailing, community facilities, recreation, cultural, leisure, education and housing within walking distance of a new station.

Increased utilisation of the existing employment area could deliver a significant amount of jobs for the future residents of the North West in an area with high levels of amenity, recreation and access to public transport.

Similarly, 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.

The redevelopment of major land holdings adjacent to the station provides an opportunity to deliver a vibrant hub for the local area, which could include a mixture of apartments, retail, restaurants, and potentially cultural facilities such as galleries and theatres and boutique office space within a pedestrian-oriented environment.

The Showground will remain a regional recreational asset and benefit from increased activity generated by the new residents, workers and visitors to the station.

The introduction of the NWRL will enable the Showground Road Station Precinct to become a transport hub for the local area, centred on a new train station and integrated with a bus interchange. The Showground Road station will be connected to a local feeder bus network that provides direct access for the residents of the surrounding suburbs 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, open spaces and natural environment are protected. The vision will be achieved by: identifying and assembling

strategic sites and government landholdings within the Centre to attract public and private investment around a vibrant mixed-use core; and improving livability and amenities within the Centre by providing a diverse range of dwellings, retail, recreation and cultural opportunities linked by 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.

8.2 PROPOSED STRUCTURE PLAN

Drawing on the analysis and existing land uses, the Study Area is proposed to become a vibrant and active hub comprising offices, light industry, retailing, community facilities, recreation, cultural, leisure, education and housing for the greater North West.

To the immediate west of the station precinct, it is proposed that over time a more intensive commercial employment will occur within the existing industrial area bounded by Showground Road to the north, the Castle Hill Showground to the east, Gladstone Road to the south and the bulky goods retail corridor of Victoria Avenue to the west. This commercial precinct will benefit from a number of public domain upgrades and direct access to station and the associated retail and recreation opportunities.

Victoria Avenue is to be reinforced as a bulky goods retail corridor which will provide a vital service function for the growing population of the North West in to the future. To the south and west of the Study Area, existing areas of industry will be retained and reinforced in to the future which perform a vital function by providing certain types of employment, services and goods for the people of the North West.

Residential uplift is proposed within the Study Area primarily located within the area adjacent to the new station. The Structure Plan provides the opportunity for a range of higher density residential development within the mixed-use village. These buildings will benefit from access to the recreation space of the Showground, the green corridor of Cattai Creek, ground floor activity of retailing and restaurants and direct access to the station and the NWRL. To the east of the station, a variety of medium density living will be located within the residential areas within an easy 10-minute walk of the station to provide 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 enable intensification of the existing broad-grain road layout by enhancing connectivity and permeability. These links could be either pedestrian or vehicular connections and would be subject to detailed analysis to determine the most appropriate location and configuration. Drawing on existing significant vegetation and parks, a green network is proposed linking Cockayne Park, Castle Hill Showground and Fred Caterson Reserve. This link will become a significant pedestrian thoroughfare, linking the key attractions within the Study Area and will also provide significant habitat for wildlife within the Study Area.

The ring road network formed by Showground Road and Windsor Road will remain significant to connect the Showground Road Study Area with the Norwest and Bella Vista Business Parks and Castle Hill whilst removing a large proportion of regional through traffic from the Precinct. Gateway or entry demarcation points are proposed at entry points to the Study Area at Norwest Boulevard, Windsor Road, Victoria Avenue and Carrington Road. These are likely to take the form of a change in streetscape or defined built form.

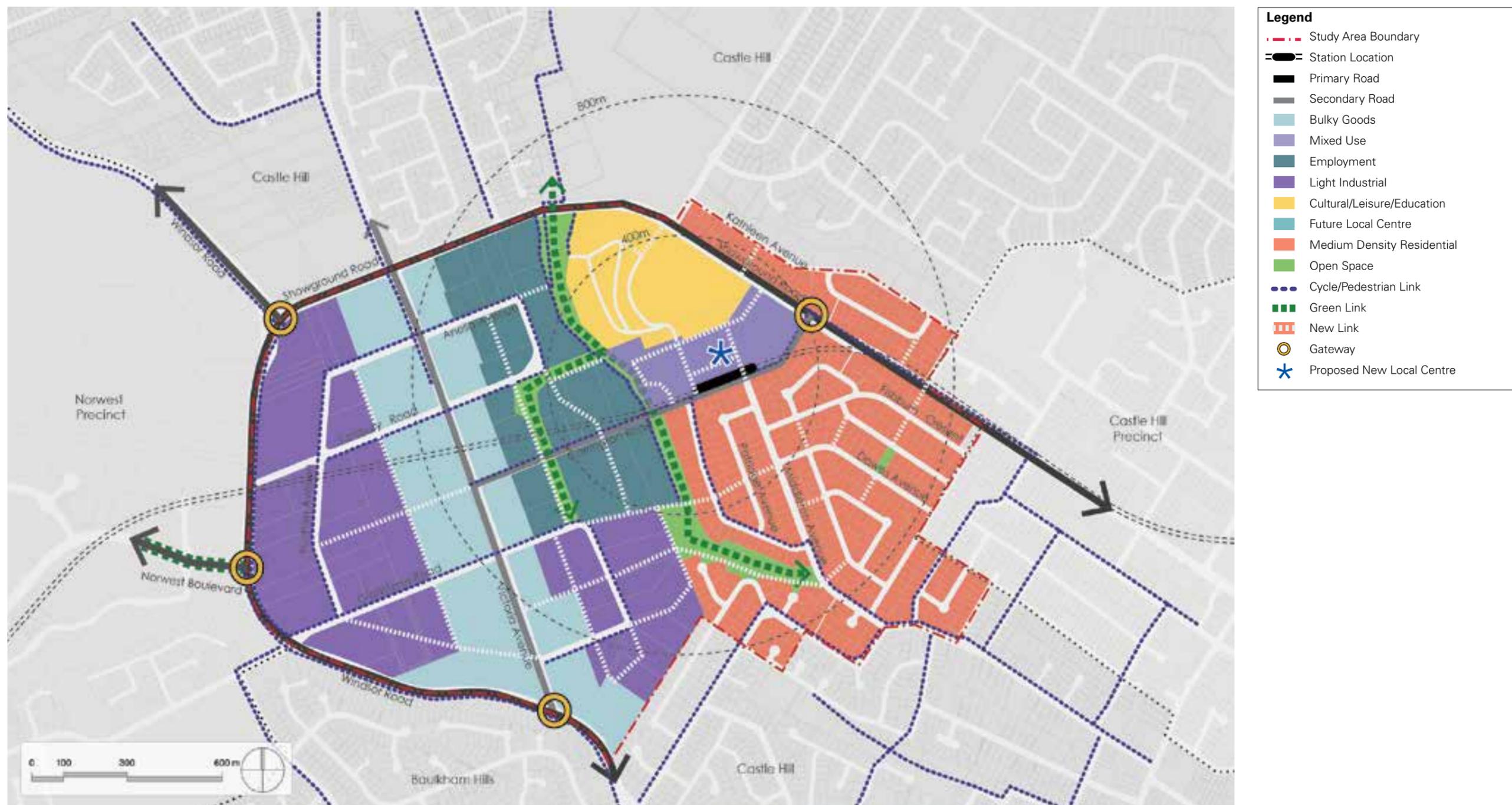
The redevelopment of sites within the Study Area, and the establishment of a new station and transport interchange, will provide significant opportunities to improve the Study Area's public domain.

8.3 RESIDENTIAL PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
SINGLE DETACHED	500	67%	400	9%	-100
TOWNHOUSE	0	0%	350	8%	350
3-6 STOREY APARTMENT	250	33%	2,600	60%	2,350
7-12 STOREY APARTMENT	0	0%	1,000	23%	1,000
TOTAL DWELLINGS	750	100%	4,350	100%	3,600

8.4 EMPLOYMENT PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
COMMERCIAL	1,000	13%	6,400	42%	5,400
RETAIL	0	0%	800	5%	800
BULKY GOODS	4,000	53%	5,500	36%	1,500
INDUSTRIAL	2,500	33%	2,500	17%	0
TOTAL JOBS	7,500	100%	15,200	100%	7,700



Legend

- - - Study Area Boundary
- Station Location
- Primary Road
- Secondary Road
- Bulky Goods
- Mixed Use
- Employment
- Light Industrial
- Cultural/Leisure/Education
- Future Local Centre
- Medium Density Residential
- Open Space
- Cycle/Pedestrian Link
- Green Link
- New Link
- Gateway
- ★ Proposed New Local Centre

Figure 12. Structure Plan for the Showground Study Area

North West Rail Link Corridor Strategy

9. Norwest

9.1 VISION FOR THE STUDY AREA

The introduction of the NWRL and a station at Norwest has the potential to further reinforce Norwest as a Specialised Precinct and the largest employment centre for Sydney's North West. A new station, located within the existing Norwest Business Park, will provide further impetus for Norwest to evolve as a vibrant and active Centre of business for the region, comprising offices, retailing, community facilities, recreation, cultural, education and housing to serve the 650,000 people of the North West by 2036.

To reinforce this status of a Specialised Precinct for the North West, Norwest will need to accommodate a significant amount of jobs. The target for Norwest is to provide an additional 15,000 jobs by 2031. This will require approximately 225,000-375,000 sqm of commercial floor space, of a variety of grades, to be delivered within Norwest to 2031.

Norwest Business Park will remain the major commercial hub of the North West. The introduction of the NWRL will increase the catchment and desirability of Norwest Business Park beyond the immediate context of the North West of Sydney. The vision is to see the orderly expansion and intensification of the Business Park, in line with this increase in demand, by delivering commercial floor space with a focus on efficient, large floor plate, campus-style office spaces. Within the Local Centre, there will also be the opportunity to integrate expanded retailing, community uses and cultural facilities which will activate a number of new pedestrian streets, plazas and squares and cater for the increased numbers of workers, residents and visitors alike.

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

Similarly, the introduction of the NWRL will enable Norwest to become a transport hub for the local area, centred on a new train station with a supporting bus system to provide access for residents to the employment and retail centres of Norwest from across the North West subregion.

The Study Area will provide opportunities for increased employment and housing capacities within walking/ cycling distance of the station and the Business Park, while ensuring the local amenity, heritage, open spaces and natural environment are protected. This vision will be achieved by: building on the Centre's assets to enhance the competitiveness of commercial office employment, as well as retailing; 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.

9.2 PROPOSED STRUCTURE PLAN

The Structure Plan proposes a true commercial core for Norwest to ensure the job targets for 2031 are achieved and that Norwest is reinforced as a Specialised Precinct for the North West. The existing commercial and retail premises adjacent to the station have been enveloped in a commercial core, to create a more flexible centre that can provide for a variety of uses over the short to medium term. This intensive, mixed commercial and retail core is to be set around the shores of Norwest Lake.

To the east and west of the centre, land has been set aside as a Business Park with more flexible controls to respond to the growing market demands for large floor plate commercial spaces and to encourage the growth of Norwest as a Specialised Precinct. In the north of the Study Area a space for a smaller Local Centre has been designated on the corner of Wager Road and Stone Mason Drive.

Suitable locations for high density residential of 7-12 storeys, have been identified surrounding the commercial/ retail core to the immediate north, which will benefit from direct access to the train station, Business Park 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 to the south of the Business Park and core on Barina Downs Road and to the east, along Windsor Road.

Beyond this, low density dwellings to the north-west of the station, comprised of 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.

Norwest Boulevard is proposed to remain the primary thoroughfare of Norwest, however significant upgrades, likely to be required in the future, will make pedestrian access and amenity a challenge. Consideration will need to be given to new signalised, potentially grade separated crossings as part of this work. Retention of the existing landscape character should also be an aim for this to be successful.

New links are proposed in locations within the Study Area where they will increase connectivity and permeability. These links could be either pedestrian and/or vehicular connections. Drawing on existing significant vegetation and parks, green links are proposed between Fairway Drive and Castle Hill Country Club Golf Course, and along the eastern side of Edgewater Drive. They will also provide significant ecological and drainage corridors within the Study Area.

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.

9.3 RESIDENTIAL PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
SINGLE DETACHED	1,000	77%	1,200	21%	200
TOWNHOUSE	100	8%	1,200	21%	1,100
3-6 STOREY APARTMENT	200	15%	2,900	51%	2,700
7-12 STOREY APARTMENT	0	0%	350	7%	350
TOTAL DWELLINGS	1,300	100%	5,650	100%	4,350

9.4 EMPLOYMENT PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
COMMERCIAL	10,000	77%	24,200	92%	14,200
RETAIL	1,000	8%	2,000	8%	1,000
BULKY GOODS	2,000	15%	0	0%	-2,000
INDUSTRIAL	0	0%	0	0%	0
TOTAL JOBS	13,000	100%	26,200	100%	13,200

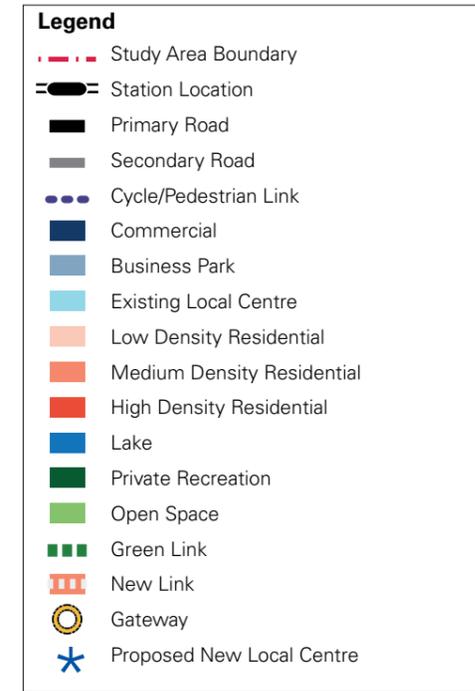
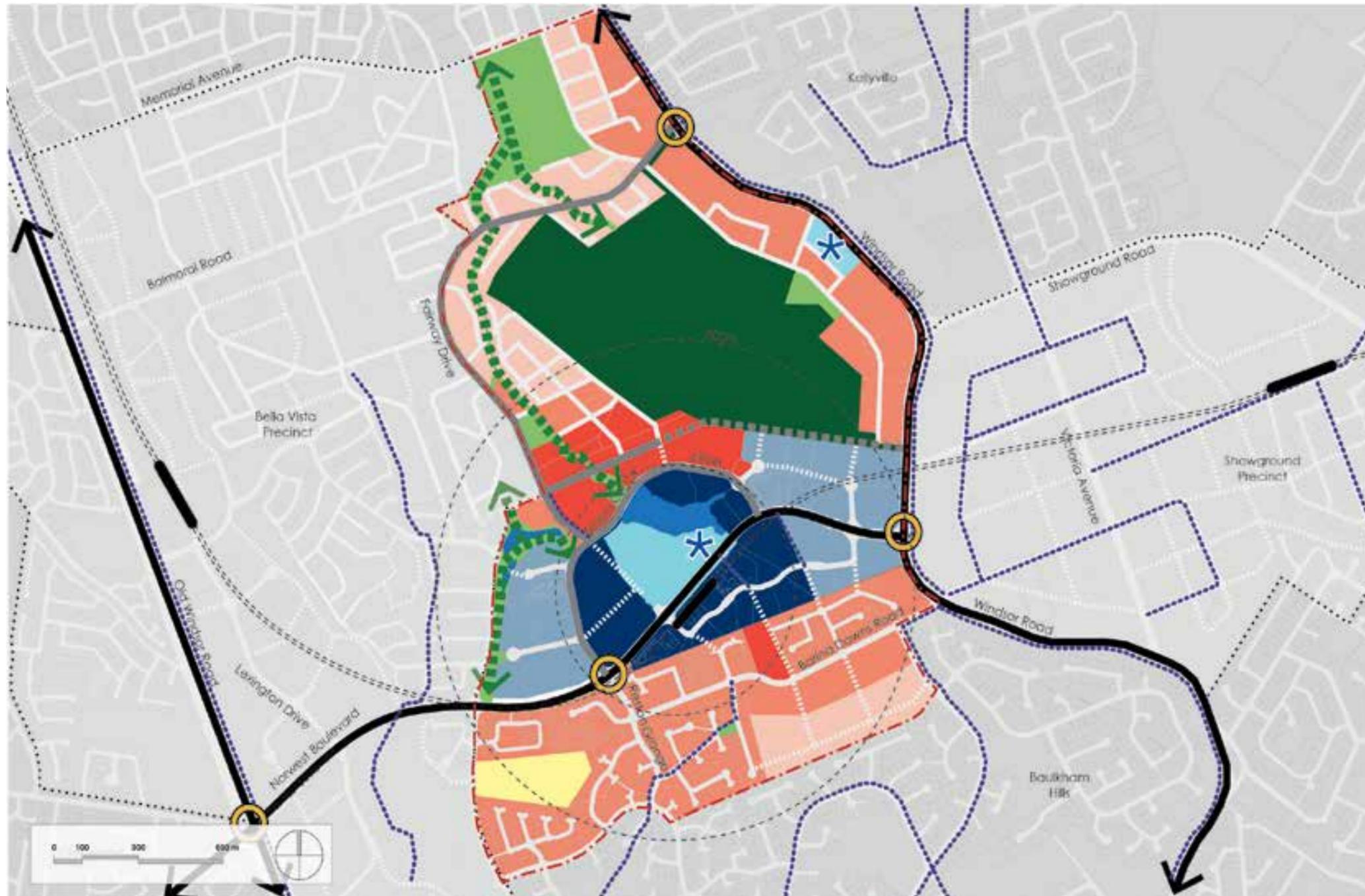


Figure 13. Structure Plan for the Norwest Study Area

North West Rail Link Corridor Strategy

10. Bella Vista

10.1 VISION FOR THE STUDY AREA

Bella Vista Study Area will have an important function in the NWRL corridor as a business and commercial 'destination' station, while also providing increased residential development opportunities.

The introduction of the NWRL will provide much needed public transport connections between Bella Vista and Rouse Hill, Norwest, Castle Hill and the wider Sydney rail network. The new station and service at Bella Vista will complement existing T-way bus services and provide a focal point for local bus networks. The Study Area will provide opportunities for increased employment and housing capacities within walking/cycling distance of the station, while ensuring the heritage, open space network and natural environment are protected. Existing employment lands will be retained and enhanced, and will accommodate higher density development in the future.

Bella Vista Business Park is a logical extension of Norwest Business Park and with the delivery of the NWRL provides an opportunity to increase its catchment and desirability beyond the immediate context of the North West of Sydney.

The vision is to see the orderly expansion and intensification of the Bella Vista Business Park, in line with this increase in demand, by delivering commercial floor space as efficient, large floor plate, campus-style office spaces. This future development will be characterised by business/office developments of between 4-6 storeys and a mix of floor plate sizes to promote a greater diversity of commercial activity. There will be a move away from car-dependent development with large areas of surface parking, to transit-orientated commercial/office development, with lower parking rates and underground or structured parking.

The Study Area will provide opportunities for increased employment and housing capacities within walking/cycling distance of the station, while ensuring the local amenity, open spaces and natural environment are protected. There will also be the opportunity to integrate expanded retailing, community uses and cultural facilities which will activate a number of new pedestrian streets, plazas and squares and cater for the increased number of workers, residents and visitors alike.

This vision will be achieved by: building on the proposed new Centre's assets to enhance the competitiveness of commercial office employment, as well as retailing; 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 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, retail, 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.

10.2 PROPOSED STRUCTURE PLAN

The Structure Plan proposes a commercial/retail core for Bella Vista centred around the new station, which will benefit from direct access to the train station the surrounding Business Park and be in close proximity to residential areas. The future character will be achieved through further consideration of zoning/development controls and through master-planning. The retail park on Celebration Drive will be redeveloped to accommodate the new Bella Vista train station, park and ride facilities and higher density employment development.

To the south of the station is the existing Bella Vista Business Park. Under the Structure Plan lots within the Business Park will be given greater flexibility in planning controls to attract more businesses through the provision of a variety of floor plates and to capitalise on the proximity and relationship of the park to the successful Norwest Business Park to the east.

To the north of the station, within the infrastructure corridor reserved for the NWRL, it is proposed that a mixed use area, comprising commercial, retail and medium density residential will serve as a transition between the employment areas and the residential of Memorial Avenue and Balmoral Road. In the north-west of the Study Area a space for a smaller Local Centre has been designated on the corner of Hector Circuit and Memorial Avenue to provide local residents with day-to-day services and amenities.

The north-east and east of the Study Area will be predominantly residential. Norwest Business Park and the Bella Vista employment lands play a key role in attracting managerial and professional employees to the greater North West. Areas adjacent to Fairway Drive accommodate low density residential of 1-2 storeys. This area provides executive housing directly adjacent to the business parks of Norwest and Bella Vista, and the Castle Hill Country Club.

Between the rail corridor and the executive housing adjacent Fairway Drive, from Memorial Avenue down to Edgewater Drive the densities will increase towards the station and the mixed use precinct, with the highest densities around the station being 7-22 storeys and the medium density housing comprising 3-6 storey apartment buildings and townhouses. To the west of the station and Old Windsor Road, Glenwood Park could deliver townhouses and 3-6 storey residential in the longer term, provided that permeability is enhanced by reconfiguration of the existing culs-de-sac.

Bella Vista Farm is a significant conservation area protected and maintained by the Structure Plan. The history and character of the property add significantly to the identity of Bella Vista and the farm and its view corridors will be maintained.

Bella Vista Station will increase accessibility to transport for local residents and those of surrounding areas. Old Windsor Road and Norwest Boulevard will remain the primary thoroughfares within the Study Area. A secondary road network should be considered to improve internal access and permeability within the business park areas, particularly for pedestrians.

Within the Study Area, pedestrian and cycling accessibility is limited with a lack of adequate crossings and public lighting. No pedestrian access is provided for the northern leg of Old Windsor Road and Celebration Drive and key routes such as Norwest Boulevard are hostile pedestrian environments. Any secondary road network will require a well-developed pedestrian/cyclist path network, to promote active modes of transport and access to key employment locations and the station.

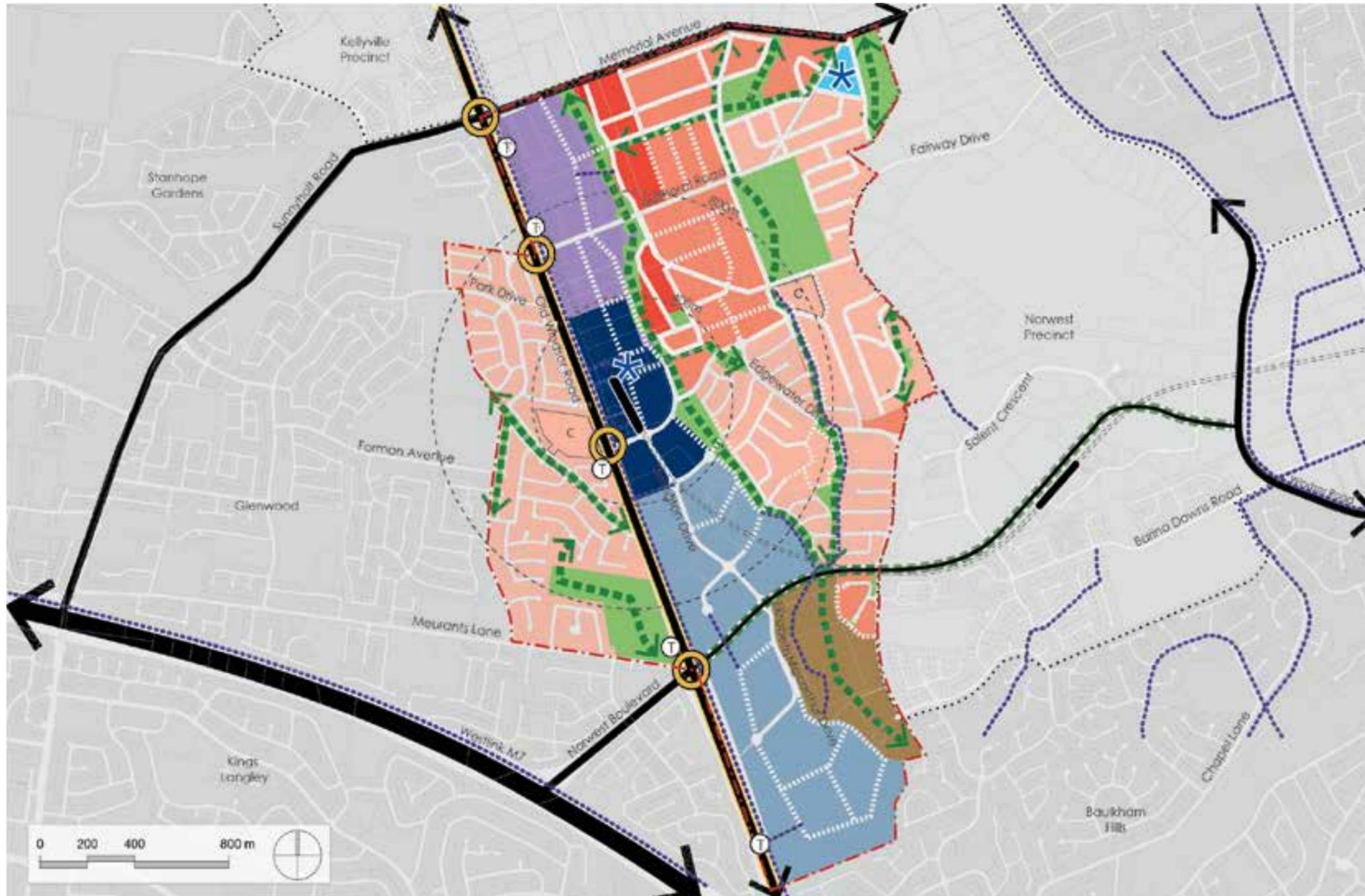
The development of sites within the Study Area, and the establishment of a new station and transport interchange, will provide significant opportunities to improve the Study Area's public domain.

10.3 RESIDENTIAL PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
SINGLE DETACHED	1,800	100%	2,000	32%	200
TOWNHOUSE	0	0%	1,000	16%	1,000
3-6 STOREY APARTMENT	0	0%	1,800	29%	1,800
7-12 STOREY APARTMENT	0	0%	1,400	23%	1,400
TOTAL DWELLINGS	1,800	100%	6,200	100%	4,400

10.4 EMPLOYMENT PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
COMMERCIAL	8,000	84%	18,250	91%	10,250
RETAIL	1,000	11%	1,750	9%	750
BULKY GOODS	500	5%	0	0%	-500
INDUSTRIAL	0	0%	0	0%	0
TOTAL JOBS	9,500	100%	20,000	100%	10,500



Legend	
	Study Area Boundary
	Station Location
	Primary Road
	Secondary Road
	Cycle/Pedestrian Link
	Commercial
	Business Park
	Low Density Residential
	Medium Density Residential
	High Density Residential
	Mixed Use
	Heritage
	Open Space
	Green Link
	New Link
	Gateway
	Church
	Proposed New Local Centre
	T-Way Stop

Figure 14. Structure Plan for the Bella Vista Study Area

North West Rail Link Corridor Strategy

11. Kellyville

11.1 VISION FOR THE STUDY AREA

The introduction of the NWRL and a station at Kellyville has the potential to further reinforce Kellyville as a major residential area for Sydney's North West. A new station will provide further impetus for Kellyville to evolve as a transit oriented, predominately residential area offering high, medium and low density housing options as well as local centre shopping.

The introduction of the NWRL has the potential to transform the Kellyville Study Area by providing a new focal point for the community centred around the station. This is proposed to include a mix of neighbourhood shops and services to provide for the daily needs of the local community.

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

Local Centres have been identified to be located at the proposed station location and along Windsor Road. Other areas close to the station location and along logical open space corridors have been identified for increased densities. In the residential area closest to the station, it is envisaged that the future character will comprise, over the long term, high density residential of 7-12 storeys. Medium density residential has been located surrounding this and along major bus routes. It is envisaged that the future character of these areas will comprise, over the long term, medium density residential dwellings, ranging in height from 2-3 storey townhouses to 3-6 storey apartments, with higher density developments located closest to the station.

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.

11.2 PROPOSED STRUCTURE PLAN

The Structure Plan proposes two local centres to provide for the growing retail needs of the existing and future residents of the Kellyville Study Area, including a new local centre adjoining the NWRL Station and T-Way.

Suitable locations for high density residential, of between 7 to 12 storeys, have been identified within close proximity to the station and along open space corridors where there is greater amenity and direct access to the bus and rail transport interchange and local services. Medium density living comprising of 3-6 storey apartments will be located within an easy 10-minute walk of the station or major bus route. Beyond this, townhouses, duplexes and single-detached dwellings will characterise the Study Area.

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, existing parks and riparian corridors, green links are proposed along Elizabeth Macarthur and Strangers Creeks. These will become significant pedestrian and cycle links between Rouse Hill and Bella Vista/Norwest. It will also provide significant ecological and drainage corridors within the Study Area.

Old Windsor Road and Windsor Road are proposed to remain the primary north-south connections. Memorial Avenue is proposed to also be a primary road, connecting east-west. Samantha Riley Drive is proposed to play a secondary function in an east-west direction. Upgrades of the streetscapes on these major thoroughfares may be required to provide attractive and accessible pedestrian connections between the station and the adjacent uses.

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.

11.3 RESIDENTIAL PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
SINGLE DETACHED	2,000	100%	1,200	19%	-800
TOWNHOUSE	0	0%	1,000	16%	1,000
3-6 STOREY APARTMENT	0	0%	3,100	48%	3,100
7-12 STOREY APARTMENT	0	0%	1,100	17%	1,100
TOTAL DWELLINGS	2,000	100%	6,400	100%	4,400

11.4 EMPLOYMENT PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
COMMERCIAL	0	0%	0	0%	0
RETAIL	100	100%	900	100%	800
BULKY GOODS	0	0%	0	0%	0
INDUSTRIAL	0	0%	0	0%	0
TOTAL JOBS	100	0%	900	100%	800

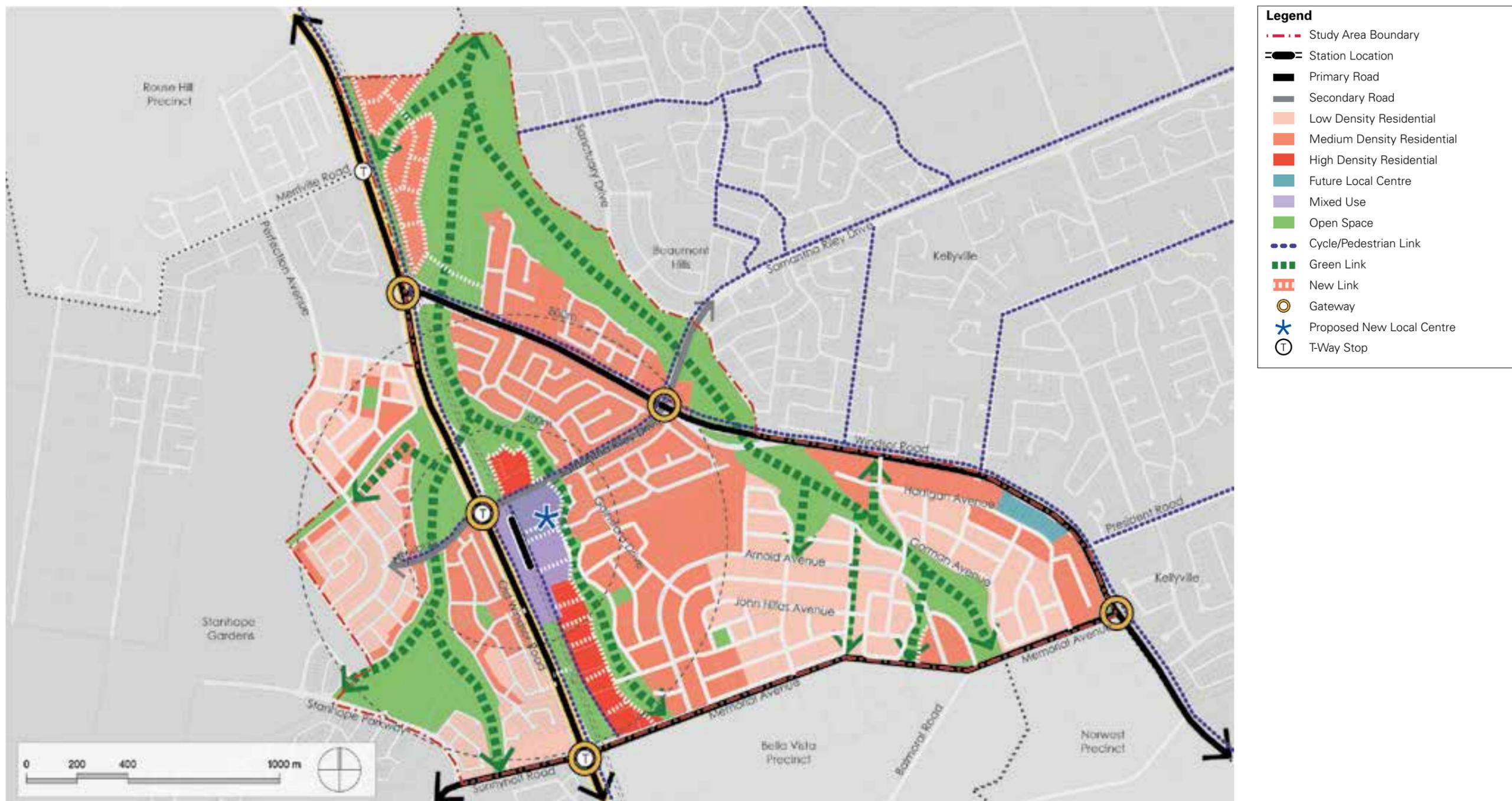


Figure 15. Structure Plan for the Kellyville Study Area

North West Rail Link Corridor Strategy

12. Rouse Hill

12.1 VISION FOR THE STUDY AREA

The Rouse Hill Study Area will play an important role in the NWRL corridor, as a mixed use destination. The introduction of the NWRL will enable the Study Area to become a major transport and retail/commercial hub for the surrounding suburbs centred on a new train station and a hub for the North West Growth Centre.

The introduction of the NWRL has the potential to transform the Study Area into a Major Centre enabling significant residential and commercial uptake in the surrounding areas. An integrated bus and cycle network feeding the NWRL station will allow Rouse Hill to serve as a major transport hub and gateway to Sydney CBD.

The Study Area will provide opportunities for increased employment and housing capacities within walking/cycling distance of the station, while ensuring the local heritage, open space network and natural environment are protected.

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

12.2 PROPOSED STRUCTURE PLAN

Drawing on the analysis and existing land uses, the Study Area is proposed to become a prominent retail and commercial hub for the north west. The Structure Plan proposes to extend the commercial/retail area northwards to Commercial Road. Some residential uplift is proposed within the Study Area surrounding the retail and commercial core. In the area immediately surrounding the retail and commercial core the Structure Plan proposes residential development comprising a mixture of 2-3 storey townhouses and 3-6 storey apartments. Beyond this, low density residential development between 1 to 2 storeys is proposed.

New links are proposed in locations within the Study Area where they will increase connectivity and permeability. These links could be either pedestrian and of vehicular connections.

Drawing on existing significant vegetation and parks, a green link is proposed along the Caddies Creek Riparian Corridor and at a low point close to Second Ponds Creek. These links will become significant pedestrian and recreational links between Rouse Hill, Beaumont Hills, Kellyville, The Ponds and Cudgegong Road. They will also provide significant habitat for wildlife within the Study Area.

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

Gateway or entry demarcation points are proposed along Windsor Road at major road intersections with Schofields, Commercial and Mile End Road. These are likely to take the form of a change in streetscape or defined built form

12.3 RESIDENTIAL PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
SINGLE DETACHED	1,800	90%	2,200	75%	400
TOWNHOUSE	0	0%	50	2%	50
3-6 STOREY APARTMENT	200	10%	400	13%	200
7-12 STOREY APARTMENT	0	0%	300	10%	300
TOTAL DWELLINGS	2,000	100%	2,950	100%	950

12.4 EMPLOYMENT PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
COMMERCIAL	0	0%	1,500	20%	1,500
RETAIL	2,000	50%	4,000	53%	2,000
BULKY GOODS	2,000	50%	2,000	27%	0
INDUSTRIAL	0	0%	0	0%	0
TOTAL JOBS	4,000	100%	7,500	100%	3,500

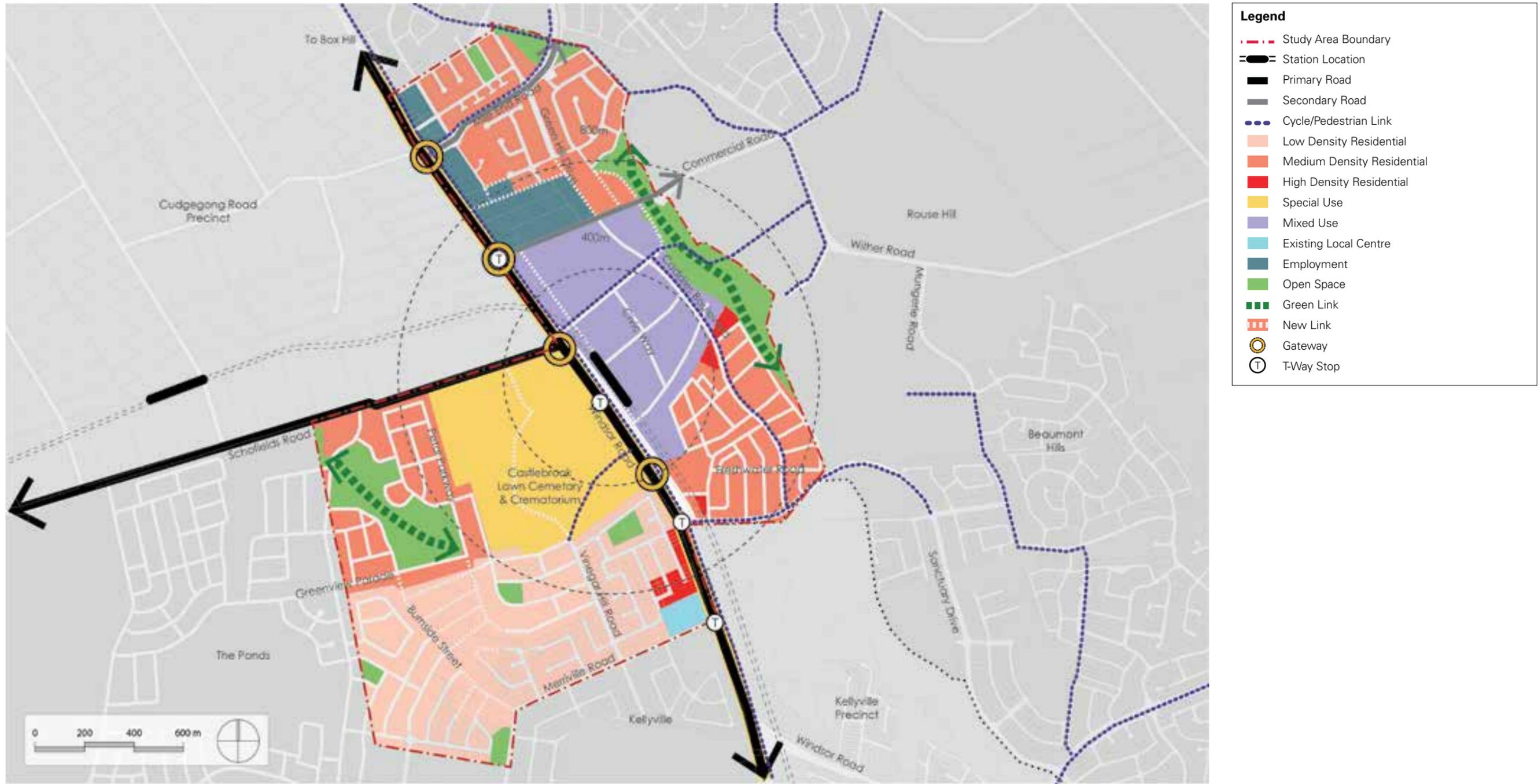
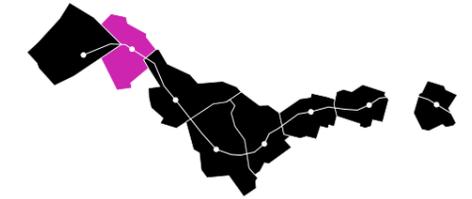


Figure 16. Structure Plan for the Rouse Hill Study Area

North West Rail Link Corridor Strategy

13. Cudgegong Road

13.1 VISION FOR THE STUDY AREA

The Cudgegong Road Study Area will play an important role in the NWRL corridor, as a local village centre. The introduction of the NWRL has the potential to transform the Cudgegong Road Study Area by providing a new focal point for the community centred around the station. This is proposed to include a mix of local shops and services to provide for the daily needs of the local community.

The NWRL will also provide the opportunity to create a new transit oriented neighbourhood focused around a rail station and village centre. This will increase residential densities within walking distance of the station and involve a variety of housing types to ensure there is affordable and appropriate housing for all members of the community.

The Study Area will provide opportunities for increased employment and housing capacities within walking/cycling distance of the station, while ensuring the local heritage, open space network and natural environment are protected.

Development opportunities for higher densities have been identified at locations which will benefit from good access to the rail transport infrastructure and the mix of uses and facilities in the Cudgegong Local Centre and Rouse Hill Centre.

13.2 PROPOSED STRUCTURE PLAN

Drawing on the analysis and existing land uses, the Study Area is proposed to become a predominately residential area for the North West. Higher residential densities are proposed within the Study Area within 800 metres of the station and opposite the Rouse Hill Centre. This comprises a mixture of medium density development of 3-6 storey apartment buildings and 2-3 storey townhouses.

An employment zone is proposed in the area surrounding the NWRL stabling yard and along Schofields Road, with the ability to expand north of the stabling yards to accommodate potential future expansion. The Structure Plan proposes additional low rise housing to replace rural residential uses in other parts of the Study Area, particularly within Riverstone East. It is envisaged this low rise residential development would allow for the inclusion of small lots. However, there may be potential for other more dense built forms should demand arise at the time of future detailed precinct planning. In the event that the expansion of the NWRL stabling yard is not required, the land north of the stabling yard could revert to a different use, such as low rise residential developments.

A finer street network is proposed throughout the Study Area to increase connectivity and permeability. These links could be either pedestrian and/or vehicular connections and would be subject to further detailed analysis to determine their location and configuration.

Open space linkages are reinforced along First and Second Ponds Creek within the Study Area. Green links are proposed firstly along First Ponds Creek and secondly between Rouse Hill House, Rouse Hill Regional Park and along Second Ponds Creek. These links will become significant recreational links for residents and also provide significant habitat for wildlife within the Study Area.

Windsor Road is proposed to remain the primary north-south link connecting the Study Area with the Norwest and Bella Vista Business Parks, Hills Centre and the Castle Hill major centre. Schofields Road is proposed to remain a major east-west link between Schofields and Rouse Hill.

Gateway or entry demarcation points are proposed at entry points to the Study Area along Windsor and Schofields Road. These are likely to take the form of a change in streetscape, landscape character or defined built form.

13.3 RESIDENTIAL PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
SINGLE DETACHED	200	100%	1,700	46%	1,500
TOWNHOUSE	0	0%	1,000	27%	1,000
3-6 STOREY APARTMENT	0	0%	1,000	27%	1,000
7-12 STOREY APARTMENT	0	0%	0	0%	0
TOTAL DWELLINGS	200	100%	3,700	100%	3,500

13.4 EMPLOYMENT PROJECTIONS

	2012		2036		GROWTH
	TOTAL	%	TOTAL	%	TOTAL
COMMERCIAL	0	0%	0	0%	0
RETAIL	0	0%	250	6%	250
BULKY GOODS	0	0%	0	0%	0
INDUSTRIAL	0	0%	4,000	94%	4,000
TOTAL JOBS	0	0%	4,250	100%	4,250



Figure 17. Structure Plan for the Cudgegong Road Study Area

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