Sydney Metro Northwest

Pedestrian-Cycle Network & Facilities Strategy

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Executive Summary

The $8.3 billion Sydney Metro Northwest is Australia's largest public transport infrastructure project currently under construction and a priority transport project for the NSW Government. It will be the first fully-automated metro system in Australia. The Sydney Metro Northwest will deliver, for the first time, a reliable public transport service to a region which has the highest car ownership levels per household in Australia. Over the coming decades, an extra 200,000 people are forecast to move into Sydney's North West Growth Centre, taking its population above 600,000.

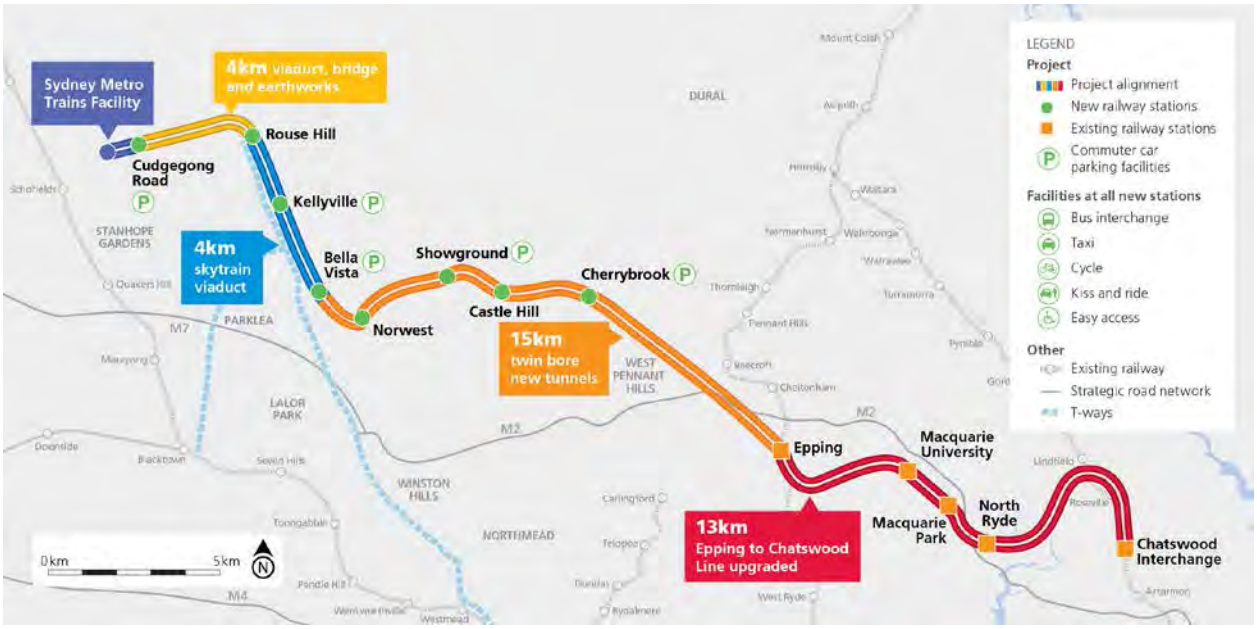

Figure 0.1 Sydney Metro Northwest Alignment

The project will deliver:

- Eight new railway stations and 4,000 commuter car parking spaces to Sydney's growing North West;
- 23 kilometres (km) of new metro line between Rouse Hill and Epping, including 15 km of tunnels and a 4 km skytrain viaduct;
- Conversion of the existing Epping to Chatswood railway to metro standards including new platform safety screen doors; and,
- A train every four minutes during peak periods, or 15 trains an hour. With metro there will be no need for a timetable as customers can turn up and go.

Sydney's new generation of fast, safe and reliable single deck trains will be rolled out on the Sydney Metro Northwest first, which is expected to open to customers in the first half of 2019. Figure 0.1 shows the entire Sydney Metro Northwest alignment including eight new stations as well as the existing stations from Epping to Chatswood.

The planning approval for Environmental Impact Statement Stage 2 (EIS 2) comprising Stations, Rail Infrastructure and Systems (SSI-5414) was approved by the Minister for Planning and Infrastructure under Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 8 May 2013.

As part of the Conditions of Approval for EIS 2, Transport for New South Wales (TfNSW) is responsible for complying with Condition C.10 in Planning Approval which states:

C10. A Pedestrian and Cyclist Network and Facilities Strategy shall be prepared in consultation with councils, RMS, Bicycle NSW and Bicycle North. The Strategy shall identify pedestrian and cycle paths and associated facilities that are to be provided as part of the SSI with the objective of providing seamless, coherent, visible and safe pedestrian and cycle access to, from and through stations. The Strategy shall consider:

a) *Existing and proposed local and regional pedestrian and cycle facilities and strategies;*

b) *Pedestrian and cycle access to and from stations, including local and regional pedestrian and bicycle connections through and around each station;*

c) *Demand for pedestrian and cycle facilities with consideration of encouraging an increased pedestrian and cycle mode share;*

d) *Pedestrian and cycle infrastructure and facilities at each station and access paths to, from and through stations, including the provision of separated cycle paths, particularly where paths form part of an existing cycle thoroughfare;*

e) *Safe, secure and weather protected bicycle storage at each station (including all three classes);*

f) *Signage and wayfinding along routes and at each station; and*

g) *The requirements of relevant design standards, including Austroads and NSW bicycle guidelines.*

The Proponent shall implement The Strategy and incorporate it into the Station Access Plan(s) (condition C5).[1]

The *Sydney Metro Northwest Pedestrian-Cycle Network & Facilities Strategy* is a direct response to condition C10 of Conditions of Approval for EIS 2.

Sydney Metro Northwest Pedestrian-Cycle Network & Facilities Strategy

TfNSW aims to make NSW a better place to live, do business and visit, by managing and shaping the future of the whole transport system. One of TfNSW's objectives is to plan for a transport system that meets the needs and expectations of the public including encouraging sustainable transport modes that support alternatives to car use. Apart from the legibility, connectivity, and amenity of pedestrian and cycling physical infrastructure (footpaths and cycleways), non-infrastructure initiatives are also critical to consider such as encouraging public to consider walking and/or cycling or supporting people to start, end or link their transport activities by walking or cycling through awareness programs and workshops.

The Long Term Transport Master Plan (*LTTP*) (TfNSW 2012) commits TfNSW to work to improve transport services through investment in new public transport, cycling and pedestrian infrastructure. Promoting sustainable travel to workplaces within North West Sydney and the provision of a network of accessible pedestrian and cycle paths to, from and through the eight new stations (Cherrybrook, Castle Hill, Showground, Norwest, Bella Vista, Kellyville, Rouse Hill and Cudgegong Road) are part of the overall philosophy inherent in TfNSW's approach to delivering effective public transport in the area.

[1] Conditions of Approval C10 for EIS Stage 2.from the link: https://majorprojects.affinitylive.com/public/1fed4ab76ed996c1c5073537b7e84ac2/115ZB%20Infrastructure%20Approval.pdf

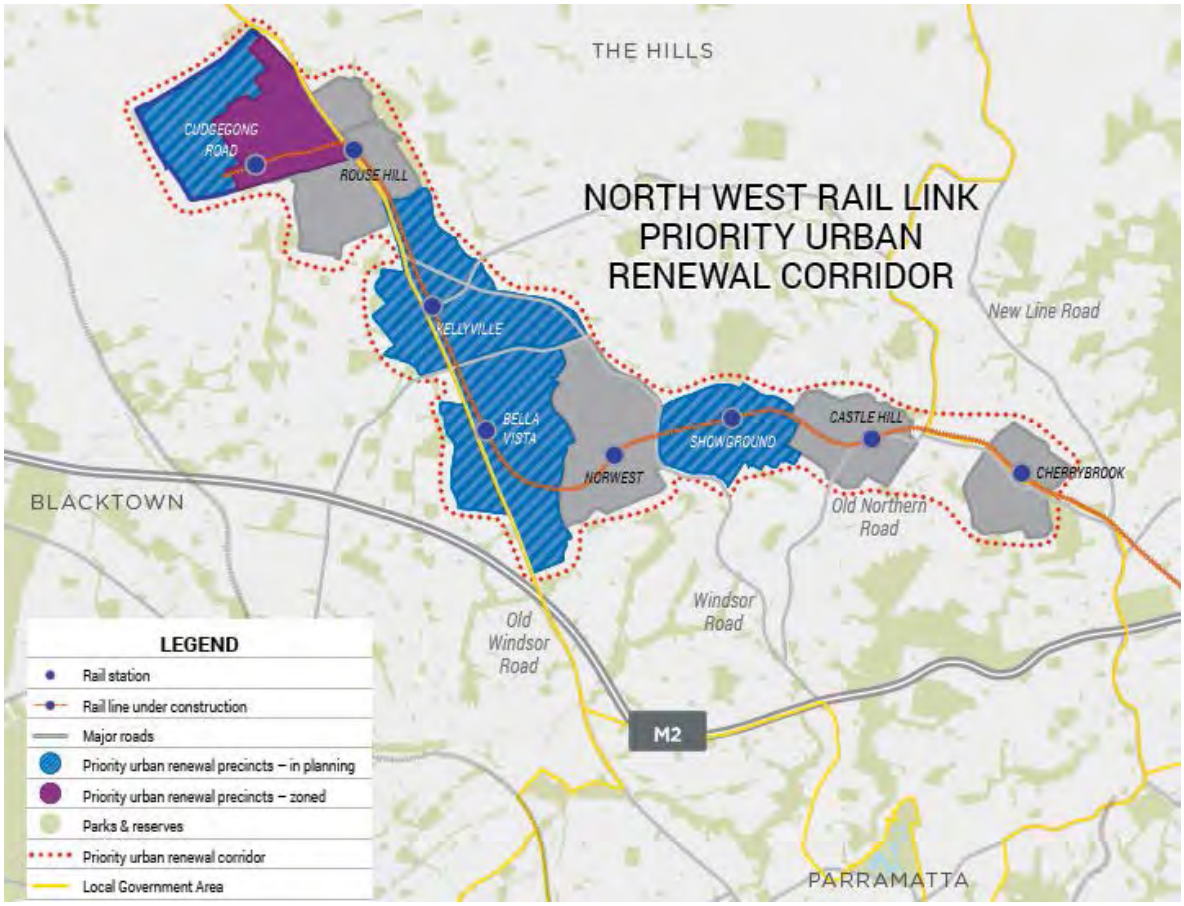

Figure 0.2 Sydney Metro Northwest's eight new stations with approximately 800 metres catchment around each station. Source: Department of Planning and Environment

Figure 0.2 shows the eight new stations along the alignment of Sydney Metro Northwest with the area surrounding each station as separate precincts roughly based on a radius of approximately 800 metres 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 figure also shows that the following station precincts have been endorsed by Department of Planning and Environment (DP&E) as priority urban renewal precincts:

- Cudgegong Road – Area 20 (priority urban renewal precincts zoned) and Riverstone East (priority urban renewal precincts in planning)
- Kellyville Station (priority urban renewal precincts in planning)
- Bella Vista (priority urban renewal precincts in planning)
- Showground (priority urban renewal precincts in planning)

The purpose of *The Sydney Metro Northwest Pedestrian-Cycle Network and Facilities Strategy* (*the Strategy)* is to assist TfNSW and the Sydney Metro Delivery Office in delivering on the stated transport hierarchy for the project, prioritising pedestrians and cyclists in the transport planning for the new stations as illustrated in Figure 0.3. It seeks to ensure appropriate planning from the precincts and wider network surrounding the stations. *The Strategy* explores and recommends opportunities to expand the walking and cycling catchments around the Sydney Metro Northwest stations which is explained in detail in section 4 to 11 of the report. This also responds to the requirements of the Sydney Metro Northwest Project Planning Approvals for EIS 2 Approved by the Minister of Planning on 8 May 2013. *The Strategy* has been developed in response to condition C10 of the EIS 2 approval.

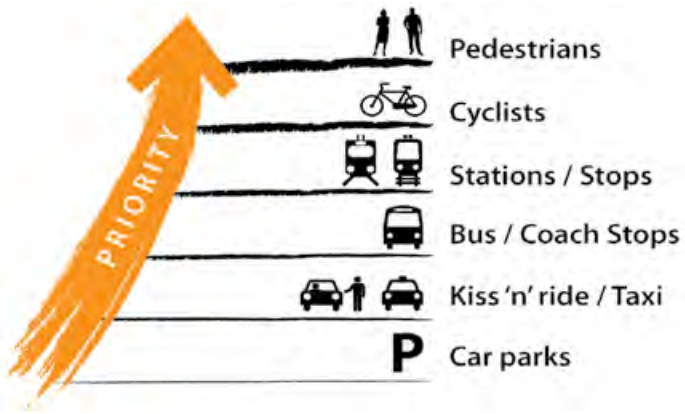

Figure 0.3 TfNSW's Hierarchy of Customer Access. Source: TfNSW

The Strategy has reviewed and considered the directions and recommendations of existing cycle, pedestrian and related strategies prepared for North West Sydney. It contemporises them within the framework of the planning approvals and structure planning work associated with Sydney Metro Northwest. New directions and recommendations as well as areas of investigation are also incorporated in response to changes to the region brought about by recent urban growth and infrastructure delivery.

It is noted that the pedestrian and cyclist facilities for the existing Epping to Chatswood Rail Link (ECRL) stations (Epping, Macquarie University, Macquarie Park, North Ryde and Chatswood) are being reviewed as part of *ECRL Multi Modal Study*, 2014 by AECOM. The objective of the study is to define upgrades to multimodal interchange facilities at the five ECRL stations as a result of the conversion and incorporation of ECRL into Sydney Metro Northwest line.

Aims and Objectives

The aim of *The Strategy* includes:

- Ensuring TfNSW meets the objectives for Sydney Metro Northwest to be effectively integrated into the existing communities;
- Consideration of the relationship of station precincts to the wider *North West Rail Link (NWRL) Corridor Strategy*;
- Ensuring effective consideration of related policies and programs by the State Government and councils; and,
- Providing recommendations to be considered in the:
    - Development of Station Access Plan(s) for the Sydney Metro Northwest;
    - Development of Priority Precinct Plans for Showground, Bella Vista and Kellyville;
    - Review of the council's *Development Control Plans (DCPs)* and masterplans, and,
- Review of existing Section 94 Contributions Plans and consideration of the recommendations of *The Strategy* in future Section 94 Contributions Plans, Voluntary Planning Agreements and other mechanisms for the planning and implementation of pedestrian - cycle infrastructure and services.

Approach

The approach taken in the development of *The Strategy* was to ensure that the facilities that TfNSW is delivering as part of the Sydney Metro Northwest consider and respond to the wider pedestrian and cycle network both current and planned. The approach taken has considered:

- Understanding the differing requirements of each end user type;
- Understanding the existing and proposed networks and network constraints;
- Ensuring a network and strategy that is fit for purpose with a focus on meeting users' requirements;
- Ability to be built and implemented with an understanding of potential responsibilities;
- Ensuring effective alignment with council and State Government policies; and,
- Managing stakeholders, perceptions and interfaces, both external and internal.

Key Findings

Table 0.1 Sydney Metro Northwest Pedestrian and Cycle Network and Facilities Strategy compliance against Condition C10 of EIS 2

Requirements of Condition C10	Fulfil Condition C10	Comment
Existing and proposed local and regional pedestrian and cycle facilities and strategies;	✓	Existing and proposed pedestrian- cycle provisions obtained from Roads and Maritime Services (RMS) and councils have been mapped in the station specific analysis sections of the report. Refer Sections 4-12. Councils and RMS have also been consulted for their proposed upgrades and future plans.
Pedestrian and cycle access to and from stations, including local and regional pedestrian and bicycle connections through and around each station;	✓	Pedestrian and cycle maps in the station specific section show the existing and proposed connections through and around the station precinct and the connection to the wider station catchment. Refer Sections 4-11.
Demand for pedestrian and cycle facilities with consideration of encouraging an increased pedestrian and cycle mode share	✓	Provision for an increase of 25% from the current Sydney-wide average (currently 1.6% of trips to an interchange). Refer 3.2.3 for detailed analysis.

Requirements of Condition C10	Fulfil Condition C10	Comment
Pedestrian and cycle infrastructure and facilities at each station and access paths to, from and through stations, including the provision of separated cycle paths, particularly where paths form part of an existing cycle thoroughfare;	✓	In general, the pathway typology specified in the *NWRL Operations Trains and Systems Deed (the Deed)* for the Sydney Metro Northwest station precincts comprises a mix of plaza spaces, footpaths, shared paths and on-road cycleways.
Safe, secure and weather protected bicycle storage at each station (including all three classes);	✓	Since the publication of the Conditions of Approval, TfNSW released its revised position on bicycle parking requirements, via the document *Sydney's Cycling Future 2013.* It outlines bicycle parking provisions to be provided as part of Sydney Metro Northwest to include secure access bicycle parking (Class 2 as defined under *Austroads* Standards) and under cover bicycle racks (Class 3 as defined under *Austroads* Standards). Refer Section 2.1.4 and 3.2.3.
Signage and wayfinding along routes and at each station	✓	Cycling and pedestrian paths at the stations will be indicated in the 'Local Area Map' based on the templates provided by TfNSW's Customer Experience Division per the Wayfinding Guideline. The signage and wayfinding along routes to the station will follow the relevant council's wayfinding guidelines. Refer Signage and Wayfinding in Section 2.1.5.
The requirements of relevant design standards, including Austroads and NSW bicycle guidelines	✓	*The Strategy* has considered the *Cycling Aspects of Austroads Guide, Austroads 2011* and *Austroads Guide to Road Design – part 6A.* Refer Section 2.5

Next Steps

As outlined in the Conditions of Approval for EIS 2, the Operations Trains and Systems (OTS) Contractor (Northwest Rapid Transit) will implement part of *The Strategy* which lies within the scope of the station precincts and incorporate it into the Station Access Plan(s). The requirements of Station Access Plan(s) are described in Condition C5 of the Conditions of Approval for EIS – 2 (SSI-5414) as follows:

The Proponent shall develop a Station Access Plan(s) to inform the final design of transport and access facilities and services, including footpaths, cycleways, passenger facilities, parking, traffic and road changes, and integration between current and proposed public domain and transport initiatives for each station. The Plan(s) shall consider, but not necessarily be limited to the area within defined and justified station walking and cycling catchments, and shall take into account:

a) a station access hierarchy consistent with the transport planning principles defined within the EIS;

b) safe, convenient and efficient access to stations and interchange between transport modes;

c) current levels of access and service for all modes and services;

d) the consideration of state and local transport initiatives and plans;

e) the identification of opportunities and constraints presented by existing and proposed transport and access infrastructure and services;

f) patronage changes resulting from land use, population, employment, transport infrastructure and service changes;

g) integration with existing and proposed transport infrastructure and services

h) pedestrian, cycle, bus, taxi, vehicle, and emergency vehicle access and parking, infrastructure and servicing requirements;

i) legislative requirements and applicable guidelines;

j) safety audits, including but not limited to a review of traffic facility and cycle changes to ensure compliance with Austroads' design criteria;

k) final design, infrastructure, management and service measures, and the level of access and service to be achieved for all users; and

l) operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

The Plan(s) shall be prepared in consultation with the Traffic and Transport Liaison Group (TTLG) required under condition C8 and shall be supported by traffic and transport analysis. Where necessary, consultation shall also be undertaken with major landholders adjoining station precincts. The Plans shall detail a delivery and implementation program and shall be provided to the Director General and made publicly available prior to construction, unless otherwise agreed by the Director General.[2]

In the coming months, the vision for the Priority Precincts will be confirmed and further detail developed, including detailed land use maps showing changes to zoning, new public spaces, pedestrian and cycle links, building heights, built form and an infrastructure schedule. This will include detailed consideration of the pedestrian and cycle networks and facilities as well as potential funding and delivery mechanisms.

[2] Conditions of Approval C5 for EIS Stage 2.from the link: https://majorprojects.affinitylive.com/public/1fed4ab76ed996c1c5073537b7e84ac2/115ZB%20Infrastructure%20Approval.pdf

Glossary

BCC	Blacktown City Council
CPTED	Crime Prevention Through Environmental Design
DCP	Development Control Plan provide detailed planning and design guidelines to support the planning controls in the LEP - Local Environmental Plan provides the basic planning objectives and development
DP&E	Department of Planning and Environment
ECRL	Epping to Chatswood Rail Link
HSC	Hornsby Shire Council
LMA	Licensed Maintenance Areas
LTTP	NSW Long Term Transport Master Plan
NRT	Northwest Rapid Transit, the OTS Contractor
NWRL	North West Rail Link. Since 4 June 2015, North West Rail Link / NWRL has been renamed *Sydney Metro Northwest.* All references in this document have been replaced accordingly with the new name except where 'North West Rail Link' or NWRL appear as part of the title of an existing policy or strategy document.
OTS	Operations Trains and Systems
PTPM	Public Transport Project Model
Priority Precincts	Formerly known as Urban Activation Precincts (UAP) is a NSW State Government initiative to deliver more homes in places with access to infrastructure, transport, services and jobs. On the Sydney Metro Northwest corridor, North Ryde station, Herring Road in Macquarie Park, Epping Town Centre, Showground, Bella Vista and Kellyville stations have been identified as Priority Precincts.
RMS	Roads and Maritime Services
SSI	State Significant Infrastructure, under Part 5.1 of the EP&A Act
Sydney Metro Northwest	Since 4 June 2015, North West Rail Link / NWRL has been renamed *Sydney Metro Northwest.* All references in this document have been replaced accordingly with the new name except where 'North West Rail Link' or NWRL are part of the title of an existing policy or strategy document.
TfNSW	Transport for NSW
The Deed	North West Rail Link Operations Trains and Systems Deed

The Strategy	Sydney Metro Northwest Pedestrian-Cycling Network and Facilities Strategy
TTLG	Traffic and Transport Liaison Group

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1. Introduction

TfNSW aims to make NSW a better place to live, do business and visit, by managing and shaping the future of the whole transport system. One of TfNSW's objectives is to plan for a transport system that meets the needs and expectations of the public including encouraging sustainable transport modes that support alternatives to car use. Apart from the legibility, connectivity, and amenity of pedestrian and cycling physical infrastructure (footpaths and cycleways), non-infrastructure initiatives are also critical to consider such as encouraging public to consider walking and/or cycling or supporting people to start, end or link their transport activities by walking or cycling through awareness programs and workshops.

The NSW Long Term Transport Master Plan (LTTP) (TfNSW 2012) commits TfNSW to work to improve transport services through investment in new public transport, cycling and pedestrian infrastructure. Promoting sustainable travel to workplaces within North West Sydney and the provision of a network of safe and accessible pedestrian and cycle paths to, from and through the eight new stations (Cherrybrook, Castle Hill, Showground, Norwest, Bella Vista, Kellyville, Rouse Hill and Cudgegong Road) are part of the overall philosophy inherent in TfNSW's approach to delivering effective public transport in the area.

The *Sydney Metro Northwest Pedestrian-Cycle Network and Facilities Strategy (The Strategy)* has reviewed and considered the directions and recommendations of existing cycle, pedestrian and related strategies prepared for the North West Region of Sydney and contemporised them within the framework of the planning approvals and structure planning work associated with the Sydney Metro Northwest. New directions and recommendations as well as areas of investigation are also incorporated in response to changes to the region brought about by recent urban growth and infrastructure delivery.

1.1 Purpose

The purpose of *The Strategy* is to assist TfNSW and the Sydney Metro Northwest delivery office in delivering on the stated transport hierarchy for the project, prioritising pedestrians and cyclists in the transport planning for the new stations as illustrated in Figure 1.1. It seeks to ensure appropriate planning from the precincts and wider network surrounding the stations.

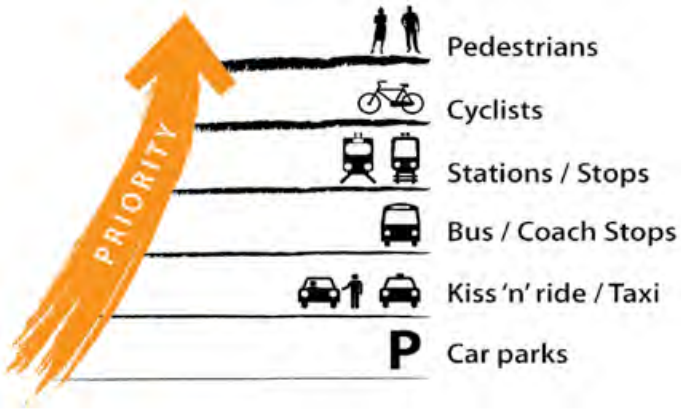

Figure 1.1 TfNSW's Hierarchy of Customer Access. Source: TfNSW

The Strategy sets high level strategic objectives and explores and recommends opportunities to expand the walking and cycling catchments around the Sydney Metro Northwest stations which is explained in detail in section 4 to 11 of the report. This also responds to the requirements of the NWRL Project Planning Approvals for EIS 2 (SSI-5414) approved by the Minister of Planning on 8 May 2013. *The Strategy* has been developed in response to condition C10 of the EIS 2 approval which states:

C10. A Pedestrian and Cyclist Network and Facilities Strategy shall be prepared in consultation with councils, RMS, Bicycle NSW and Bicycle North. The Strategy shall identify pedestrian and cycle paths and associated facilities that are to be provided as part of the SSI with the objective of providing seamless, coherent, visible and safe pedestrian and cycle access to, from and through stations. The Strategy shall consider:

a) Existing and proposed local and regional pedestrian and cycle facilities and strategies;

b) Pedestrian and cycle access to and from stations, including local and regional pedestrian and bicycle connections through and around each station;

c) Demand for pedestrian and cycle facilities with consideration of encouraging an increased pedestrian and cycle mode share;

d) Pedestrian and cycle infrastructure and facilities at each station and access paths to, from and through stations, including the provision of separated cycle paths, particularly where paths form part of an existing cycle thoroughfare;

e) Safe, secure and weather protected bicycle storage at each station (including all three classes);

f) Signage and wayfinding along routes and at each station; and

g) The requirements of relevant design standards, including Austroads and NSW bicycle guidelines.

The Proponent shall implement The Strategy and incorporate it into the Station Access Plan(s) (condition C5).

1.2 Aims and Objectives

The aim of *The Strategy* includes:

- Ensuring TfNSW meets the objectives for Sydney Metro Northwest to be effectively integrated into the existing communities;
- Consideration of the relationship between station precincts to the wider *NWRL Corridor Strategy*;
- Ensuring effective consideration of related policies and programs by the State Government and councils;
- Providing recommendations to be considered in the development of:
    - Station Access Plan(s) for the Sydney Metro Northwest;
    - *Priority Precinct* Plans for Showground, Bella Vista and Kellyville;
    - Review of Council DCPs and masterplans; and
    - Review of existing Section 94 Contributions Plans and consideration of the recommendations of this Strategy in future Section 94 Contributions Plans, Voluntary Planning Agreements and other mechanisms for the planning and implementation of pedestrian - cycle infrastructure and services.

1.3 Approach

The approach taken in the development of *The Strategy* was to ensure that the facilities that TfNSW is delivering as part of the Sydney Metro Northwest consider and respond to the wider pedestrian and cycle network, both current and planned. The approach taken has considered:

- Understanding the differing requirements of each end user type;
- Managing stakeholders, perceptions and interfaces, external and internal;
- Ensuring effective alignment with council and State Government policies;
- Understanding the existing and proposed networks and network constraints;
- Ensuring a network and strategy that is fit for purpose with a focus on meeting users requirements; and,
- Ability to be built and implemented with an understanding of potential responsibilities.

1.4 Methodology

The Strategy has evolved from the *North West Rail Link Reference Design* and the *Station Structure Plans* for each station developed as part of the *NWRL Corridor Strategy* by the Department of Planning & Environment (DP&E) covering approximately 800 metres walking catchment and 2.5 km cycling catchment around each station as shown in Figure 1.2. The pedestrian and cycling specific requirements for the station precincts as covered under *the Deed* have been used as a basis to develop *The Strategy*.

The relevant NSW Government policies and programs, local government active transport plans, master plans and *Development Control Plans (DCPs)* have been reviewed and mapped to align with the station precincts. Where relevant, recommendations have been made to improve active transport connections and complete the missing links and gaps in the pedestrian-cycle provisions in and around the station precincts. These recommendations are illustrated on pedestrian and cycle maps. *NSW Bicycle Guidelines* and *Austroads* requirements have been reviewed in the development of this strategy.

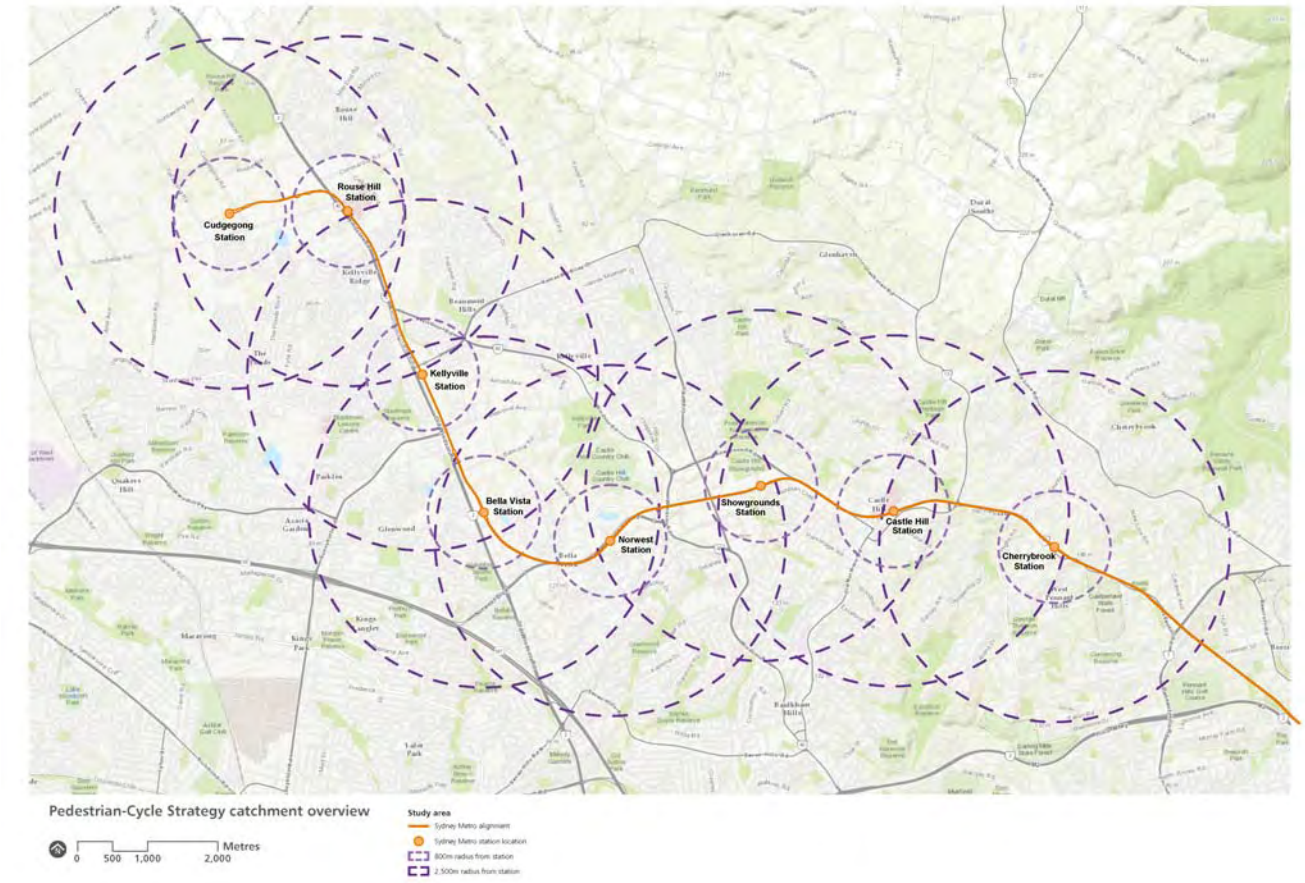

Figure 1.2 Sydney Metro Northwest Alignment showing 800m walking (inner circle) and 2.5km cycling catchment (outer circle)

The recommended pedestrian paths around the stations generally have widths ranging between 1.5 metres and 3 metres to provide improved accessibility for customers and cater for high pedestrian volumes. The relevant standards and guidelines for pedestrian paths have been referred in the report. In general, the pathway typology specified in *the Deed* for the Sydney Metro Northwest station precincts comprises a mix of plaza spaces, footpaths, shared paths and on-road cycleways.

Bicycle parking provisions specified in *the Deed* have been reviewed and validated against the current and proposed provisions at major transport interchanges across NSW. The total bicycle parking provisions across the eight new Sydney Metro Northwest stations are proposed at 2% of station access trips from within a cycle-able catchment as part of initial provisions (25% more than the current Sydney-wide average of 1.6% of trips to an interchange). The future goal is to accommodate a further 25% increase in cycling mode share trips which equates to 2.5% of future station access trips. It is intended that the station designs safeguard for increase in bicycle parking provisions. The forecast figures used for the calculating the provisions are based on Public Transport Project Model (*PTPM) version 2*. The detailed analysis for bicycle parking provisions is contained in section 3.2.3 of the report.

The Strategy identifies pedestrian and bicycle facilities for the eight new station precincts of Sydney Metro Northwest (from east to west) in the following sections of this report:

- Section 4.0 – Cherrybrook
- Section 5.0 – Castle Hill
- Section 6.0 – Showground

- Section 6.0 – Showground
- Section 7.0 – Norwest
- Section 8.0 – Bella Vista
- Section 9.0 – Kellyville
- Section 10.0 – Rouse Hill
- Section 11.0 – Cudgegong Road.

2. Baseline Review

2.1 NSW Government policies and programs

This section provides a short synopsis of relevant NSW Government policies and programs, and how these relate to *The Strategy*.

2.1.1 *NSW Long Term Transport Master Plan*

The *LTTP* provides a framework to address the state's transport challenges over the next 20 years. It supports the goals of NSW 2021 as the state's primary transport planning document.

The *LTTP* identifies the north-west corridor between Rouse Hill and Macquarie Park as one of Sydney's most constrained strategic transport corridors. In response, the Master Plan commits to the delivery of the Sydney Metro Northwest, a new single deck metro rail line from Cudgegong Road to Chatswood.

As part of its commitment to Sydney Metro Northwest, the *LTTPLTTP* identifies the need for pedestrian and bicycle facilities at all stations. The *LTTP* recognises:

- Walking as an important transport mode in our efforts to promote liveability around urban and regional precincts and affirms that it will be better integrated into the public transport network; and,
- That cycling represents both a transport mode and a recreational activity and recommends that new measures relating to cycling focus on safety (particularly around roads) and integration with public transport.

2.1.2 A Plan for Growing Sydney

A Plan for Growing Sydney (December 2014) provides a land use vision for the city over the next two decades. The Plan supports the goals of NSW 2021 as the state's primary land use planning document.

A Plan for Growing Sydney identifies the Sydney Metro Northwest Corridor as one of nine city shapers. The Sydney Metro Northwest Corridor is expected to deliver 25,000 new jobs by 2031 in Castle Hill (major centre), Norwest (specialised precinct) and Rouse Hill (major centre).

The Strategy responds to the priorities set out in *A Plan for Growing Sydney* for the Sydney Metro Northwest Corridor. Specifically, the actions and implementations laid out in Section 12.0 respond to the two following priorities in *A Plan for Growing Sydney*:

- 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; and,
- Create liveable centres around each new station that are well-designed with high quality public spaces and a range of community facilities.

2.1.3 *Sydney's Walking Future*

Sydney's Walking Future is a strategy released by TfNSW in December 2013 which focusses on walking as an active, sustainable and enjoyable transport mode, and encourages people to walk for transport, especially for trips under two kilometres. Of the seven million weekly journeys of less than two kilometres in metropolitan Sydney, more than 40 per cent are made by car. *Sydney's Walking Future* aims to make walking a more convenient, better connected and safer mode of transport. The plan supports the integration of walking into the transport system through three pillars of activity:

- *Promote* the benefits of walking and provide quality information to customers;

- *Connect* communities by delivering safe walking infrastructure and completing networks; and,
- *Engage* with partners across the NSW Government, with local government, non-government organisations and the private sector to develop initiatives and policies.

By investing in connected walking routes within two kilometres of centres and public transport interchanges, there will be greater opportunities for people to walk longer distances and help reduce congestion. *Sydney's Walking Future* commits to planning and delivering for walking within key transport projects and in corridor planning, such as Sydney Metro Northwest. Sections 4 to 11 of *The Strategy* identify missing links, existing barriers and issues and make subsequent recommendations for maximising walking opportunities in and around each of the eight new station precincts.

2.1.4 *Sydney's Cycling Future*

Sydney's Cycling Future is a strategy released by TfNSW in December 2013 which presents a new direction in the way for planning, prioritising and providing for cycling in Sydney. It supports the change in culture being seen in Sydney with more people choosing to ride a bicycle for transport. *Sydney's Cycling Future* has the overarching goal of making cycling a safe, convenient and enjoyable transport option for short trips. The same three pillars in *Sydney's Walking Future* have been identified to make cycling a feasible transport option;

- *Promote*: Better use of existing infrastructure
- *Connect*: Safe, connected networks
- *Engage*: Policy and partnerships

Sydney's Cycling Future has committed that future investment will aim for separation of bicycles, vehicles and pedestrians wherever possible. Shared paths for bicycle riders and pedestrians will only be used where there are no other options and will be carefully designed to minimise conflict. Appendix A comprises the *Business Requirements Specifications for Bicycle Parking Facilities Programme* prepared by TfNSW which outlines requirements of the Bicycle Parking Facilities Program. These requirements provide the parameter and background information which includes design, construction, operation and maintenance of the Secure Access Bike Cages and Bike Racks as well as the maintenance and operations of the Bicycle lockers.

The Connecting Centres Program aims to help councils complete local bicycle networks to major centres in metropolitan Sydney. Bicycle network plans within a five kilometre catchment of major centres (such as Castle Hill, Norwest and Rouse Hill) will be developed in consultation with councils. The Bicycle and Ride initiative aims to improve bicycle parking and information at public transport interchanges. The provision of bicycle parking at transport interchanges makes cycling a more attractive access option for customers travelling to stations. New interchanges being built as part of the Sydney Metro Northwest will include secure access bicycle parking and racks at all stations.

Condition C10 of EIS 2 indicates that *The Strategy* should consider the 'safe, secure and weather protected bicycle storage at each station (including all three classes)'. Since the publication of the Conditions of Approval, TfNSW released its new position on bicycle parking requirements, via the document *Sydney's Cycling Future,* which outlines that new interchanges being built as part of the Sydney Metro Northwest will include two classes of bicycle parking at all stations; secure access bicycle parking and racks (Class 2 and 3 parking as defined under Austroads Standards). Further detail is provided in Sections 4 to 11 of this *Strategy*.

2.1.5 Signage and Wayfinding

TfNSW is delivering a new integrated approach to wayfinding and signage across the transport network in NSW as part of the Wayfinding Program. This wayfinding strategy and signing guidelines established by TfNSW will

also be incorporated at Sydney Metro Northwest stations to maintain visual consistency across the transport network.

Cycling and pedestrian paths at the stations will be indicated in the 'Local Area Map' based on the templates provided by TfNSW's Customer Experience Division per the *Wayfinding Guideline*. The signage and wayfinding along routes to the station will follow the relevant council's wayfinding guidelines. Refer Figure 2.1 for a prototype of a Local Area Map currently used across the Transport network. Figure 2.2 shows an example of signage used for regional routes for NSW cycle network indicating cycling distance to destinations in kilometres.

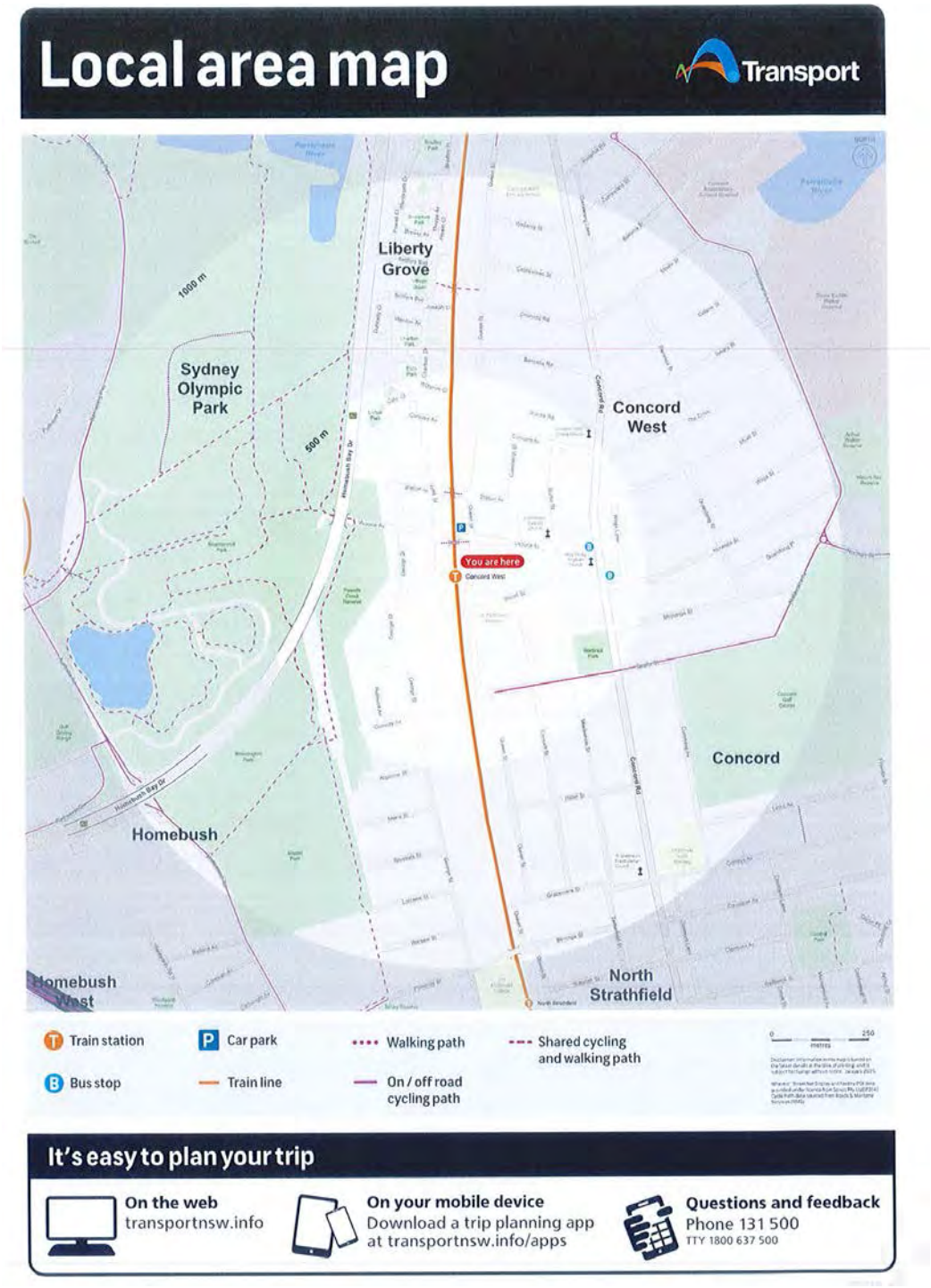

Figure 2.1 Sample Local Area Map for Concord West showing walking paths, cross-track subways to/around Bicentennial park, shared paths and cycle only paths. Source: TfNSW

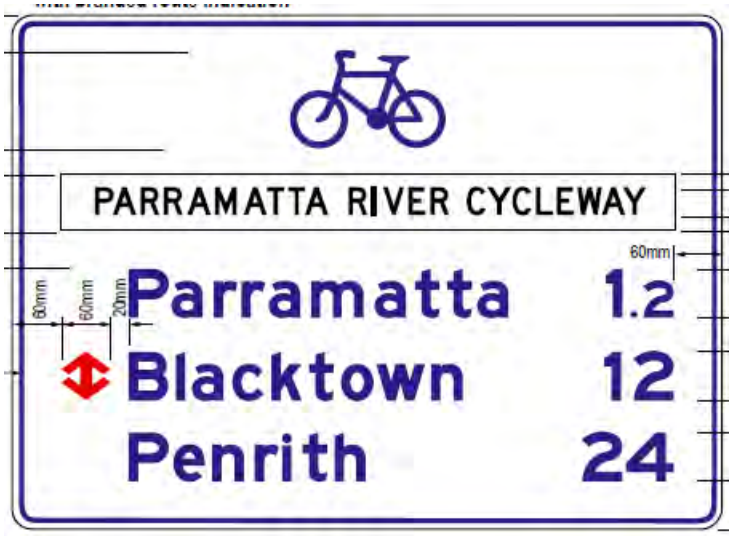

Figure 2.2 Regional Route signage for NSW cycle networks

2.2 Sydney Metro Northwest Documentation and Strategies

This section provides a short synopsis of relevant Sydney Metro Northwest documentation and strategies and how these have influenced *The Strategy*.

2.2.1 Environmental Impact Statement 2

Two Environmental Impact Statements (EIS) for the NWRL have been approved by the Minister for Planning and Infrastructure. Environmental Impact Statements Stage 2 (EIS 2) examines:

- Station designs, railway operating systems and project operations;
- Skytrain design and architectural aspects;
- Rail infrastructure; and,
- Station precincts, access roads and transport interchanges including bicycle facilities, bus stops, taxi ranks, kiss and ride and park and ride facilities.

EIS 2 received planning approval from DP&E on 8 May 2013. One of the conditions of approval requires a Pedestrian and Cyclist Network and Facilities Strategy (condition C10) to be developed. This *Strategy* is a direct response to this condition.

2.2.2 *NWRL Corridor Strategy*

The *NWRL Corridor Strategy* (the Corridor Strategy) is a 25 year plan to guide development of the eight station precincts shown in Figure 2.3. As part of the Corridor Strategy, draft structure plans for the eight station precincts allow for up to 28,800 dwellings and 49,500 jobs by 2036. The *Station Structure Plans* focus on an 800 metre radius around each station where the delivery of pedestrian and cycle connections are particularly important.

The *NWRL Corridor Strategy* has informed *The Strategy* on:

- Vision for the study area;
- Analysis of existing physical characteristics;
- Analysis of existing urban character and planning controls;

- Potential future land use and urban character and opportunities for growth and,
- Implementation actions and recommendations.

2.2.3 Active Transport Strategy

The *Active Transport Strategy (April 2012)* has informed the *NWRL Reference Design* as outlined in EIS 2. To ensure effective consideration of pedestrian and cycle networks around the eight station precincts, the Sydney Metro Northwest Delivery Office developed an Active Transport Strategy early in the design process. The Active Transport Strategy made recommendations to promote walking and cycling access to the station precincts. These recommendations have been reviewed and incorporated into *The Strategy* where appropriate.

2.3 Local Government active transport policies and programs

A review of existing and proposed cycleways within Blacktown City Council (BCC), Hornsby Shire Council (HSC) and The Hills Shire Council has been undertaken to identify additional infrastructure to provide links to Station Precincts (Figure 2.4 to Figure 2.6 and Appendix B for detailed maps).

2.3.1 Blacktown City Council Bicycle Plan

Existing cycling infrastructure in the vicinity of Sydney Metro Northwest within the Blacktown LGA is currently limited due to the semi-rural nature of the area. However, new links have been delivered as part of urban developments such as The Ponds. Blacktown City Council's (BCC) Bicycle Plan shows a number of proposed developer funded cycleways in the vicinity of Cudgegong Road Station and providing access to the stations along Old Windsor Road (Rouse Hill, Kellyville & Bella Vista). Schofields Road has been classified as an arterial road under the care and control of RMS.

During the briefing session for *The Strategy* on 24 April 2015 with the Blacktown City Council (BCC), BCC advised their general preference for off-road cycle facilities (separated or shared paths) over on-road cycleways with approximately 98% of cycleways within the Blacktown LGA being off-road cycle facilities. Where on-road cycleways are provided, these are generally restricted to inner local streets which carry low traffic volumes. Further investigation such as speed, pedestrian activity and other traffic conditions need to be considered when determining feasibility for on-road cycleways along inner suburban roads.

2.3.2 The Hills Shire Council Bicycle Plan

Existing cycling infrastructure is provided in the vicinity of the Sydney Metro Northwest within The Hills Shire Council area. These routes have been included on the station precinct maps found in Sections 4 to 11. Section 2.6 outlines feedback regarding Council bicycle plans that was captured during stakeholder engagement in February 2014.

At the briefing on 28 April 2015 with The Hills Shire Council, feedback was received on the recommendations for pedestrians and cycling improvements in sections 4 to 11. Where the infrastructure is either already proposed or planned to be delivered, the Implementation Plan in Section 12 has been updated to reflect that.

2.3.3 Hornsby Shire Council Bicycle Plan

Existing cycling infrastructure is provided in the vicinity of the Sydney Metro Northwest within Hornsby Shire Council (HSC). These routes have been included on the station precinct maps found in Section 4.

At the briefing on 30 April 2015 with the HSC, feedback was received on the recommendations for pedestrians and cycling improvements in Section 4. Where the infrastructure is either already proposed or planned to be delivered, the Implementation Plan in Section 12 has been updated to reflect that.

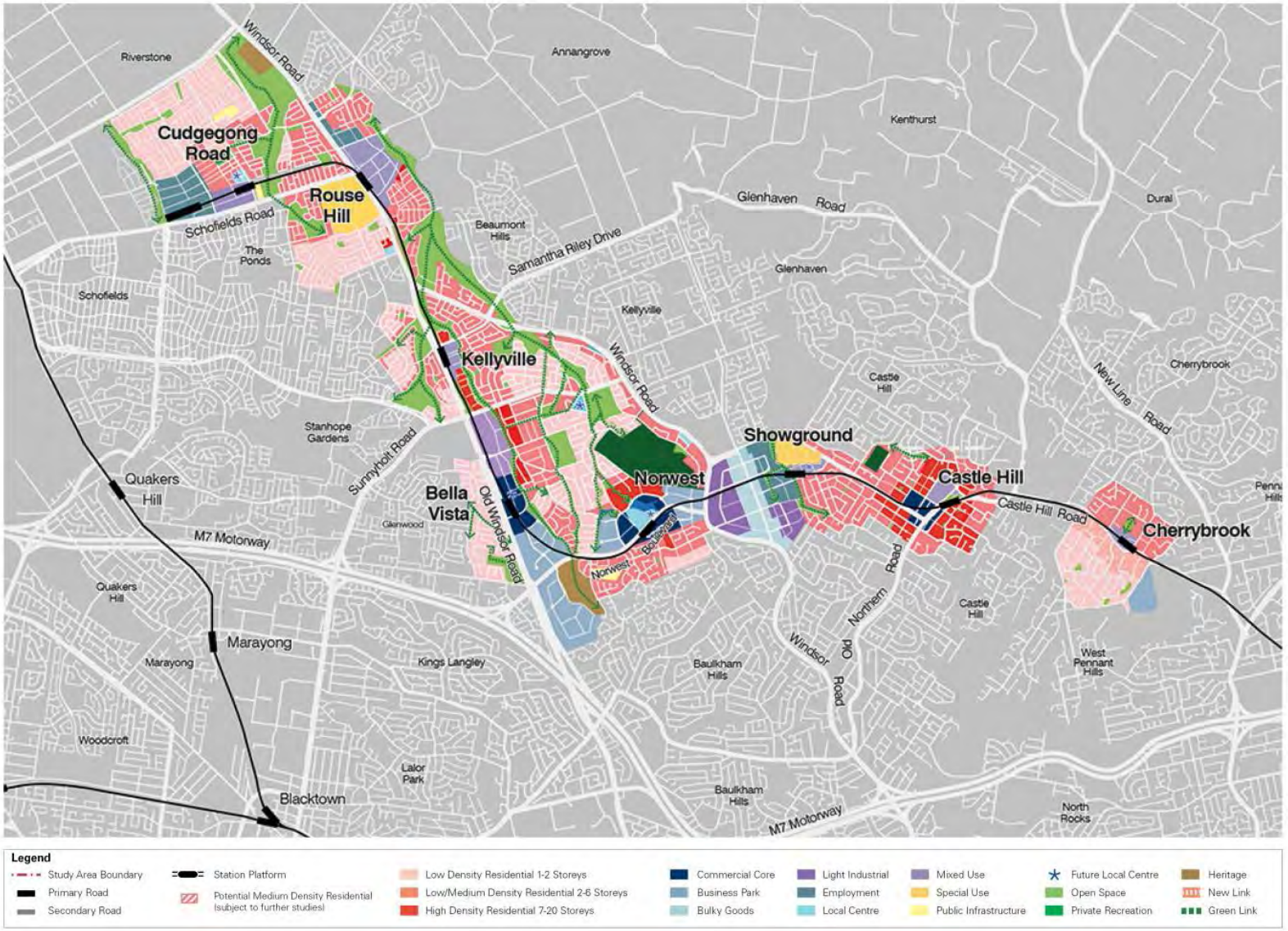

Figure 2.3 *NWRL Corridor Strategy* Plan. Source: TfNSW and DP&E, 2013

Figure 2.4 Blacktown City Council Bicycle Plan 2013 - existing and future proposed routes. Source: Blacktown City Council, 2013

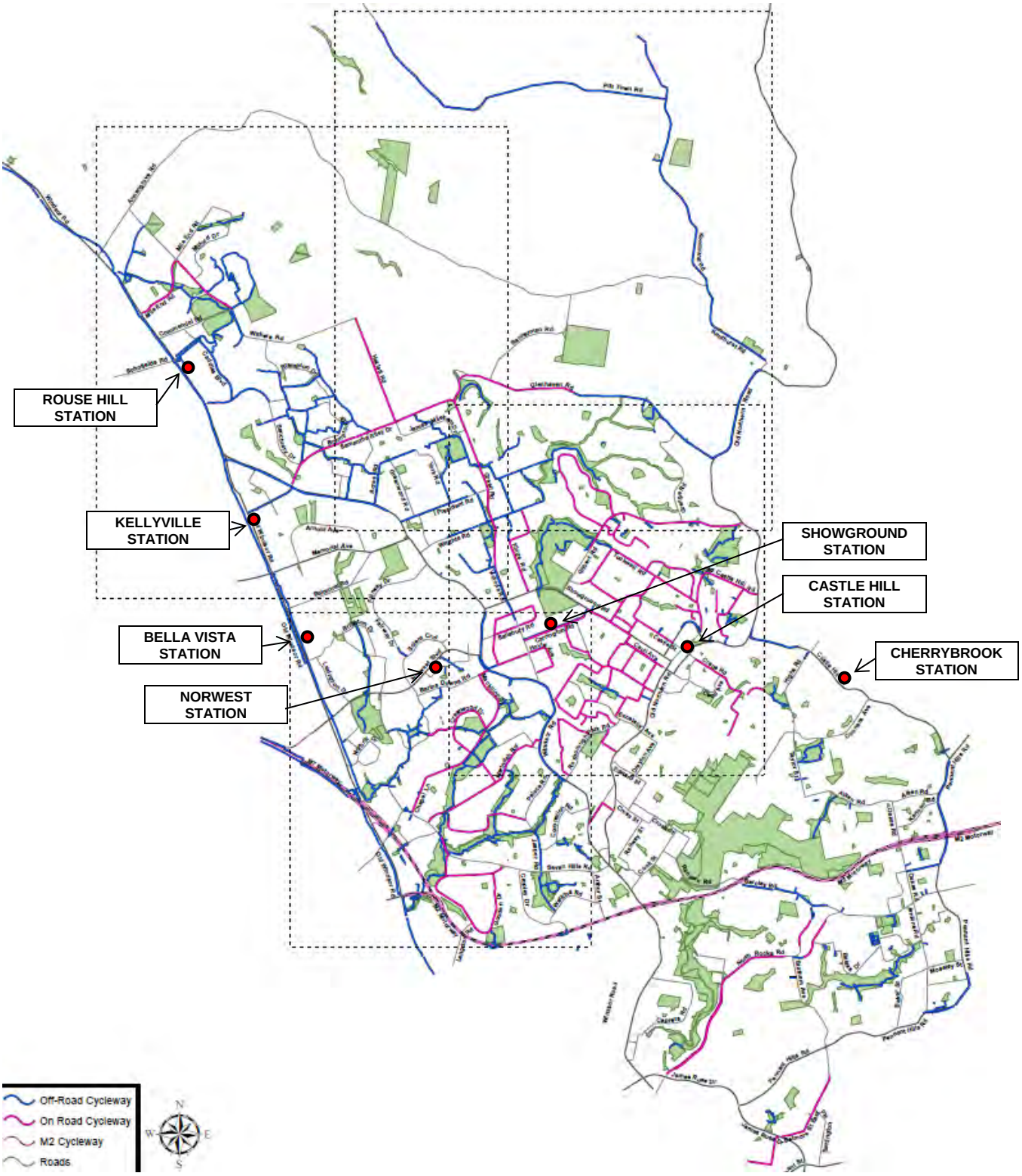

Figure 2.5 The Hills Shire Council Bike Plan. Source: The Hills Shire Council, 2013. Refer Appendix B for a detailed Bike Plan for The Hills Shire.

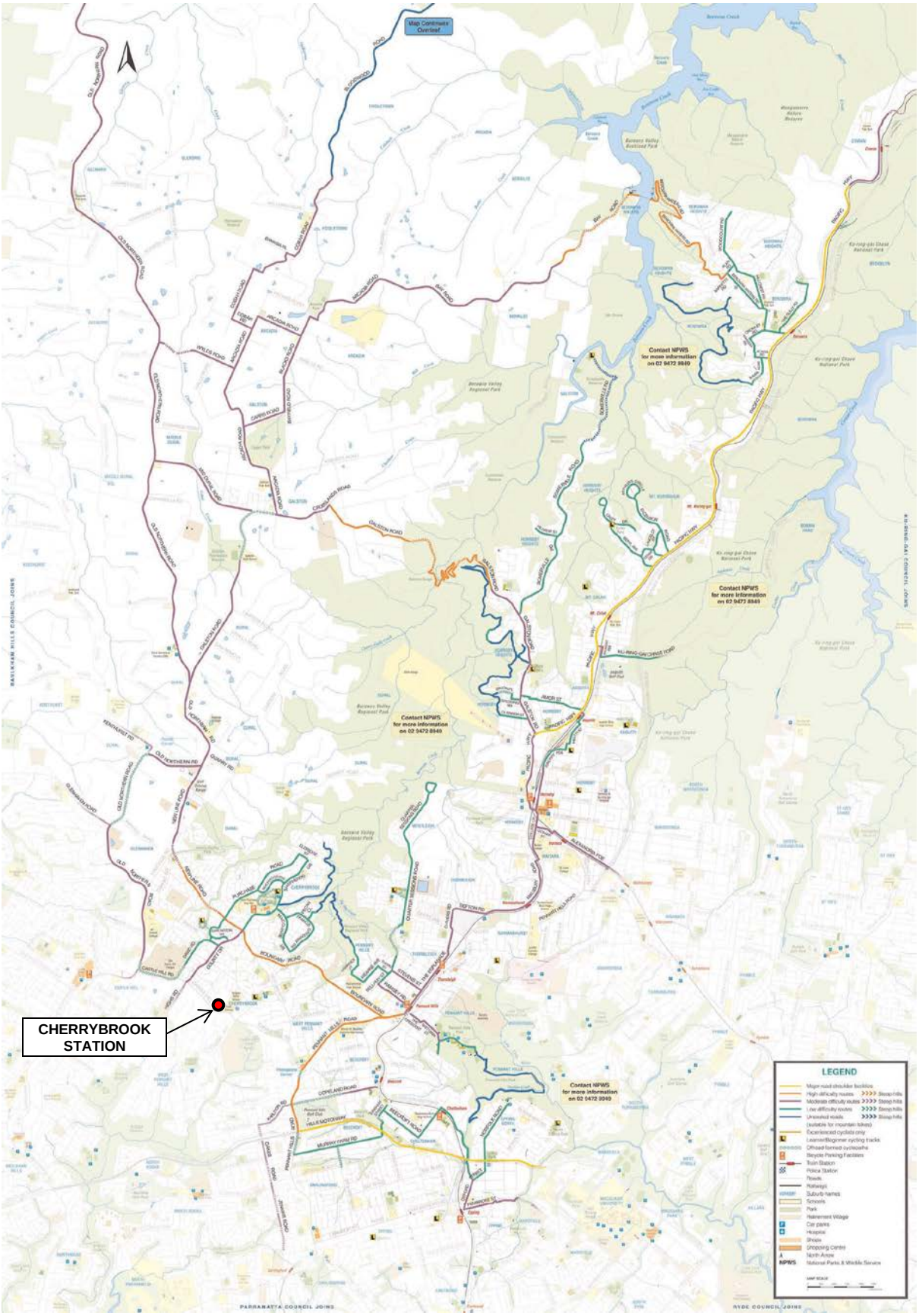

Figure 2.6 Hornsby Shire Council Bicycle Plan

2.4 Master Plans and Development Control Plans

A review of the latest Master Plans and Development Control Plans (DCPs) for release areas in the vicinity of Station Precincts has been undertaken to determine opportunities for pedestrian and cycling infrastructure. Note that there are no release areas in the vicinity of Cherrybrook Station at the time of writing this report.

2.4.1 The Hills Shire Council

Balmoral Road Release Area (2012)

Sydney Metro Northwest Station/s in proximity: Kellyville, Bella Vista, Norwest
Balmoral Road Release Area is located in close proximity to Kellyville Station, Bella Vista Station and Norwest Station. The DCP shows cycle links along Fairway Drive which creates opportunities to provide links to Norwest Station (refer Figure 2.7). The current DCP for the Hills predated the current plans for the Sydney Metro Northwest including revised station locations and as such should be reviewed in the context of the approved station and station precinct plans along with Priority Precinct Plans for Bella Vista and Kellyville to provide cycle links to Bella Vista and Kellyville stations.

Caddies Creek Master Plan

Sydney Metro Northwest Station/s in proximity: Rouse Hill, Kellyville
Caddies Creek is located within the Rouse Hill Development Area and is in close proximity to Kellyville Station and Rouse Hill Station. The access and infrastructure plan from the draft *Caddies Creek Landscape Master Plan Report* (Sydney Water, 2013) proposes a number of cycleways within the site, providing opportunities to establish links to Kellyville Station and Rouse Hill Station (refer Figure 2.8).

Rouse Hill Town Centre Green Travel Plan

Sydney Metro Northwest Station/s in proximity: Rouse Hill Station
The Rouse Hill Town centre has a green travel plan prepared to encourage active transport within the town centre. The following map is an extract from the green travel plan identifying the pedestrian and cycle network as well as the existing bicycle racks and lockers (refer Figure 2.9 and Figure 2.10).

Other Relevant DCPs

The other relevant DCPs in The Hills Shire which are in close proximity to Sydney Metro Northwest station precincts are as follows:

- Terminus Street Precinct, Castle Hill;
- Rouse Hill Regional Centre;
- Pennant Street Target Site, Castle Hill;
- Kellyville Rouse Hill Release Area;
- Norwest Residential Precinct; and,
- Crane Road Precinct, Castle Hill.

A review of The Hills Shire Council's relevant Section 94 Contribution Plans shows the following:

- Upgrade capacity at Samantha Riley Drive and Windsor Road intersection and cycleway construction
- Eversham Court Reserve - park embellishment including site preparation, design, planting, turf laying, concrete paths, picnic shelter, play facilities, retaining wall, drainage and earthworks. Eversham Court Reserve provides an important link between residential areas in the south and Brookhollow Avenue connecting to Norwest Station.

- Old Northern Road between Showground Rd and Castle Street which is the Castle Hill Mainstreet Precinct includes footpath widening to accommodate alfresco dining and plantings, provision of some parallel parking bays and multi-function smart poles providing lighting, signage, traffic signals and banners. It is noted that the *Draft Amendments to the Hills DCP Part C Section 1* was under exhibition till 26 June 2015. The amendments specified no parking provision for outdoor dining areas and a reduced rate (equivalent to the rate for restaurants in existing commercial buildings) for restaurants within the precinct. It is aimed at encouraging restaurants and outdoor dining in the Mainstreet Precinct, and is consistent with Council's strategic direction to facilitate vibrant and active centres.

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Figure 2.7 Balmoral Road Release Area - The Hills DCP (2012)

Location Plan

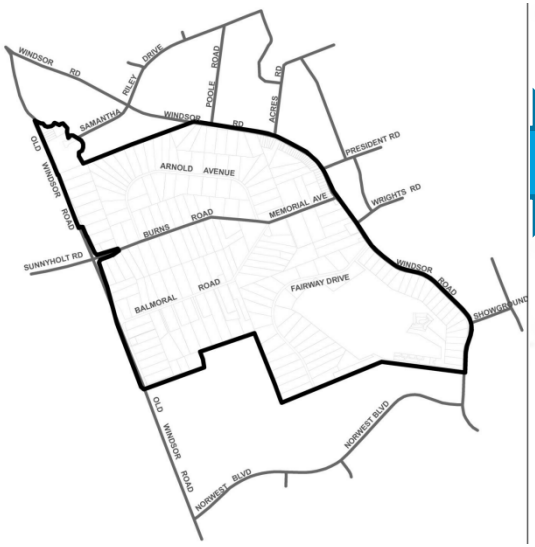


Figure 2.8 Caddies Creek Access and Infrastructure Plan. Source: Draft Caddies Creek Landscape Master Plan Report, 2013

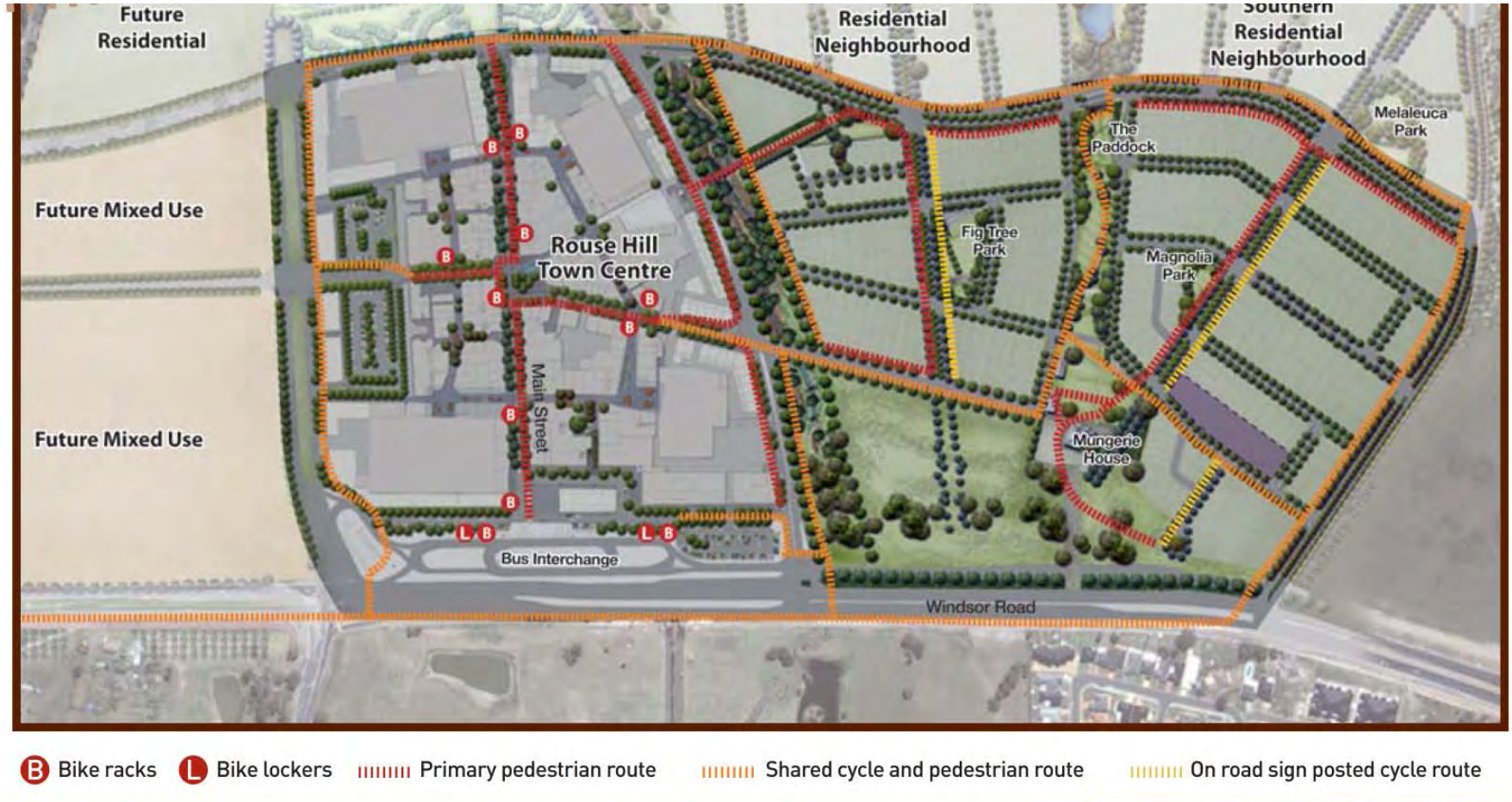


Figure 2.9 Pedestrian Cycle network of Rouse Hill Town Centre. Source: http://www.rhtc.com.au/

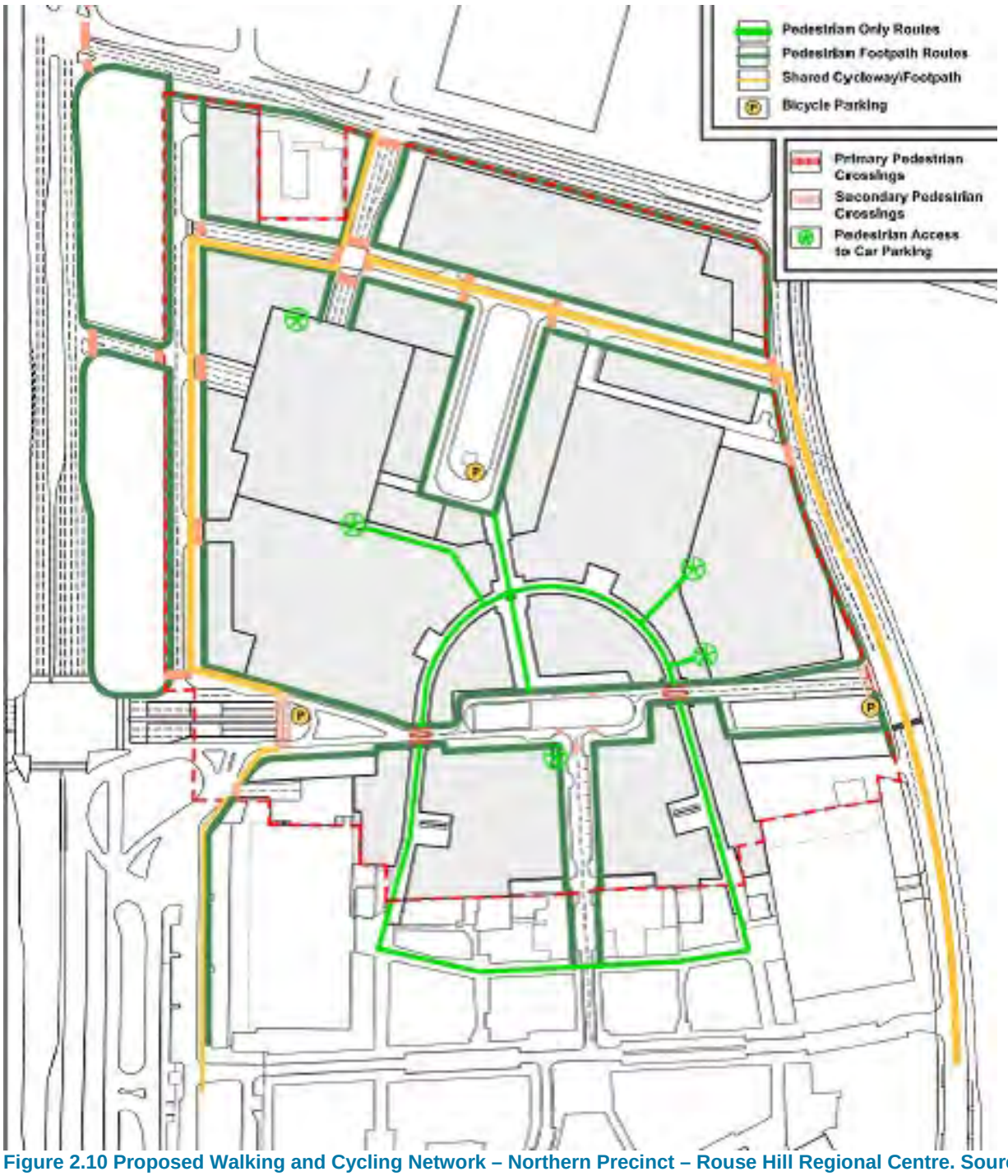


Figure 2.10 Proposed Walking and Cycling Network – Northern Precinct – Rouse Hill Regional Centre. Source: Civitas 2011

2.4.2 Blacktown City Council

Second Ponds Creek

Sydney Metro Northwest Station/s in proximity: Cudgegong Station
The Second Ponds Creek development is a precinct located to the south of Schofields Road, and west of Windsor Road. The area is governed by Part M of the Blacktown DCP (2006) and includes a pedestrian and cycle network plan for residents to be provided with easy and safe access to the main open space, and other public amenity features of the area. The main links through the Second Ponds Creek precinct, suggested in the Blacktown DCP Part M, are identified in Figure 2.11. These connections have been considered and included in the recommendations for pedestrian and cycling links for Cudgegong Road station and surrounds.

Blacktown Growth Centres DCP (Area 20)

Sydney Metro Northwest Station/s in proximity: Cudgegong Road Station and Rouse Hill Station.
Area 20 precinct is located within the North West Growth Centre bounded by Schofields Road to the south, Windsor Road to the east and the ridge line to the west. The precinct is located opposite Rouse Hill Town Centre. Opportunities exist to integrate the pedestrian and cycle network proposed in Area 20 with Cudgegong Road Station and Rouse Hill Station. A number of pedestrian and cycle connections within Area 20 are proposed in the *Blacktown City Council Growth Centre Precincts Development Control Plan 2010* providing links to Cudgegong Road Station, as shown on Figure 2.12.

Section 94 Contributions Plan No.22 – Area 20 Precinct dated 5 June 2013 outlines Blacktown City Council's policy regarding the application of Section 94 (S.94) of the EP&A Act in relation to the provision of local infrastructure and baseline facilities within the Area 20 Precinct. Within the Area 20 Precinct, S.94 contributions are levied for various amenities and services including

- Water Cycle Management Facilities;
- Traffic & Transport Management Facilities;
- Open Space and Recreation Facilities; and
- Community Facilities (land only) & Combined Precinct Facilities.

A review of the *Section 94 Contributions Plan No.22 – Area 20 Precinct* was undertaken against the recommendations made in *The Strategy* which demonstrated that the footpaths and cycleways have been included in most of the open spaces and recreation facilities in the precinct. The details of the path typology (whether shared/separated path or on-road) have not been developed yet. The BCC's Bicycle Plan 2013 indicates proposed developer funded cycleways on Tallawong Road, Cudgegong Road, Terry Road and Rouse Road.

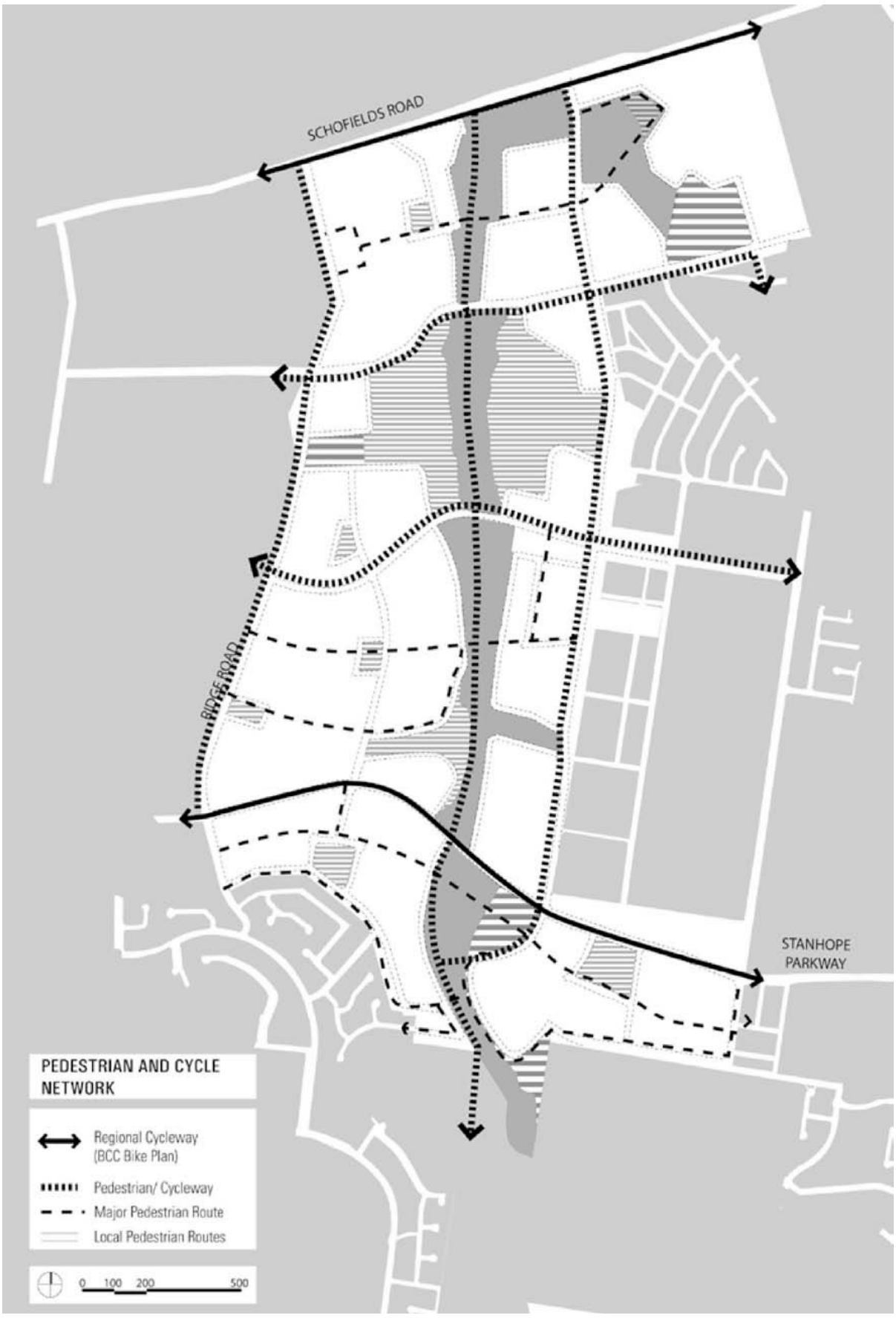


Figure 2.11 Pedestrian and cycle network of the Second Ponds Creek precinct (Blacktown DCP – Part M, 2006)

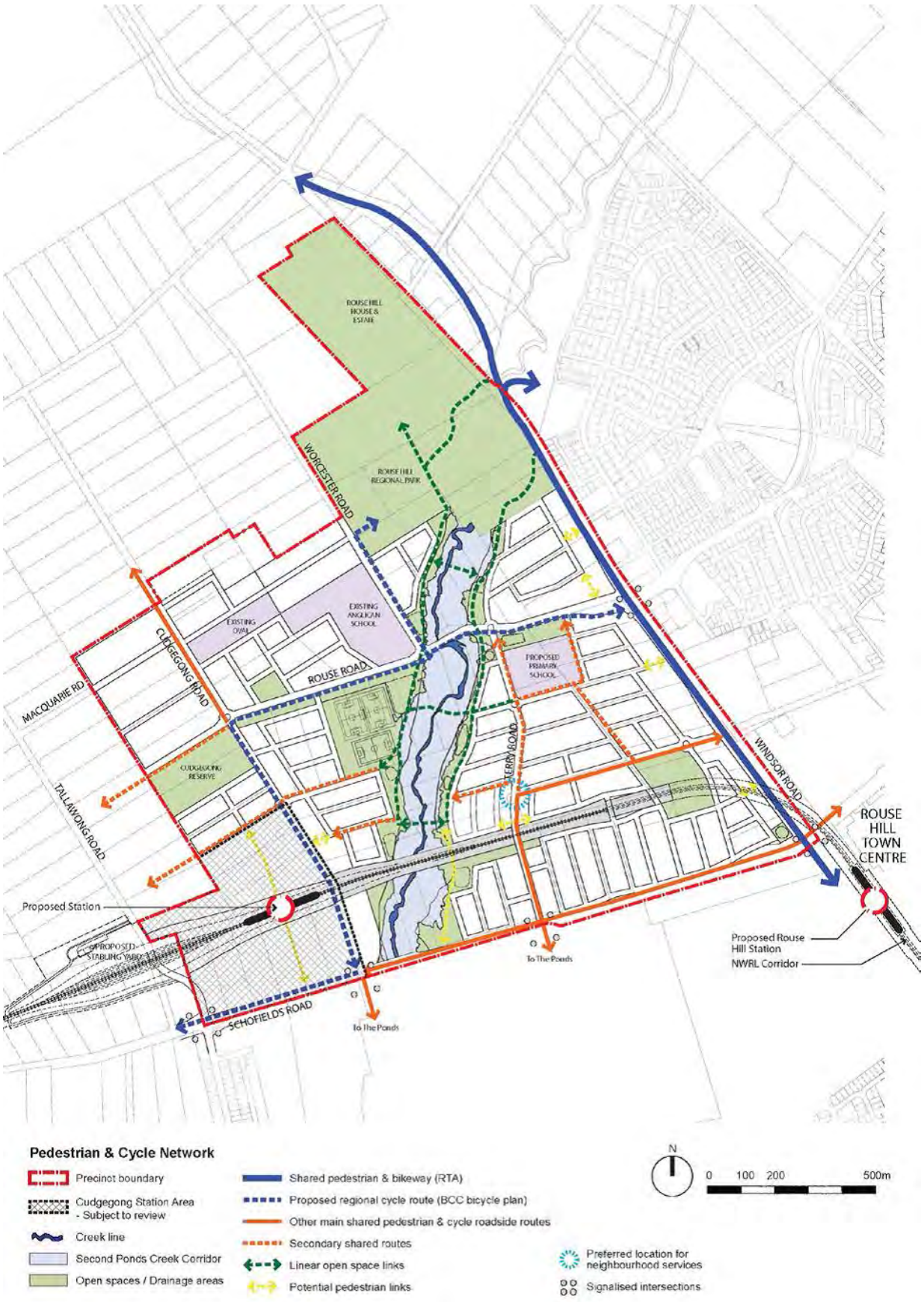


Figure 2.12 Proposed Area 20 pedestrian and cycle network

2.5 Standards and guidelines

The following standards and guidelines have been reviewed in the development of *The Strategy*:

2.5.1 *Cycling facility*

The *Roads Act 1993* provides the basis for the creation of cycling facilities on most NSW roads. The Act states that bicycles are allowed on all roads, unless specifically prohibited. Generally, these prohibited locations are limited to portions of motorways or highways, such as the Bradfield Highway across the Sydney Harbour Bridge. In these, instances alternative off road cycling facilities are provided for cyclists.

Sydney's Cycling Future 2014

The *Sydney's Cycling Future* prescribes a hierarchy of safe cycleways that should be built to major centres, which will help to identify and prioritise key projects. This hierarchy is broken in to three general types as follows:

- Regional bicycle corridors – highly used routes that connect to major destinations, on cycleways that are separate from motor vehicles and pedestrians;
- Local bicycle network – lower use corridors that connect to priority corridors and neighbourhood destinations within catchments; and
- Quiet local streets – connecting residential destinations and local services in low traffic environments, design treatments make provision for people on bikes.

Sydney's major employment centres attract many people travelling a short distance to reach their destination. Investing in connected bike routes that are within five kilometres of major centres and public transport interchanges will help to increase bike riding for short trips.

As cycling becomes more popular, the type, function and location of infrastructure built will be determined by customers' requirements. Future investment will aim for separation of bikes, vehicles and pedestrians wherever possible. Shared paths for bike riders and pedestrians will only be used where there are no other options and will be carefully designed to minimise conflict. Figure 2.13 provides the recommended hierarchy of safe cycling facility based on customer preference.

Figure 2.13 Infrastructure to match customer needs. Source: Sydney's Cycling Future, 2013

NSW Bicycle Guidelines, RMS 2005

The *NSW Bicycle Guidelines* provide guidance on how bicycle network facilities should be developed as part of the wider NSW transportation network. Selection of the appropriate path type treatment depends on a combination of factors. The guidelines also provide a guide to determining when a separate facility is required or when bicycles operating in mixed traffic conditions may be acceptable. It also outlines the fundamental principles and issues relating to bicycle network provisions.

Figure 2.14 provides guidance on the selection of separated or mixed facilities. The relationship between the prevailing traffic speed and volume is an important factor in the decision to provide physically separated facilities, mixed profile or something in between.[3]

[3] NSW Bicycle Guidelines, July 2005

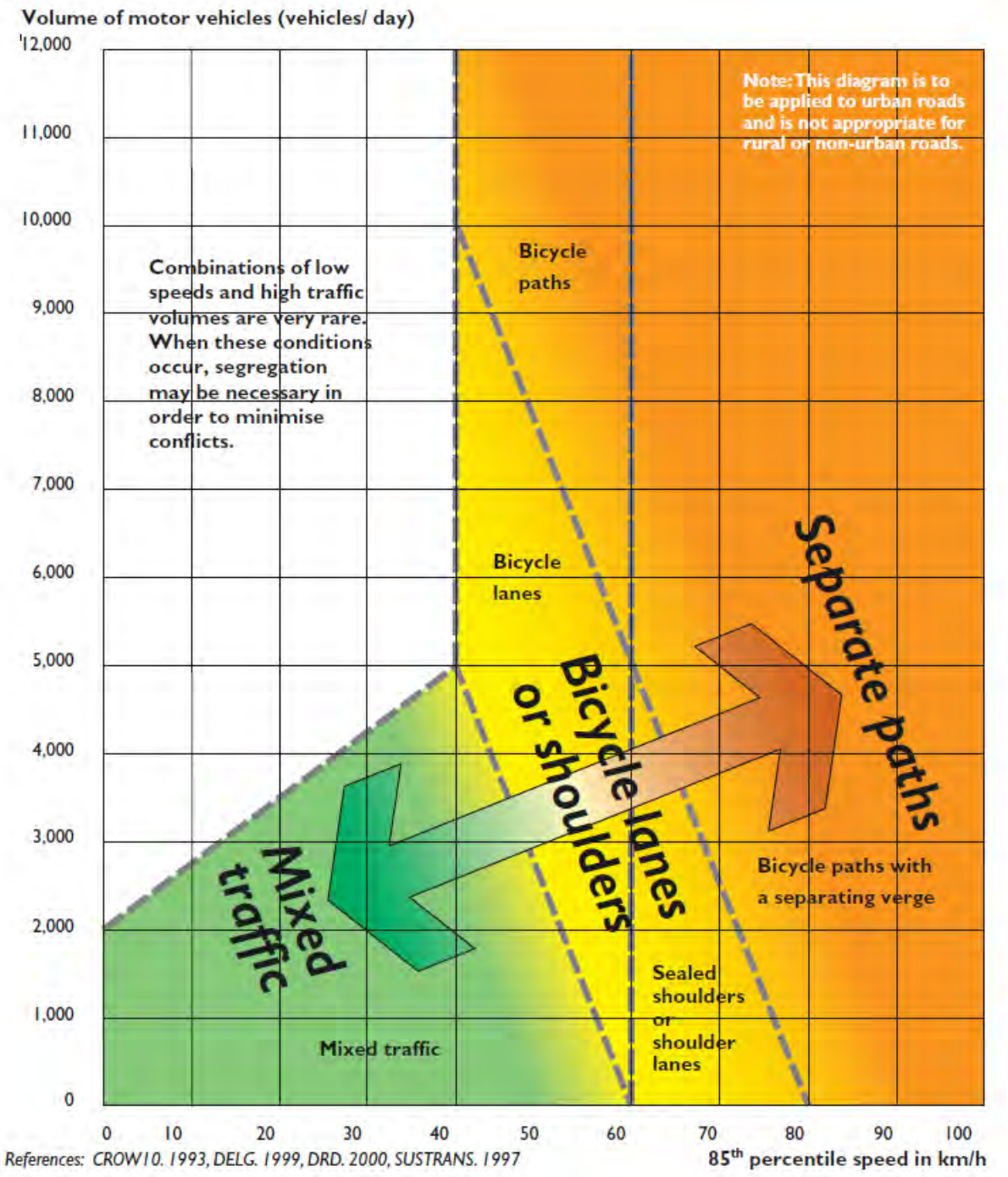
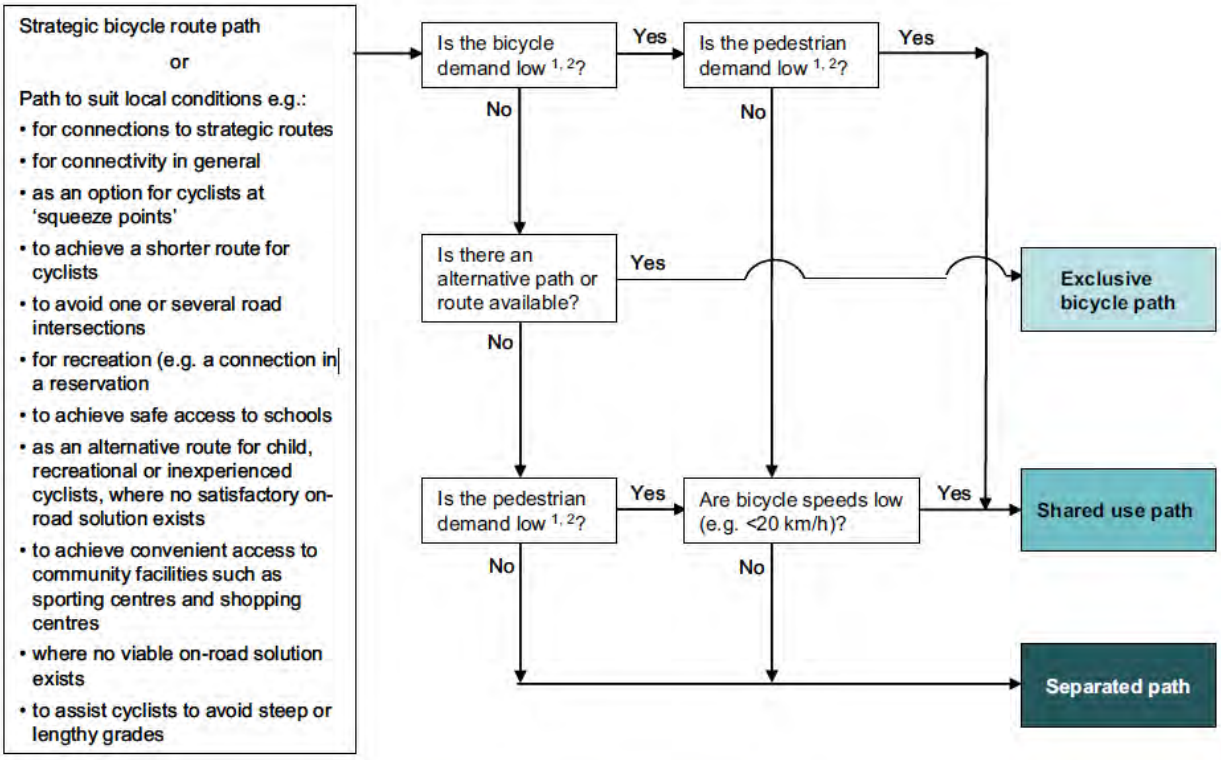


Figure 2.14 Separation of bicycles and motor vehicles according to traffic speed and volume. Source: NSW Bicycle Guidelines, July 2005

Austroads Guide to Road Design - Part 6A: Pedestrian and Cyclist Paths

The *Austroads Guide to Road Design* provides a basic guide to determining the appropriate type of path treatment required considering the primary factors as shown in Figure 2.15. It is expected that prior to this flowchart being applied a decision would have been taken as to whether an on-road lane or an off-road path, or both, are required. There may be other issues, constraints and practices that may also have a bearing on the decision making process. The demand for pedestrians and cyclists are required to be understood to determine the appropriate facility type and width requirements



Notes:

1. The level of demand can be assessed generally on the basis of the peak periods of a typical day as follows:

a. Low demand: Infrequent use of path (say less than 10 users per hour)

b. High demand: Regular use in b.oth directions of travel (say more than 50 users per hour).

2. These path volumes are suggested in order to limit the incidence of conflict between users, and are significantly lower than the capacity of the principal path types.

Source: Austroads (1999)

Figure 2.15 Guide to the choice of path treatment for cyclists

Austroads Guide to Road Design provides guidance on safe and efficient path design for pedestrians and cyclists. The Guide provides a detailed set of design requirements for footpaths. Table 2.1 to Table 2.4 summarise the footpath width and cycle path requirements based on the adopted path type.

Figure 2.16 shows a typical bicycle path outside a road reserve in areas such as parks, drainage easements or reserves. This provides a separated, exclusive operating space for riders on off-road areas suitable for regional and local bicycle network routes.

Figure 2.17 shows a typical bicycle path in a road reserve shared (with pedestrians) operating space for riders in road related areas suitable for regional and local bicycle network routes.

Table 2.1 Pedestrian footpath width requirements. Source: Table 6.1, Width requirements for footpaths, *Austroads Guide*, Austroads, 2011

Situation	Desired width (m)	Comments
General low demand	Preferred >/= 1.5m. Absolute minimum=1.2m	General minimum is 1.2 m for most roads and streets. Clear width required for one wheelchair. Not adequate for commercial or shopping environments.
High pedestrian volumes	2.4 m (or higher based on demand)	Generally commercial and shopping areas.
For wheelchairs to pass	1.8 to 1.5 (desired minimum)	Allow for two wheelchairs to pass (1.8 m comfortable, 1.5 m minimum) Narrower width (1.2 m) can be tolerated for short distances.

Table 2.2 Cycle path width. Source: *Austroads Guides*, Austroads, 2011

	Path width (metres)	
	Local Access Path	Major Path
Desirable minimum width	2.5	3.0
Minimum width – typical maximum	2.5[1] – 3.0[2]	2.5[1] – 4.0[2]

Notes: 1. A lesser width should only to be adopted where cyclist volumes and operational speeds will remain low.

2. A greater width may be required where the number of cyclists is very high.

Table 2.3 Shared path widths. Source: *Austroads Guides*, Austroads, 2011

	Path width (m)		
	Local access path	Commuter path	Recreational path
Desirable minimum width	2.5	3.0	3.5
Minimum width – typical maximum	2.5[1] -3.0[2]	2.5[1] -4.0[2]	3.0[1]-4.0[2]

Notes: 1. A lesser width should only to be adopted where cyclist volumes and operational speeds will remain low.

2. A greater width may be required where the number of cyclists and pedestrians are very or there is a high probability of conflict between users (e.g. people walking dogs, roller bladers and skaters)

Table 2.4 Separated two-way path widths. Source: *Austroads Guides*, Austroads, 2011

	Path width (m)		
	Bicycle path	Footpath	Total
Desirable minimum width	2.5	2.0	4.5
Minimum width – typical maximum	2.0 -3.0	>/=1.5	>/=4.5

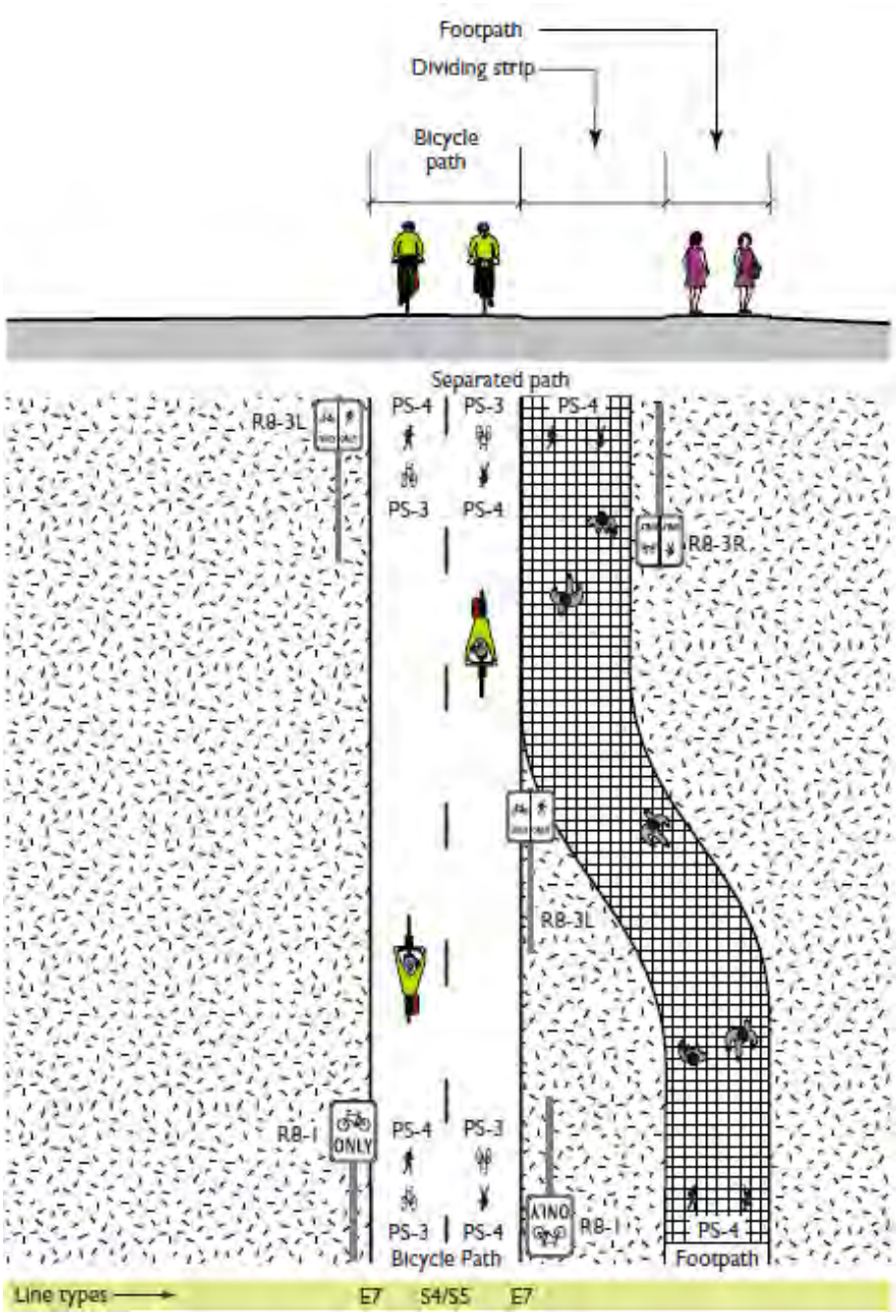


Figure 2.16 Bicycle path (not in a road reserve). Source: *NSW Bicycle Guidelines*, 2005

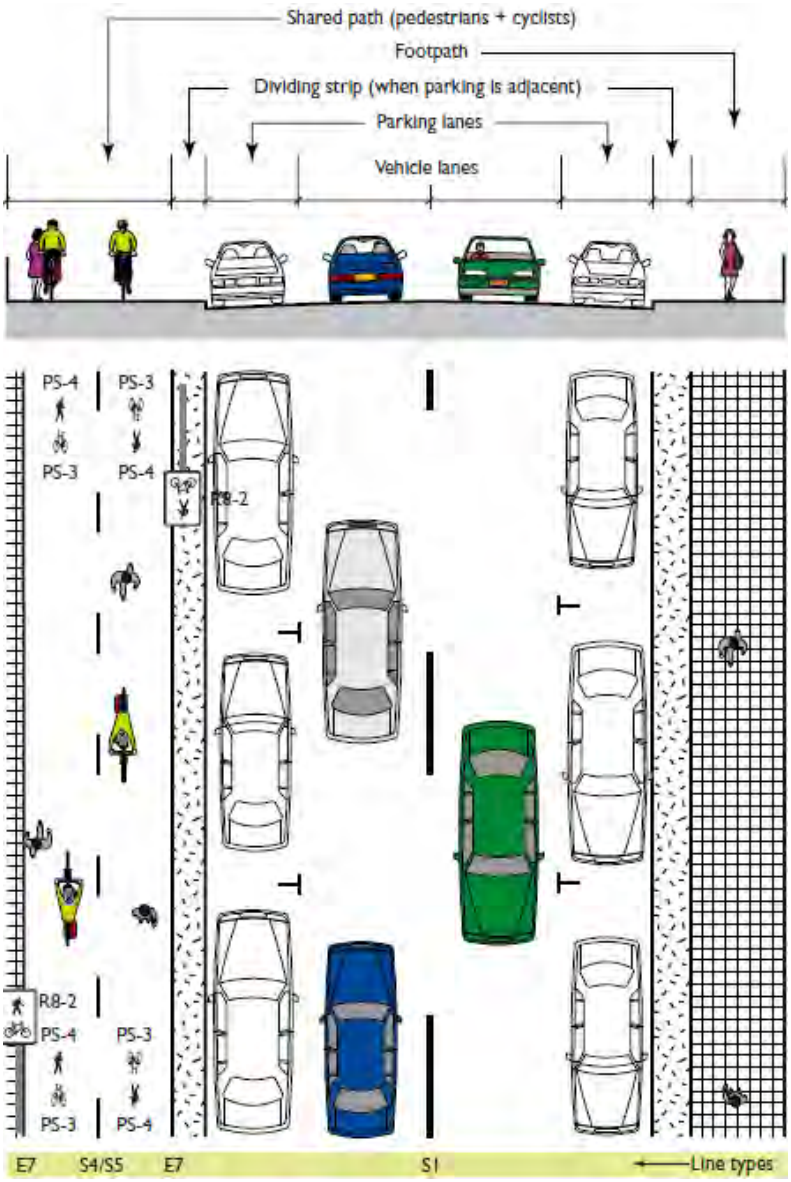


Figure 2.17 Shared path (in a road reserve). Source: *NSW Bicycle Guidelines*, 2005

Topography

Austroads standards call out the requirements of AS 1428.1 – 2001 for the appropriate slopes for footpaths. 1:33 (3%) gradient for footpaths with rest areas every 25 metres and 1:20 (5%) gradient for footpaths with rest areas every 15 metres. Footpaths with gradients steeper than 1:20 (5%) are to be considered as ramps for design purposes.

Austroad standards recommend 3% as the desirable maximum gradient for use on cycle paths. In cases where 3% cannot be achieved consideration should be given to limiting gradient to a maximum of about 5% and providing short flatter sections (say 20 m long) at regular intervals to give cyclists travelling both uphill and downhill some relief from the gradient. Gradients steeper than 5% should not be provided unless it is unavoidable.

2.5.2 Bicycle Parking

Sydney's Cycling Future 2014

The document outlines bicycle parking provisions to be provided as part of the Sydney Metro Northwest development which includes secure access bicycle parking (Class 2 as defined under *Austroads* Standards) and under cover bicycle racks (Class 3 as defined under *Austroads* Standards). It also proposes improvement of the local bicycle network to the interchanges.

These are consistent with the requirements of *the Deed* Appendix 8 for NWRL which specifies the following in Section 2.8 - Bicycle parking:

2.8.1 Bicycle parking lock-ups - class 2 *(a) Bicycle parking lock-up areas must:* *(i) be integrated with Station or service building built form where possible;* *(ii) have a black polyester TGIC powder coated galvanised steel framing structure;* *(iii) have woven stainless steel mesh wall panelling with a maximum aperture of 25mm x 50mm;* *(iv) have adequate stiffness support for the woven mesh type to minimise deformation;* *(v) have a full weather protection roofing system detailed and coloured to integrate with the Station architecture;* *(vi) include a key lock system; and* *(vii) have minimal signage attached to the lock-up structure.*	*2.8.2 Bicycle parking rails – class 3* *(a) Bicycle parking rails must:* *(i) be stainless steel with a satin finish;* *(ii) be a simple half circle or similar shape;* *(iii) have concealed footings and fixings;* *(iv) accommodate storage of two bicycles, and* *(v) have protection from weather.*

Sydney's Cycling Future makes clear that the existing bicycle locker program will continue to be offered at less heavily patronised interchanges across the rest of the network, depending on customer demand. Further on, the document outlines the network-wide approach for the proposed access arrangements for secure access bicycle parking facilities. It is intended that customers will be able to use the new facilities by registering for an access card or their Opal card in the longer term. It is noted that *the Deed* requires a key lock system for access to the secure access bicycle parking. Furthermore, *Sydney's Cycling Future* is focused on providing solutions that provide safe separation from motor vehicles and pedestrians wherever possible.

Cycling Aspects of Austroads Guide, Austroads 2011

This Guide provides information that relates to the planning, design and traffic management of cycling facilities. The purpose of a bicycle network is to enable cyclists to move safely and conveniently. Safety, coherence, directness, attractiveness and comfort are features that have been considered in forming an efficient bicycle network for the station precincts. The document also classifies bicycle parking facilities into three categories as shown in Table 2.5.

Table 2.5 Classification of bicycle parking facilities

Class	Security level	Description	Duration of parking	Main user type
1	High	Fully enclosed individual locker	All day and night	Bicycle and ride commuters at railway and bus stations
2	Medium	Lockable enclosure, shelter or compound fitted with class 3 facilities where cyclists are responsible for locking their bicycle within the communal enclosure	All day	Regular employees, students, regular bicycle and ride commuters
3	Low	Bicycle rails or racks to which both the bicycle frame and wheels can be locked	Short to medium term	Shoppers, visitors, employees of workplaces where security supervision of the facility is provided.

Source: Table F1, Cycling Aspects of Austroads Guides, Austroads, 2011

Parking facilities – Part 3: Bicycle parking facilities, AS 2890.3 – 1993

This standard sets out the requirements for the layout, design and security of bicycle parking facilities. Bicycle parking facilities should be located as close as possible to the main pedestrian access points to buildings, workplaces, and public transport stations to encourage cyclists to use the parking facilities whilst ensuring that they do not hinder pedestrian movements.

2.6 Stakeholder Engagement

This section outlines stakeholder engagement undertaken thus far, which has provided the context and input into *The Strategy*. The stakeholder engagement undertaken in the preparation of this strategy included a range of internal Sydney Metro Northwest project stakeholders, government agencies, and local government and bicycle groups. The stakeholder inputs also included a review of the public submissions to EIS 2 for the project with a focus on the pedestrian, cycle and access issues raised.

A workshop was held on 18 February 2014 for the councils, Bicycle North and Bicycle NSW at The Hills Shire Council offices where the preliminary maps were presented and the additional considerations raised. The workshop had representation from the following organizations:

- The Hills Shire Council;
- Blacktown City Council;
- AECOM;
- Bicycle North and Bicycle NSW; and,
- Sydney Metro Northwest.

This workshop was attended by officers from Blacktown City Council and The Hills Shire Council as well as officers from the Sydney Metro Northwest Delivery Office. The Hornsby Shire Council representative was not present.

A separate meeting was also held on 18 February 2014 with the RMS and TfNSW stakeholders to understand their longer term strategic planning for pedestrian and cycle infrastructure. This identified relevant policies and programs which were reviewed as part of this strategy. The meeting had representation from the following organizations and divisions:

- Active and Regional Transport Planning, Planning division, TfNSW;
- Roads and Maritime Services;
- AECOM; and,
- Sydney Metro Northwest.

Separate briefings outlining *The Strategy* were held from April to May 2015 for the following stakeholders:

- Blacktown City Council on 24 April 2015
- The Hills Shire Council on 28 April 2015
- Hornsby Shire Council on 30 April 2015
- Bicycle North and Bicycle NSW on 4 May 2015
- RMS on 6 May 2015

The Strategy has since been updated based on the formal feedback received from the above-mentioned stakeholders. Appendix C includes the stakeholder consultation register comprising all the feedback and comments from the stakeholders consulted along with the responses from Sydney Metro Northwest.

2.7 Customer considerations

Customers are at the centre of everything we do at TfNSW. Customer needs were closely considered in the identification of the actions, timing and prioritisation. Table 2.6 provides a brief overview of the types of users affected by the cyclepedestrian network around the stations and identification of some of the factors for consideration in relation to each user type.

Table 2.6 User types and factors for consideration

	Type	Factors for consideration
Businesses	Local employees	Access to local businesses via local cycle/pedestrian networks Safety of pedestrians and cyclists on/near roads CPTED requirements considered during planning and design
	Developers	Wayfinding signage needed for residents to access local pedestrian and cycle networks surrounding developments Need for developers to provide easily accessible pedestrian and cycle network Safety of pedestrians and cyclists on/near roads CPTED requirements considered during planning and design
	Schools	Access required to and from schools, ensuring safety for students on foot and on bicycles Need for appropriate signage for pedestrians, cyclists and cars/buses to ensure student safety
Community Users	School students	Need for coherent, accessible and safe routes to schools for students walking and cycling
	Elderly	Safe and accessible pedestrian networks for elderly customers, particularly noting

		appropriate gradients
	Customer with special needs or disabilities	Safe and accessible routes for these customers, particularly noting appropriate gradients
	Commuters	Need for safe and seamless connections for commuters from trains to other transport modes into and out of stations, particularly during peak hours
	Drivers	Pedestrian and cyclist network to be designed to account for driver needs, including visibility, safety and prevention of conflicts between active and motorised modes of transport
	Parents with prams	Safe and accessible pedestrian networks for parents with prams, particularly noting appropriate gradients
	Recreational users	Need for route continuation through stations for recreational users of the pedestrian and cyclist network, to be able to continue into and out of the station
	Cyclists	Consideration of facilities that suit cyclists of all levels, and for electric scooters

2.8 Planning and Development Future

The Structure Plan for *NWRL Corridor Strategy* forecasts significant growth within the corridor with a prediction of an additional 28,800 dwellings and 49,500 jobs by 2036. The Structure Plan sets the baseline assumptions for this growth. However, the delivery of this change will take many paths. Development within the corridor will be coordinated by a range of State Government agencies, local governments, developers or single lot redevelopment via private landowners.

Some of the mechanisms currently being considered include the following:

2.8.1 Priority Precincts

Priority Precincts are important areas that the NSW Department of Planning and Environment considers as having a wider social, economic or environmental significance for the community, or redevelopment significance of a scale that is important to implementing the State's planning objectives. Three of the eight new Sydney Metro Northwest station precincts located within largely greenfield areas have been announced in the Priority Precincts program in August 2014 - namely: Kellyville, Showground and Bella Vista. Development of these precincts are currently at the stage of detailed planning investigations, master planning and development facilitation in partnership with local government as well as other agencies and service providers. In the coming months, the vision for the precincts will be confirmed and further detail developed, including detailed land use maps showing changes to zoning, new public spaces, pedestrian and cycle links, building heights, built form and an infrastructure schedule. This will include detailed consideration of the pedestrian and cycle networks and facilities as well as potential funding and delivery mechanisms.

2.8.2 Growth Infrastructure Plans

Land use and transport planning are important considerations. Growth Infrastructure Plans (GIPs) will ensure that State infrastructure is delivered to support growth in each community. The new proposed planning system for NSW will put in place GIP to identify and fund infrastructure at locations anticipating significant development change. These will be applied where there are either Priority Precincts or Sub Regional Strategies.

The GIP is coordinated with the aim of bringing state infrastructure agencies together to ensure the right infrastructure is planned for and provided to support regional growth. GIPs seek to ensure better upfront coordination to allow more efficient planning, priority setting and infrastructure investment. The intention of these plans is to set the priorities, phasing and costing for growth infrastructure needs. Funding is also available for local councils to deliver improvements to public spaces through the Precinct Support Scheme.

2.8.3 UrbanGrowth

UrbanGrowth NSW was established by the State Government to address the barriers to private sector investment in development projects in NSW. UrbanGrowth's role is to focus on urban renewal projects, unlock private land holdings and access surplus Government land to increase development opportunities for the private sector as well as assist in the delivery of important infrastructure.

UrbanGrowth will play a significant role in facilitating growth both within and outside the station precincts. They also play a significant role in facilitating development within the government lands and in master planning, super lotting and de-risking land within the wider corridor. They have a role in ensuring connectivity to the station is planned and delivered.

2.8.4 Other developers

Development will be delivered by many tiers of the development industry from the large scale developers down to the single lot builder. These stakeholders will have different levels of influence over the pedestrian and cycle networks and may become involved through responses to development control plans, planning incentives, contribution plans or voluntary planning agreements.

Section 94 (s94) of the EP&A Act makes provision for a local council to require a contribution from a developer where a development is likely to increase pedestrian activity and demand for cycling facilities in an area. If the Council is satisfied that a development will generate increased pedestrian activity and demand for cycling facilities, it may place a condition on the development consent requiring:

- The dedication of land free of cost; or
- The payment of monetary contribution; or
- The construction of a material public benefit (a building/work benefiting the area); or
- A combination of the above.

A Planning Agreement is a voluntary agreement or other arrangement under *Division 6 – Development Contributions*, Section 93F of the NSW EP&A act between a planning authority (or 2 or more planning authorities) and a person (the developer):

a) who has sought a change to an environmental planning instrument, or

b) who has made, or proposes to make, a development application, or

c) who has entered into an agreement with, or is otherwise associated with, a person to whom paragraph (a) or (b) applies, under which the developer is required to dedicate land free of cost, pay a monetary contribution, or provide any other material public benefit, or any combination of them, to be used for or applied towards a public purpose.[4]

An example of Voluntary Planning Agreement in the subject area of *The Strategy* is the agreement between Queensland Investment Corporation (QIC), RMS and The Hills Shire Council for the upgrade of Showground Road between Carrington Road and Old Northern Road, Castle Hill from a two lane to four lane divided carriageway which also introduces a shared path on the northern side of Showground Road.

[4] http://www.planning.nsw.gov.au/planning_reforms/p/epa_amendment.pdf

3. Station Analysis

3.1 Overview

3.1.1 Analysis Scope

The station analyses presented in the following chapters addresses the requirements for pedestrian and cycle infrastructure and facilities for the eight stations within the Sydney Metro Northwest corridor, including (from east to west):

- Cherrybrook;
- Castle Hill;
- Showground[5];
- Norwest;
- Bella Vista[6];
- Kellyville[7];
- Rouse Hill; and,
- Cudgegong Road.

Infrastructure for pedestrians and cyclists relates to the provision of a network which enables users to access the system safely and easily, through a continuous series of paths which are dedicated for the use of pedestrians, cyclists or both. Infrastructure includes the pedestrian and bicycle crossings of the road network.

Facilities relates to the provision of end of trip facilities for cyclists at the interchanges, allowing safe and secure access storage of bicycles by customers.

The aim of *The Strategy* is to ensure that walking and cycling are real travel options for access to each of the eight station precincts. The assessment considers the role of existing infrastructure and facilities, as well as upgrades planned by the relevant local councils or RMS to meet these demands, and recommends actions to address any deficiencies in provision. *The Strategy* also recognises that infrastructure provision needs to meet travel needs and provide customer benefits, while providing value for money outcomes.

3.2 Analysis Approach and Assumptions

The pedestrian and cycling infrastructure analysis included:

- Identifying existing and planned pedestrian paths within an 800 metre catchment (approximately a 10 minute walk) from each of the station entrances. *The Strategy* recognises that *Sydney's Walking Future* is focused on completing missing links in walking networks within two kilometres of cities, towns, local centres and public transport hubs. However, this *Strategy* is focused on identifying opportunities within approximately 800 metre radius around each station where the delivery of pedestrian connections is particularly important and critical as part of developing the centres. This is also consistent with the *Station Structure Plans* for the *NWRL Corridor Strategy* which focus on an 800 metre radius around each station, a distance normally considered to reflect a 10 minute walking trip.

[5] Identified by DP&E as Priority Precinct
[6] Identified by DP&E as Priority Precinct
[7] Identified by DP&E as Priority Precinct

- Identifying existing and planned cycle routes within a 10 minute cycle from station entrances. This equates to a catchment of approximately 2.5 kilometres and was based on the road network and any dedicated cycle infrastructure. *The Strategy* recognises that *Sydney's Cycling Future* is focused on completing missing links in cycling networks within five kilometres of major centres. However, *The Strategy* is focused on identifying opportunities within approximately 2.5 kilometre radius around each station where the delivery of cycle connections is particularly important and critical as part of developing the centres as well as encouraging modal shift;
- Using information on the forecast station patronage in conjunction with residential and commercial data at the NSW Bureau of Transport Statistics (BTS) Travel Zone (TZ) level to estimate passenger volumes and the quantum of pedestrians and cyclists. Since the AM peak weekday is the busiest time period this has been used for planning purposes as the key determinant of an appropriate scale for infrastructure required;
- Assessing future land use development scenarios within the 800 metre catchments of the stations, as provided by the Department of Planning and Environment in the *NWRL Structure Plans* (February, 2014); and,
- Assessing and analysing infrastructure links within each station catchment to prioritise customer safety and identify, seamless, coherent, visible and safe pedestrian and cycle routes to, from and through stations.

3.2.1 Analysis Data

Data used in the station analyses included:

- Existing and proposed cycle paths - provided by both RMS and relevant councils (as at January 2015);
- Station precinct boundaries and layouts – as per *the Deed* (as at December 2014);
- Existing footpaths – digitised using information collated from various documents and plans and through consultation with councils, RMS and TfNSW; and,
- Sydney Metro Northwest patronage data for 2021, 2036 and 2056 – provided by TfNSW (as at December 2013).

3.2.2 Path Typology

Path typology and definitions used in this analysis include the following:

1. Footpath – path to be used by pedestrians only. Refer examples shown in Figure 3.1;
2. Shared path – path to be shared by pedestrians and cyclists, with no delineation of lanes as shown in Figure 2.17 ;
3. Separated path (off-road) – path separated into pedestrian and cyclist lanes, and located off-road as shown in Figure 2.16; and
4. On road cycle lane (marked) – cycling lane marked on road with bicycle symbols, either in shoulder or secondary position on road adjacent to parking lane. When considering on road cycle lane adjacent car parking lanes, it is recommended to have a buffer or additional clearance between parking lane and edge of bicycle lane to allow for car door opening. Refer Figure 3.2

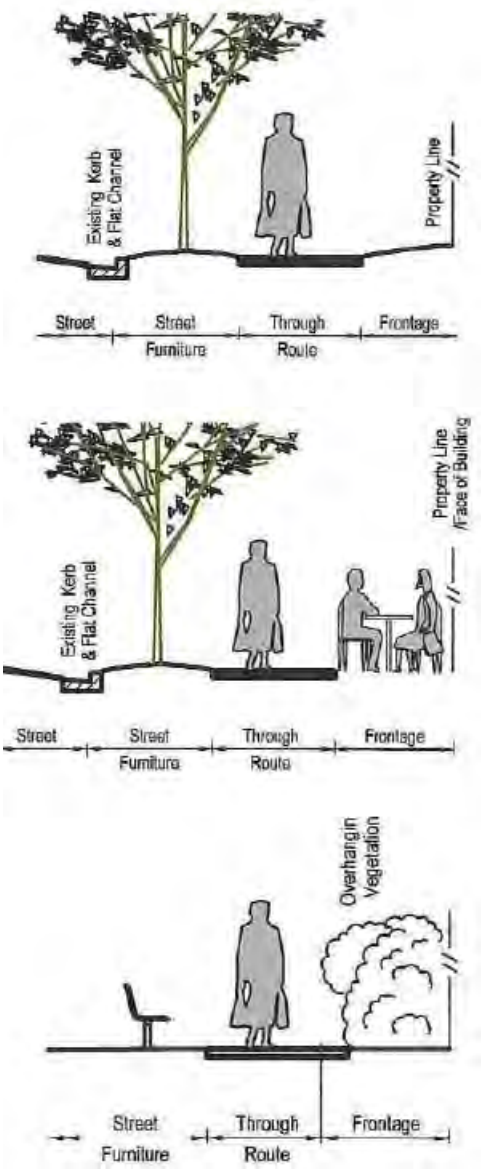


Figure 3.1 Examples of footpath zones. Source: Guide to Road Design Part 6A

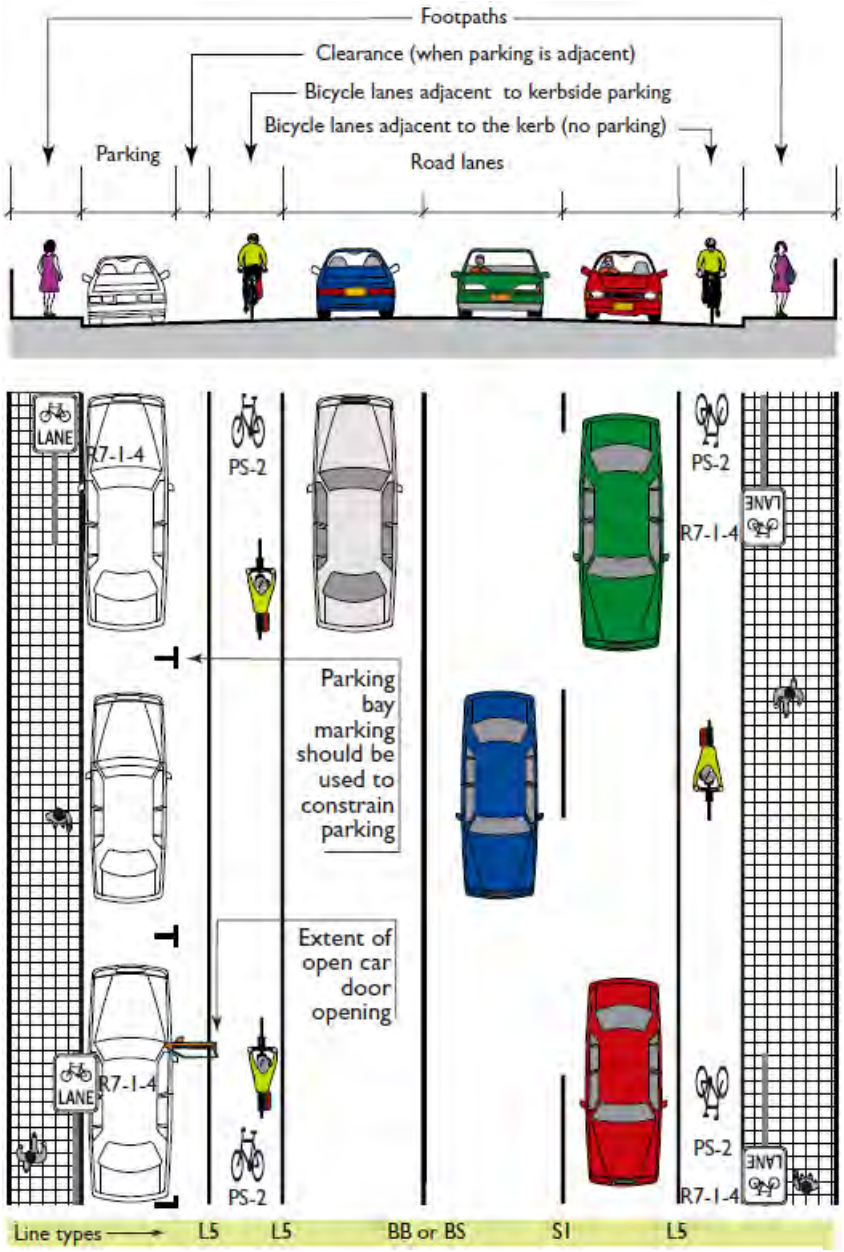


Figure 3.2 Example of on-road cycle lane. Source: NSW Bicycle Guidelines, 2005

3.2.3 Provision of Bicycle Parking at Interchanges

The NSW 2021 plan aims to more than double the mode share of bicycle trips made in the Greater Sydney region. Analysis of 2011 Journey to Work data (BTS) for the Sydney Metropolitan Area indicates approximately 1.6% of trips to an interchange in Sydney involving a bicycle.

These figures reflect an average across the Sydney Metropolitan Area. Middle to outer suburban areas such as the Sydney Metro Northwest corridor are typically characterised by lower density, car oriented environments with high vehicle ownership rates and lower levels of cycle usage. This is balanced with higher levels of cycle in other areas with lower levels of private vehicle ownership and urban environments that are more conducive to cycling.

While the North West corridor does have a number of constraints to cycling (as identified in the station specific analysis sections of this report), the introduction of Sydney Metro Northwest as a 'turn up and go' metro service and associated urban renewal around new transit nodes presents an opportunity to encourage a higher level of cycle use than would otherwise be expected in similar suburban environments. Despite the existing low mode-share for cycling in the Sydney Metro Northwest area, it is expected that the development of this significant transport infrastructure will have a transforming effect on not just the immediate station environment, but on trip patterns and trip opportunities up to 5 km away. The development of the North West Growth Centre, presents a significant opportunity to increase the cycling access and egress mode to and from the Sydney Metro Northwest stations. The western part of the alignment consists of flatter terrain, which is generally more conducive to cycling when compared to steeper gradients such as those found in the eastern part of the alignment (an example being around Cherrybrook Station, where the gradient is steeper than 5% in many sections and 10% in some parts of the catchment).

The provision for bicycle storage (class 2 and 3) as illustrated in Figure 3.3 and Figure 3.4 have been planned adjacent the station entries and exits and access movement paths (approximately 50m from Gatelines, except for Cherrybrook Station where a maximum of 115m from Gatelines has been deemed acceptable). The bicycle provisions are also required to have clear sightlines to the Primary Plaza as part of the design. It is intended that the class 3 bicycle storage will have weather protection. The Class 2 bicycle storage provides an improved long term parking solution for high demand locations such as transport interchanges. It is intended that this facility will require customers to register before accessing the cage.

A recent survey by Bureau of Transport Statistics (BTS) has shown customer preference for Class 2 type bicycle cages that offer improved space efficiency compared to lockers, lower operation costs and provision of a shared bicycle storage unit with covered and secured cycle parking. Customers can use their own lock to secure to cycle racks within the compound. Other jurisdictions such as WA have experienced growth in numbers of people accessing Public Transport by bicycle following installation of cages.

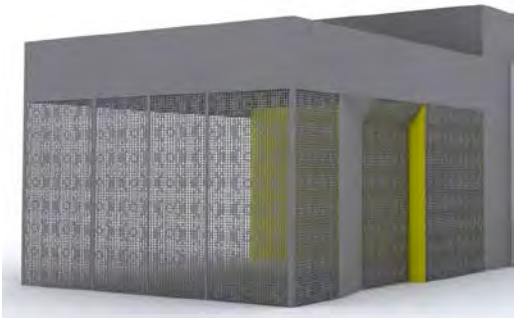


Figure 3.3 Class 2 Secure access Lock up bicycle cage with provision made for future smart card access

Figure 3.4 Class 3 Rails with weather protection

The provision of bicycle parking facilities at Sydney Metro Northwest interchanges is planned as follows:

- Initially, aim to provide for an increase of 25% in cycling mode share trips from the current Sydney-wide average of 1.6% of trips to an interchange (based on information provided by Planning division, TfNSW). This leads to a targeted initial provision of 2% of trips to an interchange which will be delivered as part of Sydney Metro Northwest project and,
- In future, accommodate a further 25% increase in cycling mode share trips, ensuring that space has been allocated at the new interchanges for future expansion of bicycle amenities.

The proposed total bicycle parking provision across all Sydney Metro Northwest stations is summarised in Table 3.1.

Table 3.1 Total Bicycle Parking Provision at Sydney Metro Northwest Stations

Total provision across all Sydney Metro Northwest Stations	Initial[1]	Future[1]
% of forecast station patronage*	2%	2.5%
Total number of bicycle parking spaces	340	610

[1] *patronage estimates based on PTPM version 02 for 2021 (initial) and 2036 (future)*

Initial provision reflects the facilities to be provided as part of 'day one' of Sydney Metro Northwest operation. Future provision is to be safeguarded for expansion to allow for increase as new cycle infrastructure is delivered and future precinct development.

Provision of cycle parking facilities at individual interchanges is proposed to vary based on an assessment of the cycling potential of each interchange, taking into account the constraints and opportunities identified in this report, including:

- Existing and proposed local cycle networks;
- Topography and other physical barriers (waterways, bushland etc);
- Existing and future land use;
- Traffic and transport related barriers (e.g. major arterial roads);
- Forecast patronage (AM peak weekday stations entries) from cycle-able catchment; and,
- Opportunity for cycling as an egress mode from stations (eg. locations with major trip generating destinations located 0.8-5km distance from the station).

Proposed provision at individual interchanges is identified in the table below. Initial provision has been identified based on expected level of development in the station precinct cycle catchment within the short to medium term, following completion of Sydney Metro Northwest.

Table 3.2 Proposed Cycle Parking Provision at Sydney Metro Northwest Interchanges

Sydney Metro Northwest Station	INITIAL		FUTURE	
	%*	Number spaces	%*	Number spaces
Cudgegong	2.5%	55	2.5%	110
Rouse Hill	2.0%	45	2.5%	70
Kellyville	2.0%	55	2.5%	110
Bella Vista	1.5%	35	3.5%	80
Norwest	2.5%	35	3.5%	65
Showground	2.5%	45	2.5%	70
Castle Hill	1.5%	25	1.5%	40
Cherrybrook	1.5%	45	2.0%	65
TOTAL (AVERAGE ACROSS ALL STATIONS)	2.0%	340	2.5%	610

**% of forecast station patronage from cycle catchment based on PTPM version 2*

It is recommended that the bicycle parking usage is monitored from when the Sydney Metro Northwest commences operation and provisions reviewed based on demand. To address future increases in peak bicycle demand adequate space has been allocated at stations to allow expansion of bicycle parking. The capacity increases will be based on demand statistics and the customers' views from surveys.

3.2.4 Recommendations

A series of station-specific issues and recommendations are provided for each station in subsequent chapters. General recommendations which would apply to all eight station precincts and surrounding areas are set out in Table 3.3 below. It is recommended that these measures are incorporated into the design, construction, operation and maintenance of all interchanges and surrounding areas.

Table 3.3 General recommendations for all Sydney Metro Northwest interchanges

Reference / Tracking Code	General Recommendations and rationale for all Interchanges
Station Facilities	
1.	In-station signage and maps of the surrounding area: simplified maps with estimated walking times, cycle times, cycle facilities and public transport interchanges.
2.	Consider the installation of CCTV covering cycle facilities to enhance 24 hour security. Consider the installation of help points in bicycle cages and car parks.
3.	Consider metered electrical charging points in cages for electric bicycles. Provide deep scooter lockers / cages for storage of electric bicycle batteries and electric scooters. Consider metered electrical charging points in storage lockers and cages for electric bicycles.

Reference / Tracking Code	General Recommendations and rationale for all Interchanges
4.	Bicycle users may choose to keep a bicycle for end-of-trip usage to make the end-of-trip journey to work. In some instances, customers may choose to leave their bicycles in the bicycle parking facility at the stations overnight. Consider the additional demand this may create on the bicycle parking facilities at some stations.
5.	Consider the visual connections with destinations to promote use of active transport. In the detailed station design, consider the pedestrian line-of-sight connections to key destinations / landmarks.
6.	Provide drinking water amenities for the station customers as part of the precincts.
Surrounding Network	
7.	Undertake a pedestrian path lighting analysis within 400m of each station to enhance pedestrian safety at night. Ensure effective passive surveillance for all major pedestrian and cycle routes.
8.	Over time, existing pedestrian paths can degrade as a result of the effect of tree roots, wear and weathering; and footpaths vary in age and condition. It is therefore recommended that a condition audit and prioritised action plan be undertaken every five years by relevant councils. Consider the need for footpath grinding, repairs and replacement, where required.
9.	Consider a broader wayfinding strategy within the station catchments that includes signage, footpath and cycle path markings and line-of-sight considerations.
10.	At all signalised intersections surrounding the station precincts, consider the pedestrian and cycle interface through phasing, fencing / barriers and single point crossing. Consideration should also be given to provision of bicycle lanterns where applicable to enable bicycle riders to legally ride across the road
11.	As some areas around the stations are particularly subject to weather elements, a program of public domain improvement should be considered, including seating, shading, shelter, landscape and urban design treatments be considered along primary corridors to improve the pedestrian and cycle amenity.
Future Development	
12.	Ensure prioritisation of public access and through site links where major development and existing/future open space is being proposed in the vicinity of the station. Ensure the design of pathways considers the needs for 24-hour access for pedestrians, cyclists, and those with limited mobility. In particular, consider security, lighting, gradient, and the need for 24-hour access. Ensure that the pedestrian and cycle guidelines are applied to any new development.
13.	Consider an education program to encourage employers within the catchment to prepare a staff travel plan to encourage the uptake of the Sydney Metro Northwest line, including promoting access by active transport options for staff. Also consider education and cycling awareness programs.
14.	councils to develop a policy through DCPs, to encourage new major developers within the corridor to provide adequate private, semi-private or public bicycle parking and end of trip facilities within their developments.
15.	Where new development occurs in areas where there are no existing footpaths, developers should be required to extend or join the pedestrian and cycle links when lands are released for development or change in land use occurs. This would provide greater accessibility to the station that is currently restricted by the cul-de-sac street network.

Each of the eight station chapters adopt a similar format and incorporate the following elements:

- **Overview of the Station** – defines the location, land uses served, transport network and topography;
- **Future Land Use and Patronage** – sets out the short and long term land use and patronage context for the station;
- **Issues and Recommendations** – identifies issues and proposed recommendations for network infrastructure and the end-of-trip facilities at stations. The numbered (e.g. C1, C2 etc.) issues and recommendations are within the defined Sydney Metro Northwest stations precincts. The lettered (e.g. CHA, RHB etc.) are outside the defined Sydney Metro Northwest station precincts; and,
- **Cycle and Pedestrian Maps** - shows the existing, planned and recommended walking and cycling network infrastructure. Areas of investigation have also been highlighted where applicable.

An implementation plan, including suggested responsibilities for the delivery of both general and specific recommendations, is outlined in Section 12.

4. Cherrybrook Station

4.1 Cherrybrook Station Overview

4.1.1 Location

The Cherrybrook Station precinct is located within the Cherrybrook residential area on the north-eastern side of Castle Hill Road, between Robert Road and Franklin Road. The station precinct is located within the Hornsby Shire LGA. Castle Hill Road forms the boundary between Hornsby Shire LGA and The Hills Shire LGA immediately south of the station.

4.1.2 Land use and Sydney Metro Northwest customers

The suburb of Cherrybrook is an established low density residential area within the Hornsby Shire Local Government Area (LGA). Within a radius of 800 metres surrounding the station precinct, are two schools - Tangara School for Girls and the Inala Rudolf Steiner School, with the Coonara Avenue Business Park site to the south-east of the Cherrybrook Station site. There is no existing local centre, retail facilities, or central public space within this area. The nearest local centre to the Cherrybrook Station site is the Coonara Village shopping centre, south west of the Coonara Avenue Business Park site.

4.1.3 Traffic and transport

Castle Hill Road is a major arterial road connecting Castle Hill, to the west, and West Pennant Hills, to the east. The main local roads include Franklin Road and Robert Road to the north, and Glenhope Road connecting with Salisbury Downs Drive to the south.

Issues that impede access for pedestrians and cyclists include a lack of dedicated and signalised crossings on Castle Hill Road, a lack of street network permeability due to many cul-de-sac, steep topography, limited street lighting and a limited footpath network in the area.

4.1.4 Topography

Castle Hill Road is located on top of a ridgeline running east to west, with elevations in the area ranging between 88 to 180 metres. To the north-east the topography is more undulating; to the south-west the topography is much steeper, with gradients greater than 10 percent. Therefore, meeting the requirements of Austroads Standards would be challenging here and may require special considerations during the design stages such as avoidance of sharp horizontal curves, provision of additional path width, recovery areas, warning signs etc.

4.2 Future Land Use

The *Cherrybrook Station Structure Plan* (DP&E 2013) has identified future growth opportunities for the area (refer Figure 4.1). The area north of Castle Hill Road is proposed to have two distinct sub-precincts. The sub-precinct closest to the station is proposed to become medium density residential characterised by 3-6 storey apartments. The second sub-precinct is proposed to become medium density residential characterised by 2-3 storey town houses. The area south of Castle Hill Road, within The Hills Shire Council LGA, is proposed to be characterised by medium density 3-6 storey apartments.

New links are proposed to increase connectivity between Edward Bennett Drive, Franklin Road and Robert Road. These links could be pedestrian and/or vehicular, and would be provided as part of future redevelopment. A green link is also proposed between Robert Park (corner of Robert Road and Dalkeith Road), and the proposed station precinct.

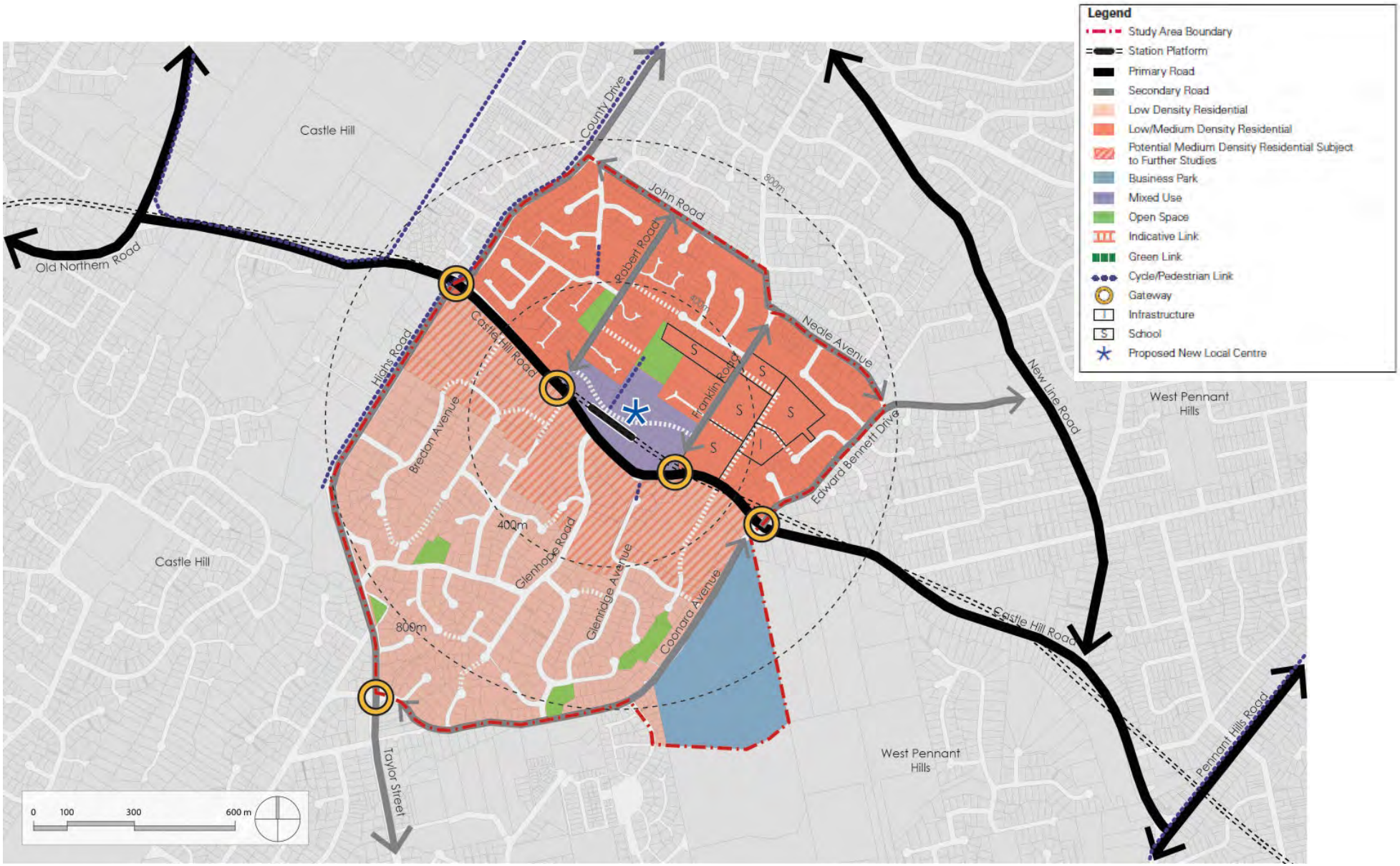


Figure 4.1 Cherrybrook Structure Plan

4.3 Issues and Recommendations

4.3.1 Network Infrastructure

Key issues and recommendations regarding pedestrian and cycling network infrastructure in the Cherrybrook Station precinct and surrounds are identified in Table 4.1 and Table 4.2.

Figure 4.2 and Figure 4.3 demonstrate the following:

- Existing pedestrian and bicycle paths within the station catchment;
- Proposed pedestrian and bicycle paths by others;
- Proposed pedestrian and bicycle paths to be delivered by Sydney Metro Northwest; and,
- Further recommendations for pedestrian and cyclist paths and infrastructure.

Refer maps in

Figure 4.2 and Figure 4.3 for map references in Table 4.1 and Table 4.2. The path typology (footpaths or shared / separated paths) within the station precinct as shown on the maps is indicative at this stage. These are subject to detailed design for station precincts by Northwest Rapid transit (NRT) in the subsequent stages.

Table 4.1 Recommended infrastructure within Cherrybrook Station precinct

Tracking code	Map Ref.	Issue	Recommendation
C1	1	No separated/shared paths within station precinct for cyclist connectivity to station entrance.	*The Deed* requires a 2.5 metres wide footpath on both sides for the New Precinct Street A. Consideration needs to be given to providing at least one side as a separated / shared path.
C2	2	Need for pedestrian and cyclist connection into station precinct from Castle Hill Road.	*The Deed* requires a 2.5 metres wide footpath on the western side of Franklin Road. Consideration needs to be given to making it a separated / shared path.
C3	3	Need for cycle path facility on Castle Hill Road	*The Deed includes* a 2.5m footpath on the northern side of Castle Hill Road between Franklin Road and Robert Road. Due to the undulating topography of Castle Hill Road, a separated path may be a more viable solution to avoid clash between pedestrians and cyclists.

Table 4.2 Recommended infrastructure outside Cherrybrook Station precinct

Tracking Code	Map Ref	Issue	Recommendation
CA	A	Existing shared path on Castle Hill Road is not continuous, creating difficult cycling environment along this high traffic road.	Prioritise and install a separated/shared path along northern side of Castle Hill Road, between David Road and Robert Rd.
CB	B	Castle Hill Road Currently includes no provision for cyclist movement - no off road facility and high speed on-road environment with no shoulder. Lack of clear cycling connections to the station and Castle Hill Road due to cul-de-sac road layout in Cherrybrook.	Prioritise and install a separated or shared path (off-road) along northern side of Castle Hill Road, between Franklin Road and Edward Bennet Drive.
CC	C	Lack of connection from Sydney Metro Northwest proposed separated/shared path from northern side of station entrance to boundary of station precinct.	Provide shared path to link station precinct with Robert Road, through future subdivision north of the station precinct, connecting to Robert Road. This will provide safe and vehicle-free access to the station for path users (pedestrians and cyclists).
CD	D	Limited cycling routes provided in close vicinity to the station. Connections required between paths proposed in this suburb.	Provision for shared or separated path on Robert Road and John Road from County Drive to Franklin Road.
CE	E		Provide a separated/shared path on Franklin Road from the intersection of John Road to the boundary of the station.
CF	F		Provide missing link on Highs Road (separated or shared path).
CG	G		Provide missing link on Taylor Street (marked on road).
CH	H		Provide marked on-road Salisbury Downs Drive, Glenhope Road, Glenridge Ave.
CI	I	Need to link residences west of Darling Mills Creek to existing cycle network, west of creek, to access Highs Road.	Investigate a potential creek crossing to connect pedestrian and cycle link at this location.
CJ	J	Disconnected and incomplete footpath network in the vicinity of Cherrybrook Station precinct, discouraging foot traffic in the area.	Provide footpaths on southern portion of Glenhope Road to link to existing footpaths on northern portion of this road.
CK	K		Provide footpath on eastern side of Robert Road linking existing footpath to boundary of station precinct.
CL	L	Links may be required to new developments based on future zoning, as indicated on Cherrybrook Structure Plan.	Potential future pedestrian and cycle link to new development in Cherrybrook area to be provided by others, subject to future development.

Tracking Code	Map Ref	Issue	Recommendation
CM	M	Links required on Ashford Road to enable residences north of station to have direct connection to the station precinct.	Investigate a shared path on Ashford Road connecting existing path between Dalkeith Road and Ashford Road. This will enable direct pedestrian and cycling connection between residences around Ashford Road, County Drive and the station precinct.
CN	N	The eastern side of New Line Road is currently a barrier for pedestrians and cyclists with no marked crossings between the roundabout intersection of New Line Road with Shepherds Drive and Boundary Road.	Provide pedestrian and cyclist crossing over New Line Road between Shepherds Drive and Boundary Road, preferably at or close to the intersection of Shepherds Drive, County Drive and New Line Road.
CO	O	Improving links from Cherrybrook Station precinct to IBM business Park via Coonara Ave.	There are existing pedestrian links from Coonara Avenue to Grosvenor Place through Grosvenor Place Reserve. A planning proposal has been submitted in April 2015 for rezoning of the land at 101 Castle Hill Road for medium to high density residential. As part of the proposal there may be opportunities to propose pedestrian and cycle links as shared or separated paths through the development to provide direct connection to Castle Hill Road. Further discussions are being held with The Hills Shire Council via TfNSW's Planning division to investigate this.
CP	P	Missing pedestrian and cycling path on Grosvenor Place to enable continuation of links from Grosvenor Place Reserve through to Castle Hill Road	Investigate active links through 101 Castle Hill Road to enable more direct linkages and permeability into Castle Hill Road and enable connections to existing pedestrian links on Grosvenor Place Reserve. Further discussions are required with The Hills Shire Council via TfNSW's Planning division to investigate this.
CQ	Q	Currently there is no marked pedestrian crossing on Franklin Road. The school on Franklin Road will generate a high volume of pedestrian traffic in the area. Safe crossing of Franklin Road required due to increased pedestrian and cyclist traffic.	Provide a pedestrian crossing on Franklin Road, north of station precinct as per map.
CR		Improvements required to provision for pedestrian crossing at intersection of Coonara Avenue and Castle Hill Road.	Add pedestrian phasing to southern leg of intersection.

4.3.2 Interchange Facilities

As outlined in Section 3.1.5, the bicycle parking provisions are proposed to vary between stations based on the cycling potential, constraints and opportunities within each catchment. Recommended bicycle parking allowances as per *the Deed* for Cherrybrook Station are specified in Table 4.3. The initial provisions are planned for 1.5 percent of station access trips (when Sydney Metro Northwest opens) and increase to 2% in the future.

Table 4.3 Bicycle parking allowances at Cherrybrook Station as per Sydney Metro Northwest Scope and Performance Requirements

Parking classification	Initial provision	Future provision
Class 2 – lock-up	35	45
Class 3 – rails	5 (capacity for 10 bicycles)	10 (20 bicycles)
Total bicycles accommodated	**45**	**65**
Percentage of station access trips	**1.5% of station access trips**	**2.0% of station access trips**

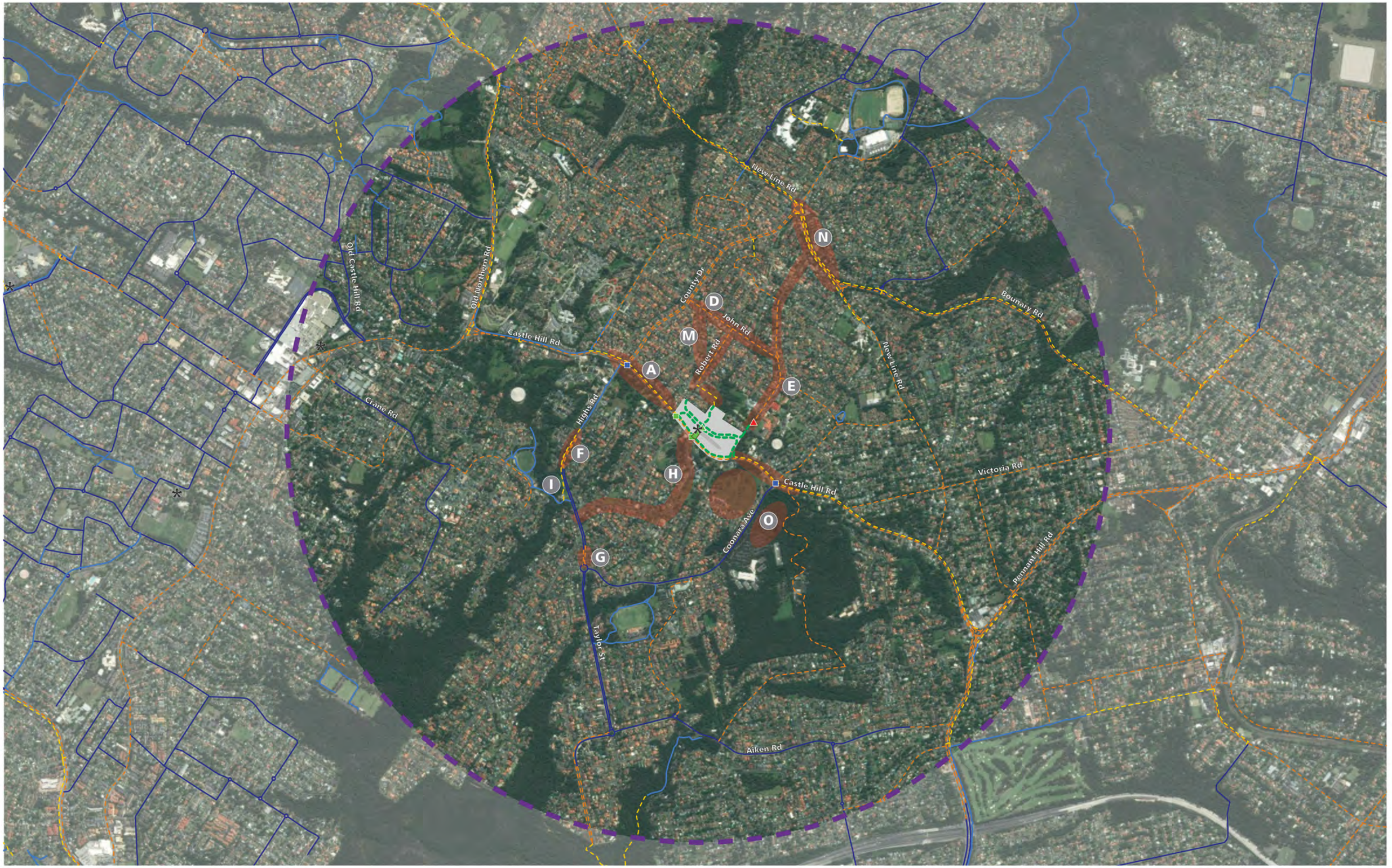


Figure 4.2
Cherrybrook Station Bicycle Recommendations

N

0 250 500 1,000 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 2.5km radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

Figure 4.3
Cherrybrook Station Pedestrian Recommendations

N

0 100 200 400 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 800m radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Footpath
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

5. Castle Hill

5.1 Castle Hill Station Overview

5.1.1 Location

Castle Hill Station is to be built in the core of Castle Hill town centre, beneath the existing Arthur Whitling Park. The site is located adjacent to both the Castle Towers and Castle Mall shopping centres, near the existing Castle Hill bus interchange. The station precinct, being within the Castle Hill town centre, is located entirely within The Hills Shire LGA.

5.1.2 Land use and Sydney Metro Northwest customers

Castle Hill is identified as a strategic centre for the North West under *A Plan for Growing Sydney*, signifying its role as an important retail and business centre for the region. The established residential and retail/commercial centre of Castle Hill covers approximately 237 hectares within The Hills Shire LGA, and includes a main street, Castle Towers shopping centre and Castle Mall shopping centre. The centre of Castle Hill is surrounded by residential development, consisting primarily of one to two storey detached houses interspersed with three to four storey apartment buildings.

Within a radius of 800 metres surrounding the Castle Hill Station site are three schools – Castle Hill Primary School, Hills Adventist School and St Bernadette's Catholic School to the east. Also within the 800 metres catchment are Castle Hill library and the various community facilities within the Castle Grand complex as well as a number of parks, play areas, reserves and community facilities. Also included in the surrounding area are Castle Hill High School, the Castle Hill RSL and Castle Hill Bowling Club

5.1.3 Traffic and transport

Castle Hill town centre is accessible from three major routes – Old Northern Road from the south, Old Northern Road/Castle Hill Road from the northeast, and Showground Road from the west. Old Northern Road traverses the town centre in a roughly north-south direction, linking Castle Hill to the CBD and employment centres in the east. Within the town centre, local traffic benefits from a ring-road which diverts through traffic via Pennant Street, McMullen Avenue and Terminus Street.

Pedestrian and cycling accessibility is restricted by barriers that limit crossing of the major arterial routes of Showground Road, Pennant Street, Old Northern Road and Castle Hill Road. Street network permeability for all transport modes is also constrained by the large number of residential cul-de-sacs which back on to the major network, and the large landholdings of the schools and Castle Towers.

5.1.4 Topography

The proposed Castle Hill Station site is located within an area of undulating topography, with elevations ranging from approximately 96 to 170 metres above sea level. A ridgeline that runs along Old Northern Road divides Castle Hill into three distinct topographical areas. To the north and south west are moderately undulating areas, while levels fall steeply to the south of Old Northern Road, resulting in gradients greater than 10 percent. Therefore, meeting the requirements of Austroads Standards would be challenging here and may require special considerations during the design stages such as avoidance of sharp horizontal curves, provision of additional path width, recovery areas, warning signs etc.

5.2 Future Land Use

The *Castle Hill Station Structure Plan* (DP&E, 2013) provides a planning framework that aims to improve the area surrounding the proposed station site and deliver a precinct with a variety of land uses (refer Figure 5.1). The area immediately surrounding the station is proposed to consist of a mixed use and commercial core, anticipated to accommodate retail services and commercial offices. This central area is proposed to be surrounded by a high density residential area, comprising 7 to 20 storey apartment buildings planned around a series of communal open spaces. Beyond this zone, medium density residential areas are proposed. These areas would be characterised by 3 to 6 storey apartment buildings, townhouses and single detached dwellings. The Hills Shire Council also recently exhibited 'Draft Precinct Plan for Castle Hill North' which will provide for higher densities and mixed use development.

A series of new links (potentially pedestrian and/or vehicular) are proposed to increase connectivity and permeability within the precinct. A green link is also proposed between Britannia Road and Gilham Street, providing a significant pedestrian and cycle link between the Castle Hill town centre and Castle Hill High School, Castle Hill RSL and residential areas to the north-east.

Significant upgrades of streetscapes on major thoroughfares such as Old Northern Road, Showground Road and Pennant Street will be required to improve pedestrian connections between the town centre and adjacent uses. Upgrades to the public domain of Castle Hill will also involve the protection of existing green spaces and the provision of additional urban plazas, parks and open spaces, particularly within the station precinct and the core of the town centre. When Sydney Metro Northwest opens, Old Castle Hill Road will be changed to a two way road.

5.2.1 Proposed Showground Road Upgrade

Roads and Maritime Services (RMS) is planning an upgrade of Showground Road between Carrington Road and Old Northern Road, Castle Hill from a two lane to four lane divided carriageway. In relation to this road widening, it is noted that QIC has entered into a Voluntary Planning Agreement with RMS and The Hills Shire Council. In early May 2014 RMS has completed the public exhibition of the *Review of Environmental Factors* (REF) including the concept design for the proposed road upgrade of Showground Road. From a cycling and pedestrian perspective, the relevant scope of the upgrade includes:

- Installing new traffic lights at the intersection of Showground Road, Kentwell Avenue and Cheriton Avenue;
- Providing new traffic lights at the intersections of Showground Road with Rowallan Avenue; and,
- Building a 2.5 metre wide shared path along the northern side of Showground Road between Carrington Road and Pennant Street.

Refer to Figure 5.2 for details of the proposed upgrade.

5.2.2 Proposed Expansion of Castle Towers shopping centre

The Castle Towers shopping centre is bounded by Pennant Street to the north and west, Old Northern Road and Old Castle Hill Road to the east and Showground Road to the south. The former Eric Felton Street[8] and Castle Street connect to Old Northern Road and Pennant Street and provide direct access to the Centre.

The owners of Castle Towers, QIC plan to expand the existing shopping centre from 113,197sqm of gross lettable area (GLA) to 194,457sqm of GLA[9] with the proposed Stage 3 Expansion Development. The Development Application submission lodged on 23 December 2014 shows the project scope occurs within the

[8] Eric Felton Street was a former public road. It was sold to QIC to facilitate expansion of Castle Towers. The former Eric Felton Street is now an entrance and access road to a number of the car parking levels at the northern end of the Castle Towers complex.
[9] Development Approval application no. DA/ 864/2015/JP of The Hills Shire Council

Stage 2 Development Site which has a site area of 112,361sqm. Road works affect a portion of Site B which has a total area of 39,604sqm with approx. 18,650sqm being affected by road works impacting Kentwell Avenue, Showground Road and Castle Street. Refer Figure 5.3 and Figure 5.4.

The initial proposal was approved by The Hills Shire Council in 2011 and was subject to conditions, one of which related to Showground Road being upgraded to four traffic lanes between Pennant Street and Carrington Street as described in section 5.2.1 above. It is intended that the redeveloped shopping centre will enable improved connectivity for pedestrians between the site and the existing public realm. There will be increased emphasis on prominent pedestrian entry points through the creation of an iconic entry statement as well as improved gateway elements such as at Heritage Square and on Old Castle Hill Road. Pedestrians will also benefit from the provision of appropriately lit paths and where possible weather protected walkways. Refer Figure 5.3 for plan showing the expansion.

5.2.3 Crane Road Precinct

To the south of Castle Hill Station, a redevelopment is planned for Crane Road precinct which is the area bounded by Crane Road, Terminus Street and Old Northern Road, Castle Hill. The proposal involves the demolition of existing site structures (generally retail and commercial with two basement levels, ground and first floor) and the construction of a mixed use development comprising 378 residential apartments and approximately 1,612m2 of retail floor space. The mixed use development is proposed to be serviced by basement car parking containing 470 vehicle parking spaces, accessed via Crane Road and Terminus Street. Pedestrian access to the development is proposed via Old Northern Road, Crane Road and Terminus Street. Refer Figure 5.4 for proposed plan showing ground level arrangements. The redevelopment of the site had been approved by the Joint Regional Planning Panel in February 2015. Refer Figure 5.5

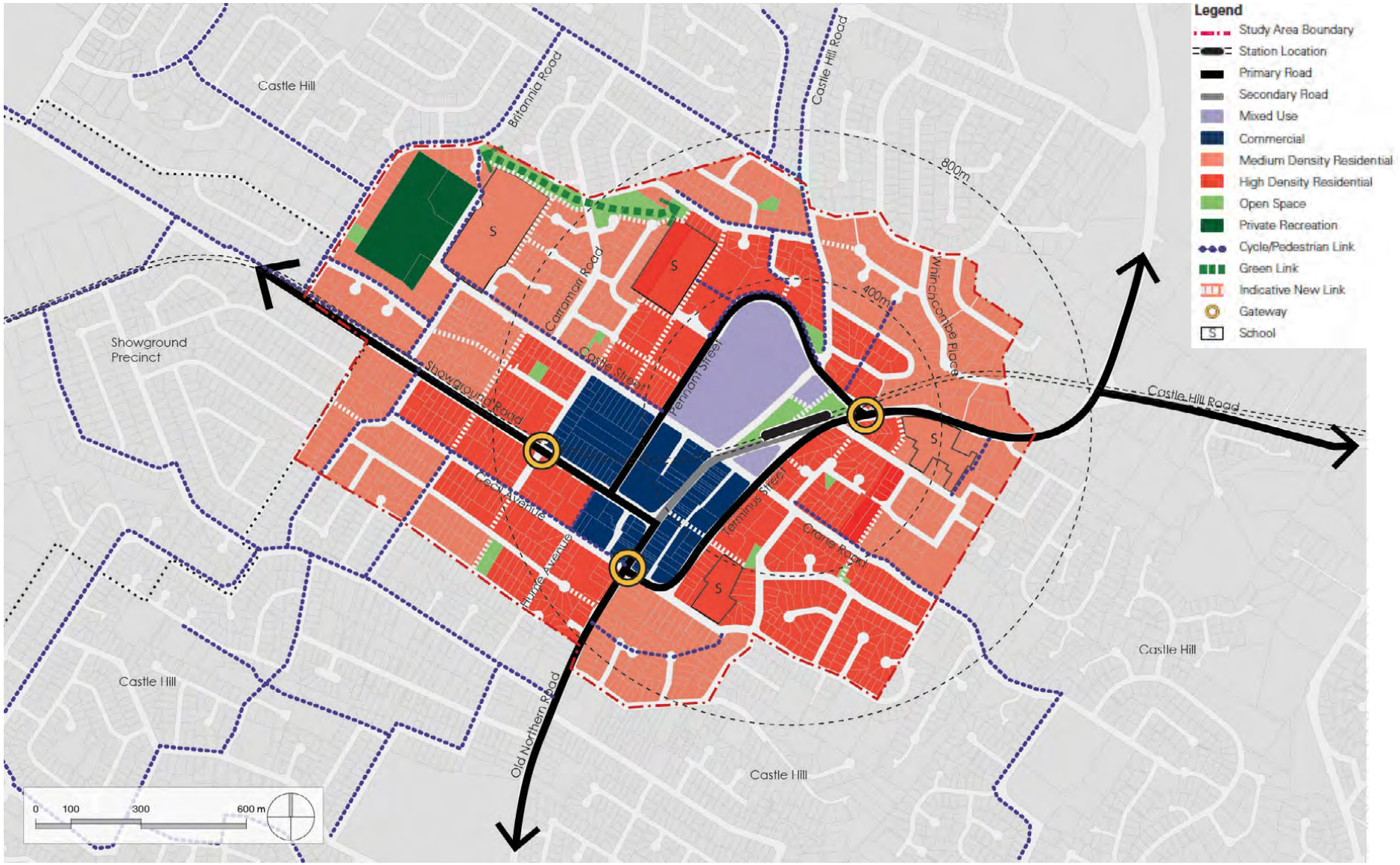


Figure 5.1 Castle Hill Structure Plan

Figure 5.2 Showground Road upgrade by RMS. Source: RMS

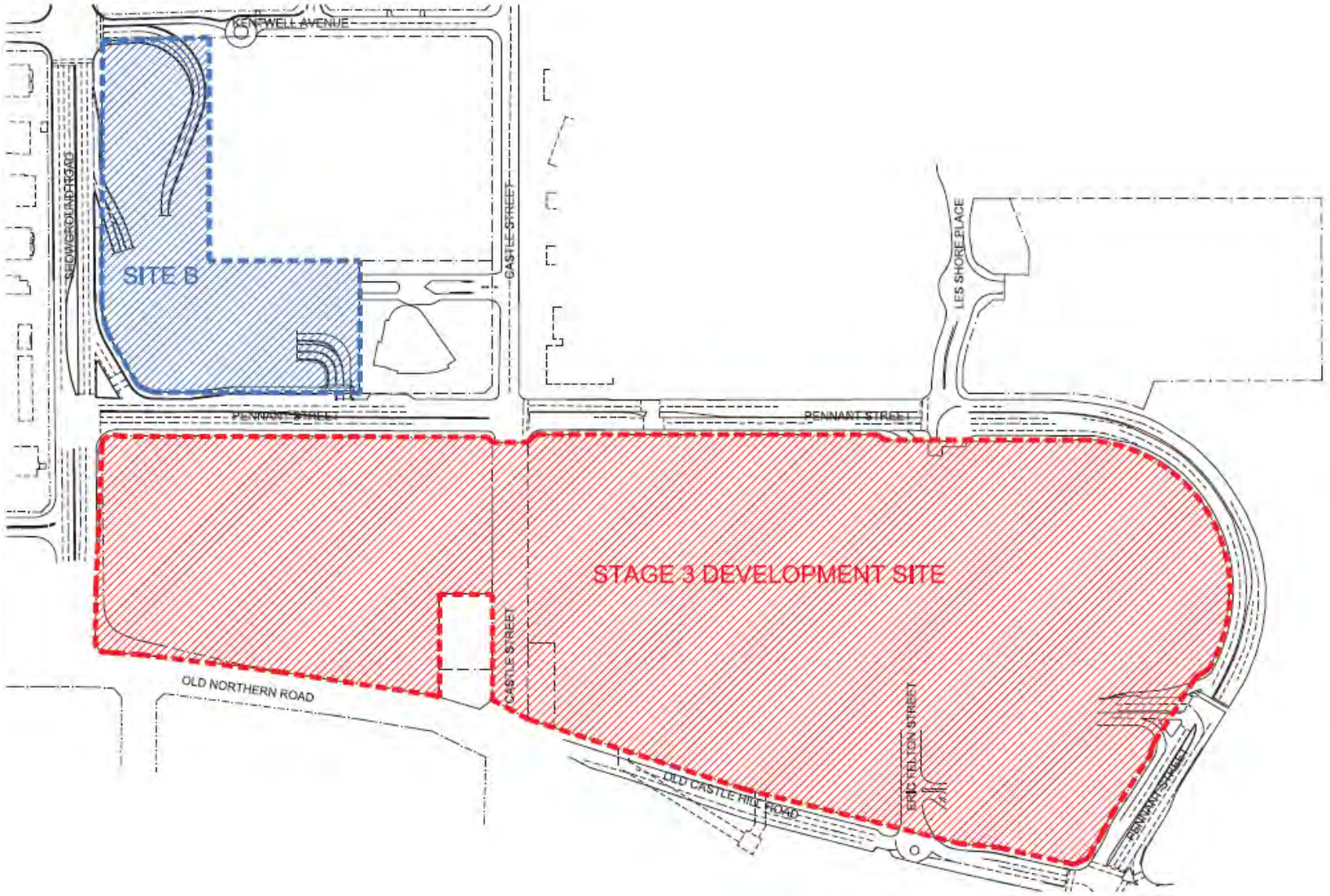


Figure 5.3 Castle Towers shopping centre expansion proposal. Source: The Hills Shire Council

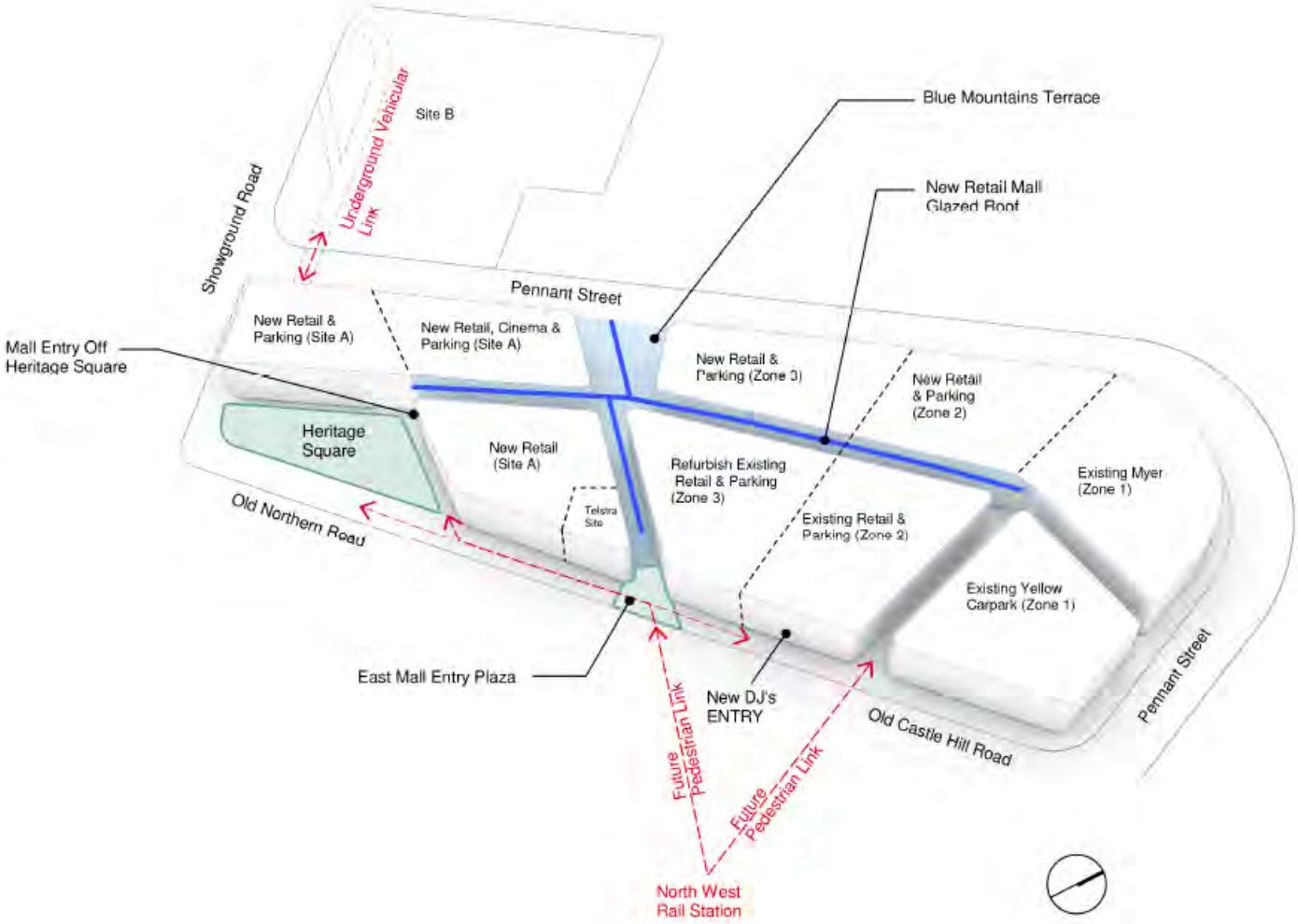


Figure 5.4 Site Planning and Massing Concept for Castle Towers Expansion. Source: The Hills Shire Council

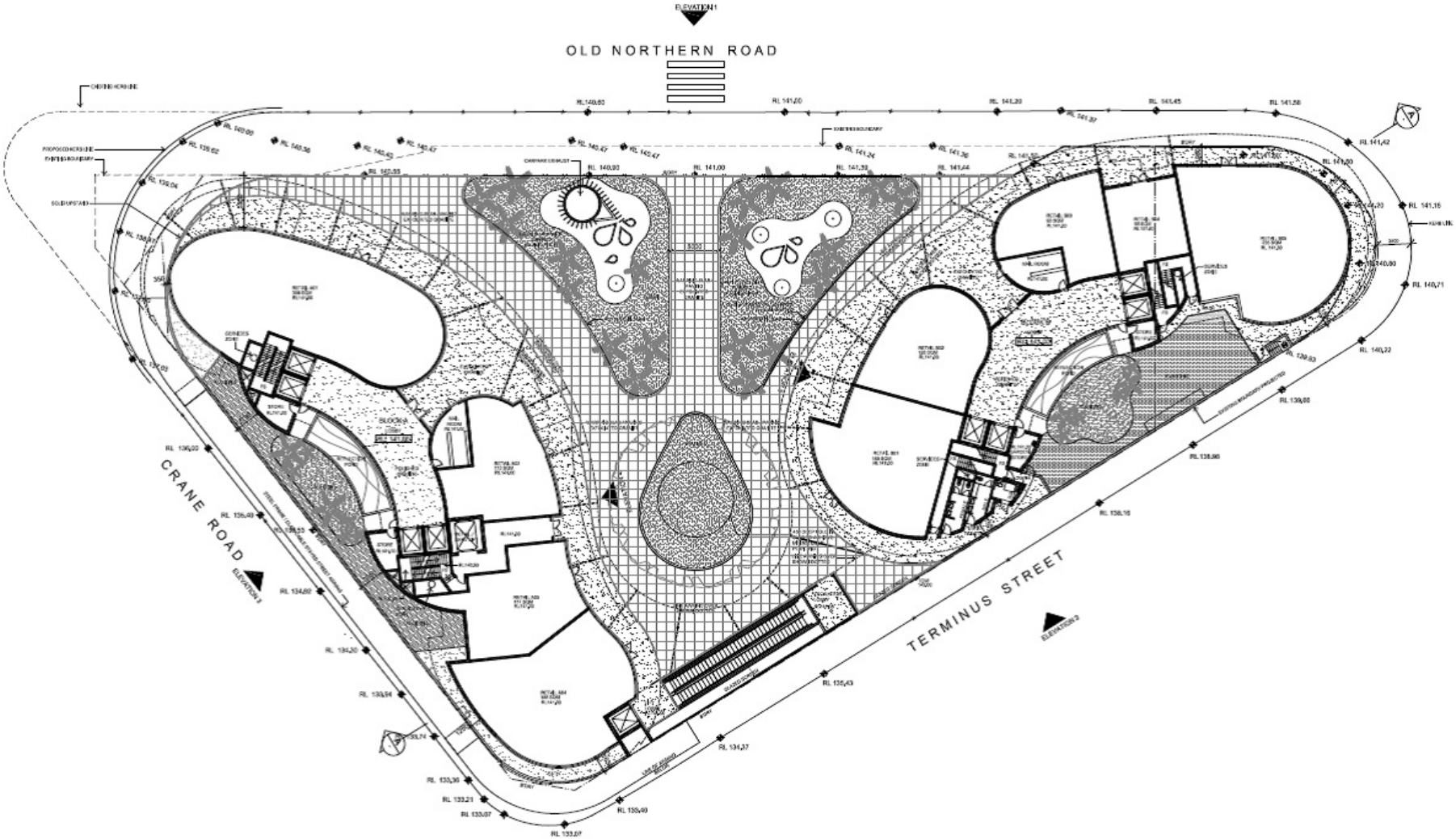


Figure 5.5 Crane Road precinct - development proposed by Zerefos. Source: Zerefos

5.3 Issues and Recommendations

5.3.1 Network Infrastructure

Key issues and recommendations regarding pedestrian and cycling network infrastructure in the Castle Hill Station precinct and surrounds are identified in Table 5.1 and
Table 5.2. Figure 5.6 and Figure 5.7 demonstrate the following:

- Existing pedestrian and bicycle paths within the station catchment;
- Proposed pedestrian and bicycle paths by others;
- Proposed pedestrian and bicycle paths to be delivered by Sydney Metro Northwest; and,
- Further recommendations for pedestrian and cyclist paths and infrastructure.

Refer maps in Figure 5.6 and Figure 5.7 for map references in Table 5.1 and
Table 5.2. The path typology (footpaths or shared / separated paths) within the station precinct as shown on the maps is indicative at this stage. These are subject to detailed design for station precincts by NRT in the subsequent stages.

Table 5.1 Recommended infrastructure within Castle Hill Station precinct

Tracking Code	Map Ref	Issue	Recommendation
CH1	1	High volume of traffic on Old Castle Hill Road in the vicinity of the station precinct, and absence of adequate space for a safe on-road bicycle path. Sight lines are limited by parked cars and the high number of buses, particularly along Old Castle Hill Road.	Provide dedicated cycleways along Old Castle Hill Road between Castle Street and McMullen Avenue
CH2	2	Need for pedestrian and cyclist access into, through and around station precinct.	Provide pedestrian/cycle shared space from secondary plaza space through primary plaza space to intersection of Old Northern Road and Crane Road.
CH3	3	Signalised intersection at Old Castle Hill Road, Old Northern Road, Crane Road and Castle Street needs improved provision for crossing for pedestrians and cyclists.	Consider the current phasing priorities and design of signalised intersections to consider the increased needs of pedestrians and cyclists.
CH4	4	Signalised intersection at Old Northern Road and Terminus Street needs improved provision for crossing for pedestrians and cyclists.	Consider the current phasing priorities and design of signalised intersections to consider the increased needs of pedestrians and cyclists.
CH5	5	Existing potential for pedestrian and vehicle conflicts with the car parking and loading dock entrance to Castle Towers. This conflict is likely to increase with the future increase in pedestrian movements associated with the Station Precinct.	Investigate provision of improved pedestrian access from Castle Towers to station precinct, particularly considering current shopping centre car park entrance location.
CH6	6	Missing pedestrian link from McMullen Avenue.	Provide pedestrian path linking McMullen Avenue to secondary plaza space through Arthur Whitling Park.

Tracking Code	Map Ref	Issue	Recommendation
CH7	-	Complexity and compactness of Castle Hill station precinct area requires a coherent and seamless pedestrian network within, to and from the station. Being identified as a Major Centre with retail, business and community facilities as well as increase in density with changes in land use proposed around the station, there is expected to be widespread pedestrian activity.	Separated cycle paths are recommended where possible and shared paths minimised to avoid clash of pedestrians and cyclists. Footpath widening should also be considered to accommodate the high levels of pedestrian activity which is likely to increase further with the rail link.

Table 5.2 Recommended infrastructure outside Castle Hill Station precinct

Tracking Code	Map Ref	Issue	Recommendation
CHA	A	Disconnected nature of the bicycle routes in the vicinity of Castle Hill Station and a lack of dedicated cycling facilities in this area present a barrier to the future cycling growth.	Provide separated path on northern side of Old Northern Road between McMullen Avenue and Castle Hill Road. A detailed assessment will be required to test the feasibility of the recommendation considering the relatively steep downhill grade (heading south) which is expected to increase the speed of cyclists, use of path by school children and elderly pedestrians.
CHB	B		Provide a shared use path on Old Northern Road between Showground Road and Castle Street. This will need to tie in with the changes proposed on this part of Old Northern Road as a result of future expansion of Castle Towers Shopping Centre and changes to Mainstreet precinct.
CHC	C	Gap in the cyclist network between Pennant Street and Old Northern Road	A shared path is proposed on the northern side of Showground Road between Pennant Street and Carrington Road as part of Showground Road upgrade by RMS. The gap in the cyclist network between Pennant Street and Old Northern Road needs to be addressed.
CHD	D	Discontinuous existing on-road marked cycle path along Crane Road.	The width of the road carriageway becomes narrow close to the intersection of Orange Grove and Crane Road. Consider provision of shared or separated path along Crane Road between Orange Grove and Old Northern Road. Consideration may be given to links through Zerefos Development for increased permeability.
CHE	E	High volume of traffic on Old Castle Hill Road in the vicinity of the station precinct, and inadequate space for a safe on-road bicycle path. Sight lines are limited by parked cars and the high number of buses, particularly along Old Castle Hill Road. Discontinuous footpaths along: Old Castle Hill Road (key route to station) and Orange Grove on the south eastern side of station.	Provide an on or off road separated path on southern side of Old Castle Hill Road between McMullen Avenue and boundary of station precinct (Arthur Whitling Park) and provide upgrade of signalised crossing to provide cyclist priority at intersection of McMullen Avenue and Old Castle Hill Road. This will be subject to network design constraints.
CHF	F	[not used]	[not used]

Tracking Code	Map Ref	Issue	Recommendation
CHG	G	[not used]	[not used]
CHH	H	Maintaining pedestrian connection along Castle Street between Pennant Street (western side) and Old Northern Road (eastern side) as part of the. Castle Towers redevelopment proposal which shows changes in access to Castle Street.	Consider 24-hour access for pedestrians and cyclists along Castle Street between Pennant Street and Old Northern Road as part of Castle Towers redevelopment proposal to enable permeability for pedestrians.

5.3.2 Interchange Facilities

As outlined in Section 3.1.5, the bicycle parking provisions are proposed to vary between stations based on the cycling potential, constraints and opportunities within each catchment. Recommended bicycle parking allowances as per *the Deed* for Castle Hill Station are specified in Table 5.3. The initial (when Sydney Metro Northwest opens) and future provisions are planned for 1.5 percent of station access trips.

Table 5.3 Bicycle parking allowances at Castle Station as per Sydney Metro Northwest Scope and Performance Requirements

Parking classification	Initial provision	Future provision
Class 2 – lock-up	35	45
Class 3 – rails	5 (capacity for 10 bicycles)	10 (20 bicycles)
Total bicycles accommodated	**45**	**65**
Percentage of station access trips	**1.5% of station access trips**	**1.5% of station access trips**

Figure 5.6
Castle Hill Station Bicycle Recommendations

N

0 250 500 1,000 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 2.5km radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

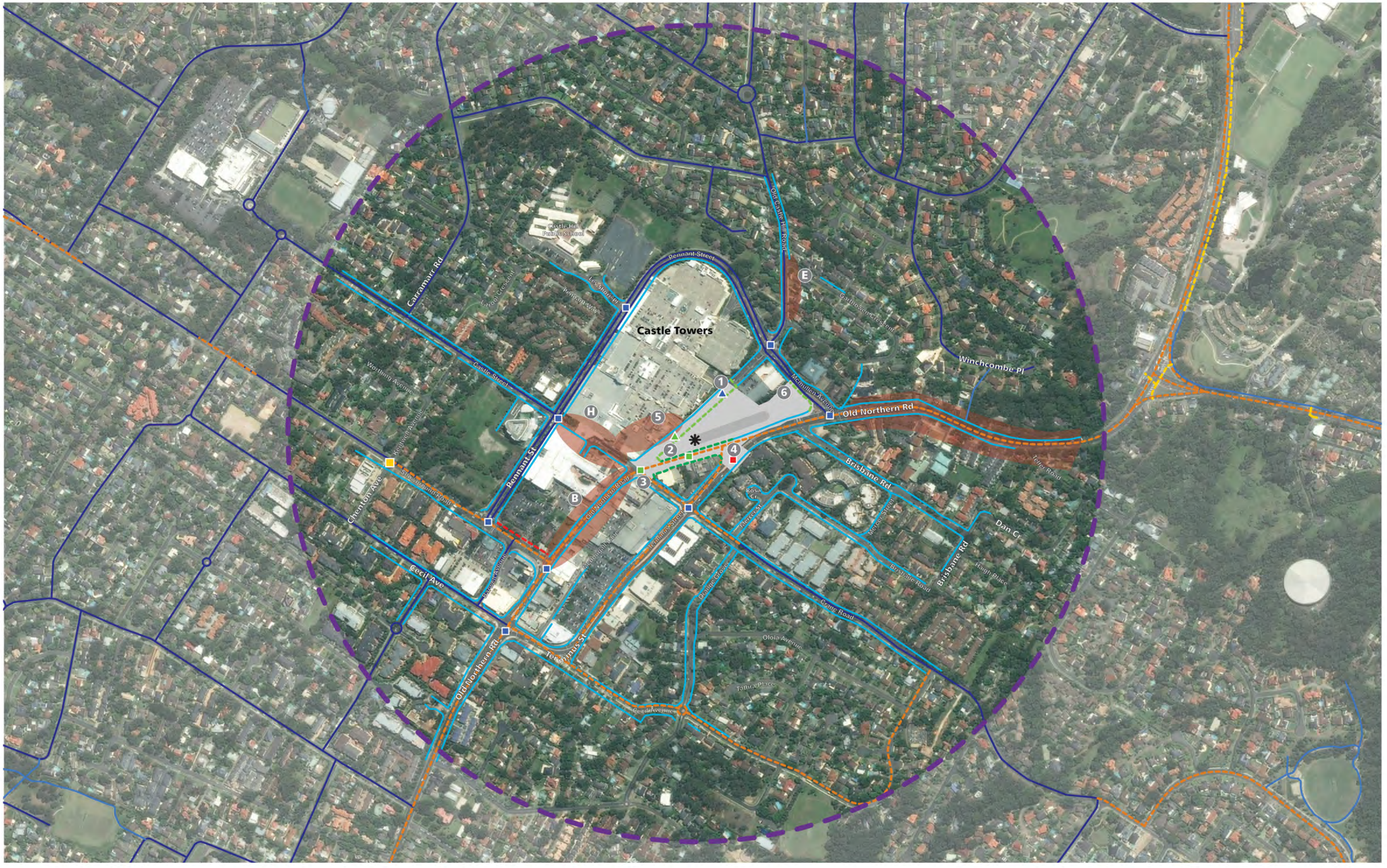


Figure 5.7
Castle Hill Station Pedestrian Recommendations

0 100 200 400 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 800m radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Footpath
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

6. Showground

6.1 Showground Station Overview

6.1.1 Location

The proposed Showground Station site is located adjacent to Carrington Road. The station precinct is located entirely within The Hills Shire Local Government Area (LGA), and is bound roughly by Showground Road and Carrington Road.

6.1.2 Land use and Sydney Metro Northwest customers

The area surrounding the Showground Station precinct contains a number of civic, cultural, retail, light industrial and service land uses of importance to North Western Sydney. The western half of the precinct, also known as the Castle Hill Industrial Area, contains light industrial and bulky goods uses that provide essential services and employment to the surrounding suburbs. The landscape character of this area is dominated by low density 1 to 3 storey warehouse-style structures and very large block sizes with limited pedestrian connections.

An established low density residential lies to the south-east of the station precinct, which adjoins residential areas of Castle Hill to the east. This area features single dwellings on large blocks within a subdivision pattern that features a large number of cul-de-sac. The Castle Hill Showground is located to the north of the precinct. The showground contains an oval and three spectator stands, as well as a range of other buildings used throughout the year and during the annual show.

The Cattai Creek corridor runs to the west of the station precinct, contributing to the leafy character of the area and providing visual and physical separation between the showground and light industrial areas.

6.1.3 Traffic and transport

Major roads within the vicinity of the station precinct include Showground Road and Carrington Road, as well as Victoria Avenue, which runs through the existing light industrial area. Windsor Road provides the main north-south connection between the Hills M2 Motorway and suburbs to the north. Carrington Road is a local road, providing an east-west connection between Showground Road and Victoria Avenue.

The street pattern in the surrounding area is generally connective, consisting of a large-grain and fine-grain configuration in the light industrial and residential areas respectively. Cycling and pedestrian infrastructure is disjointed, and accessibility for these modes is restricted by the lack of connectivity between the station and the existing industrial area. Access for cyclists around the station precinct is restricted further by the lack of dedicated cycling lanes.

6.1.4 Topography

Topography surrounding the Showground Station precinct is largely undulating, with elevations ranging from approximately 64 to 124 metres above sea level. The landscape forms a bowl around the Cattai Creek drainage channel that runs south to north from Cockayne Reserve, through the western edge of Castle Hill Showground, before continuing on to Cattai Creek. Therefore, meeting the requirements of *Austroads Standards* would be challenging here and may require special considerations during the design stages such as avoidance of sharp horizontal curves, provision of additional path width, recovery areas, warning signs etc.

6.2 Future Land Use

The *Showground Station Structure Plan* (DP&E 2013) has identified future growth areas surrounding the precinct (refer **Figure 6.1**). Showground station site has been identified as a Priority Precinct. It is proposed to

provide for more intensive commercial development to the west of the station precinct. The area around Victoria Avenue is proposed to be reinforced as a bulky goods retail corridor, which will cater for land use demand for the north-west into the future. To the west of the station precinct, existing industrial zoned areas which provide employment lands, services and goods is proposed to be retained and reinforced.

Future residential development is proposed to be isolated to the area immediately surrounding the station precinct, including a range of higher density residential development within the mixed-use area. This is proposed to be complemented by medium density residential development to the east of the station, providing a diversity of housing around the Showground station precinct.

New pedestrian or vehicular links are proposed in locations within the study area where they will enhance permeability. Utilising existing open space, a green link is proposed between 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.

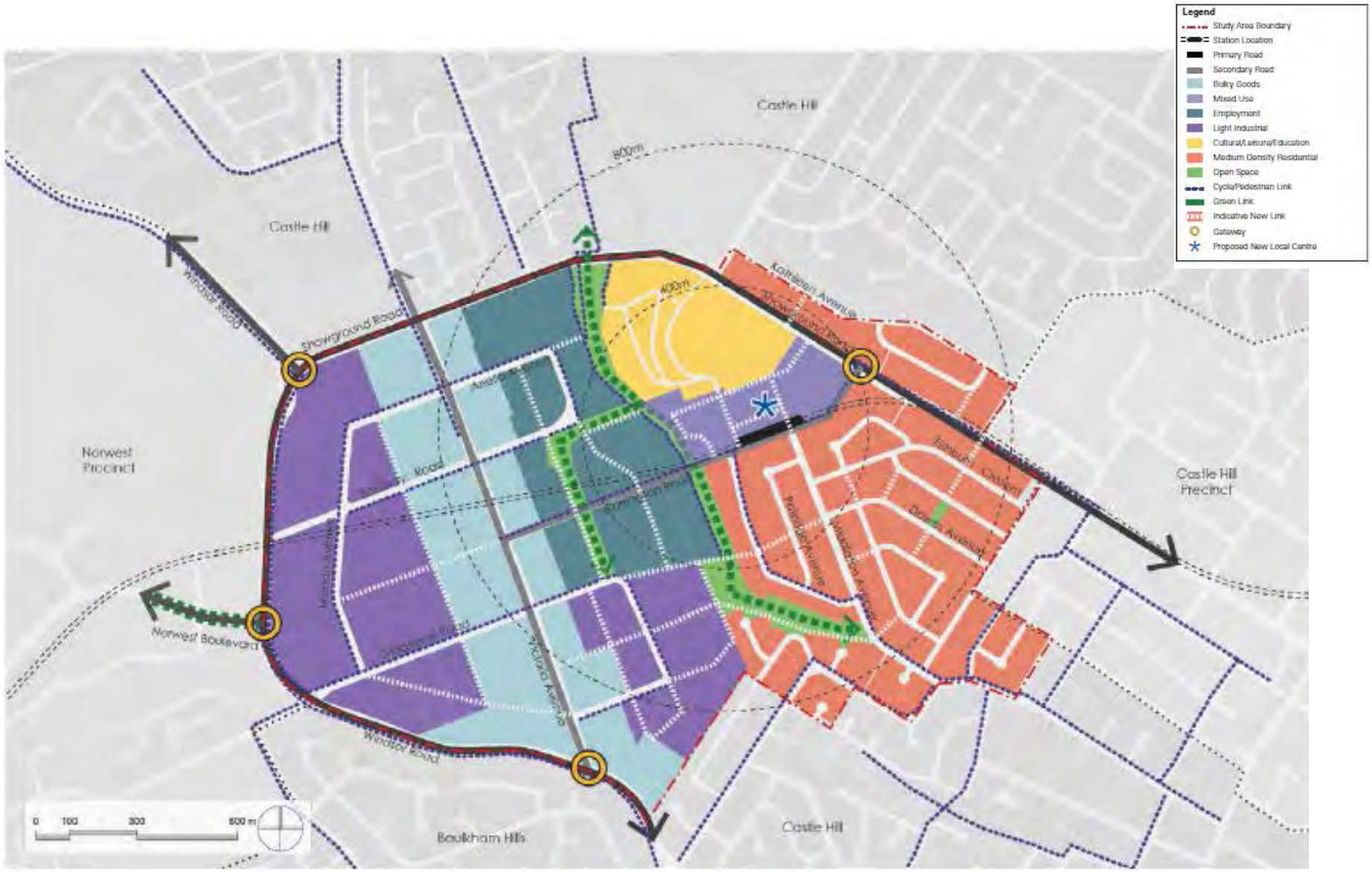


Figure 6.1 ***Showground Station Structure Plan***

6.3 Issues and Recommendations

6.3.1 Network Infrastructure

Key issues and recommendations regarding pedestrian and cycling network infrastructure in the Showground Station precinct and surrounds are identified in Table 6.1 and Table 6.2. Figure 6.2 and Figure 6.3 demonstrate the following:

- Existing pedestrian and bicycle paths within the station catchment;
- Proposed pedestrian and bicycle paths by others;
- Proposed pedestrian and bicycle paths to be delivered by Sydney Metro Northwest; and,
- Further recommendations for pedestrian and cyclist paths and infrastructure.

Refer maps in Figure 6.2 and Figure 6.3 for map references in Table 6.1 and Table 6.2. The path typology (footpaths or shared / separated paths) within the station precinct as shown on the maps is indicative at this stage. These are subject to detailed design for station precincts by NRT in the subsequent stages.

Table 6.1 Recommended infrastructure within Showground Station precinct

Tracking Code	Map Reference	Issue	Recommendation
SH1	1	Discontinuous footpath along southern side of Carrington Road and need for pedestrian and cycle paths on northern side of Carrington Road	Construct a footpath on the southern side of Carrington Road between Middleton Avenue and Ashford Avenue (within station precinct). *The Deed* requires a 2.5m wide footpath. It is recommended that a shared or separated path be considered on the northern side.
SH2	2	Need for cyclist access into, through, and around station precinct.	Consider on-road marked cycle path on Doran Drive, between New Street B and New Street A.
SH3	3	Need for pedestrian crossing facilities to the north of the station precinct into the showground area	Provide pedestrian crossings at or close to the intersection of New Precinct Street C and New Precinct Street B.

Table 6.2 Recommended infrastructure outside Showground Station precinct

Tracking Code	Map Reference	Issue	Recommendation
SHA	A	Need for separated/shared path between station precinct and Showground Road.	Separated path broadly following existing alignment of Doran Drive through the showground, between New Street A and Showground Road. Following this alignment will provide an improved and more visible route for cyclists accessing roads via Showground Road.
SHB	B	Signalised intersection at Gilbert Road and Showground Road does not currently offer safe crossing for cyclists.	Upgrade existing left in-left out intersection at Gilbert Road on Showground Road to a signalised pedestrian and cycle crossing.
SHC	C	Need for connection between proposed shared path on Showground Road and other cycling routes north of Showground Road.	Shared path on southern side of Showground Road between Gilbert Road and Kings Road.
SHD	D	Intersection at Kings Road and Showground Road needs improved crossing for pedestrians and cyclists.	Upgrade existing intersection at Kings Road and Showground Road to a signalised pedestrian and cycle crossing.

Tracking Code	Map Reference	Issue	Recommendation
SHE	E	Discontinuous footpath along southern side of Carrington Road.	Extend pedestrian footpath on southern side of Carrington Road from Ashford Avenue as far as Victoria Avenue.
SHF	*F*		*[not used]*
SHG	G	Lack of adequate pedestrian and cycle infrastructure within walking catchment of Showground Station.	Install pedestrian footpath on one side and shared path on the other side of Middleton Avenue south of Carrington Road within 10 minute walk catchment of station.
SHH	H		Install pedestrian footpath on both sides of Ashford Avenue south of Carrington Road within 10 minute walk catchment of station.
SHI	I	Absence of linkages with the existing industrial zone and employment area around Salisbury Road and Anella Avenue east of Victoria Avenue	Consider pedestrian and cycle links between Showground station precinct and Anella Avenue / Salisbury Road across Cattai Creek.

6.3.2 Interchange Facilities

As outlined in Section 3.1.5, the bicycle parking provisions are proposed to vary between stations based on the cycling potential, constraints and opportunities within each catchment. Recommended bicycle parking allowances as per *the Deed* for Showground Station are specified in Table 6.3. The initial (when Sydney Metro Northwest opens) and future provisions are planned for 2.5 percent of station access trips.

Table 6.3 Recommended bicycle parking allowances at Showground Interchange

Parking classification	2021	2036
Class 2 – lock-up	35	50
Class 3 – rails	5 (capacity for 10 bicycles)	10 (20 bicycles)
Total bicycles accommodated	**45**	**70**
Percentage of station access trips	**2.5% of station access trips**	**2.5% of station access trips**

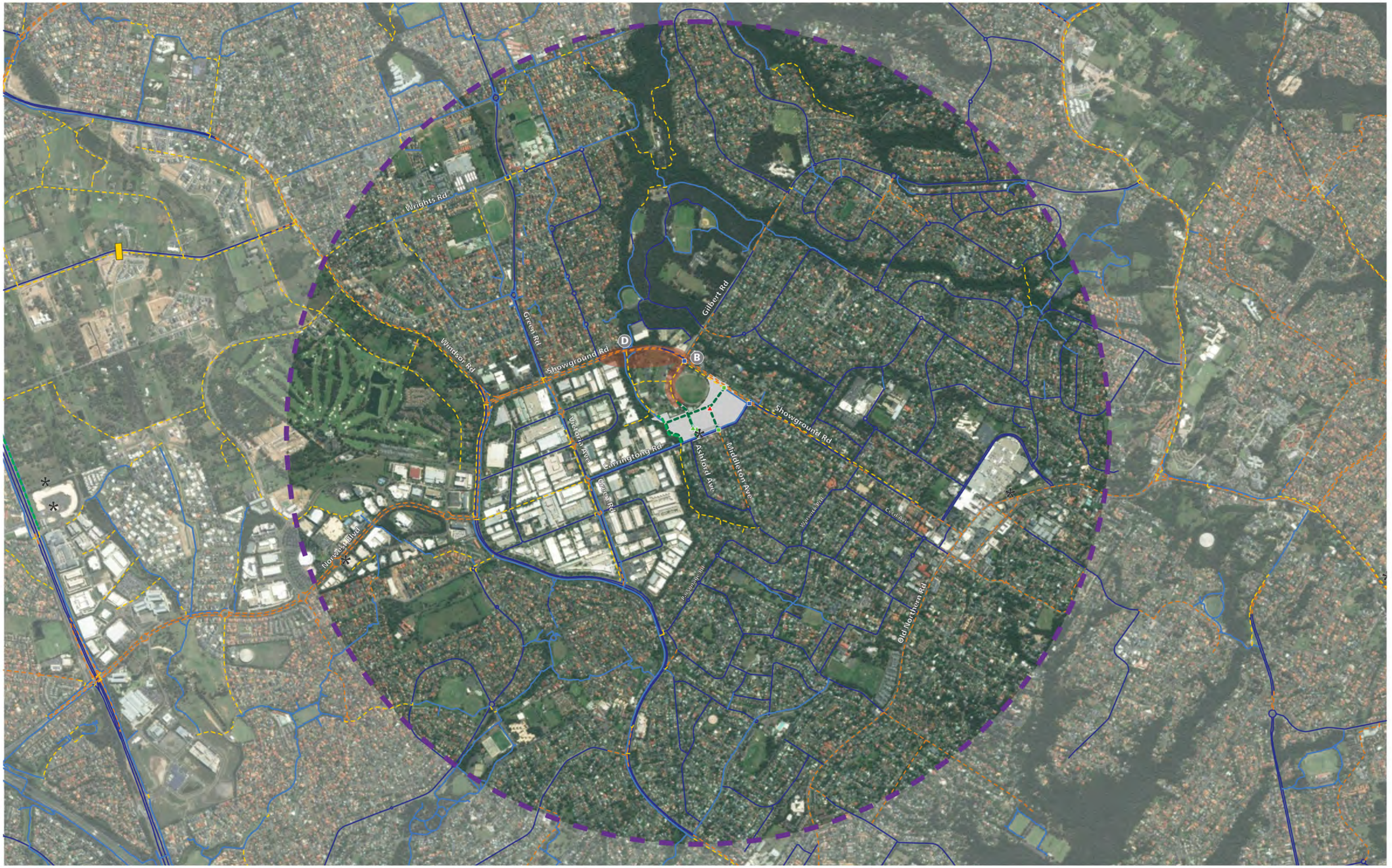


Figure 6.2
Showgrounds Station Bicycle Recommendations

N

0 250 500 1,000 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 2.5km radius from station entrance
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- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
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- Cyclist prioritised intersection
- Area of investigation

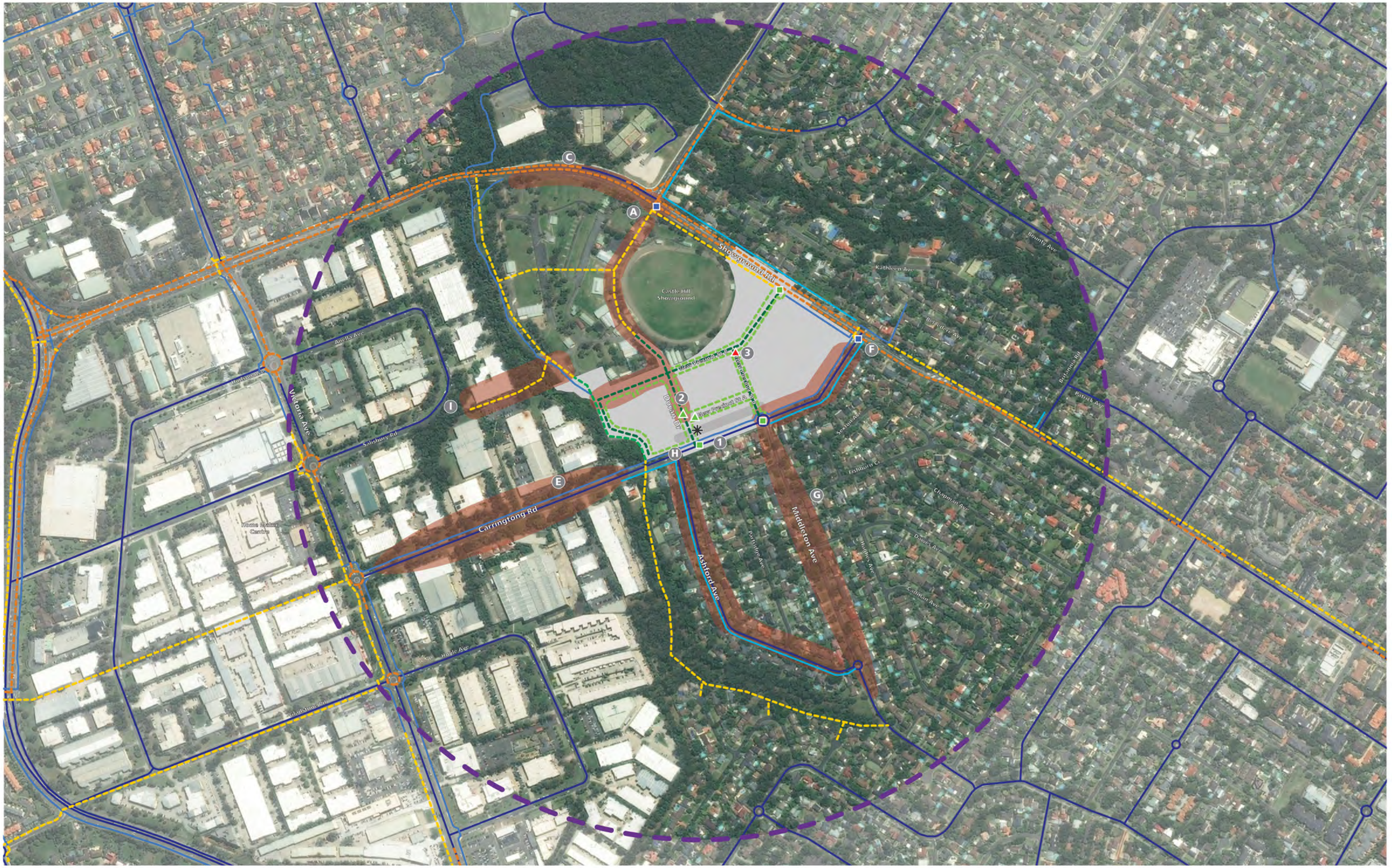

Figure 6.3
Showgrounds Station Pedestrian Recommendations

0 100 200 400 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 800m radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Footpath
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

7. Norwest

7.1 Norwest Station Overview

7.1.1 Location

The site of the proposed Norwest Station is located between Norwest Boulevard and Brookhollow Avenue, within Norwest Business Park. The station has been located primarily to serve the Norwest Business Park as well as residential areas to the north-west and south.

7.1.2 Land use and Sydney Metro Northwest customers

Norwest is the largest employment centre in the North West Subregion, comprising an established commercial and retail centre characterised by large commercial buildings. The Norwest Station site is proposed to be located within the centre of the more established, eastern area of Norwest Business Park. This area is separated from less-developed areas to the west along Old Windsor Road by wedges of residential development.

Beyond the Norwest Business Park, the area comprises largely low density residential development. The area surrounding the station precinct also contains Norwest Market town shopping centre and Hillsong Church in the north-west and the St Joseph's Convent site in the south-east.

7.1.3 Traffic and transport

Norwest Boulevard is a major arterial road and traverses the commercial and business core of the station precinct, providing a link to key destinations to the east and west. Internal access to the precinct is primarily provided by Fairway Drive and Solent Circuit to the north-west, Brookhollow Avenue and Barina Downs Road to the south-east.

Internal movement within the Norwest Business Park is constrained (particularly in the north-south direction) due to poor connectivity within the local street network, which features large block sizes in the established business park area, a number of residential culs-de-sac. Along Norwest Boulevard and streets surrounding the proposed Norwest Station site, pedestrian and cycling access is impeded by inadequacies in infrastructure such as street lighting, crossings (predominantly roundabouts) and lack of dedicated cycle lanes.

7.1.4 Topography

The topography of the Norwest Business Park consists of a valley that falls from the ridgelines of Barina Downs Road in the south and the Castle Hill Country Club towards Stranger's Creek. Areas to the north and south of Barina Downs Road are moderately undulating, while land to the west of Windsor Road falls relatively sharply down towards Stranger's Creek. Elevations in the area range from approximately 56 to 110 metres above sea level. The topography is mostly conducive to active transport modes with some undulating and steep sections.

7.2 Future Land Use

The *Norwest Station Structure Plan* (DP&E 2013) has identified future growth areas for the area (refer Figure 7.1). The structure plan proposes a commercial core for Norwest, which will ensure job targets for 2031 are achieved and that Norwest is reinforced as a specialised precinct. The existing commercial and retail premises adjacent to the station have been enveloped in this commercial core, creating a flexible mixed commercial and retail core that can provide for a variety of uses.

Outside this commercial core, space has been set aside for business park land use with more flexible controls to encourage the growth of Norwest as a specialised precinct.

The sub-precinct closest to the north of the station is proposed to become high density residential characterised by 7-12 storey apartments, benefiting from direct access to the station business park and the commercial core. The second sub-precinct is proposed to be located to the south of the station, with medium density residential characterised by 3-6 storey apartments. Beyond this, low density dwellings are proposed to be located to the north west of the station, comprising townhouses, duplexes and single detached dwellings.

Norwest Boulevard is proposed to remain the primary thoroughfare of Norwest; however upgrades will likely be required in the future, which may impact upon pedestrian access and amenity. As a result, consideration will need to be given to improved access arrangements for pedestrians, including signalised or grade separated crossings. Other new links will also be required within the precinct to increase connectivity and permeability. Using existing open space, green links are proposed between Fairway Drive and Castle Hills Country Club Golf Course, and along the eastern side of Edgewater Drive.

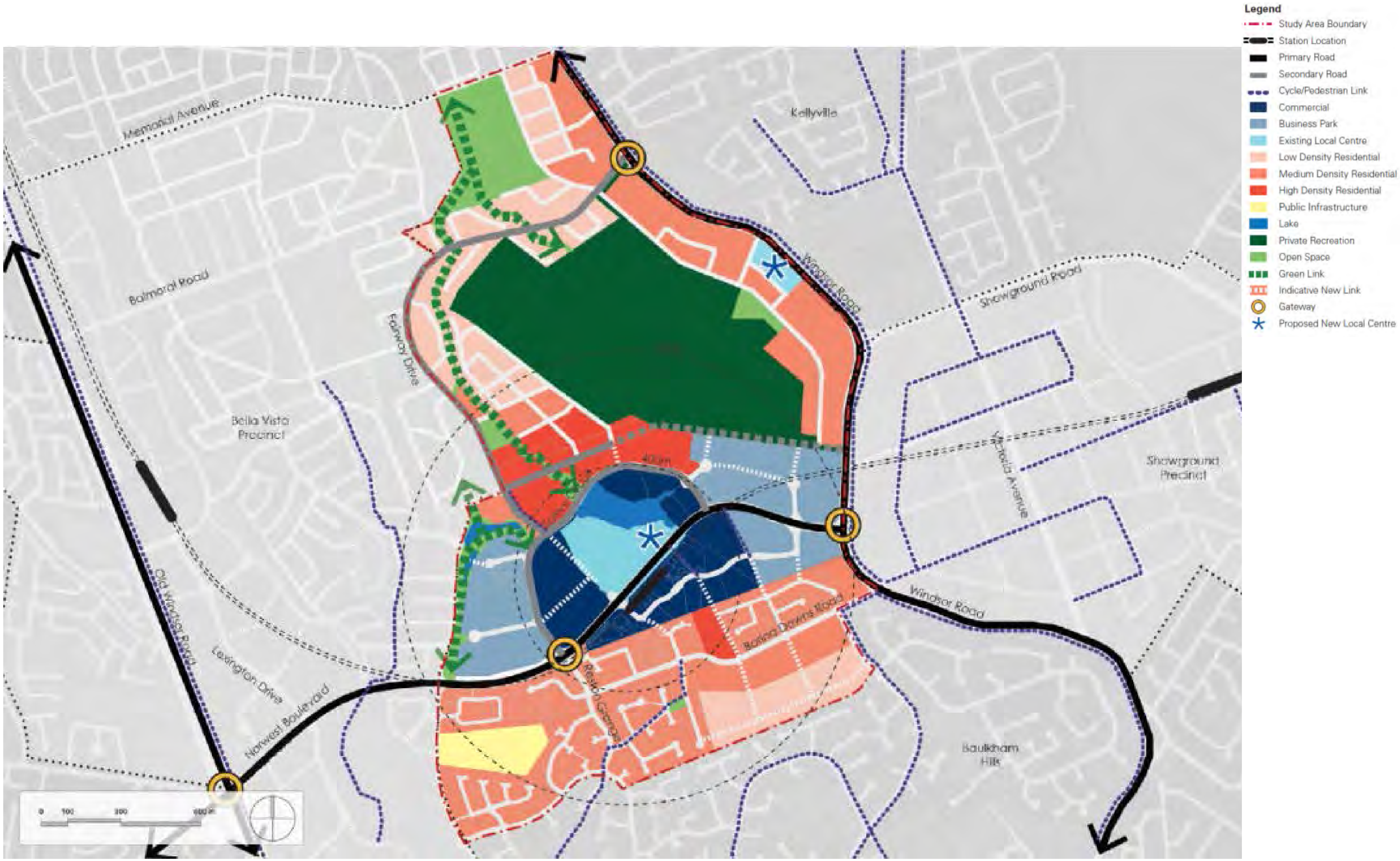

Figure 7.1 Norwest Station Structure Plan

7.3 Issues and Recommendations

7.3.1 Network Infrastructure

Key issues and recommendations regarding pedestrian and cycling network infrastructure in the Norwest Station precinct and surrounds are identified in Table 7.1 and

Table 7.2. Figure 7.2 and Figure 7.3 demonstrate the following:

- Existing pedestrian and bicycle paths within the station catchment;
- Proposed pedestrian and bicycle paths by others;
- Proposed pedestrian and bicycle paths to be delivered by Sydney Metro Northwest; and,
- Further recommendations for pedestrian and cyclist paths and infrastructure.

Refer maps in Figure 7.2 and Figure 7.3 for map references in Table 7.1 and

Table 7.2. The path typology (footpaths or shared / separated paths) within the station precinct as shown on the maps is indicative at this stage. These are subject to detailed design for station precincts by NRT in the subsequent stages.

Table 7.1 Recommended infrastructure within Norwest Station precinct

Tracking Code	Map Reference	Issue	Recommendation
NW1	1	Need for connection of pedestrian and cyclist network between station entrance and area south of station.	Install a separated off road path on north side of Brookhollow Avenue within station precinct between station entry plaza and recommended crossing of Brookhollow Avenue.
NW2	2	Need for a pedestrian and cyclist crossing on Brookhollow Avenue at its intersection with Evesham Court allowing continuity with the shared path.	Provide additional crossing approximately 140m east to provide improved connection to existing shared path (through to Evesham Court) and station entry plaza.
NW3	3	Need for connection of pedestrian and cyclist network to proposed separated path along Norwest Boulevard, to facilitate a continuous link to surrounding residential areas and existing cycling network for future station patrons.	Install separated path on southern side of Norwest Boulevard from station entrance to boundary of station precinct to link to recommended separated path on Norwest Boulevard (outside station precinct).
NW4	4	Potential need for connection between station entrance and Norwest Market Town commercial area.	Consider potential future underground pedestrian link between station and Norwest Market Town. A sub-surface pedestrian link to north side of Norwest Boulevard has been incorporated into Norwest Station concept design as a pre-agreed option.

Table 7.2 Recommended infrastructure outside Norwest Station precinct

Tracking Code	Map Reference	Issue	Recommendation
NWA	A	Difficult on-road cycling conditions on Norwest Boulevard due to narrow width of road and double-carriageway.	Install separated path on southern side of Norwest Boulevard between Windsor Road and boundary of station precinct to link to existing shared path on Windsor Road.
NWB	B		Install a separated path on northern side of Norwest Boulevard between Brookhollow Avenue and Edgewater Drive to link to existing shared path on Edgewater Drive to improve connection with the regional network to the north.
NWC	C	Disconnected existing shared paths which do not meet key arrival/departure routes of cyclists to and from the station: - Between Barina Downs Road and Brookhollow Avenue. - On Edgewater Drive.	Connect discontinued sections of shared path on Evesham Court, providing a complete off-road facility to the station from the residential areas to the south.
NWD	D		Complete missing section of shared path on Edgewater Drive.
NWE	E	Lack of direct connection between future Balmoral Road release area and Norwest Station. Missing links in pedestrian network will be required, considering future land development north of Solent Circuit, and within the Norwest town centre.	Consider future provision of pedestrian and cycle separated path to create a dedicated link between the Balmoral Road Release Area and Norwest Boulevard (running between Norwest Market Town and Hillsong Church) including upgraded crossing facility at the intersection of Solent Circuit and Fairway Drive.
NWF	F	Need for connection of proposed separated paths along Norwest Boulevard.	Installation of crossing facility on Solent Circuit at Norwest Boulevard to facilitate longitudinal movement of pedestrians and cyclists.
NWG	G	Disconnected existing shared paths which do not meet key arrival/departure routes of cyclists to and from the station between Barina Downs Road and Fairmont Avenue.	Connect discontinued shared path along Fairmont Avenue and Barina Downs Road.
NWH	*H*	*[Not Used]*	*[Not Used]*
NWI	I	No pedestrian infrastructure exists to connect the existing footpath network adjacent to Norwest Lake, to future development areas north of Solent Circuit.	Install pedestrian footpath on southern side of Century Circuit having regard to any end state intersection changes that may impact the area.
NWJ	J	Disconnected shared paths between Brookhollow Avenue and Norwest Boulevard.	Link shared path between Brookhollow Avenue and Norwest Boulevard. Safeguard for extension of sub-surface pedestrian link to the new development in the north

7.3.2 Interchange Facilities

As outlined in Section 3.1.5, the bicycle parking provisions are proposed to vary between stations based on the cycling potential, constraints and opportunities within each catchment. Recommended bicycle parking allowances as per *the Deed* for Norwest Station are specified in Table 7.3. The initial (when Sydney Metro Northwest opens) are planned at 2.5 percent and future provisions increased to 3.5 percent of station access trips.

Table 7.3 Bicycle parking allowances at Norwest Station

Parking classification	2021	2036
Class 2 – lock-up	25	35
Class 3 – rails	5 (capacity for 10 bicycles)	15 (30 bicycles)
Total bicycles accommodated	**35**	**65**
Percentage of station access trips	**2.5% of station access trips**	**3.5% of station access trips**

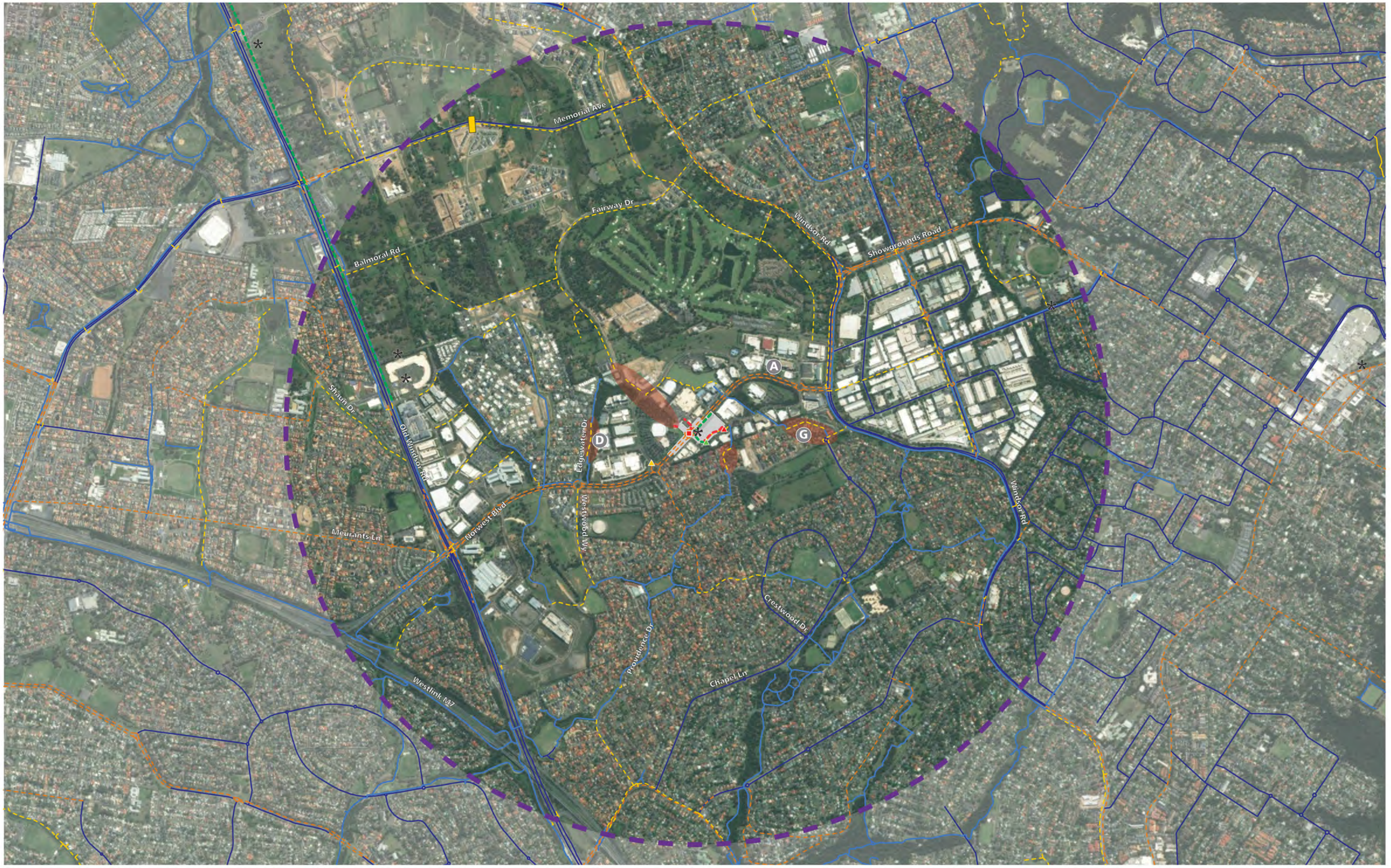

Figure 7.2
Norwest Station Bicycle Recommendations

N

0 250 500 1,000 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 2.5km radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

Figure 7.3
Norwest Station Pedestrian Recommendations

0 100 200 400 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 800m radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Footpath
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

8. Bella Vista

8.1 Bella Vista Station Overview

8.1.1 Location

The Bella Vista Station precinct area borders Old Windsor Road in the west, Balmoral Road in the north and Celebration Drive in the south.

The station is located within The Hills Shire Local Government Area (LGA), with the precinct incorporating some areas of Blacktown City Council across Old Windsor Road.

8.1.2 Land use and Sydney Metro Northwest customers

The Bella Vista precinct currently encompasses the western portion of the Norwest Business Park and is surrounded by an area of low density housing and developing greenfield housing estates.

Within an 800 metre radius of the station there is also the Anglican Technical College and Emmanuel Baptist Church, both located on the west side of Old Windsor Road.

8.1.3 Traffic and transport

Old Windsor Road is a major arterial road connecting Windsor to the north with the M2/M7 and Parramatta to the south. Norwest Boulevard is also a major arterial road connecting the M2/M7 with Windsor Rd and Castle Hill. At the present time the local transport network is not well developed and the street layout is dominated by culs-de-sac.

There are limited existing cycle paths in the area and they are not fully interconnected. There is a dedicated cycle path along Old Windsor Road but other major roads in the precinct such as Norwest Boulevard do not provide dedicated cycle infrastructure and do not offer pedestrians and cyclists friendly environments.

Issues that impede the prevalence of bicycle and pedestrian accesses in the area include difficulty in crossing Old Windsor Road and poor permeability of the street network caused by the high prevalence of culs-de-sac.

8.1.4 Topography

Old Windsor Road runs uphill from north to south through the precinct. Elevations in the area vary from 56 to 108 metres above sea level. The highest point in the Bella Vista area occurs in the south of the precinct in Bella Vista Farm Park and this high point drops off steeply to the north and south. The topography is mostly conducive to active transport modes with some undulating and steep sections.

8.2 Future Land Use

The *Bella Vista Station Structure Plan* (DP&E and TfNSW 2014) informs future land use planning around the station precinct. Bella Vista station site has been identified as a Priority Precinct. The plan (shown in Figure 8.1) proposes a commercial/retail core around the station that would benefit from access to the future station and surrounding business park and be in close proximity to residential areas. North of the station is to be designated a mixed use area comprising commercial, retail and medium density residential. This will provide a transition between the commercial area and the residential areas of Memorial Avenue and Balmoral Road. The northern areas of the precinct near the rail line comprise zones of medium and high density residential with the highest density around the station being 7 to 22 storeys.

In the north west of the precinct is a proposed smaller local centre on the corner of Hector Circuit and Memorial Avenue. The north east and east of the precinct is proposed to be predominantly low density residential.

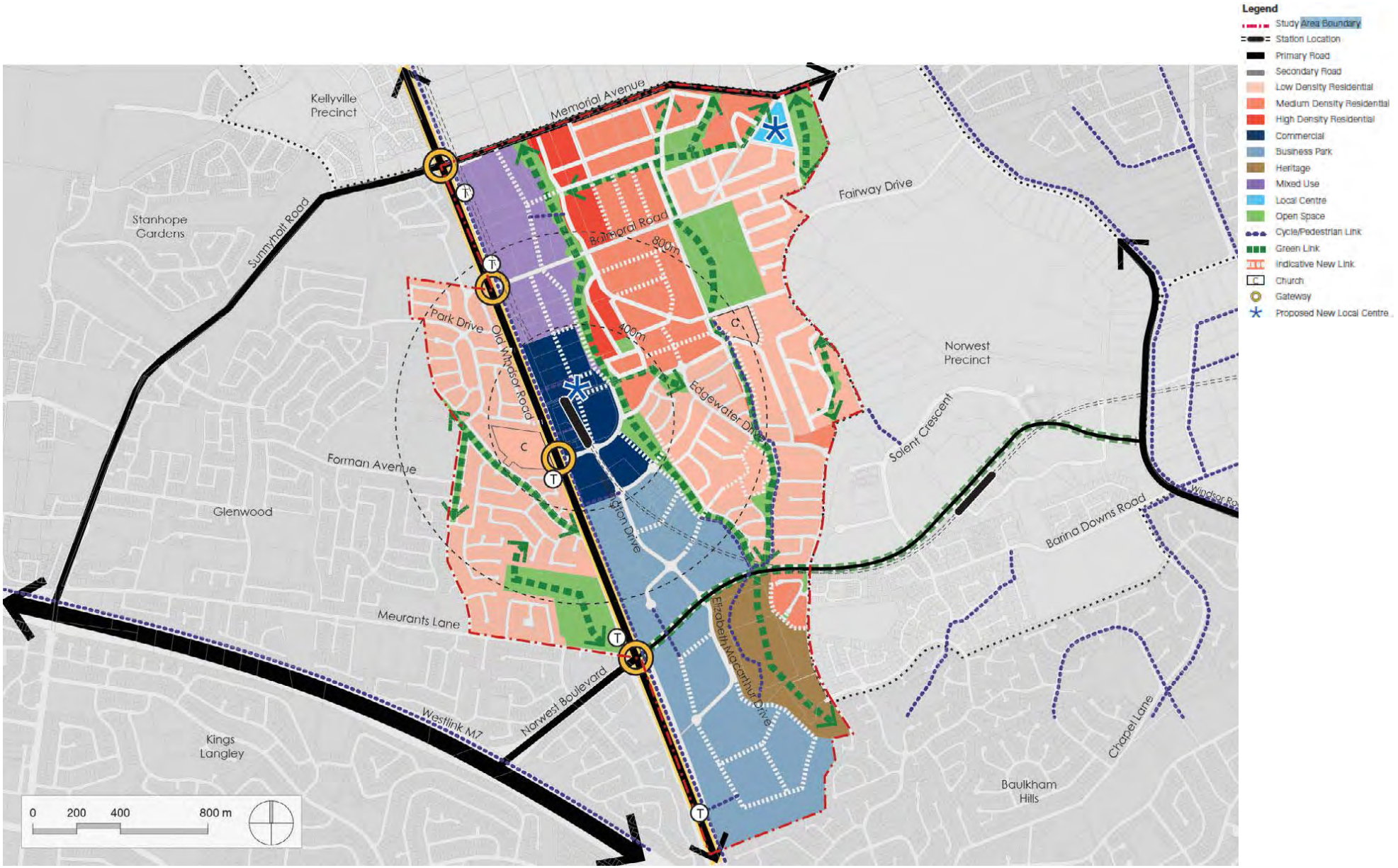

Figure 8.1 Bella Vista Structure Plan

8.3 Issues and Recommendations

8.3.1 Network Infrastructure

Key issues and recommendations regarding pedestrian and cycling network infrastructure in the Bella Vista Station precinct and surrounds are identified in Table 8.1 and

Table 8.2, Figure 8.2 and Figure 8.3 demonstrate the following:

- Existing pedestrian and bicycle paths within the station catchment;
- Proposed pedestrian and bicycle paths by others;
- Proposed pedestrian and bicycle paths to be delivered by Sydney Metro Northwest; and,
- Further recommendations for pedestrian and cyclist paths and infrastructure

Refer maps in Figure 8.2 and Figure 8.3 for map references in Table 8.1 and

Table 8.2. The path typology (footpaths or shared / separated paths) within the station precinct as shown on the maps is indicative at this stage. These are subject to detailed design for station precincts by NRT in the subsequent stages.

Table 8.1 Recommended infrastructure within Bella Vista Station precinct

Tracking Code	Map Reference	Issue	Recommendation
BV1	1	Need for pedestrian and cyclist network connections between station precinct and broader network.	Provide separated path on northern side of Celebration Drive between Old Windsor Road and Lexington Drive extension.
BV2	2	Disconnected separated/shared path network surrounding Bella Vista station.	Provide separated path on southern side of Celebration Drive between Brighton Drive and Lexington Drive.
BV3	3	Need for safe and efficient crossings for pedestrians and cyclists entering and exiting Lexington Drive extension and the station precinct. Need for connection between separated/shared path on northern and southern sides of Celebration Drive.	Install signalised intersection with pedestrian and cyclist crossing facilities at intersection of Celebration Drive and Lexington Drive.
BV4	4	No separated/shared paths within station precinct for cyclist connectivity to station entrance. Need for pedestrian and cyclist connection into station precinct from Lexington Drive.	Provide separated path on New precinct street between Old Windsor Road and Lexington Drive extension.
BV5	5	Need for pedestrian and cyclist connection to Balmoral Road to link station precinct to proposed cycling route along Balmoral Road, particularly considering future development in Balmoral Road Release Area.	Provide separated path on western side of New Precinct Street A connecting to Balmoral Road and Balmoral Road Release Area in the north.
BV6	6	Lack of crossing facilities north of station entrances for cyclists/pedestrians travelling from/to new Balmoral Road Release Area.	Install pedestrian crossing at eastern end of car park entrance road.
BV7	7		Install pedestrian crossing on Balmoral Road at northern end of station precinct, aligned to western side of Lexington Drive / New Precinct Street A.

Tracking Code	Map Reference	Issue	Recommendation
BV8	8	Missing direct link between station precinct and Brighton Drive to the east.	Provide pedestrian and cycle connection from station to Brighton Drive in the east. This will provide connection between the station precinct and the residential in the east by linking with the existing shared path on Brighton Drive.

Table 8.2 Recommended infrastructure outside Bella Vista station precinct

Tracking Code	Map Reference	Issue	Recommendation
BVA	A	Lack of pedestrian and cyclist connection, and long walk/cycle time to station, for residences west of Old Windsor Road.	Investigate provision and location of a separated path connection to the footbridge over Old Windsor Road near the Glenwood residential area.
BVB	B	Disconnection of shared path on western side of Old Windsor Road south of station precinct. Need for connection to access residences on western side of Old Windsor Road.	Install separated path on the western side of Old Windsor Road between Celebration Drive and Shaun Drive.
BVC	C	Disconnected separated/shared path network surrounding Bella Vista station.	Investigate on-road cycling route options west of Old Windsor Road in the Glenwood residential area.
BVD	D		Connect and extend existing separated/shared paths on northern portion of Brighton Drive to link to new Balmoral Road Release Area.
BVE	E	Need for pedestrian and cyclist connection on Balmoral Road to link station precinct to future development in Balmoral Road Release Area.	Installation of separated path on Balmoral Road to link to new Balmoral Road Release Area. It is further noted that The Hills Shire Council advised that Balmoral Rd DCP requires 2.5m wide shared path along full length of Balmoral Rd on one side of road only with 1.5m wide footpath on other side. Substantial sections of this cycleway have already been constructed by developers.
BVF	F	Disconnected separated/shared path network surrounding Bella Vista station. Shaun Drive or adjacent streets provide opportunity for connection due to ease of connection to Old Windsor Road, width of street and adjacent space.	Investigate provision of a separated path along Shaun Drive or parallel street to connect residences west of Old Windsor Road to station precinct.
BVG	G	Disconnected separated/ shared path network south of Bella Vista station.	Provide separated or on-road route on Westwood Way, to Norwest Boulevard, to provide connection to existing shared path network.
BVH	H	Lexington Drive provides limited capacity for cycle use with marked vehicle lanes, parked cars and wide driveway entrances.	Consider design for either off road or on road cycle facilities along Lexington Drive to improve cycle access. Also provide safe pedestrian crossing over Lexington Drive.
BVI	I	Need for pedestrian and cyclist connection across Memorial Avenue mid-block..	Consider provision of pedestrian and cycle bridge over Memorial Avenue as part of the upgrade being carried out by RMS.

Tracking Code	Map Reference	Issue	Recommendation
BVJ	J	Missing links across Elizabeth MacArthur Creek to the east of the station to link to part of the future development in Balmoral Road Release Area to the east.	Provide pedestrian and cycle connection across Elizabeth MacArthur Creek
BVK	K	No pedestrian crossings along Lexington Dr between Celebration Drive and Norwest Boulevard	Consider pedestrian crossing midway between Celebration Drive and Norwest Boulevard.
BVL	L	Narrow footpaths along Lexington Drive	Widen footpaths along Lexington Drive
BVM	-	Inclusion of active transport links to and from Sydney Metro Northwest stations on current master plans relevant to surrounding area.	Ensure active transport links to and from the Sydney Metro Northwest stations are considered in detail as part of the Priority Precinct planning for Bella Vista and plans for Balmoral Road Release Area 2012.
BVN	N	Missing active transport connection from Bella Vista Farm Park to the eastern side of the park (Westwood Way side).	Provide pedestrian and cycle connection between the existing paths within Bella Vista Farm Park and the off-road cycle path on Bella Vista Drive
BVO	O	Need for more direct pedestrian and cyclist connection for residences east of Elizabeth Macarthur Creek to Bella Vista station in the north west and Old Windsor Road in the west.	Provide pedestrian and cycle links over Elizabeth Macarthur Creek and Waterfall Crescent Reserve connecting to culs-de-sac streets – Meridian Place and Norwest Business Park west at the end of Woolworths Way

8.3.2 Interchange Facilities

As outlined in Section 3.1.5, the bicycle parking provisions are proposed to vary between stations based on the cycling potential, constraints and opportunities within each catchment. Recommended bicycle parking allowances as per *the Deed* for Bella Vista Station are specified in Table 8.3. The initial provisions are planned for 1.5 percent of station access trips (when Sydney Metro Northwest opens) and increase to 2% in the future.

Table 8.3 Bicycle parking allowances at Bella Vista Station

Parking classification	2021	2036
Class 2 – lock-up	25	40
Class 3 – rails	5 (capacity for 10 bicycles)	20 (40 bicycles)
Total bicycles accommodated	**35**	**80**
Percentage of station access trips	**1.5%**	**3.5%**

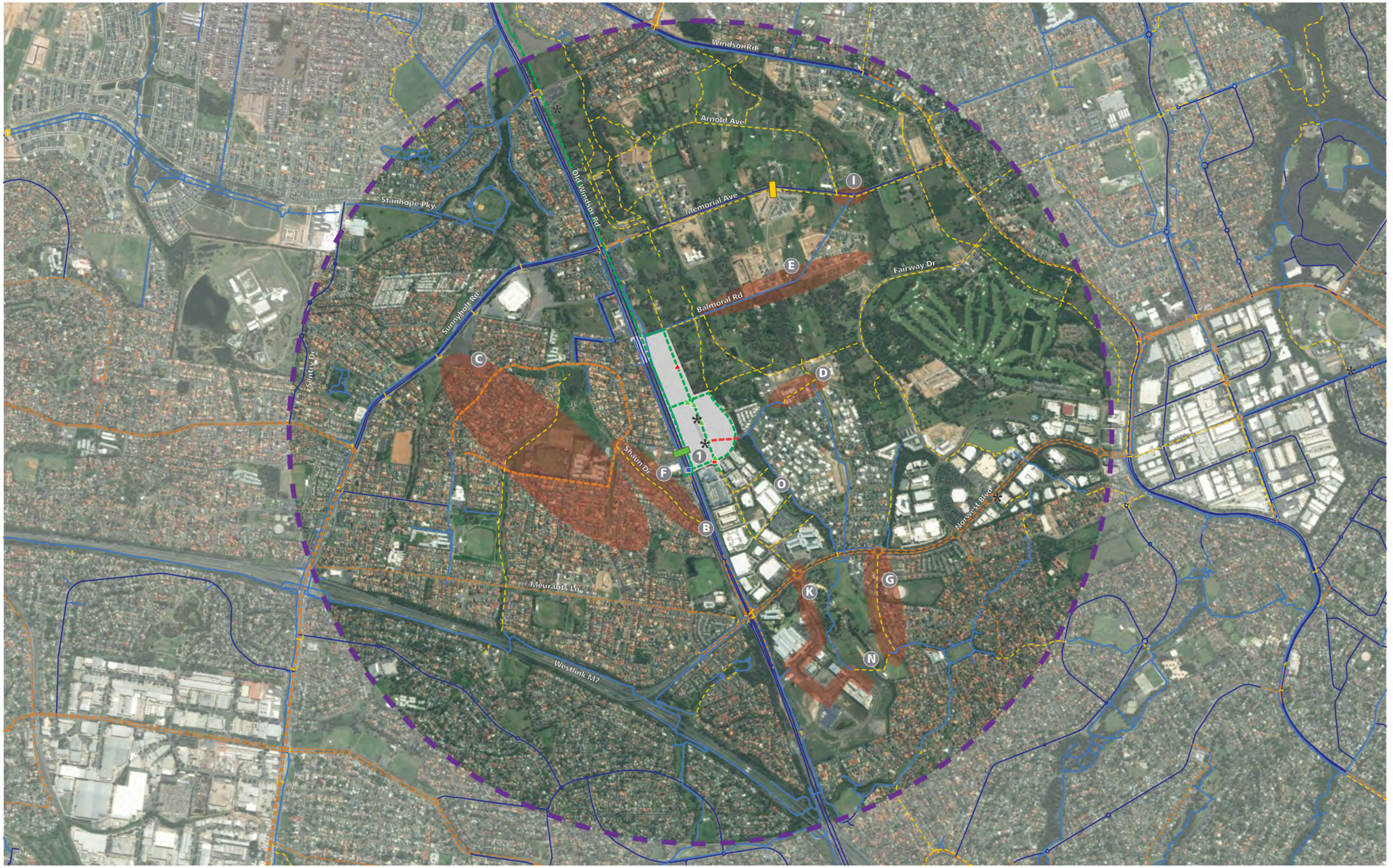

Figure 8.2
Bella Vista Station Bicycle Recommendations

N 0 250 500 1,000 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 2.5km radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

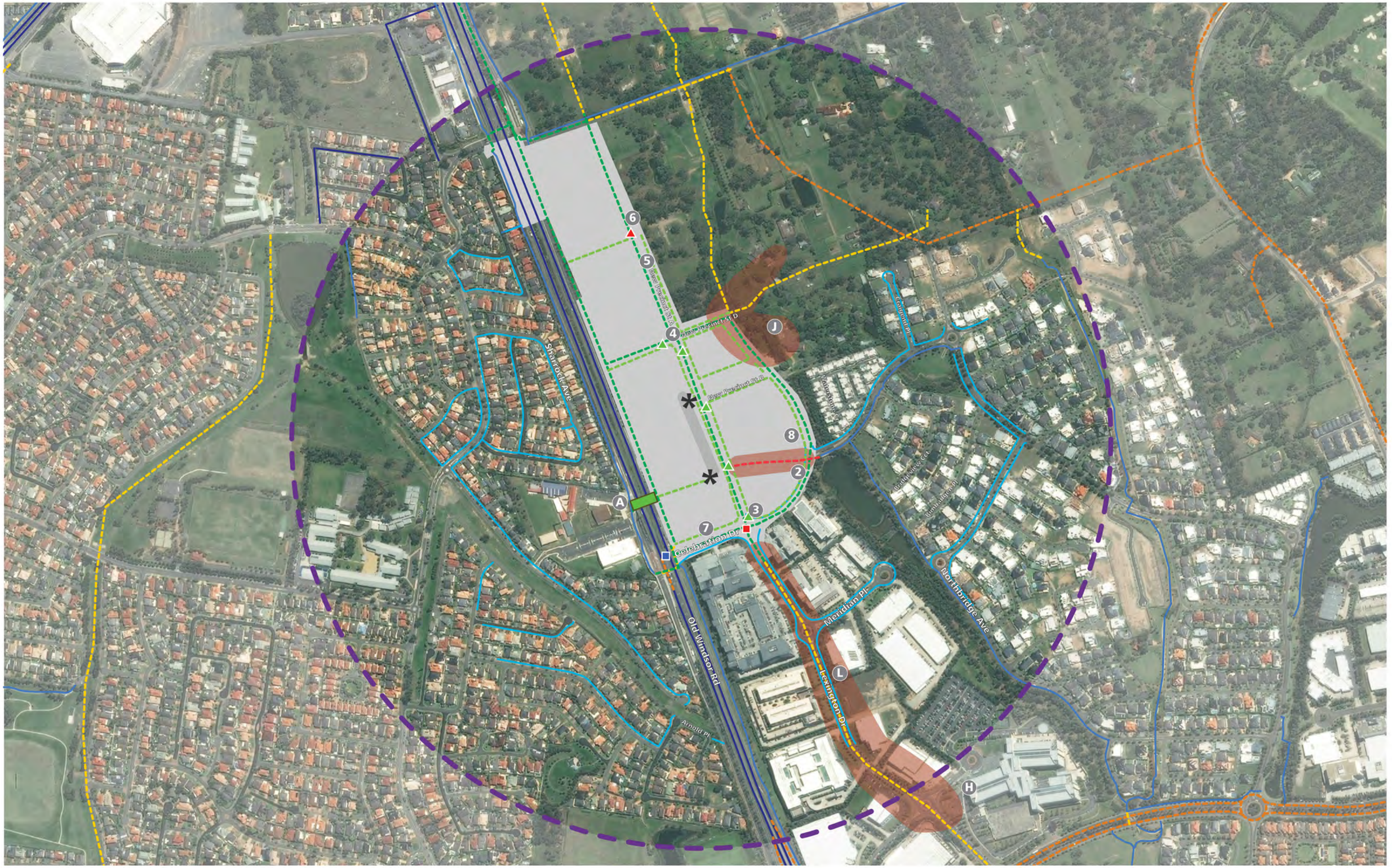

Figure 8.3
Bella Vista Station Pedestrian Recommendations

N

0 100 200 400 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 800m radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Footpath
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

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- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

9. Kellyville

9.1 Kellyville Station Overview

9.1.1 Location

The Kellyville Station precinct area is situated between Old Windsor Road in the west and Samantha Riley Drive in the north.

The station is located within The Hills Shire Local Government Area (LGA), with the precinct incorporating some areas of Blacktown City Council across Old Windsor Road.

9.1.2 Land use and Sydney Metro Northwest customers

The Kellyville Station precinct currently features low density residential dwellings and undeveloped land within the Balmoral Road release area. Within an 800 metre area of the proposed station there is a nature reserve, and low density residential areas as well as Caddies Creek and Elizabeth Macarthur Creek.

9.1.3 Traffic and transport

Old Windsor Road and Windsor Road are major arterial roads that connect Windsor in the north with the M2/M7 and Parramatta to the south. There are existing cycle routes along Old Windsor Road and Windsor Road. In the north of the precinct, Old Windsor and Windsor roads join to form Windsor Road.

Issues that impede pedestrian and bicycle access in the area include lack of crossings over Caddies and Elizabeth Macarthur Creeks and limited street lighting in undeveloped areas. The Old Windsor/Windsor Road corridor is wide and heavily trafficked with high sign-posted speed limits for an urban area.

9.1.4 Topography

Old Windsor Road is on a gentle upgrade from north to south and elevations in the area range from 46 to 72 metres above sea level. Topographical analysis of the area shows that the highest points in the precinct occur in the south area along Memorial Avenue. In general, the topography is quite conducive to active transport modes – walking and cycling.

9.2 Future Land Use

The *Kellyville Station Structure Plan* (DP&E and TfNSW 2014) identifies proposed future land uses around the station precinct. Kellyville station site has been identified as a *Priority Precinct*. The plan shown in **Figure 9.1** proposes a new local centre adjacent to the station to provide for the growing retail needs of the area. Surrounding the station and open spaces areas of high density residential have been identified (between 7 to 12 storeys) where there is greater access to bus and rail transport corridors as well as retail services. Medium density residential (3 to 6 storeys) will be located further from the station; around a ten minute walk. Beyond the medium density zone, townhouses, duplexes and single detached dwellings would be located.

The area would draw on existing vegetation, parks and riparian corridors to establish green links along Elizabeth Macarthur and Strangers Creeks. These will form significant pedestrian and cyclist links between Rouse Hill and Bella Vista/Norwest while providing ecological and drainage corridors within the area. The public domain plan would involve the upgrading of streetscapes in and around the precinct including the creation of new and widening of existing footpaths, providing barrier free access and introducing attractive and appropriate street furniture.

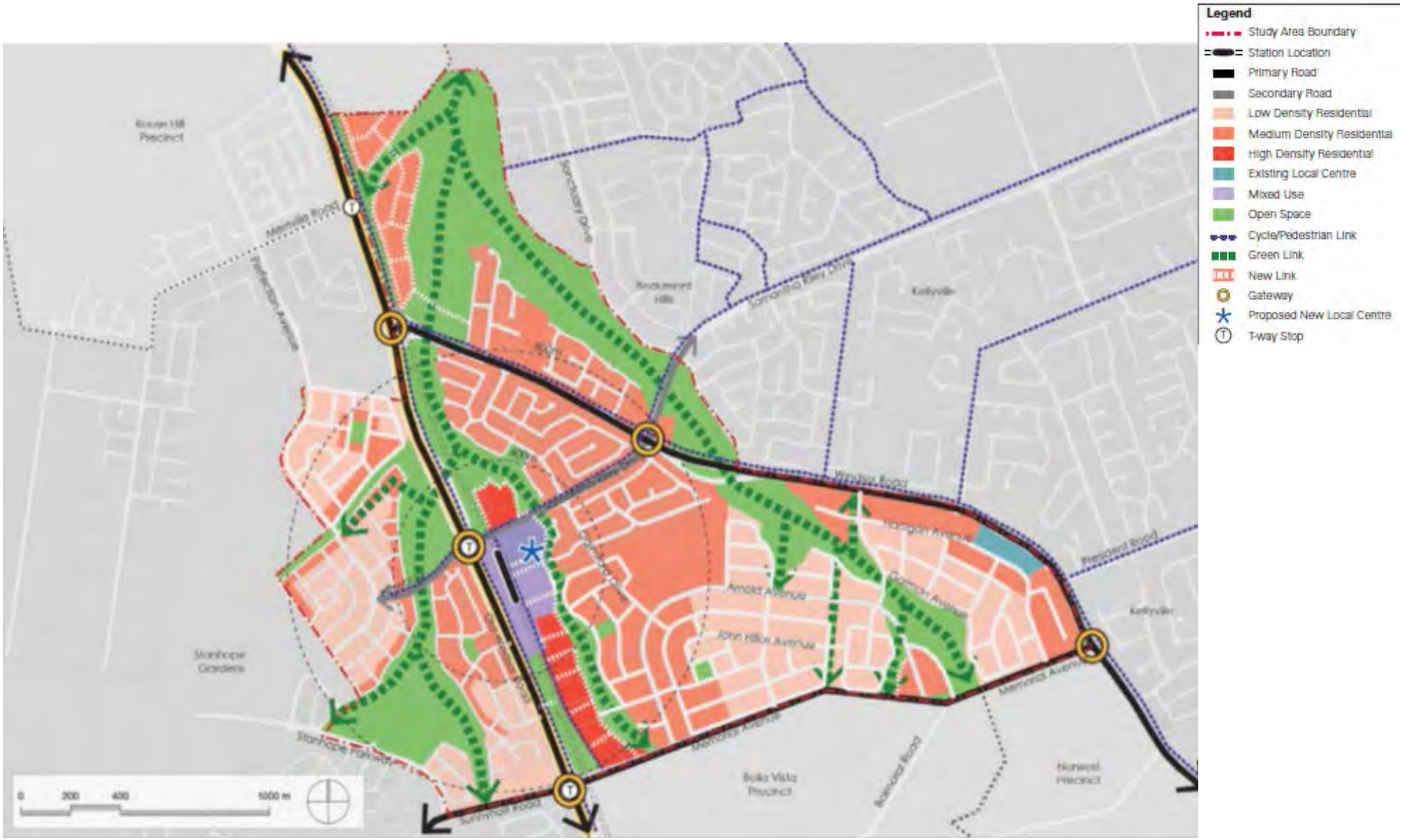

Figure 9.1 Kellyville Station Structure Plan

9.3 Issues and Recommendations

9.3.1 Network Infrastructure

Key issues and recommendations regarding pedestrian and cycling network infrastructure in the Kellyville Station precinct and surrounds are identified in Table 9.1 and

Table 9.2. Figure 9.2 and Figure 9.3 demonstrate the following:

- Existing pedestrian and bicycle paths within the station catchment;
- Proposed pedestrian and bicycle paths by others;
- Proposed pedestrian and bicycle paths to be delivered by Sydney Metro Northwest; and,
- Further recommendations for pedestrian and cyclist paths and infrastructure .

Refer maps in Figure 8.2 and Figure 8.3 for map references in Table 8.1 and

Table 8.2. The path typology (footpaths or shared / separated paths) within the station precinct as shown on the maps is indicative at this stage. These are subject to detailed design for station precincts by NRT in the subsequent stages.

Table 9.1 Recommended infrastructure within Kellyville Station precinct to be delivered by Sydney Metro Northwest

Tracking Code	Map Reference	Issue	Recommendation
KV1	1	Need for connections between station entrance to surrounding road and recommended cycling network.	Install separated path on southern side of Samantha Riley Drive between New precinct street and boundary of station precinct.
KV2	2	No safe crossings for pedestrians and cyclists when entering station precinct via Samantha Riley Drive from the east.	Install pedestrian crossing on New Road A at intersection with Samantha Riley Drive.

Table 9.2 Recommended infrastructure outside Kellyville Station precinct to be delivered by others

Tracking Code	Map Reference	Issue	Recommendation
KVA	A	Existing shared path on the southern side of Samantha Riley Drive, connecting Windsor Road and Old Windsor Road, not properly line-marked and signposted.	Upgrade existing shared path to separated off road path on southern side of Samantha Riley Drive between boundary of station precinct and Windsor Road.
KVB	B	Limited crossings of Caddies Creek restrict pedestrian and cyclist movement between the eastern and western sides of the creek, where the station will be located.	Install separated paths to traverse the eastern side of Elizabeth Macarthur Creek in a north-to-south direction, between Windsor Road and Memorial Avenue. Bridge crossing recommended from Wendon Avenue across the creek into the station precinct. A second crossing is also recommended across the creek between Wenden Avenue and Memorial Avenue. Build footpath along western side of Landy Place to connect to the existing pedestrian connections to the north leading to southern side of Samantha Riley Drive

Tracking Code	Map Reference	Issue	Recommendation
KVC	C	Lack of cycling routes connecting station precinct with surrounding area to the east.	Prioritise delivery of proposed separated path along Memorial Avenue. REF for Memorial Avenue upgrade shows proposed shared paths along Memorial Avenue.
KVD	D	Disconnected separated/shared path network in the area surrounding Kellyville Station.	Investigate connecting the missing link in existing shared paths on Palace Street/Keirlie Road.
KVE	E	Disconnected pedestrian network in the vicinity of the station.	Provide footpath on northern side of Samantha Riley Drive between Macquarie Avenue and New precinct Street. It is also understood that the road reserve is fairly tight through this area once turning lanes etc. are provided. The feasibility of constructing a fully compliant footpath on the northern side within the road reserve needs to be assessed. Alternatively, it may need to extend on to the adjacent development land and be included as a DA requirement.
KVF	F	Need for pedestrian and cyclist connection across Memorial Avenue mid-block..	Consider provision of pedestrian and cycle bridge over Memorial Avenue as part of the upgrade being carried out by RMS.
KVG	-	Inclusion of active transport links to and from Sydney Metro Northwest stations on current master plans relevant to surrounding area.	Ensure active transport links to and from the Sydney Metro Northwest stations are considered in detail as part of the Priority Precinct planning for Kellyville and plans for Balmoral Road Release Area 2012.

9.3.2 Interchange Facilities

As outlined in Section 3.1.5, the bicycle parking provisions are proposed to vary between stations based on the cycling potential, constraints and opportunities within each catchment. Recommended bicycle parking allowances as per *the Deed* for Kellyville Station are specified in Table 8.3. The initial provisions are planned for 1.5 percent of interchange access trips (when Sydney Metro Northwest opens) and increase to 2% in the future.

Table 9.3 Recommended bicycle parking allowances at Kellyville Station

Parking classification	2021	2036
Class 2 – lock-up	35	70
Class 3 – rails	10 (capacity for 20 bicycles)	20 (40 bicycles)
Total bicycles accommodated	**55**	**110**
Percentage of station access trips	**2.0%**	**2.5%**

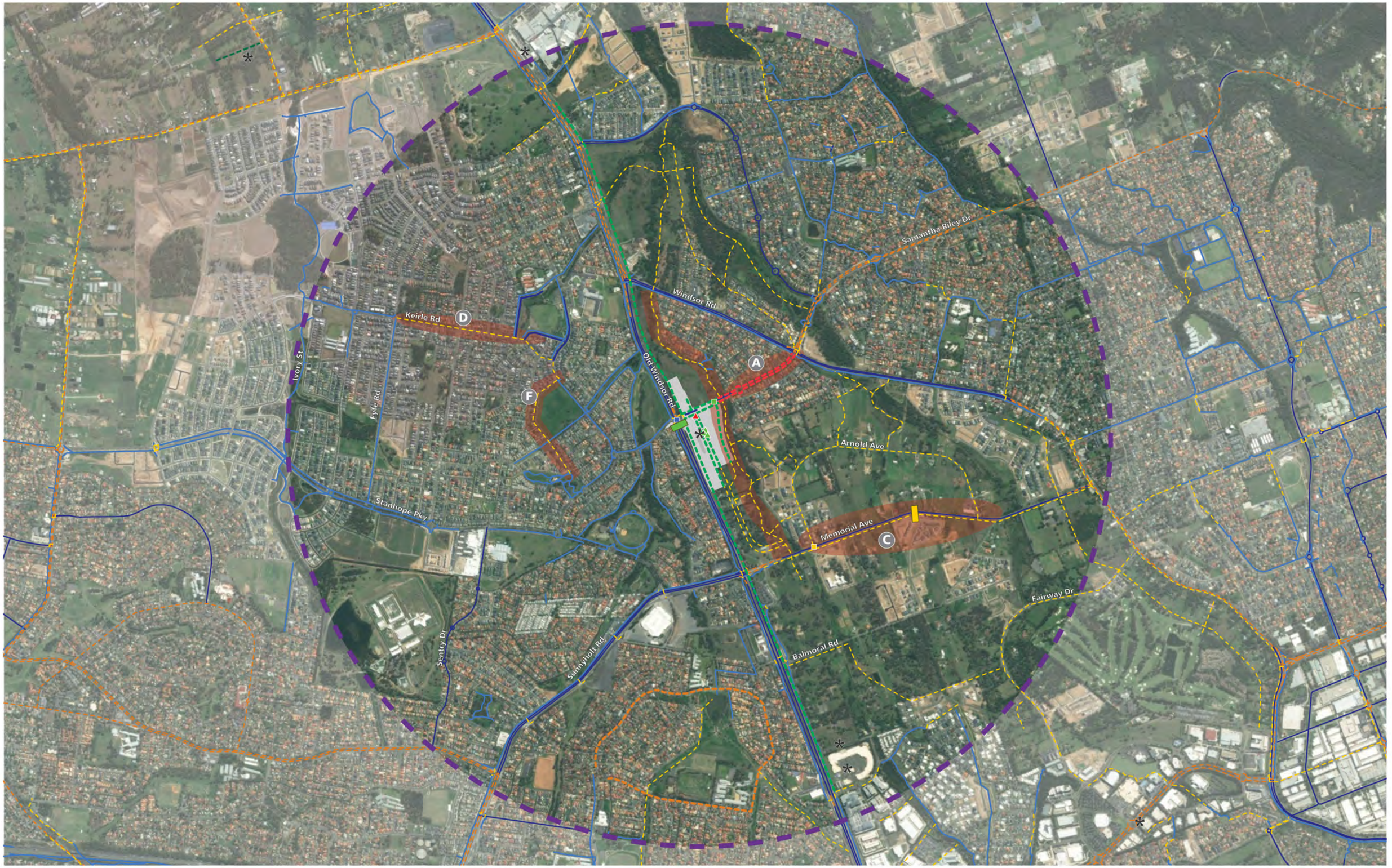

Figure 9.2
Kellyville Station Bicycle Recommendations

N 0 250 500 1,000 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 2.5km radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

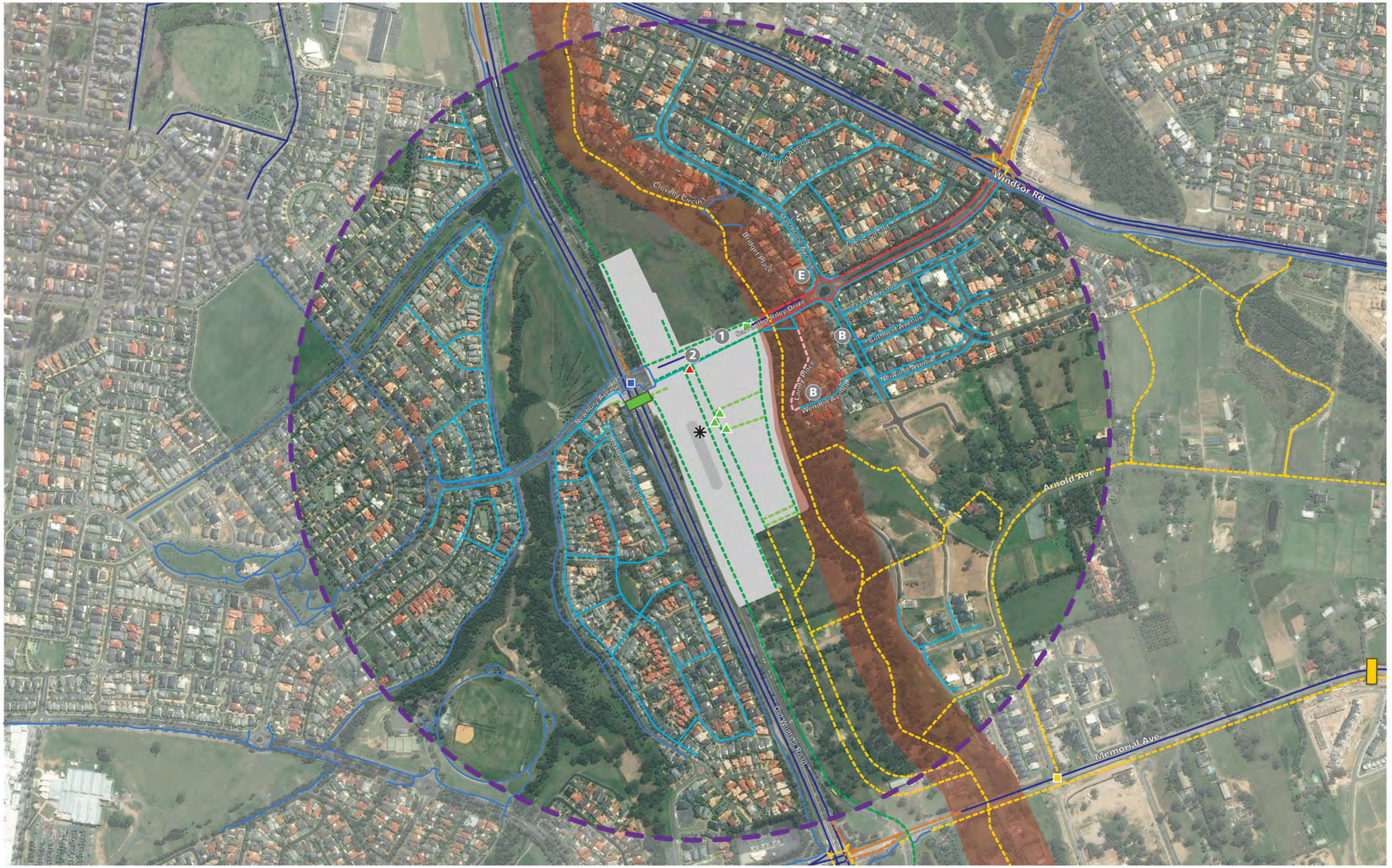

Figure 9.3
Kellyville Station Pedestrian Recommendations

0 100 200 400 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 800m radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Footpath
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

10. Rouse Hill

10.1 Rouse Hill Station Overview

10.1.1 Location

The Rouse Hill station precinct area is located within the Rouse Hill residential and commercial area, bordered by Windsor Road and Tempus Street to the south-west, Rouse Hill Drive to the north-west and White Hart Drive to the south-east.

The station is located within the Hills Shire Local Government Area (LGA), with the precinct incorporating some areas of Blacktown City Council LGA across Old Windsor Road.

10.1.2 Land use and Sydney Metro Northwest customers

Within an 800 metre radius surrounding the station at Rouse Hill are areas of low density residential dwellings, the Castlebrook Cemetery in the south-west, a quarry and Rouse Hill Town Centre. The Ponds Residential Area to the west of the station is currently being developed for residential use.

10.1.3 Traffic and transport

Windsor Road is a major arterial road that connects Windsor in the north with western Sydney and Parramatta to the south. There is a dedicated shared path along Windsor Road but cyclists and pedestrians are impeded by the difficulty in crossing Windsor Road. White Hart Drive is a local road and an important means of access into and out of the Rouse Hill Regional Centre car parks. Caddies Boulevard which is to the east of Rouse Hill Regional Centre is a major collector road that links Commercial Road with Sanctuary Drive. All other roads within the Rouse Hill Town Centre are currently private roads such as Rouse Hill Dr, Tempus Street, Main Street and Civic Way.

10.1.4 Topography

Elevations in the area range from 42 to 84 metres above sea level. The highest point in the area occurs in the south within an area of low density residential dwellings. In general, the topography is quite conducive to active transport modes – walking and cycling.

10.2 Future Land Use

The *Rouse Hill Station Structure Plan* (DP&E and TfNSW, 2014) has identified future growth areas for the area (refer Figure) with the study area proposed to become a prominent retail and commercial hub for the North West. The mixed use area is proposed to be extended northwards to Commercial Road.

Some residential uplift is proposed with medium to high density residential development surrounding the retail and commercial core comprising of a mixture of 2-3 storey townhouses and 3-6 storey apartments. Low density residential development is proposed in the southern region of the study area.

New links are proposed to increase connectivity and permeability within the study area. These links could be either pedestrian and/or vehicular. A green link is also proposed along the Caddies Creek Riparian Corridor and at Second Ponds Creek providing a pedestrian and recreational link between Rouse Hill, Beaumont Hills, Kellyville, The Ponds and Cudgegong Road.

The Hills Shire Council has also developed a master plan for the Edwards Road Precinct (*Master Plan – Edwards Road Industrial Precinct* (2013)), situated approximately 1.5 kilometres north of the Rouse Hill station precinct. This plan proposes new zoning for the Edwards Road Precinct to encourage land uses not offered in

other parts of The Hills Shire LGA. This new development area will likely increase station patronage from the north.

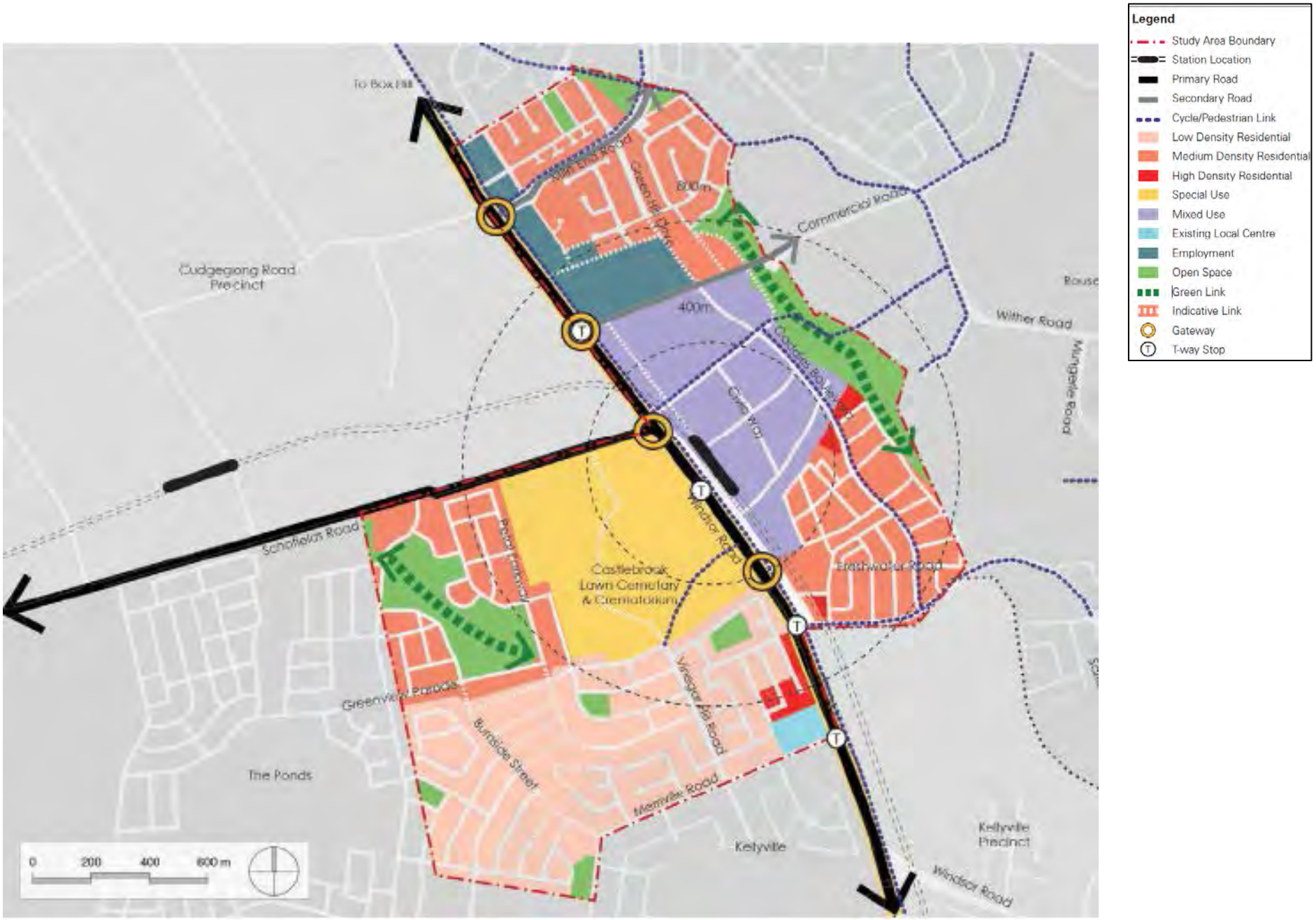

Figure 10.1 Rouse Hill Structure Plan

10.3 Issues and Recommendations

10.3.1 Network Infrastructure

Key issues and recommendations regarding pedestrian and cycling network infrastructure in the Rouse Hill Station precinct and surrounds are identified in Table 10.1 and

Table 10.2. Figure 10.2 and Figure 10.3 demonstrate the following:

- Existing pedestrian and bicycle paths within the station catchment;
- Proposed pedestrian and bicycle paths by others;
- Proposed pedestrian and bicycle paths to be delivered by Sydney Metro Northwest; and,
- Further recommendations for pedestrian and cyclist paths and infrastructure.

Refer maps in Figure 10.2 and Figure 10.3 for map references in Table 10.1 and

Table 10.2. The path typology (footpaths or shared / separated paths) within the station precinct as shown on the maps is indicative at this stage. These are subject to detailed design for station precincts by NRT in the subsequent stages.

Table 10.1 Recommended infrastructure within Rouse Hill Station precinct

Tracking Code	Map Reference	Issue	Recommendation
RH1	1	Cluster of pedestrian accidents at the intersection of Windsor Road, Schofields Road and Rouse Hill Drive. High volume of traffic along Windsor Road presents a barrier to pedestrian movements. Long crossing time to cross the Windsor Road, Schofields Road, Rouse Hill Drive intersection.	Upgrade of signalised intersection of Windsor Road/Rouse Hill Drive and Schofields Road (including the T-Way) to prioritise pedestrian and cyclist crossing, with appropriate signal infrastructure and phasing installed. Rationalise or enhance legibility of lanes on the eastern side of Windsor Road at Rouse Hill Drive intersection. Connect pedestrian and cycle paths from Rouse Hill Station to off-road shared path on Schofields Road and southwards to the Ponds pedestrian and cycle path.

Table 10.2 Recommended infrastructure outside Rouse Hill Station precinct

Tracking Code	Map Reference	Issue	Recommendation
RHA	A	Pedestrian/cyclist barrier between station / town centre and the residential area directly south of Castlebrook Lawn Cemetery, west of Windsor Road (to the south near Vinegar Hill Reserve). Need for more direct connection to the Windsor Road shared path.	Undertake a detailed investigation into the opportunities available to connect this area to Windsor Road. This may include: Option 1: taking out an easement off Waterford street Option 2: discussing with the Cemetery the possibility of a separated path from termination of Heathfield Street, along the rear end of residences of Kilby and Waterford Streets, to connect to Windsor Road existing shared path.

Tracking Code	Map Reference	Issue	Recommendation
RHB	B	Disconnected separated/shared path route on Commercial Road.	Install separated path on southern side of Commercial Road.
RHC	C	Need for link to capture residences in the catchment to the north of Commercial Road.	Complete Green Hills Drive extension with off road shared path between Commercial Road and Mile End Road to improve cycling connections
RHD	D	Lack of signalisation at intersection of Caddies Boulevard and Commercial Road. Potential future pedestrian/cyclist link on northern side of Commercial Road needs to be serviced through safe crossing of Commercial Road for patrons to access station precinct.	Upgrade intersection of Caddies Boulevard and Commercial Road to prioritise pedestrian and cyclist crossing.
RHE	E	Lack of safe crossing facility for pedestrians and cyclists at the intersection of Windsor Road and White Hart Drive, for users of the shared path.	Upgrade of signalised intersection of Windsor Road and White Hart Drive (including T-way crossing facilities) to prioritise pedestrian and cyclist crossing with appropriate signalling and phasing.
RHF	F	Need for pedestrian / cyclist link over Windsor Road close to the intersection with Commercial Road to connect with the proposed residential development in the south east part of Area 20 precinct.	Investigate improved pedestrian / cyclist access over Windsor Road close to Commercial Road intersection. Consult with RMS and councils regarding existing alternative connections (underpass) through Rouse Hill Regional Park and RMS future plans for grade separation of Windsor Road / Schofields Road / Rouse Hill Drive intersection

10.3.2 Interchange Facilities

As outlined in Section 3.1.5, the bicycle parking provisions are proposed to vary between stations based on the cycling potential, constraints and opportunities within each catchment. Recommended bicycle parking allowances as per *the Deed* for Rouse Hill Interchange are specified in Table 10.3. The initial provisions are planned for 2.0 percent of station access trips (when Sydney Metro Northwest opens) and increase to 2.5 percent of station access trips in the future.

Table 10.3 Bicycle parking allowances at Rouse Hill Station

Parking classification	2021	2036
Class 2 – lock-up	35	50
Class 3 – rails	5 (capacity for 10 bicycles)	10 (20 bicycles)
Total bicycles accommodated	**45**	**70**
Percentage of station access trips	**2.0%**	**2.5%**

Figure 10.2
Rouse Hill Station Bicycle Recommendations

0 250 500 1,000 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 2.5km radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

Figure 10.3
Rouse Hill Station Pedestrian Recommendations

0 100 200 400 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 800m radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Footpath
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

11. Cudgegong Road

11.1 Cudgegong Road Station Overview

11.1.1 Location

The Cudgegong Road Station precinct is located in the North West Growth Centre beside the Riverstone East and Area 20 release areas. It is bounded by Schofields Road to the south, Cudgegong Road to the east and Tallawong Road to the west.

11.1.2 Land use and Sydney Metro Northwest customers

The area within 800 metre of the station is currently low density and rural density residential dwellings and agricultural land. There is also a caravan park and an Anglican school.

11.1.3 Traffic and transport

The area is bounded by two major arterial roads - Windsor Road to the east and Schofields Road to the south. Cudgegong Road and Tallawong Road which run along the eastern and western side of Cudgegong Road Station precinct respectively are non-arterial roads under the care and control of Blacktown City Council.

Currently the pedestrian and bicycle traffic movement is impeded by poor permeability due to existing large rural blocks, poor road network and lack of dedicated bicycle paths.

11.1.4 Topography

The elevation in the precinct area ranges from 40 to 70m above sea level. Analysis of the area shows the highest points occur in the south east of the area at the intersection of Schofields Road and Windsor Road and in the centre of the area at the junction of Cudgegong Road and Macquarie Road. In general, the topography is quite conducive to active transport modes – walking and cycling.

11.2 Future Land Use

The *Cudgegong Road Station Structure Plan* (DP&E and TfNSW 2014) has identified future growth (refer Figure 11.1 and Figure 11.2) with the area proposed to become a significant residential release area for the North West. Higher density residential development is proposed within 800m from the station and in the south western region of the study area. A local centre is proposed to the north of the station providing opportunities for retail and community services within close proximity to the station.

An employment zone is proposed to the west of the station with the ability to expand north of the stabling yard to accommodate potential future expansion. Low residential housing is proposed to replace rural residential uses, in particular Riverstone East, with the potential for denser built form should the demand arise. In the event the expansion of the Rapid Transit Rail Facility is not required the proposed employment zone could be used for other uses such as low residential developments.

The proposed street network increases connectivity and permeability within the study area. Green links are proposed along First Ponds Creek and between Rouse Hill House, Rouse Hill Regional Park and along Second Ponds Creek. Windsor Road and Schofields Road will provide connectivity to the wider road network and provide links to other major centres.

A key issue identified by the Structure Plan is pedestrian access across Windsor and Schofields Road to the Rouse Hill Centre.

11.2.1 Schofields Road Upgrade and extension

Schofields Road is being upgraded in three stages:

- Stage 1 is between Windsor Road and Tallawong Road and was completed in June 2014. The road is upgraded from a two lane to a four lane, divided road with a speed limit of 60km/hr with three new signalised intersections at The Ponds Boulevard/Terry Road, Cudgegong Road and Tallawong Road/Ridgeline Drive. As part of the upgrade, an off-road shared path has been completed on both sides of the Schofields Road with new street lighting.
- Stage 2 is between Tallawong Road and Veron Road and is being built. As part of this stage, off-road, shared paths for cyclists and pedestrians on the southern side of the road will be delivered and provisions for a future shared path on the northern side of the road will be made.
- Stage 3 is between Veron Road and Richmond Road and is in planning. As part of this stage, off-road, shared paths for cyclists and pedestrians will be constructed on both sides of the road and signalised crossings for pedestrians and cyclists installed at all intersections.

Refer Figure 11.3 showing location and schematic plan of Schofields Road upgrade.

Figure 11.1 Cudgegong Road Structure Plan

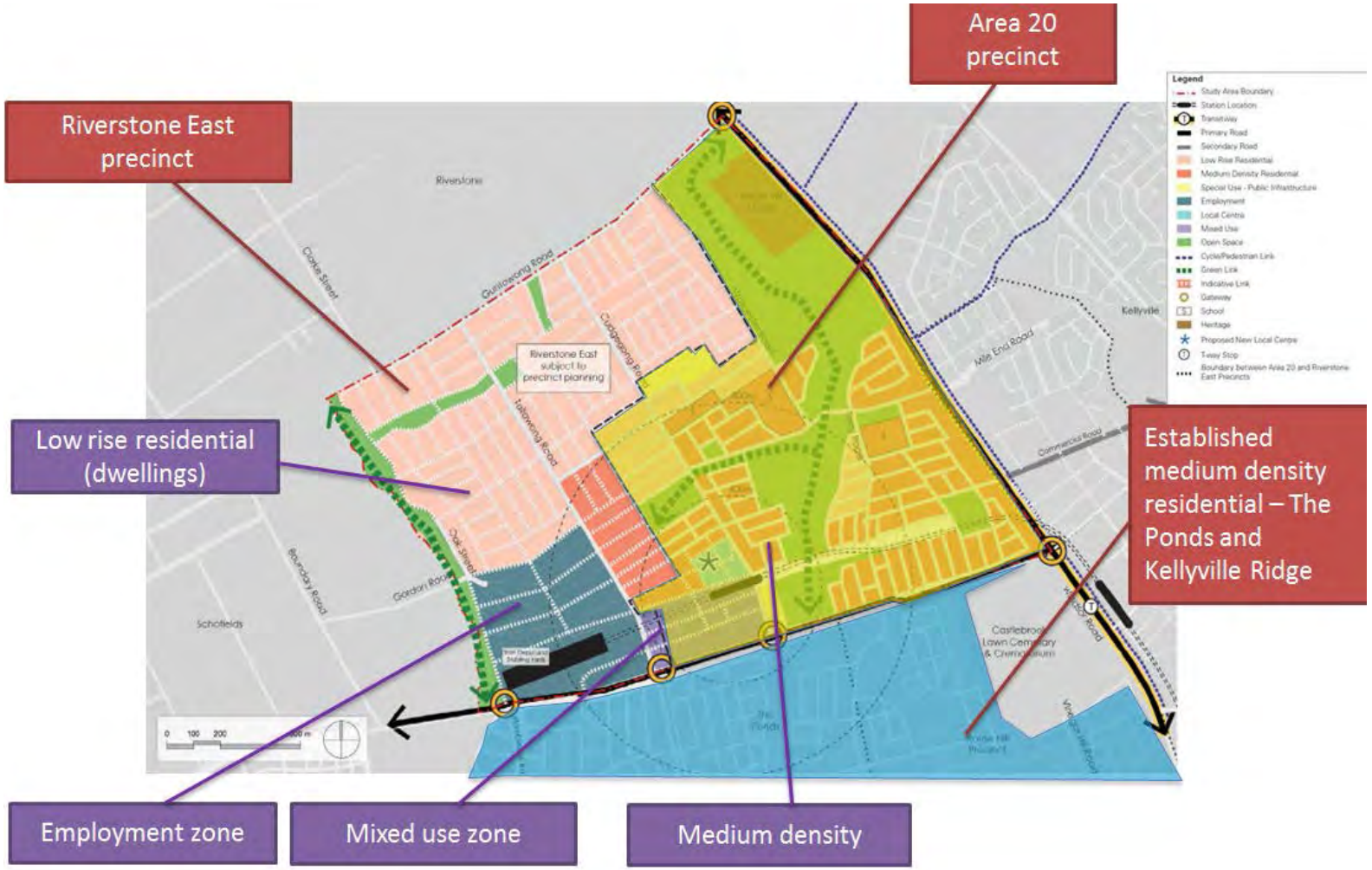

Figure 11.2 Cudgegong Road Station - Existing Future and Land Use

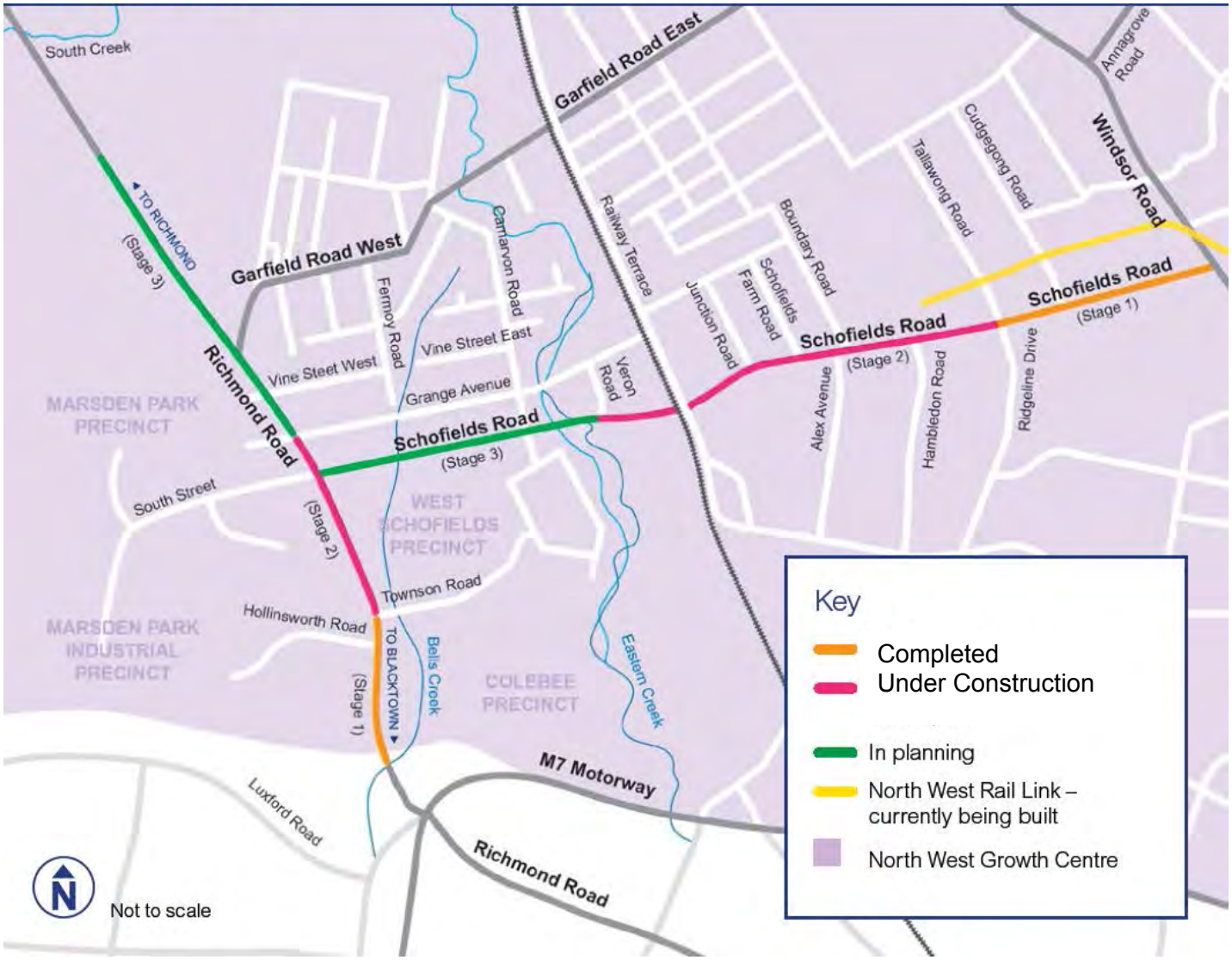

Figure 11.3 Schofields Road Upgrade stages. Source: RMS 2015

11.3 Issues and Recommendations

11.3.1 Network Infrastructure

Key issues and recommendations regarding pedestrian and cycling network infrastructure in the Cudgegong Road Station precinct and surrounds are identified in Table 11.1 and 11.2. Figure 11.4 and Figure 11.5 demonstrate the following:

- Existing pedestrian and bicycle paths within the station catchment;
- Proposed pedestrian and bicycle paths by others;
- Proposed pedestrian and bicycle paths to be delivered by Sydney Metro Northwest; and,
- Further recommendations for pedestrian and cyclist paths and infrastructure.

The path typology (footpaths or shared / separated paths) within the station precinct as shown on the maps is indicative at this stage. These are subject to detailed design for station precincts by NRT in the subsequent stages.

Table 11.1 Recommended infrastructure within Cudgegong Road Station precinct to be delivered by Sydney Metro Northwest

Tracking Code	Map Reference	Issue	Recommendation
-	On road cycle routes	Bus use of New Precinct Street as well as busy station entrance on North Spine Road necessitates improved cyclist access to station entrance.	Recommended removal of on-road route along New Precinct Street.
CR1	1	Need for a coherent network of pedestrian and cyclist access within station precinct between station entrance and surrounding roads.	Install a shared or separated path on south side of New Precinct Street B.
CR2	2		Install a shared or separated path on north side of New Precinct Street A, which extends to New Precinct Street C.
CR3	3	Need for improved pedestrian and cyclist crossing facilities in the vicinity of vehicles within the station precinct.	Install pedestrian crossing at northern end of station access road (near New Precinct Street).
CR4	4		Install pedestrian crossing on eastern end of New Precinct Street, west of Cudgegong Road.
CR5	5	Lack of dedicated cycling facilities in the vicinity of Cudgegong Road station.	Install shared or separated path on east side of Tallawong Road, within the extent of the station precinct.
CR6	6		Install shared or separated path on west of Cudgegong Road within the extent of the station precinct.

Table 11.2 Recommended infrastructure outside Cudgegong Road Station precinct to be delivered by others

Tracking Code	Map Reference	Issue	Recommendation
CRA	A	Lack of dedicated pedestrian and cycling facilities in the vicinity of Cudgegong Road station.	Install shared or separated path on east side of Tallawong Road, between the boundary of the station precinct and Guntawong Road.
CRB	B		Install shared or separated path on west side of Cudgegong Road, between the boundary of the station precinct and Guntawong Road.
CRC	C		Prioritise the provision of a shared or separated path along Rouse Road.
CRD	*D*		*[not used]*
CRE	E		Install all cycle paths (shared or separated) recommended within Area 20 release area in the Blacktown City Council Growth Centre Precincts DCP (2010). Consider reviewing the planning controls in light of the current station precinct planning including linear open space links proposed across Second Ponds Creek riparian corridor
CRF	F		Recommend all new roads within 10min walking catchment of station have pedestrian paths installed and adequate cycling infrastructure. Review current DCPs to consider station precinct planning.
CRG	G	New signalised intersections have been installed on Schofields Road to manage the increased vehicle demand for the station and Second Ponds Creek. These intersections need to prioritise pedestrian and cyclist crossing.	Investigate the design of these intersections to ensure improved pedestrian and cycle access and appropriate phasing / priority. These may have been designed and phased for existing pedestrian flows and may not have considered the potential station demands.
CRH	H	Need for well-designed pedestrian and cycle links in the Area 20 precinct to provide efficient active transport connections to Cudgegong Road Station	The current Area 20 precinct plan shows a network of active transport links however the path typology is yet to be defined. As a new development, developers should be required to extend the pedestrian and cycle links here. This would provide greater accessibility to Cudgegong Road station.

11.3.2 Interchange Facilities

As outlined in Section 3.1.5, the bicycle parking provisions are proposed to vary between stations based on the cycling potential, constraints and opportunities within each catchment. Recommended bicycle parking allowances as per *the Deed* for Cudgegong Road Station are specified in Table 11.3. The initial (when Sydney Metro Northwest opens) and future provisions are planned for 2.5 percent of station access trips.

Table 11.3 Bicycle parking allowances at Cudgegong Road Station

Parking classification	Initial	Future
Class 2 – lock-up	35	70
Class 3 – rails	10 (capacity for 20 bicycles)	20 (40 bicycles)
Total bicycles accommodated	**55**	**110**
Percentage of station access trips	**2.5%**	**2.5%**

Figure 11.4
Cudegong Station Bicycle Recommendations

N

0 250 500 1,000 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 2.5km radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Delivered by Sydney Metor Northwest†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
- Pedestrian/Cycle bridge

Further recommendations†
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

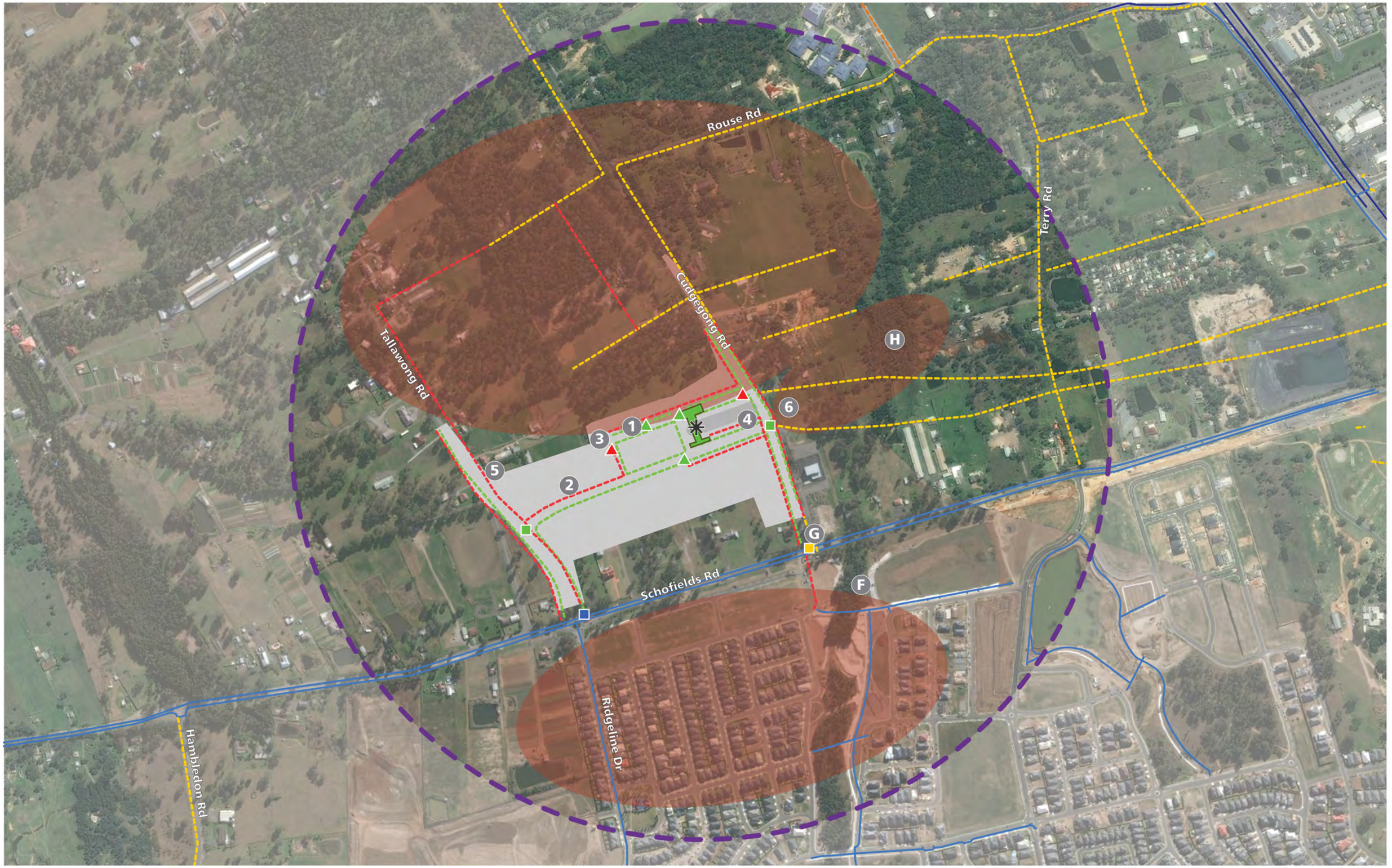

Figure 11.5
Cudegong Station Pedestrian Recommendations

0 100 200 400 Metres

* Includes separated cycleways, shared pathways, green links.
^ Subject to confirmation of separation requirements based on vehile volumes and speeds.
† Alignments and facility type subject to change based on design/specification development.

Study area
- 800m radius from station entrance
- Station precinct
- Station box (approximate)
- Station entrance (approximate)

Existing infrastructure
- Footpath
- Off-road cycleway*
- On-road bike lane
- Signalised intersection

Delivered by others
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Signalised intersection
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- Pedestrian/Cycle bridge

Further recommendations†
- Footpath
- Off-road cycleway*
- On-road bike lane^
- Zebra crossing
- Cyclist prioritised intersection
- Area of investigation

12. Implementation Plan

12.1 Introduction

The intent of the Implementation Plan is to identify the full range of actions identified in the previous sections of this report in order to identify more detailed actions. It also outlines the timing, priority, delivery actions and potential responsibilities.

12.1.1 Table structures

Table 12.1 below provides an overview of the logic of the implementation strategy.

Table 12.1 Implementation strategy logic and process

Reference / Tracking Code	Requirement	Description of activity	Timing & priority	Delivery	Possible / known Responsibility
This is consistent with the tracking code reference under recommendations in Sections 3 to 11 and illustrated in the pedestrian and cycling maps in sections 4 to 11.	**Requirement headline**	This explains the implementation activity including: • what the activity is • where it relates to • why it is recommended	**Timing** • Short Term – Actions required between 2014-2019 • Medium Term – Actions required between 2019 – 2022 • Long Term – Actions post 2022 **Priority** • Low Priority – good to have linking infrastructure • Medium Priority – important linking infrastructure • High Priority – critical linking infrastructure	**How** Guidelines and recommended direct actions • Direct action (paths, bridges, connections, upgrades) • Controls (LEP, Contribution plans) • Incentives (Financial, planning) • Guidelines & Strategies (DCP, Cycle Strategies)	This provides an indicative responsibility for the actions. This may include a range of responsibilities across TfNSW, Sydney Metro Northwest, RMS, councils, developer, community, business. Where the responsibility is already known, this has been specified.

12.2 Commitments across all precincts - Facilities

Table 12.2 identifies a range of actions that are relevant to all stations in relation to ensuring adequate pedestrian and cycle facilities are provided.

Table 12.2 General recommendations across all precincts

Reference / Tracking Code	Requirement	Description of Activity	Timing & priority	Delivery	Possible /known Responsibility
Station Facilities					
1.	Station signage	In station signage and maps of the surrounding area. Simplified maps with estimated walking times, cycle times, cycle facilities and public transport interchanges.	Short term – High Priority	TfNSW's Wayfinding strategy principles	Sydney Metro Northwest/TfNSW
2.	Secure access bicycle parking	Provide appropriate Class 2 and 3 bicycle parking facilities in accordance with TfNSW policy, within close proximity to station entrances (in line of sight to entrances where possible). Consider bicycle cage locations with the potential for future expansion needs in mind as mode shift occurs.	Short term – High Priority	Requirements as part of station design	Included in *the Deed*
	Security	Consider the installation of CCTV and the cycle facilities to ensure 24 hour security. Consider the installation of help points in the bicycle cages.	Short term – High Priority	Security guidelines	Sydney Metro Northwest / TfNSW
3.	Storage lockers	There is an increasing trend towards use of electric scooters and bicycles as part of an urban commute. Provide deep scooter lockers / cages for storage of electric bicycle batteries and electric scooters. Consider metred electrical charging points in storage lockers.	Medium term – Medium Priority	Not part of *the Deed*	TfNSW to consider

Reference / Tracking Code	Requirement	Description of Activity	Timing & priority	Delivery	Possible /known Responsibility
4.	Bicycle storage	Bicycle users may choose to keep a bicycle for end-of-trip usage to make the end-of-trip journey to work. In some instances, customers may choose to leave their bicycles in the bicycle parking facility at the stations overnight. Consider the additional demand this may create on the bicycle parking facilities at some stations.	Medium term – Medium priority	Operational guidelines	Sydney Metro Northwest / TfNSW
5.	Visual connections to destinations	In the detailed station design consider the pedestrian line of sight connections to key destinations / landmarks	Short term – Medium priority	Station precinct design	Sydney Metro Northwest
6.	Provide drinking water amenities for the station customers as part of the precincts.	Drinking water bubblers are included in the *Deed* for provision at all new stations.	Short term – High Priority	Station precinct design	Sydney Metro Northwest
Surrounding Network					
7.	Pedestrian lighting and crime prevention	Undertake a pedestrian lighting analysis within 400 m of each station for pedestrian safety during hours of darkness. Ensure effective passive surveillance for all major pedestrian and cycle routes.	Short term – Medium priority	Engage a Crime Prevention through Environmental Design (CPTED) audit within the buffer areas including an assessment of the lighting levels.	Audit of Works Council Local Government
8.	Pedestrian and cycle infrastructure asset condition audit	Over time existing pedestrian paths degrade with roots, wear and weathering affects. Along the corridor the footpaths vary in age and condition. It would be recommended to undertake a condition audit and prioritised action plan completed every five years by relevant councils. Consider footpath grinding, repairs and replacement where needed.	Medium term – Medium priority	Undertake an asset condition audit initially focused on immediate station surrounds. Work with council to prioritise actions and timing.	Audit of Works, councils, RMS To be discussed between Sydney Metro Northwest and councils.

Reference / Tracking Code	Requirement	Description of Activity	Timing & priority	Delivery	Possible /known Responsibility
9.	Wayfinding strategy	Consider a wider wayfinding strategy within the station catchments that includes signage, footpath and cycle path markings and line of site considerations.	Short to medium term – Medium priority	Short term strategy Longer term implementation	Sydney Metro Northwest – Strategy Council – Implementation To be discussed between Sydney Metro Northwest and councils.
10.	Pedestrian and cyclist priority	At all signalised intersections surrounding the station precincts, consider the pedestrian and cycle interface through phasing, fencing / barriers andsingle point crossing. Consideration should also be given to provision of bicycle lanterns where applicable to enable bicycle riders to legally ride across the road	Short term – High Priority	Station specific recommendations have been made for the relevant intersections and crossings.	RMS / Council / Sydney Metro Northwest
11.	Design / Amenity review	Some areas designated for pedestrians waiting to be collected by cars/taxis/buses are particularly exposed to weather elements. It would be recommended that a program of public domain improvement is considered including seating, shading, shelter, landscape and urban design treatments along primary corridors to improve the pedestrian and cycle amenity.	Medium term – High priority	Included in *the Deed* to define public domain within the station precinct. For areas outside of station precinct RMS and council will be consulted.	RMS / Council / Sydney Metro Northwest

Reference / Tracking Code	Requirement	Description of Activity	Timing & priority	Delivery	Possible /known Responsibility
Future Development					
12.	Ensuring effective through site links	Ensure prioritisation of public access and through site links where major development is being proposed in the vicinity of the station. Ensure the pathways consider the needs for 24 hour access for pedestrians, cyclists, and disabled people. Consider security, lighting, grade and the needs for 24 hour access.	Short term – Medium priority	Develop DCPs for the station surrounds identifying preferred through site links with major development potential. Some of these links have been identified in the *NWRL Corridor Strategy* documents however would need to be considered in a DCP.	Council - Policy Developer - Construction
13.	Workplace Travel Plans	Consider an education program to encourage employers within the catchment to prepare a staff travel plan to encourage the uptake of the Sydney Metro Northwest line and active transport options for staff. Also consider education and cycling awareness programs.	Medium term – Medium priority	Provide guidance and incentives for employers to develop workplace travel plans.	Sydney Metro Northwest and councils with employers within the catchment of the stations.
14.	Cycle Parking Facilities	Councils to develop a policy through DCPs, to require new major developers within the corridor to provide adequate private, semi private or public bicycle parking and end of trip facilities within their developments.	Medium term – Medium priority	Integrated into local government Development Control Plans (DCP's) where possible. Consider both the residential need and commercial needs. Consider planning incentives to encourage the uptake of bicycle parking.	Council – Policy Developer – Construction. Requirement for provision of cycle parking facilities already included in The Hills Shire Council's DCP.

Reference / Tracking Code	Requirement	Description of Activity	Timing & priority	Delivery	Possible /known Responsibility
15.	Footpath network extensions	Where development occurs in areas where there are no existing footpaths, proponents should be required to extend the footpath network	Medium term – Medium priority	Integrate a footpaths provision into the DCP to guide the future expansion of the footpath networks within the corridor.	Council / Developer

12.3 Cherrybrook implementation plan

The following table provides an overview of the actions and implementation steps recommended for Cherrybrook.

Table 12.3 Cherrybrook implementation plan

Reference / Tracking Code	Street / location/context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
C1	New Station Street	Provide a separated / shared path through the station precinct to facilitate cycle access into the station.	Short Term – High Priority	Included in *the Deed* (as 2.5m wide pathway on New Precinct Street A)	Sydney Metro Northwest
C3	Castle Hill Road	*The Deed includes* a 2.5m footpath on the northern side of Castle Hill Road between Franklin Road and Robert Road. Due to the undulating topography of Castle Hill Road, a separated path may be a more viable solution to avoid clash between pedestrians and cyclists.	Short term – High Priority	Sydney Metro Northwest to consult with RMS to discuss the path design in light of RMS policy.	Sydney Metro Northwest / RMS
CA	Castle Hill Road	Prioritise and install a separated/shared path (off-road) along northern side of Castle Hill Road, between David Road and Robert Rd.	Medium Term – High Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	RMS / Hornsby Shire Council
CB	Castle Hill Road	Prioritise and install a separated/shared path (off-road) along northern side of Castle Hill Road, between Franklin Road and Edward Bennet Drive.	Medium Term – High Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	RMS / Hornsby Shire Council
CC	Robert Road	Provide shared path to link station precinct with Robert Road, through future subdivision north of the station precinct, connecting to Robert Road. This will provide an improved vehicle-free access to the station for path users (ped and cycle).	Short term – High Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	Sydney Metro Northwest / Hornsby Shire Council

Reference / Tracking Code	Street / location/context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
CD		Provide shared/separated paths on Robert Road and John Road from County Drive to Franklin Road.	Medium Term – High Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	Hornsby Shire Council
C2	Franklin Road	Provide a separated / shared path on Franklin Road within the station precinct.	Short Term – High Priority	Included in *the Deed* as 2.5 m wide path on western side between Castle Hill Road and northern limit of works	Sydney Metro Northwest
CQ		Provide a pedestrian crossing on Franklin Road, north of station precinct as per map.	Short Term – High Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	Hornsby Shire Council /RMS
CE		Provide a separated/shared path on Franklin Road from the intersection of John Road to the boundary of the station.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	Hornsby Shire Council
CF	Highs Road	Provide missing link on Highs Road (separated/shared path (off road)).	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council's Draft 15/16 Works Program includes works for completion of missing footpath links on Highs Rd.

Reference / Tracking Code	Street / location/context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
CG	Taylor Street	Provide missing link on Taylor Street (marked on road cycle path).	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council
CH	Salisbury Downs Drive, Glenhope Road, Glenridge Ave.	Provide marked on-road Salisbury Downs Drive, Glenhope Road, Glenridge Ave.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council
CI	Darling Mills Creek	Investigate a potential creek crossing to connect pedestrian and cyclist link.	Long Term – Low Priority	Include in strategy, prioritise, budget and then direct action to construct.	The Hills Shire Council
CJ	Glenhope Road	Provide footpaths on southern portion of Glenhope Road to link to existing footpaths on northern portion of this road.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council. The Hills Shire Council's Draft 18/19 Works Program includes works for footpaths on southern end of Glenhope Road linking Glenayr Grove to Invergownie Close
CK	Robert Road	Provide footpath on eastern side of Robert Road linking existing footpath to boundary of station precinct.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council

Reference / Tracking Code	Street / location/context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
CL	Off Castle Hill Road	Potential future link to new developments in Cherrybrook area and West Pennant Hills to be provided by others, subject to future development.	Long Term – Low Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council/ developer
CN	New Line Road	Provide pedestrian and cyclist crossing over New Line Road between Shepherds Drive and Boundary Road, preferably at or close to the intersection of Shepherds Drive, County Drive and New Line Road	Medium Term – High Priority	Discuss with the Council and RMS on future plans.	Hornsby Shire Council/ RMS
CM	Ashford Road	Investigate a shared path on Ashford Road connecting existing path between Dalkeith Road and Ashford Road. This will enable direct pedestrian and cycling connection between residences around Ashford Road, County Drive and the station precinct.	Medium Term – Medium Priority	Consulted with the Council on future plans. May be considered as developer works in kind	Hornsby Shire Council
CR	Coonara Avenue and Castle Hill Road	Add pedestrian phasing to southern leg of intersection.	Medium Term – Medium Priority	Check with RMS on the status of intersection upgrade to deliver pedestrian crossing improvements.	RMS / Council
CO	Coonara Avenue and Grosvenor Place Reserve	There are existing pedestrian links from Coonara Avenue to Grosvenor Place through Grosvenor Place Reserve. A planning proposal has been submitted in April 2015 for rezoning of the land at 101 Castle Hill Road for medium to high density residential. As part of the proposal there may be opportunities to propose active links through the development to provide direct connection to Castle Hill Road.	Medium Priority	Further discussions are required with The Hills Shire Council via TfNSW's Planning, division to investigate this.	The Hills Shire Council / Land Developer/TfNSW
CP	Grosvenor Place	Investigate active links through 101 Castle Hill Road to enable more direct linkages and permeability into Castle Hill Road and enable connections to existing pedestrian links on Grosvenor Place Reserve.	Medium Priority	Further discussions are required with The Hills Shire Council via TfNSW's Planning, division to investigate this.	The Hills Shire Council / Land Developer/TfNSW

12.4 Castle Hill implementation plan

The following table provides an overview of the actions and implementation steps recommended for Castle Hill.

Table 12.4 Castle Hill implementation plan

Reference / Tracking Code	Street / location/context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
CH1	Old Castle Hill Road	Provide dedicated cycleways along Old Castle Hill Road between McMullen Avenue and southern boundary of station precinct (Arthur Whitling Park).	High Priority	Included in *the Deed* to provide on road cycleway both directions between McMullen Avenue and southern boundary of station precinct (Arthur Whitling Park).	Sydney Metro Northwest
CH2	Station Precinct	Provide pedestrian/cycle shared space from secondary plaza space through primary plaza space to intersection of Old Northern Road and Crane Road.	Short Term – High Priority	Requirements currently not included	Sydney Metro Northwest
CH6		Provide pedestrian path linking McMullen Avenue to secondary plaza space through Arthur Whitling Park	Short Term – High Priority	Requirements currently not included	Sydney Metro Northwest
CH5	Old Castle Hill Road	Investigate provision of improved pedestrian access from Castle Towers to station precinct, particularly considering current shopping centre car park entrance location.	Short Term – High Priority	A sub-surface pedestrian link connecting Castle Hill Station and Castle Towers shopping centre is currently under investigation	Sydney Metro Northwest, Castle Towers (QIC)
CH7	Station Precinct	Complexity and compactness of Castle Hill station precinct area requires a seamless pedestrian network within, to and from the station. Being identified as a Major Centre with retail, business and community facilities as well as increase in density with changes in land use proposed around the station, there is expected to be widespread pedestrian activity.	Short Term – High Priority	Separated cycle paths are recommended where provided and shared paths minimised to avoid clash of pedestrians and cyclists.	Sydney Metro Northwest / The Hills Shire Council

Reference / Tracking Code	Street / location/context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
CHA	Old Northern Road	Provide separated path on northern side of Old Northern Road between McMullen Avenue and Castle Hill Road.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council
CHB		Provide a shared use path on Old Northern Road between Showground Road and Castle Street.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council
CH3		Signalised intersection at Old Castle Hill Road, Old Northern Road, Crane Road and Castle Street needs improved provision for crossing for pedestrians and cyclists. Consider the current phasing priorities and design of signalised intersections to consider the increased needs of pedestrians and cyclists.	Short Term – Medium Priority	*The Deed* requires modification to existing 5-way intersection of Crane Road, Old Castle Hill Road and Old Northern Road as part of Local Area Works	Sydney Metro Northwest
CH4		Signalised intersection at Old Northern Road and Terminus Street needs improved provision for crossing for pedestrians and cyclists.	Short Term – Medium Priority	*The Deed* requires modification to existing intersection of Terminus Street with Old Northern Road;	Sydney Metro Northwest
CHC	Showground Road	A shared path is proposed on the northern side of Showground Road between Pennant Street and Carrington Road as part of Showground Road upgrade by RMS. The gap in the cyclist network between Pennant Street and Old Northern Road needs to be addressed.	Medium Term – Medium Priority	Consult with RMS to include as part of Showground Road upgrade	Sydney Metro Northwest / RMS
CHD	Crane Road	Provide on road marked path along Crane Road between Orange Grove and Old Northern Road.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council

Reference / Tracking Code	Street / location/context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
CHE		Provide an on or off road separated path on southern side of Old Castle Hill Road between McMullen Avenue and boundary of station precinct (Arthur Whitling Park) and provide upgrade of signalised crossing to provide cyclist priority at intersection of McMullen Avenue and Old Castle Hill Road. This will be subject to network design constraints.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	RMS/ The Hills Shire Council
CHH	Castle Street	Consider 24-hour access for pedestrians along Castle Street between Pennant Street and Old Northern Road as part of Castle Towers redevelopment proposal to enable permeability for pedestrians.	Short Term – High Priority	Discussion with Castle Towers (QIC)	Castle Towers (QIC) and The Hills Sire Council

12.5 Showground implementation plan

The following table provides an overview of the actions and implementation steps recommended for Showground.

Table 12.5 Showground implementation plan

Reference / Tracking Code	Street / location/ context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
SH1	Station Precinct	Construct a footpath on the southern side of Carrington Road between Middleton Avenue and Ashford Avenue	Short Term – High Priority	Not currently included in the requirements	Sydney Metro Northwest / The Hills Shire Council
SH2	Station Precinct	There is a need for cyclist access into, through and around station precinct. Consider on-road marked cycle path on Doran Drive, between New Street B and New Street A	Short Term – High Priority	*The Deed* requires a 3m wide footpath on both sides of Doran Drive	Sydney Metro Northwest
SHA	Path to the north of Showground	Separated path broadly following existing alignment of Doran Drive through the Showground station precinct, between New Street A and Showground Road. Following this alignment will provide a safer and more visible route for cyclists accessing roads via Showground Road.	Short Term – High Priority	Included in the OTS contract	The Hills Shire Council /Sydney Metro Northwest or developer
SHD	Showground Road	Upgrade of existing intersection at Kings Road and Showground Road to a signalised pedestrian and cycle crossing.	Short Term – Medium Priority	Investigate current intersection priority.	RMS
SHC		Construct shared path on southern side of Showground Road between Gilbert Road and Kings Road.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	RMS
SHB		Upgrade existing left in-left out intersection at Gilbert Road on Showground Road to a signalised pedestrian and cycle crossing.	Short Term – High Priority	Undertake intersection analysis and consider pedestrian and cycle priority.	RMS
SHE	Carrington Road	Extend pedestrian footpath on southern side of Carrington Road from Ashford Avenue as far as Victoria Avenue.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer

Reference / Tracking Code	Street / location/ context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
SHG	Middleton Avenue	Install pedestrian footpath on one side and shared path on the other side of Middleton Avenue south of Carrington Road within 10 minute walk catchment of station.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer
SHH	Ashford Avenue	Install pedestrian footpath on both sides of Ashford Avenue south of Carrington Road within 10 minute walk catchment of station.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	Ashford Avenue is listed for construction of footpath along 1 side only as per Council's adopted new footpath strategy, currently outside 2015-19 program.
SHI	Anella Avenue and Salisbury Road a	Consider pedestrian and cycle links between Showground station precinct and Anella Avenue / Salisbury Road across Cattai Creek.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer

12.6 Norwest implementation plan

The following table provides an overview of the actions and implementation steps recommended for Norwest.

Table 12.6 Norwest implementation plan

Reference / Tracking Code	Street / location	Detail	Timing and Priority	Delivery	Possible /known Responsibility
	Cycle Infrastructure				
NW1	Station Precinct	Install a separated off road path on north side of Brookhollow Avenue within station precinct between station entry plaza and recommended crossing of Brookhollow Avenue.	Short Term – High Priority	Included in *the Deed* as 3.0 metres wide footpath along north-east side of Brookhollow Avenue	Sydney Metro Northwest
NW3		Install separated path on southern side of Norwest Boulevard from station entrance to boundary of station precinct to link to recommended separated path on Norwest Boulevard (outside station precinct).	Short Term – High Priority	Included in *the Deed* to match existing footpath width towards the west from the station and provide 2.5m wide footpath towards the east from the station	Sydney Metro Northwest
NWA	Norwest Boulevard	Install separated path on southern side of Norwest Boulevard between Windsor Road and boundary of station precinct to link to existing shared path on Windsor Road.	Short Term – High Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer
NWB		Install a separated path on northern side of Norwest Boulevard between Brookhollow Avenue and Edgewater Drive to link to existing shared path on Edgewater Drive.	Short Term – High Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer
NWC	Evesham Court	Connect discontinued sections of shared path on Evesham Court, providing a complete off-road facility to the station from the residential areas to the south.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer

Reference / Tracking Code	Street / location	Detail	Timing and Priority	Delivery	Possible /known Responsibility
NWD	Edgewater Drive	Complete missing section of shared path on Edgewater Drive.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer
NWE	Link between the Balmoral Road Release area and Norwest Boulevard	Consider future provision of pedestrian and cycle separated path to create a dedicated link between the Balmoral Road release area and Norwest Boulevard (running between Norwest Market Town and Hillsong Church) including upgraded crossing facility at the intersection of Solent Circuit and Fairway Drive.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer
NWF	Solent Circuit at Norwest Boulevard	Install crossing facility on Solent Circuit at Norwest Boulevard to facilitate longitudinal movement of pedestrians and cyclists.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer. Crossing facility is already proposed as part of Part D Section 8 of The Hills DCP.
NWG	Fairmont Avenue	Connect discontinued shared path along Fairmont Avenue and Barina Downs Road.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct.	The Hills Shire
NW2	Station Precinct	Provide additional crossing approximately 140m east to provide improved connection to existing shared path (through to Evesham Court) and station entry plaza.	Short Term – High Priority	Consultation with The Hills Shire Council	Sydney Metro Northwest / The Hills Shire Council
NW4	Underground link between station and Norwest Market Town.	Consider potential future underground pedestrian link between station and Norwest Market Town.	Short Term – High Priority	A sub-surface pedestrian link to north side of Norwest Boulevard has been incorporated into Norwest Station concept design as a pre-agreed option.	Sydney Metro Northwest / The Hills Shire Council and the owner of the retail centre

Reference / Tracking Code	Street / location	Detail	Timing and Priority	Delivery	Possible /known Responsibility
NWI	Century Circuit.	Install pedestrian footpath on southern side of Century Circuit having regard to any end state intersection changes that may impact the area.	Medium Term – Medium Priority	Consultation required with the property owner.	Century Circuit is a private road and any responsibility for pedestrian path would rest with the current property owner or a developer.
NWJ	Underground connection between Brookhollow Avenue and Norwest Boulevard	Link shared path between Brookhollow Avenue and Norwest Boulevard. Safeguard for extension of sub-surface pedestrian link to the new development in the north	Medium Term – Medium Priority	Discussions with the current property owner	Current property owner / Developer

12.7 Bella Vista implementation plan

The following table provides an overview of the actions and implementation steps recommended for Bella Vista.

Table 12.7 Bella Vista implementation plan

Reference / Tracking Code	Street / location / context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
BV1	Station Precinct	Provide separated path on northern side of Celebration Drive between Old Windsor Road and Lexington Drive extension.	Short Term – High Priority	*The Deed* requires a 2.5m wide footpath along north side of Celebration Dr between Old Windsor Rd and New Precinct Street A	Sydney Metro Northwest
BV2		Provide separated path on southern side of Celebration Drive between Brighton Drive and Lexington Drive.	Short Term – High Priority	*The Deed* requires matching existing footpath along south side of Celebration Dr between New Precinct Street A and Brighton Drive.	Sydney Metro Northwest
BV3		Install signalised intersection with pedestrian and cyclist crossing facilities at intersection of Celebration Drive and Lexington Drive.	Short Term – High Priority	Included in the OTS WAD	Sydney Metro Northwest
BV4		Provide separated path on New Precinct Street D between Old Windsor Road and New Precinct Street A.	Short Term – High Priority	Not in *the Deed*	Sydney Metro Northwest
BV5		Provide separated path on western side of New Precinct Street A connecting to Balmoral Road and Balmoral Road Release Area in the north.	Short Term – High Priority	Not in *the Deed*	Sydney Metro Northwest/ developer
BVA	Connection between Old Windsor Road and the Glenwood residential area	Investigate provision and location of a separated path connection to the footbridge over Old Windsor Road near the Glenwood residential area.	Short Term – High Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	TfNSW to consider
BVB	Old Windsor Road	Install separated path on the western side of Old Windsor Road between Celebration Drive and Shaun Drive.	Short Term – High Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	RMS or developer

Reference / Tracking Code	Street / location / context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
BVC	West of Old Windsor Road in the Glenwood residential area.	Investigate on-road cycling route options west of Old Windsor Road in the Glenwood residential area.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	Blacktown City Council
BVD	Brighton Drive	Connect and extend existing separated/shared paths on northern portion of Brighton Drive to link to new Balmoral Road release area.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer
BVE	Balmoral Road and Balmoral Road Release Area	Install separated path on Balmoral Road to link to new Balmoral Road Release Area.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer. It is further noted that The Hills Shire Council advised that Balmoral Rd DCP requires 2.5m wide shared path along full length of Balmoral Rd on one side of road only with 1.5m wide footpath on other side. Substantial sections of this cycleway have already been constructed by developers.
BVF	Shaun Drive	Investigate provision of a separated path along Shaun Drive or parallel street to connect residences west of Old Windsor Road to station precinct.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct.	Blacktown City Council or developer
BVG	Westwood Way	Provide separated or on-road route on Westwood Way, to Norwest Boulevard, to provide connection between existing shared network.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct.	The Hills Shire Council or developer

Reference / Tracking Code	Street / location / context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
BVH	Lexington Drive	Consider design for either off road or on road cycle facilities along Lexington Drive to improve cycle access.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct.	The Hills Shire Council or developer. It is noted that the following factors are required to be considered in detail when planning for a cycling facility on Lexington Drive: - Limited existing road carriageway width - kerbside parking - Limited verge width - Extensive street tree planting along full length of road
BVM	Planning Controls	Ensure active transport links to and from the Sydney Metro Northwest stations are considered in detail as part of the Priority Precinct planning for Bella Vista and plans for Balmoral Road Release Area 2012.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct.	TfNSW / The Hills Shire Council / developer
BV6	Station Precinct	Install pedestrian crossing at eastern end of car park entrance road.	Short Term – High Priority	*The Deed* requires provision of prioritised pedestrian crossings	Sydney Metro Northwest.
BV7		Install pedestrian crossing on Balmoral Road at northern end of station precinct, aligned to western side of Lexington Drive.	Short Term – High Priority	Not included. RMS warrants (based on number of pedestrians and vehicles) would need to be met.	Sydney Metro Northwest/developer.
BV8	Brighton Drive	Provide pedestrian and cycle connection from station to Brighton Drive in the east. This will provide connection between the station precinct and the residential in the east by linking with the existing shared path on Brighton Drive.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct.	Sydney Metro Northwest / The Hills Shire Council
BVI	Memorial Avenue	Consider provision of pedestrian and cycle bridge over Memorial Avenue as part of the upgrade being carried out by RMS.	Short Term – High Priority	Review REF for Memorial Avenue upgrade by RMS	RMS/The Hills Shire Council

Reference / Tracking Code	Street / location / context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
BVJ	Elizabeth MacArthur Creek	Provide pedestrian and cycle connection across Elizabeth MacArthur Creek	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct.	Sydney Water / The Hills Shire Council
BVK	Celebration Drive and Norwest Boulevard	Consider pedestrian crossing midway between Celebration Drive and Norwest Boulevard	Short Term – High Priority	Consultation with The Hills Shire Council and RMS. The Hills Shire Council advised that there are existing pedestrian crossing facilities in the splitter islands on the roundabouts at Woolworths Way and Meridian Place. A marked pedestrian crossing elsewhere along the road would need to satisfy RMS warrant in terms of pedestrian counts. There is also a concern that even if warrants are met, a marked pedestrian crossing will have a further impact on the already congested traffic movements along Lexington Dr during the AM & PM peaks.	The Hills Shire Council /RMS.
BVL	Lexington Drive	Widen footpaths along Lexington Drive	Short Term – High Priority	Consultation with council	The Hills Shire Council
BVN	Bella Vista Farm Park	Provide pedestrian and cycle connection between the existing paths within Bella Vista Farm Park and the off-road cycle path on Bella Vista Drive	Short Term – High Priority	Consultation with council	The Hills Shire Council
BVO	Elizabeth Macarthur Creek	Provide pedestrian and cycle links over Elizabeth Macarthur Creek and Waterfall Crescent Reserve connecting to culs-de-sac streets – Meridian Place and Norwest Business Park west at the end of Woolworths Way	Short Term – High Priority	Consultation with council	Sydney Water / The Hills Shire Council

12.8 Kellyville implementation plan

The following table provides an overview of the actions and implementation steps recommended for Kellyville.

Table 12.8 Kellyville implementation plan

Reference / Tracking Code	Street / location / context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
KVA	Samantha Riley Drive	Upgrade existing shared path to separated off road path on southern side of Samantha Riley Drive between boundary of station precinct and Windsor Road.	Short Term – High Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council / developer
KV1		Install separated path on southern side of Samantha Riley Drive between New precinct street and boundary of station precinct.	Short Term – High Priority	*The Deed* requires footpath widths varying from 1.8 to 3.0m in width between Old Windsor Rd and eastern extent of works.	Sydney Metro Northwest
KVB	Elizabeth Macarthur Creek	Install a separated path to traverse the eastern side of Elizabeth Macarthur Creek in a north-to-south direction, between Windsor Road and Memorial Avenue.	Short Term – High Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council / developer/ Sydney Water
		Bridge crossing recommended from Wendon Avenue across the creek into the station precinct. A second crossing is also recommended across the creek between Wenden Avenue and Memorial Avenue. Build footpath along western side of Landy Place to connect to the existing pedestrian connections to the north leading to southern side of Samantha Riley Drive	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council / developer/ Sydney Water
KVC	Memorial Avenue.	Prioritise delivery of proposed separated path along Memorial Avenue.	Short Term – High Priority	Requires consultation with RMS and review of REF for Memorial Avenue upgrade	RMS/
KVF		Consider provision of pedestrian and cycle bridge over Memorial Avenue as part of the upgrade being carried out by RMS.	Short Term – High Priority	Review REF for Memorial Avenue upgrade by RMS	RMS/The Hills Shire Council
KVD	Palace Street/Keirlie Road.	Connect existing shared path on Palace Street/Keirlie Road.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	Blacktown City Council / developer

Reference / Tracking Code	Street / location / context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
KVE	Samantha Riley Drive	Provide footpath on northern side of Samantha Riley Drive between Macquarie Avenue and New precinct street.	Short Term – High Priority	Include in strategy, prioritise, budget and then direct action to construct. WAD package 16 shows approximate limits of the work and they do not extend all the way to Macquarie Avenue. It is understood that they would finish to the west of the creek crossing.	Sydney Metro Northwest will deliver part of the works In accordance with WAD package 16 i.e. approximately west of the creek crossing. The remaining works to join Macquarie Avenue footpath to be delivered by either the developer of the high density apartment complex on the northern side of Samantha Riley Dr or as directed by The Hills Shire Council.
KV2		Install pedestrian crossing on New Road A at intersection with Samantha Riley Drive.	Short Term – High Priority	*The Deed* requires provision of prioritised pedestrian crossings	Sydney Metro Northwest / RMS. Ensure that RMS warrants can be met for marked pedestrian crossing.
KVG	Planning controls	Ensure active transport links to and from the Sydney Metro Northwest stations are considered in detail as part of the Priority Precinct planning for Kellyville and plans for Balmoral Road Release Area 2012.	Medium Term – Medium Priority	On review of the DCP ensure effective consideration of station access.	The Hills Shire Council

12.9 Rouse Hill implementation plan

The following table provides an overview of the actions and implementation steps recommended for Rouse Hill.

Table 12.9 Rouse Hill implementation plan

Reference / Tracking Code	Street / location / context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
RHA	Path through Castlebrook Cemetery	There is a significant barrier to pedestrian and cycle access from the south near Vinegar Hill Reserve. It is recommended to undertake a detailed investigation into the opportunities available to connect this area to Windsor Road. This may include: Option 1: taking out an easement off Waterford street Option 2: discussing with the Cemetery the possibility of a separated path from termination of Heathfield Street, along the rear end of residences of Kilby and Waterford Streets, to connect to Windsor Road existing shared path.	Medium Term – High Priority	Requires further investigations and discussion with key stakeholders.	Blacktown City Council / Cemetery / Landowners.
RHB	Commercial Road.	Install separated path on southern side of Commercial Road.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer
RHC	Between Commercial Road and Mile End Road	Investigate connections between Commercial Road and Mile End Road to improve cycling connections.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer
RH1	Windsor Road, Schofields Road and Rouse Hill Drive intersection.	Upgrade of signalised intersection of Windsor Road/Rouse Hill Drive and Schofields Road (including the T-Way) to prioritise pedestrian and cyclist crossing, with appropriate signal infrastructure and phasing installed. Rationalise or enhance legibility of lanes on the eastern side of Windsor Road at Rouse Hill Drive intersection. Connect pedestrian and cycle paths from Rouse Hill Station to off-road shared path on Schofields Road and southwards to the Ponds pedestrian and cycle path.	Short Term – High Priority	Meeting between Sydney Metro Northwest and RMS to discuss intersection priorities and future plans for grade separation	RMS / Blacktown City Council / The Hills Shire Council

Reference / Tracking Code	Street / location / context	Detail	Timing and Priority	Delivery	Possible /known Responsibility
RHE	Windsor Road and White Hart Drive	Upgrade of signalised intersection of Windsor Road and White Hart Drive (including T-way crossing facilities) to prioritise pedestrian and cyclist crossing with appropriate signalling and phasing.	Short Term – High Priority	Engage with RMS to discuss intersection priorities.	Sydney Metro Northwest and RMS
RHD	Caddies Boulevard and Commercial Road	Upgrade intersection of Caddies Boulevard and Commercial Road to prioritise pedestrian and cyclist crossing.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	The Hills Shire Council or developer
RHF	Windsor Road and Commercial Road	Investigate improved pedestrian / cyclist access over Windsor Road close to Commercial Road intersection.	Medium Term – Medium Priority	Consult with RMS and councils regarding existing alternative connections through Rouse Hill Regional Park and RMS future plans for grade separation of Windsor Road / Schofields Road / Rouse Hill Drive intersection	RMS/ The Hills Shire Council / Blacktown City Council

12.10 Cudgegong Road implementation plan

The following table provides an overview of the actions and implementation steps recommended for Cudgegong Road.

Table 12.10 Cudgegong Road implementation plan

Reference / Tracking Code	Street / location / context	Detail	Timing and Priority	Delivery	Possible / known Responsibility
CR1	Station Precinct	Install a separated path on south side of New Precinct Street B.	Short Term – High Priority	Included in *the Deed* on road cycle paths, at minimum, on New Precinct Street B.	Sydney Metro Northwest
CR2		Install a shared or separated path on north side of New Precinct Street A , which extends to New Precinct Street C.	Short Term – High Priority	Not included in *the Deed*	Sydney Metro Northwest to consider
CR5		Install a shared or separated path on east side of Tallawong Road, within the extent of the station precinct.	Short Term – High Priority	Not included in *the Deed*	Sydney Metro Northwest to consider
CR6		Install a shared or separated path on west side of Cudgegong Road within the extent of the station precinct.	Short Term – High Priority	Consultation with council	Sydney Metro Northwest / Blacktown City Council
CRA	Tallawong Road	Install a shared or separated path on east side of Tallawong Road between the boundary of the station precinct and Guntawong Road.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	Blacktown City Council / Developer
CRB	Cudgegong Road	Install shared or separated path on west side of Cudgegong Road between the boundary of the station precinct and Guntawong Road.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	Blacktown City Council / Developer
CRC	Rouse Road	Prioritise the provision of a shared or separated path along Rouse Road.	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	Blacktown City Council / Developer
CRD	Connect existing shared path network south of Schofields Road	Connect existing shared path network south of Schofields Road, between The Ponds and Schofields Road (south Cudgegong Road).	Medium Term – Medium Priority	Include in strategy, prioritise, budget and then direct action to construct. May be subject to developer works in kind.	Blacktown City Council / Developer
CR3	Station Precinct	Install pedestrian crossing at northern end of station access road (near New Precinct Street).	Short Term – High Priority	Currently included in *the Deed* to provide prioritised pedestrian crossings	Sydney Metro Northwest

Reference / Tracking Code	Street / location / context	Detail	Timing and Priority	Delivery	Possible / known Responsibility
CR4		Install pedestrian crossing on eastern end of New Precinct Street, west of Cudgegong Road.	Short Term – High Priority	Currently included in *the Deed* to provide prioritised pedestrian crossings	Sydney Metro Northwest
CRG	New intersections on Schofields Road	New signalised intersections have been installed on Schofields roads to manage the increased traffic demand for the station and Second Ponds Creek. Investigate the design and phasing of these intersections to ensure design for pedestrian and cycle access and consider phasing / priority. These may have been designed and phased for existing pedestrian flows and may not have considered the potential station demands.	Short Term – High Priority	Review intersection phasing and priority. Make changes if required.	Sydney Metro Northwest, RMS
CRE	Area 20 release area.	Install all paths recommended within Area 20 release area in the Blacktown City Council Growth Centre Precincts DCP (2010). Consider reviewing the DCP in light of the current station precinct planning.	Short Term – High Priority	Ensure effective consideration in detailed precinct designs.	Blacktown City Council / DP&E /Developer
CRF	New roads with pedestrian paths installed.	Recommend all new roads within 10min walking catchment of station have pedestrian paths installed and adequate cycling infrastructure. Review current DCPs to consider station precinct planning.	Short Term – High Priority	Ensure effective controls in council policy.	Blacktown City Council / Developer
CRH	Area 20 Precinct	Need for well-designed pedestrian and cycle links in the Area 20 precinct to provide efficient active transport connections to Cudgegong Road Station. The current Area 20 precinct plan shows a network of active transport links however the path typology is yet to be defined. As a new development, developers should be required to extend the pedestrian and cycle links here. This would provide greater accessibility to Cudgegong Road station.	Short Term – High Priority	Ensure effective consideration in detailed precinct designs.	Blacktown City Council / DP&E /Developer

Appendix A
Benchmarking for Bicycle Facilities Provisions

Background

This appendix illustrates examples of existing secure access bicycle parking provisions across Australia.

Transperth, the brand name of the public transport system servicing Perth and operated by Public Transport Authority (PTA) have made provisions for Lock ‘n’ Ride bicycle shelters at train stations encouraging increased use of public transport. A typical Lock ‘n’ Ride bicycle shelter consists of a locked steel mesh cage, accessed by means of a registered SmartRider card, with u-rail type bicycle parking facilities inside. These bicycle shelters are provided in addition to existing bicycle parking facilities available at most stations. In general the bicycle shelters are located close to the station access to encourage cycling as more convenient option. Figure 12.2 Kelmscott WA lock’n’ride facility (example of a standalone facility)illustrates a lock and ride facility at Kelmscott, WA.

Parkiteer (stemming from the words 'park it here') bicycle cages provide an undercover and secure access place to park bicycles at selected stations and major transport interchanges in Victoria. Entry to the bicycle cages is provided by an electronic card system, providing 24 hour monitored access along with a 24/7 support helpline. Figure 12.1 and Figure 12.4 illustrate examples of Parkiteer bicycle cages at Sunshine and Syndal stations in Victoria.

Figure 12.6 illustrates secure access bicycle storage facilities in Horwood Place car park in Parramatta comprising hanging and loop type racks.
Figure 12.3 illustrates Cycle Central Manly, an undercover lock-up bicycle parking area close to Manly ferry terminal in Whistler Street provided by Manly Council. This facility is accessible 24-hours a day via a council-issued keycard. Figure 12.5 shows its location with respect to the ferry terminal.

Figure 12.2 Kelmscott WA lock’n’ride facility (example of a standalone facility)

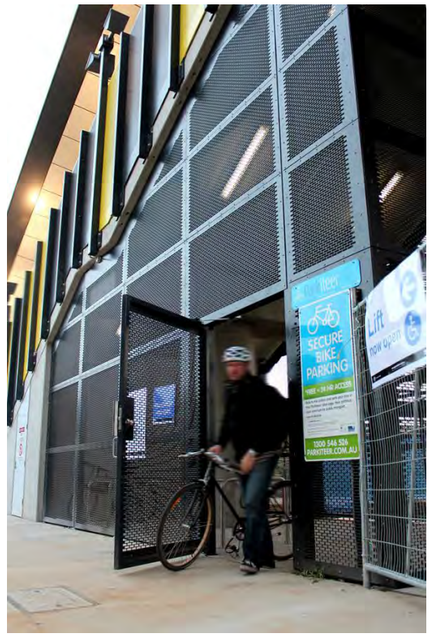


Figure 12.1 Sunshine Station (example of secure access bicycle parking facility integrated

Figure 12.3 Cycle Central Manly (example of secure access bicycle facility in car park)

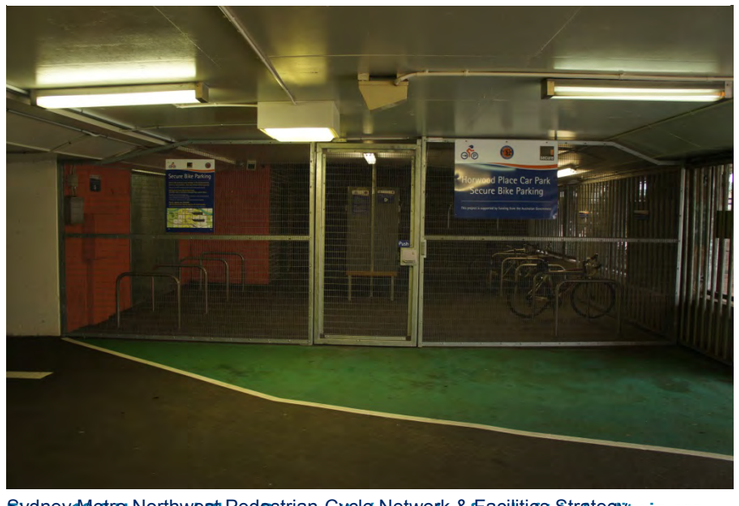


Figure 12.6 Horwood Place Parramatta (example of end of trip facility in car park)

Figure 12.5 Location map - Cycle Central Manly. Source: www.manly.nsw.gov.au/

Figure 12.4 Syndal Station Melbourne (example of secure access bicycle parking facility integrated into station building under stairs)

Appendix B Council's Bicycle Plans

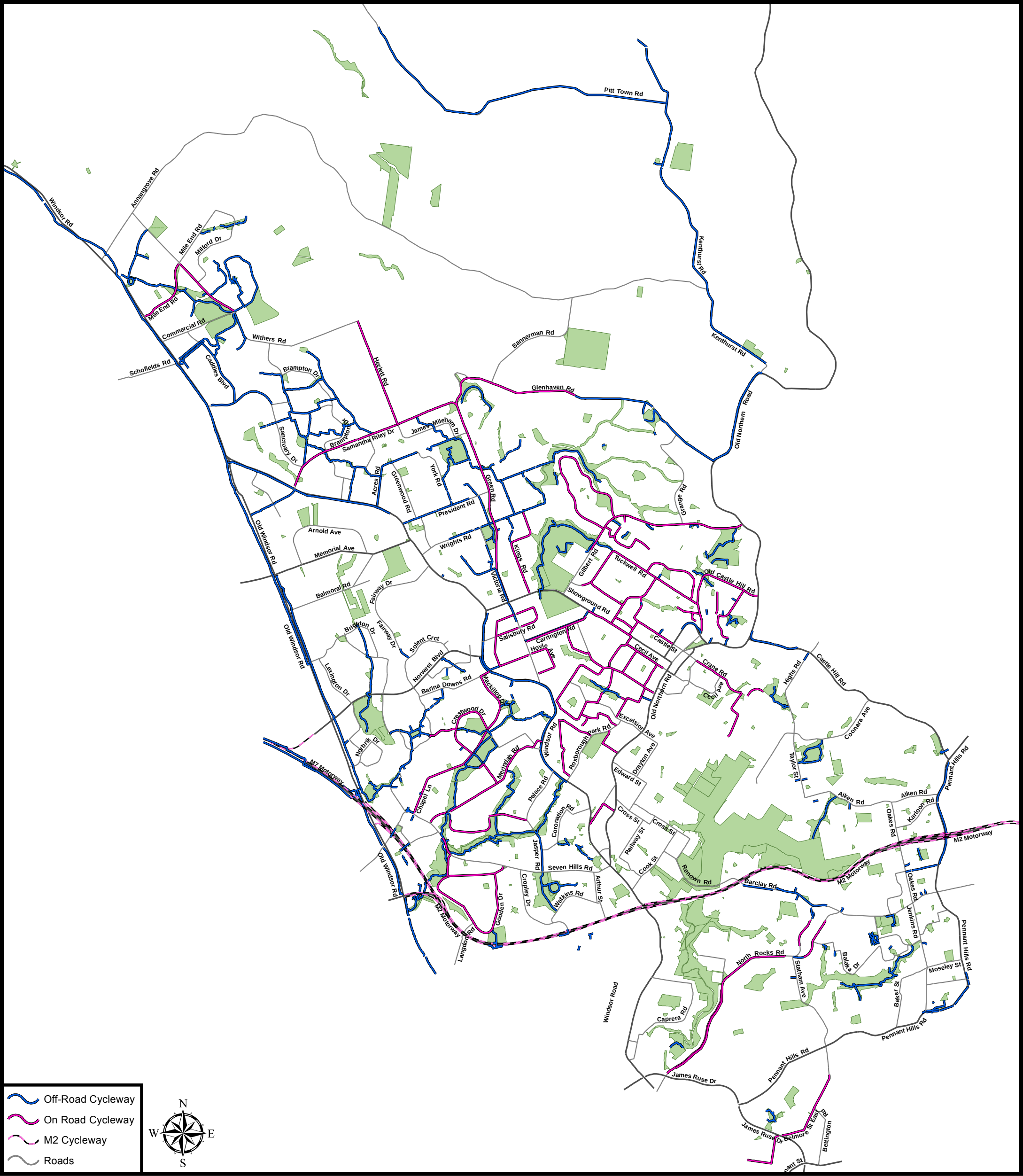
B.1 Blacktown City Council Bicycle Plan

BLACKTOWN BIKE PLAN 2013
EXISTING & FUTURE PROPOSED ROUTES

- Proposed Off-Road Cycleways
- Proposed On-Road Cycleways
- Existing Cycleways
- Proposed Developer Funded
- RMS Proposed State Link
- Council Recommended State Link
- Railway Station
- Hospital

Blacktown City Council

B.2 The Hills Shire Bicycle Plan


Pitt Town Rd
Windsor Rd
Annangrove Rd
Mile End Rd
Milford Dr
Mile End Rd
Commercial Rd
Withers Rd
Schofields Rd
Caddies Blvd
Kenthurst Rd
Bannerman Rd
Kenthurst Rd
Brampton Dr
Hezlett Rd
Glenhaven Rd
Old Northern Road
Sanctuary Dr
Brampton Dr
Samantha Riley Dr
James Milehan Dr
Acres Rd
Greenwood Rd
York Rd
Green Rd
President Rd
Grange Rd
Old Windsor Rd
Arnold Ave
Memorial Ave
Wrights Rd
Kings Rd
Gilbert Rd
Tuckwell Rd
Old Castle Hill Rd
Balmoral Rd
Fairway Dr
Victoria Rd
Showground Rd
Brighton Dr
Fairway Dr
Solent Crct
Salisbury Rd
Carrington Rd
Hoyle Ave
Castle St
Cecil Ave
Crane Rd
Highs Rd
Castle Hill Rd
Old Windsor Rd
Lexington Dr
Norwest Blvd
Barina Downs Rd
Mackillop Dr
Old Northern Rd
Cecil Ave
Crestwood Dr
Excelsior Ave
Coonara Ave
Nothrik Dr
Windsor Rd
Roxborough Park Rd
Drayton Ave
Taylor St
Pennant Hills Rd
M7 Motorway
Merindah Rd
Edward St
Aiken Rd
Aiken Rd
Karloon Rd
Chapel Ln
Palace Rd
Coronation Rd
Cross St
Cross St
Oakes Rd
M2 Motorway
Railway St
Jasper Rd
Seven Hills Rd
Cook St
Renown Rd
M2 Motorway
Barclay Rd
Oakes Rd
Old Windsor Rd
Cropley Dr
Arthur St
Watkins Rd
M2 Motorway
Gooden Dr
Langdon Rd
Jenkins Rd
Pennant Hills Rd
North Rocks Rd
Statham Ave
Balaka Dr
Moseley St
Baker St
Windsor Road
Caprera Rd
Pennant Hills Rd
James Ruse Dr
Pennant Hills Rd
James Ruse Dr
Belmore St East Rd
Bettington
Off-Road Cycleway
On Road Cycleway
M2 Cycleway
Roads
N
W
E
S

B.3 Hornsby Shire Bicycle Plan

Hornsby Shire Council

Cycling Map

ENJOY YOUR CYCLING and take reasonable care.

further enquiries

or copies of the map contact:

CUSTOMER SERVICE
(02) 9847 6666
EMAIL
hsc@hornsby.nsw.gov.au
WEB
www.hornsby.nsw.gov.au/recreation
FAX
(02) 9847 6999
TTY
(02) 9847 6577

Warning: cycling may present some risk of injury.
- Cyclists are recommended to always wear appropriate protective equipment.
- When cycling on an unfamiliar route, proceed with care.
- Children should be subject to parental supervision.
- Although every care has been taken, no responsibility is accepted for error or omissions.

using this map

This map is designed to help you find the best way of getting around Hornsby by bicycle. The highlighted routes are not always the most direct routes but are usually the best for riding a bike.

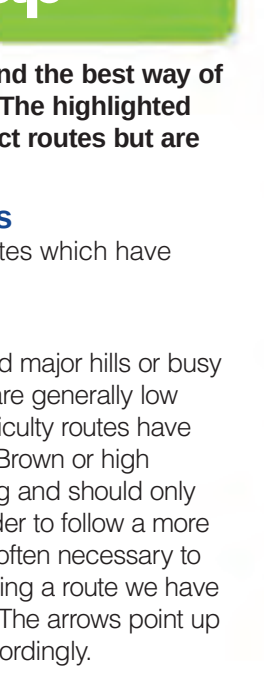
Marked on road cycling routes
We have shown the marked cycle routes which have signs on poles or logos on the road.

Useful cycling routes
These are mainly routes chosen to avoid major hills or busy roads and intersections. Green routes are generally low difficulty routes. Purple or moderate difficulty routes have more traffic and are more challenging. Brown or high difficulty routes are the most challenging and should only be used by experienced cyclists. In order to follow a more direct route or to avoid busy roads it is often necessary to climb steep hills. To assist you in choosing a route we have marked the hillier sections with arrows. The arrows point up the hill so you can plan your routes accordingly.

Unsealed tracks and trails suitable for mountain bikes
These are mainly firetrails or management trails which can be used by mountain bikers. Conditions vary so exercise care and ride within your abilities.

Cycle paths
There are some cycle paths that pass through parks in Hornsby and occasionally travel on signposted shared footpaths/cycleways. These are often important links and provide low stress options for beginning cyclists.

Children's cycle tracks
Several children's facilities in parks have been shown. Each is a closed track providing a safe environment and is a good place to practice riding a bike. These venues often also provide toilets and BBQ facilities for family outings.



major cycle routes across Hornsby

Hornsby-Pennant Hills
Follow College Cs, R onto Clark Rd, L onto Malsbury Rd and continue onto Milson Pde and Sefton Rd then turn L onto Chilvers, follow signposts through lights then follow the Esplanade and Yarrara Rd to Pennant Hills.

Hornsby-Bobbin Head-Turramurra (or return to Hornsby)
This popular recreational route starts at Hornsby, continue northwards using the routes indicated on the map to reach Ku-ring-gai Chase Rd. A nice ride through the bushland with a steep descent to Bobbin Head where you can reward yourself with spectacular water views. A steep climb back to Turramurra then follow the backstreets to return to Hornsby. Can be busy on weekends.

Westleigh-Pennant Hills
Follow Quarter Sessions Rd to the south of Duffy Ave then turn right onto Timbarra Rd then travel through the bush along a wide cycleway and continue along Bellamy St and Ramsay Rd to Pennant Hills station.

Cherrybrook-Pennant Hills
Start at Francis Greenway Dve near Pecan Cl in Cherrybrook and cycle up and down a steep unsealed firetrail to exit at Laurence St in Pennant Hills.

Pennant Hills-Epping
At the eastern end of Pennant Hills Park you can join the mostly unsealed Whale Rock Track which connects with North Epping at Boundary Rd via a firetrail, or with Macquarie University and M2 via a cycleway near Browns Waterhole.

Epping-Macquarie University
Cycle east along Pembroke St, cross Epping Rd at the pedestrian lights then continue along Pembroke St, walk across Terrys creek bridge to connect with Ryde Council cycleway.

local cycle routes across Hornsby

Cherrybrook
Marked cycle routes along roads Purchase Rd/Eldridge St/Francis Greenway/Macquarie Dve. Connect with unsealed firetrails at various locations including Pecan Cl where you can join a steep unsealed firetrail which links with Schofields Pde in Pennant Hills.

Berowra Heights
Cycle along Berowra Waters Rd or along Woodcourt Rd and Alan Rd. Connect with unsealed firetrails at Ti Tree Cr, Berkeley Cl, Warrina St or off Gully Rd.

Mt Colah
Cycle along Excelsior Rd, Beryl Ave and Oxley Dve.

Hornsby Heights
Cycle along mostly marked cycle route along Galston Rd and Somerville Rd. Reach Asquith Station along Sutton Link St and Amor St. Connect with unsealed firetrails at Clarinda St, opp Rofe Park, the Outlook, Montview Pde.

Asquith
Cycle from Asquith to Hornsby along Haldane St/ Heath/Lockwood/Lessing/Stephen/Railway Pde.

Epping
Cycle along mostly marked cycle route on Norfolk Rd and parts of Oxford St. Cycle to Macquarie University by following Pembroke St to the east where you will need to walk across the Terrys Creek bridge to join with the cycleway on the Ryde side which joins Vimiera Rd.

Carlingford
Cycle to western end of Murray Farm Rd to join cyclepath leading to M2.

bike riding rules

Riders of bicycles should:

- Correctly wear an approved helmet, with straps fitting snugly under the chin.
- Obey all the road rules.
- Ride on the left side of a road unless signposted otherwise.
- Only ride on a footpath if aged 12 years or less or accompanying a child under 12 years age.
- Use a bicycle lane if one is marked on the road, unless impracticable to do so.
- Always use hand signals when turning or stopping.
- Walk, not ride, across pedestrian crossings.
- Travel no more than 1.5 metres apart if riding two abreast.
- Slow down on a cycle path when pedestrians are present and warn pedestrians of your approach.
- Cycle only on firetrails or management trails in bushland or parks. It is illegal to cycle on designated walking tracks.

All bicycles must:
- Be fitted with an effective brake and a bell, horn or similar warning device.
- If used at night have a steady or flashing white light on the front and a red reflector and red light at the rear.

bicycle parking locations

Hornsby currently has bicycle parking racks and rails which includes most railway stations, shopping centers and carparks. For bicycle parking locations and updates visit www.hornsby.nsw.gov.au.

For details on how to hire a bike locker phone Bicycle NSW on (02) 9281 4099.

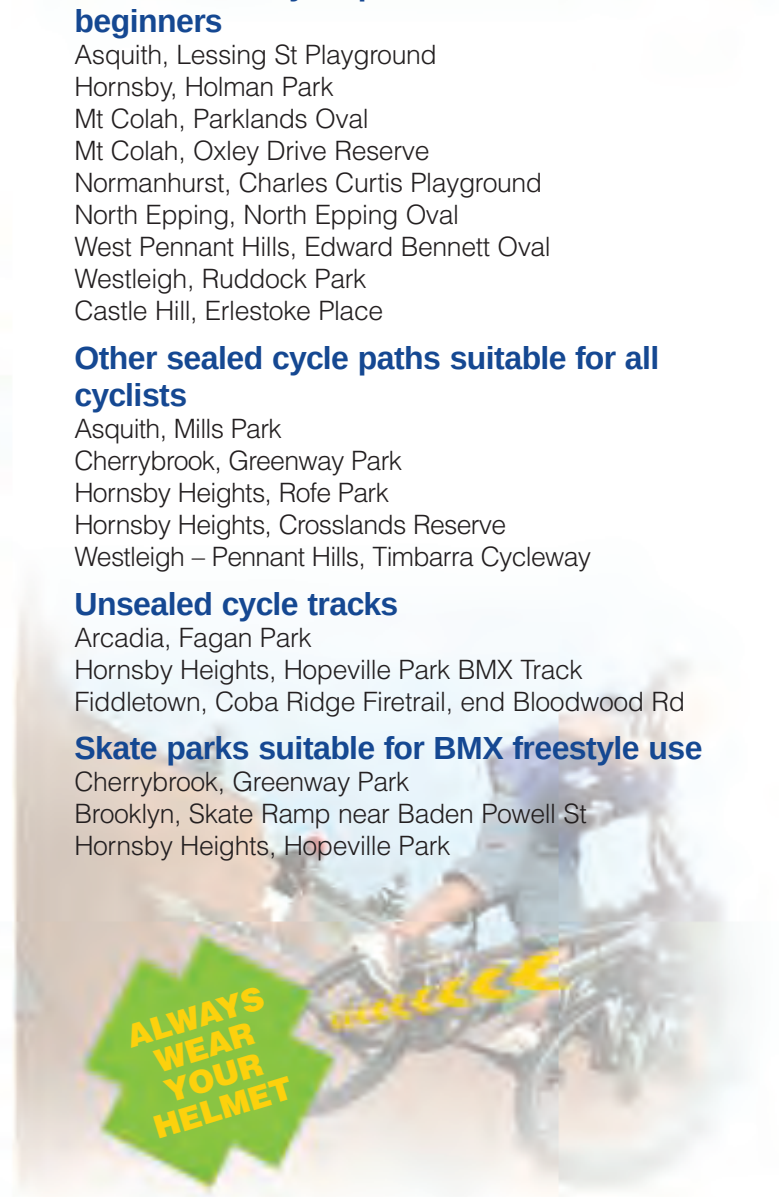
cycle paths and other cycle facilities

Small sealed cycle paths suitable for beginners
Asquith, Lessing St Playground
Hornsby, Holman Park
Mt Colah, Parklands Oval
Mt Colah, Oxley Drive Reserve
Normanhurst, Charles Curtis Playground
North Epping, North Epping Oval
West Pennant Hills, Edward Bennett Oval
Westleigh, Ruddock Park
Castle Hill, Erlestoke Place

Other sealed cycle paths suitable for all cyclists
Asquith, Mills Park
Cherrybrook, Greenway Park
Hornsby Heights, Rofe Park
Hornsby Heights, Crosslands Reserve
Westleigh – Pennant Hills, Timbarra Cycleway

Unsealed cycle tracks
Arcadia, Fagan Park
Hornsby Heights, Hopeville Park BMX Track
Fiddletown, Coba Ridge Firetrail, end Bloodwood Rd

Skate parks suitable for BMX freestyle use
Cherrybrook, Greenway Park
Brooklyn, Skate Ramp near Baden Powell St
Hornsby Heights, Hopeville Park



ALWAYS WEAR YOUR HELMET

Sustainable Action Committee

This Cycling Map was an initiative of Council's Sustainable Action Committee (SAC). SAC aims to improve quality of life by making sure our community, environment and economy are respected and equitably sustained. SAC provides residents, businesses, institutions and Council with a forum to meet others who are committed to making a difference, whilst learning, making decisions, developing strategies and undertaking projects such as this Cycling Map that contribute to the Shire's vision of creating a living environment...

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Bike North
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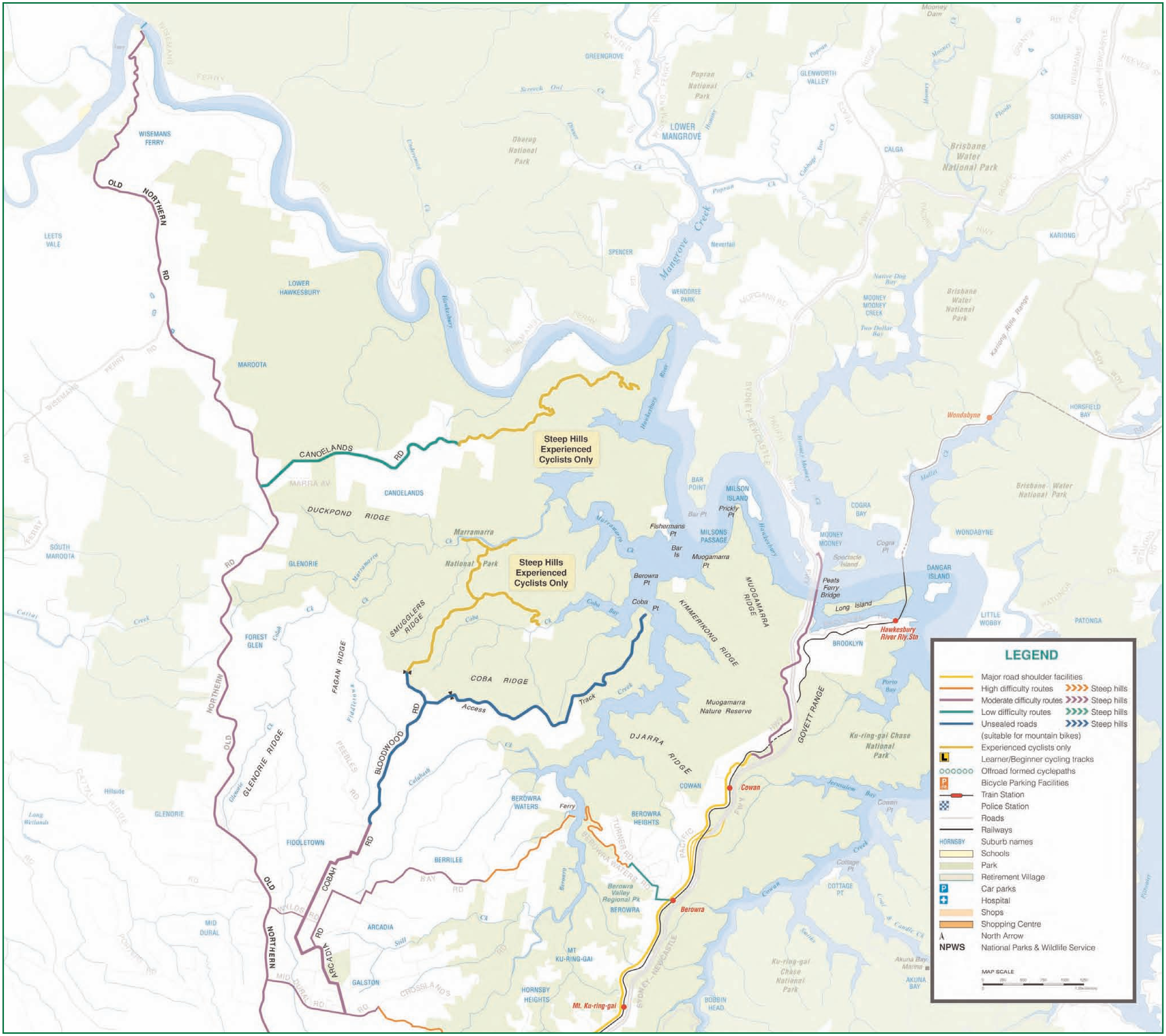
Gladesville NSW 1675
www.bikenorth.org.au



LEGEND
Major road shoulder facilities
High difficulty routes
Moderate difficulty routes
Low difficulty routes
Unsealed roads (suitable for mountain bikes)
Steep hills
Steep hills
Steep hills
Steep hills
Experienced cyclists only
Learner/Beginner cycling tracks
Offroad formed cyclepaths
Bicycle Parking Facilities
Train Station
Police Station
Roads
Railways
HORNSBY
Suburb names
Schools
Park
Retirement Village
Car parks
Hospital
Shops
Shopping Centre
North Arrow
NPWS
National Parks & Wildlife Service
MAP SCALE
Steep Hills Experienced Cyclists Only
Steep Hills Experienced Cyclists Only
WISEMANS FERRY
OLD NORTHERN RD
LEETS VALE
LOWER HAWKESBURY
MAROOTA
CANOELANDS RD
MARRA AV
CANOELANDS
DUCKPOND RIDGE
SOUTH MAROOTA
GLENORIE
FOREST GLEN
SMUGGLERS RIDGE
FAGAN RIDGE
GLENORIE RIDGE
BLOODWOOD RD
COBA RIDGE
Access Track
Marramarra National Park
GREENGROVE
Dharug National Park
SPENCER
LOWER MANGROVE
Mangrove Creek
WENDOREE PARK
Popran National Park
GLENWORTH VALLEY
CALGA
SOMERSBY
Brisbane Water National Park
KARIONG
MOONEY MOONEY CREEK
Wondabyne
HORSFIELD BAY
BAR POINT
MILSON ISLAND
MILSONS PASSAGE
Fishermans Pt
Bar Is
Muogamarra Pt
Berowra Pt
Coba Pt
KIMMERIKONG RIDGE
MUOGAMARRA RIDGE
Muogamarra Nature Reserve
DJARRA RIDGE
COGRA BAY
WONDABYNE
MOONEY MOONEY
DANGAR ISLAND
Peats Ferry Bridge
Long Island
Hawkesbury River Rly Stn
BROOKLYN
LITTLE WOBBY
PATONGA
GOVETT RANGE
Ku-ring-gai Chase National Park
COWAN
Cowan
BEROWRA WATERS
Ferry
BEROWRA HEIGHTS
Berowra Valley Regional Pk
BEROWRA
Berowra
FIDDLETOWN
BERRILEE
BAY RD
COBAH RD
ARCADIA RD
ARCADIA
WILDS RD
MID DURAL
MID DURAL RD
GALSTON
CROSSLANDS RD
MT KU-RING-GAI
HORNSBY HEIGHTS
Mt. Ku-ring-gai
SYDNEY-NEWCASTLE FWY
COTTAGE PT
BOBBIN HEAD
AKUNA BAY
Hillside

Map Continues Overleaf

Contact NPWS for more information on 02 9472 8949

Contact NPWS for more information on 02 9472 8949

Contact NPWS for more information on 02 9472 8949

Contact NPWS for more information on 02 9472 8949

BAULKHAM HILLS COUNCIL JOINS

KU-RING-GAI COUNCIL JOINS

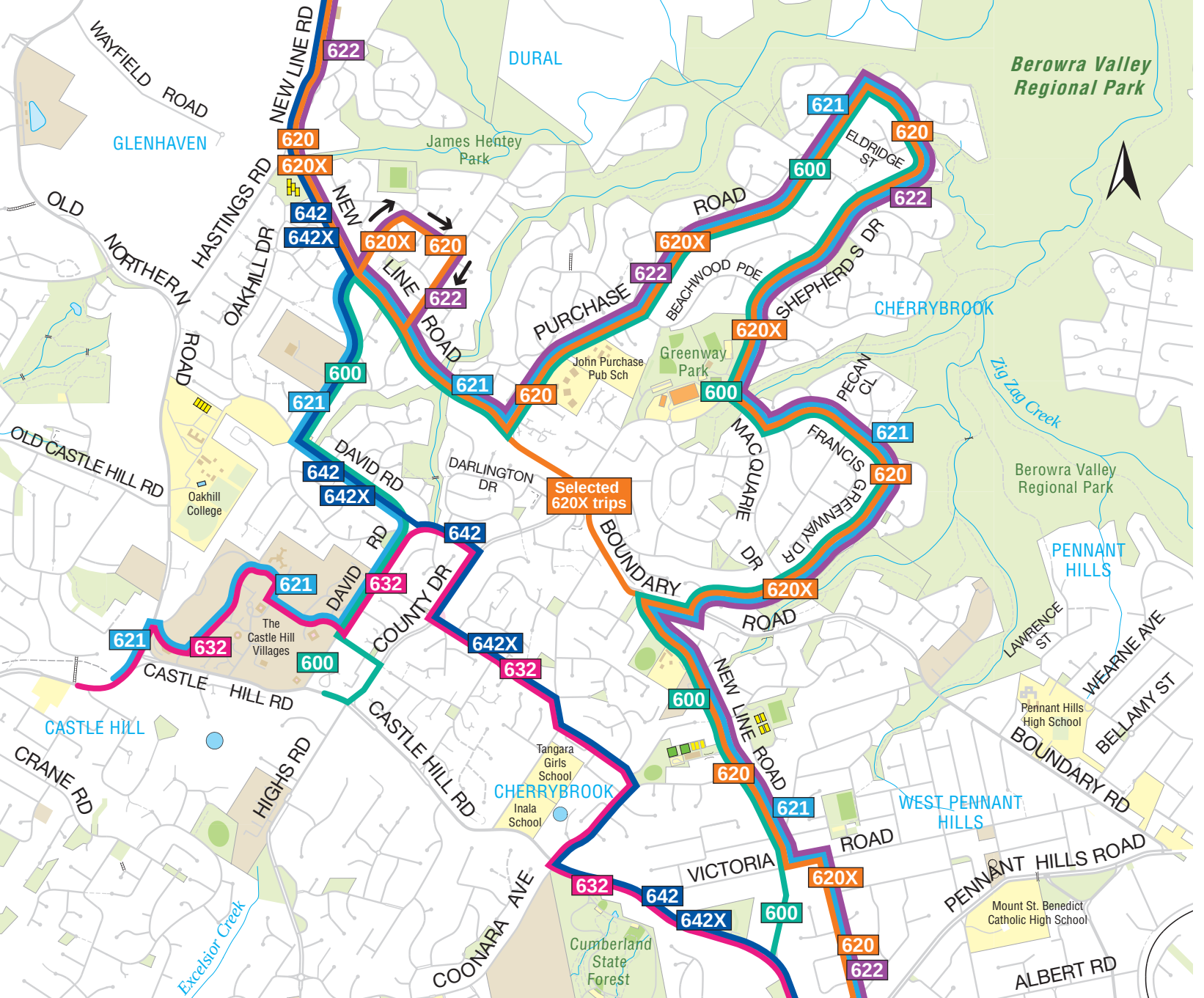
PARRAMATTA COUNCIL JOINS

RYDE COUNCIL JOINS

LEGEND

- Major road shoulder facilities
- High difficulty routes — Steep hills
- Moderate difficulty routes — Steep hills
- Low difficulty routes — Steep hills
- Unsealed roads — Steep hills (suitable for mountain bikes)
- Experienced cyclists only
- Learner/Beginner cycling tracks
- Offroad formed cyclepaths
- Bicycle Parking Facilities
- Train Station
- Police Station
- Roads
- Railways
- Suburb names
- Schools
- Park
- Retirement Village
- Car parks
- Hospital
- Shops
- Shopping Centre
- North Arrow
- NPWS National Parks & Wildlife Service

MAP SCALE



LEGEND

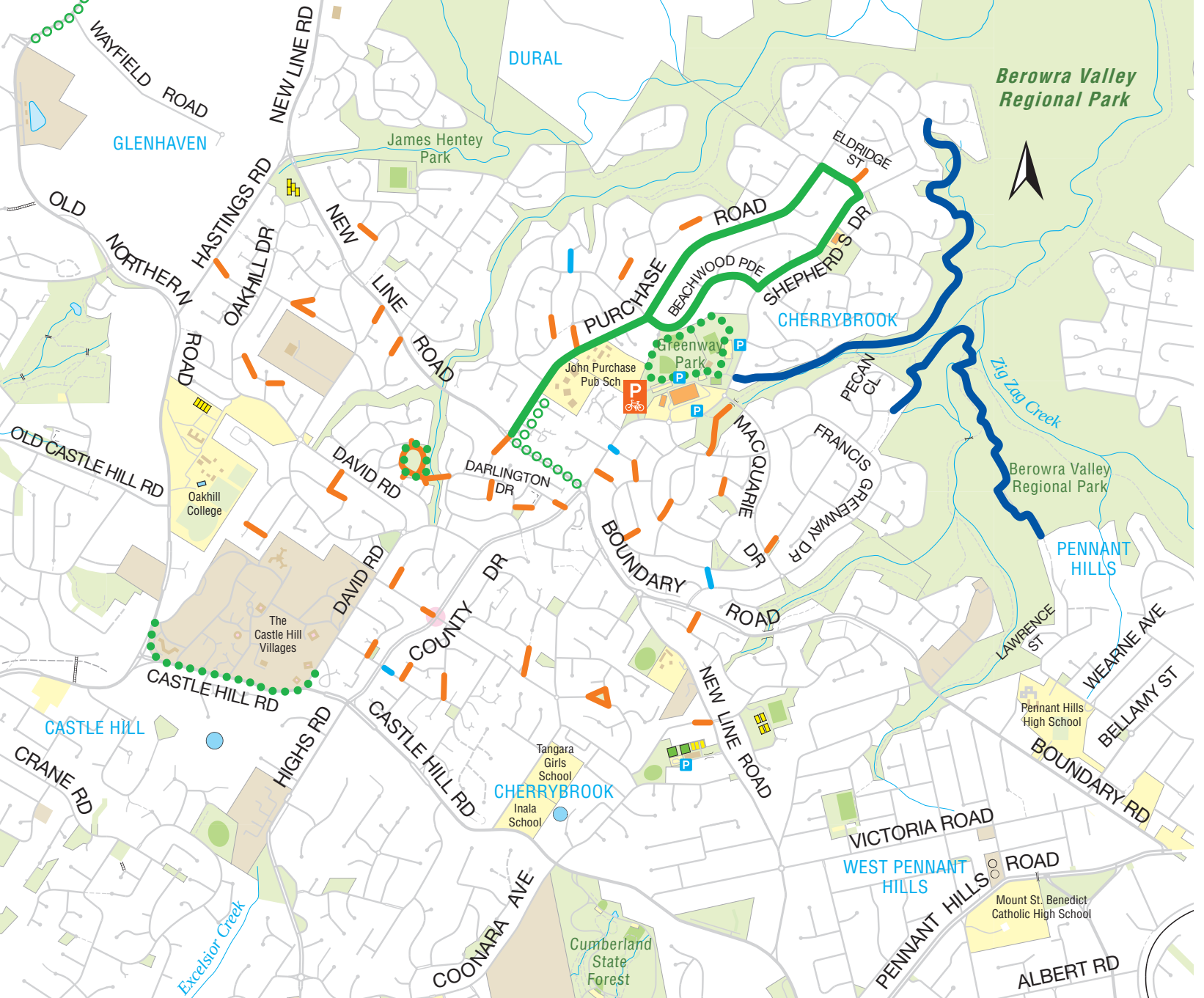
- Bus Route 600
- Bus Route 620 / 620X
- Bus Route 621
- Bus Route 622
- Bus Route 632
- Bus Route 642/642X
- Roads
- CHERRYBROOK — Suburb names
- Schools
- Park
- Retirement Village
- Shops
- Shopping Centre
- North Arrow

Please click the Bus Route links above to take you directly to the relevant timetables.

MAP SCALE

0 250 500 750 1000 1250

0 1.25kilometre



LEGEND

- On-road shared kerbside lane (existing)
- Unsealed roads (existing) (suitable for mountain bikes)
- Off-road formed cyclepaths (existing)
- Off-road formed cyclepaths (proposed)
- Pedestrian / bicycle links
- Pedestrian/ bicycle links with stairs
- Bicycle Parking Facilities
- Roads
- HORNSBY — Suburb names
- Schools — Park
- Retirement Village
- Car parks — Shops
- Shopping Centre
- North Arrow

For more information on Cycleway maps covering your region please visit www.rta.nsw.gov.au

MAP SCALE

0 250 500 750 1000 1250

0 1.25kilometre

Appendix C Stakeholder Consultation

Document title:

Sydney Metro Northwest Pedestrian-Cycle Network and Facilities Strategy

Review Comments Sheet

Document details / ver No: NWRL PedestrianCycle StrategyNWRL_rev 03

Date issued: 1/05/2015

Comment No.	Document Title	Document Revision	Review Document No	Document Ref / Section	Company	Department	Comments	Comment Date	NWRL / RTI Response
1	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bicycle NSW		The Strategy must include a delivery Timeline - otherwise there is no imperative to actually deliver any of the objectives.	6-May-15	The purpose of this report is to set high level strategic objectives, identify opportunities to improve pedestrian-cycle links and devise an implementation plan which has been consulted with the Councils and RMS. The delivery program will vary depending on Councils' and RMS's future delivery plans for the catchments and funding availability. However, the final version of the report has been further refined based on the feedback from councils and RMS.
2	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bicycle NSW		casual bike storage should still be under cover	6-May-15	The project requires all bike racks to be undercover with weather protection. Refer to section 3.2.3 in the report.
3	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bicycle NSW		Access could be gained by Opal card, but the card must be pre-registered for bike storage access at that station	6-May-15	The design and operation of the bicycle facilities shall be integrated with Opal in the future. The customers will be able to use the bike facilities by registering for an access card in the interim. Refer to section 2.5.4 in the report.
4	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bicycle NSW		Rolling stock carriages should each have a bike area at one end with space for at least 10 bike per carriage. There are many commuters who will need to cycle at their destination.	6-May-15	Sydney Metro North West trains will have multipurpose areas in the first and last train car which will have combined provision for prams, wheelchairs, bikes and luggage. There are no specific racks to hold bikes or luggage. Refer artist impression at the end of the Appendix C
5	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bicycle NSW		The storage should be closer to the station than any parking	6-May-15	Under the modal priority for interchange planning at Sydney Metro Northwest stations bicycle parking infrastructure is required to be closer to station gatelines than any other modal parking/layover provision. Provision for bike storage (class 2 and 3) have been planned adjacent the station entry/exits and access movement paths (approximately 50m from Gatelines, except for Cherrybrook Station where a maximum of 115m from Gatelines is acceptable). The bike storage areas are required to have clear sightlines to the Primary Plaza as part of the design. Additional descriptive narrative has been added to the report.
6	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bicycle NSW		Bike storage target should be at least 10% of trips (ie approx doubled).	6-May-15	Noted. The total bicycle parking facilities at NWRL interchanges (includes all stations) is planned as follows: • Initial provisions at 2% of station access trips to the interchange, 0.4% more than the current average (current Sydney-wide average is 1.6% of trips) • Future provisions at 2.5% of station access trips ensuring that space has been allocated at the new interchanges for future expansion of bicycle amenities. The use of facilities will be monitored in the initial stages of operation of the rail link and would be appropriately expanded to meet the change in demand at each station.

Total Items: 4

Comment No.	Document Title	Document Revision	Review Document No	Document Ref / Section	Company	Department	Comments	Comment Date	NWRL / RTI Response
7	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bicycle NSW		The walking and cycling catchments should be doubled to 1,600 and 5,000m respectively. Both equate to about 20 minutes walking or cycling. Cycleways should be planned to cater for these wider catchments.	6-May-15	Noted that realistically the catchments could be much wider depending on topography, traffic conditions and appropriate land uses along the active transport links.The Strategy recognises that Sydney's Cycling Future is focused on completing missing links in cycling networks within 5 km of major centres. While this strategy is consistent with the Sydney's Cycling Future, the primary focus is to identify the key opportunities within an approximately 2.5 kilometre radius around each station where the delivery of cycle connections is particularly important and critical as part of developing the centres and encouraging modal shift. The Strategy also recognises that Sydney's Walking Future is focused on completing missing links in walking networks within two kilometres of cities, towns, local centres and public transport hubs. While this strategy is consistent with the Sydney's Walking Future, the primary focus is to identify the key opportunities within an approximately 800 metre radius around each station which is a distance normally considered to reflect a 10 minute walking trip. This is also where the delivery of pedestrian connections is particularly important and critical as part of developing active centres and encouraging modal shift. This is also consistent with the Station Structure Plans for the NWRL Corridor Strategy.
8	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bicycle NSW		There is a 'clean slate' with these new stations and suburbs. Doing the same old things, and repeating those mistakes should not be an option. There is a need to plan for the Active Transport that community wants to see in 20 years, and then encourage this to happen. It is interesting to note that studies in the Sutherland Shire has shown that increasing Park and Ride facilities has actually decreased Active Transport.	6-May-15	Noted and for that reason Sydney Metro North West have adopted an integrated approach to planning of the rail stations and its precincts with provision of active transport facilities for initial stage when the rail line commences along with space allocation at all stations for future expansion. The total bicycle parking facilities at NWRL interchanges (includes all stations) is planned as follows: • Initial provisions at 2% of station access trips to the interchange (current Sydney-wide average is 1.6% of trips) • Future provisions at 2.5% of station access trips ensuring that space has been allocated at the new interchanges for future expansion of bicycle amenities. Car Parking management for the project is being considered as part of a separate strategy and is outside the scope of this strategy.
9	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bicycle NSW		Active Transport should be proactively encouraged. NSW Health figures show that obesity is rapidly increasing - especially in young people, and more so in the western suburbs.	6-May-15	Noted and for that reason NWRL project have adopted an integrated approach to planning of the rail stations and its precincts with provision of active transport facilities for initial stage when the rail line commences along with space allocation at all stations for future expansion. In addition, walking and cycling are on the top of TfNSW's hierarchy of customer access.
10	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bicycle NSW		Expansion should be planned by moving into and subtracting parking. please look at the WA examples of how they are doing this	6-May-15	Conversion of parking spaces into cycle storage needs much more detailed analysis prior to implementation which is beyond the scope of this strategy and project. The use of facilities will be monitored in the initial stages of operation of the rail link.
11	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bike North		Can you please confirm that current planning includes provision of bike carrying facilities in the rolling stock? Although this was part of the conditions of consent we are concerned to have this confirmed and advocated by your team.	6-May-15	Sydney Metro North West trains will have multipurpose areas in the first and last train car which will have combined provision for prams, wheelchairs, bikes and luggage. There are no specific racks to hold bikes or luggage. Refer artist impression at the end of the Appendix C

Comment No.	Document Title	Document Revision	Review Document No	Document Ref / Section	Company	Department	Comments	Comment Date	NWRL / RTI Response
12	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bike North		Condition C10 indicates that all three types of bike parking should be provided but only two types are in the strategy. Although there are difficulties with the current model on individual bike lockers (Class 1) the problems are with the current implementation not the concept. We request lockers be provided with a different design and management model. We suggest that casual use free individual bike lockers be provided on a "bring your own lock" systems. The lockers should consist of heavy wire weldmesh "windows" which can allow for visual inspection to see if a bike is locked inside. If a locker is locked with no bike then the lock is cut off. Simple.	6-May-15	Since the publication of the Conditions of Approval for EIS 2, TfNSW released its revised position on bicycle parking requirements, and is now more consistent with the document Sydney's Cycling Future 2013. It outlines bicycle parking provisions to be provided as part of NWRL to include secure access bicycle parking (Class 2 as defined under Austroads Standards) and under cover bicycle racks (Class 3 as defined under Austroads Standards). Refer Section 2.1.4. Recent survey by Bureau of Transport Statistics (BTS) have shown customer preference for cages due to: - improved space efficiency compared to lockers - lower operation costs - provision of a shared bicycle storage unit with covered and secured cycle parking. Customers can use their own lock to secure to cycle racks within the compound. Other jurisdictions (eg. WA) have experienced growth in numbers of people accessing PT by bike following installation of cages The unit provides long term parking solution for high demand locations such as transport interchanges. It is intended that In NSW the facility will be free but will require customers to register before accessing the cage.
13	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bike North		More bike parking should be planned for particularly expansion or conversion of space to bike parking. A mode share of over 10% should be expected in the short term as soon as the cycle network is in place. We would expect that all bike parking should be very close to the station, much closer and more convenient and more visible than car parking. In addition plans should be made now for the retro-fitting of the closest car park to bike parking in its initial design to ensure this conversion can be made with minimum effort. We expect cycle mode share could grow significantly over 10% with the right incentives.	6-May-15	Provision for bike storage (class 2 and 3) have been planned adjacent the station entry/exits and access movement paths (approximately 50m from Gatelines, except for Cherrybrook Station where a maximum of 115m from Gatelines is acceptable). They are required to have clear sightlines to the Primary Plaza as part of the design. The initial and future requirements for bike parking have been determined and specified in consultation with TfNSW's Planning division and informed by surveys undertaken by Bureau of Transport Statistics (BTS). The use of facilities will be monitored in the initial stages of operation of the Sydney Metro Northwest. These have already been specified in the OTS Contract.
14	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bike North		In representing cyclists interests Bike North is keen to see a forward thinking approach to what this area will be like in a decade or more. This needs a new vision. Many transport problems have come because of the current "car oriented development" of the area over many years and the NWRL is recognition of this but the new focus must be strongly biased to active transport.	6-May-15	Noted. The NWRL Corridor Strategy focuses on encouraging modal shift to active transport use. The planning is based on TfNSW's hierarchy of transport access for customers putting pedestrians and cyclists on the top of the hierarchy. Refer figure 1.1 of the report showing TfNSW's Hierarchy of Customer Access.
15	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bike North		On flat ground, like much of the area, it takes just 15 minutes to travel 5 km at a conservative commuting speed of 20 km/hr. This would be competitive with driving times and the use of cycling to access the stations must be encouraged and driving discouraged. In particular there should be a considered fee for commuter car parking, which will give extra incentive to public and active transport options. In particular use of a card system should charge drivers who live closest to the stations more than those who live further away, to promote active transport.	6-May-15	Noted. For that reason Sydney metro Northwest project have adopted an integrated approach to planning of the rail stations and its precincts with active transport facilities for initial along with earmarked allocations for future. In addition, walking and cycling are on the top of TfNSW's hierarchy of customer access. Car parking related matters will be dealt as part of Parking Management Strategy for the stations. It is outside the scope of this strategy.
16	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bike North		While the network plans are generally good one of our major concerns is that none of the facilities making up the wider network are actually being built. Although it will fall to Councils to implement the plan we are concerned that lack of funding or even the individual decisions of Councils may delay or even stop the cycling network being implemented. The network is critical to the success of the active transport strategy as transport patterns, once established, are harder to shift. The network must be delivered, preferably in its entirety, at the same time the railway is opened.	6-May-15	Noted. Feedback from The Hills Shire Council has confirmed that some of the recommended infrastructure in the Strategy is either being implemented or proposed to be implemented as part of the programme. The plans for Priority Precincts of Showground, Bella Vista and Kellyville stations will further refine the Active Transport links. Funding mechanism and priorities are yet to be determined with the relevant groups.

Comment No.	Document Title	Document Revision	Review Document No	Document Ref / Section	Company	Department	Comments	Comment Date	NWRL / RTI Response
17	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bike North		Please note that we expect a proportion of cyclists will be travelling for more than 5 km to use the huge benefits of the NWRL, as will a portion of drivers.	6-May-15	Noted that realistically the catchments could be wider depending on topography, traffic conditions and appropriate land uses along the active transport links.The Strategy recognises that Sydney's Cycling Future is focused on completing missing links in cycling networks within 5 km of major centres. However, this strategy is focused on identifying opportunities within approximately 2.5 kilometre radius around each station where the delivery of cycle connections is particularly important and critical as part of developing the centres and encouraging modal shift. Also refer figure 1.2 of the report which shows the overlapping walking and cycling station catchments of Sydney Metro Northwest.
18	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bike North		The good work on the cycle network identfying existing and new routes is applauded. Bike North expects that various issues and solutions will be part of the detailed design process. However what is needed is a much wider and more complete cycle network, in particular reaching out from each station for a minimum of 5 km. The use of 2.5 km in the strategy is noted but can't understand why this distance is used or where it came from. All discussion on short distance cycling has focussed on 5 km, and many of the networks are much longer.	6-May-15	Noted that realistically the catchments could be wider depending on topography, traffic conditions and appropriate land uses along the active transport links. Since the Strategy commenced, TfNSW released its revised position with Sydney's Cycling Future recommending 5km radius for cycling catchment.The Strategy recognises that Sydney's Cycling Future is focused on prioritisation for missing links in cycling networks within 5km of major centres. However, the study boundary for this strategy is focused on identifying opportunities within approximately 2.5 kilometre radius around each station where the delivery of cycle connections is particularly important and critical as part of developing the centres, encouraging modal shift and ensuring min was to make sure that ensuring no gaps within the stations. Refer figure 1.2 of the report which shows the overlapping walking and cycling station catchments of Sydney Metro Northwest.
19	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bike North		Your presentation focussed on the 8 new railways stations, but Epping, Macquarie University, North Ryde and Chatswood stations are also in the project and are noted as being reviewed in the Executive Summary but not in the main report. We request that the cycling plans to extended to reviewing and upgrading cycle networks for 5 km around each of these stations as well. A review of bike parking at these four stations is also a necessary part of this plan and we hope to see this included.	6-May-15	Facilities at Epping, Macquarie University, Macquarie Park, North Ryde and Chatswood stations are a subject of a separate study called *ECRL Multi Modal Study* . This is explained in the Executive Summary of the *Strategy.*
20	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Bike North		Your advice that Blacktown Council does not support cycle facilities on road is of great concern to us. The network of local roads is already in place and as long as both the traffic volumes and speeds are low this network is a vital component for cycling. The cycling network should be designed with best-practice in mind and not be hampered by current views of a Council which should be amended	6-May-15	Blacktown City Council have advised that where on-road cycleways are provided, these are generally restricted to inner local streets which carry low traffic volumes. Further investigation (e.g speed, pedestrian activity & age) may also at times be necessary to determine feasible locations for on-road cycleways along inner suburban roads. Sydney Metro North West project have added the words in the report to clarify this in section 2.3.1.
21	NWRL Pedestrian - Cycle Network & Facilities Strategy	3			Blacktown City Council	Traffic Management	Numerous bicycle infrastructure have been recommended by NWRL which are needed in the short and medium term, especially those within the 800 metres walking and 2 km cycling catchment. Council has recently developed its Bike Plan to be implemented over a 10 year period. Where the recommended paths by NWRL have also been identified by Council through its recently reviewed Bike Plan, such paths may be delivered by Council, subject to funding availability. Notwithstanding the above, for pedestrian and cycling infrastructure that have been recommended by NWRL within the 2km cycling and 800m walking cathment, these should be investigated, funded and delivered by NWRL.	21-May-15	This is a high level strategy at this stage which identifies opportunities and makes recommendations. The funding and delivery responsibility is yet to be determined.

Comment No.	Document Title	Document Revision	Review Document No	Document Ref / Section	Company	Department	Comments	Comment Date	NWRL / RTI Response
22	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Figure 9.3	Blacktown City Council	Traffic Management	Figure 9.3: NWRL proposes a pedestrian bridge across Old Windsor Road connecting Kellyville Station on the eastern side to the residential area of Stanhope Gardens on the western side. Establishing pedestrian/cyclist access from the residential area to Kellyville Station is expected to result in high parking demand along residential streets within Stanhope Gardens. Council supports the proposed access strategy. However, it is emphasised that NWRL consider the provision of an off-street commuter car parking facility on the western side of Old Windsor Road, in Stanhope Gardens in its overall infrastructure delivery scheme.	21-May-15	The objective of the bridge is to increase permeability to residential areas on the western side of Old Windsor Road. The bridge will provide the required connectivity for pedestrians and cyclists in the Blacktown City Council area to the Sydney Metro Northwest stations on the eastern side of Old Windsor Road - Kellyville and Bella Vista. The proposed pedestrian bridges have been approved as part of NWRL EIS Stage 2. The feedback in relation to parking demand is noted. Issues and concerns relating to commuter car parking will be addressed as part of 'Parking Management Strategy' which BCC will be consulted on.
23	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 8.1, Figures 8.2 and Figure 8.3	Blacktown City Council	Traffic Management	Whilst Council supports the need to establish access for pedestrian/cyclists accessing the Bella VistaStation precinct from the western side of Old Windsor Road, previous experiences indicate that the establishment of such access routes also result in high commuter parking demands on nearby residential streets such as that encountered on Crestview Crescent following the establishment of a pedestrian access point from Crestview Drive to T-Way Norbrik Bus Station on Old Windsor Road. Council to date has been managing parking demand on Crestview Drive and surrounding streets with little or no success.Establishing pedestrian/cyclist access from the residential area of Glenwood to Old Windsor Road via Sharrock Avenue or Shaun Drive is expected to result in similar parking demand along streets within walking/cyclying distance to the Bella Vista Station precinct. Council will support the proposed access strategy. However, it is emphasised that NWRL consider the provision of an off-street commuter car parking facilityon the western side of Old Windsor Road, in Glenwood in its overall infrastructure delivery scheme.	21-May-15	The feedback in relation to parking demand is noted. Issues and concerns relating to commuter car parking will be addressed as part of 'Parking Management Strategy' which BCC will be consulted on.
24	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 9.2, Figure9.2 and Figure 9.3	Blacktown City Council	Traffic Management	Map reference F: Path along Tilbury Avenue is not considered to be necessary as there is are existing off-road continuous cycle path between connecting Tilbury Avenue to Old Windsor Road (e.g. via Hayle Terrace, via Perfection Avenue). Figure 9.2 shows existing on-road cycleway along Merriville Road, and Perfection Avenue. The following comments are made in this regard: Council's Bike Plan does not indicate any cycling route (on-road or off-road) along Merriville Road. An alternate off-road continuous cycleway currently exists along the creek from Singleton Avenue to Windsor Road. A new cyclepath along Merriville Road does not appear to be necessary at this time. Council's Bike Plan shows an existing off-road path along Perfection Avenue between Greenwich Street and Stanhope Parkway. This path then follows the path mentioned above to lead to Windsor Road. Similarly, Sentry Drive is also shown as a existing on-road cycleway. This route is not designated as a cycle route in Council's Bike Plan. If developed, this should be in the form of an off-road cycleway. Also, the responsible authority/organisation for funding and delivery of the path should be identified. Please refer to Genral Comments section for further information.	21-May-15	Recommendation 'F' has been removed from Kellyville - table 9.2. Maps have been amended to remove on road cycleway on Merriville Road. Maps have also been amended to show the continuous off road bike path on Perfection Ave as advised by BCC. RMS Cycleway Finder shows a cycleway type 5 on Sentry Drive and the maps in the report show the missing gap in order to connect the cycling facility to Stanhope Parkway. Maps have not been amended.
25	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.2	Blacktown City Council	Traffic Management	Recommendations noted. However, further discussion is needed between NWRL and Council to discuss incorporation of relevant recommendations into Council's Policy documentation and lighting and security issues.	21-May-15	Sydney Metro Northwest will be providing lighting and security within the approved project boundary to ensure safe and attractive enviroment. Asset management arrangements will be made to ensure that. Anything outside of the defined station precinct boundary is not part of the project.
26	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.7	Blacktown City Council	Traffic Management	Tracking code BVB: Old Windsor Road is a State Road under care and control of Roads and Maritime Servises (RMS) Provision of path should be the responsibility of RMS and not Council. Tracking Code BVA and BVF: Please refer to comment No. 1 above.	21-May-15	Noted. Implementation plan has been amended to show possible responsibility - RMS.

Comment No.	Document Title	Document Revision	Review Document No	Document Ref / Section	Company	Department	Comments	Comment Date	NWRL / RTI Response
27	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.8	Blacktown City Council	Traffic Management	Tracking code KVF: See comment 2 above. Tracking Code KVD : Refer to General Comments section below.	21-May-15	KVF has been removed as per previous comment. KVD remains unchanged no previous comment found and additionally, BCC Bike map shows the gap in cycle infrastructure on Palace Street and Keirlie Road and KVD recommends completing the missing link.
28	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.9	Blacktown City Council	Traffic Management	Tracking Code RHA: Please refer to General Comments section below	21-May-15	Noted and responded
29	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.10	Blacktown City Council	Traffic Management	Tracking Codes CRA, CRB, CRC, CRD, CRE and CRF: Please refer to general comments section	21-May-15	Noted and responded
30	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 8.1, Figures 8.2 and Figure 8.3	Blacktown City Council	Traffic Management	Recommended on-road cycleway by "Others" along Meurants Lane is not supported given the volume of traffic carried by the road and resulting concerns for cyclist safety. An off-road path is recommended to address safety concerns. Also, the responsible authority/organisation for funding and delivery of the path should be identified. Please refer to Genral Comments section for further information. Although marked outside the 10 minute cycling cathment, Figure 8.2 shows a number of on-road existing cycleways (unbroken blue lines) within the Blacktown City Council Area. Council has not designated these as cycleways in its Bike Map. Please refer to Council's Bike Map and make necessary changes.	21-May-15	The maps and recommendation have been amended to show off-road path. The funding and delivery responsibility will be discussed as part of next steps. The maps have been amended to align with BCC maps.
31	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 11.2, Figure 11.2 and Figure 11.3	Blacktown City Council	Traffic Management	Map reference A, B and C: Paths along Tallawong Road, Cudgegong Road, Rouse Road are proposed developer funded paths as can be seen from Council's Bike Plan. It is expected these paths will be installed as off-road shared paths during the delivery of NWRL works and precint development works Map reference D: A link currently exists along Ridgeline Drive connecting The Ponds and Schofields Road. Map reference E: Paths recommended within Area 20 is expected to be installed as off-road shared paths during the delivery of NWRL works and precint development works.	21-May-15	Noted the maps have been checked to ensure this is reflected. Map reference and recommendation D has been removed. Map reference and recommendation E has been shown as shared or separated path. Additional words have been added in the table 11.2 as well.
32	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		General	RMS		At interchange facilities for all stations: In regards to bike parking, the strategy has initial provision and future provision. What is the trigger for having to provide future provision? Should there not be triggers in place that if 90% of bike lockup being used on a regular basis then need to provide more. As I recall when they introduced these lock-up cages into Adelaide's stations and bus interchanges that they filled up to max capacity within 4 weeks as a take up was a lot more than predicted.	1-Jun-15	Initial provision reflects the facilities to be provided as part of 'day one' of Sydney Metro Northwest operation. Future provision is to be safeguarded for expansion to allow for increase as new cycle infrastructure is delivered and future precinct development. The initial and future requirements for bike parking have been determined and specified in consultation with TfNSW's Planning division and informed by surveys undertaken by Bureau of Transport Statistics (BTS). The bicycle parking usage will be monitored from when the Sydney Metro Northwest commences operation and provisions reviewed based on demand. To address future increases in peak bicycle demand adequate space has been allocated at stations to allow expansion of bicycle parking. Any capacity increases will be based on demand statistics and the customers' views from surveys. These have already been specified in the OTS Contract.

Comment No.	Document Title	Document Revision	Review Document No	Document Ref / Section	Company	Department	Comments	Comment Date	NWRL / RTI Response
33	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		5.3 Castle Hill Station Issues and recommendations	RMS		CHA & CHB – Separated path on Old Northern between McMullen and Castle Hill Road, not enough width, need to underground electricity, remove the signs and put up a ped barrier between vehicles and shared path as the width would require the path be next to the kerb. On road marked bike path along Old Northern between Showground and Castle Street, not enough road width unless you remove the parking, plus if parking is still there major hazard of getting hit by opening car doors.	1-Jun-15	CHA - A detailed assessment will determine the feasibilty of this recommendation. Words have also been added in the recommendation. CHB amended to a shared use path on Old Northern Road between Showground Road and Castle Street. It is noted that a THSC currently have an exhibition Of Draft Amendments To The Hills DCP Part C Section 1 prepared for the Mainstreet Precinct of Old Northern Road, Castle Hill. There is a reduced car parking provision aimed at encouraging restaurants and outdoor dining in the Mainstreet Precinct, consistent with Council's strategic direction to facilitate vibrant and active centres. Sydney Metro Northwest will monitor the development and changes to this.
34	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		7.3 Norwest Station Issues and recommendations	RMS		NWA & NWB relate to infrastructure on Norwest Blvd that need to be incorporated into the comprehensive re-design that RMS is currently undertaking.	1-Jun-15	It is understood that RMS are close to finalising a concept design for Norwest Boulevard. When the concept design is available, recommendations NWA and NWB will be accordingly reviewed.
35	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Various	THSC	Community Planning & Infrastructure Special Projects	Throughout the document there are numerous references to *'the Hills Shire Council'* . It should be *'The Hills Shire Council'* .	18-May-15	Amended throughout the report
36	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Section 2.4 Page 14	THSC	Community Planning & Infrastructure Special Projects	Under the Rouse Hill Town Centre Green Travel Plan there is reference to existing bike racks and lockers. It is Council's understanding that these have been removed by ISJV as part of the SVC construction works at the Rouse Hill station site. Might need to confirm whether the lockers and racks have been temporarily replaced while construction is in progress.	18-May-15	SVC have advised that some of the lockers (approximately 8) have been relocated at the Southern end of Market Lane by TfNSW. The rest were sent to a depot and the racks have been removed by ISJV. The permanent provision will be as per NRT's emerging design, in compliance with the SPR. Sydney Metro Northwest will provide further details to THSC as it becomes available.
37	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 3.4 Page 32	THSC	Community Planning & Infrastructure Special Projects	Under the *Station Facilities* section of the table, no mention is made about provision of drinking water supply for both cyclists and the general public. Possibly being provided anyway as part of the OTS design for the station precincts but may be worth confirming.	18-May-15	Drinking water bubblers are included in the OTS contract for provision at all new stations. Table 3.4 and Table 12.2 now incorporates this general recommendation.
38	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Section 4.1.3 Page 34	THSC	Community Planning & Infrastructure Special Projects	Very minor typo. Comma missing in second paragraph between *culs-de-sacs* and *steep topography* . Also according to my very old dictionary the plural for *a cul-de-sac* is *culs-de-sac.*	18-May-15	Amended
39	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Section 5.1.2 Page 42	THSC	Community Planning & Infrastructure Special Projects	In the second paragraph it states that Castle Hill High School, Castle Hill RSL and Castle Hill bowling club are within the 800m catchment around the Castle Hill station site. All three facilities are actually outside of the 800m radius. It might also be worthwhile mentioning the fact that Castle Hill library and the various community facilities within the Castle Grand complex are all within the 800m radius.	18-May-15	Words have been amended
40	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Section 5.2.2 Page 43	THSC	Community Planning & Infrastructure Special Projects	Eric Felton Street is no longer a public road. It was closed at least 10 years ago and sold to QIC to facilitate expansion of Castle Towers. The former Eric Felton Street is now an entrance and access road to a number of the car parking levels at the northern end of the Castle Towers complex. However it does get picked up as Eric Felton Street if you do a search on Google Maps . Not sure if other GPS systems will identify it as Eric Felton St. May be easiest to refer to it as *'the former Eric Felton*	18-May-15	The clarification words have been added.
41	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Figure 5.1 Page 45	THSC	Community Planning & Infrastructure Special Projects	On plan *Old Castle Hill Rd* is incorrectly labelled as *Castle Hill Rd* .	18-May-15	Amended

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42	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 5.1 Page 49	THSC	Community Planning & Infrastructure Special Projects	In the recommendation against Tracking code CH1 it refers to dedicated cycleways along Old Castle Hill Rd between Crane Rd and McMullen Ave. Should be *Castle St* rather than *Crane Rd*.	18-May-15	Reference has been corrected in the report.
43	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 5.2 Page 50	THSC	Community Planning & Infrastructure Special Projects	The recommendation to install a separated path on the northern side of Old Northern Rd is supported in principle (Tracking code CHA). However the recommendation needs to take into consideration the risks of such a path with (i) the relatively steep downhill grade (heading south) which will increase the speed of cyclists and (ii) the potential for cyclists using the path to conflict with school children that will be at the bus stop and traffic lights opposite St Bernadettes and elderly pedestrians that currently use the existing path to walk or use mobility scooters going to and from the ARV complex on the corner of Old Northern Rd and Castle Hill Rd.	18-May-15	The advice is noted. The option of physical separation may need to be considered to minimise conflict. A detailed assessment will determine the feasibilty of this recommendation. Words have also been added in the recommendation.
44	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 5.2 Page 50	THSC	Community Planning & Infrastructure Special Projects	Tracking code CHD. Need to check to see if there is sufficient width on the road carriageway in this section of Crane Rd for an on-road marked cycle path. Not sure of existing lane widths but it is doubtful if enough room could be found within existing carriageway.	18-May-15	Noted. The cycle lane or the road shoulders end just before the intersection of Crane Road with Orange Grove. The recommendation has been amended to 'shared or separated paths' for this section. It will need to be investigated as part of concept design.
45	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 5.2 Page 50	THSC	Community Planning & Infrastructure Special Projects	Tracking codes CHF & CHG. Missing footpath links on Old Castle Hill Rd, Mercer St and Orange Gove have actually been built.	18-May-15	Maps and text have been amended with CHF and CHG deleted.
46	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Section 6.1.2 Page 54	THSC	Community Planning & Infrastructure Special Projects	Paragraph 2. There are actually three spectator stands around the Showground arena, not one.	18-May-15	The numbers of stands have been amended.
47	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 6.2 .Page 58	THSC	Community Planning & Infrastructure Special Projects	Tracking Code SHC. Will seek RMS funding for cycleway on Showground Rd from existing cycleway at Showground to Windsor Rd(southern side) Tracking Code SHF . Footpath already constructed along southern side of Carrington Rd between Showground Rd and Middleton. Tracking Code SHH. Ashford Ave listed for construction of footpath along 1 side not both sides as per Council's adopted new footpath strategy, currently outside 2015-19 program	18-May-15	Noted re: response to recommendation SHC. Report updated to remove SHF. The implementation plan table 12.5 has been updated to reflect THSC's current status on SHH.
48	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 7.2 Page 65	THSC	Community Planning & Infrastructure Special Projects	Tracking code NWF. Crossing facility is already proposed as part of Part D Section 8 of The Hills DCP.	18-May-15	Noted and the response has been captured in the Implementation Plan.
49	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 7.2 Page 65	THSC	Community Planning & Infrastructure Special Projects	Tracking code NWH. Not sure if this link would get a lot of use. Saxonvale Rd has a very steep longitudinal grade on either side of a crest that is about half way along the street. Cyclists going between the station precinct and the Crestwood area are more likely to use existing roads and cycleways along Crestwood Dr, Chapel Lane, McKillop Dr, Barina Downs Rd etc. rather than use Saxonvale Rd.	18-May-15	Map updated to reflect THSC's Bike plan.
50	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 8.1 Page 71	THSC	Community Planning & Infrastructure Special Projects	Tracking codes BV6 and BV7. Not sure if referring to marked pedestrian crossings or a facility such as a pedestrian refuge. If the former then RMS warrants (based on number of pedestrians and vehicles) would need to be met.	18-May-15	Noted. This to be investigated in detail.
51	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 8.2 Page 72	THSC	Community Planning & Infrastructure Special Projects	Tracking code BVE. Balmoral Rd DCP requires only 2.5m wide shared path along full length of Balmoral Rd (one side of road only with 1.5m wide footpath on other side). Substantial sections of this cycleway have already been constructed by developers.	18-May-15	Noted. The maps, recommendations and the implementation plan have been amended to reflect that.

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52	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 8.2 Page 72	THSC	Community Planning & Infrastructure Special Projects	Tracking code BVH. Opportunities for either off-road or on-road cycle facilities along Lexington Dr may be limited due to existing road carriageway width and kerbside parking (on-road cycle facility) and limited verge width and extensive street tree planting along full length of road (off-road cycle facility). On road cycleway could probably only be achieved by banning parking along one or both sides of the road which could have implications for businesses, their employees and visitors. At present it is doubtful whether this would be supported by Council.	18-May-15	Noted. THSC's advice has been captured in the Implementation Plan. An appropriate type of facility will be determined through further consultation and concept design.
53	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 8.2 Page 72	THSC	Community Planning & Infrastructure Special Projects	Tracking code BVK. There are existing pedestrian crossing facilities in the splitter islands on the roundabouts at Woolworths Way and Meridian Place. A marked pedestrian crossing elsewhere along the road would need to satisfy RMS warrant in terms of pedestrian counts. There is also a concern that even if warrants are met, a marked pedestrian crossing will have a further impact on the already congested traffic movements along Lexington Dr during the AM & PM peaks. Depending on the final design of the signalised intersection at Celebration Dr and Lexington Dr, it is likely that a pedestrian crossing phase will be provided across Lexington Dr at that intersection.	18-May-15	Noted. The recommendation has been retained. However the words in the implementation plan have been amended to include THSC's advice.
54	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 9.1 Page 78	THSC	Community Planning & Infrastructure Special Projects	Tracking code KVH. Will need to ensure that warrants can be met for marked pedestrian crossing.	18-May-15	Noted and captured in the implementation plan.
55	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 9.2 Page 78	THSC	Community Planning & Infrastructure Special Projects	Tracking code KVB. Need to ensure that landscape design work already undertaken by NRT for cycleway network along the above ground section of the railway between Bella Vista ands Rouse Hill stations is consistent with this recommendation.	18-May-15	Sydney Metro will ensure consistency with NRT's Corridor landscaping concept.
56	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 9.2 Page 79	THSC	Community Planning & Infrastructure Special Projects	Tracking code KVE. Samantha Riley Dr between Windsor Rd and Elizabeth Macarthur Creek is to be reconstructed by OTS contractor. It would be assumed that footpath will be provided as part of those works and/or by the developer of the high density apartment complex on the northern side of Samantha Riley Dr.	18-May-15	WAD package 16 shows approximate limits of the work and they do not extend all the way to Macquarie Avenue. It is also understood that the road reserve is fairly tight through this area once turning lanes etc. are provided. The feasibility of constructing a fully compliant footpath on the northern side within the road reserve needs to be checked. Alternatively, it may need to extend on to the adjacent development land and be included as a DA requirement. Further discussions will be required between THSC and Sydney Metro Northwest to determine the details. Words have been added in the report to reflect that in the implementation plan as well as in Kellyville station section.
57	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Section 10.1.3 Page 82	THSC	Community Planning & Infrastructure Special Projects	Last sentence refers to all other roads in Town Centre being private roads. It is suggested that this statement be qualified by inserting the word *'currently'* before *'private roads'* . The reason is that a condition of consent for the Town Centre requires Tempus St to be dedicated as a public road once the railway opens or 2017 (whichever comes first). It is also likely that the section of Rouse Hill Dr from Windsor Rd to Tempus St will also be dedicated as public road by TfNSW.	18-May-15	The words have been amended.
58	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.2 Page 102	THSC	Community Planning & Infrastructure Special Projects	Requirement for provision of cycle parking facilities already included in Council's DCP (Section 2.3 Part C Section 1).	18-May-15	Noted. The information has been added to the Implementation Plan.
59	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.3 Page 104	THSC	Community Planning & Infrastructure Special Projects	Tracking code CF. Note that $50K has been provided in Draft 15/16 Works Program for completion of missing footpath links on Highs Rd.	18-May-15	Noted. The Implementation Plan has been updated to reflect that.
60	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.3 Page 105	THSC	Community Planning & Infrastructure Special Projects	Tracking code CJ. Note that $60K has been provided in Draft 18/19 Works Program for footpaths on southern end of Glenhope Rd linking Glenayr Gr to Invergownie Cl	18-May-15	Noted. The Implementation Plan has been updated to reflect that.

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61	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.4 Page 107	THSC	Community Planning & Infrastructure Special Projects	Tracking code CHA. Refer to comment 10 above.	18-May-15	The advice is noted. The option of physical separation may need to be considered to minimise conflict. A detailed assessment will determine the feasibilty of this recommendation. Words have also been added in the recommendation.
62	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.4 Page 107	THSC	Community Planning & Infrastructure Special Projects	Tracking code CHB. This recommendation is not supported by Council. The Old Northern Rd 'Mainstreet' between Showground Rd and Castle St/Crane Rd is already a 40kph zone. There is insufficient carriageway width for an on-road marked bicycle path without removing the existing short term parking that is currently available on both sides of the road.	18-May-15	The recommendation has been changed to shared use path.
63	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.4 Page 108	THSC	Community Planning & Infrastructure Special Projects	Tracking code CHD. Refer to comment 11 above.	18-May-15	Noted. The cycle lane or the road shoulders end just before the intersection of Crane Road with Orange Grove. The recommendation has been amended to 'shared or separated paths' for this section. It will need to be investigated as part of concept design.
64	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.4 Page 109	THSC	Community Planning & Infrastructure Special Projects	Tracking code CHF & CHG. Refer to comment 12 above.	18-May-15	Maps and text have been amended with CHF and CHG deleted.
65	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.5 Page 110	THSC	Community Planning & Infrastructure Special Projects	Tracking code SHA. Responsibility should be NWRL/THSC or developer	18-May-15	The responsibility has been amended to reflect that.
66	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.6 Page 113	THSC	Community Planning & Infrastructure Special Projects	Tracking code NWH. Refer to comment 16 above.	18-May-15	Map updated to reflect THSC's Bike plan.
67	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.6 Page 114	THSC	Community Planning & Infrastructure Special Projects	Tracking code NWJ. Century Circuit is a private road. Therefore any responsibility for pedestrian path would rest with the current property owner or a developer and not Council.	18-May-15	Note. The Implementation Plan has been amended accordingly.
68	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		General	THSC	Strategic Planning	We are concerned that State government are not providing us with coordinated outcomes and as a Council we are being asked to comment on potentially different outcomes from work being undertaken by different authorities. The Priority Precincts work may have different outcomes to those proposed in the TfNSW Pedestrain-Cycle Network and Facilities and we ask that TfNSW liaise with the Department of Planning & Environment to ensure a cohesive approach. Our contact there is Anne-Maree Carruthers or Malcolm McDonald. Peter Burke has been involved in previous meetings and would have their contact details.	20-May-15	Noted. Sydney Metro will ensure consistency with Priority Precinct proposals in the NWRL Ped-Cycle Strategy. It is also noted that the Priority Precinct Plans have not been publicily exhibited yet. The maps in the strategy have been amended to reflect the PP's draft proposals.
69	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Table 12.8 Page 119	THSC	Community Planning & Infrastructure Special Projects	Tracking code KVE. Refer to comment 23 above.	18-May-15	WAD package 16 shows approximate limits of the work and they do not extend all the way to Macquarie Avenue. It is also understood that the road reserve is fairly tight through this area once turning lanes etc. are provided. The feasibility of constructing a fully compliant footpath on the northern side within the road reserve needs to be checked. Alternatively, it may need to extend on to the adjacent development land and be included as a DA requirement. Further discussions will be required between THSC and Sydney Metro Northwest to determine the details. Words have been added in the report to reflect that in the implementation plan as well as in Kellyville station section.
70	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Section 5.2.2 Pages 43 & 44	THSC	Community Planning & Infrastructure Special Projects	QIC recently lodged a new DA for the expansion of Castle Towers. It may be worth contacting Council's Principal Executive Planner Kristine McKenzie (9843 0319) to discuss any changes in the current DA to those approved back in 2011. These changes may need to be reflected in Section 5.2.2 which I presume relates more to the previously approved DA.	18-May-15	THSC's Principal Executive Planner was contacted. The current DA information has been obtained and the report updated to reflect that in 5.2.2.

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71	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Cherrybrook Station, Section 4	HSC	Traffic & Road Safety	The maps Cherrybrook need to be updated based on the plan for Shepherds Dr shared path recently constructed. The link below shows bicycle rails used by Council at other locations, the finish on our racks is stainless steel.	1-Jun-15	The maps have been updated to reflect the change for Shepherds Drive. The bicycle rail designs have been sent to NRT as requested at the briiefing to HSC on 30/04/15.
72	NWRL Pedestrian - Cycle Network & Facilities Strategy	3		Cherrybrook Station, Section 4	HSC	Traffic & Road Safety	This is an extract from Hornsby Shire Council's submission to EIS2 for NWRL. Although some aspects of the proposal have changed since these comments were made in 2012, they provide a checklist of Council's issues. 2.2 Integration of pedestrian and cycling facilities Traffic volumes, pedestrian activity and other multi-modal activities will increase around the proposed Cherrybrook station precinct once it is operational. The vehicular activity around the station precinct will create conflict with pedestrians and cyclists. Currently no dedicated cyclist facilities or continuous pedestrian network is available in the vicinity of the proposed Cherrybrook station. A small number of cyclists currently use Castle Hill Road. Improvements will need to be made in the following areas - Cycling paths, both to AND through the station precincts - Integration of cycling paths to broader RMS and council cycle networks - Detail of cycle parking and other end of trip facilities - Landscaping treatment to deter the pedestrian set down or pick up directly from Castle Hill Road, which will be a road safety issue. The proponent should provide these works as part of the project.	19-Jun-15	Noted. Some of these issues have been covered in The Strategy and more details will be available when the Concept Design for Cherrybrook station is submitted.

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Artist's impression of Rollingstock for Sydney Metro Northwest