sydney METRO | northwest

Interchange Access Plan

SEPTEMBER 2018

NSW GOVERNMENT | Transport for NSW

The content was correct at the time of publication in September 2018 and may have since changed.
For any updates to information, please contact Sydney Metro at 1800 171 386 or at sydneymetro@transport.nsw.gov.au

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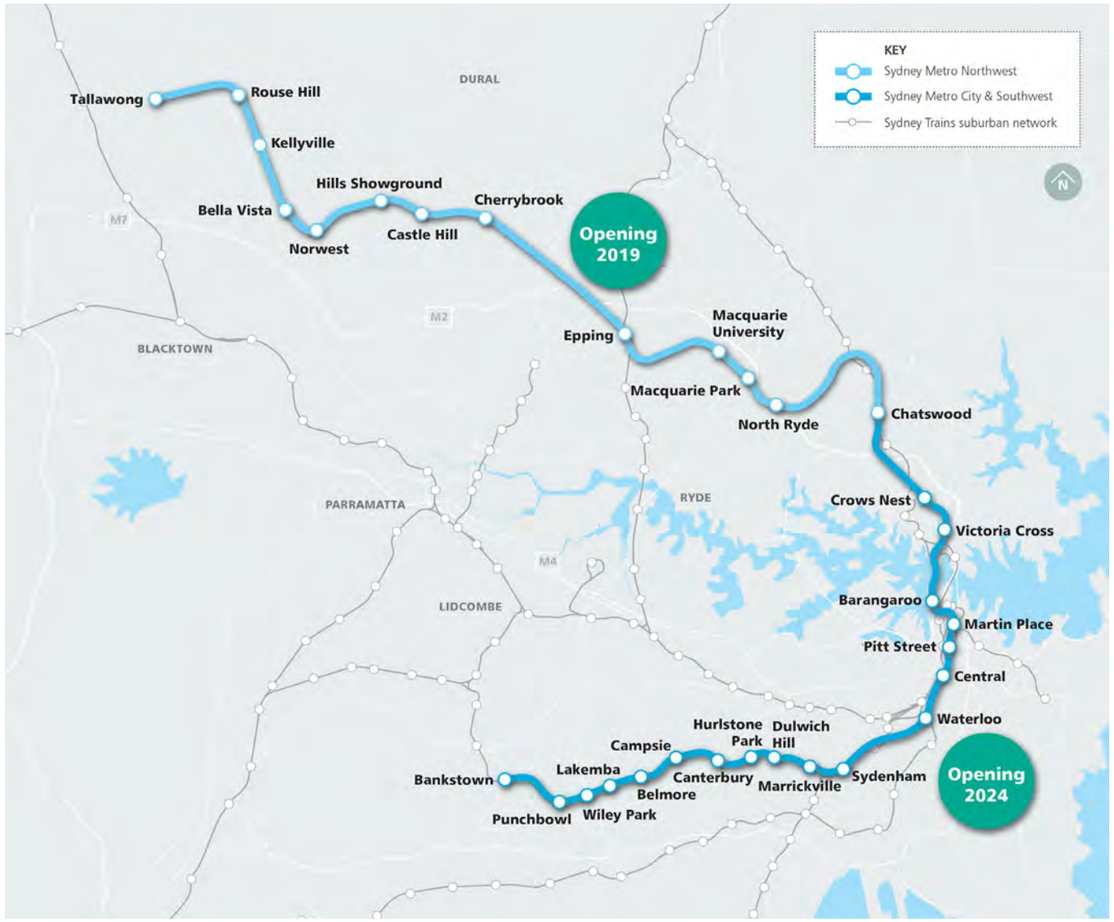
Sydney Metro

Sydney Metro will deliver state-of-the-art rail services to the people of Sydney and will be the first fully-automated metro rail system in Australia. Combining best-practice design and operations with the opportunity to deliver urban renewal and place-making, Sydney Metro will deliver a step change in the provision of safe and efficient rail services that maximise customer experience.

Together with other projects in *Sydney's Rail Future*, Sydney Metro will support a major increase in the capacity of Sydney's rail network, with a train every four minutes during the peak hour and a line capacity of 40,000 passengers per day. The project will significantly improve reliability and service provision across the rail network by addressing current and emerging constraints, including train, platform and station crowding, and network complexity.

Sydney Metro Northwest, from Tallawong to Chatswood is the first stage of Sydney Metro, with Sydney Metro City & Southwest from Chatswood to Bankstown included as the second stage. Sydney Metro Northwest will deliver, for the first time, a reliable public transport service to a region that has the highest car ownership levels per household in NSW. Over the coming decades, an extra 200,000 people will move into Sydney's north-west, taking its population above 600,000, or twice the size of Canberra.



Sydney Metro

Sydney Metro will deliver over 60 kilometres of metro rail between Tallawong and Bankstown via the Sydney CBD. The projects include:

- Eight new stations between Tallawong and Cherrybrook, including four kilometres of elevated skytrain between Bella Vista and Rouse Hill.
- 15 kilometres of twin tunnels between Bella Vista and Epping.
- Conversion of five existing stations and the railway corridor between Epping and Chatswood to metro operations.
- Seven new underground stations between Crows Nest and Waterloo, including 15 kilometres of tunnels.
- Renewal and conversion of eleven existing above-ground stations between Sydenham and Bankstown to metro operations.

The conversion of existing railway corridors and stations to metro operations will include upgrades to platform, overhead electricity and track infrastructure, and electronic and communication systems.

Interchange Access Plan issues, assessment and recommendations

The Interchange Access Plan has been developed by applying broad transport and access standards, guidelines, principles and strategies to the specific physical and operating environment of the interchange. It consolidates the requirements and aspirations for good customer transfer and identifies potential barriers or risks to achieving them, considering anticipated patronage and movement patterns once metro services are in operation.

The Interchange Access Plan sets out areas that are likely to require attention. Some improvements to infrastructure and operations will be made as a direct result of constructing the metro stations and associated works. Any future proposed improvements would be informed by further detailed assessment of infrastructure design, capacity and condition, guided by the Interchange Access Plan.

Interchange Access Plan purpose

The Interchange Access Plan has been prepared to:

- Provide detailed interchange deliverables.
- Inform the interchange design of transport and access facilities, including footpaths, cycle paths and bike parking, bus stops, and car parking.
- Identify customer amenities, shelter, and road and traffic management required to ensure easy, accessible, safe and efficient customer transfer.
- Provide a list of recommendations for delivery partners and other stakeholders to enable the implementation of an easy customer transfer which supports the project objectives.

The Interchange Access Plan is provided to inform planning and investment decisions. This document will be updated in response to station design as required.

Sydney Metro objectives

The objectives of Sydney Metro are to:

- Improve the quality of the transport experience for customers.
- Provide a transport system that is able to satisfy long-term demand.
- Grow public transport patronage and mode share.
- Support the productivity of the Global Economic Corridor.
- Serve and stimulate urban development.
- Improve the resilience of the transport network.
- Improve the efficiency and cost effectiveness of the public transport system.

Interchange and transfer principles

Transport for NSW (TfNSW) is responsible for ensuring the needs of the customer are at the centre of planning and decision making for the transport system, and that all projects and services are designed and operated accordingly. This is reflected in the TfNSW mission statement:

'The customer is at the centre of everything we do in transport.'

Customer-centred design

Sydney Metro aims to serve a diverse set of customers who will undertake a number of journeys throughout the day and week using the metro. The design and delivery of service is centred around the customer – their needs, behaviours, and their jobs to be done.

Sydney Metro's commitment is to deliver a reliable 'door-to-door-to-door' (from origin to destination and back again) transport solution (see figure below), which is easy for all customers, by the delivery of a thoughtfully designed, seamlessly integrated experience that helps move customers around safely, quickly and easily and is adaptive to change. Providing services centred around the customer is key to Sydney Metro's ongoing success and building a solid customer base.

Customers expect the provision of a service that is on time, clean, safe, comfortable, efficient, convenient, has the right information and has adequate customer service. These basics are key drivers of customer satisfaction.

Sydney Metro's goal is to deliver a level of service that goes beyond satisfaction, makes it easy for customers to use the metro and encourages repeat use across the multiple types of journeys they may make. This will support TfNSW's goal of increasing the number of journeys taken on public transport by customers, both in the peak and off-peak periods.

Sydney Metro provides a customer focus by addressing customer needs at all stages of the journey. A critical principle of Sydney Metro is that every effort will be made to make good connections to other modes, ensuring easy and quick transfer. It is critical to customers that their journey is seamless and well integrated across all connecting modes and that there is easy and safe access to connect to/from the metro.

Door-to-door-to-door experience for Sydney Metro

At each stage of the journey there are a number of touchpoints where the customer will interact with a TfNSW product, service, system or is interacting in one of TfNSW's spaces such as a station or an interchange or using one of TfNSW's modes. At these touchpoints the aim is to make it easy to interact as well as provide consistency in service delivery and information, such that it is easy for a customer to have a seamless journey.

The stations, interchanges, trains and complete travel experience all contribute to and will be integral to the customer experience. A high-quality transport product is critical to attracting and retaining customers, and also to meeting broader transport goals.

Linking communities, schools, hospitals, key destinations and businesses with the new metro network is key in delivering the easy customer experience.

Sydney Metro customer principles

The Sydney Metro customer principles inform the design, development and operation of the services, products, systems and spaces to enable customers to have an easy and safe customer experience. For customers, these principles can be interpreted to be:

- Understand Me – means demonstrating awareness and appreciation of my requirements for certainty, safety and value by providing me with easy and effective transport experiences that match my specific needs and wants.
- Give Me Confidence – means providing me with a clear appreciation for the integrated service offerings available through Sydney Metro. Assure me that throughout the journey I can trust Sydney Metro to provide dependable, safe and secure solutions that will meet my particular needs whilst getting me to my destination in time and home again comfortably.
- Inform Me – means providing me with easy access to clear, accurate, relevant and up-to-date information at appropriate times and through convenient channels that enable me to plan my day, execute my plans and share details with others so I can easily achieve my goals with the least amount of effort, confusion and with minimal disruption.
- Guide Me – means showing me the best way to get to where I want to go, in order to get there in time, with the least amount of frustration, stress or uncertainty by directing, instructing and managing flow, crowding or impediments. It also means helping me resolve any problems or difficulties I might encounter that might negatively impact my overall experience.
- Be Reliable – means providing an effective frequency of integrated services that meet my specific needs, whilst dependably collecting and delivering me at scheduled times that enable me to successfully manage my commitments and run my life.
- Value Me – means providing effective transport solutions that I can access with the minimum amount of effort, at the right times and through convenient channels that truly respect my time. In addition, my safety, security, health and wellbeing are all considered and provided for in the way the services are delivered.
- Give Me Control – means empowering me with the necessary knowledge and ability to make choices. It means reducing uncertainty and stress by allowing me to play an active role in managing my situation. Providing advance notice of problems with guidance and real-time updates that keep me informed gives me the freedom to update arrangements with others that may be impacted by the situation.
- Connect Me – means bringing customers closer to the people and things that are most important to them. A more effective transport solution provides a vital contribution to meeting customers interpersonal needs including a sense of belonging, self-esteem, friendship, love and security. Being connected is an integral enabler and a key component of the broader community experience.

Interchange and transfer principles *continued*

An integrated customer journey

Customers see their journey from 'door-to-door-to-door' and may plan and use multiple travel modes throughout their journey in order to achieve their tasks. It is critical to customers that their journey is seamless and well integrated across all connecting modes, and that access to/from the metro from other modes is easy, efficient and safe.

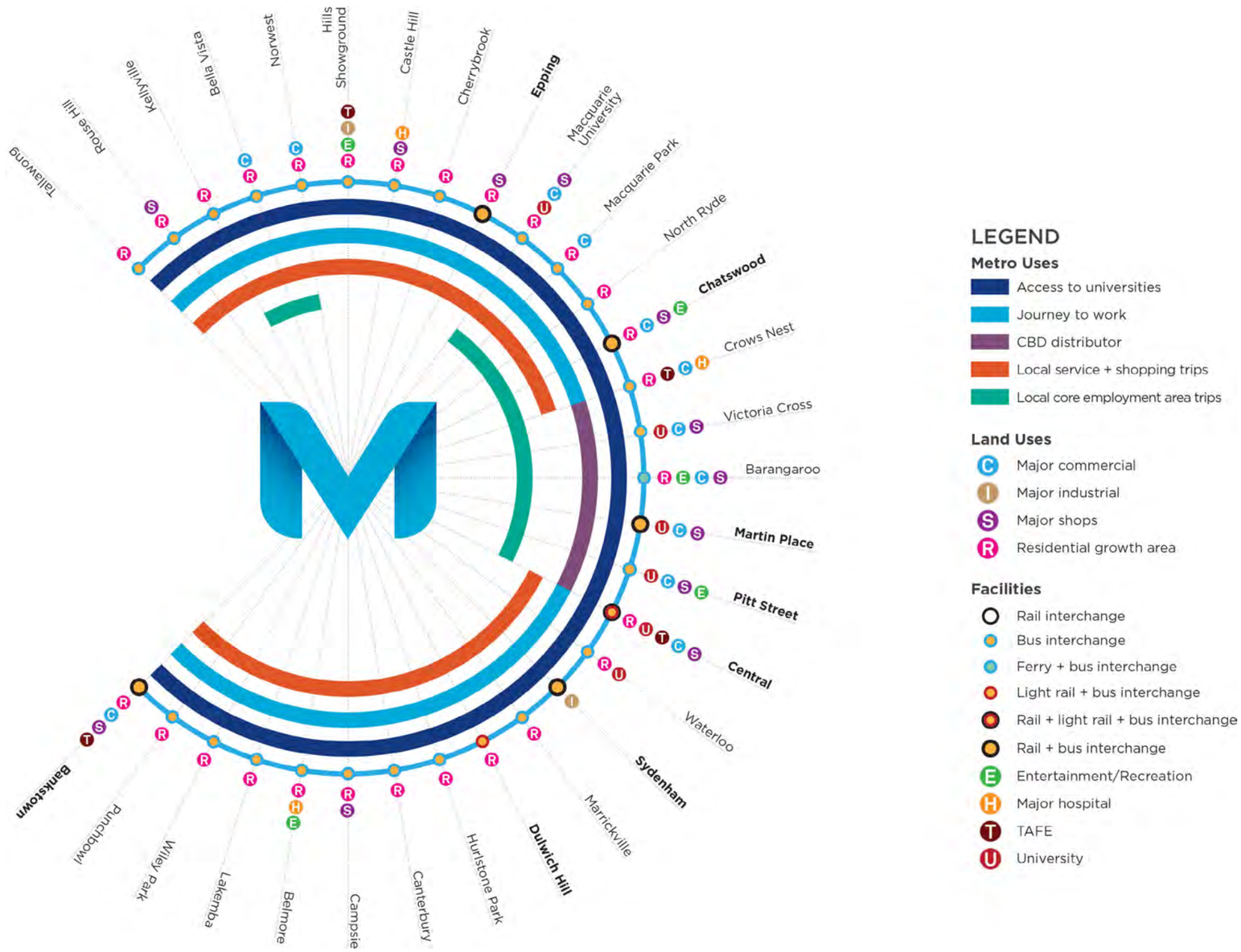
The Sydney Metro customer journey map captures the touchpoints in a customer's journey from door (origin – planning the day) to door (destination) to door (return to origin). Key customer satisfaction drivers and customer principles that are important to customers have been noted at each journey stage. The satisfaction drivers indicate the service attributes that customers consider most important, what customers believe represents value, and the elements of the transport experience that contribute to customer satisfaction. Customer experience of the transport system is made up of two core elements – the functional benefit and the experience of the journey itself. Customer Value Proposition research suggests there are a number of broad factors that encourage people to use public transport. These factors reflect the trade-offs customers consider when making their travel choices and indicate known customer 'pain points' that impact customer interaction with public transport. Sydney Metro must ensure that these elements are well understood in order to deliver products, services, systems and stations that match customer needs and increase its customer base.

Access and egress

Sydney Metro will facilitate a diverse range of trips, providing not only a fast journey to work but also encouraging trips for other purposes such as access within the Sydney's north-west, Sydney's Global Economic Corridor, the north-west business park, local or business trips, access to universities and educational institutions, and service and recreational uses.

In order to facilitate a range of trips across the multitude of destinations Sydney Metro stations will act as both origins and destinations for these trips. Each station will vary to the extent that it is a trip origin or destination throughout the day. The diagram on this page shows the diverse range of trips to a variety of land use categories.

In general, stations with high levels of surrounding employment and/or educational institutions, such as Norwest or Macquarie University, tend to be destination stations in the morning peak period. Stations with high surrounding residential areas, such as Cherrybrook and Epping, tend to be origin stations in the morning peak period. This trend reverses in afternoon as people return to their homes.



Sydney Metro trip diversity and accessibility

Interchange and transfer principles *continued*

Modal hierarchy

Modal hierarchy

Designing an efficient interchange requires the allocation of space to different users, according to TfNSW's modal hierarchy. Wherever possible, this hierarchy aims to prioritise transfers from more equitable and sustainable modes, such as walking and cycling, over vehicle-based modes, including the provision of supporting infrastructure.

4,000 commuter parking spaces will be delivered as part of Sydney Metro Northwest at Tallawong, Kellyville, Bella Vista, Hills Showground and Cherrybrook. No additional car parking spaces will be provided across the remaining Sydney Metro Northwest stations. In general, metro customers will not be encouraged to access the station by driving their car. No car parking will be provided at any of the metro stations between Chatswood and Sydenham and no additional parking will be provided between Sydenham and Bankstown.

Every arrival or departure from each station will be as a pedestrian – either from the precinct or after transferring from or to connecting modes.

Transport mode	Description
Walking and cycling	Walking and cycling are the highest priority access modes as they are the most sustainable, cost-effective, equitable and accessible. Pedestrians and bicycle riders have the lowest environmental impact and (typically) require the least amount of space, while they also contribute to personal safety, urban and commercial viability. For stations located within established urban areas, walking and cycling access will be predominantly along existing paths and routes, which may require upgrade. Additional new paths and routes may also be required. For stations located within new or developing urban development areas, additional new paths and routes may be proposed. The interchange must provide safe, easy, quick, direct, continuous, high-quality, clearly signposted and accessible access between the station and other modes for connecting and transferring customers. A safe and well-defined pedestrian connection shall be provided from the station entry/exit to the nearest footpath on the adjacent street network. Pedestrian routes within the station and interchange shall be clear, direct, unimpeded, accessible, provide for clear sight lines and passive surveillance, and facilitate easy circulation. Pedestrian routes within the station and interchange shall be reduced by highlighting all hazards with high-contrast finishes, special lighting or tactile paving.
	Pedestrian networks in and around the station must encourage walking, cater for forecast demand, minimise delays crossing roads, and provide access to the station and other modes for all (including older people, and people with young families and disabilities, who have greater safety and mobility needs) in line with *Disability Discrimination Act 1992* (DDA) requirements. Through-site links to stations should be open 24 hours a day (or as long as metro is operating). Pedestrian infrastructure shall be designed to accommodate modelled volumes/demands and to protect pedestrians from other road users in accordance with relevant Australian Standards, and Austroads and NSW Government guidelines. For bicycle riders, the interchange must provide safe and clear bicycle access in the vicinity of the station, signage and bike parking facilities at stations, in order to encourage cycling to Sydney Metro. Cycle routes must be of a high quality outside the stations, be designed to accommodate forecasted modelled user demands in accordance with Australian Standards and Austroad Guidelines, and be safely integrated with the local network. The station must enable through-access to allow for bicycles to be taken on metro trains. Cycleways need to be separated from vehicles, pedestrians and parked cars in accordance with Austroads Guidelines and NSW Government directions. Bicycle access and bike parking must be provided at all stations in accordance with Australian Standards, Austroads Guidelines and NSW Government directions.
Rail	Customer transfer from rail services will occur between platforms at Epping, Chatswood, Martin Place, Central, Sydenham, and Bankstown Stations. At these stations clear and intuitive wayfinding should be provided to ensure an easy customer transfer. At other stations customers will need to exit the stations and use existing footpaths to connect to other rail stations. Sydney Metro interchanges shall incorporate accessible facilities, and safe, accessible paths of travel between Sydney Metro platforms and other rail platforms, in accordance with the *Disability Standards for Accessible Public Transport 2002* (DSAPT).
Light rail, bus and ferry	Transfer to other public transport modes is the second highest priority in station planning. These services expand the effective catchment area of Sydney Metro. Seamless transfer is required in order to encourage linked trips within the public transport network. Sydney Metro interchanges shall incorporate accessible facilities and safe, accessible paths of travel between station and light rail, bus and ferry facilities, in accordance with the DSAPT.
Coaches	Transfer to coaches is the third highest priority in station planning. Coach services provide connection to major city and regional NSW destinations. Transfer between coaches and the connecting public transport services and/or surrounding land use is important to ensure high level customer experience. Sydney Metro interchanges shall incorporate accessible facilities and safe, accessible paths of travel between the station and the coach facility, in accordance with the DSAPT.

Interchange and transfer principles *continued*

Transport mode	Description
Taxi	Taxis are the highest priority of the car-based modes, supplementing the public transport system for access to destinations separated from the public transport network. Taxi access and parking should be provided at all stations, with shelters, seating and taxi providers' contact details. Taxi zones are to be visible and well signposted, and located where taxis can depart easily in most directions to reduce any unnecessary travel to reach the passenger's destination. Sydney Metro interchanges shall incorporate accessible facilities, and accessible paths of travel between station and taxi facilities, in accordance with the DSAPT.
Kiss-and-ride	Kiss-and-ride is the preferred mode of those accessing the station by private vehicle, but a relatively low priority. Kiss-and-ride supports the concept of car sharing, trip chaining and ride sharing, reducing the number of single-occupant trips, and, in some instances, parking demand. Kiss-and-ride spaces are to be provided where safe and efficient vehicle access and high vehicle turnover is available, as part of kerbside parking or within station car parks closest to the station. Kiss-and-ride in CBD areas will not be provided for exclusively, but could occur in existing short-term parking zones. Access must be safe and easy for vehicles to enter and exit, minimising conflicts with pedestrians, cycles, buses and other vehicles. Ridesharing services, such as GoCatch and Uber, will use kiss-and-ride zones to pick up and drop off passengers. Sydney Metro station interchanges shall incorporate accessible facilities and accessible paths of travel between station and kiss-and-ride facilities in accordance with the *Disability Standards for Accessible Public Transport 2002* (Transport Standards) (DSAPT).
Park-and-ride	Park-and-ride is the lowest priority of all modes. Given the high accessibility to sustainable transport modes in Sydney, formal parking facilities are only suggested outside of major centres. The stations between Chatswood and Sydenham will not include park-and-ride facilities and there is no additional car parking proposed for stations between Sydenham and Bankstown. For Sydney Metro Northwest, due to the extent of likely station catchments and the nature of the local transport networks, 4,000 parking spaces will be provided for metro customers at Tallawong, Kellyville, Bella Vista, Hills Showground and Cherrybrook Stations. Access to parking areas should be located away from town centres where possible, with new parking areas accessible by a safe, well-lit footpath to enable customers to drive and catch the train. Parking areas should also be located and designed to minimise disruption to walking connections between town centres and the station. Car park layouts shall ensure safe and efficient entry, exit and circulation for pedestrians and vehicles. Car parks shall have clearly marked pedestrian circulation to achieve safe segregation of pedestrian pathways and vehicles in car parks. Car park access points shall be oriented away from station entries to avoid conflicts between pedestrians and vehicles. Provision has been made on Sydney Metro Northwest for electric vehicle parking in the future. Park-and-ride shall be compliant with the Sydney Metro Northwest Parking Management Strategy and the Sydney Metro City & Southwest Parking Management Strategy.

Modes serving each station

Interchange and transfer principles *continued*

Legislative requirements and applicable guidelines

Sydney Metro stations and interchanges must comply with the following legislative requirements and guidelines.

Legislation or guideline	Description
Legislation	
Disability Discrimination Act 1992	Designated Sydney Metro stations and interchange facilities will be fully compliant with the *Disability Discrimination Act 1992*.
Disability Standards for Accessible Public Transport 2002	The purpose of *Disability Standards for Accessible Public Transport 2002* (Transport Standards) (DSAPT) is to enable public transport operators and providers to remove discrimination against people with disabilities from public transport services 'as far as possible'.
Strategy and policy	
Future Transport 2056	The strategy is an update of the 2012 *NSW Long Term Transport Master Plan*. It outlines a vision, strategic directions and customer outcomes. The strategy acknowledges the vital role transport plays in the land use, tourism, and the economic development of towns and cities. It includes issue-specific and place-based supporting plans that focus on integrated solutions rather than individual modes of transport. The strategy also focusses on the role of transport in delivering movement and place outcomes that support the character of the places and communities needed for the future.
NSW Long Term Transport Master Plan	The 20-year plan to improve the NSW transport system by delivering an integrated, modern transport system that puts the customer first.
Sydney City Centre Access Strategy	The strategy outlines how people will enter, exit, and move in and around the Sydney CBD over the next 20 years, and demonstrates how light rail, buses, trains, ferries, cars, taxis, pedestrians and cyclists will interact in the heart of Sydney. The strategy will also be updated to reflect current changes in an evolving plan that allows for the growth of Sydney as a global centre through the establishment of a multi-modal transport access plan for the city centre.
Sydney's Walking Future	The strategy focuses on encouraging more people to walk, both for short trips and access to public transport. It recommends investment in new walking links and improvements in the planning of pedestrian environments to help connect people to places and public transport services.
Sydney's Cycling Future	The strategy to improve and deliver a safe and connected network of bicycle paths throughout Sydney. It recommends prioritising bicycle infrastructure investment to ensure projects that are most likely to encourage more people to ride a bike are completed first, and investing in connected bike routes that are within five kilometres of major centres and public transport interchanges. The strategy includes the Bike and Ride initiative, which will make it convenient for customers to ride to transport hubs, leave their bikes locked up and transfer to public transport to continue their journey.
Sydney's Rail Future	The strategy to transform and modernise Sydney's rail network so that it can grow with the city's population and meet the needs of customers in the future. It is the long-term plan to increase the capacity of Sydney's rail network by investing in new services and upgrading existing infrastructure. It aims to improve the customer's experience, improve reliability and increase services across the rail network. This strategy is currently being updated.
Sydney's Light Rail Future	The strategy to transform and modernise Sydney's light rail network so that it can grow with the city's population and meet the needs of customers in the future.
Sydney's Bus Future	The strategy to transform and modernise Sydney's bus network so that it can grow with the city's population and meet the needs of customers in the future.
Sydney's Ferry Future	The strategy to transform and modernise Sydney's ferry network so that it can grow with the city's population and meet the needs of customers in the future.
Guidelines	
Australian Standards	Standards relevant to construction, operation and maintenance of interchanges and all relevant modes.
Austroads	Austroads' levels of service (LoS) establish standards of performance for key infrastructure, based on its ability to accommodate forecast use and movements safely and efficiently. Levels range from A to F, in descending order of performance.
Local council guidelines	Interchange facilities must comply with relevant local council guidelines.
NSW Government Bike and Ride Program	Provide bicycle parking facilities in accordance with TfNSW Bike and Ride Program and to meet likely future demand close to the station in line with the access hierarchy.
TfNSW Interchange Wayfinding Requirements	Provide wayfinding information at stations with directions to surrounding cycle routes, in accordance with TfNSW Interchange Wayfinding Requirements.
TfNSW Interchange Planning Guidelines	Guidelines for the development of interchanges.
Crime Prevention Through Environmental Design	Stations, trains and the interface to the public domain adjoining stations shall be designed in accordance with Crime Prevention Through Environmental Design (CPTED) principles.
NSW Bicycle Guidelines	Provides guidance to assist in the planning and design of high-quality cycleways within the on-road and off-road environments. The guide should be read in conjunction with Austroads guidelines, however it prevails for any differences.
State and Commonwealth guidelines for buses	Bus bays provided or modified by the project shall meet NSW state and Commonwealth guidelines for size and layout. Where a conflict exists, the Commonwealth standard will apply. Where the Commonwealth standard cannot practically apply, the highest practical standard should be provided in excess of NSW state standards and guidelines.
NSW Road Safety Strategy	The NSW Road Safety Strategy 2012-2021 establishes the direction of road safety in NSW for the next ten years. The strategy sets out the safe system approach with the end goal of no death or serious injury occurring on the road transport network.

Interchange and transfer principles *continued*

Operations and maintenance

The station must provide access for operations and maintenance activities. Provision shall be made at stations for emergency vehicle access. Sufficient space shall be provided at stations for the accommodation of buses in the event of planned or unplanned disruption of normal operations.

Further detail regarding the operation and maintenance of the interchange can be seen in the operations, maintenance and management provisions, which fits within the TfNSW Interchange Operations and Maintenance Framework.

Defining the interchange area

The area to be included in the Interchange Access Plan has been determined by the particular local context of each metro station. The definition of the 'interchange' area reflects local pedestrian routes, circulation patterns and desire lines; land use and the level of activity around the station; relationships to other transport networks and modes; and the proximity of local access roads and routes.

The area to be considered as the interchange is effectively determined by:

- The current and likely demands for pedestrian access to the station entry/entries as currently proposed.
- Formal or informal bike routes and desire lines, in relation to the station entry/entries.
- The path of travel from the surrounding rail stations.
- The path of travel from the surrounding light rail stops, if applicable.
- The path of travel from the surrounding bus stops.
- Current or planned taxi zones, ranks or stands, as well as informal customer drop-off/pick-up points from/to taxis.
- The anticipated propensity for, and location of, drop-off and pick-up of customers as passengers in private cars.
- Major destinations within the immediate catchment of the station, including over site development to be undertaken as part of the metro project.
- Where appropriate, transfer from other modes, including coaches.

Some customers may access metro services from other modes some distance from the metro station (or vice versa), due to the particular trips that are being made. An example of this would be someone leaving a metro station at Pitt Street before joining a bus at Queen Victoria Building to travel to Balmain or Drummoyne. Another example would be travelling by bus to Chatswood, alighting on the Pacific Highway and then walking to Chatswood to join the metro service to Norwest. In these cases, the Interchange Access Plan will consider the relationship of these in order to develop any specific requirements or design principles to ensure seamless transfer between the modes, even though there is a large area of public domain between them. The requirements could, for example, include guidance on signage and wayfinding between the two locations, and specific measures to address any barriers to good access that have been identified.

Interchange and transfer principles *continued*

Terms and definitions

Term	Definition	Ownership/responsibility
Station	The station building and all service facilities required for the operation of the metro, including the entries and exits, and under the direct responsibility of the contracted operator. The station is within the interchange area, and includes the area directly owned by TfNSW as part of Sydney Metro or Sydney Trains, including the ground plane that will be used for over station development, the licensed maintenance area, and any other areas required for station operation.	One or more of the following: • Sydney Metro operator. • Transport for NSW (TfNSW).
Interchange*	The area and assets that facilitate easy, safe and intuitive customer access to and egress from the public transport network, transfer between modes by accessible paths, entry to urban centres, and an efficient customer journey. The interchange includes the station (see above). The interchange can have multiple sites that may not be connected, and includes areas that are owned by other stakeholders.	One or more of the following: • Sydney Metro operator. • Transport for NSW. • Other transport operators. • Local council. • Roads and Maritime Services (RMS). • Private property owners.
Precinct	The area that influences and interacts with the station and interchange, within the local context. The interchange provides a transport access focal point for the precinct, serving key attractions and generating opportunities for land use change and place-making opportunities within the precinct. The precinct includes areas that are owned by other stakeholders.	One or more of the following: • Local council. • RMS. • Private property owners.
Catchment	The station walking catchment is generally within an 800-metre walk of the station. For suburban stations the catchment and the precinct may be the same. For urban stations the precinct will generally be smaller than the catchment. The Project may seek greater catchment areas to assess specific outcomes, such as parking impacts on local streets. The cycling catchment for Sydney Metro stations is taken as 2.5 kilometres, due to their proximity to each other and potential destinations along the network. This is a comfortable 10-minute bike ride for an average rider.	One or more of the following: • Local council. • RMS. • Private property owners.

* For Epping, Chatswood, Martin Place, Central, Sydenham and Bankstown Stations, many customers will transfer within the boundaries of the station – both between Sydney Trains services and between Sydney Trains and Sydney Metro services. These Interchange Access Plans acknowledge the need to consider the broader principles of customer transfer as an integral part of station design.

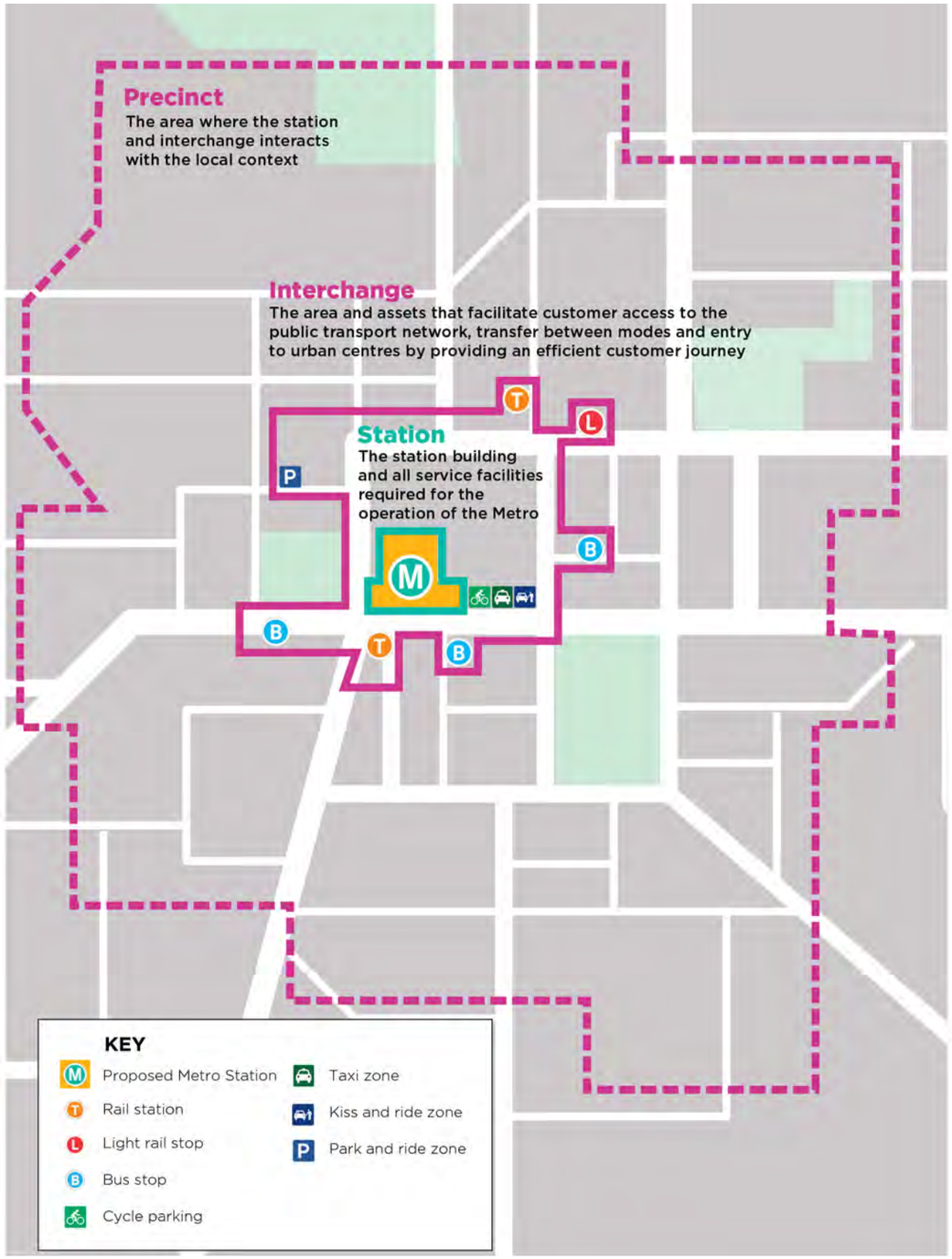


Illustration of terms and definitions

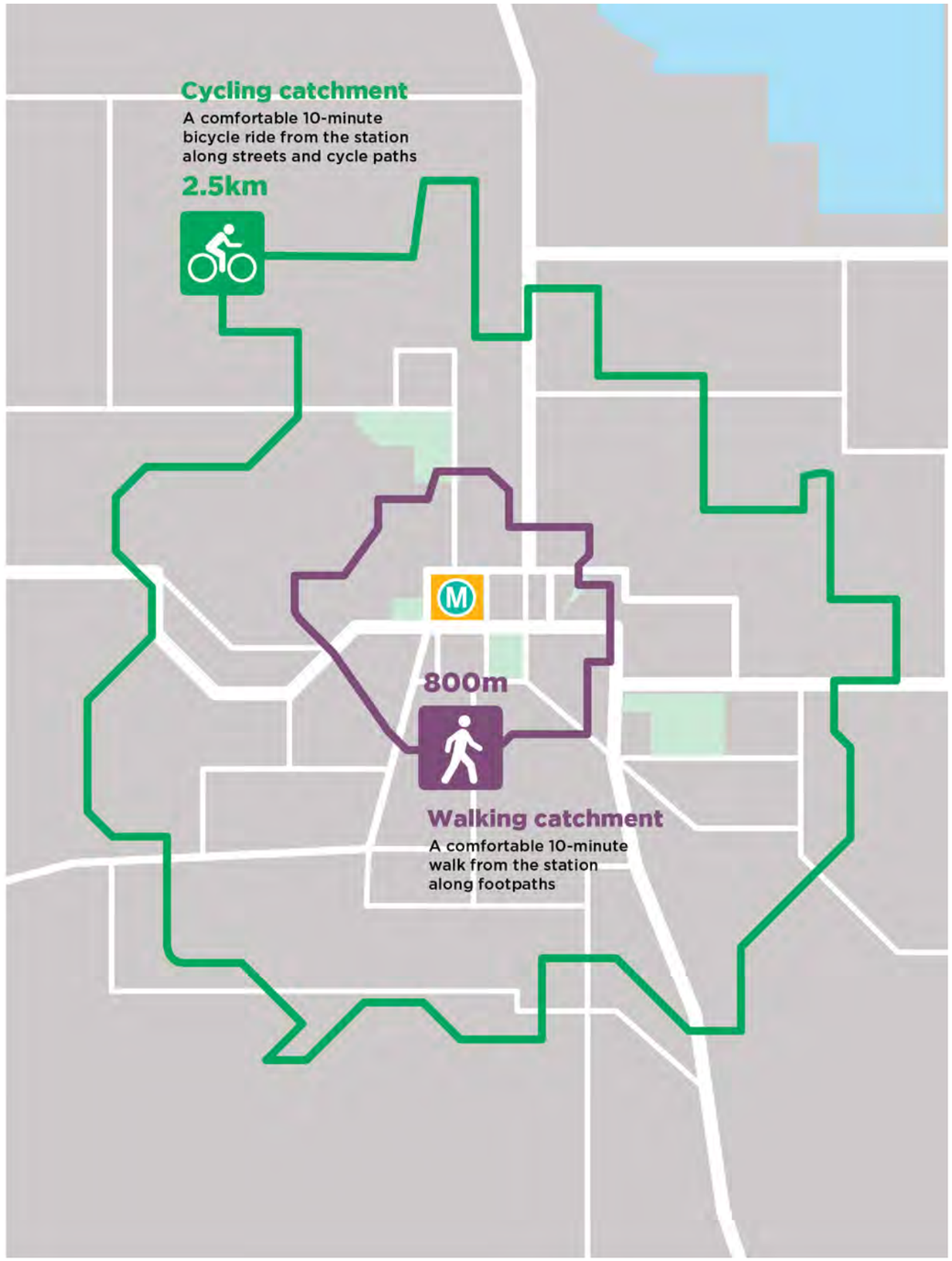


Illustration of terms and definitions

Wayfinding

The aim at all interchanges is to provide intuitive, clear and consistent information and signage, as well as legible, intuitive spaces, to enhance customer journeys through efficient navigation and transfer between services and modes. Effective wayfinding will encourage a seamless customer journey from origin to final destination and back again.

Wayfinding and its legibility will ensure that all customers can travel independently and easily on Sydney Metro by:

- Understanding the needs of customers.
- Providing accurate information at the right time to appropriately guide and inform customers on their journey.
- Planning and creating predictable and intuitive environments.
- Applying a consistent system of signs and information.

Wayfinding will support the safety of pedestrians and protect them from other road users by providing clear signage to ensure:

- Safe integration with existing networks.
- Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.

Wayfinding is supported by a design that is visually simple and intuitive to negotiate, contributing to an easy customer experience by:

- Providing visibility between station levels where possible.
- Using intuitive design to minimise wayfinding choices and the need for signage.
- Providing safe, legible, efficient, convenient, obstruction free, level, direct and attractive routes for customer access.

Wayfinding signage and information is to be provided in accordance with the TfNSW guidelines, to ensure consistency with TfNSW signage.

Customers are to be provided with wayfinding and information when they are:

- Interchanging between services or modes.
- Connecting to and from public transport by walking, cycling, catching a taxi, being dropped off or picked up in private vehicle or parking in their car.

Detailed wayfinding information is being developed.

Consultation

Consultation regarding the Sydney Metro Interchange Access Plans has been undertaken on an ongoing basis with stakeholders from TfNSW, Sydney Metro, RMS, and local government for all interchanges.

Interchange Access Plans conditions of approval

The Minister for Planning granted approval to carry out Critical State Significant Infrastructure (Sydney Metro Northwest) on 8 May 2013, subject to conditions of approval. The Interchange Access Plans requirements (formerly known as the Station Access Plans) under these conditions of approval are outlined below.

C5 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 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.

C6 In developing the Station Access Plan(s) required under condition C5, the Proponent shall consider:

(a) traffic and accessibility design requirements (condition C2);

(b) Parking Management Strategy requirements (condition C1 1);

(c) Pedestrian and Cyclist Network and Facilities Strategy requirements and infrastructure (condition C1 0);

(d) Cherrybrook Station requirements (condition C12);

(e) bus layover requirements (condition C13); and

(f) the Urban Design and Corridor Landscaping Plan (condition C44).

C7 The Station Access Plan(s) required under condition C5 shall be reviewed by a qualified traffic and transport professional(s), independent of the detailed design process for the SSI, having regard to the requirements of this approval. The independent, qualified professional(s) shall be approved by the Director-General prior to commencement of the review process.

Interchange Access Plans planning conditions

Condition	Description	Relevance in the document
C5	**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;	The station access hierarchy, that is consistent with definitions in the EIS, is provided on page 6, section: Interchange and transfer principles - Modal hierarchy.
	(b) safe, convenient and efficient access to stations and interchange between transport modes;	Safe convenient and efficient access to stations and interchange between transport modes is described within section: Interchange and transfer requirements for each station.
	(c) current levels of access and service for all modes and services;	The current level of access and service for all modes and services is described in section: Local context and Interchange and transfer requirements for each station.
	(d) the consideration of state and local transport initiatives and plans;	Consideration of state and local transport initiatives and plans is provided on page 8, section: Interchange and transfer principles - Legislative requirements and applicable guidelines.
	(e) the identification of opportunities and constraints presented by existing and proposed transport and access infrastructure and services;	The identification of opportunities and constraints presented by existing and proposed transport and access infrastructure and service is provided in section: Local context and Interchange and transfer requirements for each station.
	(f) patronage changes resulting from land use, population, employment, transport infrastructure and service changes;	Patronage changes resulting from land use, population, employment, transport infrastructure and service changes are identified in section: Local context and Interchange and transfer requirements for each station.
	(g) integration with existing and proposed transport infrastructure and services;	The integration with existing and proposed transport infrastructure and services is described in section: Local context and Interchange and transfer requirements for each station.
	(h) pedestrian, cycle, bus, taxi, vehicle, and emergency vehicle access and parking, infrastructure and servicing requirements;	The pedestrian, cycle, bus, taxi, vehicle, and emergency vehicle access and parking, infrastructure and servicing requirements are described in section: Local context and Interchange and transfer requirements for each station.

Interchange Access Plans planning conditions *continued*

Condition	Description	Relevance in the document
	(l) legislative requirements and applicable guidelines;	Consideration of the legislative requirements and applicable guidelines is provided on page 8, section: Interchange and transfer principles - Legislative requirements and applicable guideline.
	(j) safety audits, including but not limited to a review of traffic facility and cycle changes to ensure compliance with Austroads design criteria;	Safety audits were undertaken during the design phase and influenced access to each station.
	(k) final design, infrastructure, management and service measures, and the level of access and service to be achieved for all users;	The final design, infrastructure, management and service measures, and the level of access and service to be achieved for all user is provided in section: Local context and Interchange and transfer requirements for each station.
	(l) operational management provisions for future operational requirements, including maintenance, security and management responsibilities.	Summary of the operational management provisions for future operational requirements, including maintenance, security and management responsibilities is provided in section: Operations, maintenance and management provisions for each station pack.
C6	**In developing the Station Access Plan(s) required under condition C5, the Proponent shall consider:**	
	(a) traffic and accessibility design requirements (condition C2);	The traffic and accessibility design requirements directly influenced the station design and were considered in the development of the Interchange Access Plans.
	(b) Parking Management Strategy requirements (condition C1 1);	The Parking Management Strategy is being developed as a separate component to the Interchange Access Plans.
	(c) Pedestrian and Cyclist Network and Facilities Strategy requirements and infrastructure (condition C1 0);	The Pedestrian and Cyclist Network and Facilities Strategy was developed prior to the Interchange Access Plans and influenced the recommended walking and cycling outcomes.
	(d) Cherrybrook Station requirements (condition C12);	The Cherrybrook station requirements were considered in the development of the Interchange Access Plans.
	(e) bus layover requirements (condition C13);	Bus layover requirements were considered in the development of the Interchange Access Plans.
	(f) the Urban Design and Corridor Landscaping Plan (condition C44).	The Urban Design and Corridor Landscaping Plan were considered in the development of the Interchange Access Plans.

Condition	Description	Relevance in the document
C7	**The Station Access Plan(s) required under condition C5 shall be reviewed by a qualified traffic and transport professional(s), independent of the detailed design process for the SSI, having regard to the requirements of this approval. The independent, qualified professional(s) shall be approved by the Director-General prior to commencement of the review process.**	The Interchange Access Plans have been reviewed by qualified traffic and transport professionals, independent of the detailed design process.

Regional context – Tallawong to Chatswood

Sydney Metro will deliver a world-class metro rail system for the people of Sydney. The most obvious benefit will be to people in local communities from Rouse Hill to Bankstown walking to their nearest metro station.

The schematic map below shows metro's role in the context of the wider transport system. Many more people will be able to benefit from fast, accessible, reliable and frequent metro services by travelling to a metro station by bike or other public transport modes to then transfer to metro.

Integrating timetables to facilitate seamless transfers is one goal of the *NSW Long Term Transport Masterplan* (2012). Sydney Metro will deliver interchanges that help achieve this goal by putting the customer at the centre to ensure a seamless transfer between modes in an accessible, safe, comfortable and convenient place that is easy to navigate.

Metro's high-frequency service means that there will never be a long wait when transferring to metro services. High-quality links between rapid and suburban buses will help transform the travel experience by enabling access to more places, linking more people via transfer on to or from Sydney Metro.

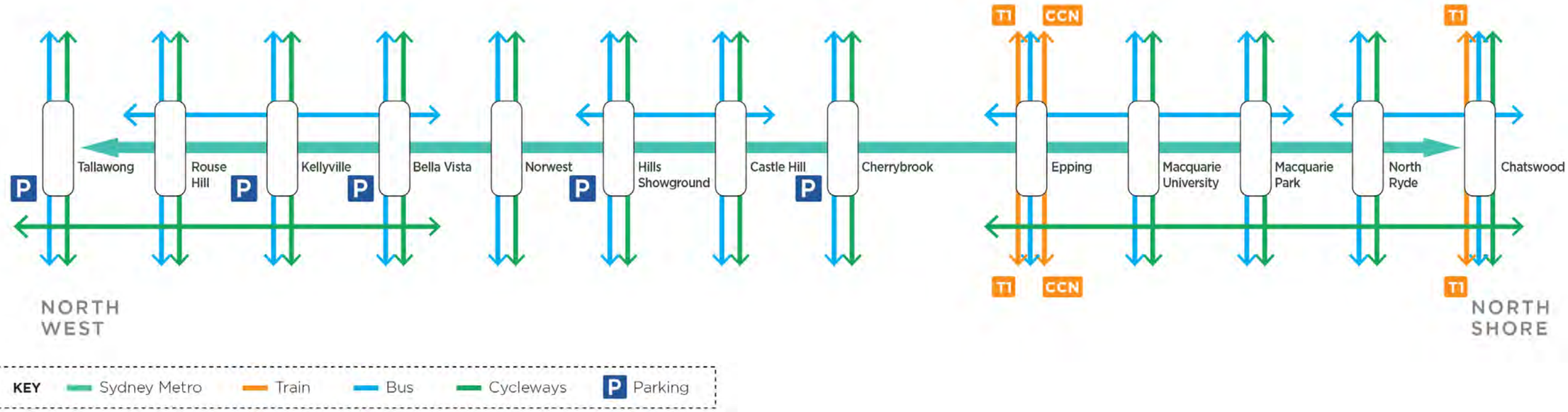
Improved cycling infrastructure and bike parking will enable easier travel by bike, connecting metro stations to surrounding cycle routes. Each metro station will connect into the surrounding walking and cycling network, and will provide bike parking facilities.

The integration of walking and cycling and public transport will increase metro's accessibility to more people in Sydney, helping to make journeys more reliable and providing greater travel choices to communities.

Related projects

The following projects will be completed and operational when or shortly after the Sydney Metro Northwest commences operations:

- Kellyville north car park – open for use by T-Way customers as existing T-Way carpark is closed.
- Castle Hill Old Northern Road bus interchange (2018).
- Rouse Hill southern bus layover (2016, to be modified in 2018).
- Rouse Hill northern bus layover (2018).
- Norwest pedestrian underpass.
- Showground Road upgrade.
- Footbridges at Bella Vista and Kellyville.
- Burns T-way car park.
- Balmoral Road upgrade.
- Delhi Road widening – opening mid-2018.
- Lachlan's Line pedestrian and cycleway bridge – opening end 2019.
- North Ryde Station precinct development.
- Epping Road and Epping rail bridge widening.
- High-frequency Station Link services (previously know as the Temporary Transport Plan (TTP)) will keep customers moving while the rail line between Epping and Chatswood is upgraded for around seven months, ahead of Sydney Metro opening in 2019.



Regional context – Tallawong to Chatswood

Tallawong

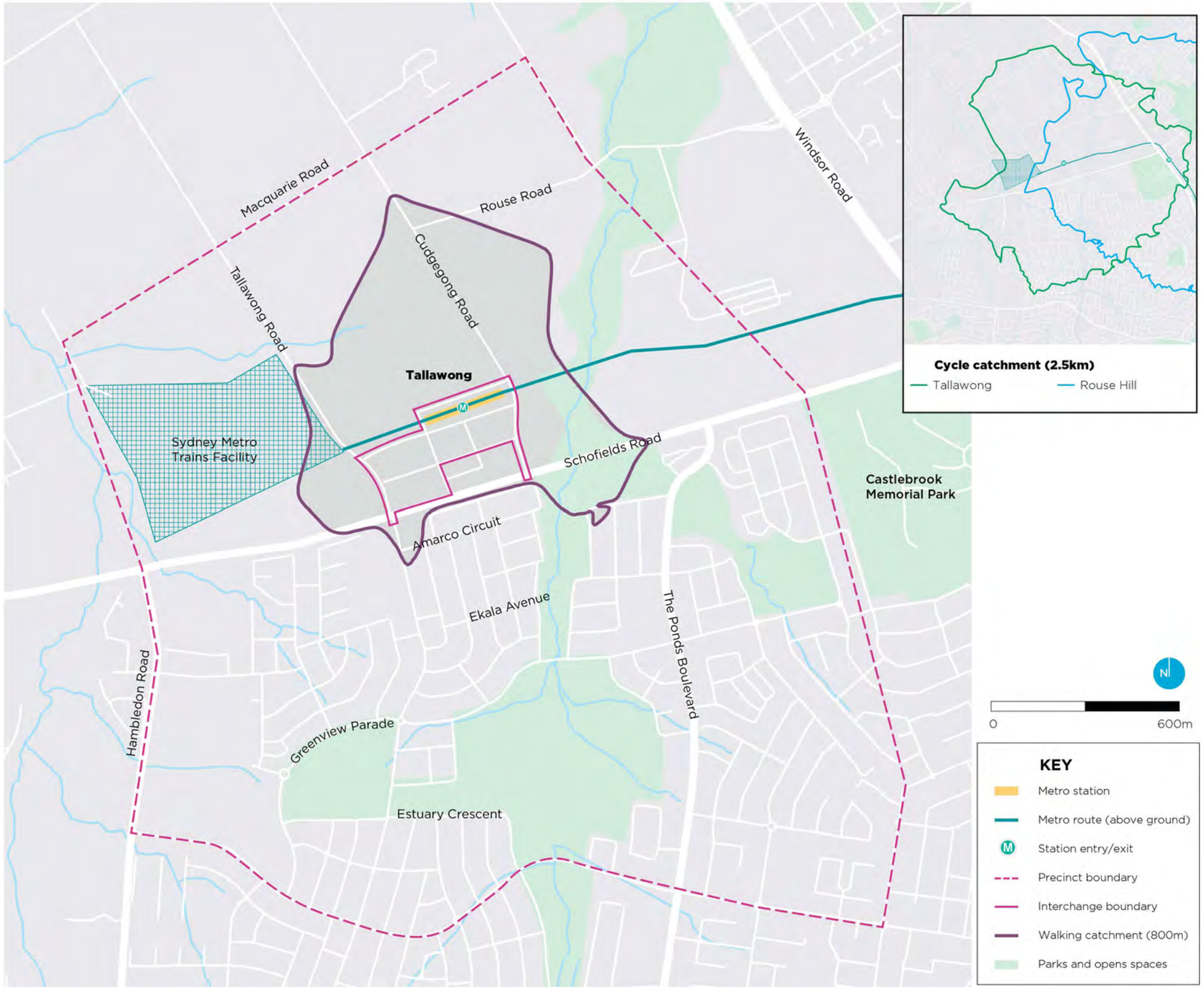
Tallawong – local context

Tallawong Station will provide a new open-cut station, north of Schofields Road between Cudgegong Road and Tallawong Road.

It will be a major park and-ride station serving the North West Growth Centre, with 1,000 park-and-ride spaces.

Tallawong Station will be accessible from an over-rail concourse connecting to Themeda Avenue (south) and Implexa Parade (north).

The entrance will provide access to surrounding residential areas.



Tallawong Station – local context

Tallawong – local context *continued*

Tallawong Station will be the transport hub of a new village centre in a rapidly growing area of Sydney's north-west.

A metro station at Tallawong will support existing residents within The Ponds and future neighbourhoods in the North West Growth Centre.

Station strategy

The station strategy for Tallawong is to:

- Provide easy, safe and intuitive transfer to and from the metro station within the existing network and road environment.
- Increase public transport access to the surrounding existing and future residential areas.

Feature.	Description
Location	• In a cutting, approximately 7.2 metres below street level, on the northern side of Schofields Road between Cudgegong Road and Tallawong Road.
LGA	• City of Blacktown Council.
Station entry	• An over-rail plaza entry accessed from Implexa Parade to the north and Themeda Avenue to the south.
Transport interchange	• Walking, cycling, bus, taxi, kiss-and-ride and park-and-ride.
Main features and traffic arrangements	• Widening of Cudgegong Road from Schofields Road north of the rail corridor to provide a dedicated right-turn lane into Themeda Avenue. • Widening of Tallawong Road to provide two lanes in each direction from Schofields Road to north of the rail corridor. • New southern station access road parallel to Schofields Road between Cudgegong Road and Tallawong Road (one lane each direction). • New northern station access road parallel to Schofields Road connecting to Cudgegong Road only (one lane each direction). • Bus ranks on both the northern and southern sides of the northern access road near the station entry. • Taxi and kiss-and-ride zones on the northern and southern sides of the northern access road, either side of the station entry. • Signalisation of southern access road intersections with both Cudgegong Road and Tallawong Road (subject to RMS approval). • At-grade 1,000-space car park on southern side of rail corridor, between Tallawong and Cudgegong Roads, with access via north-south car park access roads.
Customers	• Residential precincts.
Key attractions	• Castlebrook Memorial Park Cemetery and Crematorium. • First Ponds Creek. • Peel Reserve Park. • Riverbank Public School. • Rouse Hill Anglican College. • Rouse Hill Regional Park. • Second Ponds Creek. • The Ponds High School. • The Ponds Shopping Centre.

- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Current land use and characteristics

Existing land use and characteristics

To the south and west of the Sydney Metro Trains Facility, low-density residential housing is being developed. The Ponds is developed largely as low-density single detached dwellings with the incorporation of some medium-density townhouses surrounding the neighbourhood park.

To the north and east is rural land, however this will change in the future as part of the North West Growth Centre development.

Tallawong Station is within the Area 20 precinct (SEPP (Sydney Region Growth Centres) 2006). The Area 20 precinct will be a new village centre and provide housing for approximately 6,400 residents.

Existing station precinct strategic planning context

The *Draft West Central District Plan* (Greater Sydney Commission 2016) aims to capture new opportunities generated by Sydney Metro Northwest and other investments, to build a more connected district. The plan has the following actions that are potentially relevant to Tallawong Station:

- Align land use planning and infrastructure planning.
- Provide design-led planning to support high-quality urban design.
- Support the development of initiatives for a sustainable low carbon future.

The plan also states that completion of Sydney Metro Northwest will improve access to employment across the district.

The Department of Planning and Environment (DP&E) is working closely with local councils to deliver the *Sydney Metro Northwest Priority Urban Renewal Corridor*. This strategy aims to deliver new homes, jobs, cafes and parks along the rail line.

Tallawong Station is also part of the Department of Planning and Environment's North West Priority Growth Area, which will ultimately provide 33,000 homes and access to local jobs at Marsden Park, Rouse Hill, Norwest, Blacktown and Penrith. Sydney Metro Northwest is integral to ensuring growing communities have access to public transport options and connections to surrounding areas.

Tallawong Station was formerly known as Cudgegong Road Station, and the *Cudgegong Road Station Structure Plan* (DP&E and TfNSW 2014) proposes the area becomes a significant residential release area for the north-west. Higher-density residential development will be within 800 metres from the station and in the south-western region. A local centre will be north of the station, with retail and community services close to the station.

An employment zone will be west of the station with the ability to expand north of the stabling yard to accommodate potential future expansion. Low-density residential housing will replace rural residential uses, particularly in Riverstone East, with potential for denser built form should the demand arise.

If the expansion of the Rapid Transit Rail Facility is not required the proposed employment zone could be used for other uses such as low-density residential developments.

Green links are proposed along First Ponds Creek and between Rouse Hill House, Rouse Hill Regional Park and along Second Ponds Creek.

Tallawong – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Tallawong, as these modes are not available at this station:

- Light rail.
- Ferry.
- Coach.

Future land use

Land use, transport integration and opportunities

A metro station at Tallawong will support state and local strategic and planning controls by enabling opportunities for urban renewal including housing diversity and intensification, meeting the needs of residents, workers and visitors, and creating a vibrant, sustainable community that reaches its full economic and social potential. It is expected that a metro station at Tallawong will have the following specific benefits:

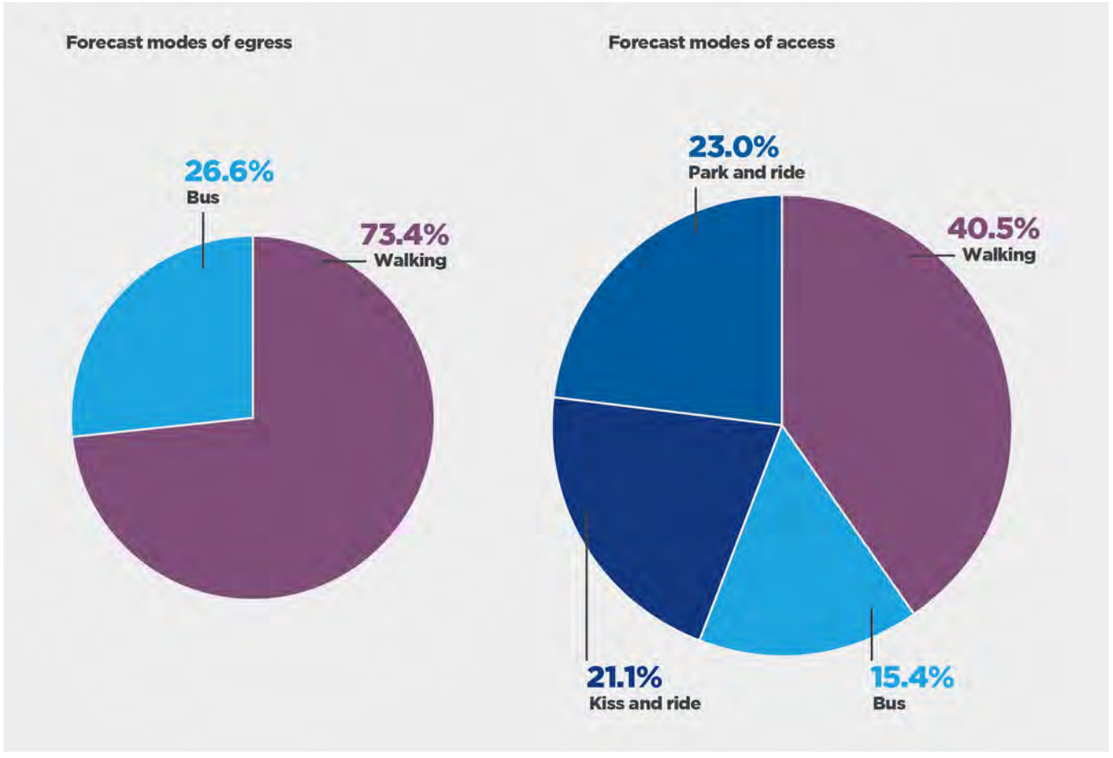
- The station will form part of the interchange that provides safe and direct access to residential land uses surrounding the station that will directly benefit from additional transport connectivity to the Global Economic Corridor.
- The station will provide the opportunity for further development of the area as a vibrant and active centre with strong public transport links to North Sydney, the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure and educational facilities.
- The station will provide opportunities to increase residential densities within walking distance of the station.

These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and the City of Blacktown.

Opportunities and constraints

Tallawong Station has the following urban design opportunities and constraints.

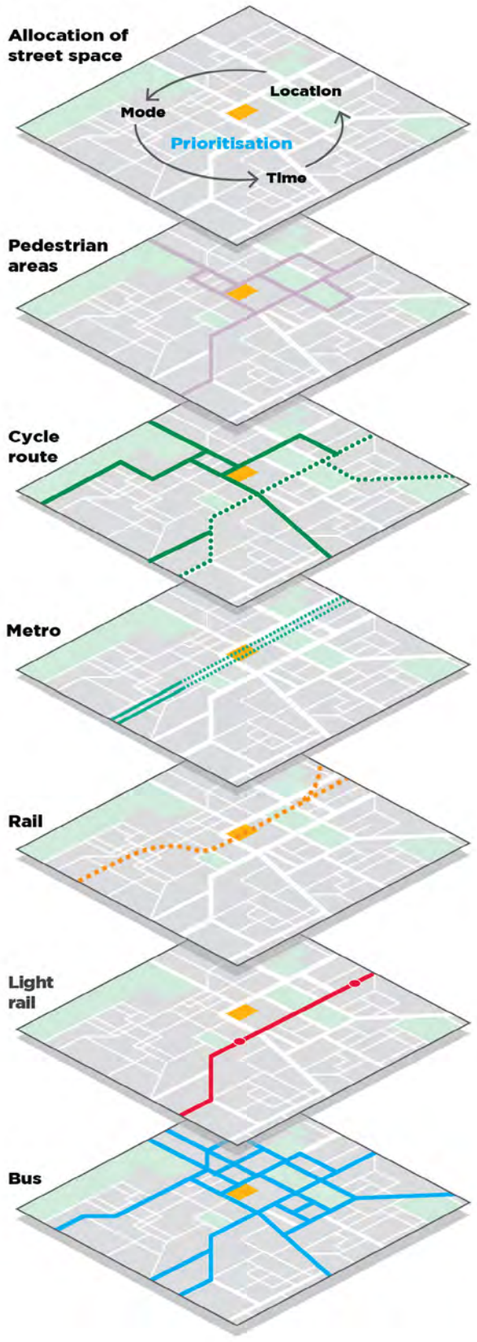
Opportunities	Constraints
• Integrate the metro station with the existing road network to facilitate safe transfers to and from the station and cutomers' destinations. • Integrate station and interchange with future village centre located to the north. • Create a robust 'day one' station precinct and identity. • Establish a legible street level address to the station. • Integrate large-scale park-and-ride within a framework for future development. • Activate and provide surveillance of park-and-ride facilities and pedestrian routes. • Respond to the Cumberland Plain landscape character of the area. • Create village-scale streetscapes with pedestrian and bicycle priority.	• The need to respond to the future development and access provisions surrounding the station.



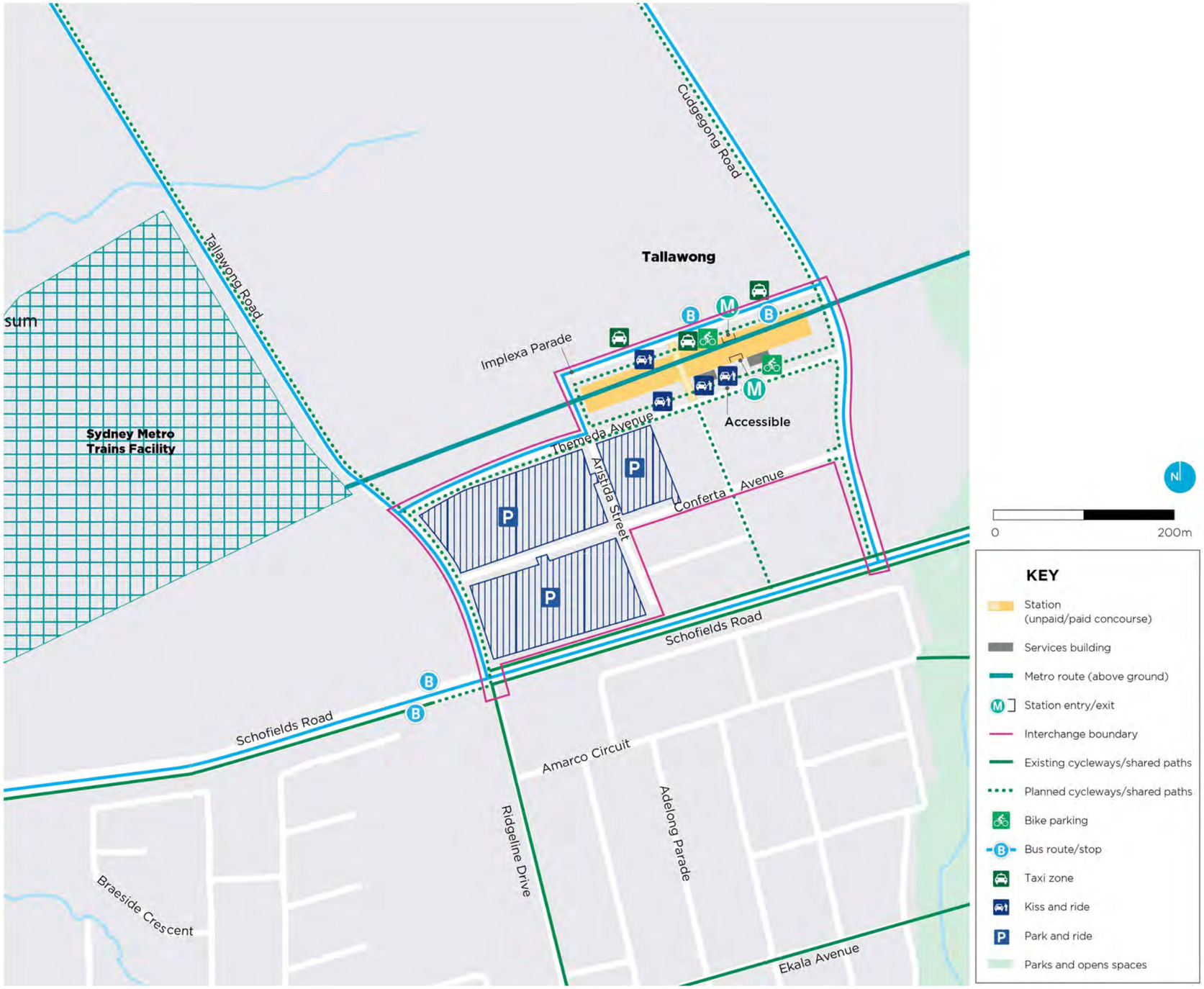
2036 3.5-hour AM peak demand and mode splits

Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

Tallawong – interchange and transfer requirements overview

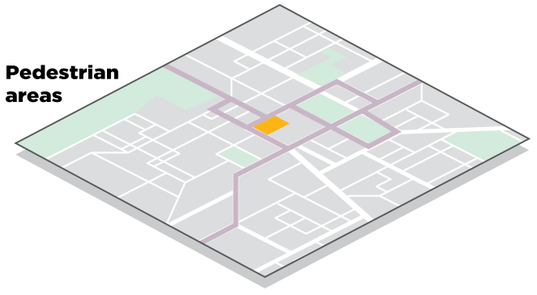


Mode layers



Tallawong Station – interchange and transfer requirements overview

Tallawong – walking interchange and transfer requirements



Mode layer

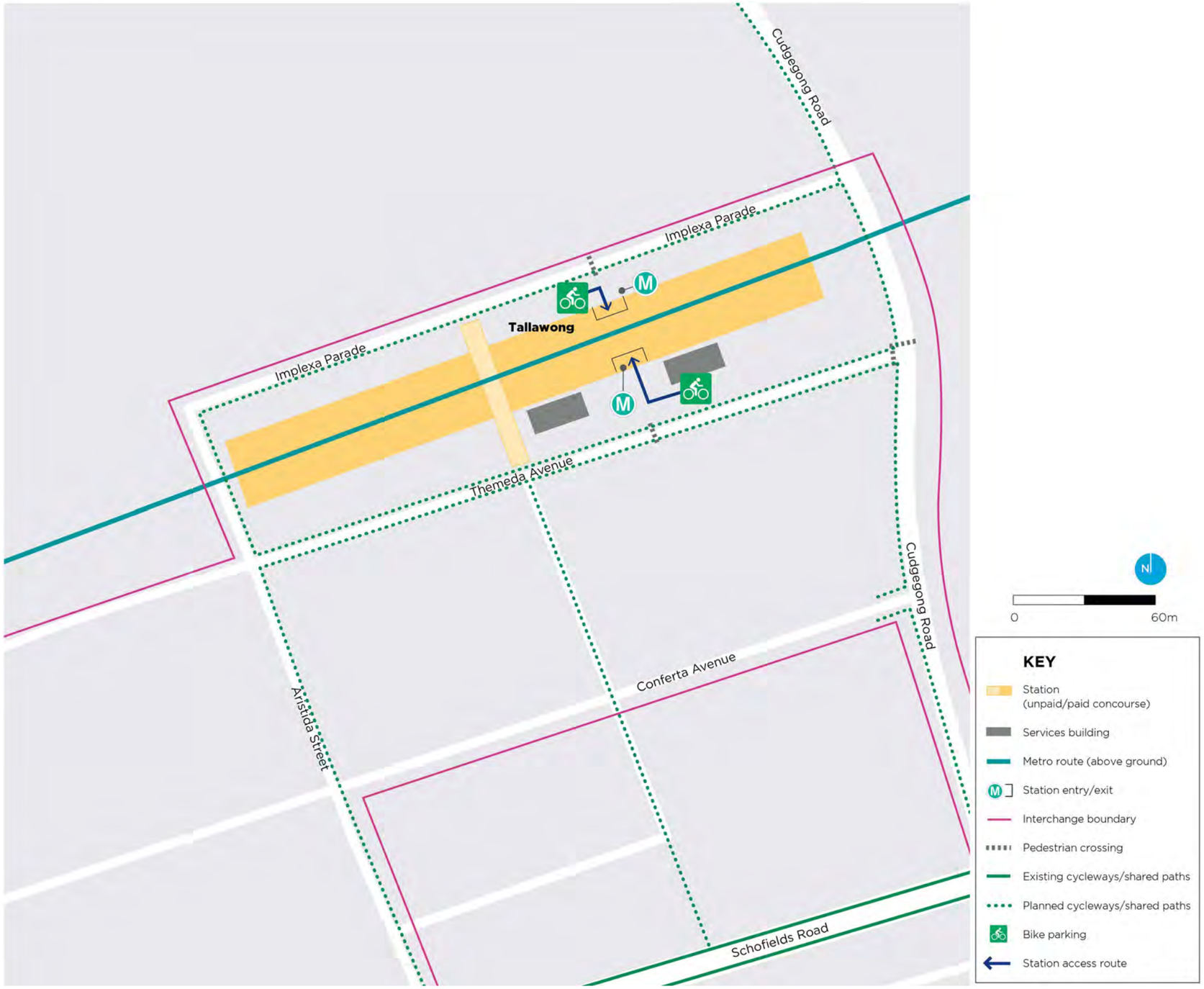
Tallawong Station – pedestrian interchange and transfer requirements

Tallawong – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Tallawong is an origin station. The station site has no existing access, however a network of footpaths will serve the pedestrian network within the established residential areas south of the station.	The majority of pedestrian demand at opening will connect from The Ponds area (to the south). Future demand will be evident from the north of the station as development comes online.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Station access	The station supports two access points, which require safe, convenient and direct pedestrian routes: • The northern access is on Implexa Parade, between Cudgegong Road and Tallawong Road.	• The southern access is on Themeda Avenue, between Cudgegong Road and Tallawong Road.
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with residential areas surrounding the station.	The pedestrian environment potentially impacted by the proposed station includes: • Pedestrian and cycle access via a shared path (off road) linking to Cudgegong Road and through to Tallawong Road. • Signalised pedestrian crossing at the junction of Cudgegong Road and Themeda Avenue that leads directly to the station entry.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by the City of Blacktown. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant.	• Northern Station Access — Provide connectivity to the surrounding residential precincts. • Southern Station Access — Provide for high pedestrian demand over Schofields Road to residential precincts.
Safe transfer	The station will provide easy transfer to bike parking facilities located at: • Implexa Parade (northern entry) – bike racks. • Themeda Avenue (southern entry) – bike shed and racks.	
Transfer to and from bike parking	The station provides easy transfer to bike parking facilities located close to the gateline.	
Transfer to and from other rail	No design provision is considered for this location.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will provide easy transfer to bus stops on Implexa Parade.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	The station will provide easy transfer to the taxi rank on Implexa Parade.	
Transfer to and from kiss-and-ride	The station will provide easy transfer to kiss-and-ride zones on Implexa Parade and Themeda Avenue.	
Transfer to and from park-and-ride	The station will provide easy transfer to park-and-ride spaces accessed from Themeda Avenue.	

Tallawong – cycling interchange and transfer requirements

Mode layer



Tallawong Station – cycling interchange and transfer requirements

Tallawong – cycling interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	A shared pedestrian and bike path exists on both sides of Schofields Road between First Ponds Creek and Windsor Road.	The station and interchange will be designed to allow bicycle riders to move along the local street network and through the station and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 50 metres of the gateline. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	• Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To facilitate cycle transfer within the interchange, bike parking will be provided: • At the northern entrance on Implexa Parade. • At the southern entry on Themeda Avenue.	
Types of parking facilities	The bike parking provisions at the station are: • Bike shed for 35 bicycles, with electronic access facility. • Bike racks for 20 bicycles.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shed for 70 bicycles, with electronic access facility. • Bike racks for 40 bicycles.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments.
Closest cycling routes	The existing cycling network surrounding the station is limited. A shared path facility exists on both sides of Schofields Road.	
New cycle routes by Sydney Metro	• Install a shared path on south side of Implexa Parade. • Install a shared path on north and south sides of Themeda Avenue, which extends to Aristida Street.	• Install shared path on east side of Tallawong Road, within the extent of the station precinct. • Install shared path on west side of Cudgegong Road within the extent of the station.
Cycle routes for consideration by others	• Install shared or separated path on east side of Tallawong Road, between the boundary of the station precinct and Guntawong Road. • Install shared or separated path on west side of Cudgegong Road, between the boundary of the station precinct and Guntawong Road. • Prioritise the provision of a shared or separated path along Rouse Road. • Install all cycle paths (shared or separated) recommended within Area 20 release area in the Blacktown City Council Growth Centre Precincts DCP (2010).	• Recommend all new roads within 10-minute walking catchment of station have pedestrian paths installed and adequate cycling infrastructure. • 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 Tallawong Station.

Tallawong – bus interchange and transfer requirements

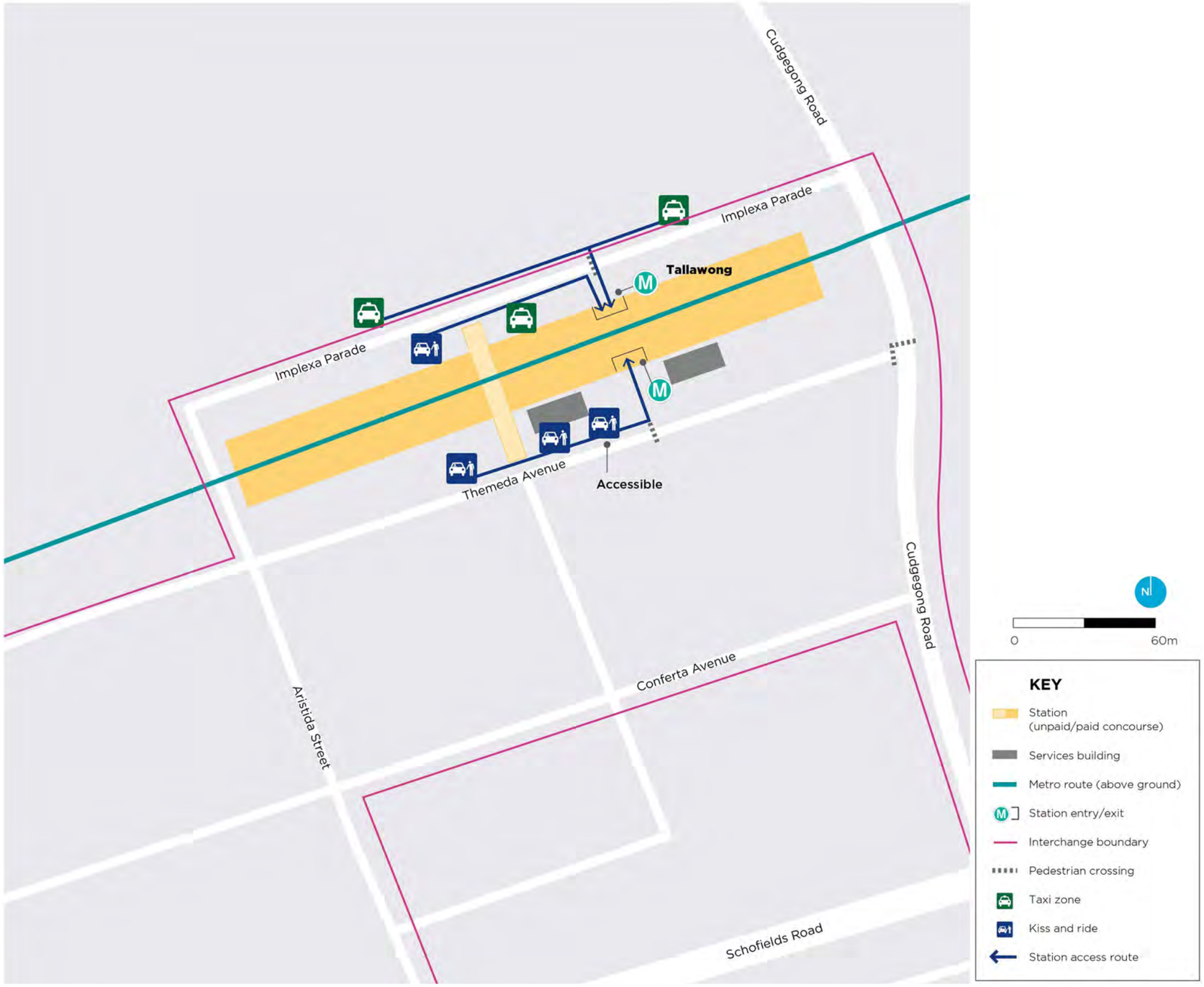
Mode layer

Tallawong Station – bus and light rail interchange and transfer requirements

Tallawong – bus interchange and transfer requirements *continued*

Item	Description		
Current state			
Current levels of access and service	A number of bus routes operate within the vicinity of Tallawong Station, running along Schofields Road.	These routes are: • T72 – Rouse Hill to Blacktown. • T75 – Riverstone and Rouse Hill to Blacktown.	• 747 – Marsden Park to Rouse Hill via Riverstone. • 751 – Rouse Hill Town Centre to Blacktown.
Current mode splits and intermodal transfer	Not applicable.		
Integration			
Closest bus stops/routes	The primary bus stops within the interchange are: • North of station — Implexa Parade.		
Potential changes to bus stops/route	Potential changes to bus routes to the station are under investigation.		
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.		• Dedicated footways along local and regional roads. • Signalised controlled pedestrian crossings at the eastern entrance.
Transfer to and from bus	Customers will be able to transfer between bus stops at metro station entries using footpaths.		Where necessary, improvements will be made to signage and wayfinding to ensure an easy customer transfer through improved provision of information.
Transfer to and from bus (overnight)	No design provision is considered for this location.		
Transfer to and from bus (school)	No design provision is considered for this location.		
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions*.		
Bus bays	Bus bays provided or modified by the project shall meet NSW state and Commonwealth guidelines for size and layout. Where a conflict exists, the Commonwealth standard will		apply. Where the Commonwealth standard cannot practically apply, the highest practical standard should be provided in excess of NSW state standards and guidelines.
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.		

Tallawong – vehicle drop-off interchange and transfer requirements



Tallawong Station – vehicle drop-off interchange and transfer requirements

Tallawong – vehicle drop-off interchange and transfer requirements *continued*

Item	Description.
Current state	
Current levels of access and service	Not applicable.
Current mode splits and intermodal transfer	Not applicable.
Integration	
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from taxi	Taxi ranks must be a 130-metre or less walk from the gatelines to the head of the taxi rank. Nine new taxi ranks will be provided at: • Implexa Parade.
Transfer to and from kiss-and-ride	Kiss-and-ride zones must be a 130-metre or less walk from the gatelines. 15 new kiss-and-ride zones, including one accessible zone, will be provided at: • Implexa Parade. • Themeda Avenue.
Taxi rank locations	Taxi ranks that service local centres as well as stations are supported as long as they are located within 100 metres of the station access point.
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.

Tallawong – vehicle parking interchange and transfer requirements

Tallawong Station – vehicle parking interchange and transfer requirements

Tallawong – vehicle parking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Not applicable.	
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Park-and-ride spaces required	A total of 1,000 spaces are required, as follows: • Accessible – 30. • Compact – 150. • Standard – 820.	Car parking bays must be prioritised in order of priority as above, in relation to proximity to the station gateline. In addition to the spaces above, 30 motorcycle parking spaces are required.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.	
Transfer to and from park-and-ride	Park-and-ride zones must be a 400-metre or less walk from the gatelines to the head of the furthest car bay.	The park-and-ride zones within the interchange are accessed from Conferta Avenue and Aristida Street.
Accessible parking bays	Accessible parking bays must be compliant with the *Disability Discrimination Act 1992* and the *Disability Standards for Accessible Public Transport 2002*.	
Compact spaces	Compact parking bays (2.5 x 5.0 metres) shall be located together and in a convenient location close to the station entrance.	
Motorcycle parking	Motorcycle and scooter parking shall be allocated to make efficient use of under croft and incidental areas and minimise the need for motorcycles to circulate throughout the car park.	
Meeting point	Where car parking is provided, an accessible designated meeting point shall be provided within each car park, as a place where customers can wait in a safe and secure area to meet breakdown assistance services made at their own arrangement.	

Tallawong – operations, maintenance and management provisions

Tallawong Station – operations, maintenance and management provisions

Tallawong – operations, maintenance and management provisions *continued*

The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Servicing and maintenance access (major)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Rail replacement bus service access	Rail replacement buses will use the bus zone on Implexa Parade.
Delivery access (retail and operational)	Delivery vehicles will use the on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	New mail zones will be established within the precinct, consistent with future development.
Staff car parking	Two staff and two maintenance parking spaces will be provided within the at-grade car park.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

Tallawong – recommendations

Tallawong Station – recommendations

Tallawong – recommendations *continued*

This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at Tallawong Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at Tallawong Station.

Action	
Walking	
TAL–W1	Missing parts of the walking and cycling network exist along Schofields Road. Install a 90-metre shared path along the southern side of Schofields Road west of Ridgeline Drive to connect the existing infrastructure along Ridgeline Road and Schofields Road. *Proposed scope: Undertake concept and detailed design and construct a shared path. The works include a 90-metre, 2.5-metre-wide shared path with associated signs and line marking.*
Park-and-ride	
TAL–P1	As an outcome of the Parking Management Strategy, install parking management recommendations. *Proposed scope: Install signs and line marking.*
Wayfinding	
TAL–S1	Improve wayfinding and general information for walking and bicycle rider customers informing of the surrounding networks outside the interchange area that connect to the station. *Proposed scope: Install signs and line marking.*
Management and maintenance	
TAL–M1	Document operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

Rouse Hill

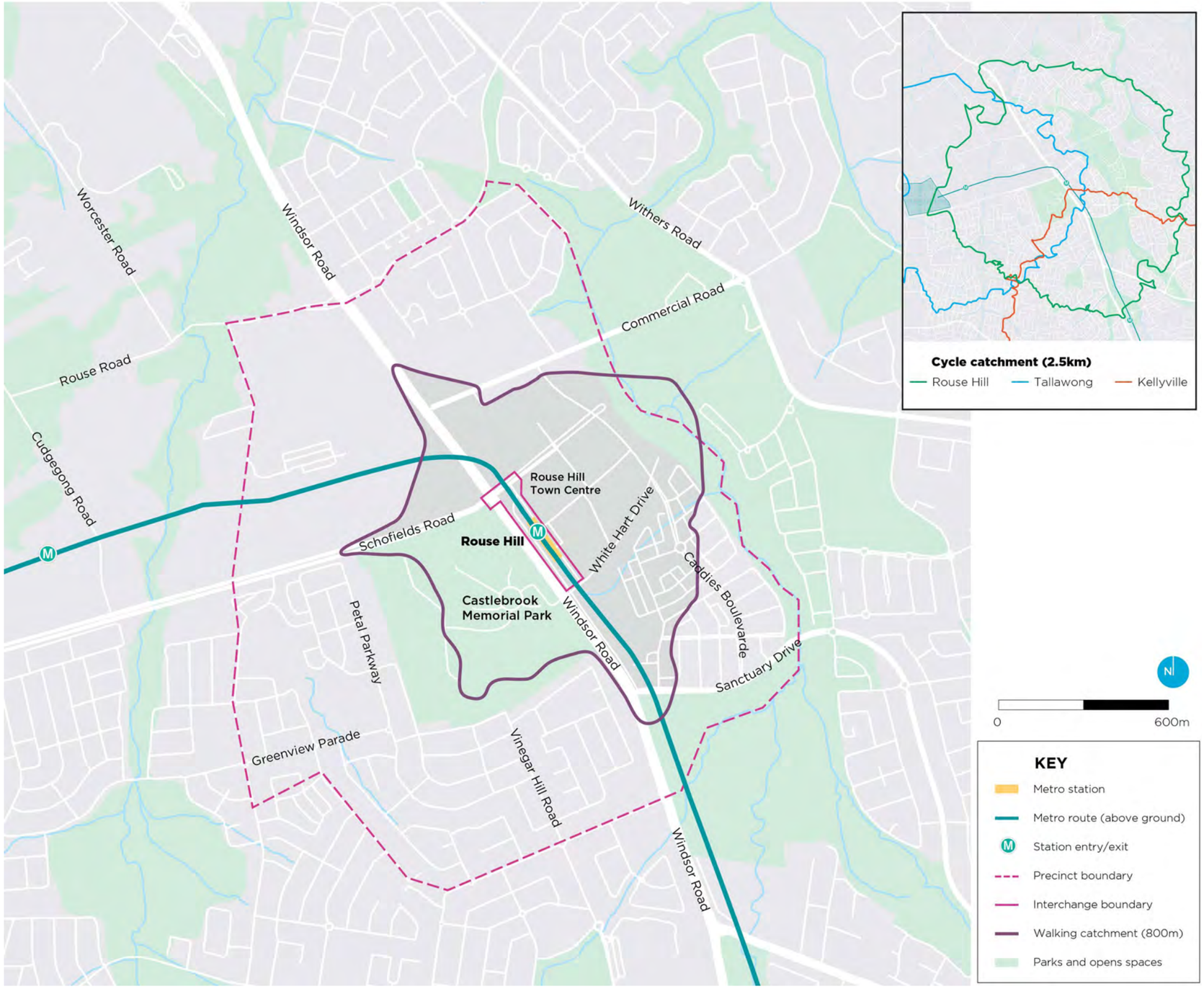
Rouse Hill – local context

Rouse Hill Station will provide a new elevated station, east of Windsor Road between Rouse Hill Drive and White Hart Drive.

It will be a major bus-rail interchange station serving the North West Growth Centre, with no park-and-ride spaces.

Rouse Hill Station will be accessible from an under-rail pedestrian connection between Tempus Street and the Northwest T-way.

The entrance will open onto the Rouse Hill town centre, and provide access to surrounding employment, retail, recreational and community facilities, and residential areas.



Rouse Hill Station – local context

Rouse Hill – local context *continued*

Rouse Hill Station will be a major public transport interchange, connecting to the modified T-way.

A metro station at Rouse Hill will support the surrounding residential areas and Rouse Hill town centre, and provide connections to future employment zones. Rouse Hill has a long-term employment target of 10,000 to 11,000 jobs by 2036.

Station strategy

The station strategy for Rouse Hill is to:

- Provide easy, safe and intuitive transfer to and from the metro station within the existing network and road environment.
- Increase public transport access to the surrounding existing and future employment, retail, residential, recreational and community facilities areas.
- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Feature	Description
Location	• On a viaduct, approximately 11.7 metres above street level, on the eastern side of Windsor Road between Rouse Hill Drive and White Hart Drive.
LGA	• The Hills Shire Council.
Station entry	• An under-rail viaduct plaza entry accessed from the Northwest T-way to the west and Tempus Street to the east.
Transport interchange	• Walking, cycling, bus, taxi and kiss-and-ride.
Main features and traffic arrangements	• Bus access (north- and south-bound) via 'bus only' T-way interchange on western side of the station, connecting to existing T-way at intersection with White Hart Drive. • Pedestrian crossing on Tempus Street at Market Square. • Pedestrian crossing on T-way. • Taxi ranks access via Tempus Street. • Extension of T-way across Rouse Hill Drive towards Commercial Road. • Kiss-and-ride access via Tempus Street.
Customers	• Employment, retail, recreational, community and residential precincts.
Key attractions	• Bruce Purser Reserve. • Caddies Creek Reserve. • Castlebrook Memorial Park Cemetery and Crematorium. • Commercial Road netball complex. • Ironbark Ridge Public School. • John XXIII Catholic Primary School. • Kellyville Ridge Public School. • Malek Fahd Beaumont Hills. • Northwest T-way. • OK Caravan Park. • Our Lady of the Angels Catholic Primary School. • Rouse Hill Anglican College. • Rouse Hill High School. • Rouse Hill House and Farm. • Rouse Hill Public School. • Rouse Hill Regional Park. • Rouse Hill Town Centre. • Roy Dudley Park. • The Hills Centenary Park.

Current land use and characteristics

Existing land use and characteristics

The area around Rouse Hill Station is recently established, with Rouse Hill Town Centre providing convenient retail services and growing considerably since opening in 2007. High-density housing surrounds the central square.

The area surrounding Rouse Hill Town Centre is being developed as part of the North West Growth Centre, largely for residential purposes.

To the north are established residential properties, with large double-storey houses in a landscaped setting, and some higher-density properties.

Along Windsor Road to the north are some additional small shopping complexes, including the Aldi complex, The Terrace and the Rouse Hill Village Centre.

To the east and south-east is new residential development, including houses and townhouses. Lots are generally smaller in this area and higher density.

Immediately to the east, the area is still being developed. Further east however, the area of Beaumont Hills contains higher population density.

To the south-west is Kellyville Ridge, with a range of housing types including low-rise apartments, medium-density housing and low-density separate detached dwellings. A number of businesses are located to the south along Windsor Road.

To the west is The Ponds, with mainly low-density housing. South of Schofields Road is the Castlebrook Lawn Cemetery and Crematorium, which is surrounded by new residential development.

Existing station precinct strategic planning context

The *Draft West Central District Plan* (Greater Sydney Commission 2016) aims to capture new opportunities generated by Sydney Metro Northwest and other investments, to build a more connected district. The plan has the following actions that are potentially relevant to Rouse Hill Station:

- Align land use planning and infrastructure planning.
- Provide design-led planning to support high-quality urban design.
- Support the development of initiatives for a sustainable low carbon future.

The plan also states that completion of Sydney Metro Northwest will improve access to employment across the district. Rouse Hill is identified as a District Centre, with a job target range of 10,000 to 11,000 by 2036.

The Department of Planning and Environment is working closely with local councils to deliver the *Sydney Metro Northwest Priority Urban Renewal Corridor*. This strategy aims to deliver new homes, jobs, cafes and parks along the rail line.

Rouse Hill Station is on the edge of the Department of Planning and Environment's (DP&E) North West Priority Growth Area, which will ultimately provide 33,000 homes and access to local jobs at Marsden Park, Rouse Hill, Norwest, Blacktown and Penrith. Sydney Metro Northwest is integral to ensuring growing communities have access to public transport options and connections to surrounding areas.

The *Rouse Hill Station Structure Plan* (DP&E and TfNSW, 2014) proposes the area becomes a prominent retail and commercial hub for the north-west. The mixed-use area will be extended northwards to Commercial Road.

Some residential uplift is proposed with medium- to high-density residential development surrounding the retail and commercial core, with a mixture of two- to three-storey townhouses and three- to six-storey apartments. Low-density residential development will be in the southern region.

A green link is proposed along the Caddies Creek Riparian Corridor and at Second Ponds Creek.

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

Rouse Hill – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Rouse Hill, as these modes are not available at this station:

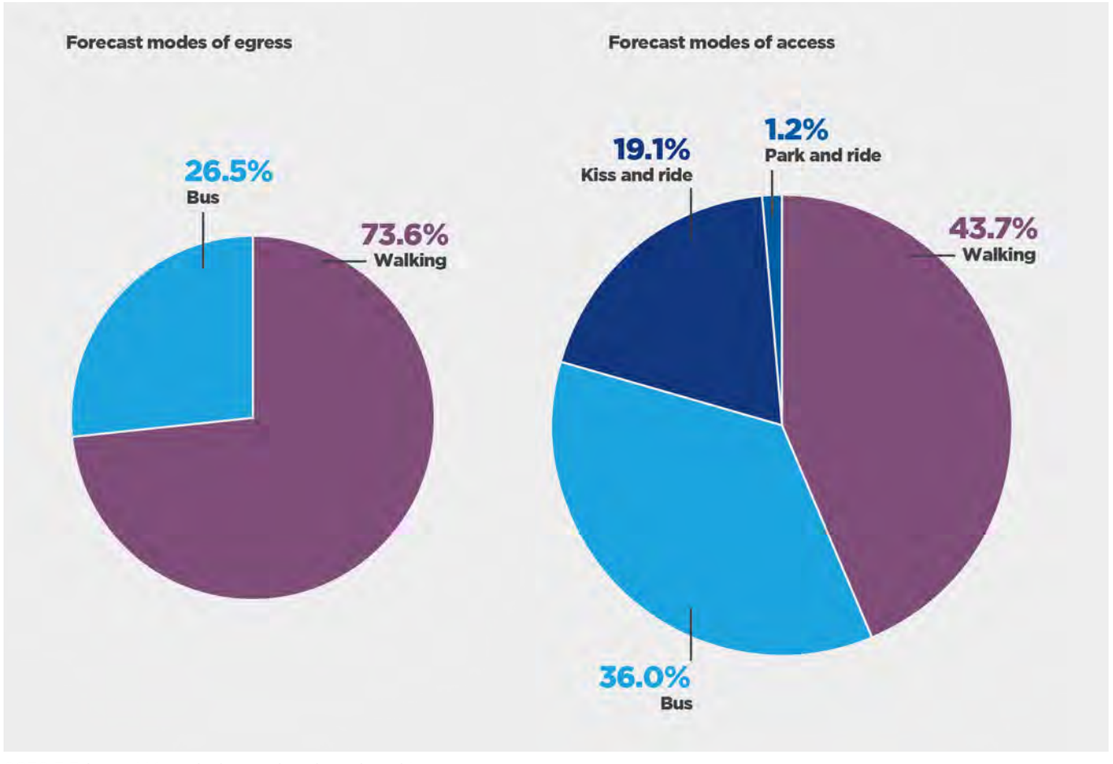
- Light rail.
- Ferry.
- Park-and-ride.
- Coach.

Future land use

Land use, transport integration and opportunities

A metro station at Rouse Hill will support state and local strategic and planning controls by enabling opportunities for urban renewal including housing diversity and intensification, meeting the needs of residents, workers and visitors, and creating a vibrant, sustainable community that reaches its full economic and social potential. It is expected that a metro station at Rouse Hill will have the following specific benefits:

- The station will form part of the interchange that provides safe and direct access to residential and mixed-use land uses surrounding the station that will directly benefit from additional transport connectivity to the Global Economic Corridor.
- The station will provide the opportunity for further development of the area as a vibrant and active centre with strong public transport links to North Sydney, the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure and educational facilities.
- The station will provide opportunities to increase residential densities within walking distance of the station.



2036 3.5-hour AM peak demand and mode splits

Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

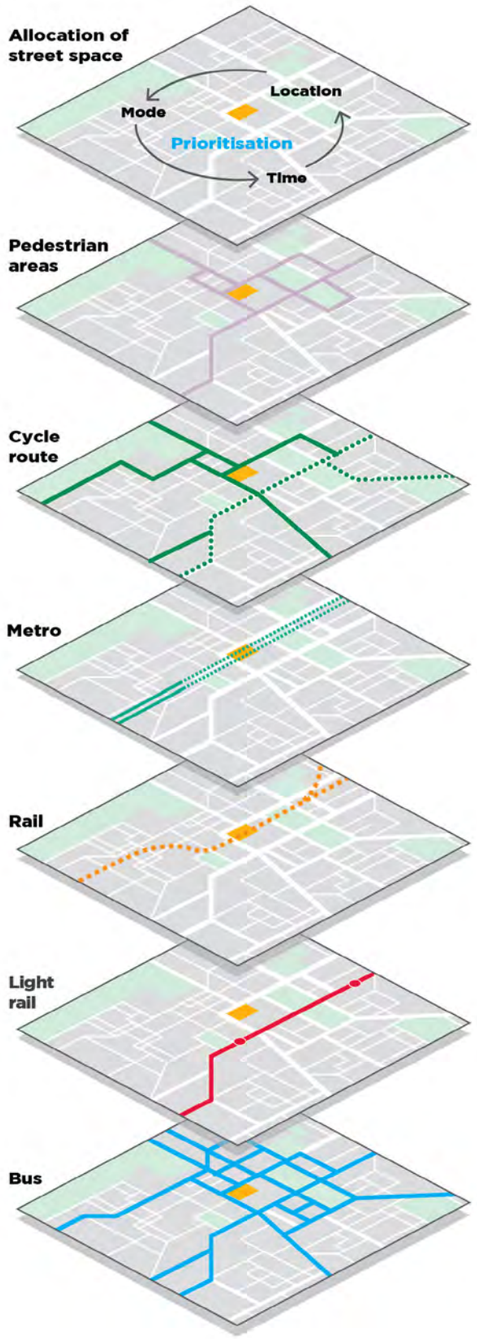
These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and The Hills Shire Council.

Opportunities and constraints

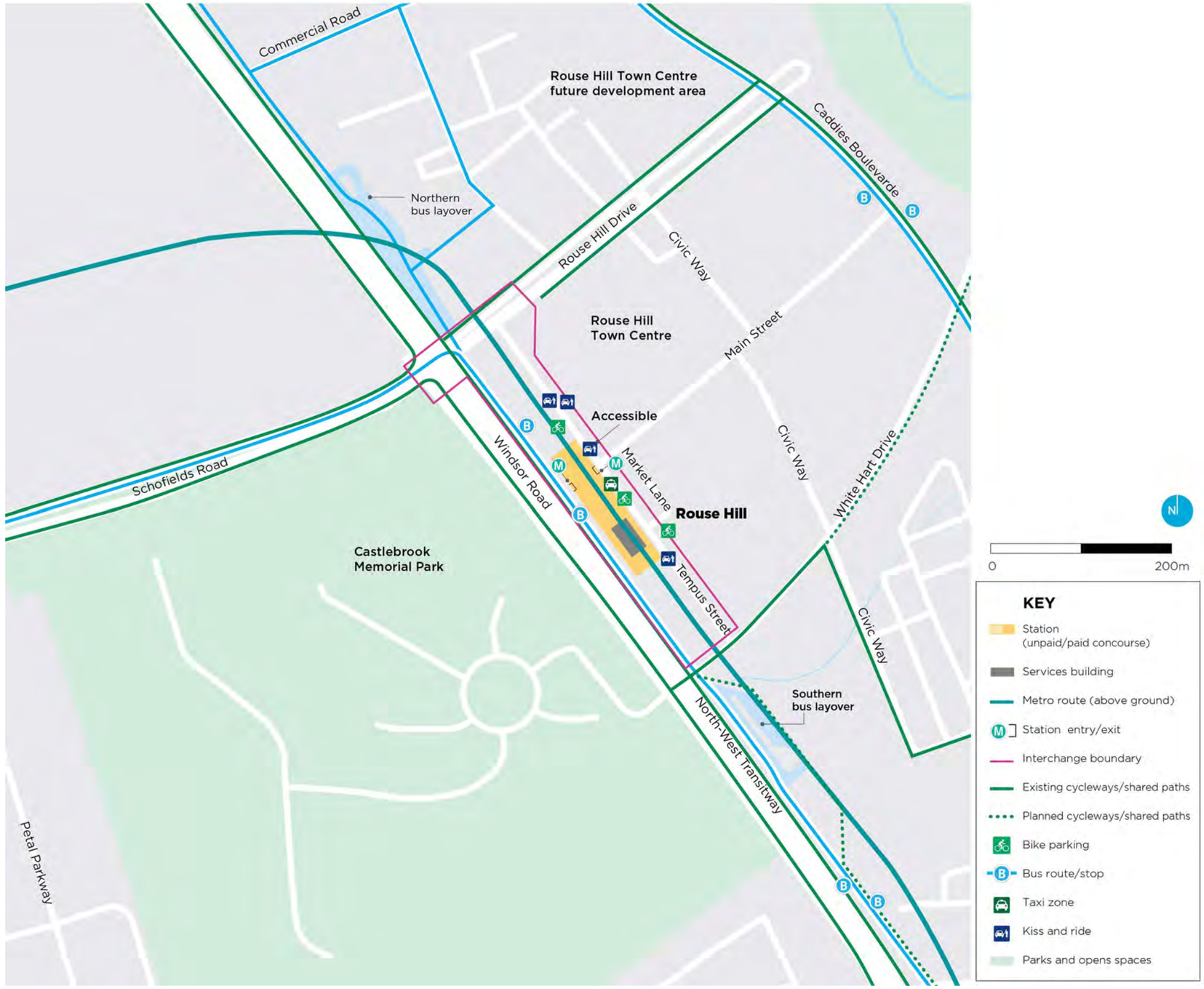
Rouse Hill Station has the following urban design opportunities and constraints.

Opportunities	Constraints
• Integrate the metro station with the existing road network to facilitate safe transfers to and from the station and passengers' destinations. • Ensure the town centre frontage provides a legible pedestrian and transport address. • Coordinate with future Rouse Hill town centre expansion plans. • Ensure flexibility by planning for future RMS expansion of Windsor Road. • Ensure visibility and identification from Main Street and Windsor Road. • Provide safe and comfortable bus interchange and kiss-and-ride areas. • Create safe and attractive public spaces at ground level with well-considered use of space beneath the viaduct. • Ensure bus layover designs respond to planned adjoining land uses. • Minimise the extent of services buildings and integrate with station entry.	• Integrate into the existing landscaping and access provisions of the town centre.

Rouse Hill – interchange and transfer requirements overview

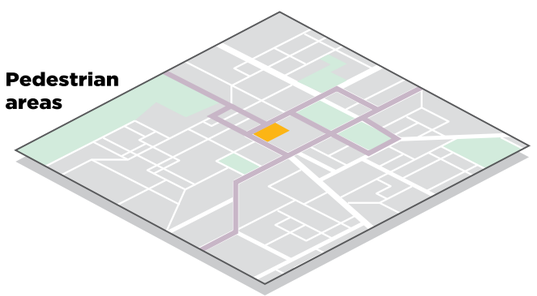


Mode layers



Rouse Hill Station – interchange and transfer requirements overview

Rouse Hill – walking interchange and transfer requirements



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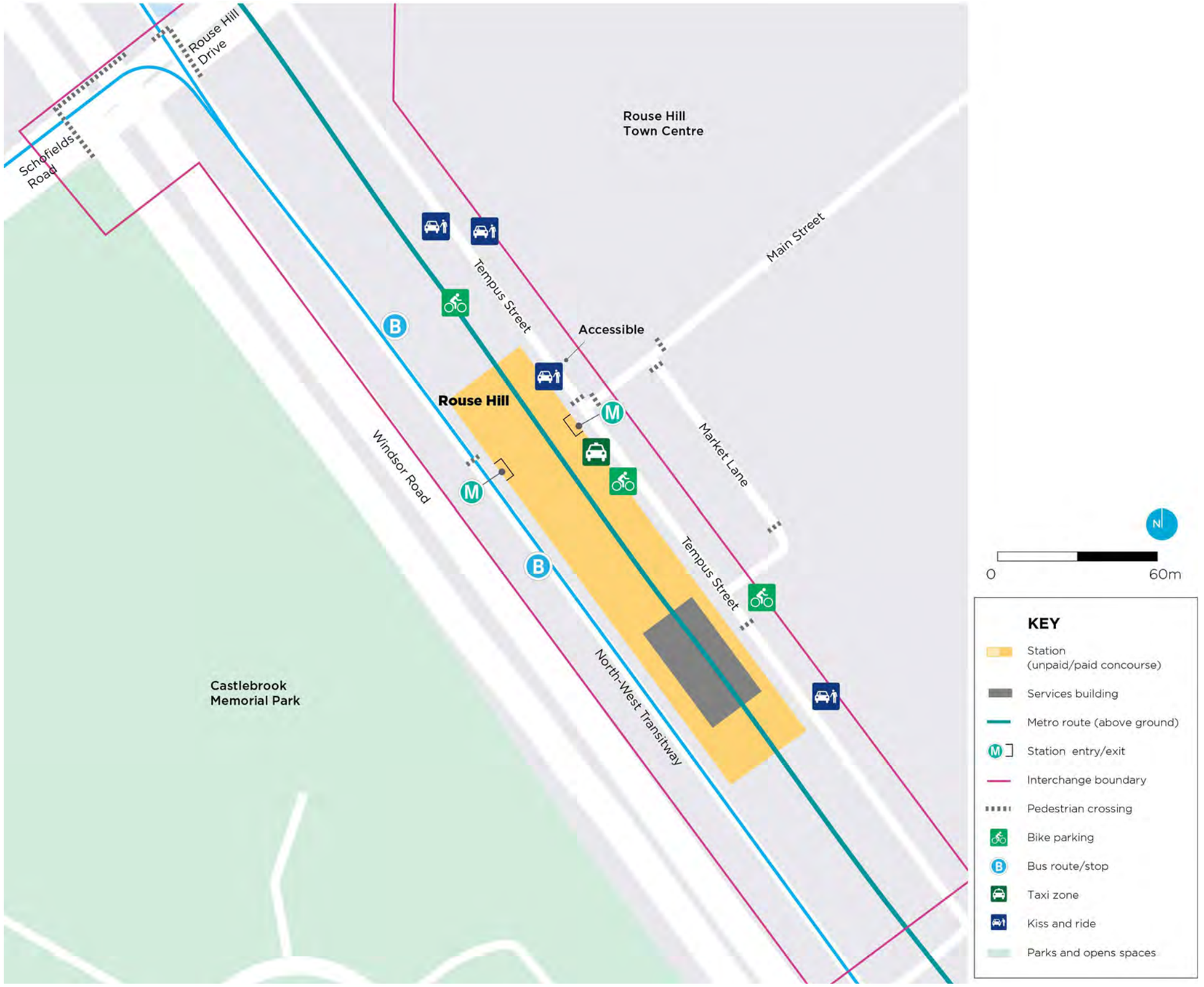
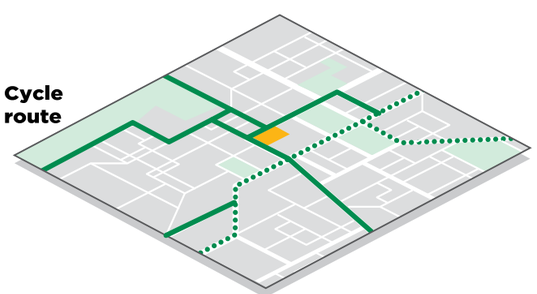


Rouse Hill Station – pedestrian interchange and transfer requirements

Rouse Hill – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Rouse Hill is an origin and destination station. The station site has no existing access, however an existing network of footpaths serves the pedestrian network surrounding the station.	The majority of pedestrian demand at opening will connect to the Rouse Hill Town Centre directly to the east of the station and from the residential area to the south. Future demand will originate from the north and further to the south as development is completed.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Station access	The station supports two access points, which require safe, convenient and direct pedestrian routes: • The western access is from the Northwest T-way, between Rouse Hill Drive and White Hart Drive.	• The eastern access is on Tempus Street, between Rouse Hill Drive and White Hart Drive.
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with employment, retail, recreational, community and residential areas surrounding the station. The pedestrian environment potentially impacted by the proposed station includes: • At-grade marked foot crossing on three legs of the intersection of Windsor Road and Rouse Hill Drive.	• Marked foot crossings on all but the northern legs (across Windsor Road) of the intersections of Windsor Road with White Hart Drive and Commercial Road. • There is a pedestrian desire line between the existing car park to the north of Rouse Hill Drive and the Rouse Hill Town Centre. Pedestrians cross to the east of the intersection across Rouse Hill Drive without using the marked foot crossing at the Windsor Road intersection. The proposed shared user path within the station precinct will link this route for pedestrians from east to west.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by The Hills Shire Council. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant.	• Western Station Access — Provide for high pedestrian demand over Windsor Road to residential precincts. • Eastern Station Access — Provide connectivity to Rouse Hill Town Centre.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.	• Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from bike parking	The station will provide easy transfer to bike parking facilities located at: • Station entry plaza – bike shed and racks.	
Transfer to and from other rail	No design provision is considered for this location.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will provide easy transfer to bus stops and the North-West T-way on Windsor Road.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	The station will provide easy transfer to the taxi rank on Tempus Street.	
Transfer to and from kiss-and-ride	The station will provide easy transfer to kiss-and-ride zones on Tempus Street.	
Transfer to and from park-and-ride	No design provision is considered for this location.	

Rouse Hill – cycling interchange and transfer requirements



Mode layer

Rouse Hill Station – cycling interchange and transfer requirements

Rouse Hill – cycling interchange and transfer requirements *continued*.

Item	Description	
Current state		
Current levels of access and service	A shared path exists on the western side south of Windsor Road south of Schofields Road and an on-road cycle lane north of Schofields Road. An on-road marked lane also exists on the eastern side of Windsor Road, extending to the north and south of Rouse Hill Drive. Designated shared paths are also provided along Rouse Hill Drive, Caddies Boulevard, Civic Way and Galara Street.	South of the station, an off-road shared path exists on Sanctuary Drive. The station and interchange will be designed to allow bicycle riders to move through the station and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 50 metres of the gateline. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	• Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To facilitate cycle transfer within the interchange, bike parking will be provided: • At the station entrance plaza between Windsor Road and Tempus Street.	
Types of parking facilities	The bike parking provisions at the station are: • Bike shed for 35 bicycles, with electronic access facility. • Bike racks for 10 bicycles. • Eight existing bike lockers for the T-way located in Market Lane facing Market Square will be retained.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shed for 50 bicycles, with electronic access facility. • Bike racks for 20 bicycles.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments.
Closest cycling routes	The existing cycling network surrounding the station is limited. A shared path exists on the western side of Windsor Road, both north and south of Schofields Road and an on-road cycle lane exists north of Schofields Road.	South of the station, an off-road shared path exists on Sanctuary Drive. An on-road marked lane exists on the eastern side of Windsor Road, extending to the north and south of Rouse Hill Drive.
New cycle routes by Sydney Metro	• 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.	• A new shared path will be constructed along the eastern side of Windsor Road connecting to Kellyville Station.
Cycle routes for consideration by others	• 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.	• Install separated path on southern side of Commercial Road. • Complete Green Hills Drive with off-road shared path between Commercial Road and Mile End Road to improve cycling connections. • 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 and Rouse Hill Drive intersection.

Rouse Hill – bus interchange and transfer requirements

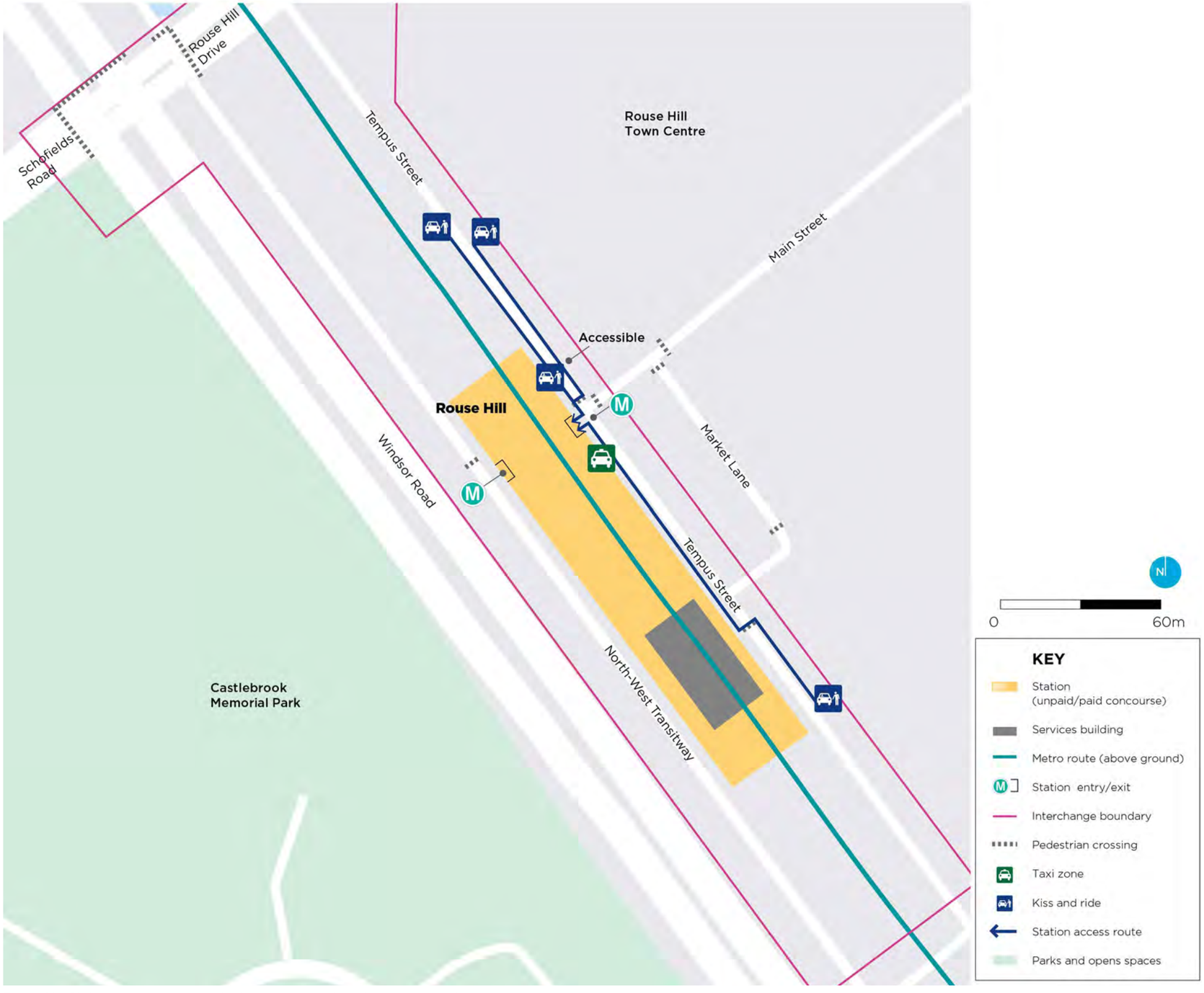
Mode layer

Rouse Hill Station – bus and light rail interchange and transfer requirements

Rouse Hill – bus interchange and transfer requirements *continued*

Item	Description			
Current state				
Current levels of access and service	A number of bus routes operate within the vicinity of Rouse Hill Station. These routes are: • 601 – Rouse Hill to Parramatta. • 602X – Rouse Hill to North Sydney. • 603 – Rouse Hill to Parramatta via Glenhaven. • 605 – North Kellyville to Rouse Hill Town Centre.	• 607X – Rouse Hill to City QVB. • 608 – Windsor to Rouse Hill. • 610 – Rouse Hill to City QVB. • 610X – Rouse Hill to City QVB via Lane Cove Tunnel. • 619 – Rouse Hill to Macquarie Park via Castle Hill. • 641 – Rouse Hill Town Centre to Dural. • 742 – Riverstone to Rouse Hill.	• 746 – Rouse Hill Town Centre to Riverstone. • 747 – Marsden Park to Rouse HIll via Riverstone. • 751 – Rouse Hill Town Centre to Blacktown. • 752 – Rouse Hill to Blacktown via Quakers Hill. • T63 – Rouse Hill Town Hall to Parramatta via Kellyville Ridge.	• T64 – Rouse Hill Town Hall to Parramatta via Kellyville. • T65 – Rouse Hill Town Centre to Parramatta. • T66 – Rouse Hill to Parramatta. • T71 – Castle Hill to Blacktown via Standhope Gardens. • T72 – Rouse Hill to Blacktown. • T75 – Riverstone and Rouse Hill to Blacktown.
Current mode splits and intermodal transfer	Not applicable.			
Integration				
Closest bus stops/routes	The primary bus stops within the interchange are: • West of station: — North-West T-way. — Windsor Road.			
Potential changes to bus stops/route	Potential changes to bus routes to the station are under investigation.			
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.		• Dedicated footways along local and regional roads. • Marked pedestrian crossings at the eastern entrance.	
Transfer to and from bus	Customers will be able to transfer between bus stops at metro station entries using new and existing footpaths.		Where necessary, improvements will be made to signage and wayfinding to ensure an easy customer transfer through improved provision of information.	
Transfer to and from bus (overnight)	No design provision is considered for this location.			
Transfer to and from bus (school)	No design provision is considered for this location.			
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions.*			
Bus bays	Bus bays provided or modified by the project shall meet NSW state and Commonwealth guidelines for size and layout. Where a conflict exists, the Commonwealth standard will		apply. Where the Commonwealth standard cannot practically apply, the highest practical standard should be provided in excess of NSW state standards and guidelines.	
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.			

Rouse Hill – vehicle drop-off interchange and transfer requirements

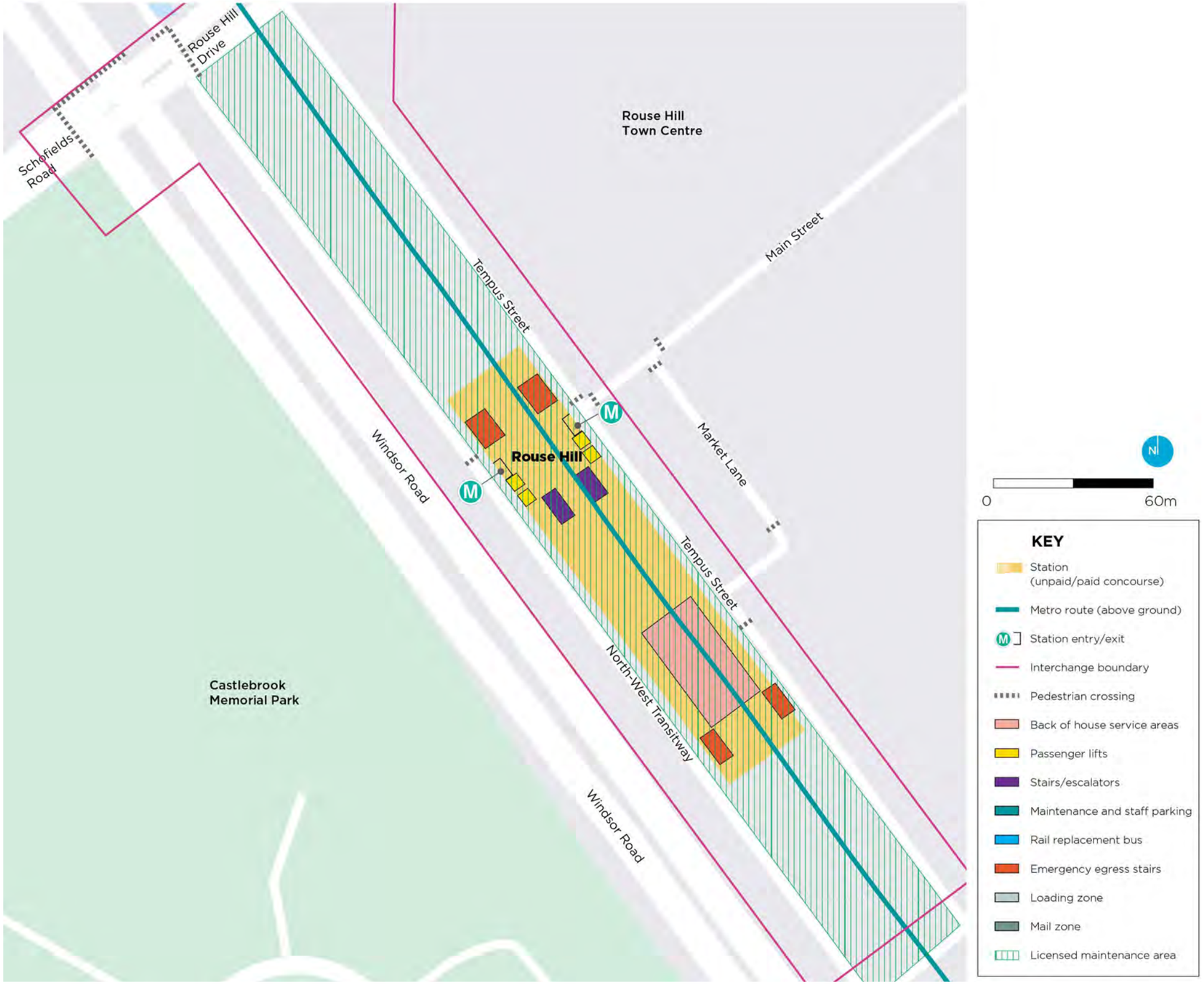


Rouse Hill Station – vehicle drop-off interchange and transfer requirements

Rouse Hill – vehicle drop-off interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Not applicable.
Current mode splits and intermodal transfer	Not applicable.
Integration	
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from taxi	Taxi ranks must be a 200-metre or less walk from the gatelines to the head of the taxi rank. Nine new taxi ranks will be provided at: • Tempus Street.
Transfer to and from kiss-and-ride	Kiss-and-ride zones must be a 200-metre or less walk from the gatelines. 25 new kiss-and-ride zones, including two accessible zones, will be provided at: • Tempus Street.
Taxi rank locations	Taxi ranks that service local centres as well as stations are supported as long as they are located within 100 metres of the station access point.
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.

Rouse Hill – operations, maintenance and management provisions



Rouse Hill Station – operations, maintenance and management provisions

Rouse Hill – operations, maintenance and management provisions *continued*

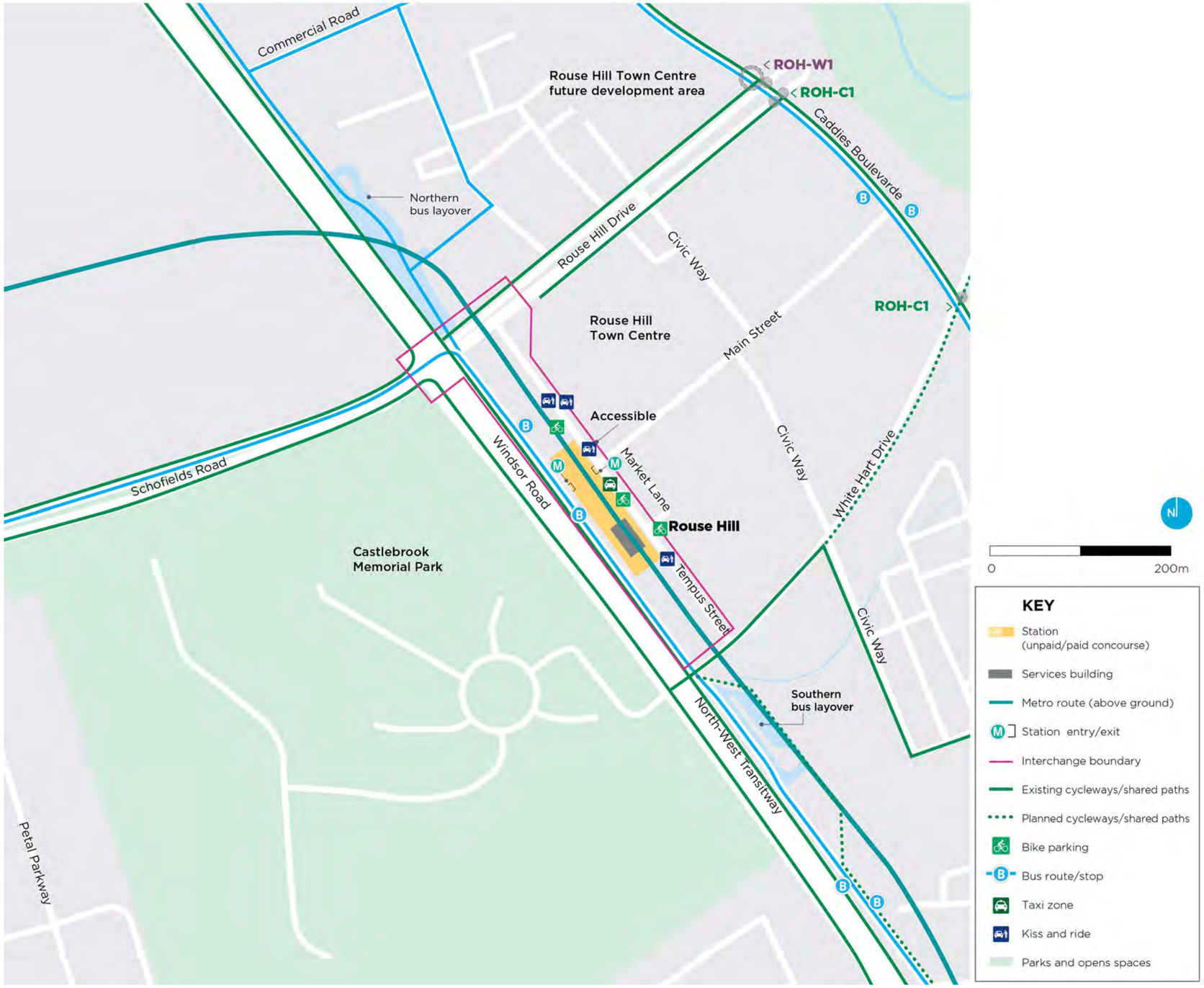
The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles will use designated service vehicle parking zones on Tempus Street.
Servicing and maintenance access (major)	Service vehicles will use designated service vehicle parking zones on Tempus Street.
Rail replacement bus service access	Rail replacement buses will use the bus zone on the Northwest T-way.
Delivery access (retail and operational)	Delivery vehicles will use the on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	Mail zones may be established on an as needed basis with the surrounding development.
Staff car parking	No design provision is considered for this location.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

Rouse Hill – recommendations



Rouse Hill Station – recommendations

Rouse Hill – recommendations *continued*

This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at Rouse Hill Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at Rouse Hill Station.

	Action
Walking	
ROH–W1	Install shared path signs and line marking at the start and end of the shared path along Caddies Boulevard between Rouse Hill Drive and Commercial Road. Extend the walking and cycling network surrounding the station. *Proposed scope: Install signs and line marking.*
Cycling	
ROH–C1	Signalised crossing facilities along off-road cycle routes require bicycle lanterns to allow continued connection (rather than riders having to dismount). Install bicycle lanterns, to allows bicycle rides to connect between the two shared paths without having to dismount, at the following signalised crossing locations: • Eastern leg of White Hart Drive/Caddies Boulevard intersection. • Eastern leg of Caddie Boulevard/Rouse Hill Drive intersection. • Southern leg of Caddie Boulevard/Rouse Hill Drive intersection. • Northern leg of Caddie Boulevard/Rouse Hill Drive intersection. *Proposed scope: Install bicycle lanterns to operation within the same phase as pedestrian crossings, and widen the existing crossing and kerb ramps.*
Park-and-ride	
ROH–P1	As an outcome of the Parking Management Strategy, install parking management recommendations. *Proposed scope: Install signs and line marking.*
Wayfinding	
ROH–S1	Improve wayfinding and general information for walking and bicycle rider customers informing of the surrounding networks outside the interchange area that connect to the station. *Proposed scope: Install signs and line marking.*
Management and maintenance	
ROH–M1	Document operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

Kellyville

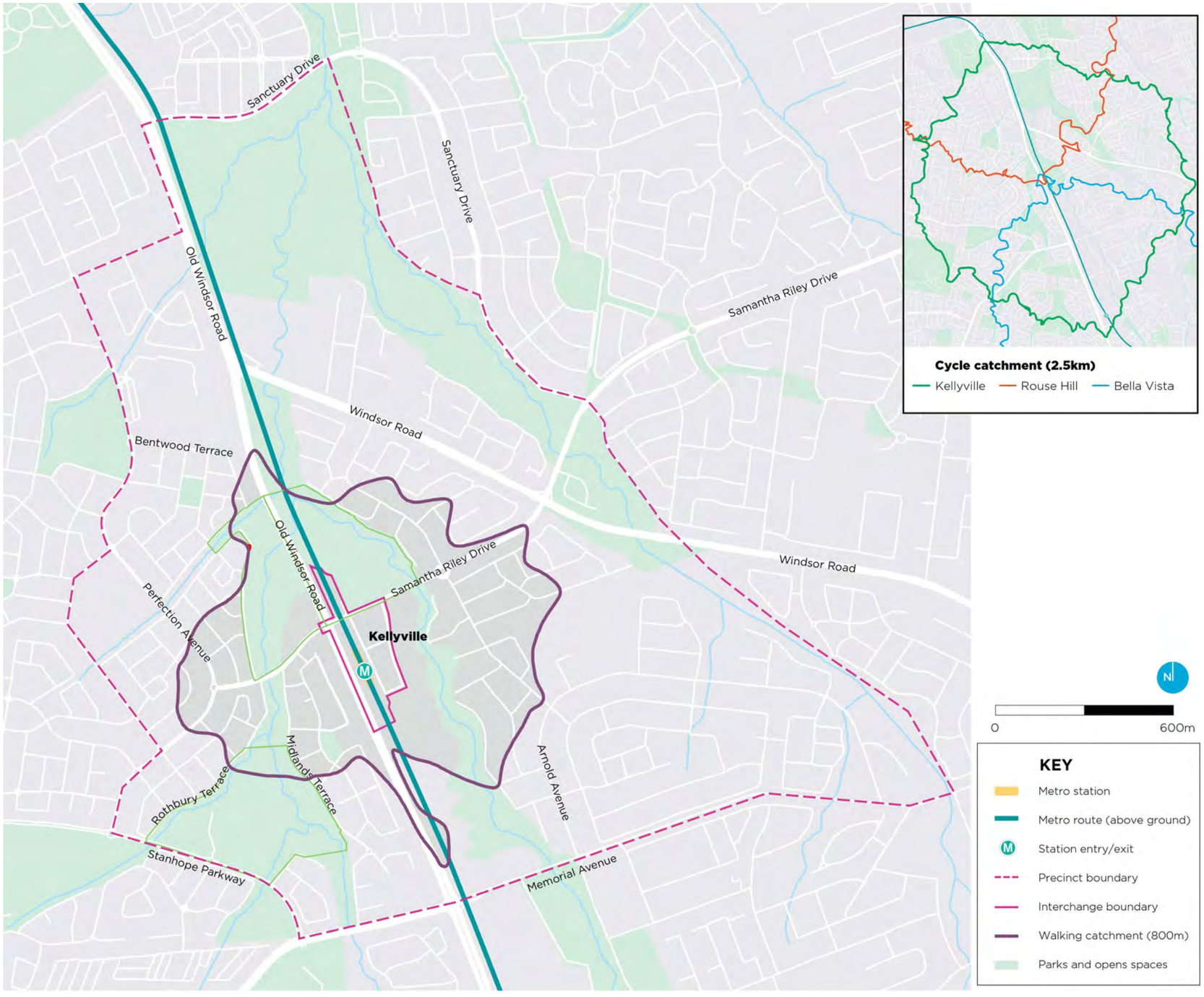
Kellyville – local context

Kellyville Station will provide a new elevated station, east of Old Windsor Road at the corner of Samantha Riley Drive and Old Windsor Road.

It will be a major park and-ride station, with 1,360 park-and-ride spaces.

Kellyville Station will be accessible from an under-rail pedestrian connection between Old Windsor Road and Guragura Street.

The entrance will provide access to surrounding residential areas.



Kellyville Station – local context

Kellyville – local context *continued*

Kellyville Station will be a major public transport interchange, connecting to the T-way.

A metro station at Kellyville will support the surrounding residential areas of Kellyville, Beaumont Hills and Stanhope Gardens, as well as existing and future residential development in the area.

Station strategy

The station strategy for Kellyville is to:

- Provide easy, safe and intuitive transfer to and from the metro station within the existing network and road environment.
- Increase public transport access to the surrounding existing and future residential areas.
- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Feature	Description
Location	• On a viaduct, approximately 13.7 metres above street level, on the eastern side of Old Windsor Road at the corner of Samantha Riley Drive.
LGA	• The Hills Shire Council.
Station entry	• An under-rail viaduct plaza entry accessed from Old Windsor Road to the west and Guragura Street to the east.
Transport interchange	• Walking, cycling, bus, taxi, kiss-and-ride and park-and-ride.
Main features and traffic arrangements	• New station access road parallel to Old Windsor Road, off Samantha Riley Drive (one lane each direction). • Signalisation of intersection of Samantha Riley Drive and Decora Drive close to Elizabeth MacArthur Creek. • Taxi and kiss-and-ride zones on Guragura Street. • Bus services at the existing T-way stops. • At-grade and multi-storey car parks with access off Guragura Street, and north of Samantha Riley Drive under the viaduct. • Pedestrian bridge across Old Windsor Road linking station to Stanhope Gardens and Riley T-way stop.
Customers	• Residential precincts.
Key attractions	• Blacktown Leisure Centre Stanhope. • Caddies Creek. • Castlebrook Memorial Park Cemetery and Crematorium. • Cumberland Nepean Softball. • Elizabeth Macarthur Creek. • Elizabeth Macarthur Park. • John XXIII Catholic Primary School. • Kellyville Ridge Public School. • Mungerie House Rouse Hill Visitor Information Centre. • Northwest T-way. • Parklea Correctional Centre. • Stanhope Reserve. • Stanhope Shopping Village.

Current land use and characteristics

Existing land use and characteristics

The area around Kellyville Station is mainly residential.

North of the station is the North West T-way car park.

To the east of Old Windsor Road is the Balmoral Road Release Area, bordered by Elizabeth Macarthur Creek. This is being developed for low- to medium-density residential and business park uses.

To the north-east is additional residential development, with low-density one- and two-storey detached dwellings.

To the west of Old Windsor Road are recently developed low-density residential areas in Stanhope Gardens and Kellyville Ridge, with a mix of housing types including separate detached dwellings and townhouse-style houses.

Existing station precinct strategic planning context

The *Draft West Central District Plan* (Greater Sydney Commission 2016) aims to capture new opportunities generated by Sydney Metro Northwest and other investments, to build a more connected district. The plan has the following actions that are potentially relevant to Kellyville Station:

- Align land use planning and infrastructure planning.
- Provide design-led planning to support high-quality urban design.
- Support the development of initiatives for a sustainable low carbon future.

The plan also states that completion of Sydney Metro Northwest will improve access to employment across the district.

The Department of Planning and Environment (DP&E) is working closely with local councils to deliver the *Sydney Metro Northwest Priority Urban Renewal Corridor*. This strategy aims to deliver new homes, jobs, cafes and parks along the rail line. It also identifies Kellyville as a Planned Precinct, with the vision to create 'a green, vibrant and connected community'. The precinct will have new public spaces including a new town square opposite the station, new sports fields and neighbourhood parks, and more accessible natural spaces adjoining Elizabeth Macarthur Creek.

The *Kellyville Station Structure Plan* (DP&E and TfNSW 2014) identifies proposed future land uses around the station precinct. The plan proposes a new local centre next to the station to provide for the growing retail needs of the area.

High-density residential between seven to 12 storeys will surround the station. Medium-density residential of three to six storeys will be located further from the station. Beyond the medium-density zone, townhouses, duplexes and single detached dwellings will be located.

Green links are proposed along Elizabeth Macarthur and Strangers Creeks, using existing vegetation, parks and riparian corridors.

Kellyville – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Kellyville, as these modes are not available at this station:

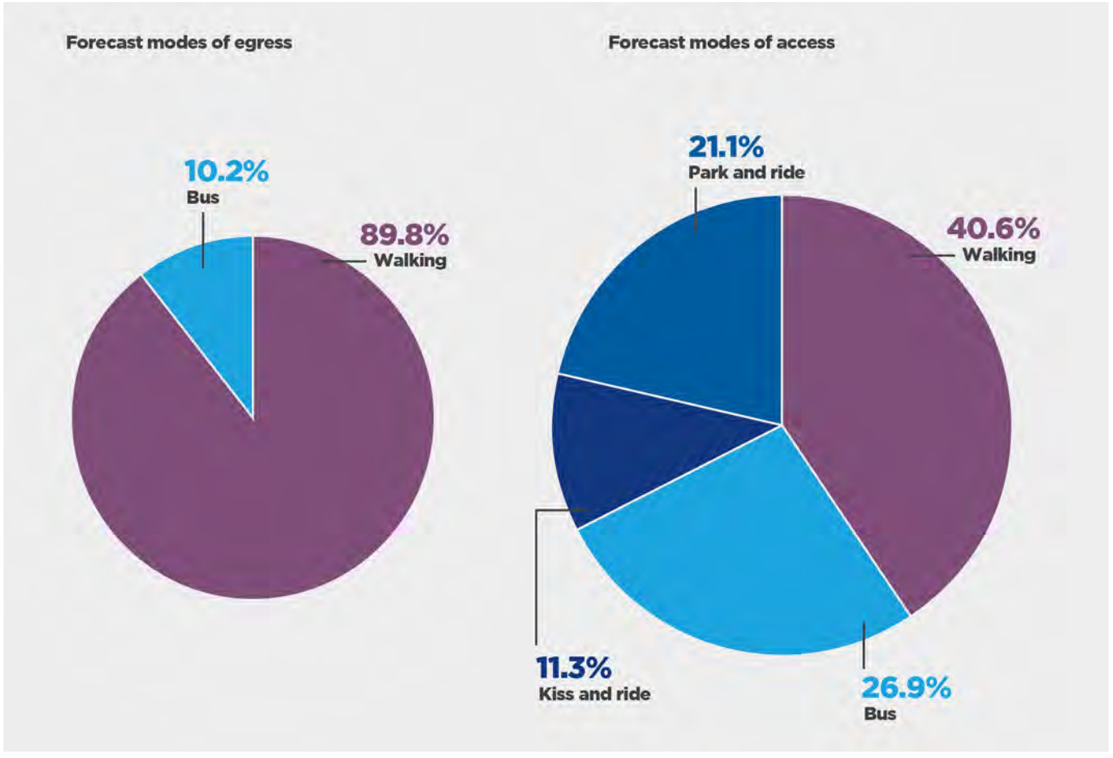
- Light rail.
- Ferry.
- Coach.

Future land use

Land use, transport integration and opportunities

A metro station at Kellyville will support state and local strategic and planning controls by enabling opportunities for urban renewal including housing diversity and intensification, meeting the needs of residents, workers and visitors, and creating a vibrant, sustainable community that reaches its full economic and social potential. It is expected that a metro station at Kellyville will have the following specific benefits:

- The station will form part of the interchange that provides safe and direct access to residential and mixed-use land uses surrounding the station that will directly benefit from additional transport connectivity to the Global Economic Corridor.
- The station will provide the opportunity for further development of the area as a vibrant and active centre with strong public transport links to North Sydney, the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure and educational facilities.
- The station will provide opportunities to increase residential densities within walking distance of the station.



2036 3.5-hour AM peak demand and mode splits

Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

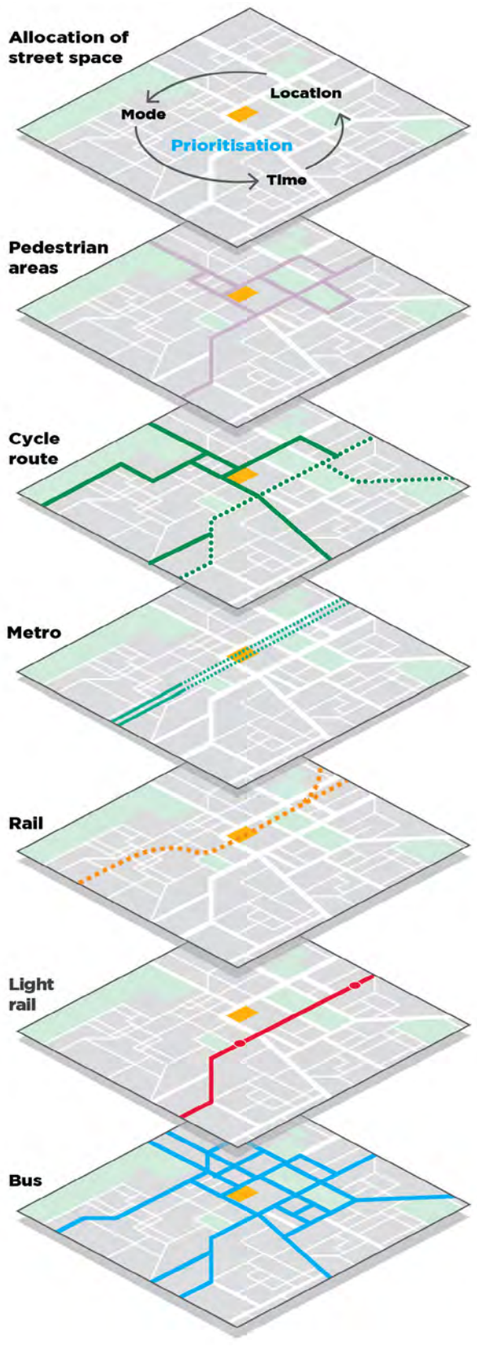
These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and The Hills Shire Council.

Opportunities and constraints

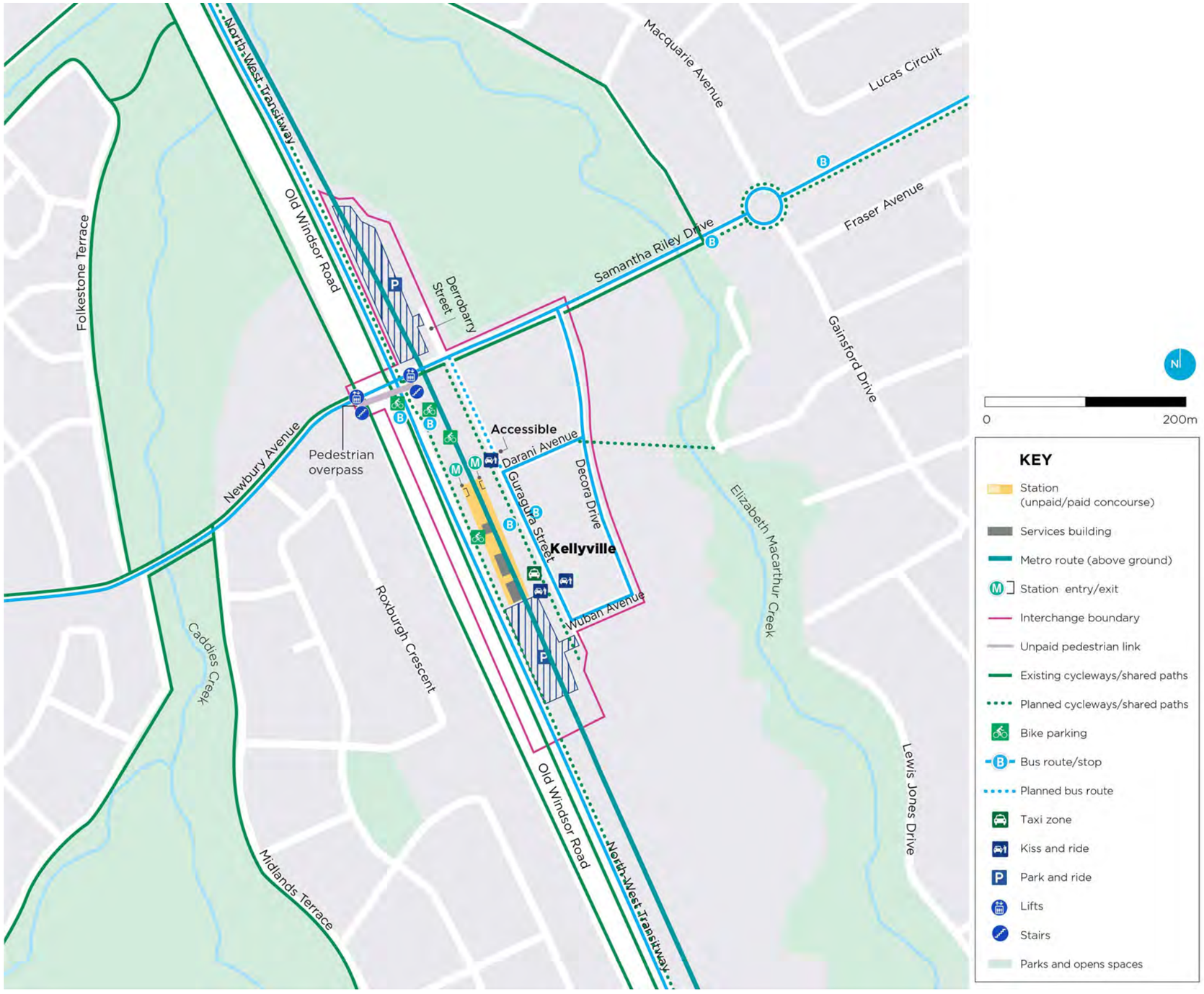
Kellyville Station has the following urban design opportunities and constraints.

Opportunities	Constraints
• Integrate the metro station with the existing road network to facilitate safe transfers to and from the station and customers' destinations. • Integrate with future development area and neighbourhood retail centre. • Establish a station high street address to provide legible pedestrian and transport address. • Create a robust 'day one' station precinct and identity. • Ensure visibility and identification from Samantha Riley Drive and Old Windsor Road. • Establish new pedestrian bridge access across Old Windsor Road providing a link to residential, school and T-Way stop. • Retain established landscape edge at Old Windsor Road and response to the riparian and landscape setting. • Create usable space beneath the viaduct. • Ensure park-and-ride facilities are integrated sensitively within the urban environment. • Enhance the linear parkland corridor along Elizabeth Macarthur Creek.	• The need to respond to the future development surrounding the station.

Kellyville – interchange and transfer requirements overview

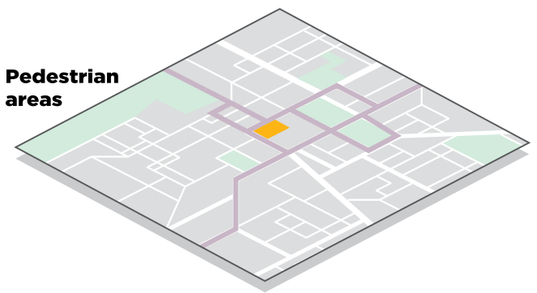


Mode layers



Kellyville Station – interchange and transfer requirements overview

Kellyville – walking interchange and transfer requirements



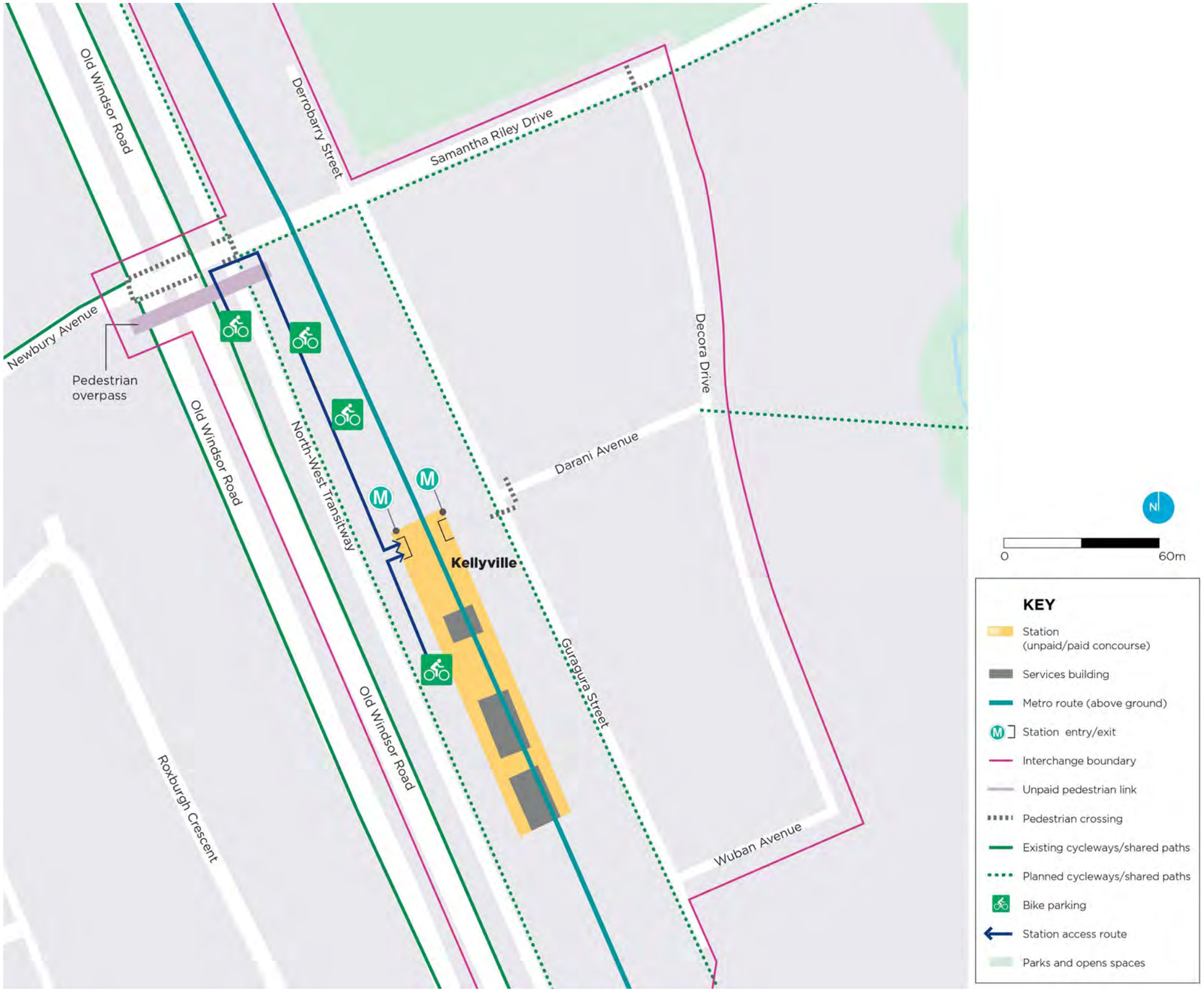
Mode layer

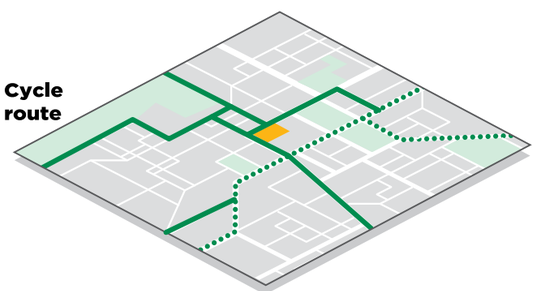
Kellyville Station – pedestrian interchange and transfer requirements

Kellyville – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Kellyville is an origin station. The station site has no existing access, however a network of footpaths will serve the pedestrian network surrounding the station.	The majority of pedestrian demand at opening will connect from the residential areas to the east, west and north of the station. Future demand will originate from the east as the Planned Precinct develops over time.
Current mode splits and intermodal transfer	Not applicable.	Approximately 800 customers access the T-way in the 3.5-hour AM peak.
Integration		
Station access	The station supports two access points, which require safe, convenient and direct pedestrian routes: • The western access is on Old Windsor Road, at the intersection with Samantha Riley Drive.	• The eastern access is on Guragura Street, at the intersection with Darani Avenue.
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with residential areas surrounding the station. The pedestrian environment potentially impacted by the proposed station includes: • Pedestrian and cycle access via a shared path (off road). • Marked crossings on Guragura Street and Darani Avenue. • Signalised crossings on Samantha Riley Drive.	• Shared path along Samantha Riley Drive. • New pedestrian bridge over Old Windsor Road. • Connections to the T-way. • Footpath along western side of Landy Place to connect to the existing pedestrian connections to the north leading to southern side Samantha Riley Drive. • Green links along Elizabeth Macarthur and Strangers Creeks, forming significant pedestrian and cyclist links between Kellyville, Rouse Hill, Bella Vista and Norwest.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by The Hills Shire Council. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant.	• Western Station Access — Provide for high pedestrian demand over Old Windsor Road to residential precincts. • Eastern Station Access — Provide for high pedestrian demand over Samantha Riley Drive to residential precincts.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.	• Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from bike parking	The station will provide easy transfer to bike parking facilities located at: • Station entry plaza – bike shed and racks.	
Transfer to and from other rail	No design provision is considered for this location.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will provide easy transfer to bus stops and the Riley T-way on Old Windsor Road.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	The station will provide easy transfer to the taxi rank on Guragura Street.	
Transfer to and from kiss-and-ride	The station will provide easy transfer to kiss-and-ride zones on Guragura Street.	
Transfer to and from park-and-ride	The station will provide easy transfer to park-and-ride spaces accessed from Guragura Street and Derrobarry Street.	

Kellyville – cycling interchange and transfer requirements





Mode layer

Kellyville Station – cycling interchange and transfer requirements

Kellyville – cycling interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	On-road bike lanes exist on Old Windsor Road in both the north and south direction. An off road shared path on the southern side of Samantha Riley Drive connects the station to off-road paths along Bridget Place and Clovelly Circuit.	An off-road shared path is also provided on the northern side of Newbury Avenue. The station and interchange will be designed to allow bicycle riders to move along the local street network and through the station and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	From onsite investigations up to 10 bikes are evident at the bike racks near the Riley T-way and three of the five bike lockers are in use.	
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 50 metres of the gateline. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	• Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To facilitate cycle transfer within the interchange, bike parking will be provided: • At the station entrance plaza between Old Windsor Road and Guragura Street.	
Types of parking facilities	The bike parking provisions at the station are: • Bike shed for 35 bicycles, with electronic access facility. • Bike racks for 20 bicycles. • Five existing bike lockers for the T-way located at the corner of Old Windsor Road and Samantha Riley Drive will be retained.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shed for 70 bicycles, with electronic access facility. • Bike racks for 40 bicycles.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments.
Closest cycling routes	An off road shared path on the southern side of Samantha Riley Drive connects the station to off-road paths along Bridget Place and Clovelly Circuit.	An off-road shared path is also provided on the northern side of Newbury Avenue. On-road bike lanes are provided on Old Windsor Road in both the north and south direction.
New cycle routes by Sydney Metro	• Install shared path on southern side of Samantha Riley Drive between Old Windsor Road and boundary of station precinct.	• Install a shared path on the western side of the station between the car parks and the Northwest T-Way, providing a connection to the station entrance plaza from Bella Vista and Rouse Hill Stations.
Cycle routes for consideration by others	• Install separated paths to traverse the eastern side of Elizabeth Macarthur Creek in a north-to-south direction, between Windsor Road and Memorial Avenue. • Prioritise delivery of proposed separated path along Memorial Avenue. • Bridge crossing recommended from Wenden Avenue across the creek into the station precinct.	• A second crossing is also recommended across the creek between Wenden Avenue and Memorial Avenue. • Investigate connecting the missing link in existing shared paths on Palace Street and Keirlie Road. • Consider provision of pedestrian and cycle bridge over Memorial Avenue as part of the upgrade being carried out by RMS.

Kellyville – bus interchange and transfer requirements

Mode layer

Kellyville Station – bus and light rail interchange and transfer requirements

Kellyville – bus interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	A number of bus routes operate within the vicinity of Kellyville Station. These routes are: • 602X – Rouse Hill to North Sydney. • 607X – Rouse Hill to City QVB. • 612X – Kellyville to Milsons Point. • 617X – Rouse Hill to City QVB. • 619 – Rouse Hill to Macquarie Park via Castle Hill. • T65 – Rouse Hill Town Hall to Parramatta. • T66 – Rouse Hill to Parramatta. • T75 – Riverstone and Rouse Hill to Blacktown.
Current mode splits and intermodal transfer	• 752 combined entries and exits from the Riley T-way (3.5-hour peak).
Integration	
Closest bus stops/routes	The primary bus stops within the interchange are: • West of station: — Riley T-way. — Old Windsor Road.
Potential changes to bus stops/route	Potential changes to bus routes to the station are under investigation.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Dedicated footways along local and regional roads. • Marked pedestrian crossings at the eastern entrance.
Transfer to and from bus	Customers will be able to transfer between bus stops at metro station entries using new and existing footpaths. Where necessary, improvements will be made to signage and wayfinding to ensure an easy customer transfer through improved provision of information.
Transfer to and from bus (overnight)	No design provision is considered for this location.
Transfer to and from bus (school)	No design provision is considered for this location.
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions.*
Bus bays	Bus bays provided or modified by the project shall meet NSW state and Commonwealth guidelines for size and layout. Where a conflict exists, the Commonwealth standard will apply. Where the Commonwealth standard cannot practically apply, the highest practical standard should be provided in excess of NSW state standards and guidelines.
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.

Kellyville – vehicle drop-off interchange and transfer requirements

Kellyville Station – vehicle drop-off interchange and transfer requirements

Kellyville – vehicle drop-off interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Not applicable.
Current mode splits and intermodal transfer	Not applicable.
Integration	
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from taxi	Taxi ranks must be a 130-metre or less walk from the gatelines to the head of the taxi rank. Four new taxi ranks will be provided at: • Guragura Street.
Transfer to and from kiss-and-ride	Kiss-and-ride zones must be a 130-metre or less walk from the gatelines. 10 new kiss-and-ride zones, including one accessible zone, will be provided at: • Guragura Street.
Taxi rank locations	Taxi ranks that service local centres as well as stations are supported as long as they are located within 100 metres of the station access point.
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.

Kellyville – vehicle parking interchange and transfer requirements

Kellyville Station – vehicle parking interchange and transfer requirements

Kellyville – vehicle parking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	The existing northern car park is currently used for T-way parking.	
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Park-and-ride spaces required	A total of 1,360 spaces are required, as follows: • Accessible – 41. • Compact – 204. • Standard – 1,115.	Car parking bays must be prioritised in order of priority as above, in relation to proximity to the station gateline. In addition to the spaces above, 40 motorcycle parking spaces are required.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.	
Transfer to and from park-and-ride	Park-and-ride zones must be a 480-metre or less walk from the gatelines to the head of the furthest car bay.	The park-and-ride zones within the interchange are accessed from Guragura Street and Derrobarry Street.
Accessible parking bays	Accessible parking bays must be compliant with the *Disability Discrimination Act 1992* and the *Disability Standards for Accessible Public Transport 2002*.	
Compact spaces	Compact parking bays (2.5 x 5.0 metres) shall be located together and in a convenient location close to the station entrance.	
Motorcycle parking	Motorcycle and scooter parking shall be allocated to make efficient use of under croft and incidental areas and minimise the need for motorcycles to circulate throughout the car park.	
Meeting point	Where car parking is provided, an accessible designated meeting point shall be provided within each car park, as a place where customers can wait in a safe and secure area to meet breakdown assistance services made at their own arrangement.	

Kellyville – operations, maintenance and management provisions

Kellyville Station – operations, maintenance and management provisions

Kellyville – operations, maintenance and management provisions *continued*

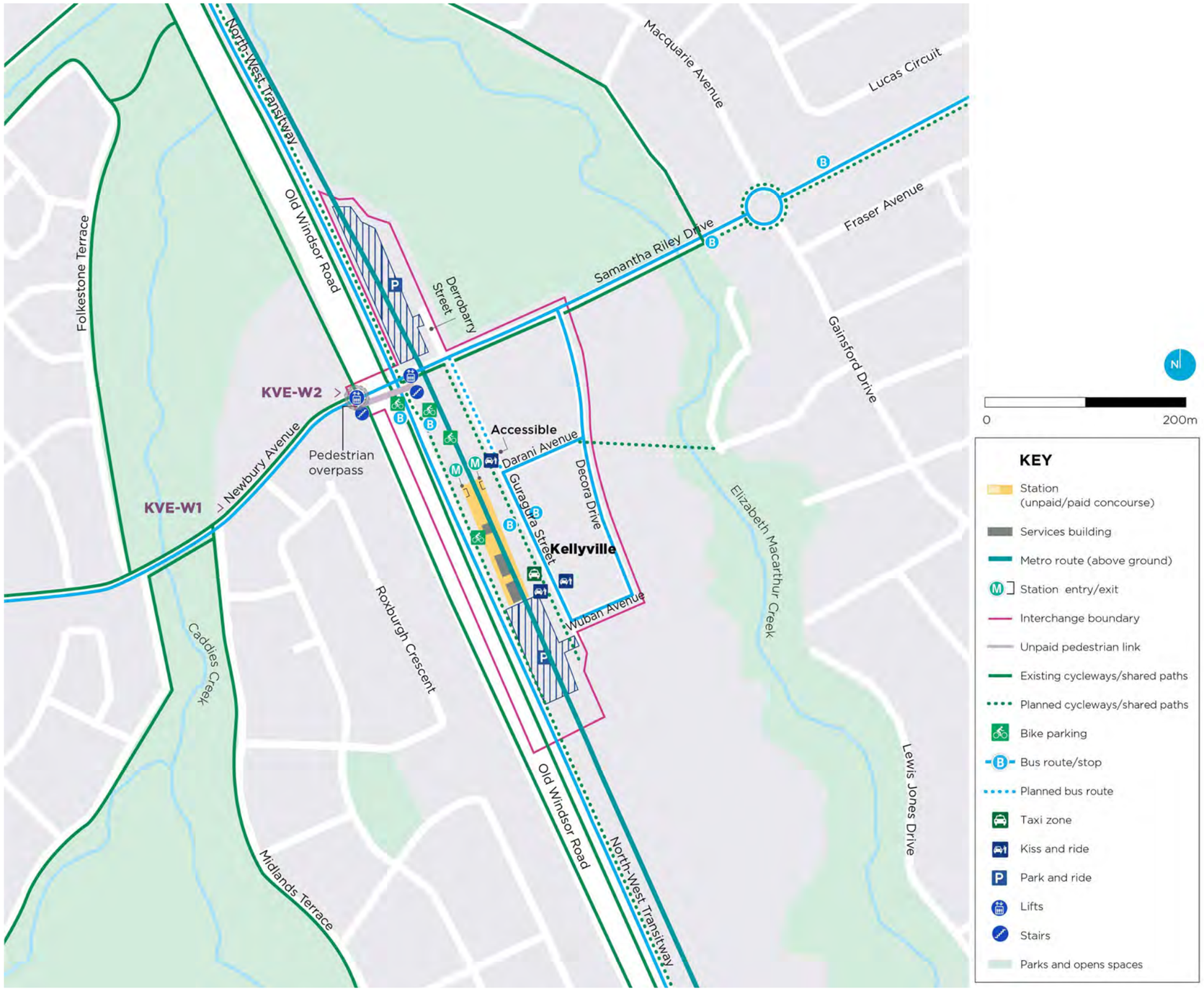
The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Servicing and maintenance access (major)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Rail replacement bus service access	Rail replacement buses will use the bus zone on the Northwest T-way.
Delivery access (retail and operational)	Delivery vehicles will use the on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	New mail zones may be established on an as needed basis with the surrounding development.
Staff car parking	One staff and two maintenance parking spaces will be provided in the multi-level car park.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

Kellyville – recommendations



Kellyville Station – recommendations

Kellyville – recommendations *continued*

This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at Kellyville Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at Kellyville Station.

Action	
Walking	
KVE–W1	Install shared path signs and line marking along the northern side Newbury Avenue shared path between Old Windsor Road and Perfection Avenue. Existing infrastructure requires signs and line marking. *Proposed scope: install signs and line marking.*
KVE–W2	Relocate signs post blocking the shared path on the northern side of Newbury Avenue, west of Old Windsor Road. Signs states, 'Unauthorised use of T-way Prohibited'. *Proposed scope: Relocate sign post off the shared path.*
Park-and-ride	
KVE–P1	As an outcome of the Parking Management Strategy, install parking management recommendations. *Proposed scope: Install signs and line marking.*
Wayfinding	
KVE–S1	Improve wayfinding and general information for walking and bicycle rider customers informing of the surrounding networks outside the interchange area that connect to the station. *Proposed scope: Install signs and line marking.*
Management and maintenance	
KVE–M1	Document operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

Bella Vista

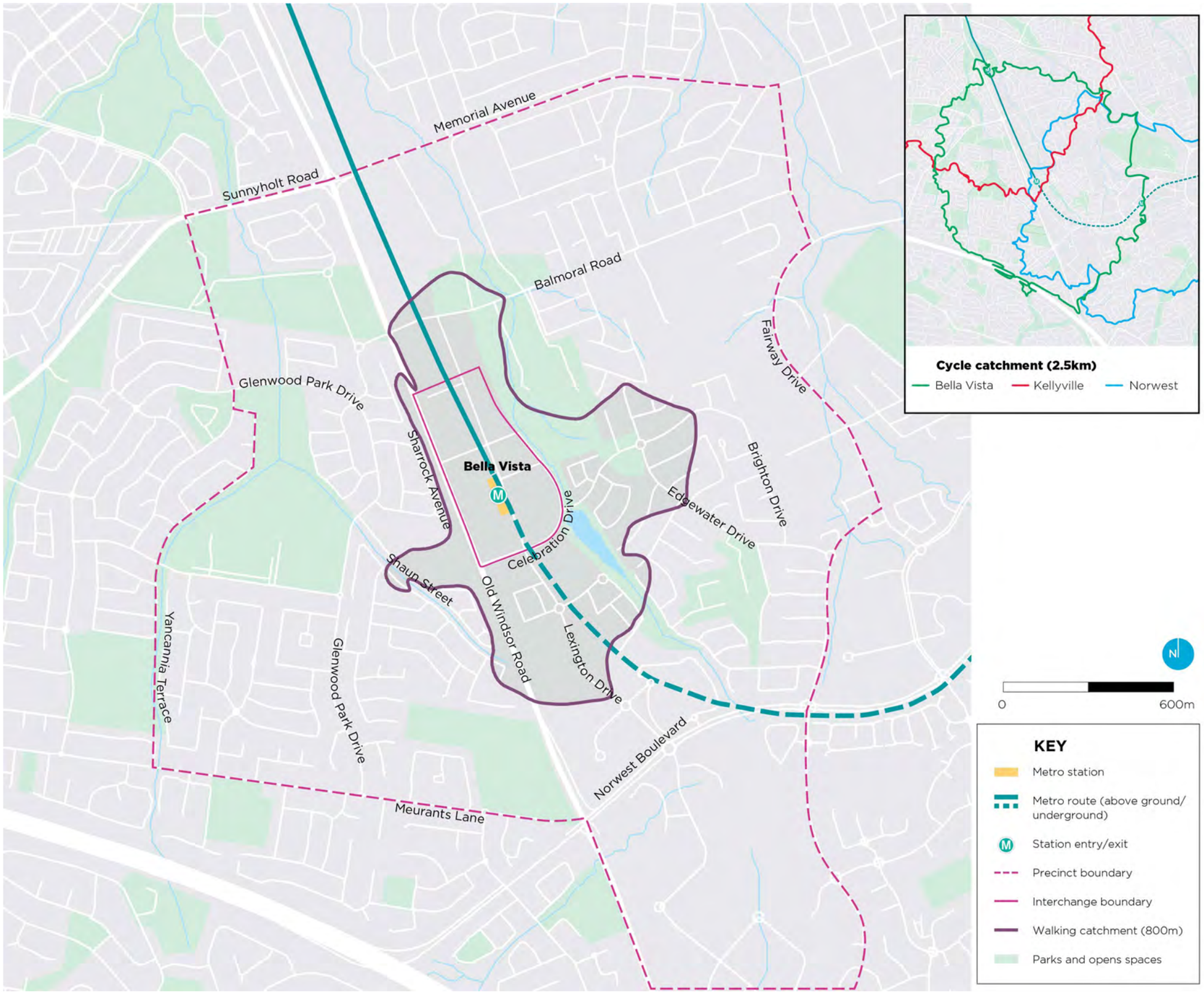
Bella Vista – local context

Bella Vista Station will provide a new open-cut station, east of Old Windsor Road between Balmoral Road and Celebration Drive.

It will be a major park and-ride station, with 800 park-and-ride spaces.

Bella Vista Station will be accessible from plazas on Celebration Drive and Unaipon Avenue.

The entrance will provide access to surrounding employment and residential areas.



Bella Vista Station – local context

Bella Vista – local context *continued*

Bella Vista Station will be a key landmark within the new surrounding commercial and mixed-use centre.

A metro station at Bella Vista will support the adjacent Norwest Business Park, providing access to current and future employment, as well as existing and future residential development in the area.

Station strategy

The station strategy for Bella Vista is to:

- Provide easy, safe and intuitive transfer to and from the metro station within the existing network and road environment.
- Increase public transport access to the surrounding existing and future employment and residential areas.
- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Feature	Description
Location	• In a cutting, approximately eight metres below street level, on the eastern side of Old Windsor Road between Balmoral Road and Celebration Drive.
LGA	• The Hills Shire Council.
Station entry	• A northern plaza entry from Mawson Avenue, adjacent to Florey Avenue. • A southern plaza entry from Mawson Avenue, north of Celebration Drive.
Transport interchange	• Walking, cycling, bus, taxi, kiss-and-ride and park-and-ride.
Main features and traffic arrangements	• New station access road (Mawson Avenue) extending Lexington Drive to the north of Celebration Drive (one lane each direction). • Pedestrian crossings on Mawson Avenue near the station entry. • Bus stops on Mawson Avenue. • Signalisation of intersection of Celebration Drive and Lexington Drive. • Widening to two lanes of eastbound side of Celebration Drive, between Old Windsor Road and Lexington Drive. • Multi-storey 800-space car park west of the rail line, with access via Byles Place or directly from Old Windsor Road (southbound). • New bus stops, and taxi and kiss-and-ride zones on Mawson Avenue, close to station entry.
Customers	• Employment and residential precincts.
Key attractions	• Bella Vista Primary School. • Elizabeth Macarthur Creek. • Glenwood High School. • Holy Cross Catholic Primary School – Glenwood. • Norwest Business Park. • Parklea Markets. • Parklea Public School. • Trades Norwest Anglican Senior College. • Valentine Sports Park.

Current land use and characteristics

Existing land use and characteristics

The area around Bella Vista Station is characterised by large format commercial buildings to the south, which are generally newer and taller than the older part of Norwest Business Park.

Also to the east are residential developments that are mostly low-density residential with small pockets of medium-density townhouse development.

North and north-east of the station will be developed as low- to medium-density residential uses as part of the Balmoral Road Release Area.

To the west of Old Windsor Road is Glenwood, with a few businesses and recently developed low-density residential areas.

About 1.3 kilometres north of the Bella Vista Station is the Burns Road T-way stop.

Between Bella Vista Station and Memorial Avenue, the current land use is largely rural or in the process of being transformed into a residential area as part of the Balmoral Road Release Area.

Existing station precinct strategic planning context

The Draft West Central District Plan (Greater Sydney Commission 2016) aims to capture new opportunities generated by Sydney Metro Northwest and other investments, to build a more connected district. The plan has the following actions that are potentially relevant to Bella Vista Station:

- Align land use planning and infrastructure planning.
- Provide design-led planning to support high-quality urban design.
- Support the development of initiatives for a sustainable low carbon future.

The plan also states that completion of Sydney Metro Northwest will improve access to employment across the district.

The Department of Planning and Environment (DP&E) is working closely with local councils to deliver the Sydney Metro Northwest Priority Urban Renewal Corridor. This strategy aims to deliver new homes, jobs, cafes and parks along the rail line. It also identifies Bella Vista as a Planned Precinct, with the vision to create 'The Hills' premier living and business precinct'. The precinct will have new public spaces including a new town square opposite the station, open space and neighbourhood parks, and more accessible natural spaces adjoining Elizabeth Macarthur Creek.

The Bella Vista Station Structure Plan (DP&E and TfNSW 2014) informs future land use planning around the station precinct. The plan proposes a commercial/retail core around the station. North of the station will be a mixed-use area with commercial, retail and medium-density residential.

The northern areas of the precinct will have zones of medium- and high-density residential with the highest density around the station being seven to 22 storeys.

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

Bella Vista – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Bella Vista, as these modes are not available at this station:

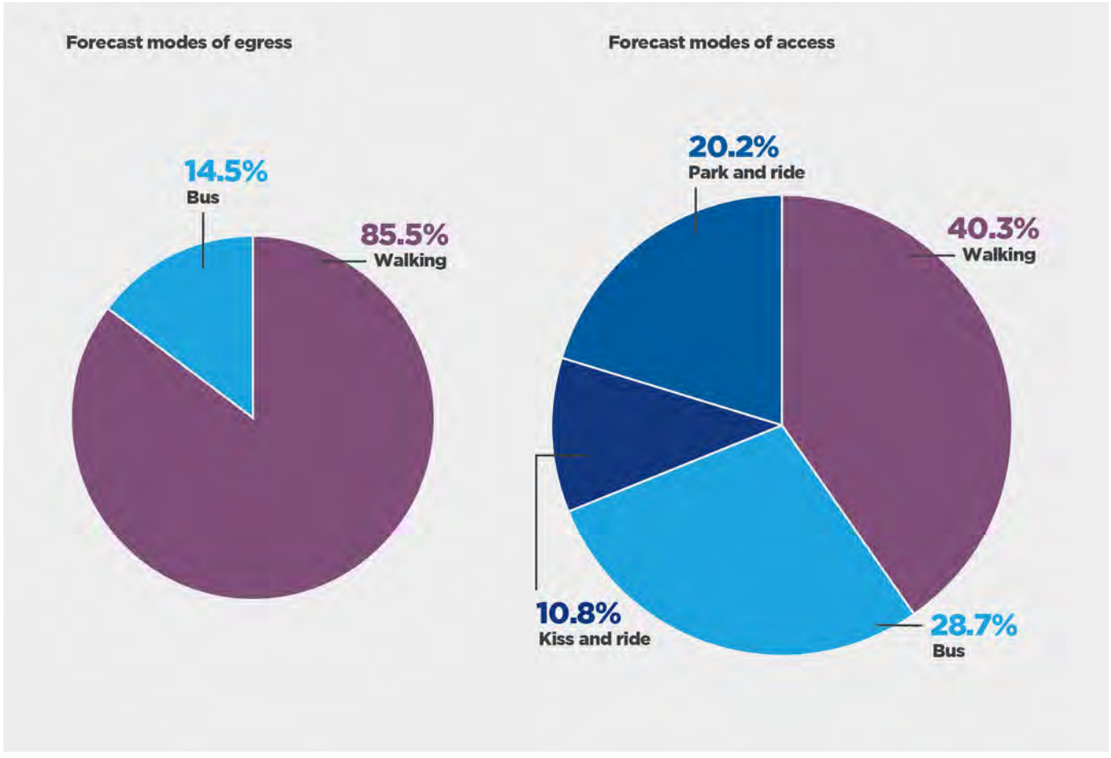
- Light rail.
- Ferry.
- Coach.

Future land use

Land use, transport integration and opportunities

A metro station at Bella Vista will support state and local strategic and planning controls by enabling opportunities for urban renewal including housing diversity and intensification, meeting the needs of residents, workers and visitors, and creating a vibrant, sustainable community that reaches its full economic and social potential. It is expected that a metro station at Bella Vista will have the following specific benefits:

- The station will form part of the interchange that provides safe and direct access to residential and mixed-use land uses surrounding the station that will directly benefit from additional transport connectivity to the Global Economic Corridor.
- The station will provide the opportunity for further development of the area as a vibrant and active centre with strong public transport links to North Sydney, the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure and educational facilities.
- The station will provide opportunities to increase residential densities within walking distance of the station.



2036 3.5-hour AM peak demand and mode splits

Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

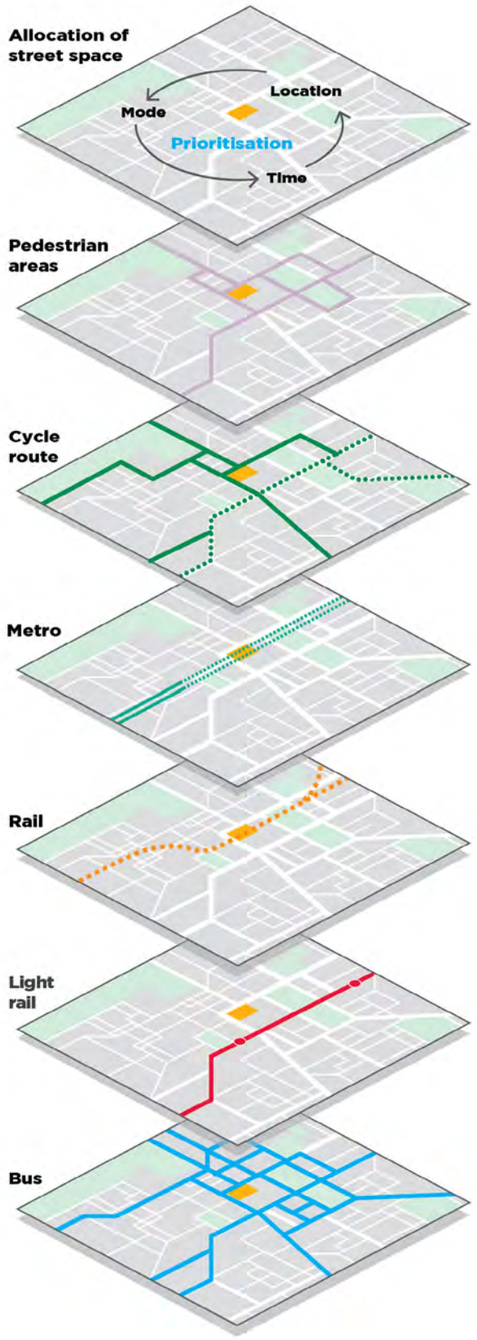
These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and The Hills Shire Council.

Opportunities and constraints

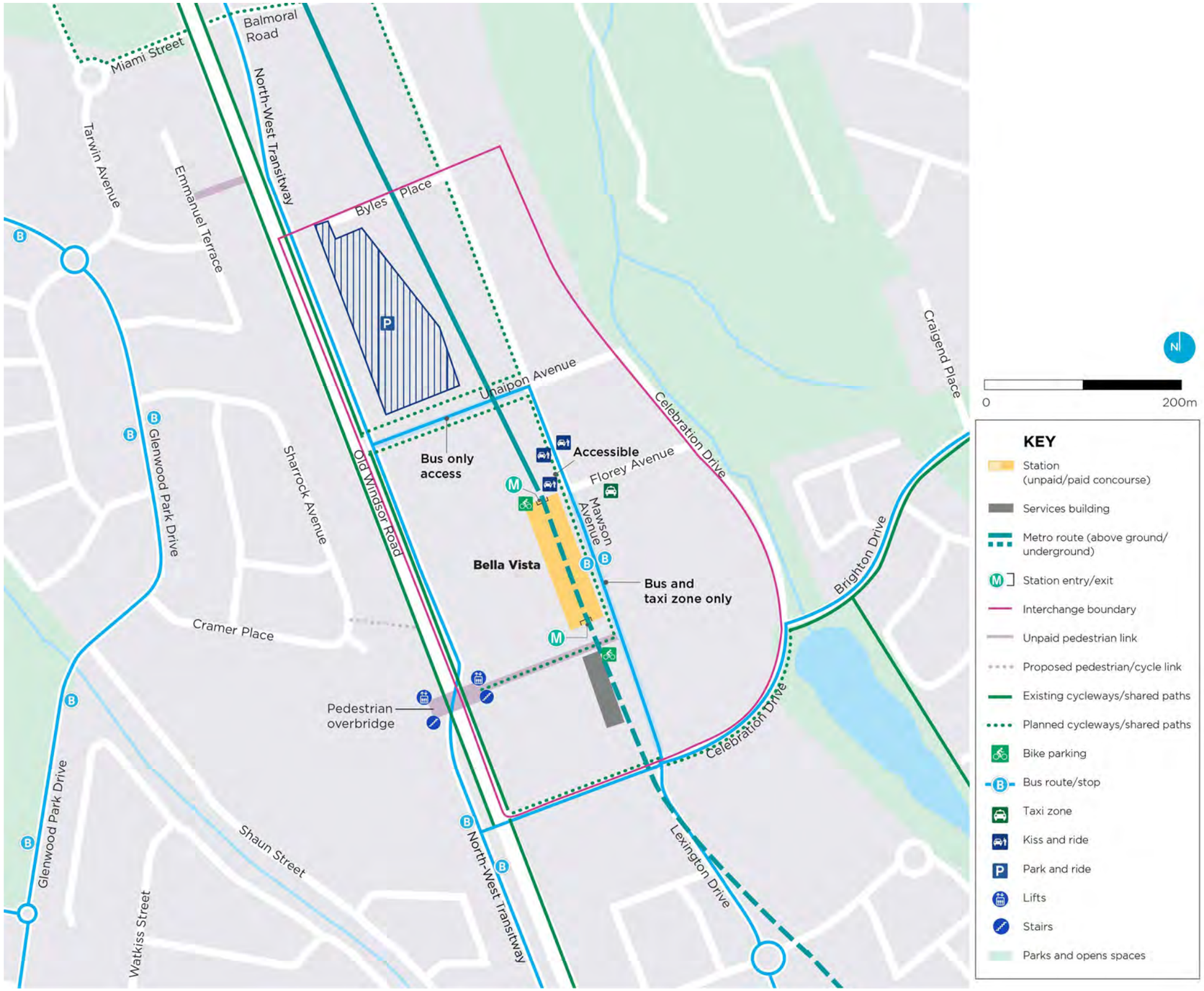
Bella Vista Station has the following urban design opportunities and constraints.

Opportunities	Constraints
• Integrate the metro station with the existing road network to facilitate safe transfers to and from the station and customers' destinations. • Integrate with future development area. • Create a robust 'day one' station precinct and identity. • Establish a key landmark location between the existing business park and future commercial growth area. • Create pedestrian priority streetscapes, connectivity and station address plazas. • Provide a legible and strong framework for the future growth corridor. • Accommodate retail and activation drivers in the station precinct zone. • Ensure visibility and identification from Lexington Drive. • Enhance the linear parkland corridor along Elizabeth Macarthur Creek.	• The need to respond to the future development surrounding the station.

Bella Vista – interchange and transfer requirements overview

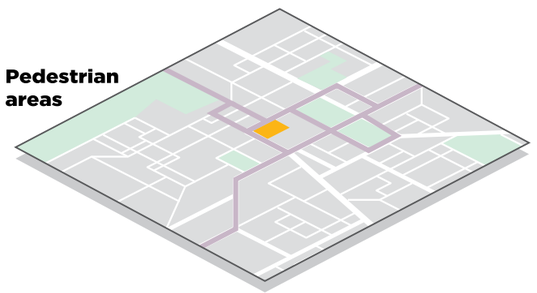


Mode layers



Bella Vista Station – interchange and transfer requirements overview

Bella Vista – walking interchange and transfer requirements



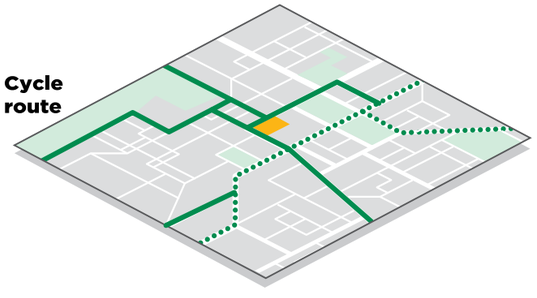
Mode layer

Bella Vista Station – pedestrian interchange and transfer requirements

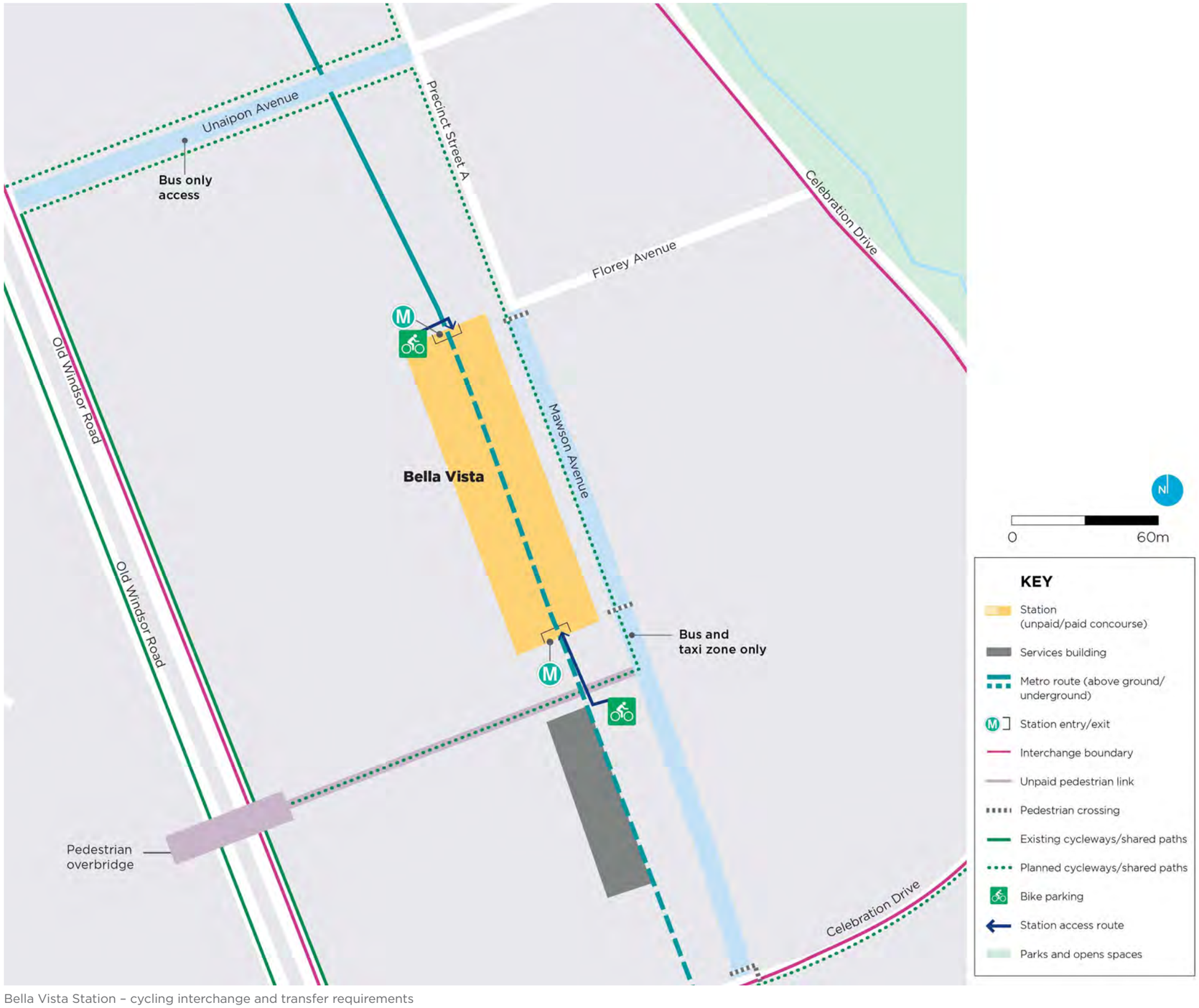
Bella Vista – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Bella Vista is an origin and destination station. The station site has no existing access, however a network of footpaths will serve the pedestrian network surrounding the station.	The majority of pedestrian demand at opening will connect from the residential areas to the east and west of the station. Future demand will originate immediately from the east as the Planned Precinct develops over time.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Station access	The station supports two access points, which require safe, convenient and direct pedestrian routes: • The northern access is from Mawson Avenue, near Florey Avenue.	• The southern access is from Mawson Avenue and the shared path connecting to the pedestrian bridge across Old Windsor Road.
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with employment and residential areas surrounding the station. The pedestrian environment potentially impacted by the proposed station includes: • Pedestrian and cycle access via a shared path (off road). • Pedestrian footbridge over Old Windsor Road.	• Separated shared path linking the southern station concourse and new footbridge. • Signalised crossings at the intersection of Celebration Drive and Lexington Drive. • Retain existing pedestrian crossings at the signalised intersection of Old Windsor Road and Celebration Drive.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by The Hills Shire Council. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant.	• Northern Station Access — Provide access for customers using the commuter car park, and for future development of the Balmoral Road release area and precinct north of the station. • Southern Station Access — Provide for high pedestrian demand over Old Windsor Road to residential precincts and south to the Norwest Business Park. — Provide connectivity to the surrounding residential precincts.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.	• Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from bike parking	The station will provide easy transfer to bike parking facilities located at: • Northern entry – bike shelter. • Southern entry – bike shed.	
Transfer to and from other rail	No design provision is considered for this location.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will provide easy transfer to bus stops on Mawson Avenue.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	The station will provide easy transfer to the taxi rank on Florey Avenue.	
Transfer to and from kiss-and-ride	The station will provide easy transfer to kiss-and-ride zones on Mawson Avenue.	
Transfer to and from park-and-ride	The station will provide easy transfer to park-and-ride spaces accessed from Byles Place.	

Bella Vista – cycling interchange and transfer requirements



Mode layer

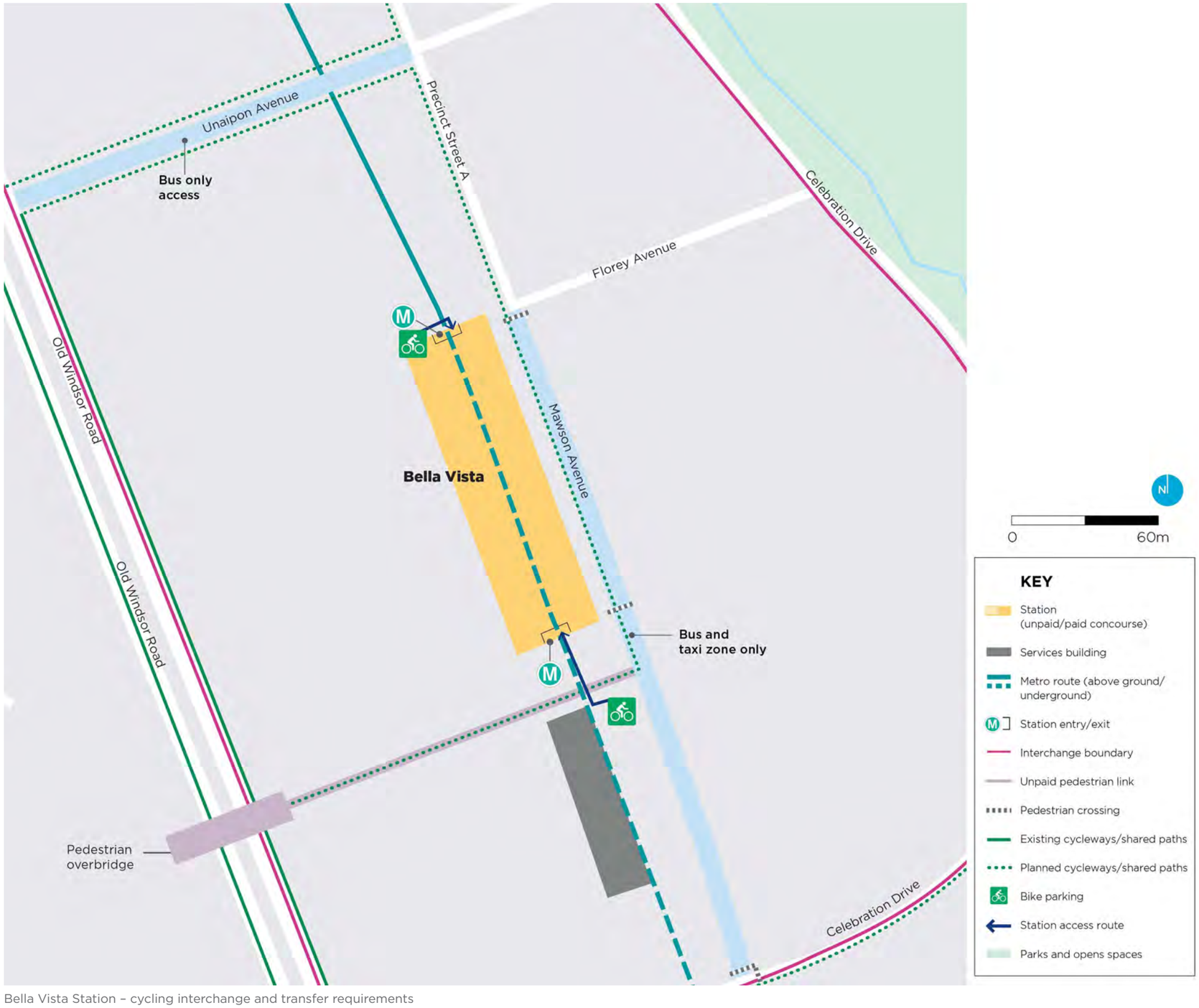


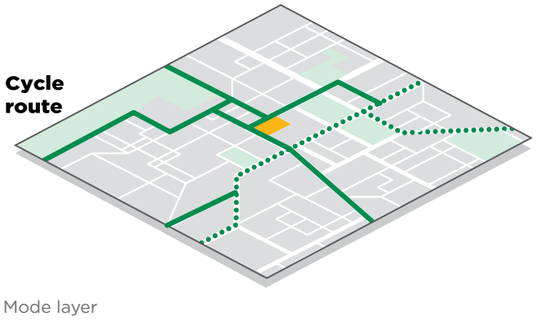
Bella Vista Station – cycling interchange and transfer requirements

Bella Vista – cycling interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	A shared path exists on both sides of Old Windsor Road.	The station and interchange will be designed to allow bicycle riders to move along the local street network and through the station and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 50 metres of the gateline. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	• Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To facilitate cycle transfer within the interchange, bike parking will be provided: • At the northern entrance near Florey Avenue. • At the southern entrance, north of Celebration Drive.	
Types of parking facilities	The bike parking provisions at the station are: • Bike shed for 25 bicycles, with electronic access facility. • Bike racks for 10 bicycles.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shed for 40 bicycles, with electronic access facility. • Bike racks for 40 bicycles.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments.
Closest cycling routes	The existing cycling network surrounding the station is limited. A separated bi-directional bike lane exists on Old Windsor Road.	
New cycle routes by Sydney Metro	• Provide a shared path on northern side of Celebration Drive between Old Windsor Road and Mawson Avenue. • Provide a shared path on southern side of Celebration Drive between Brighton Drive and Lexington Drive. • Provide a shared path on Unaipon Avenue between Old Windsor Road and Mawson Avenue.	• Provide a shared path on western side of Mawson Avenue connecting to Balmoral Road and Balmoral Road Release Area in the north. • Provide pedestrian and cycle connection from station to Brighton Drive in the east, linking with the existing shared path on Brighton Drive. • Investigate provision and location of a separated path connection to the footbridge over Old Windsor Road near the Glenwood residential area.

Bella Vista – cycling interchange and transfer requirements *continued*





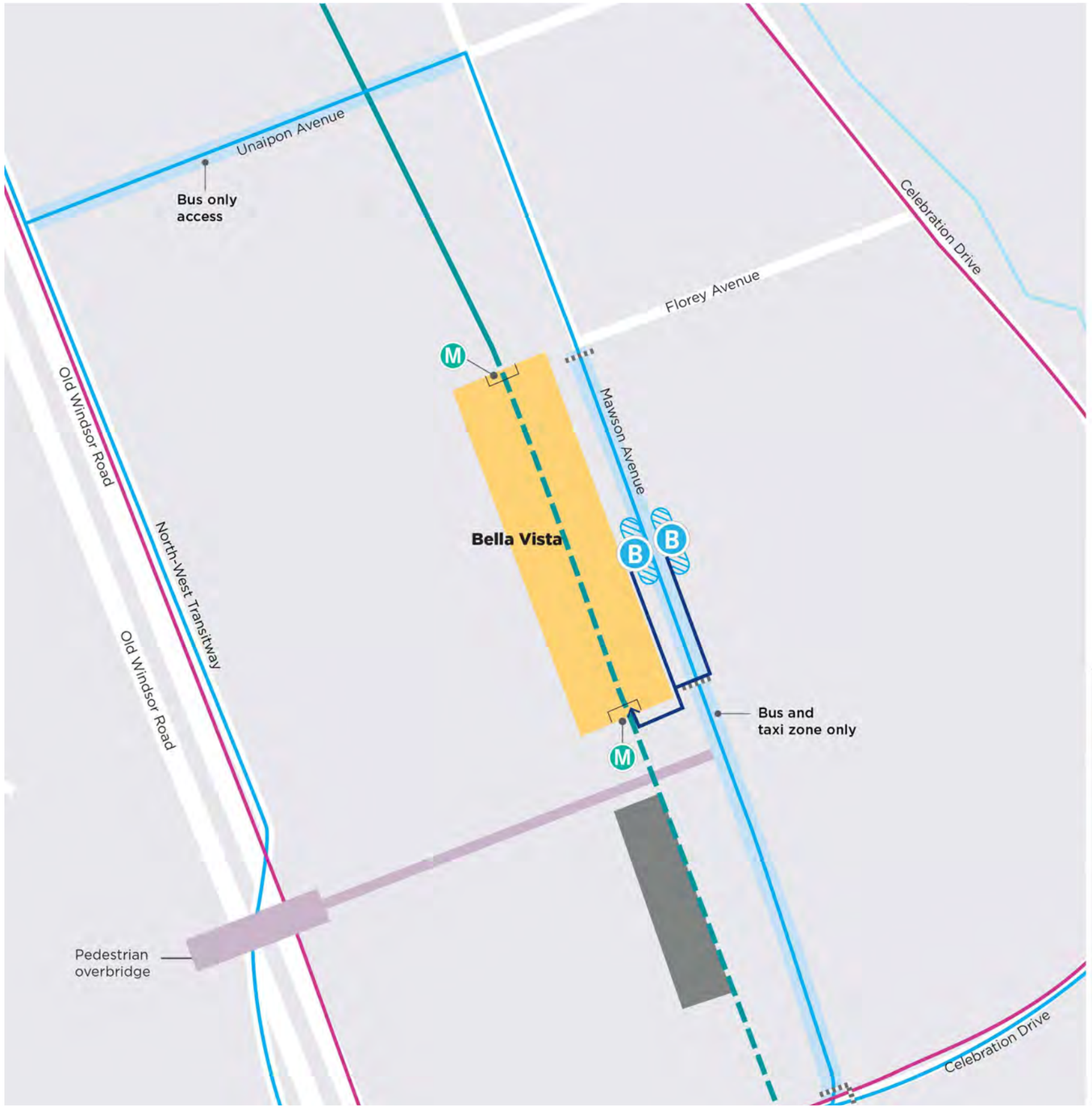
Mode layer

Bella Vista Station – cycling interchange and transfer requirements

Bella Vista – cycling interchange and transfer requirements *continued*

Item	Description	
Cycle routes for consideration by others	• Install separated path on the western side of Old Windsor Road between Celebration Drive and Shaun Street. • Investigate on-road cycling route options west of Old Windsor Road in the Glenwood residential area. • Connect and extend existing separated/shared paths on northern portion of Brighton Drive to link to new Balmoral Road Release Area. • Install separated path on Balmoral Road to link to new Balmoral Road Release Area. The Balmoral Road DCP requires 2.5-metre-wide shared path along full length of one side of Balmoral Road. Developers have already constructed substantial sections of this cycleway. • Investigate provision of a separated path along Shaun Drive or a parallel street to connect residences west of Old Windsor Road to station precinct.	• Provide separated or on-road route on Westwood Way, to Norwest Boulevard, to provide connection to existing shared path network. • 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. • Consider provision of pedestrian and cycle bridge over Memorial Avenue as part of the upgrade being carried out by RMS. • Provide pedestrian and cycle connection between the existing paths within Bella Vista Farm Park and the off-road cycle path on Bella Vista Drive. • Provide pedestrian and cycle links over Elizabeth Macarthur Creek and Waterfall Crescent Reserve connecting to cul-de-sac streets – Meridian Place and Norwest Business Park west at the end of Woolworths Way.

Bella Vista – bus interchange and transfer requirements



Mode layer

Bella Vista Station – bus and light rail interchange and transfer requirements

Bella Vista – bus interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	A number of bus routes operate within the vicinity of Bella Vista Station. These routes are: • 602X – Rouse Hill to North Sydney. • 607X – Rouse Hill to City QVB. • 617X – Rouse Hill to City QVB. • T65 – Rouse Hill Town Hall to Parramatta. • T66 – Rouse Hill to Parramatta.
Current mode splits and intermodal transfer	Not applicable.
Integration	
Closest bus stops/routes	The primary bus stops within the interchange are: • East of station: — Mawson Avenue. • West of the station: — Northwest T-way.
Potential changes to bus stops/route	Potential changes to bus routes to the station are under investigation.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Dedicated footways along local and regional roads. • Signalised controlled pedestrian crossings at the eastern entrance.
Transfer to and from bus	Customers will be able to transfer between bus stops at metro station entries using new and existing footpaths. Where necessary, improvements will be made to signage and wayfinding to ensure an easy customer transfer through improved provision of information.
Transfer to and from bus (overnight)	No design provision is considered for this location.
Transfer to and from bus (school)	No design provision is considered for this location.
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions.*
Bus bays	Bus bays provided or modified by the project shall meet NSW state and Commonwealth guidelines for size and layout. Where a conflict exists, the Commonwealth standard will apply. Where the Commonwealth standard cannot practically apply, the highest practical standard should be provided in excess of NSW state standards and guidelines.
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.

Bella Vista – vehicle drop-off interchange and transfer requirements

Bella Vista Station – vehicle drop-off interchange and transfer requirements

Bella Vista – vehicle drop-off interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Not applicable.
Current mode splits and intermodal transfer	Not applicable.
Integration	
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from taxi	Taxi ranks must be a 130-metre or less walk from the gatelines to the head of the taxi rank. Four new taxi ranks will be provided at: • Florey Avenue.
Transfer to and from kiss-and-ride	Kiss-and-ride zones must be a 130-metre or less walk from the gatelines. 16 new kiss-and-ride zones, including one accessible zone, will be provided at: • Mawson Avenue.
Taxi rank locations	Taxi ranks that service local centres as well as stations are supported as long as they are located within 100 metres of the station access point.
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.

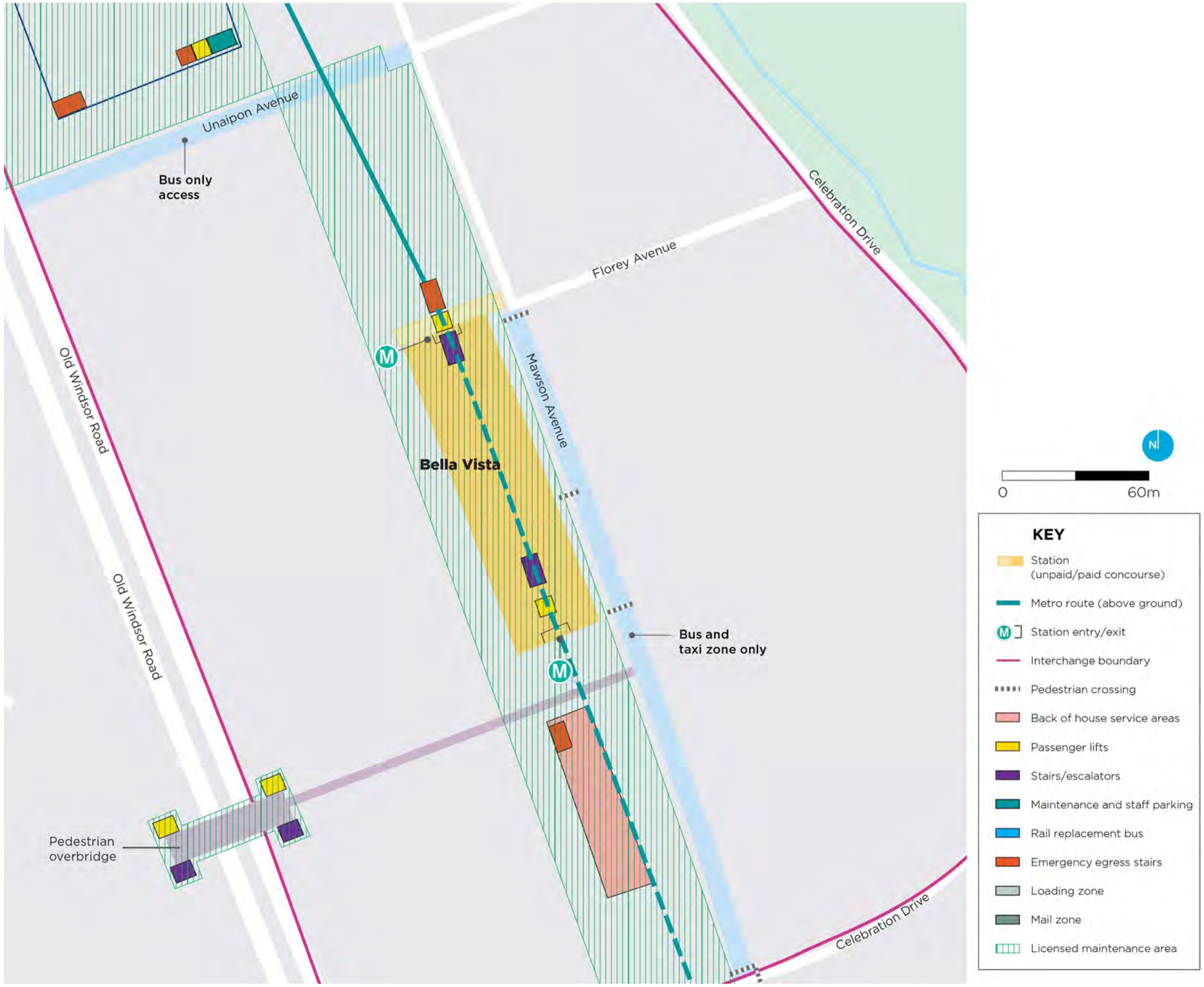
Bella Vista – vehicle parking interchange and transfer requirements

Bella Vista Station – vehicle parking interchange and transfer requirements

Bella Vista – vehicle parking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Not applicable.	
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Park-and-ride spaces required	A total of 800 spaces are required, as follows: • Accessible – 24. • Compact – 120. • Standard – 656.	Car parking bays must be prioritised in order of priority as above, in relation to proximity to the station gateline. In addition to the spaces above, 24 motorcycle parking spaces are required.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.	
Transfer to and from park-and-ride	Park-and-ride zones must be a 400-metre or less walk from the gatelines to the head of the furthest car bay.	The park-and-ride zones within the interchange are accessed from Byles Place.
Accessible parking bays	Accessible parking bays must be compliant with the *Disability Discrimination Act 1992* and the *Disability Standards for Accessible Public Transport 2002*.	
Compact spaces	Compact parking bays (2.5 x 5.0 metres) shall be located together and in a convenient location close to the station entrance.	
Motorcycle parking	Motorcycle and scooter parking shall be allocated to make efficient use of under croft and incidental areas and minimise the need for motorcycles to circulate throughout the car park.	
Meeting point	Where car parking is provided, an accessible designated meeting point shall be provided within each car park, as a place where customers can wait in a safe and secure area to meet breakdown assistance services made at their own arrangement.	

Bella Vista – operations, maintenance and management provisions



Bella Vista Station – operations, maintenance and management provisions

Bella Vista – operations, maintenance and management provisions *continued*

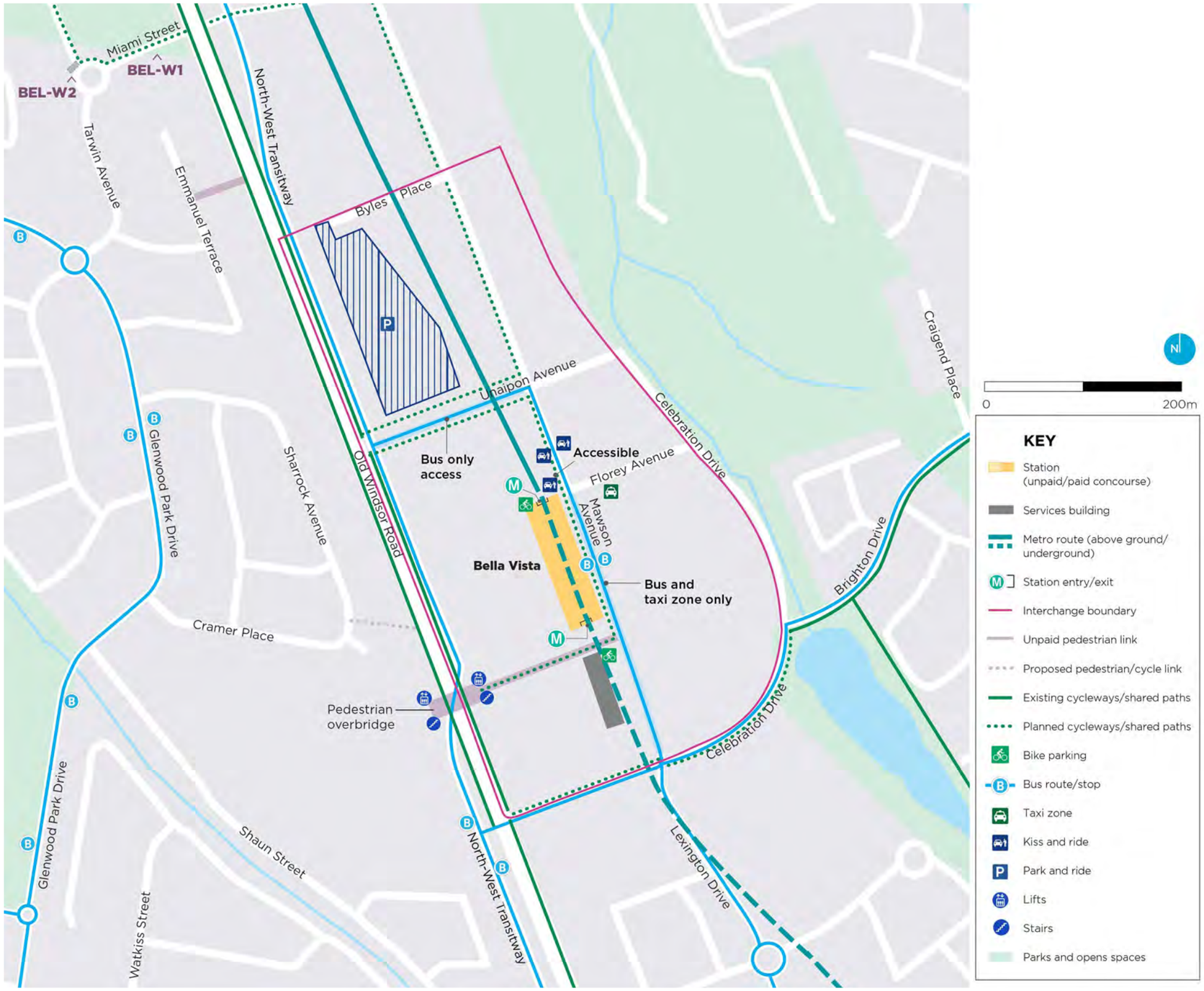
The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Servicing and maintenance access (major)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Rail replacement bus service access	Rail replacement buses will use the bus zone on Mawson Avenue.
Delivery access (retail and operational)	Delivery vehicles will use the on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	Mail zones may be established on an as needed basis with the surrounding development.
Staff car parking	One staff and two maintenance parking spaces will be provided in the multi-level car park.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

Bella Vista – recommendations



Bella Vista Station – recommendations

Bella Vista – recommendations *continued*

This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at Bella Vista Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at Bella Vista Station.

	Action
Walking	
BEL–W1	Install shared path signs and line marking along the northern side of Miami Street shared path between Balmoral Road and Almona Street. There are currently no signs to inform of the shared path. *Proposed scope: Install signs and line marking.*
BEL–W2	Widen the existing pedestrian refuge at the western leg of the of the Miami Street/Almona Street roundabout and install compliant kerb ramps. *Proposed scope: Remove kerb within the refuge and widen the crossing.*
Park-and-ride	
BEL–P1	As an outcome of the Parking Management Strategy, install parking management recommendations. *Proposed scope: Install signs and line marking.*
Wayfinding	
BEL–S1	Improve wayfinding and general information for walking and bicycle rider customers informing of the surrounding networks outside the interchange area that connect to the station. *Proposed scope: Install signs and line marking.*
Management and maintenance	
BEL–M1	Document operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

Norwest

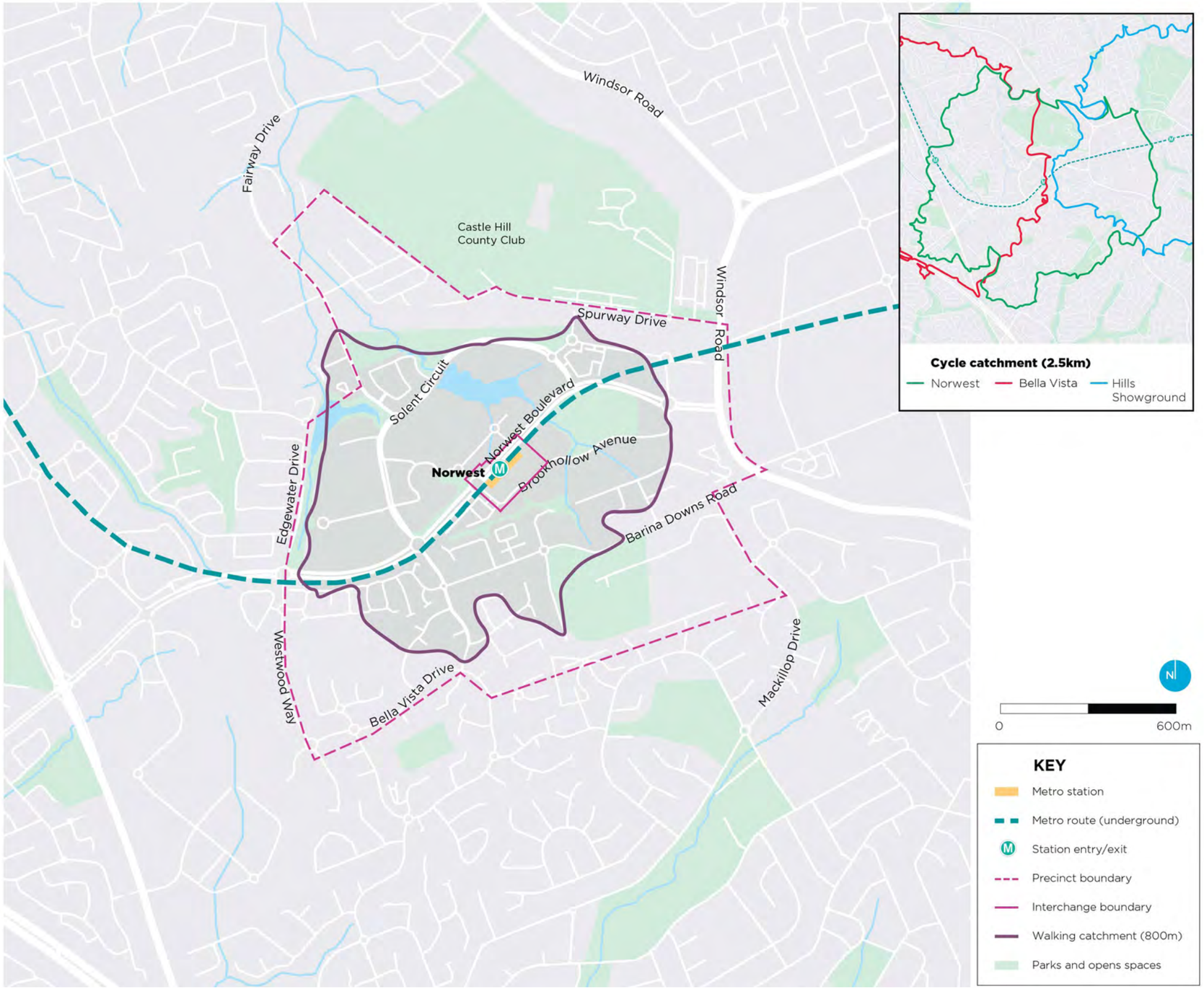
Norwest – local context

Norwest Station will provide a new underground station, south of Norwest Boulevard at the corner of Norwest Boulevard and Brookhollow Avenue.

It will be a major bus-rail interchange station serving the Norwest Business Park, with no park-and-ride spaces.

Norwest Station will be accessible from a plaza on the corner of Norwest Boulevard and Brookhollow Avenue. An additional entry will be via a pedestrian tunnel underneath Norwest Boulevard.

The entrance will provide access to surrounding employment and community facilities, and residential areas.



Norwest Station – local context

Norwest – local context *continued*

Norwest Station will be within the Norwest Business Park.

A metro station at Norwest will support the surrounding Norwest Business Park, providing access to current and future employment, as well as existing and future residential development in the area. It will also provide access to Norwest Marketown.

Station strategy

The station strategy for Norwest is to:

- Provide easy, safe and intuitive transfer to and from the metro station within the existing network and road environment.
- Increase public transport access to the surrounding existing and future employment, residential and community facilities areas.
- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Feature	Description
Location	• Underground, approximately 21 metres below street level, on the southern side of Norwest Boulevard at the corner of Brookhollow Avenue.
LGA	• The Hills Shire Council.
Station entry	• A western plaza entry from Brookhollow Avenue. • A northern entry via a north-south pedestrian tunnel underneath Norwest Boulevard.
Transport interchange	• Walking, cycling, bus, taxi and kiss-and-ride.
Main features and traffic arrangements	• Signalisation of intersection of Norwest Boulevard, Brookhollow Avenue and Century Circuit. • Taxi and kiss-and-ride zones on Brookhollow Avenue. • If required, RMS may undertake right-turn bay extensions and other works to accommodate growth.
Customers	• Employment, community and residential precincts.
Key attractions	• Bella Vista Farm Park. • Bella Vista Village Centre. • Castle Hill Country Club. • Charles McLaughlin Reserve. • Crestwood Community Centre. • Crestwood High School. • Crestwood Public School. • Hillsong Church. • Hillsong Performing Arts Academy. • Museums Discovery Centre. • Norwest Business Park. • Norwest Marketown. • St Joseph's Centre. • St Michael's School. • Sydney Ice Arena.

Current land use and characteristics

Existing land use and characteristics

The area around Norwest Station was established in 1998 with the development of the Norwest Business Park north of the station. The park is characterised by large-format campus-style commercial buildings of between three and five storeys, located within a modern landscaped setting. Wide roads, large setbacks and established native trees and vegetation separate buildings and create a relaxed and park-like atmosphere that complements the man-made recreational lakes and walking tracks within the area.

Also to the north is the Balmoral Road Release Area, which is being developed for housing and employment.

Parklands close to the station include the Bella Vista Farm Park, reservoir and Village Green, as well as some residential and retail land uses, including Norwest Marketown.

South of the business park is Bella Vista, with over 2,000 dwellings, a 22-hectare heritage park and more than 30 hectares of recreational space.

The vast majority of housing in the Norwest area are large single detached dwellings, with some medium-density options being developed (townhouses and low-rise apartments).

Existing station precinct strategic planning context

The *Draft West Central District Plan* (Greater Sydney Commission 2016) aims to capture new opportunities generated by Sydney Metro Northwest and other investments, to build a more connected district. The plan has the following actions that are potentially relevant to Norwest Station:

- Align land use planning and infrastructure planning.
- Provide design-led planning to support high-quality urban design.
- Support the development of initiatives for a sustainable low carbon future.

The plan also states that completion of Sydney Metro Northwest will improve access to employment across the district. Norwest is identified as a Strategic Centre, with a job target range of 49,000 to 53,000 by 2036.

The Department of Planning and Environment (DP&E) is working closely with local councils to deliver the *Sydney Metro Northwest Priority Urban Renewal Corridor*. This strategy aims to deliver new homes, jobs, cafes and parks along the rail line.

The *Norwest Station Structure Plan* (DP&E 2013) has identified future growth areas for the area. The 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 will be high-density residential with seven- to 12-storey apartments. The second sub-precinct will be south of the station, with medium-density three- to six-storey apartments. Beyond this, low-density dwellings will be north-west of the station, with townhouses, duplexes and single detached dwellings.

Green links are proposed between Fairway Drive and Castle Hill Country Club Golf Course, and along the eastern side of Edgewater Drive, using existing open space.

Norwest – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Norwest, as these modes are not available at this station:

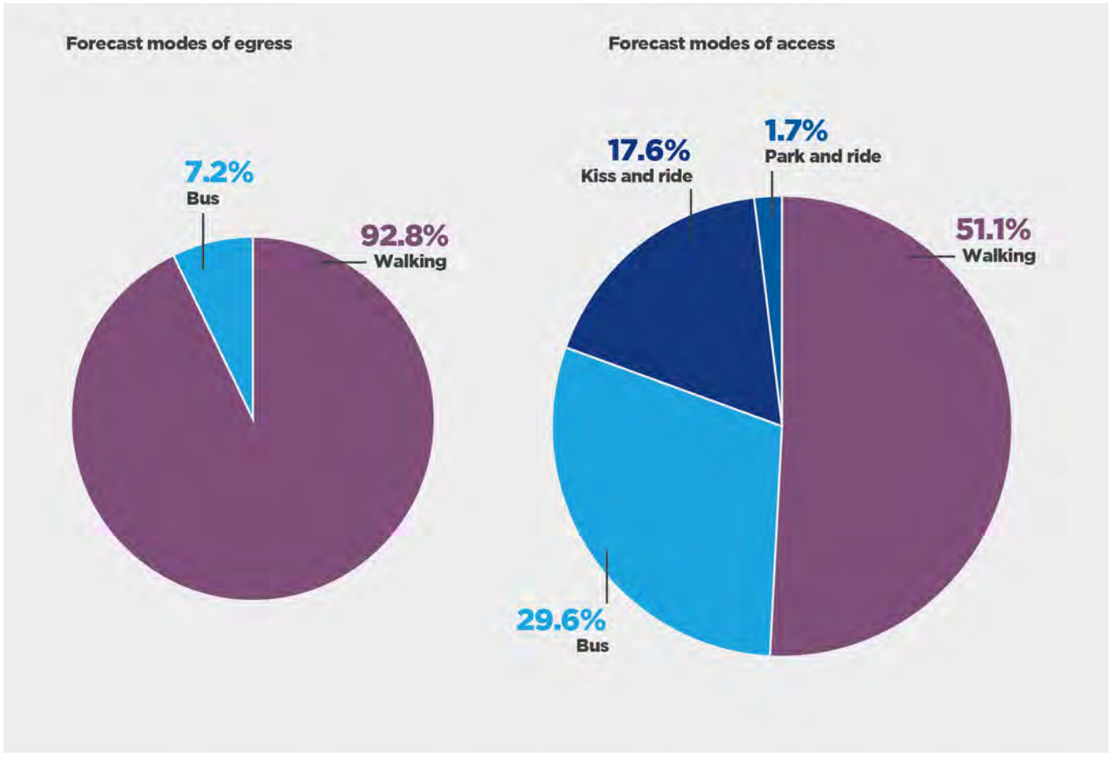
- Light rail.
- Ferry.
- Park-and-ride.
- Coach.

Future land use

Land use, transport integration and opportunities

A metro station at Norwest will support state and local strategic and planning controls by enabling opportunities for urban renewal including housing diversity and intensification, meeting the needs of residents, workers and visitors, and creating a vibrant, sustainable community that reaches its full economic and social potential. It is expected that a metro station at Norwest will have the following specific benefits:

- The station will form part of the interchange that provides safe and direct access to residential and mixed-use land uses surrounding the station that will directly benefit from additional transport connectivity to the Global Economic Corridor.
- The station will provide the opportunity for further development of the area as a vibrant and active centre with strong public transport links to North Sydney, the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure and educational facilities.
- The station will provide opportunities to increase residential densities within walking distance of the station.



2036 3.5-hour AM peak demand and mode splits

Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

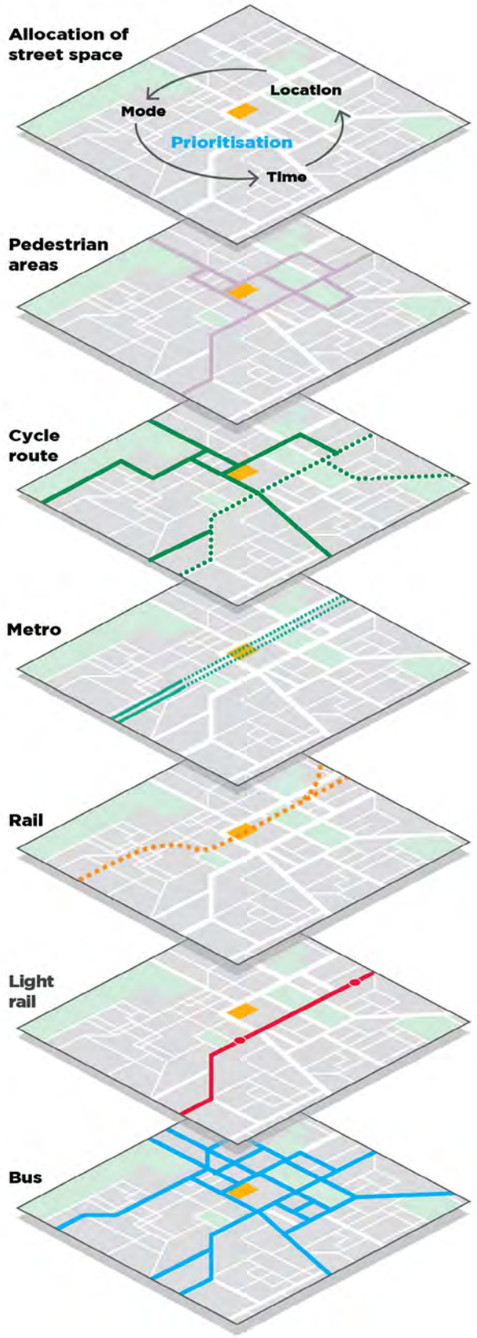
These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and The Hills Shire Council.

Opportunities and constraints

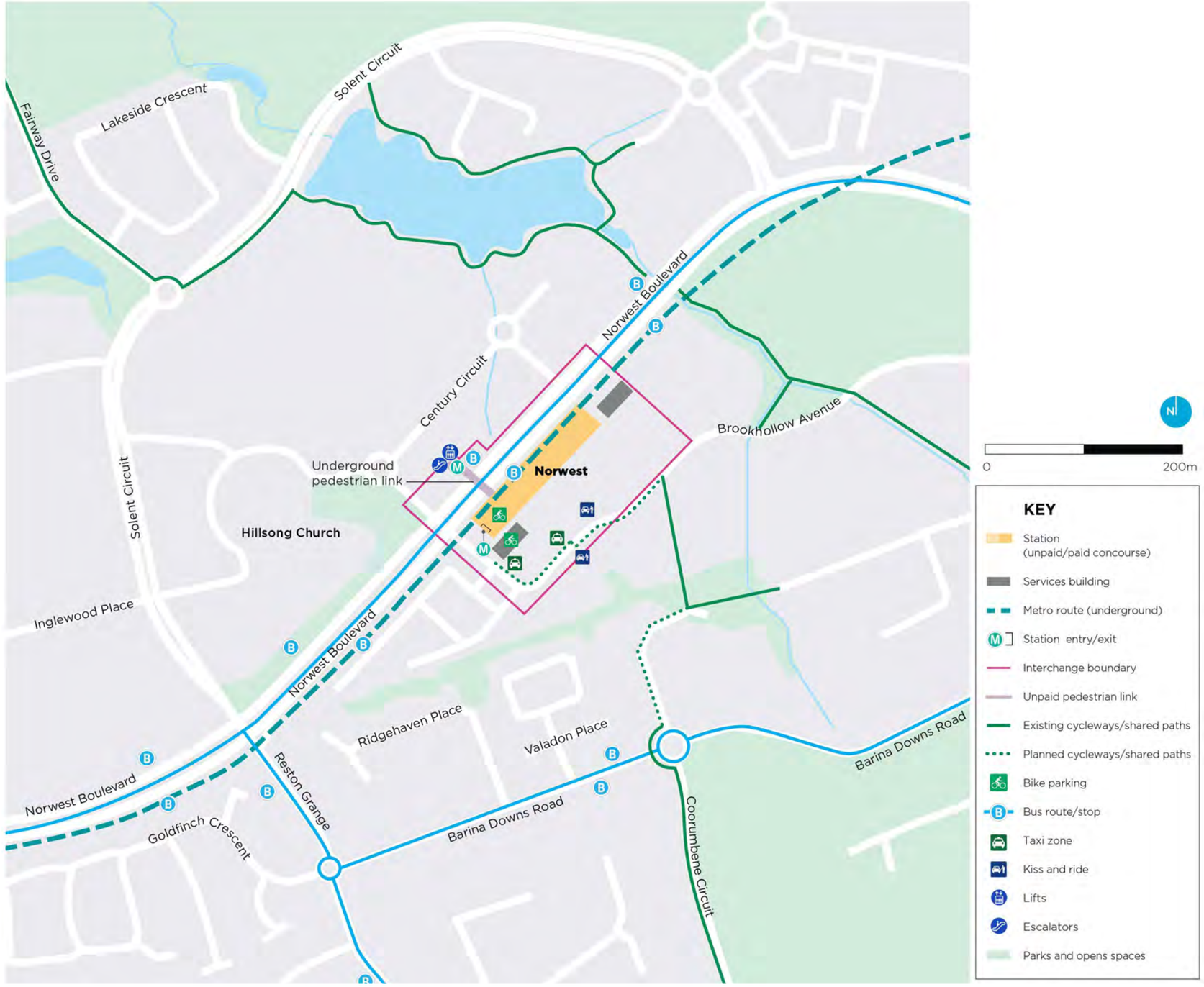
Norwest Station has the following urban design opportunities and constraints.

Opportunities	Constraints
• Integrate the metro station with the existing road network to facilitate safe transfers to and from the station and customers' destinations. • Provide an accessible, attractive and safe environment for pedestrians that mitigates the impacts of Norwest Boulevard and links to surrounding land uses. • Integrate with new commercial development. • Underpin renewal of the surrounding business park as a major transit oriented employment centre for north-west Sydney. • Ensure visibility and identification from Norwest Boulevard. • Ensure simple and legible access for all modes of transport. • Create a robust 'day one' station precinct and identity. • Ensure flexibility by planning for future RMS expansion of Norwest Boulevard. • Safeguard links to future developments.	• Consider the existing streetscape including median and street trees. • Consider future road network upgrades and access provisions surrounding the station.

Norwest – interchange and transfer requirements overview



Mode layers



Norwest Station – interchange and transfer requirements overview

Norwest – walking interchange and transfer requirements

Mode layer

Norwest Station – pedestrian interchange and transfer requirements

Norwest – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Norwest is an origin and destination station. The station site has no existing access, however an existing network of footpaths serves the pedestrian network surrounding the station.	The majority of pedestrian demand at opening will connect from and to all directions surrounding the station.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Station access	The station supports two access points, which require safe, convenient and direct pedestrian routes: • The western access is on Brookhollow Avenue, at the intersection with Norwest Boulevard.	• The northern access via a north-south pedestrian tunnel underneath Norwest Boulevard, at the intersection with Brookhollow Avenue.
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with employment, community and residential areas surrounding the station.	The pedestrian environment potentially impacted by the proposed station includes: • Pedestrian and cycle access via a shared path (off road), linking to Brookhollow Avenue through to the north of Norwest Boulevard. • Signalised crossing at the junction of Norwest Boulevard and Brookhollow Avenue.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by The Hills Shire Council. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant.	• Western Station Access — Provide for high pedestrian demand south-west to the Norwest Business Park. — Provide connectivity to the surrounding residential precincts. • Northern Station Access — Provide for high pedestrian demand across Norwest Boulevard to residential precincts and Norwest Marketown.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.	• Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from bike parking	The station will provide easy transfer to bike parking facilities located at: • Brookhollow Avenue (southern side of station entry plaza) – bike shed and racks.	
Transfer to and from other rail	No design provision is considered for this location.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will provide easy transfer to bus stops on Norwest Boulevard.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	The station will provide easy transfer to the taxi rank on Brookhollow Avenue.	
Transfer to and from kiss-and-ride	The station will provide easy transfer to kiss-and-ride zones on Brookhollow Avenue.	
Transfer to and from park-and-ride	No design provision is considered for this location.	

Norwest – cycling interchange and transfer requirements

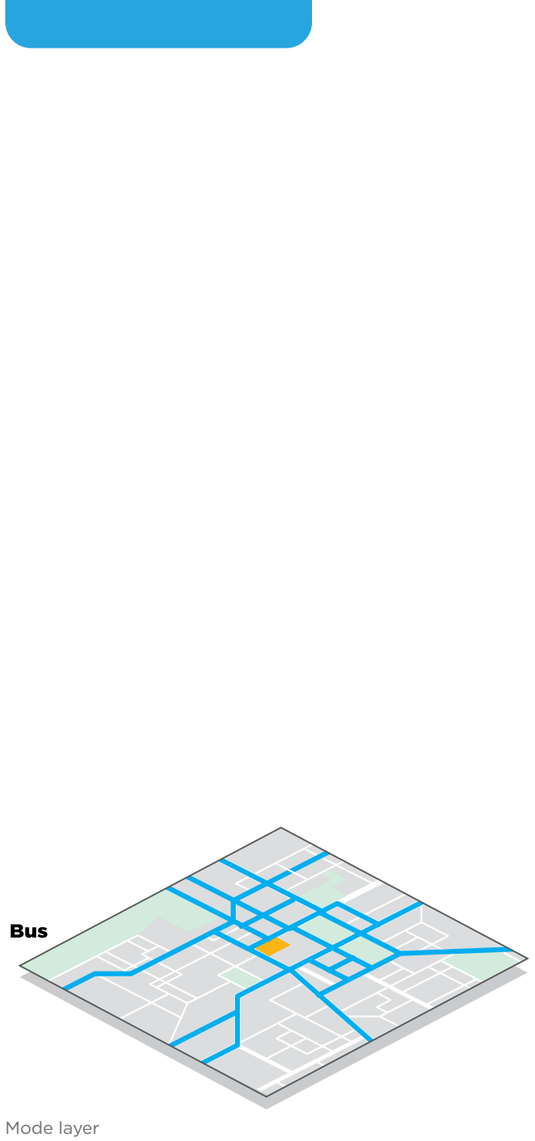
Mode layer

Norwest Station – cycling interchange and transfer requirements

Norwest – cycling interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	The nearby cycle facilities to the station are along Elizabeth Macarthur Creek, Windsor Road and Whiteman Avenue.	The station and interchange will be designed to allow bicycle riders to move through the station and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 50 metres of the gateline. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	• Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To facilitate cycle transfer within the interchange, bike parking will be provided: • At the southern side of the station entrance plaza on Brookhollow Avenue.	
Types of parking facilities	The bike parking provisions at the station are: • Bike shed for 25 bicycles, with electronic access facility. • Bike racks for 10 bicycles.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shed for 35 bicycles, with electronic access facility. • Bike racks for 30 bicycles.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments.
Closest cycling routes	Shared paths exist on Fairway Drive, Coorunbene Circuit and Whiteman Avenue.	
New cycle routes by Sydney Metro	• Install a off-road shared path on north side of Brookhollow Avenue within station precinct between station entry plaza and recommended crossing of Brookhollow Avenue.	
Cycle routes for consideration by others	• 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. • 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. • 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.	• Complete missing section of shared path on Edgewater Drive. • Consider future provision of pedestrian and cycle separated path to create a dedicated link between the Balmoral Road Release Area and Norwest Boulevard, including upgraded crossing facility at the intersection of Solent Circuit and Fairway Drive. • Connect discontinued shared path along Fairmont Avenue and Barina Downs Road. • Link shared path between Brookhollow Avenue and Norwest Boulevard. Safeguard for extension of sub-surface pedestrian link to the new development in the north.

Norwest – bus interchange and transfer requirements



Mode layer

Norwest Station – bus and light rail interchange and transfer requirements

Norwest – bus interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	A number of bus routes operate within the vicinity of Norwest Station. These routes are: • 618X – City to Norwest Business Park via Lane Cove Tunnel. • 628 – Norwest to Chatswood. • 715 – Norwest Business Park to Seven Hills. • 745 – St Marys to Castle Hill via Stanhope Gardens. • T62 – Castle Hill to Parramatta via Bella Vista and North-West T-way. • T64 – Rouse Hill Town Hall to Parramatta via Kellyville. • T70 – Castle Hill to Blacktown via Glenwood.
Current mode splits and intermodal transfer	Not applicable.
Integration	
Closest bus stops/routes	The primary bus stops within the interchange are: • West of station: — Norwest Boulevard.
Potential changes to bus stops/route	Potential changes to bus routes to the station are under investigation.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Dedicated footways along local and regional roads. • Signalised controlled pedestrian crossings across Norwest Boulevard. • Underground pedestrian link under Norwest Boulevard.
Transfer to and from bus	Customers will be able to transfer between bus stops at metro station entries using new and existing footpaths. Where necessary, improvements will be made to signage and wayfinding to ensure an easy customer transfer through improved provision of information.
Transfer to and from bus (overnight)	No design provision is considered for this location.
Transfer to and from bus (school)	No design provision is considered for this location.
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions.*
Bus bays	Bus bays provided or modified by the project shall meet NSW state and Commonwealth guidelines for size and layout. Where a conflict exists, the Commonwealth standard will apply. Where the Commonwealth standard cannot practically apply, the highest practical standard should be provided in excess of NSW state standards and guidelines.
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.

Norwest – vehicle drop-off interchange and transfer requirements

Norwest Station – vehicle drop-off interchange and transfer requirements

Norwest – vehicle drop-off interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Not applicable.
Current mode splits and intermodal transfer	Not applicable.
Integration	
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from taxi	Taxi ranks must be a 200-metre or less walk from the gatelines to the head of the taxi rank. Nine new taxi ranks will be provided at: • Brookhollow Avenue.
Transfer to and from kiss-and-ride	Kiss-and-ride zones must be a 200-metre or less walk from the gatelines. Nine new kiss-and-ride zones, including one accessible zone, will be provided at: • Brookhollow Avenue.
Taxi rank locations	Taxi ranks that service local centres as well as stations are supported as long as they are located within 100 metres of the station access point.
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.

Norwest – operations, maintenance and management provisions

Norwest Station – operations, maintenance and management provisions

Norwest – operations, maintenance and management provisions *continued*

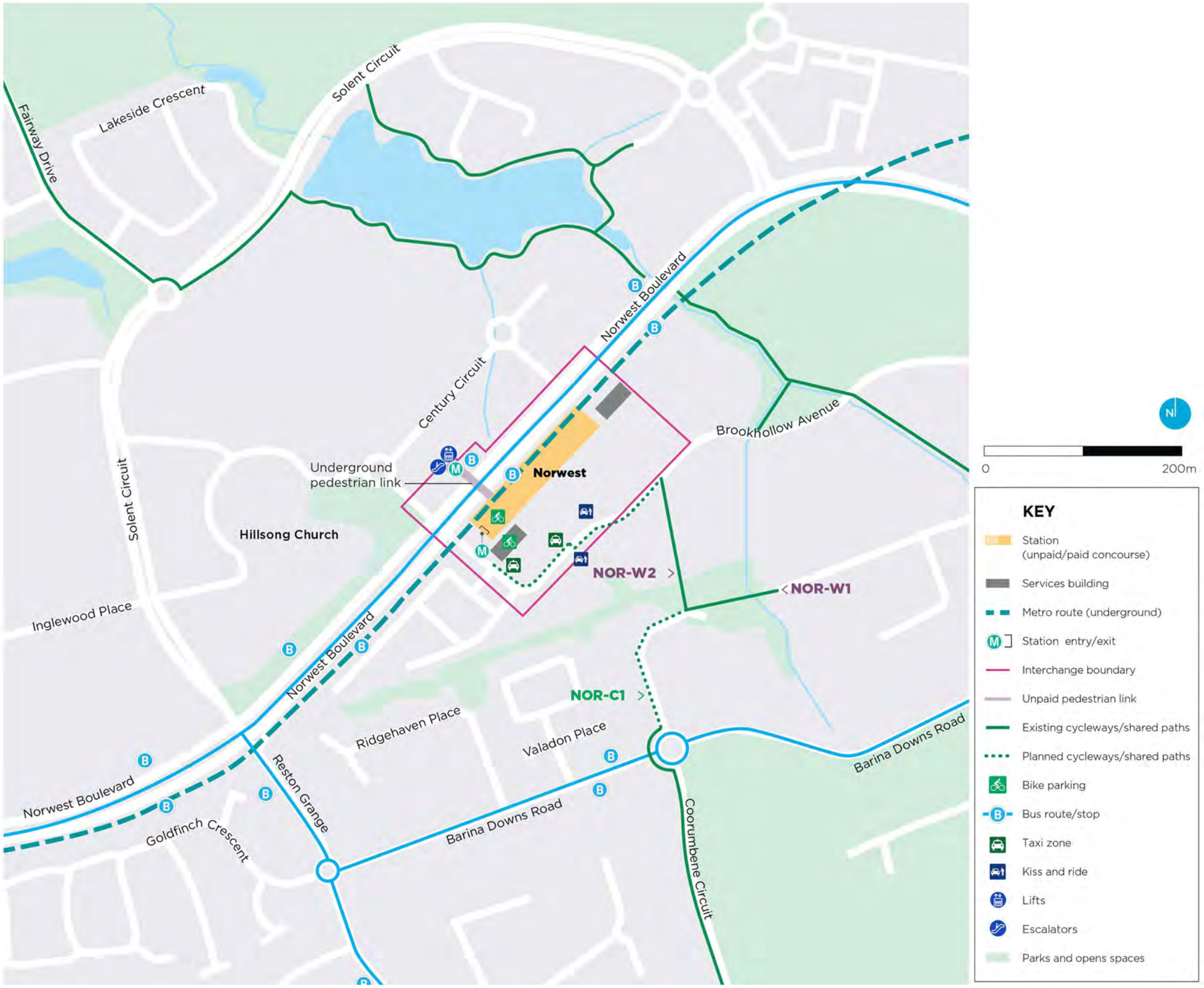
The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Servicing and maintenance access (major)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Rail replacement bus service access	Rail replacement buses will use the bus zone on Norwest Boulevard.
Delivery access (retail and operational)	Delivery vehicles will use the on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	Mail zones may be established on an as needed basis with the surrounding development.
Staff car parking	One staff and two maintenance parking spaces will be accessed via the driveway on Norwest Boulevard.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

Norwest – recommendations



Norwest Station – recommendations

Norwest – recommendations *continued*

This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at Norwest Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at Norwest Station.

	Action
Walking	
NOR–W1	There are currently no signs to inform walking and cycling customers of the surrounding network, which results in a disconnected walking and cycling network. Install signs and line marking along the existing shared path that connects between Evesham Court, Fairmont Avenue and Brookhollow Avenue. *Proposed scope: Install signs and line marking.*
NOR–W2	Existing path is too narrow to accommodate pedestrians and bicycle riders and has a paving surface which result in tripping hazards. Install a 150-metre concrete shared path between Brookhollow Avenue and Evesham Court. *Proposed scope: Remove existing paving, install a 150-metre-long, 2.5-metre-wide shared path, signs and line markings, and cut back landscaping.*
Cycling	
NOR–C1	Disconnected cycle route information provides gaps in the network. Install on-road bicycle symbols along Evesham Court for 160 metres to connect Brookhollow Avenue with Whiteman Avenue. *Proposed scope: Install bicycle symbols.*
Park-and-ride	
NOR–P1	As an outcome of the Parking Management Strategy, install parking management recommendations. *Proposed scope: Install signs and line marking.*
Wayfinding	
NOR–S1	Improve wayfinding and general information for walking and bicycle rider customers informing of the surrounding networks outside the interchange area that connect to the station. *Proposed scope: Install signs and line marking.*
Management and maintenance	
NOR–M1	Document operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

Hills Showground

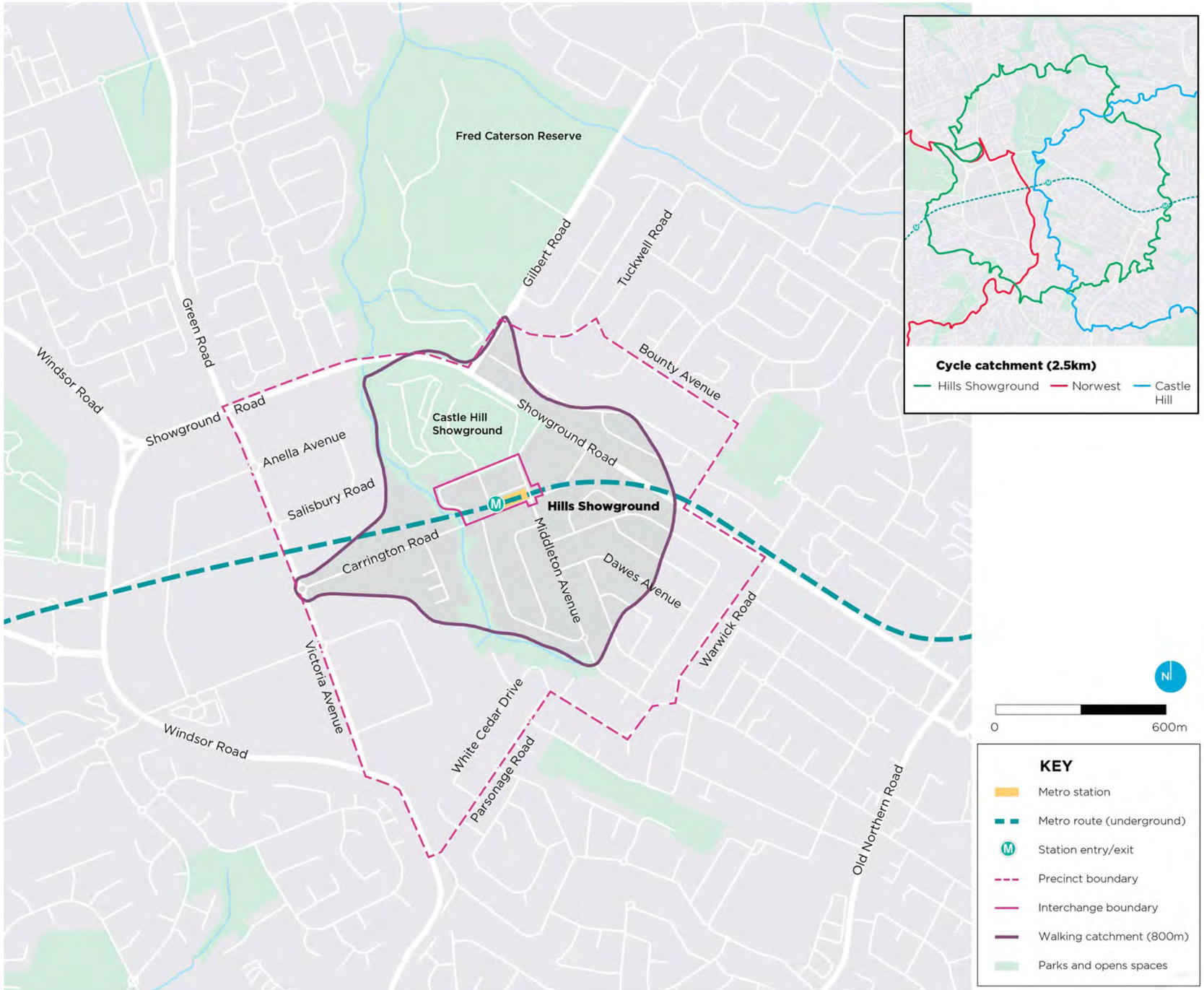
Hills Showground – local context

Hills Showground Station will provide a new underground station, on Doran Drive, north of Carrington Road between Showground Road and Cattai Creek.

It will be an interchange and park-and-ride station, with 600 park-and-ride spaces.

Hills Showground Station will be accessible from a plaza on Doran Drive.

The entrance will provide access to surrounding employment, recreational and residential areas.



Hills Showground Station – local context

Hills Showground – local context *continued*

Hills Showground Station will be the catalyst for the evolution of the showground precinct into a village centre.

A metro station at Hills Showground will support the Castle Hill Showground, and provide access to current and future employment, as well as existing and future residential development in the area.

Station strategy

The station strategy for Hills Showground is to:

- Provide easy, safe and intuitive transfer to and from the metro station within the existing network and road environment.
- Increase public transport access to the surrounding existing and future employment, recreational and residential areas.
- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Feature	Description
Location	• Underground, approximately 16.6 metres below street level, on the northern side of Carrington Road between Showground Road and Cattai Creek.
LGA	• The Hills Shire Council.
Station entry	• A plaza entry from Doran Drive.
Transport interchange	• Walking, cycling, bus, taxi, kiss-and-ride and park-and-ride.
Main features and traffic arrangements	• New station access road (De Clambe Drive) off Carrington Road to the west of the Ashford Avenue intersection (one lane each direction). • Multi-story 600-space car park west of Doran Drive, with access via De Clambe Drive. • Upgrade Doran Drive to accommodate two traffic lanes at intersection and provide bus stops, and taxi and kiss-and-ride zones close to station entrance. • Provide access to the Showground area via Doran Drive. • Signalisation of intersection of Doran Drive with Carrington Road (subject to RMS approval). • New road (De Clambe Drive) linking Doran Drive and Showground Road, with signalised intersection on Showground Road between existing signalised intersections of Gilbert and Carrington Roads (subject to RMS approval). The new intersection would allow all traffic movements except for right turns from De Clambe Drive to Showground Road, which would be restricted to buses only. • Two bus stops on each side of Doran Drive close to station entrance.
Customers	• Employment, recreational and residential precincts.
Key attractions	• Castle Hill Cemetery. • Castle Hill High School. • Castle Hill Industrial Area. • Castle Hill RSL Club. • Castle Hill Showground. • Castle Hill TAFE. • Cattai Creek. • Cockayne Reserve. • Excelsior Public School. • Fred Caterson Reserve. • Hills District Pony Club. • Hills Sports Stadium.

Current land use and characteristics

Existing land use and characteristics

The area around Hills Showground Station is well established.

The majority of the area to the east of the station and surrounding the industrial area consists of low-density residential dwellings, typically one- and two-storey brick veneer houses with generous street setbacks, established trees and landscaping.

To the north are Castle Hill Showground and Fred Caterson Reserve, which is a large recreational and open space area accessed from the station precinct via a bike track along Cattai Creek.

To the west, the Castle Hill Industrial Area includes a diverse range of commercial land uses, including light industrial, warehousing and large-scale bulky goods retail.

Existing station precinct strategic planning context

The *Draft West Central District Plan* (Greater Sydney Commission 2016) aims to capture new opportunities generated by Sydney Metro Northwest and other investments, to build a more connected district. The plan has the following actions that are potentially relevant to Hills Showground Station:

- Align land use planning and infrastructure planning.
- Provide design-led planning to support high-quality urban design.
- Support the development of initiatives for a sustainable low carbon future.

The plan also states that completion of Sydney Metro Northwest will improve access to employment across the district.

The Department of Planning and Environment (DP&E) is working closely with local councils to deliver the *Sydney Metro Northwest Priority Urban Renewal Corridor*. This strategy aims to deliver new homes, jobs, cafes and parks along the rail line. It also identifies Hills Showground as a Planned Precinct, with the vision to create 'The Hills' cultural and innovation precinct'. The precinct will have new public spaces including a new town square opposite the station, open space and neighbourhood parks, and more accessible natural spaces adjoining Cattai Creek.

The *Showground Station Structure Plan* (DP&E 2013) has identified future growth areas surrounding the precinct. The station site has been identified as a Planned Precinct. More intensive commercial development will be west of the station. The area around Victoria Avenue will be reinforced as a bulky goods retail corridor and existing industrial zoned areas that provide employment lands, services and goods will be retained and reinforced.

Future residential development will be isolated to the area immediately surrounding the station precinct, including a range of higher-density residential development within the mixed-use area. This will be complemented by medium-density residential development to the east of the station.

A green link is proposed between Cockayne Reserve, Castle Hill Showground and Fred Caterson Reserve, using existing open space.

Hills Showground – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Hills Showground, as these modes are not available at this station:

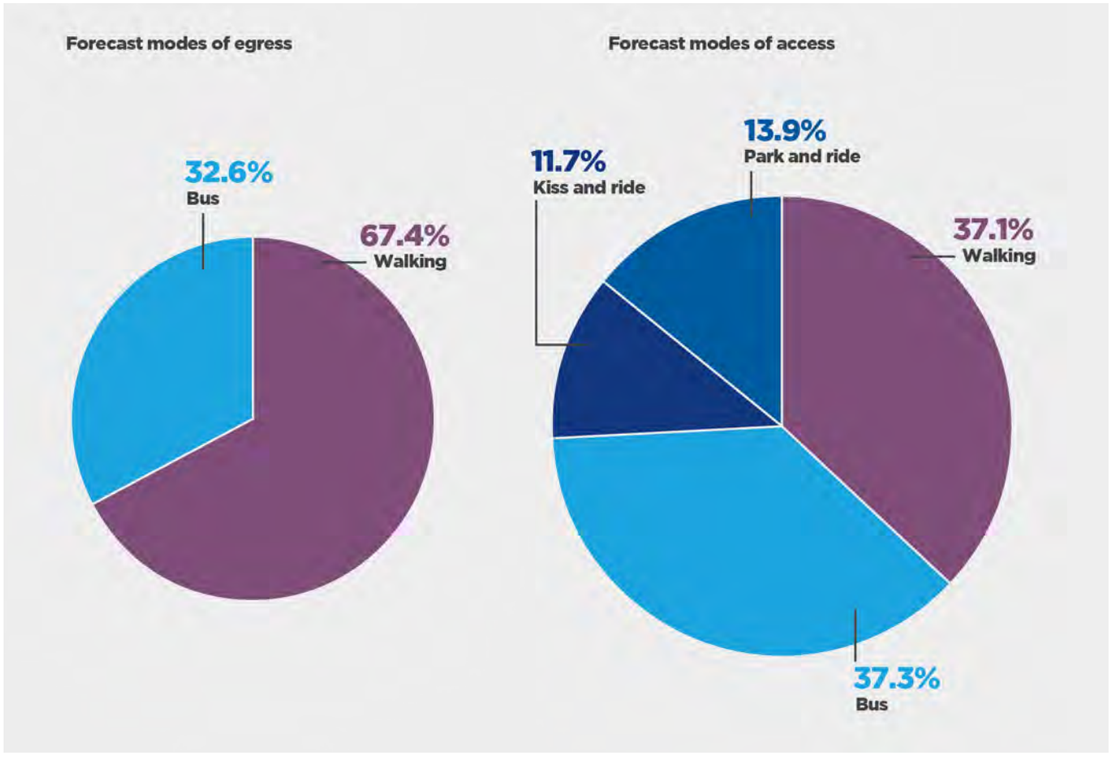
- Light rail.
- Ferry.
- Coach.

Future land use

Land use, transport integration and opportunities

A metro station at Hills Showground will support state and local strategic and planning controls by enabling opportunities for urban renewal including housing diversity and intensification, meeting the needs of residents, workers and visitors, and creating a vibrant, sustainable community that reaches its full economic and social potential. It is expected that a metro station at Hills Showground will have the following specific benefits:

- The station will form part of the interchange that provides safe and direct access to residential and mixed-use land uses surrounding the station that will directly benefit from additional transport connectivity to the Global Economic Corridor.
- The station will provide the opportunity for further development of the area as a vibrant and active centre with strong public transport links to North Sydney, the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure and educational facilities.
- The station will provide opportunities to increase residential densities within walking distance of the station.



2036 3.5-hour AM peak demand and mode splits

Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

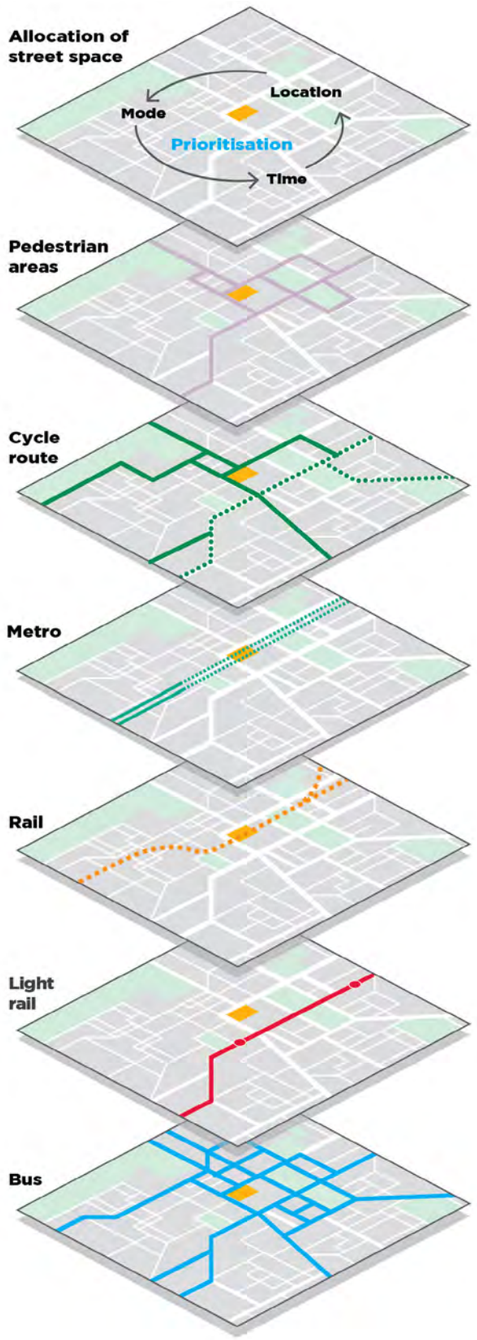
These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and The Hills Shire Council.

Opportunities and constraints

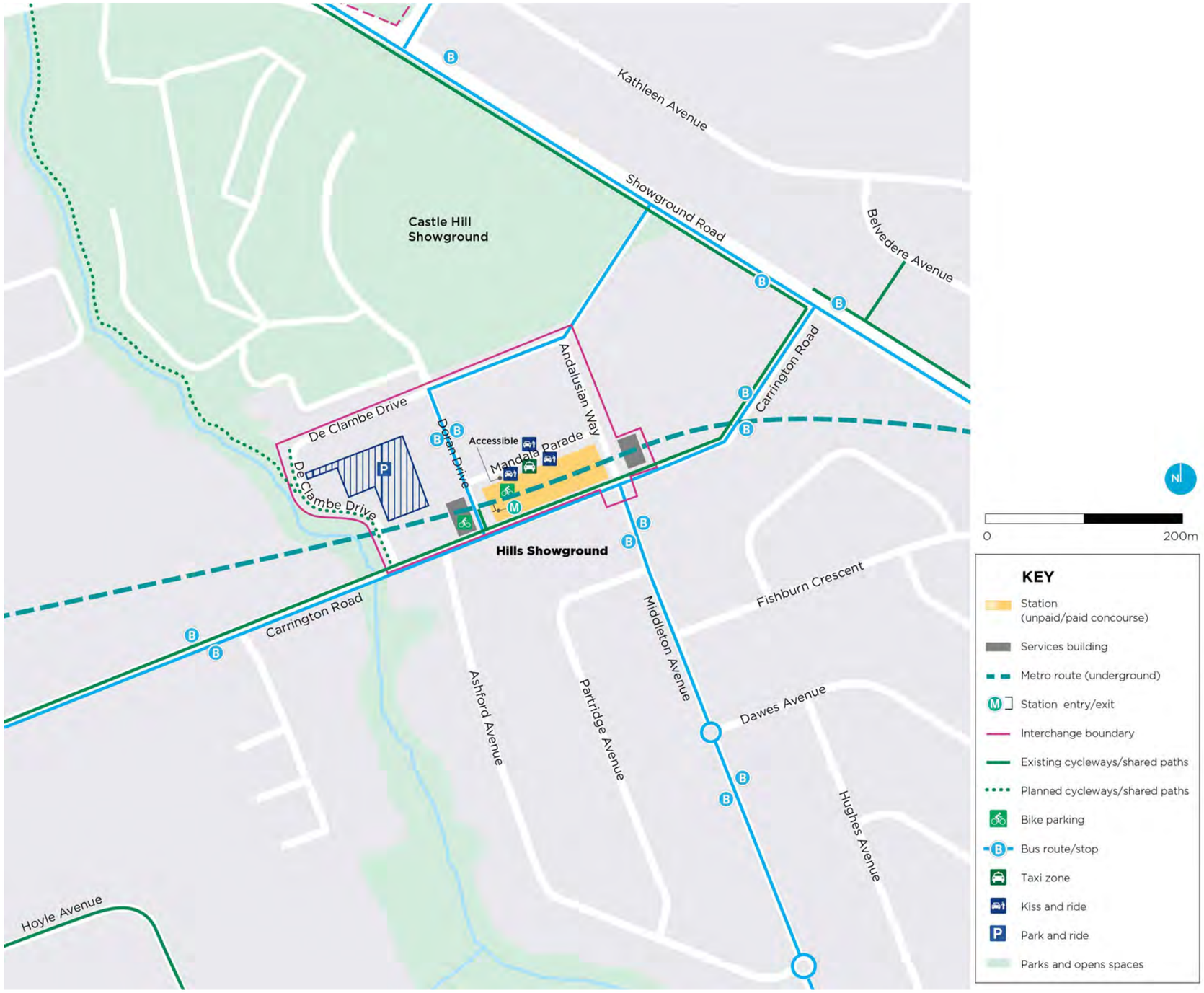
Hills Showground Station has the following urban design opportunities and constraints.

Opportunities	Constraints
• Integrate the metro station with the existing road network to facilitate safe transfers to and from the station and customers' destinations. • Recognise the cultural setting of the Showground facilities and curtilage as initiating the potential for 'place-making'. • Improve access to the precinct with a new street network that accommodates high-quality pedestrian and cycle access. • Create a clear sense of place at the station entry that responds to its context as a gateway to the Showground. • Integrate future development sites into an efficient and connected precinct plan. • Modify existing topography to help integrate the station to the precinct and natural ground levels. • Minimise any adverse impacts on Castle Hill Showground facilities and maintain existing showground circulation patterns and uses.	• The need to respond to the future development surrounding the station.

Hills Showground – interchange and transfer requirements overview

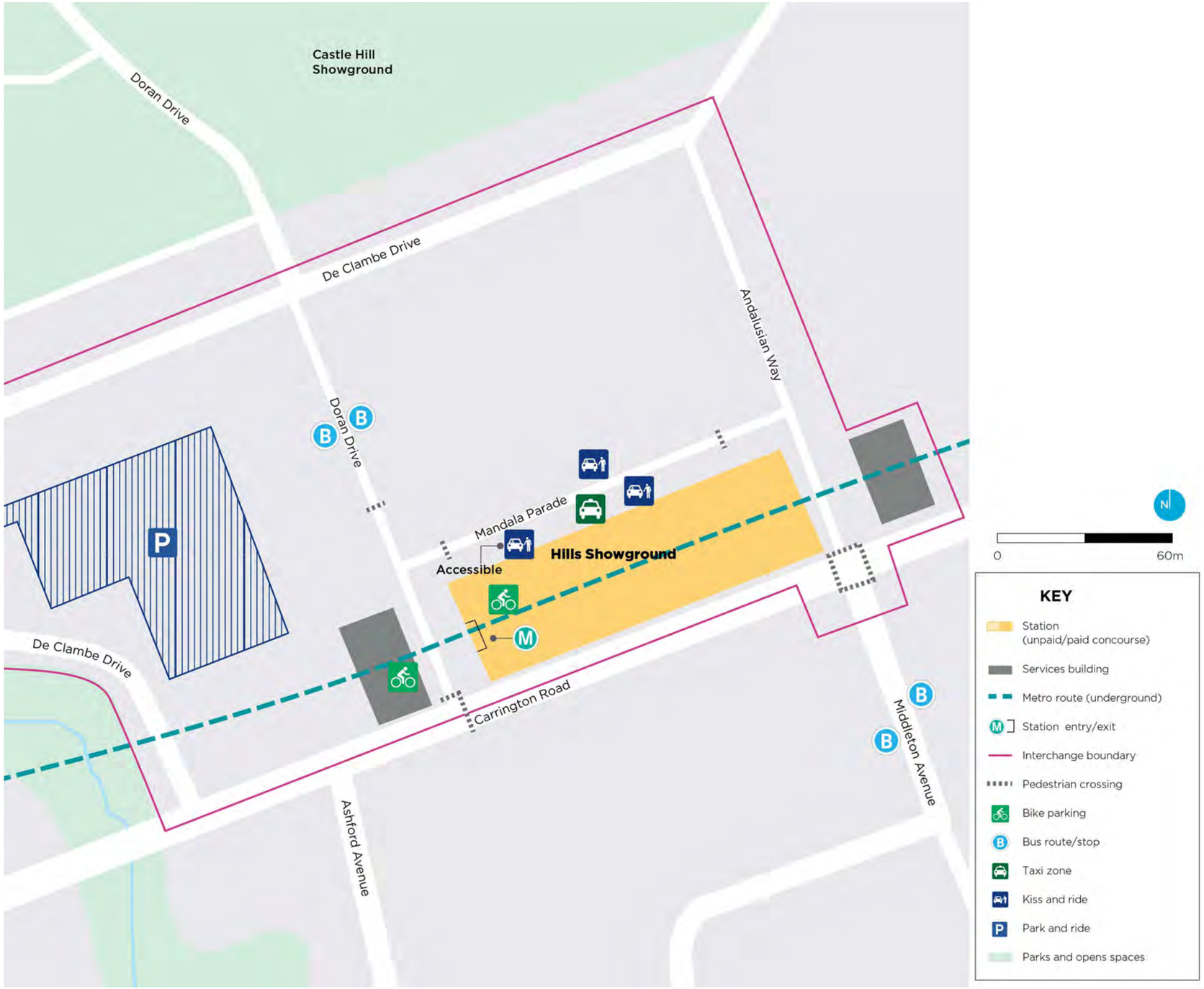


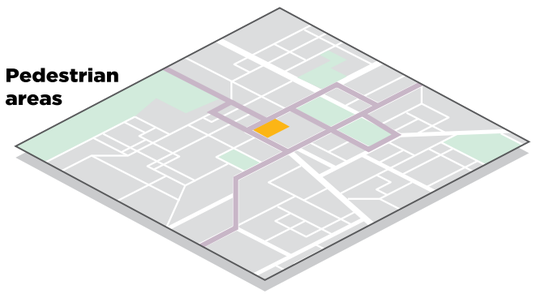
Mode layers



Hills Showground Station – interchange and transfer requirements overview

Hills Showground – walking interchange and transfer requirements





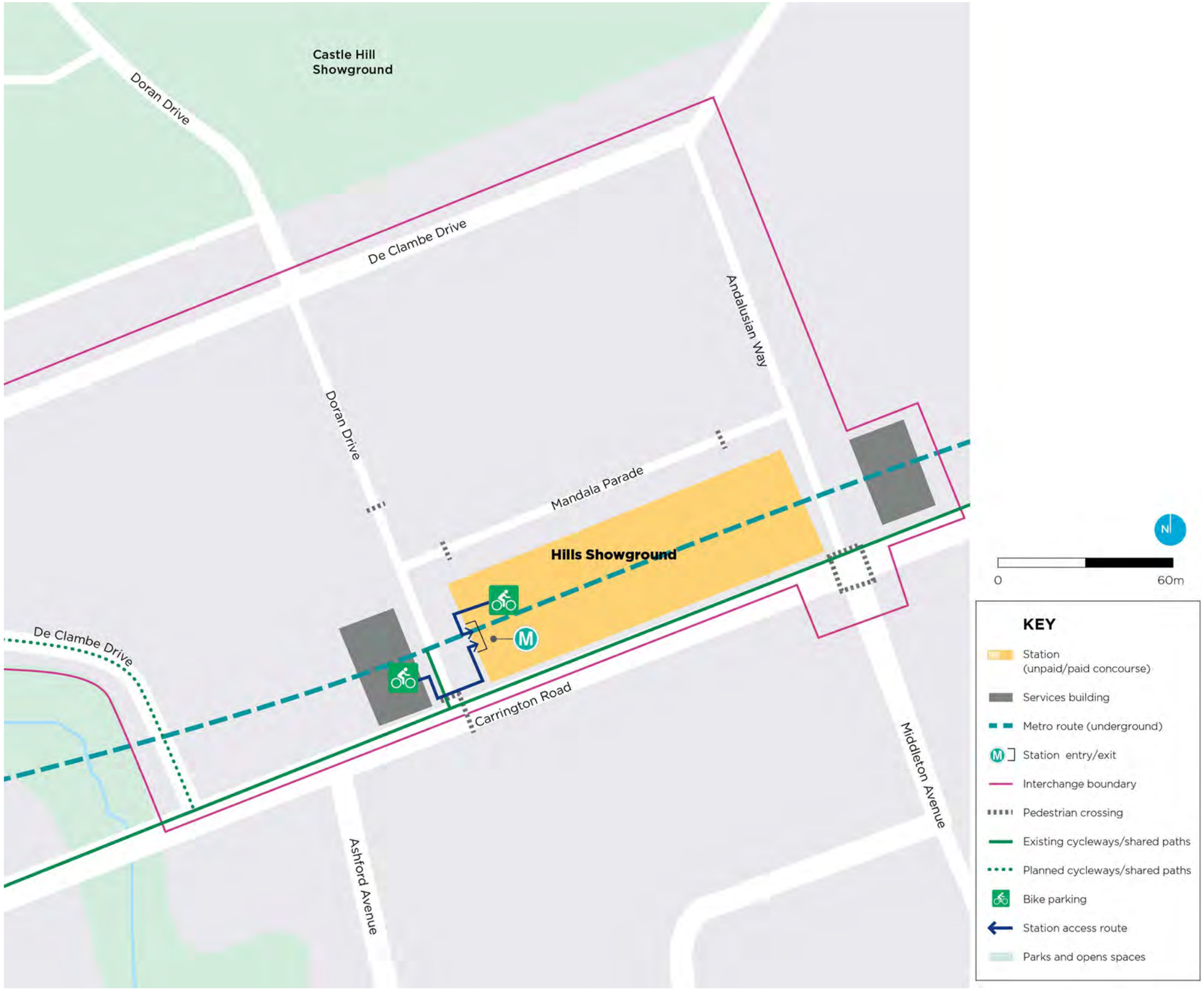
Mode layer

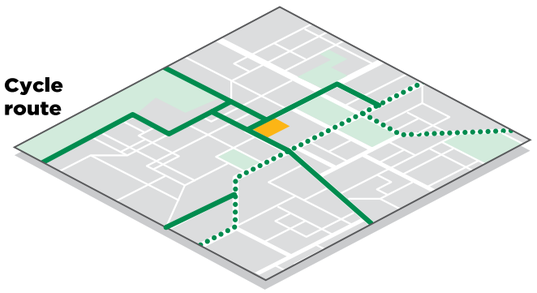
Hills Showground Station – pedestrian interchange and transfer requirements

Hills Showground – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Hills Showground is an origin station. The station site has no existing access, however a network of footpaths will serve the pedestrian network surrounding the station.	The majority of pedestrian demand at opening will connect from and to all directions surrounding the station.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Station access	The station supports an access point, which requires safe, convenient and direct pedestrian routes: • The entry on Doran Drive, between Showground Road and Cattai Creek.	
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with employment, recreational and residential areas surrounding the station. The pedestrian environment potentially impacted by the proposed station includes: • Pedestrian and cycle access via a shared path (off road), linking Carrington Road to Cattai Creek.	• Shared 2.5-metre-wide pathway from Carrington Road at De Clambe Drive to existing pathway at northern boundary of project works site. • Signalised crossing at the intersection of Doran Drive and Carrington Road.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by The Hills Shire Council. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant.	• Station Access — Provide for high pedestrian demand over Carrington Road to residential precincts.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.	• Direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from bike parking	The station will provide easy transfer to bike parking facilities located at: • Corner of Doran Drive and Carrington Road – bike shed and racks.	
Transfer to and from other rail	No design provision is considered for this location.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will provide easy transfer to bus stops on Doran Drive.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	The station will provide easy transfer to the taxi rank on Mandala Parade.	
Transfer to and from kiss-and-ride	The station will provide easy transfer to kiss-and-ride zones on Mandala Parade.	
Transfer to and from park-and-ride	The station will provide easy transfer to park-and-ride spaces accessed from De Clambe Drive.	

Hills Showground – cycling interchange and transfer requirements





Mode layer

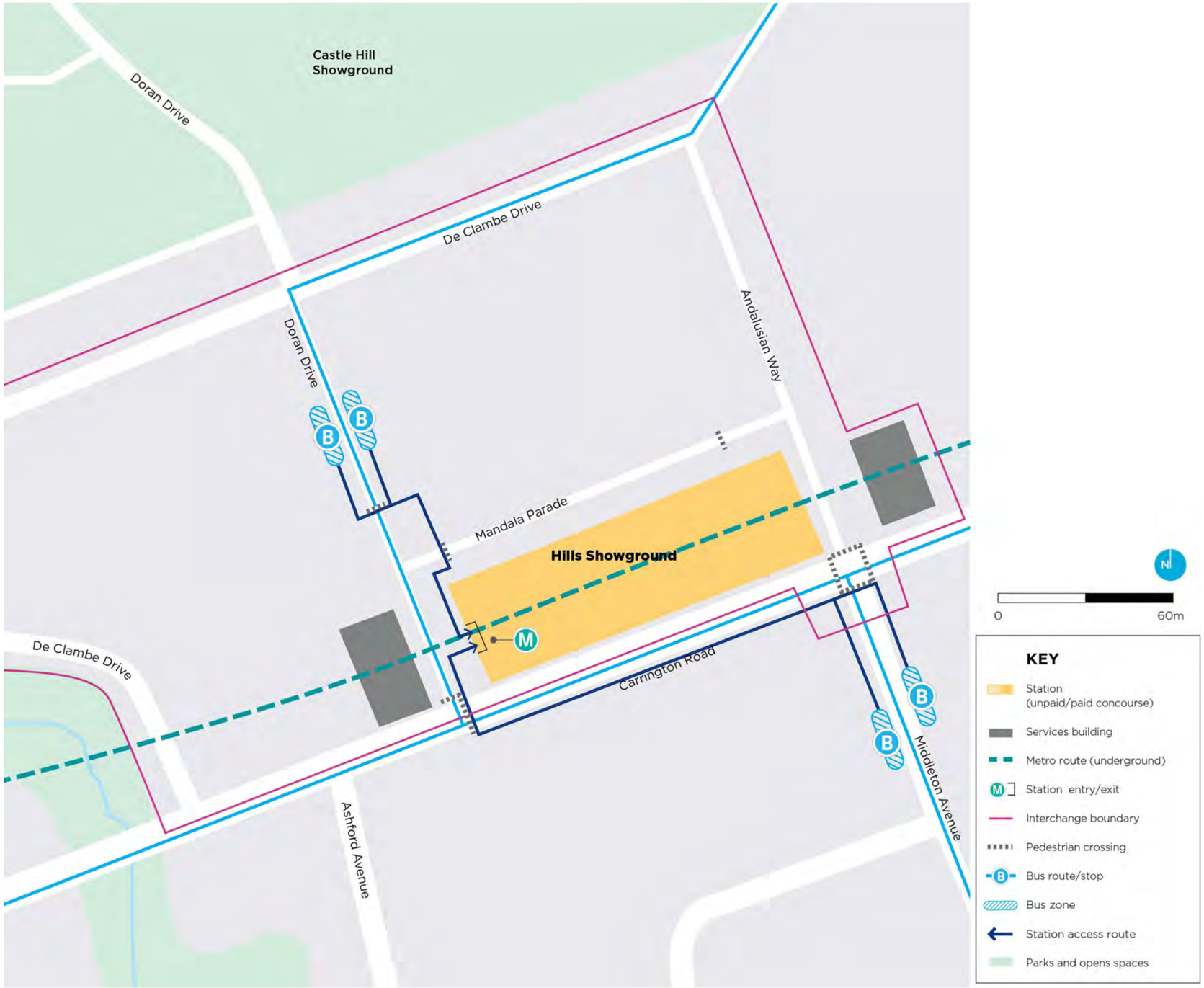
Hills Showground Station – cycling interchange and transfer requirements

Hills Showground – cycling interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	An off-road cycle path exists on Carrington Road. Main cycling routes connecting to the station are along Cattai Creek, and Ashford Avenue.	The station and interchange will be designed to allow bicycle riders to move along the local street network and through the station and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 50 metres of the gateline. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	• Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To facilitate cycle transfer within the interchange, bike parking will be provided: • At the station entrance on the corner of Doran Drive and Carrington Road.	
Types of parking facilities	The bike parking provisions at the station are: • Bike shed for 35 bicycles, with electronic access facility. • Bike racks for 10 bicycles.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shed for 50 bicycles, with electronic access facility. • Bike racks for 20 bicycles.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments.
Closest cycling routes	An extensive existing cycling network surrounds the station. On-road bike lanes exist on: • Anella Avenue. • Ashford Avenue. • Carrington Road. • Caterson Drive.	• Hoyle Avenue. • Packard Avenue. • Salisbury Road. • Victoria Avenue.
New cycle routes by Sydney Metro	• Install a shared 2.5-metre path from Carrington Road at De Clambe Drive to the existing pathway at the northern boundary of the project works site.	
Cycle routes for consideration by others	• Shared path on southern side of Showground Road between Gilbert Road and Kings Road. • Consider pedestrian and cycle links between station precinct, Anella Avenue and Salisbury Road across Cattai Creek.	

Hills Showground – bus interchange and transfer requirements

Mode layer



Hills Showground Station – bus and light rail interchange and transfer requirements

Hills Showground – bus interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	A number of bus routes operate within the vicinity of Hills Showground Station. These routes are: • 604 – Castle Hill to Parramatta via Winston Hills. • 619 – Rouse Hill to Macquarie Park via Castle Hill. • 715 – Norwest Business Park to Seven Hills. • 745 – St Marys to Castle Hill via Stanhope Gardens. • T60 – Castle Hill to Parramatta. • T70 – Castle Hill to Blacktown via Glenwood. • T71 – Castle Hill to Blacktown via Stanhope Gardens.
Current mode splits and intermodal transfer	Not applicable.
Integration	
Closest bus stops/routes	The primary bus stops within the interchange are: • North of station: — Doran Drive. • South of station: — Middleton Avenue.
Potential changes to bus stops/route	Potential changes to bus routes to the station are under investigation.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Dedicated footways along local and regional roads. • Signalised controlled pedestrian crossings across Carrington Road and Doran Drive. • Marked pedestrian crossing across Doran Drive and Mandala Parade.
Transfer to and from bus	Customers will be able to transfer between bus stops at metro station entries using new and existing footpaths. Where necessary, improvements will be made to signage and wayfinding to ensure an easy customer transfer through improved provision of information.
Transfer to and from bus (overnight)	No design provision is considered for this location.
Transfer to and from bus (school)	No design provision is considered for this location.
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions.*
Bus bays	Bus bays provided or modified by the project shall meet NSW state and Commonwealth guidelines for size and layout. Where a conflict exists, the Commonwealth standard will apply. Where the Commonwealth standard cannot practically apply, the highest practical standard should be provided in excess of NSW state standards and guidelines.
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.

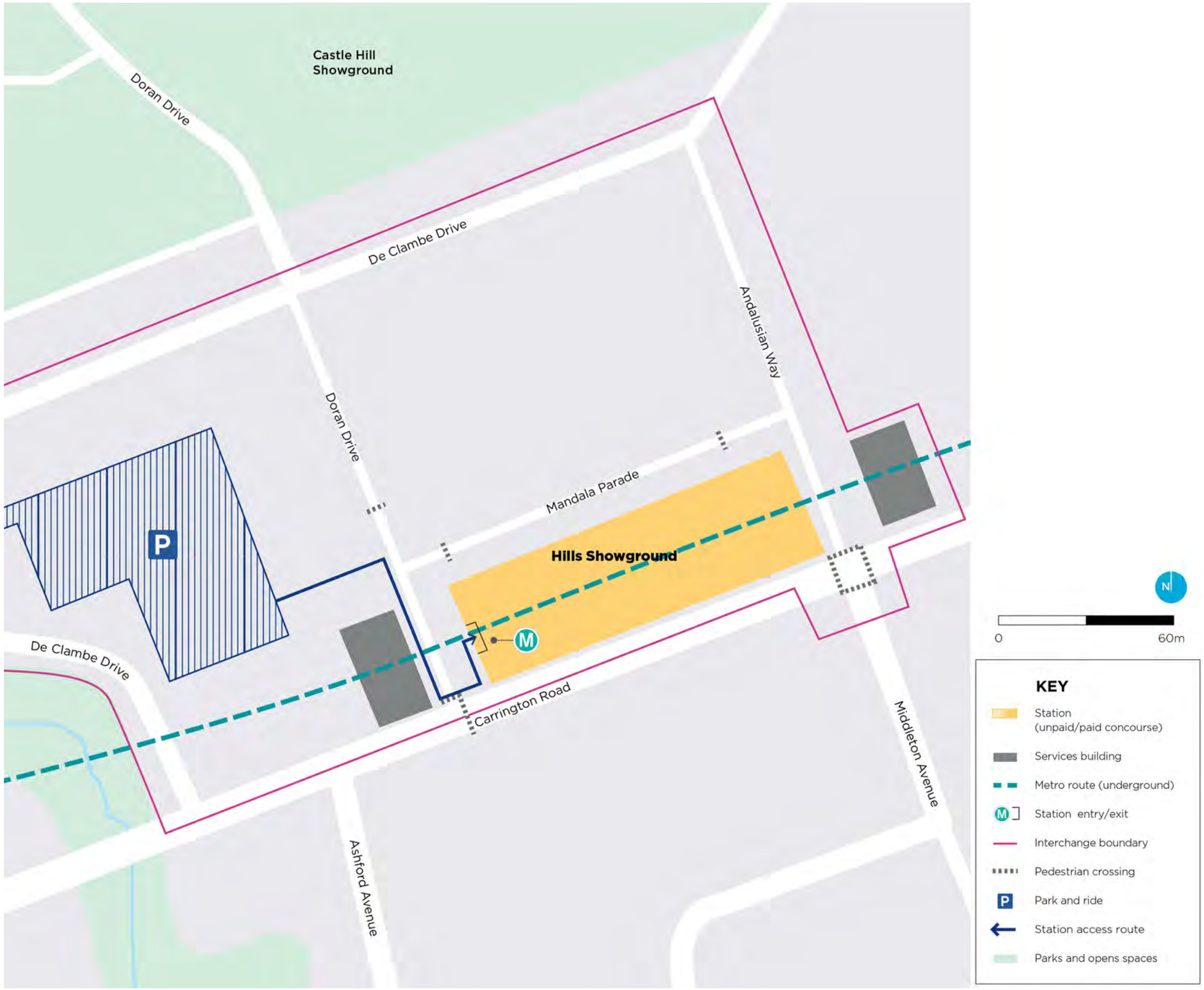
Hills Showground – vehicle drop-off interchange and transfer requirements

Hills Showground Station – vehicle drop-off interchange and transfer requirements

Hills Showground – vehicle drop-off interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Not applicable.
Current mode splits and intermodal transfer	Not applicable.
Integration	
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from taxi	Taxi ranks must be a 130-metre or less walk from the gatelines to the head of the taxi rank. Four new taxi ranks will be provided at: • Mandala Parade.
Transfer to and from kiss-and-ride	Kiss-and-ride zones must be a 130-metre or less walk from the gatelines. 16 new kiss-and-ride zones, including one accessible zone, will be provided at: • Mandala Parade.
Taxi rank locations	Taxi ranks that service local centres as well as stations are supported as long as they are located within 100 metres of the station access point.
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.

Hills Showground – vehicle parking interchange and transfer requirements



Hills Showground Station – vehicle parking interchange and transfer requirements

Hills Showground – vehicle parking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Not applicable.	
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Park-and-ride spaces required	A total of 600 spaces are required, as follows: • Accessible – 18. • Compact – 90. • Standard – 492.	Car parking bays must be prioritised in order of priority as above, in relation to proximity to the station gateline. In addition to the spaces above, 18 motorcycle parking spaces are required.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.	
Transfer to and from park-and-ride	Park-and-ride zones must be a 400-metre or less walk from the gatelines to the head of the furthest car bay.	The park-and-ride zones within the interchange are accessed from De Clambe Drive.
Accessible parking bays	Accessible parking bays must be compliant with the *Disability Discrimination Act 1992* and the *Disability Standards for Accessible Public Transport 2002*.	
Compact spaces	Compact parking bays (2.5 x 5.0 metres) shall be located together and in a convenient location close to the station entrance.	
Motorcycle parking	Motorcycle and scooter parking shall be allocated to make efficient use of under croft and incidental areas and minimise the need for motorcycles to circulate throughout the car park.	
Meeting point	Where car parking is provided, an accessible designated meeting point shall be provided within each car park, as a place where customers can wait in a safe and secure area to meet breakdown assistance services made at their own arrangement.	

Hills Showground – operations, maintenance and management provisions

Hills Showground Station – operations, maintenance and management provisions

Hills Showground – operations, maintenance and management provisions *continued*

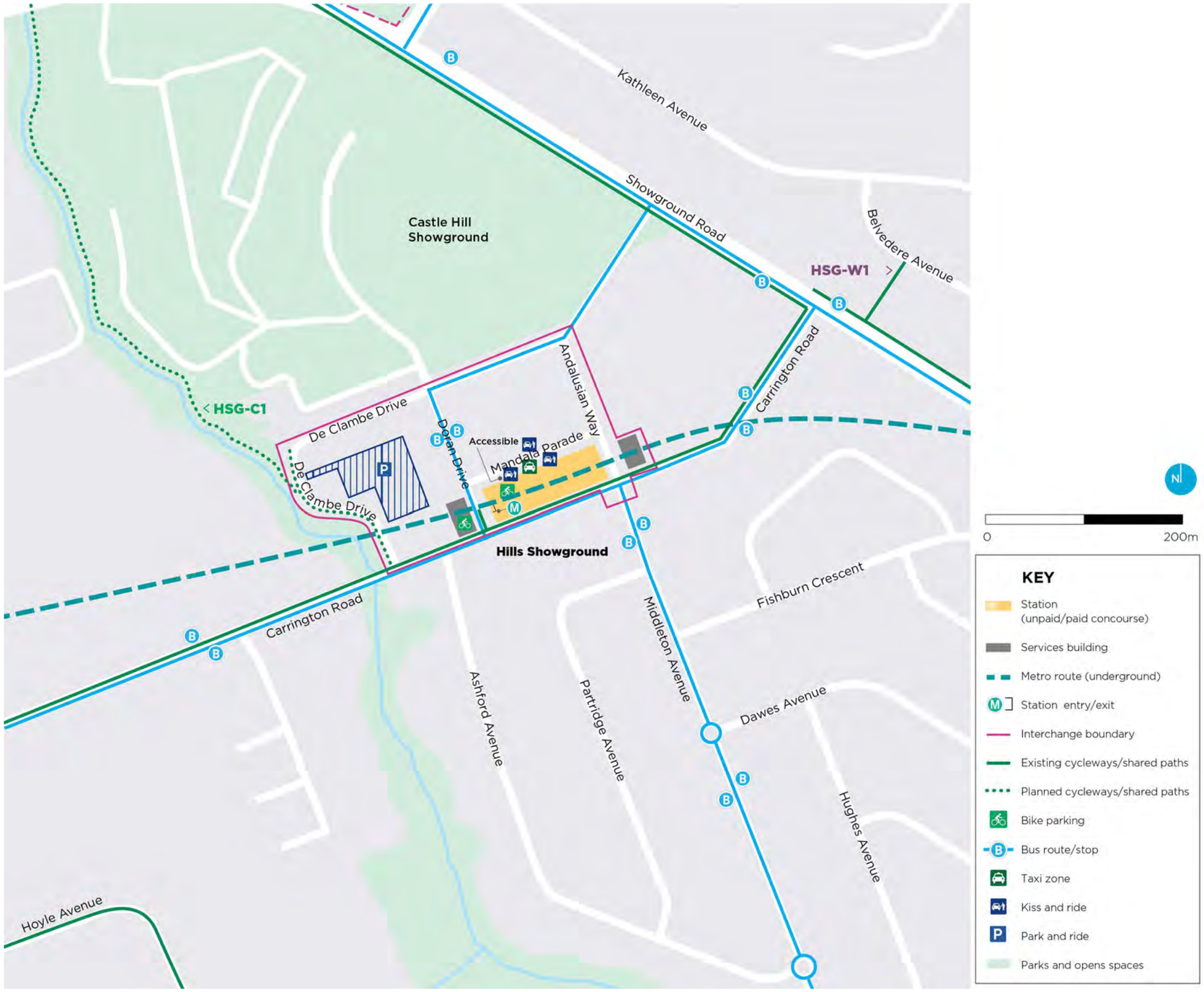
The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Servicing and maintenance access (major)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Rail replacement bus service access	Rail replacement buses will use the bus zone on Doran Drive.
Delivery access (retail and operational)	Delivery vehicles will use the on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	Mail zones may be established on an as needed basis with the surrounding development.
Staff car parking	One staff and two maintenance parking spaces will be accessed via the driveway on Carrington Road.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

Hills Showground – recommendations



Hills Showground Station – recommendations

Hills Showground – recommendations *continued*

This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at Hills Showground Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at Hills Showground Station.

	Action
Walking	
HSG–W1	There are currently no signs to inform walking and cycling customers of the surrounding network, which results in a disconnected walking and cycling network. Install signs and line marking along the shared path between Belvedere Avenue and Showground Road. *Proposed scope: Install signs and line markings.*
Cycling	
HSG–C1	Limited cycling provision connects between the Cattai Creek shared path to the Hills Showground Station along the local road network. Install a 110-metre shared path between the Cattai Creek shared path and the local showground road network, to extend the cycling network north-west from the station. *Proposed scope: Undertake concept and detailed design, and construct a shared path. Install a 2.5-metre shared path, for a length of 110 metres, with associated signs and line marking.*
Park-and-ride	
HSG–P1	As an outcome of the Parking Management Strategy, install parking management recommendations. *Proposed scope: Install signs and line marking.*
Wayfinding	
HSG–S1	Improve wayfinding and general information for walking and bicycle rider customers informing of the surrounding networks outside the interchange area that connect to the station. *Proposed scope: Install signs and line marking.*
Management and maintenance	
HSG–M1	Document operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

Castle Hill

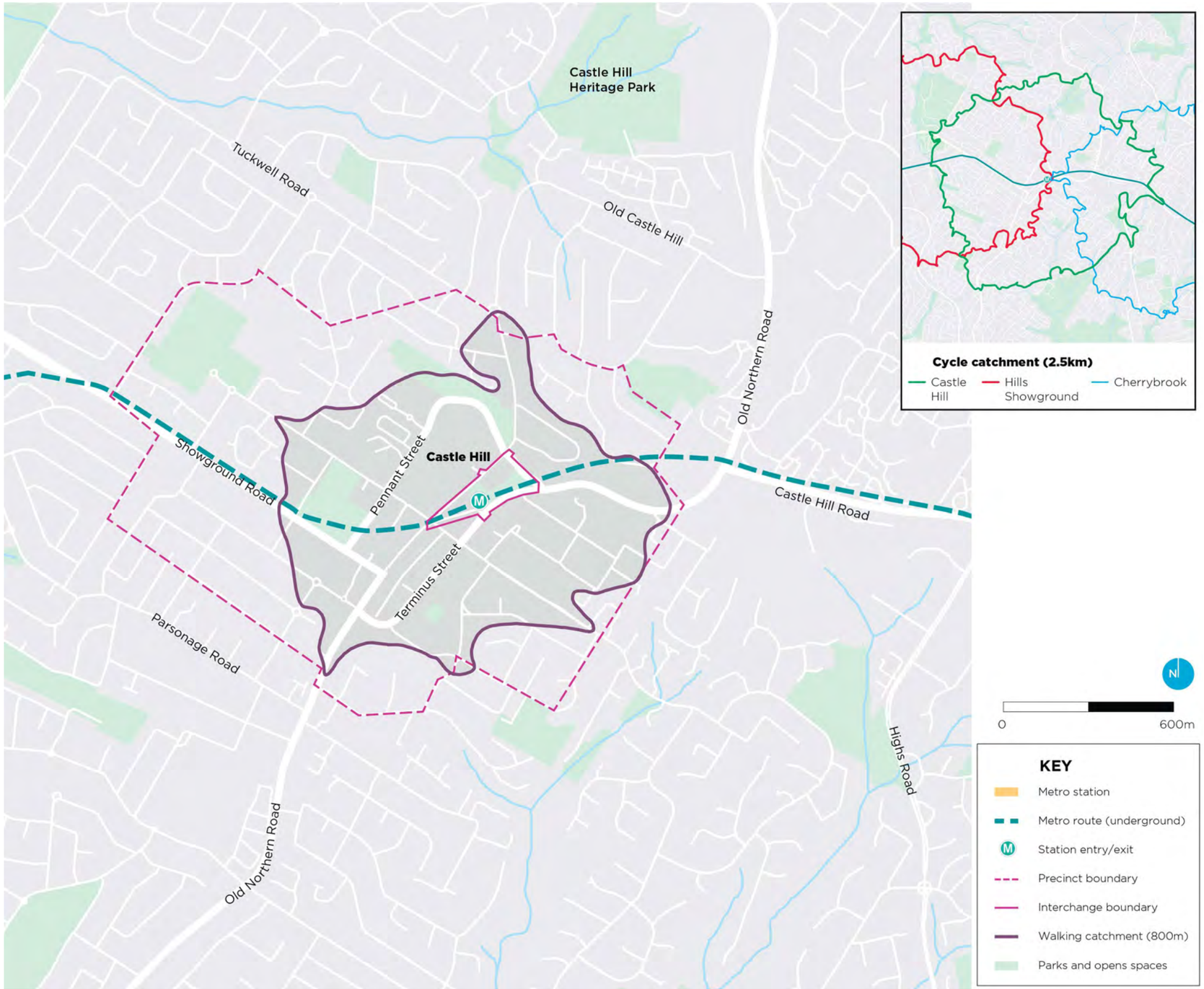
Castle Hill – local context

Castle Hill Station will provide a new underground station beneath Arthur Whitling Park, north of Old Northern Road at the corner of Old Northern Road and Old Castle Hill Road.

It will be a major bus-rail interchange station serving the Castle Hill town centre, with no park-and-ride spaces.

Castle Hill Station will be accessible from a plaza on the corner of Old Northern Road and Old Castle Hill Road.

The entrance will provide access to surrounding employment, retail and residential areas.



Castle Hill Station – local context

Castle Hill – local context *continued*

Castle Hill Station will be a major public transport interchange, connecting to local bus services. The bus interchange will be located on Old Northern Road, at the southern end of the park, between Terminus Street and Crane Road.

A metro station at Castle Hill will support the surrounding residential areas, and provide connections to future employment zones. Castle Hill has a long-term employment target of 16,000 to 19,500 jobs by 2036.

Station strategy

The station strategy for Castle Hill is to:

- Provide easy, safe and intuitive transfer to and from the metro station within the existing network and road environment.
- Increase public transport access to the surrounding existing and future employment and residential areas.
- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Feature	Description
Location	• Underground, approximately 22.1 metres below street level, on the northern side of Old Northern Road at the corner of Old Castle Hill Road.
LGA	• The Hills Shire Council.
Station entry	• A plaza entry accessed from Old Northern Road to the south and Old Castle Hill Road to the north.
Transport interchange	• Walking, cycling, bus, taxi and kiss-and-ride.
Main features and traffic arrangements	• Widen Old Castle Hill Road north of the Castle Towers vehicle entry to become a two-way road between McMullen Avenue and the intersection of Old Northern Road, Crane Road and Castle Street. • Signalisation of intersection of Old Northern Road and Terminus Street for both construction and operations. • Taxi and kiss-and-ride zones on Old Castle Hill Road. • Change traffic signals at the intersection of Old Northern Road, Old Castle Hill Road, Crane Road and Castle Street to allow two-way traffic movements in Old Castle Hill Road at the intersection (includes pedestrian crossings on all legs of the intersection to operate as a scramble crossing). • Relocate all bus ranks to Old Northern Road between the intersection with Crane Road, Castle Street and Terminus Street.
Customers	• Employment, retail and residential precincts.
Key attractions	• Anglicare Castle Hill Retirement Village. • Arthur Whitling Park. • Bernadette's Catholic School. • Castle Hill Bowling Club. • Castle Hill Community Centre. • Castle Hill Heritage Park. • Castle Hill High School. • Castle Hill Library. • Castle Hill Police Station. • Castle Hill Public School. • Castle Hill RSL Club. • Castle Hill Senior Citizens Centre. • Castle Mall. • Castle Towers. • Castlewood Community Reserve. • Gilroy Catholic College. • Hills Adventist College. • Oakhill College. • Pioneer Place Reserve. • St Gabriel's School for Hearing Impaired Children.

Current land use and characteristics

Existing land use and characteristics

The area around Castle Hill Station is well established and was developed from 1910, following the opening of the tramline. From the 1950s, urban development rapidly spread into the Castle Hill area.

The area immediately surrounding the station is dominated by shopping precincts, including Castle Towers, Castle Mall and numerous speciality retail and commercial uses extending south along Old Northern Road. There are a number of independent businesses and offices located within close proximity to the station.

A bus interchange is located on Old Northern Road providing numerous bus services throughout the area and a layover facility is located on Old Castle Hill Road.

The Castle Hill locality is highly urbanised with large-scale shopping centres, pedestrian focussed malls and retail streets. The retail precinct is surrounded by residential uses, with higher densities clustered around the commercial core and medium and low density further afield.

Housing in the area is mainly single detached dwellings on larger blocks, with increased infill higher-density housing (apartments and some townhouses).

As the Sydney Metropolitan Strategy defines Castle Hill as a Major Centre, the station catchment is likely to be very large, with people commuting from further away to access the facilities available. This station will be a key destination from a regional perspective.

Existing station precinct strategic planning context

The *Draft West Central District Plan* (Greater Sydney Commission 2016) aims to capture new opportunities generated by Sydney Metro Northwest and other investments, to build a more connected district. The plan has the following actions that are potentially relevant to Castle Hill Station:

- Align land use planning and infrastructure planning.
- Provide design-led planning to support high-quality urban design.
- Support the development of initiatives for a sustainable low carbon future.

The plan also states that completion of Sydney Metro Northwest will improve access to employment across the district. Castle Hill is identified as a District Centre, with a job target range of 16,000 to 19,500 by 2036.

The Department of Planning and Environment (DP&E) is working closely with local councils to deliver the *Sydney Metro Northwest Priority Urban Renewal Corridor.* This strategy aims to deliver new homes, jobs, cafes and parks along the rail line.

The *Castle Hill Station Structure Plan* (DP&E, 2013) provides a planning framework to improve the area surrounding the station site and deliver a precinct with a variety of land uses.

The area immediately surrounding the station will have a mixed use and commercial core, with retail services and commercial offices. This central area will be surrounded by high-density residential with seven- to 20-storey apartment buildings around a series of communal open spaces. Beyond this zone will be medium-density residential with three- to six-storey apartment buildings, townhouses and single detached dwellings.

The Hills Shire Council also recently exhibited the Draft Precinct Plan for Castle Hill North that will provide for higher densities and mixed-use development.

Upgrades to public domain in Castle Hill will protect existing green spaces and provide additional urban plazas, parks and open spaces, particularly within the station precinct and the core of the town centre.

Castle Hill – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Castle Hill, as these modes are not available at this station:

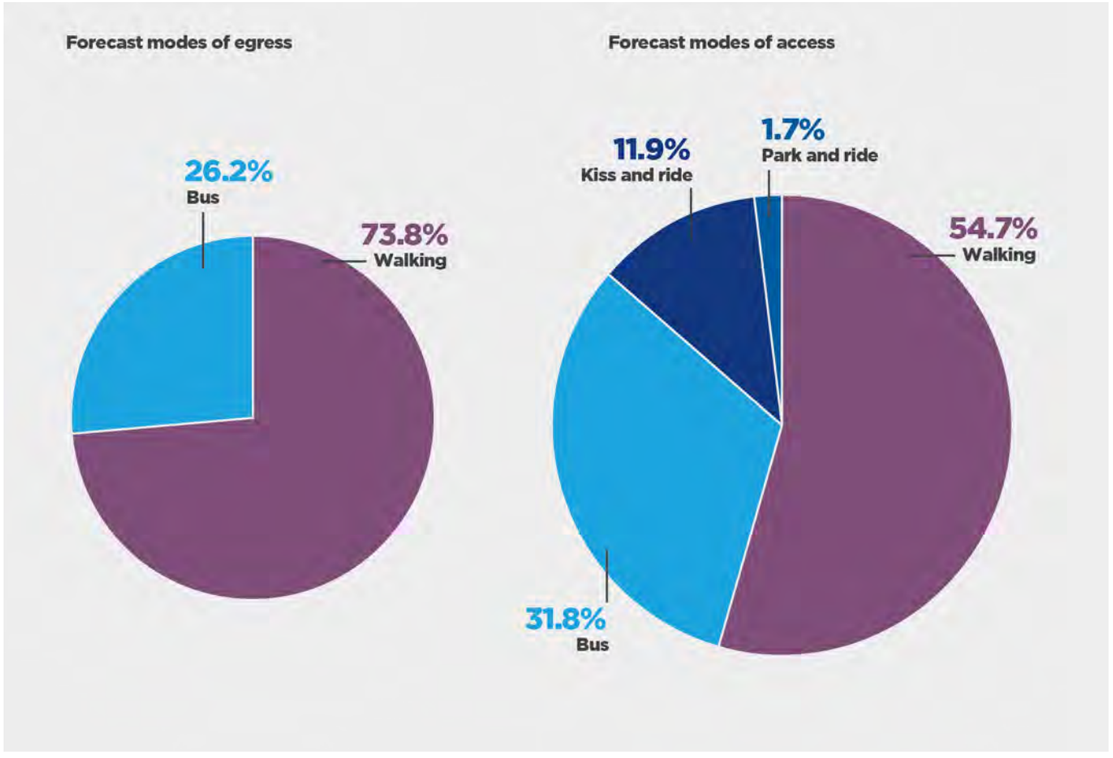
- Light rail.
- Ferry.
- Park-and-ride.
- Coach.

Future land use

Land use, transport integration and opportunities

A metro station at Castle Hill will support state and local strategic and planning controls by enabling opportunities for urban renewal including housing diversity and intensification, meeting the needs of residents, workers and visitors, and creating a vibrant, sustainable community that reaches its full economic and social potential. It is expected that a metro station at Castle Hill will have the following specific benefits:

- The station will form part of the interchange that provides safe and direct access to residential and mixed-use land uses surrounding the station that will directly benefit from additional transport connectivity to the Global Economic Corridor.
- The station will provide the opportunity for further development of the area as a vibrant and active centre with strong public transport links to North Sydney, the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure and educational facilities.
- The station will provide opportunities to increase residential densities within walking distance of the station.



2036 3.5-hour AM peak demand and mode splits

Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

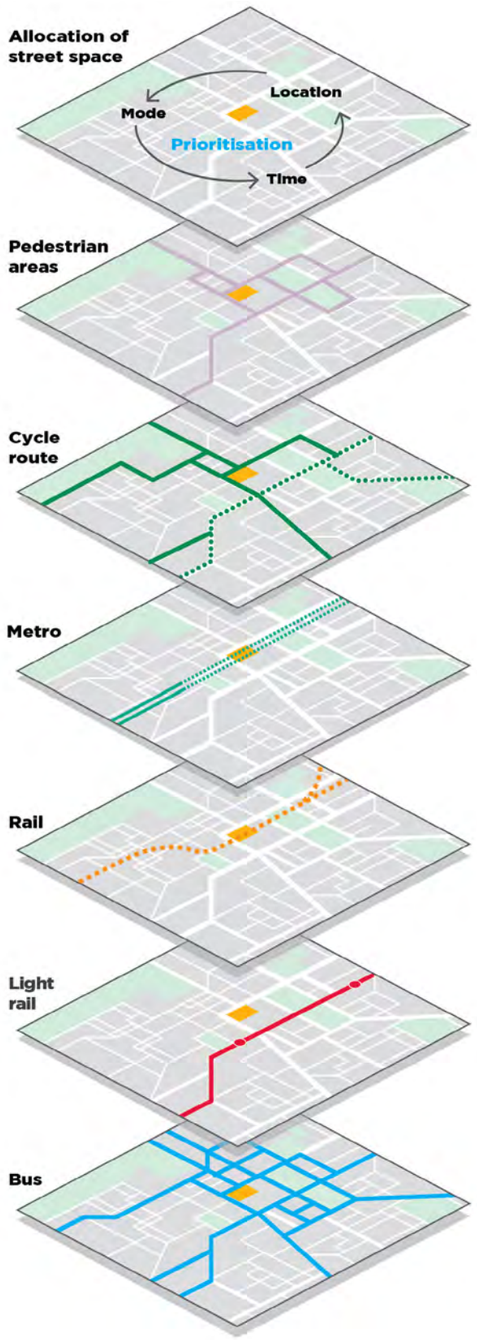
These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and The Hills Shire Council.

Opportunities and constraints

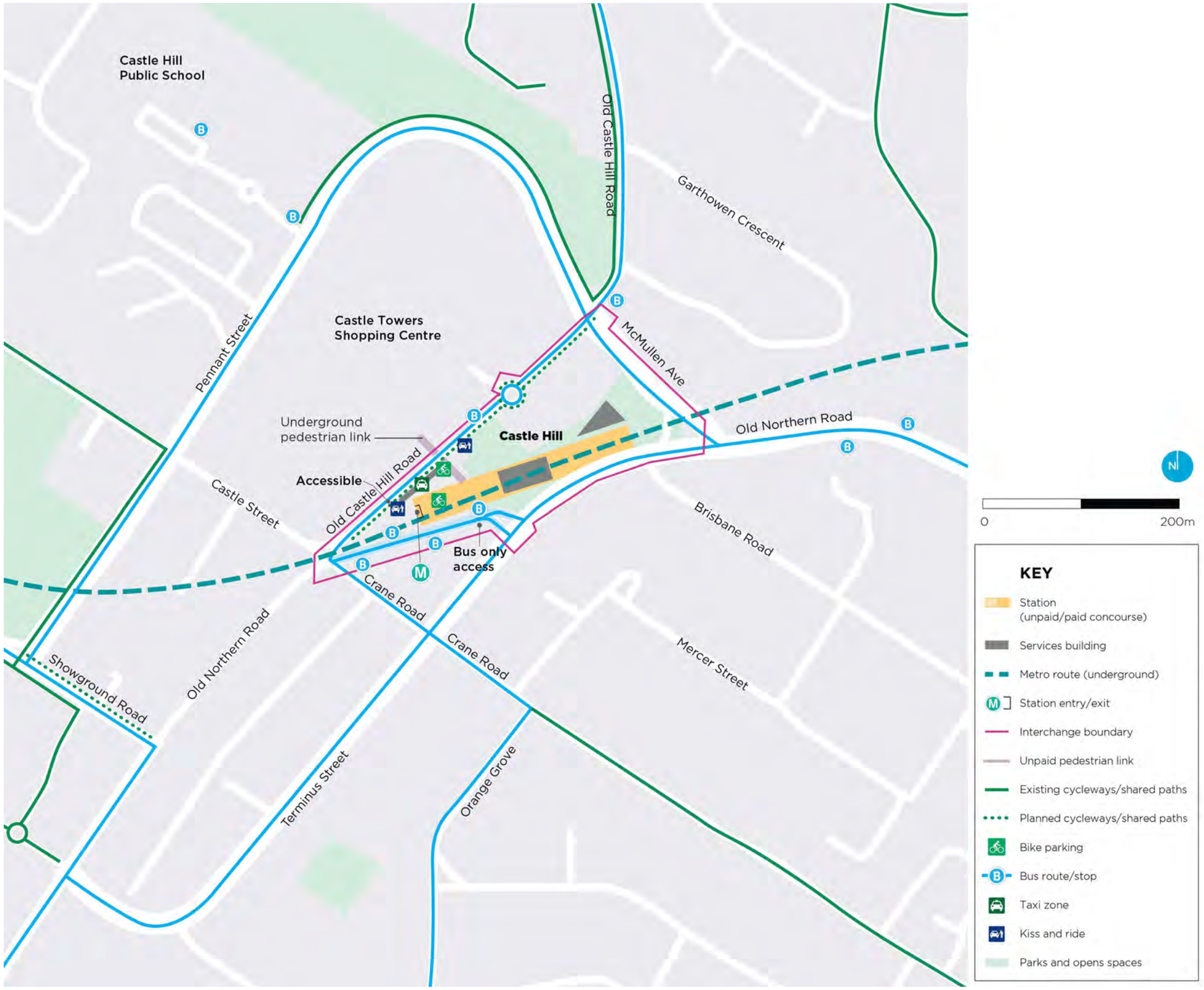
Castle Hill Station has the following urban design opportunities and constraints.

Opportunities	Constraints
• Integrate the metro station with the existing road network to facilitate safe transfers to and from the station and customers' destinations. • Recognise and address the town centre setting. • Establish an integrated transport interchange at the station entry, providing activation, connection and integration with the park setting and a strong sense of identity. • Reinstate Arthur Whitling Park. • Integrate thoughtful station facility elements into the park setting and function. • Create safe and secure public domain areas around the station entry.	• The need to respond to the future development surrounding the station.

Castle Hill – interchange and transfer requirements overview



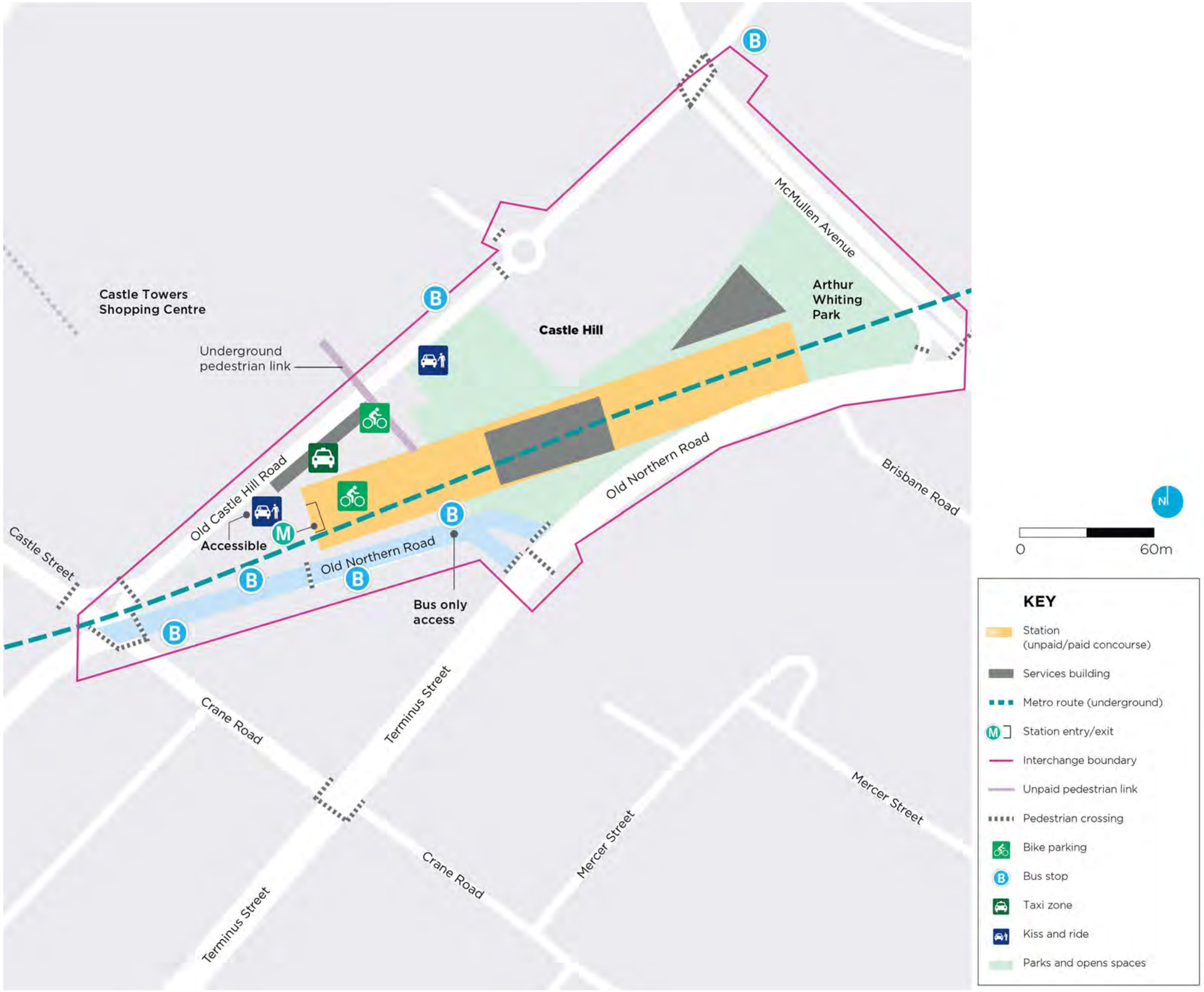
Mode layers



Castle Hill Station – interchange and transfer requirements overview

Castle Hill – walking interchange and transfer requirements

Mode layer

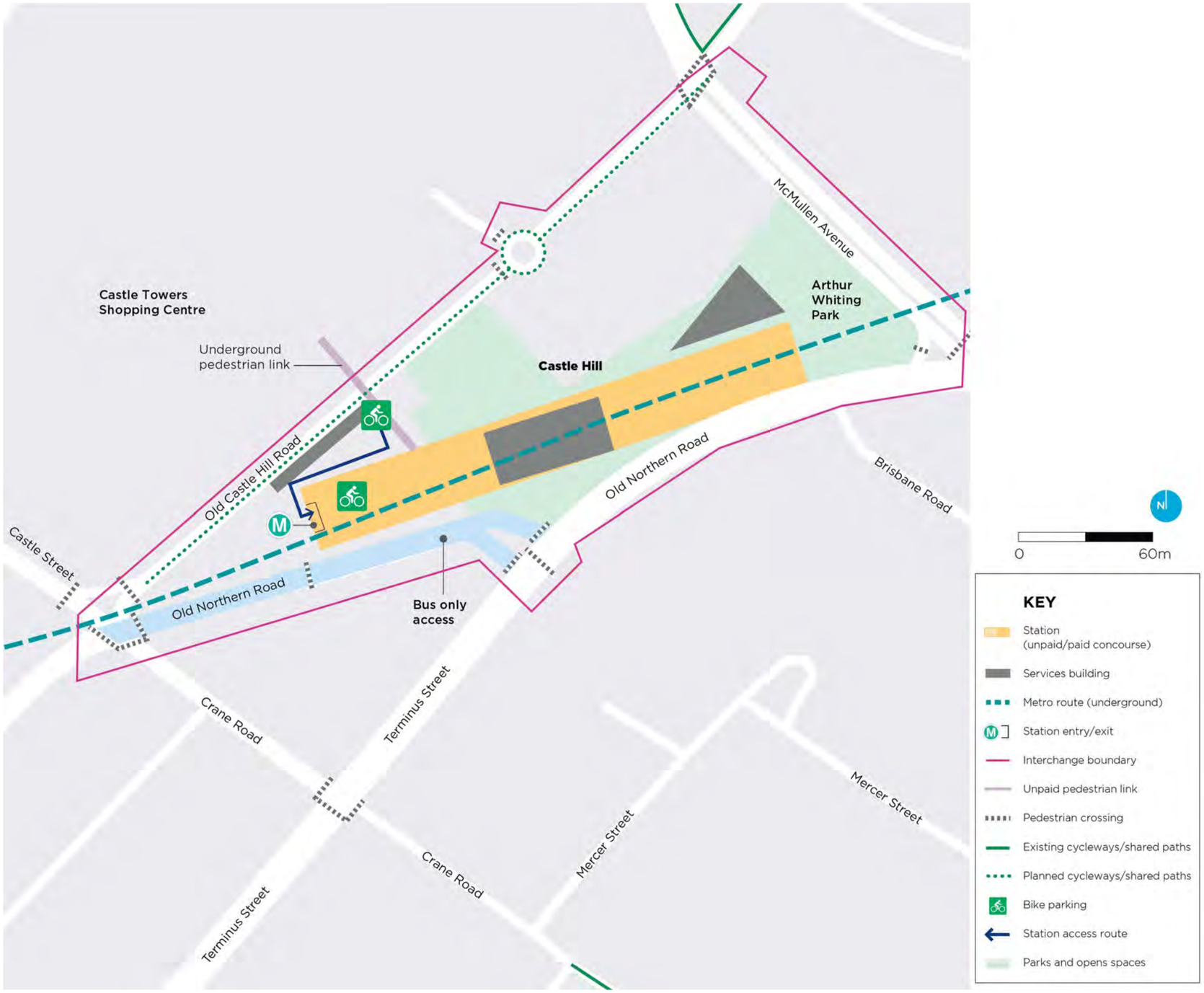


Castle Hill Station – pedestrian interchange and transfer requirements

Castle Hill – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Castle Hill is an origin and destination station. The station site has no existing access, however an existing network of footpaths serve the pedestrian network surrounding the station.	The majority of pedestrian demand at opening will connect from and to all directions surrounding the station. Future demand will be evident as the development intensifies around the station.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Station access	The station supports two access points, which require safe, convenient and direct pedestrian routes: • The main station entry will be from a plaza at the corner of Old Northern Road and Old Castle Hill Road.	• A second station entry will be via an underground pedestrian link connecting to Castle Towers shopping centre.
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with employment and residential areas surrounding the station. The pedestrian environment potentially impacted by the proposed station includes: • New pedestrian crossings of Old Northern Road and Old Castle Hill Road.	• A below-ground pedestrian connection to Castle Towers shopping centre. • The retention of marked pedestrian crossing at the roundabout on Old Castle Hill Road at the intersection of Eric Felton Street. • The reinstatement of pedestrian and cycle facilities through Arthur Whitling Park.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by The Hills Shire Council. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant.	• Station access — Provide for high pedestrian demand over Old Castle Hill Road and Old Northern Road to the bus interchange and retail, commercial and residential precincts. — The underground pedestrian link will provide direct access between the station and Castle Towers shopping centre.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.	• Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from bike parking	The station will provide easy transfer to bike parking facilities located at: • Station entry plaza – bike shed and racks.	
Transfer to and from other rail	No design provision is considered for this location.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will provide easy transfer to bus stops on Old Northern Road and Old Castle Hill Road.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	The station will provide easy transfer to the taxi rank on Old Castle Hill Road.	
Transfer to and from kiss-and-ride	The station will provide easy transfer to kiss-and-ride zones on Old Castle Hill Road.	
Transfer to and from park-and-ride	No design provision is considered for this location.	

Castle Hill – cycling interchange and transfer requirements



Mode layer

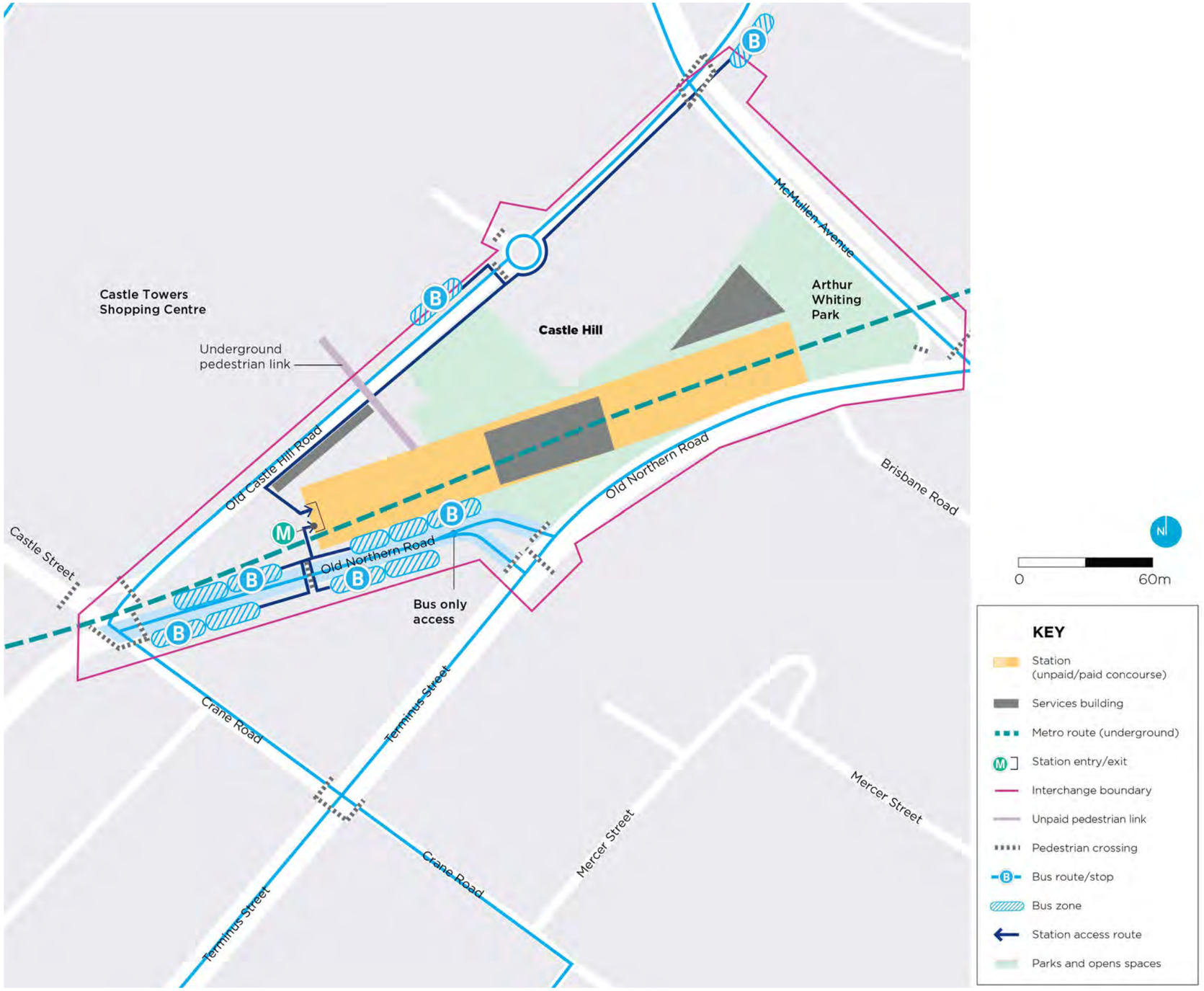
Castle Hill Station – cycling interchange and transfer requirements

Castle Hill – cycling interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	The closest on-road bike lane exists on Old Castle Hill Road, north of McMullen Avenue.	The station and interchange will be designed to allow bicycle riders to move through the station and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 50 metres of the gateline. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	• Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To facilitate cycle transfer within the interchange, bike parking will be provided: • At the station entrance plaza between Old Northern Road and Old Castle Hill Road.	
Types of parking facilities	The bike parking provisions at the station are: • Bike shed for 15 bicycles, with electronic access facility. • Bike racks for 10 bicycles.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shed for 20 bicycles, with electronic access facility. • Bike racks for 20 bicycles.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments.
Closest cycling routes	An extensive existing cycling network surrounds the station. On-road bike lanes exist on: • Barwell Avenue. • Carramar Road. • Castle Street. • Cecil Avenue. • Clarke Place. • Crane Road. • First Farm Drive.	• Gay Street. • Gilham Street. • Hume Avenue. • Lynstock Avenue. • Old Castle Hill Road. • Pennant Street. • Showground Road. • Winchcombe Place.
New cycle routes by Sydney Metro	• Provide an on road path along Old Castle Hill Road between Castle Street and McMullen Avenue.	• Provide shared path from secondary plaza space through primary plaza space to intersection of Old Northern Road and Crane Road.
Cycle routes for consideration by others	• As part of Showground Road upgrade by RMS, a shared path is proposed on the northern side of Showground Road between Pennant Street and Carrington Road. The gap in the cyclist network between Pennant Street and Old Northern Road needs to be addressed. • Provide separated path on northern side of Old Northern Road between McMullen Avenue and Castle Hill 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.	• Provide a shared-use path on Old Northern Road between Showground Road and Castle Street. • Provide an on- or off-road 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. • 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.

Castle Hill – bus interchange and transfer requirements

Mode layer

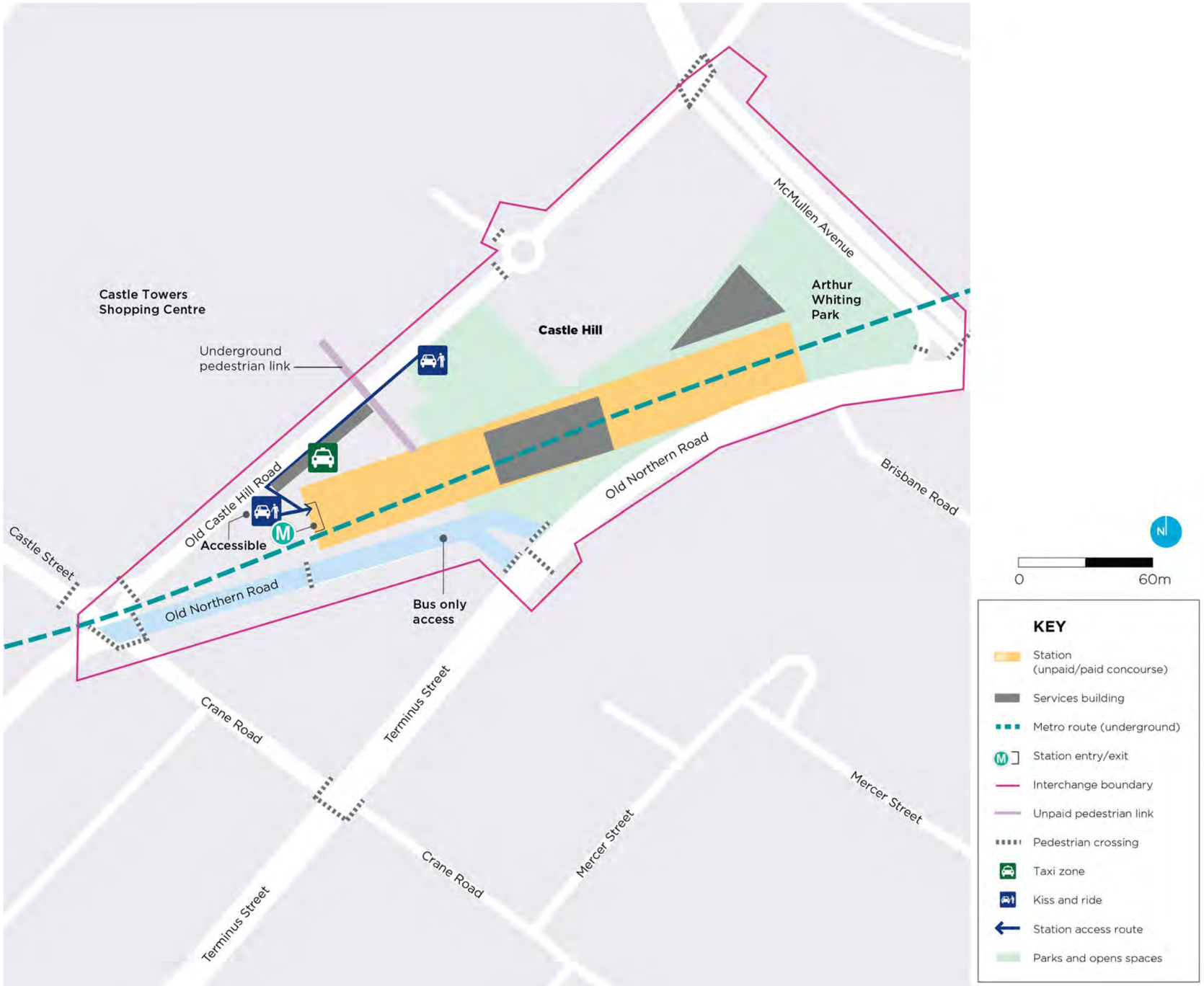


Castle Hill Station – bus and light rail interchange and transfer requirements

Castle Hill – bus interchange and transfer requirements *continued*

Item	Description			
Current state				
Current levels of access and service	A number of bus routes operate within the vicinity of Castle Hill Station. These routes are: • 603 – Rouse Hill to Parramatta via Glenhaven. • 604 – Castle Hill to Parramatta via Winston Hills. • 610 – Rouse Hill to City QVB.	• 610X – Rouse Hill to City QVB via Lane Cove Tunnel. • 612X – Kellyville to Milsons Point. • 619 – Rouse Hill to Macquarie Park via Castle Hill. • 627 – Castle Hill to Chatswood. • 632 – Castlewood Estate to Pennant Hills. • 633 – Castle Hill to Pennant Hills.	• 637 – Glenorie to Castle Hill via Galston and Round Corner. • 638 – Berrilee to Pennant Hills via Round Corner. • 639 – Kenthurst to Castle Hill. • 715 – Norwest Business Park to Seven Hills. • 745 – St Marys to Castle Hill via Stanhope Gardens.	• M60 – Hornsby to Parramatta. • M61 – Castle Hill to City QVB. • T60 – Castle Hill to Parramatta. • T62 – Castle Hill to Parramatta via Bella Vista and North-West T-way. • T70 – Castle Hill to Blacktown via Glenwood. • T71 – Castle Hill to Blacktown via Stanhope Gardens.
Current mode splits and intermodal transfer	Not applicable.			
Integration				
Closest bus stops/routes	The primary bus stops within the interchange are: • South of station: — Old Northern Road.		• North of station: — Old Castle Hill Road.	
Potential changes to bus stops/route	Potential changes to bus routes to the station are under investigation.			
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.		• Dedicated footways along local and regional roads. • Signalised controlled pedestrian crossings at the eastern entrance.	
Transfer to and from bus	Customers will be able to transfer between bus stops at metro station entries using existing footpaths.		Where necessary, improvements will be made to signage and wayfinding to ensure an easy customer transfer through improved provision of information.	
Transfer to and from bus (overnight)	No design provision is considered for this location.			
Transfer to and from bus (school)	No design provision is considered for this location.			
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions.*			
Bus bays	Bus bays provided or modified by the project shall meet NSW state and Commonwealth guidelines for size and layout. Where a conflict exists, the Commonwealth standard will		apply. Where the Commonwealth standard cannot practically apply, the highest practical standard should be provided in excess of NSW state standards and guidelines.	
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.			

Castle Hill – vehicle drop-off interchange and transfer requirements

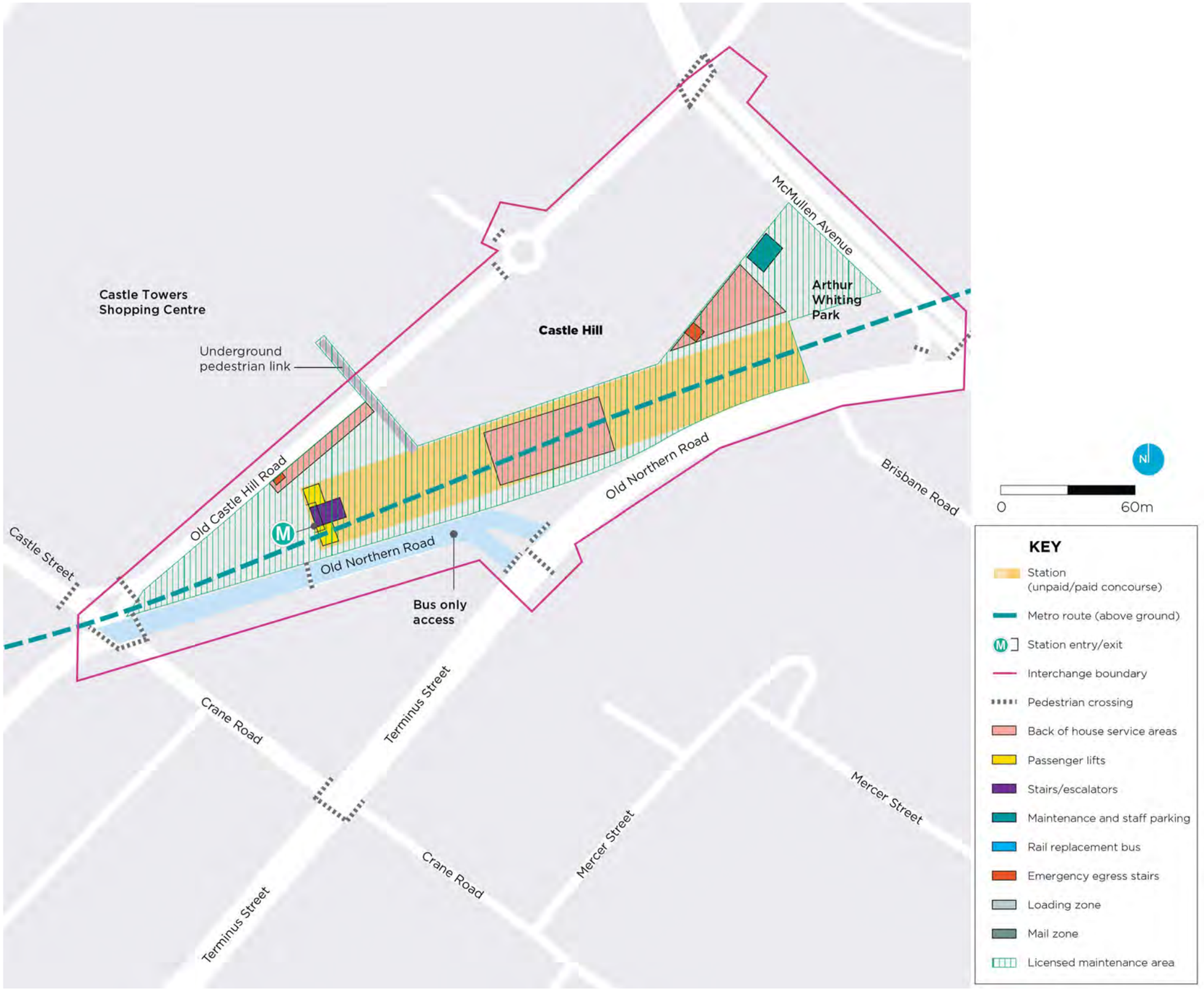


Castle Hill Station – vehicle drop-off interchange and transfer requirements

Castle Hill – vehicle drop-off interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Not applicable.
Current mode splits and intermodal transfer	Not applicable.
Integration	
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from taxi	Taxi ranks must be a 130-metre or less walk from the gatelines to the head of the taxi rank. Nine new taxi ranks will be provided at: • Old Castle Hill Road.
Transfer to and from kiss-and-ride	Kiss-and-ride zones must be a 130-metre or less walk from the gatelines. Seven new kiss-and-ride zones, including one accessible zone, will be provided at: • Old Castle Hill Road.
Taxi rank locations	Taxi ranks that service local centres as well as stations are supported as long as they are located within 100 metres of the station access point.
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.

Castle Hill – operations, maintenance and management provisions



Castle Hill Station – operations, maintenance and management provisions

Castle Hill – operations, maintenance and management provisions *continued*

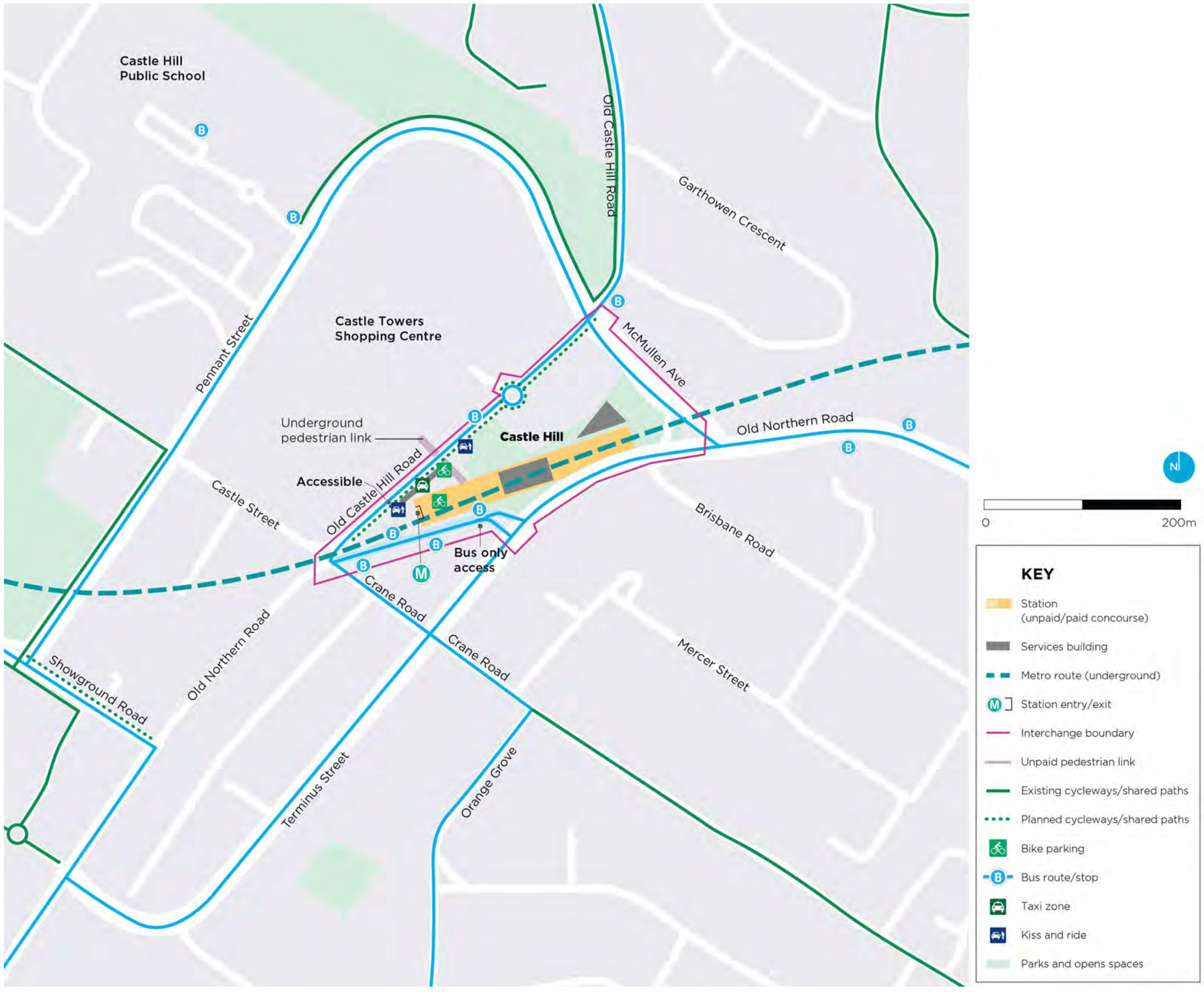
The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Servicing and maintenance access (major)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Rail replacement bus service access	Rail replacement buses will use the bus zones on Old Northern Road and Old Castle Hill Road.
Delivery access (retail and operational)	Delivery vehicles will use the on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	Mail zones may be established on an as needed basis with the surrounding development.
Staff car parking	No staff parking will be provided. Two maintenance parking spaces will be accessed via the driveway on McMullen Avenue.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

Castle Hill – recommendations



Castle Hill Station – recommendations

Castle Hill – recommendations *continued*

This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at Castle Hill Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at Castle Hill Station.

	Action
Park-and-ride	
CAH–P1	As an outcome of the Parking Management Strategy, install parking management recommendations. *Proposed scope: Install signs and line marking.*
Wayfinding	
CAH–S1	Improve wayfinding and general information for walking and bicycle rider customers informing of the surrounding networks outside the interchange area that connect to the station. *Proposed scope: Install signs and line marking.*
Management and maintenance	
CAH–M1	Document operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

Cherrybrook

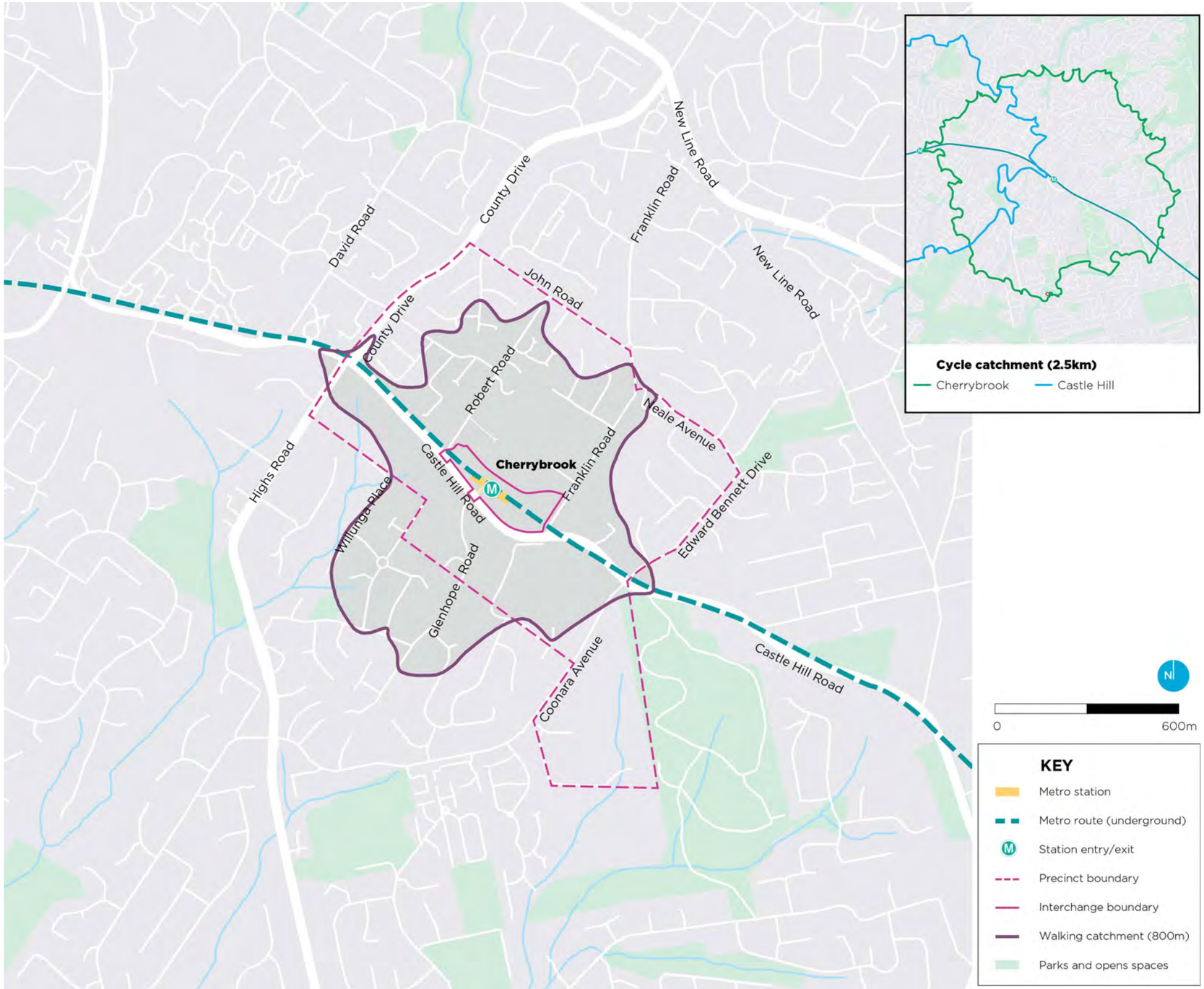
Cherrybrook – local context

Cherrybrook Station will provide a new open-cut station north of Castle Hill Road between Robert Road and Franklin Road.

It will be an interchange and park-and-ride station, with 400 park-and-ride spaces.

Cherrybrook Station will be accessible from a plaza on Bradfield Parade from the north, and from Castle Hill Road from the south.

The entrance will provide access to surrounding residential and educational areas.



Cherrybrook Station – local context

Cherrybrook – local context *continued*

Cherrybrook Station will be the transport hub of an established suburb.

A metro station at Cherrybrook will support the surrounding residential and educational areas.

This area is a Planned Precinct. Metro will also support the future demands.

Station strategy

The station strategy for Cherrybrook is to:

- Provide easy, safe and intuitive transfer to and from the metro station within the existing network and road environment.
- Increase public transport access to the surrounding existing and future residential and educational areas.
- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Feature	Description
Location	• In a cutting, approximately 6.25 metres below street level, on the northern side of Castle Hill Road between Robert Road and Franklin Road.
LGA	• Hornsby Shire Council.
Station entry	• An over-rail plaza entry accessed from Bradfield Parade to the north and Castle Hill Road to the south.
Transport interchange	• Walking, cycling, bus, taxi, kiss-and-ride and park-and-ride.
Main features and traffic arrangements	• New station access road parallel to Castle Hill Road between Robert Road and Franklin Road (one lane each direction). • New bus stops, and taxi and kiss-and-ride zones on Bradfield Parade. • Pedestrian crossing on Bradfield Parade at entrance to station. • Provide commuter car park east of the station. • Widen Robert Road between Castle Hill Road and Bradfield Parade to provide two lanes in each direction. • Signalisation of intersection of Castle Hill Road and Robert Road. • Widen Franklin Road from Castle Hill Road to just south of Kayla Way intersection to add a right-turn lane into Bradfield Parade. South of the Bradfield Parade intersection, Franklin Road will have two northbound lanes and one southbound lane. • An un-signalised 60-metre left-turn lane into Franklin Road on Castle Hill Road. • Pedestrian crossing across Franklin Road at intersection with Castle Hill Road. • Signalisation of intersection of Glenhope Road and Castle Hill Road (subject to RMS approval), with right-turn lane for vehicles turning from Castle Hill Road into Glenhope Road. • Reconfiguration of parking and traffic lanes on Robert Road and Franklin Road to aid bus access to the station from John Road.
Customers	• Residential and educational precincts.
Key attractions	• Castlewood Community Reserve. • Cherrybrook Public School. • Cherrybrook Technology High School. • Cumberland State Forest. • Edward Bennett Oval. • George Thornton Reserve. • Inala Rudolf Steiner School. • Koala Park Sanctuary. • Mount Wilberforce Lookout Reserve. • Oakhill College. • Robert Road Park. • Tangara Infants School. • Tangara School for Girls. • West Pennant Hills Sports Club.

Current land use and characteristics

Existing land use and characteristics

The area around Cherrybrook Station was subdivided in 1959 and is well established. This initial development was followed by further accelerated development in the 1980s when the semi-rural area became a residential boom suburb and the characteristics of today's environment were formed.

Today, the Cherrybrook locality is characterised by generally large, low-density dwellings predominantly built within the last 30 years, surrounded by established vegetation, green open spaces and natural corridors across the undulating topography. Houses are generally set back from the street front with landscaping. Limited medium-density housing (townhouses) is available where new pockets of recent infill development have occurred.

Existing station precinct strategic planning context

The *Draft North District Plan* (Greater Sydney Commission 2016) aims to capture new opportunities generated by Sydney Metro Northwest and other investments, to build a more connected district. It also identifies Cherrybrook as a Planned Precinct. The plan has the following actions that are potentially relevant to Cherrybrook Station:

- Align land use planning and infrastructure planning.
- Provide design-led planning to support high-quality urban design.
- Support the development of initiatives for a sustainable low carbon future.

The plan also states that completion of Sydney Metro Northwest will improve access to employment across the district. The Cherrybrook Station precinct is part of the government's plans to accelerate the supply of housing across the district.

The Department of Planning and Environment (DP&E) is working closely with local councils to deliver the *Sydney Metro Northwest Priority Urban Renewal Corridor.* This strategy aims to deliver new homes, jobs, cafes and parks along the rail line.

The *Cherrybrook Station Structure Plan* (DP&E 2013) has identified future growth opportunities for the area. The area north of Castle Hill Road is proposed to have two distinct sub-precincts, one closest to the station with medium-density three- to six-storey apartments, and another with medium-density two- to three-storey townhouses. The area south of Castle Hill Road, within The Hills Shire Council, will have medium-density three- to six-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.

Cherrybrook – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Cherrybrook, as these modes are not available at this station:

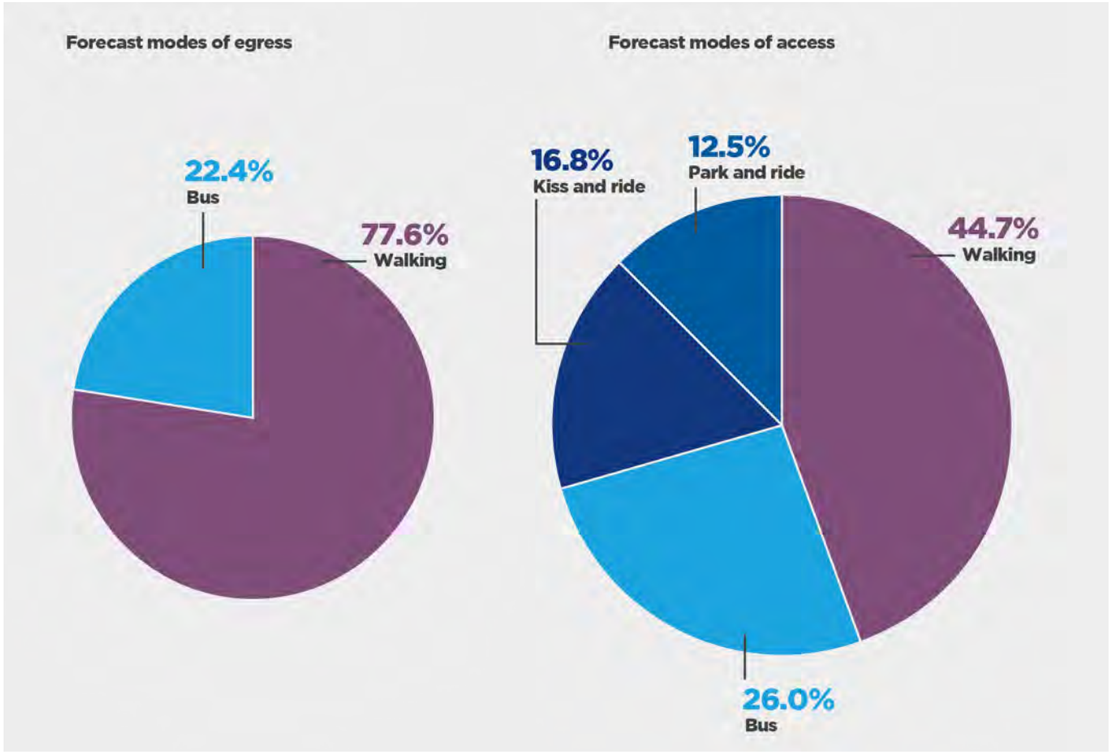
- Light rail.
- Ferry.
- Coach.

Future land use

Land use, transport integration and opportunities

A metro station at Cherrybrook will support state and local strategic and planning controls by enabling opportunities for urban renewal including housing diversity and intensification, meeting the needs of residents, workers and visitors, and creating a vibrant, sustainable community that reaches its full economic and social potential. It is expected that a metro station at Cherrybrook will have the following specific benefits:

- The station will form part of the interchange that provides safe and direct access to residential land uses surrounding the station that will directly benefit from additional transport connectivity to the Global Economic Corridor.
- The station will provide the opportunity for further development of the area as a vibrant and active centre with strong public transport links to North Sydney, the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure and educational facilities.
- The station will provide opportunities to increase residential densities within walking distance of the station.



2036 3.5-hour AM peak demand and mode splits

Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

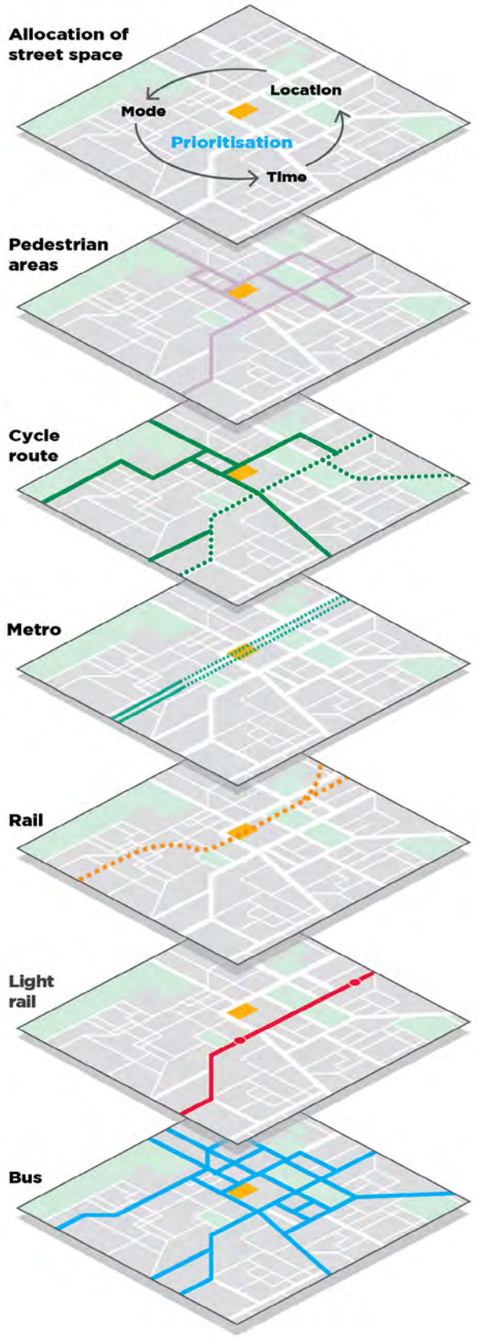
These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and the Hornsby Shire Council.

Opportunities and constraints

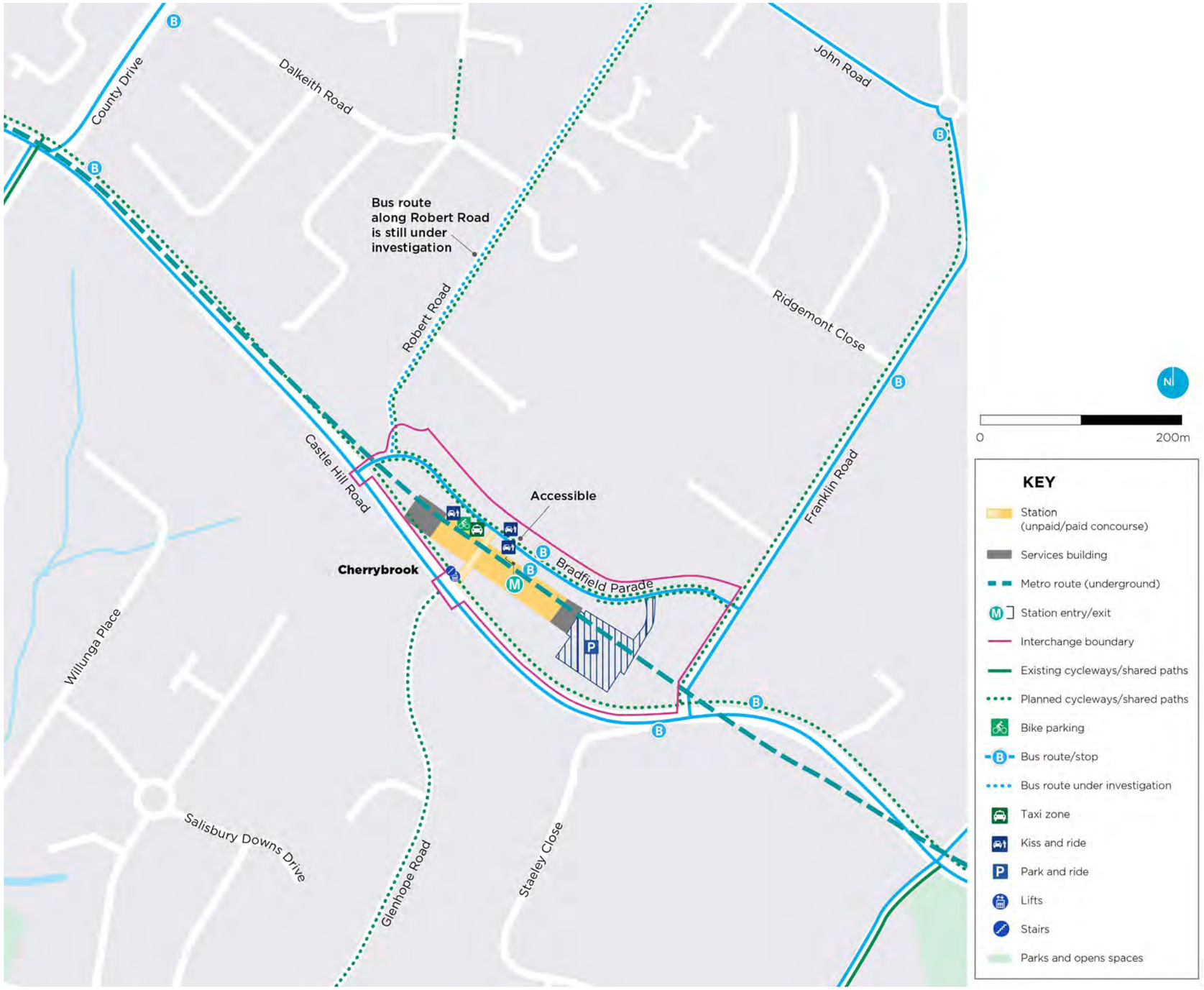
Cherrybrook Station has the following urban design opportunities and constraints.

Opportunities	Constraints
• Integrate the metro station with the existing road network to facilitate safe transfers to and from the station and customers' destinations. • Protect, extend and celebrate the remnant and surrounding Blue Gum High Forest landscape setting. • Create a strong 'place' at the station entry, providing activation, connection, opportunities for community activities (if possible) and a strong sense of identity. • Create attractive and effective pedestrian and cycling connections to the north along the creek and through the existing street network. • Minimise the visual impact of the power line by directing views away from the stanchion and using buildings and landscape to screen views.	• The need to respond to the future development surrounding the station. • Consider the terrain and steep gradient of the surrounding road network connecting to the station.

Cherrybrook – interchange and transfer requirements overview



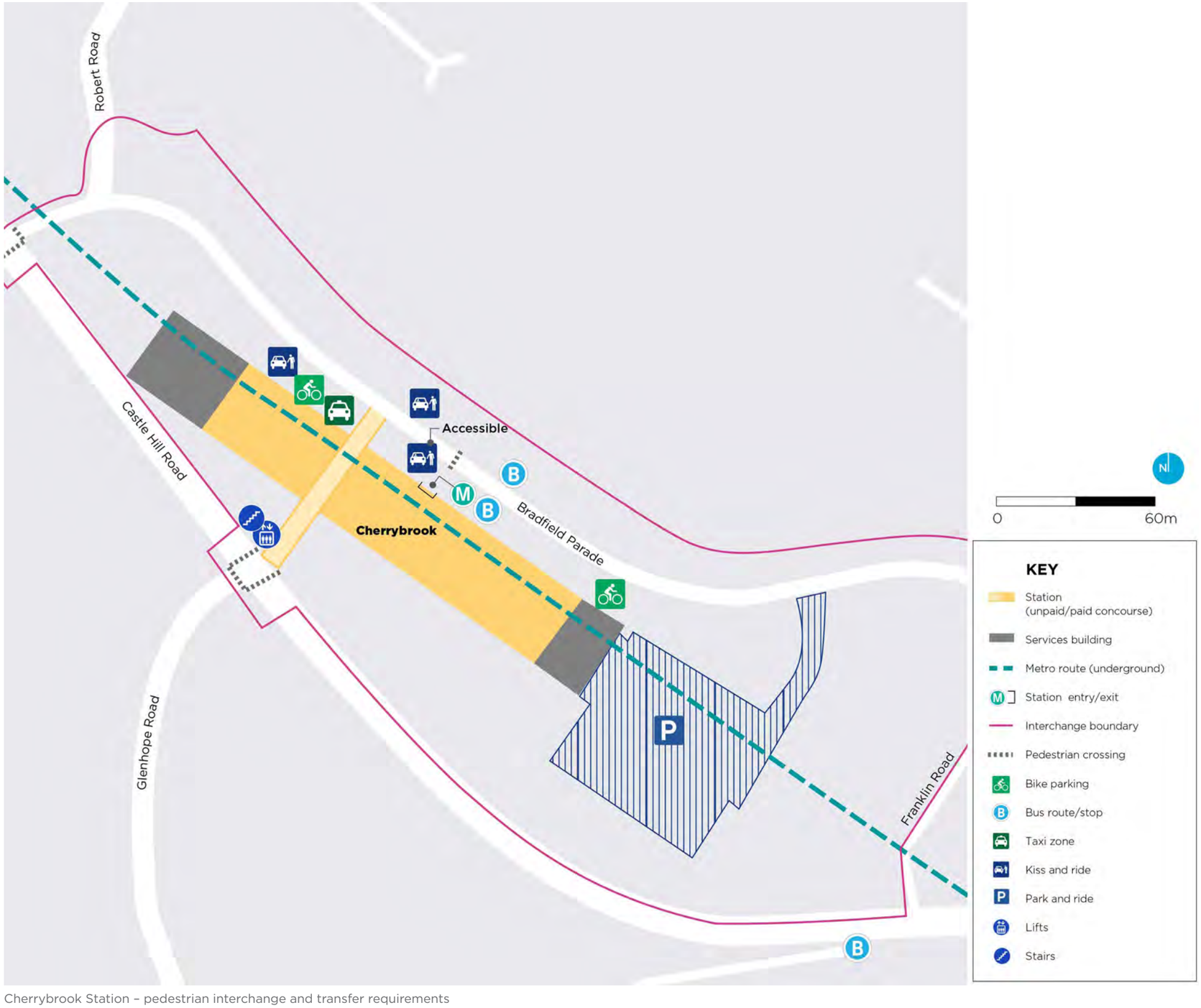
Mode layers



Cherrybrook Station – interchange and transfer requirements overview

Cherrybrook – walking interchange and transfer requirements

Mode layer

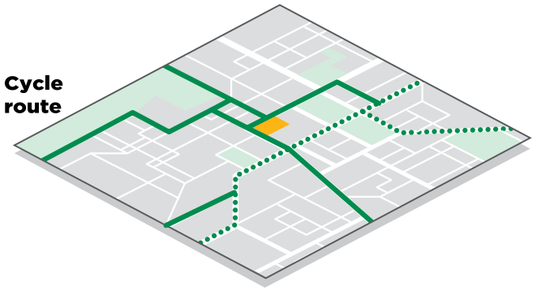


Cherrybrook Station – pedestrian interchange and transfer requirements

Cherrybrook – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Cherrybrook is an origin and destination station. The station site has no existing access, however a network of footpaths will serve the pedestrian network surrounding the station.	The majority of pedestrian demand at opening will connect from and to all directions surrounding the station. Future demand will be evident as the development intensifies around the station.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Station access	The station supports two access points, which require safe, convenient and direct pedestrian routes: • The northern access is on Bradfield Parade, between Robert Road and Franklin Road.	• The southern access is on Castle Hill Road, between Robert Road and Franklin Road.
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with educational and residential areas surrounding the station.	The pedestrian environment potentially impacted by the station includes: • Pedestrian and cycle access will be via a shared path (off road). • Signalised crossing at the intersection of Castle Hill Road and Glenhope Road, which leads across pedestrian bridge directly to station entry.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by Hornsby Shire Council. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant.	• Northern Station Access — Provide connectivity to the surrounding residential and educational precincts. • Southern Station Access — Provide for high pedestrian demand over Castle Hill Road to residential precincts.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.	• Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from bike parking	The station will provide easy transfer to bike parking facilities located at: • Bradfield Parade (northern entry) – bike shed and racks.	
Transfer to and from other rail	No design provision is considered for this location.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will provide easy transfer to bus stops on Bradfield Parade.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	The station will provide easy transfer to the taxi rank on Bradfield Parade.	
Transfer to and from kiss-and-ride	The station will provide easy transfer to kiss-and-ride zones on Bradfield Parade.	
Transfer to and from park-and-ride	The station will provide easy transfer to park-and-ride spaces accessed from Bradfield Parade.	

Cherrybrook – cycling interchange and transfer requirements



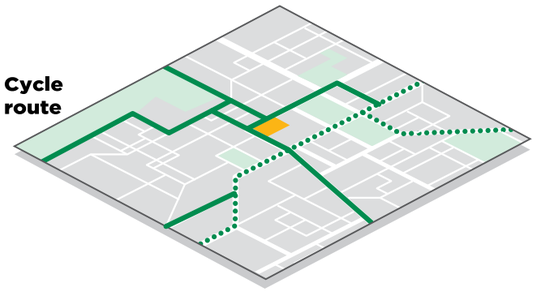
Mode layer

Cherrybrook Station – cycling interchange and transfer requirements

Cherrybrook – cycling interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	The nearby cycle facilities to the station are along Highs Road and Coonara Avenue.	The station and interchange will be designed to allow bicycle riders to move along the local street network and through the station, and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 115 metres of the gateline. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	• Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To facilitate cycle transfer within the interchange, bike parking will be provided: • At the northern entrance on Bradfield Parade.	
Types of parking facilities	The bike parking provisions at the station are: • Bike shed for 35 bicycles, with electronic access facility. • Bike racks for 10 bicycles.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shed for 45 bicycles, with electronic access facility. • Bike racks for 20 bicycles.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments.
Closest cycling routes	The existing cycling network surrounding the station is limited. A shared path exists on Highs Road.	An on-road bike lane exists on Coonara Avenue.
New cycle routes by Sydney Metro	• Consider providing at least one side of Bradfield Parade as a shared path. • Provide western side of Franklin Road as a shared path. • Provide eastern side of Robert Road as a shared path.	• Consider converting northern side of Castle Hill Road between Franklin Road and Robert Road to a shared path.

Cherrybrook – cycling interchange and transfer requirements *continued*



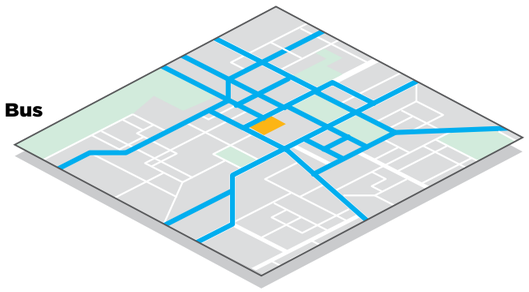
Mode layer

Cherrybrook Station – cycling interchange and transfer requirements

Cherrybrook – cycling interchange and transfer requirements *continued*

Item	Description	
Cycle routes for consideration by others	• Prioritise and install a separated/shared path along northern side of Castle Hill Road, between David Road and Robert Road. • Prioritise and install a separated or shared path (off-road) along northern side of Castle Hill Road, between Franklin Road and Edward Bennet Drive. • Provide shared path to link station precinct with Robert Road, through future subdivision north of the station precinct, connecting to Robert Road. • Provision for shared or separated path on Robert Road and John Road from County Drive to Franklin Road. • Provide a separated/shared path on Franklin Road from the intersection of John Road to the boundary of the station. • Provide missing link on Highs Road (separated or shared path). • Provide missing link on Taylor Street (marked on road). • Provide marked on-road path on Salisbury Downs Drive, Glenhope Road and Glenridge Ave.	• Investigate a potential Darling Mills Creek crossing to connect pedestrian and cycle links. • Potential future pedestrian and cycle link to new development in Cherrybrook area to be provided by others, subject to future development. • 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. • 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. • Investigate opportunities to propose pedestrian and cycle links as shared or separated paths from Cherrybrook Station precinct to IBM Business Park via Coonara Avenue. • 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.

Cherrybrook – bus interchange and transfer requirements



Mode layer

Cherrybrook Station – bus and light rail interchange and transfer requirements

Cherrybrook – bus interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	A number of bus routes operate within the vicinity of Cherrybrook Station. These routes are: • 632 – Castlewood Estate to Pennant Hills. • 633 – Castle Hill to Pennant Hills. • 642 – Round Corner Dural to City Wynyard. • 642X – Round Corner Dural to City Wynyard via Lane Cove Tunnel.
Current mode splits and intermodal transfer	Not applicable.
Integration	
Closest bus stops/routes	The primary bus stops within the interchange are: • North of station: — Bradfield Parade.
Potential changes to bus stops/route	Potential changes to bus routes to the station are under investigation.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Dedicated footways along local and regional roads. • Signalised controlled pedestrian crossings at the eastern entrance.
Transfer to and from bus	Customers will be able to transfer between bus stops at metro station entries using existing footpaths. Where necessary, improvements will be made to signage and wayfinding to ensure an easy customer transfer through improved provision of information.
Transfer to and from bus (overnight)	No design provision is considered for this location.
Transfer to and from bus (school)	No design provision is considered for this location.
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions.*
Bus bays	Bus bays provided or modified by the project shall meet NSW state and Commonwealth guidelines for size and layout. Where a conflict exists, the Commonwealth standard will apply. Where the Commonwealth standard cannot practically apply, the highest practical standard should be provided in excess of NSW state standards and guidelines.
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.

Cherrybrook – vehicle drop-off interchange and transfer requirements

Cherrybrook Station – vehicle drop-off interchange and transfer requirements

Cherrybrook – vehicle drop-off interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Not applicable.
Current mode splits and intermodal transfer	Not applicable.
Integration	
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from taxi	Taxi ranks must be a 130-metre or less walk from the gatelines to the head of the taxi rank. Four new taxi ranks will be provided at: • Bradfield Parade.
Transfer to and from kiss-and-ride	Kiss-and-ride zones must be a 130-metre or less walk from the gatelines. 14 new kiss-and-ride zones, including one accessible zone, will be provided at: • Bradfield Parade.
Taxi rank locations	Taxi ranks that service local centres as well as stations are supported as long as they are located within 100 metres of the station access point.
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.

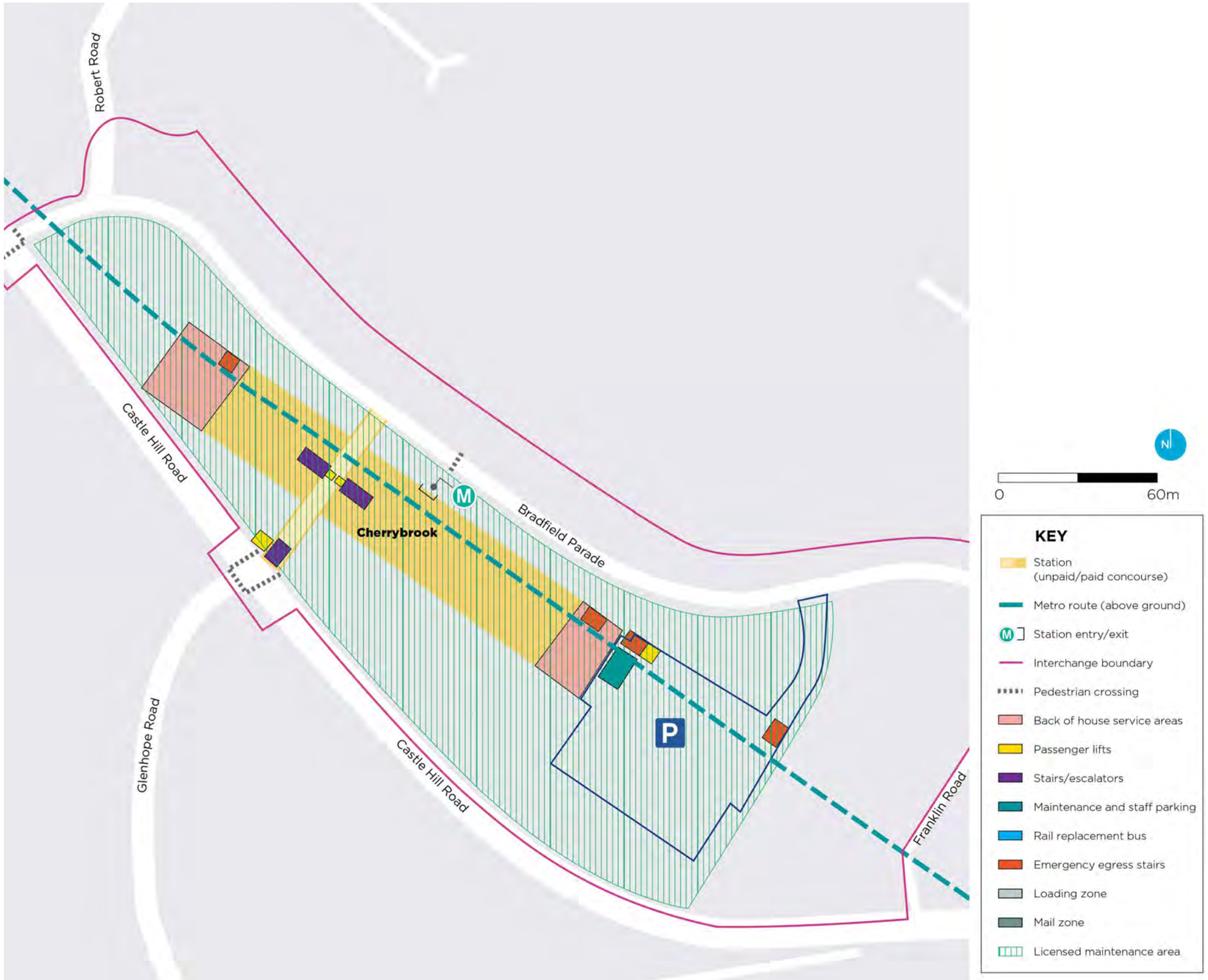
Cherrybrook – vehicle parking interchange and transfer requirements

Cherrybrook Station – vehicle parking interchange and transfer requirements

Cherrybrook – vehicle parking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Not applicable.	
Current mode splits and intermodal transfer	Not applicable.	
Integration		
Park-and-ride spaces required	A total of 400 spaces are required, as follows: • Accessible – 12. • Compact – 60. • Standard – 328.	Car parking bays must be prioritised in order of priority as above, in relation to proximity to the station gateline. In addition to the spaces above, 12 motorcycle parking spaces are required.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Direct paths of travel along pedestrian desire lines within low speed environments.	
Transfer to and from park-and-ride	Park-and-ride zones must be a 400-metre or less walk from the gatelines to the head of the furthest car bay.	The park-and-ride zones within the interchange are accessed from Bradfield Parade.
Accessible parking bays	Accessible parking bays must be compliant with the *Disability Discrimination Act 1992* and the *Disability Standards for Accessible Public Transport 2002*.	
Compact spaces	Compact parking bays (2.5 x 5.0 metres) shall be located together and in a convenient location close to the station entrance.	
Motorcycle parking	Motorcycle and scooter parking shall be allocated to make efficient use of under croft and incidental areas and minimise the need for motorcycles to circulate throughout the car park.	
Meeting point	Where car parking is provided, an accessible designated meeting point shall be provided within each car park, as a place where customers can wait in a safe and secure area to meet breakdown assistance services made at their own arrangement.	

Cherrybrook – operations, maintenance and management provisions



Cherrybrook Station – operations, maintenance and management provisions

Cherrybrook – operations, maintenance and management provisions *continued*

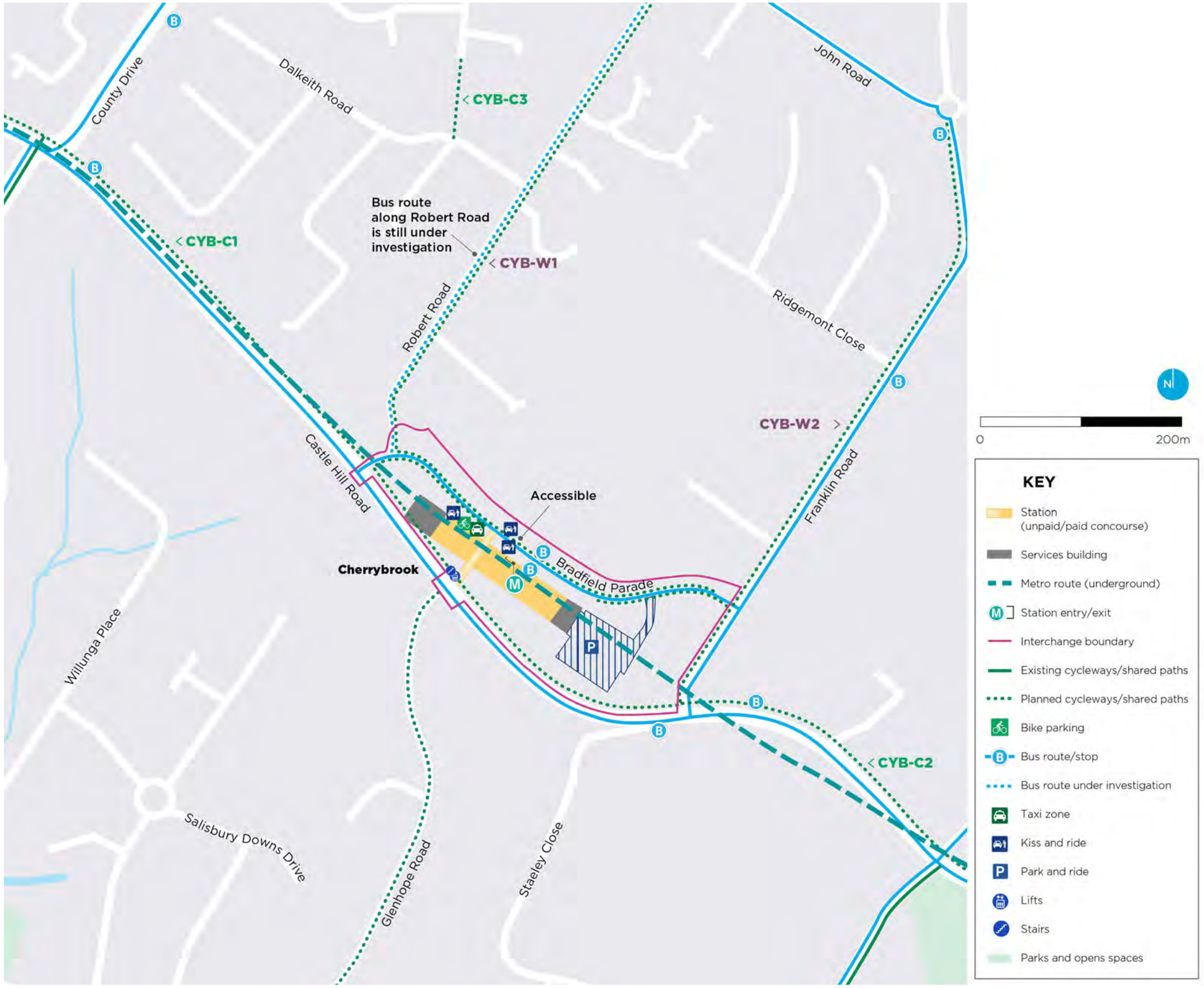
The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Servicing and maintenance access (major)	Service vehicles will use designated service vehicle parking zones within the interchange area.
Rail replacement bus service access	Rail replacement buses will use the bus zone on Bradfield Parade.
Delivery access (retail and operational)	Delivery vehicles will use the on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	Mail zones may be established on an as needed basis with the surrounding development.
Staff car parking	One staff and two maintenance parking spaces will be provided in the multi-storey car park.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

Cherrybrook – recommendations



Cherrybrook Station – recommendations

Cherrybrook – recommendations *continued*

This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at Cherrybrook Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at Cherrybrook Station.

Action	
Walking	
CYB–W1	No walking and cycling provision extends along Robert Road at the end of NRT works to John Road. Install a 470-metre shared path along the eastern side of Robert Road between Oliver Way and John Road. Join to NRT works along Franklin Road to extend the walking and cycling network north from the station. *Proposed scope: Install shared path, signs and line markings.*
CYB–W2	No walking and cycling provision extends along Franklin Road at the end of NRT works to John Road. Install a 480-metre shared path along the western side of Franklin Road between the station precinct and John Road. Join to NRT works along Robert Road to extend the walking and cycling network north from the station. *Proposed scope: install shared path, signs and line markings.*
Cycling	
CYB–C1	No cycling provision extends west from Cherrybrook Station along Castle Hill Road beyond NRT works that terminate at Robert Road. Install a 420-metre shared path along the northern side of Castle Hill Road between County Drive and Robert Road. Join to NRT works along Castle Hill Road to extend the cycling network west from the station. *Proposed scope: Undertake concept and detailed design, and construct a shared path. The works includes widening an existing 1.2-metre footpath to a 2.5-metre shared path, for a length of 420 metres, with associated signs and line marking.*
CYB–C2	No cycling provision extends east from Cherrybrook Station along Castle Hill Road beyond NRT works that terminate at Franklin Road. Install a 670-metre shared path along the northern side of Castle Hill Road between Edward Bennent and Franklin Road. Join to NRT works along Castle Hill Road to extend the cycling network east from the station. *Proposed scope: Undertake concept and detailed design, and construct a shared path. The works includes widening an existing 1.2-metre footpath to a 2.5-metre shared path, for a length of 670 metres, with associated signs and line marking.*
CYB–C3	No cycling provision (only a footpath) is provided connecting Ashford Road residential area to the station. Install 80-metre shared path, along the existing footpath, between properties 22 and 17 Ashford Road and extend to between 10A and 8A Dalkeith Road. *Proposed scope: Undertake concept and detailed design, and construct a shared path. The works include a 80-metre widening of the existing footpath with the removal of existing 'Pedestrian Only' signs and installation of 'Shared Path' signs and line marking.*
Park-and-ride	
CYB–P1	As an outcome of the Parking Management Strategy, install parking management recommendations. *Proposed scope: Install signs and line marking.*
Wayfinding	
CYB–S1	Improve wayfinding and general information for walking and bicycle rider customers informing of the surrounding networks outside the interchange area that connect to the station. *Proposed scope: Install signs and line marking.*
Management and maintenance	
CYB–M1	Prepare an Interchange Operations and Maintenance Plan (IOMP) in accordance with TfNSW Asset Standards Authority, Development of Interchange Operation and Maintenance Plans, February 2017. The IOMP document seeks to clarify operation and maintenance responsibilities for transport interchanges.

Epping

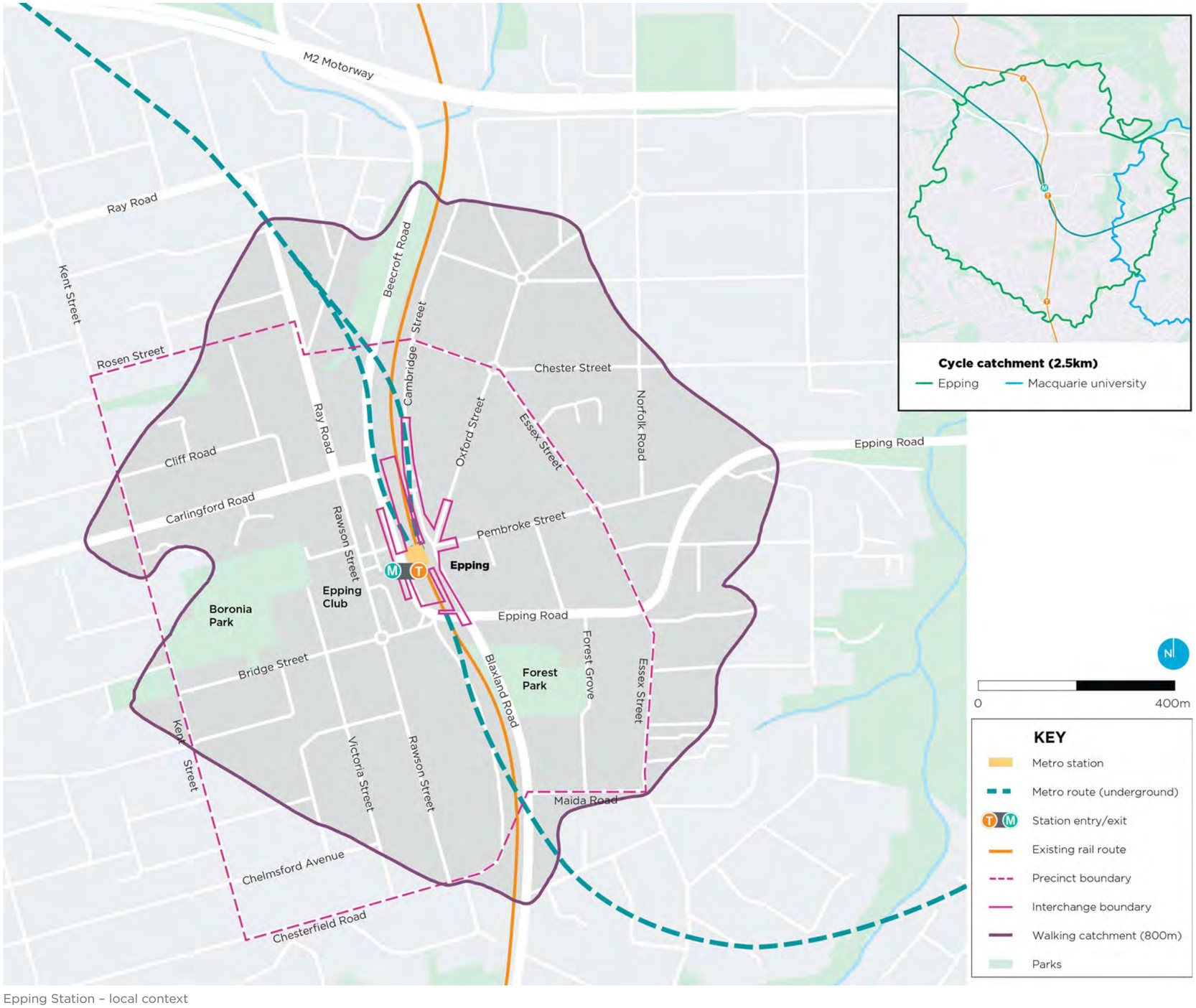
Epping – local context

The existing Epping Station will provide metro operations using existing platforms, with direct connections to rail services and transfer to existing transport services at the existing station at Epping.

The two existing station entries will be retained.

The existing eastern entry from Langston Place (at the intersections of Cambridge, Oxford and Pembroke Streets) provides access to businesses, retail and local residential areas.

The existing western entry from Beecroft Road (north of Epping Road) provides access to surrounding local areas.



Epping Station – local context

Epping – local context *continued*

Epping Station will continue to service the surrounding mixed-use catchment, with business, retail and residential areas. Both Sydney Trains services and Sydney Metro services will operate from this station.

The station is located within the Epping Town Centre, with Beecroft Road to the west, Langston Place to the east and Epping Road to the south. Sydney Metro will use the existing station facilities for operations.

Metro services at Epping will support planned residential and commercial growth for the town centre.

Station strategy

The station strategy for Epping is to:

- Provide easy, safe and intuitive transfer to and from the Sydney Trains and Sydney Metro platforms within the existing network and road environment.
- Support the existing and future growth of commercial, retail within the Epping Town Centre and surrounding residential areas.
- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Feature	Description
Location	• At the site of the existing Epping Station, where platforms 5 and 6 will be repurposed for metro services.
LGA	• City of Parramatta
Station entry	• The existing eastern entry from Langston Place will be retained. • The existing western entry from Beecroft Road will be retained.
Transport interchange	• Walking, cycling, suburban rail, bus, taxi, kiss-and-ride, and park-and-ride.
Main features and traffic arrangements	• Existing bus stops on Cambridge Street and Beecroft Road retained. • Improved shelter protection for taxi and kiss-and-ride customers. • Wayfinding signage and Sydney Metro information will be provided.
Customers	• Commercial, retail, educational, leisure and residential.
Key attractions	• Boronia Park. • Forest Park. • Epping Public School. • Arden Anglican School. • Our Lady Help of Christians Catholic Primary School.

Current land use and characteristics

Existing land use and characteristics

Sydney Metro services will operate from the existing Epping Station. Existing station entries on Langston Place and Beecroft Road will be retained.

The station will continue to service the T1 Northern Line, connecting to Hornsby to the north and Strathfield to the south, and also connecting to the Intercity CCN Central Coast and Newcastle Line.

Within Epping Town Centre, the predominant land use is low-scale commercial, retail, educational and religious activities. Areas outside the town centre in all directions are mainly medium density (up to three storeys) residential apartments, with single dwelling properties located further from the station.

Road network connections from the station lead to the M2 Motorway to the north, Macquarie University to the east via Epping Road, Eastwood and Parramatta River to the south via Blaxland Road and Carlingford to the west.

Existing station precinct strategic planning context

A Plan for Growing Sydney identifies Epping as a Planned Precinct. The following priorities in the plan are potentially relevant to Epping Station and the Project:

- Improve transit connections through the Global Economic Corridor to better link centres and transport gateways.
- Work with councils to identify suitable locations for housing and employment growth coordinated with infrastructure delivery (urban renewal) and rail services.
- Work with councils to investigate potential future employment and housing opportunities associated with a Sydney Metro station.

The draft *North District Plan* (Greater Sydney Commission, 2016) sets priorities and actions for the North District, including driving the growth of the Eastern Harbour City through the planning and delivery of regionally significant infrastructure. The strategic centres of North Sydney, St Leonards, Chatswood, Macquarie Park and Northern Beaches are linked to the Eastern Harbour City and play an important economic role in supporting the growth of Sydney as a global city.

The area is identified as an urban renewal area, which includes considerations to leverage off the addition of metro services to Epping Station to deliver additional employment and residential capacity.

Epping – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Epping, as these modes are not available at this station:

- Light rail.
- Ferry.
- Coach.

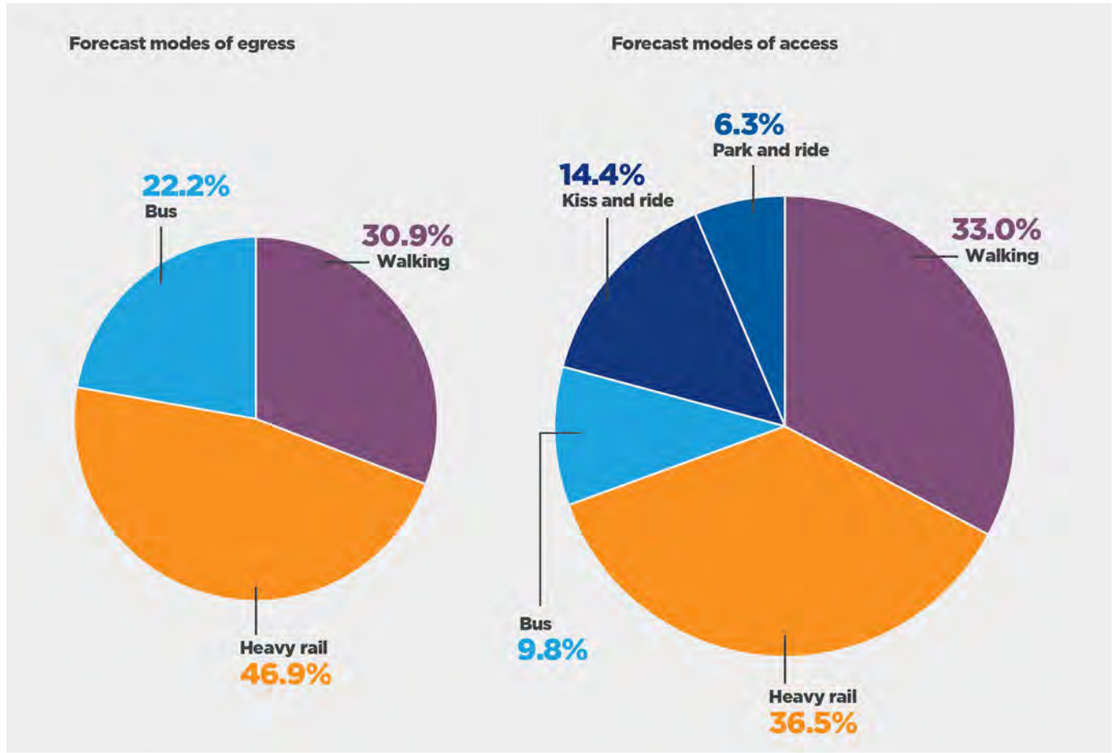
Future land use

Land use, transport integration and opportunities

Metro services at Epping will support state and local strategic and planning controls by providing an incentive for investment within and surrounding the town centre, enhancing urban design and amenity, and improving connectivity in Epping. It is expected that metro services at Epping will have the following specific benefits:

- The station will form part of an interchange that will continue to provide safe and direct access to residential and mixed-use land uses surrounding the station will directly benefit from additional transport connectivity to the Global Economic Corridor, with an increase in service frequency compared to existing rail services.
- The increase in rail services will provide the opportunity for further development of the area as a vibrant and active mixed-use centre with strong public transport links to North Sydney and the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure, and educational facilities.
- The increase in rail services will contribute to the increased utilisation of the existing employment area extending along Langston Place, Beecroft Road and Rawson Street, delivering an increase in new jobs in an area with levels of amenity, recreation opportunities and good access to public transport.
- The increase in rail services will provide opportunities to increase residential densities within walking distance of the station.

These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and the City of Parramatta Council.



2036 3.5-hour AM peak demand and mode splits

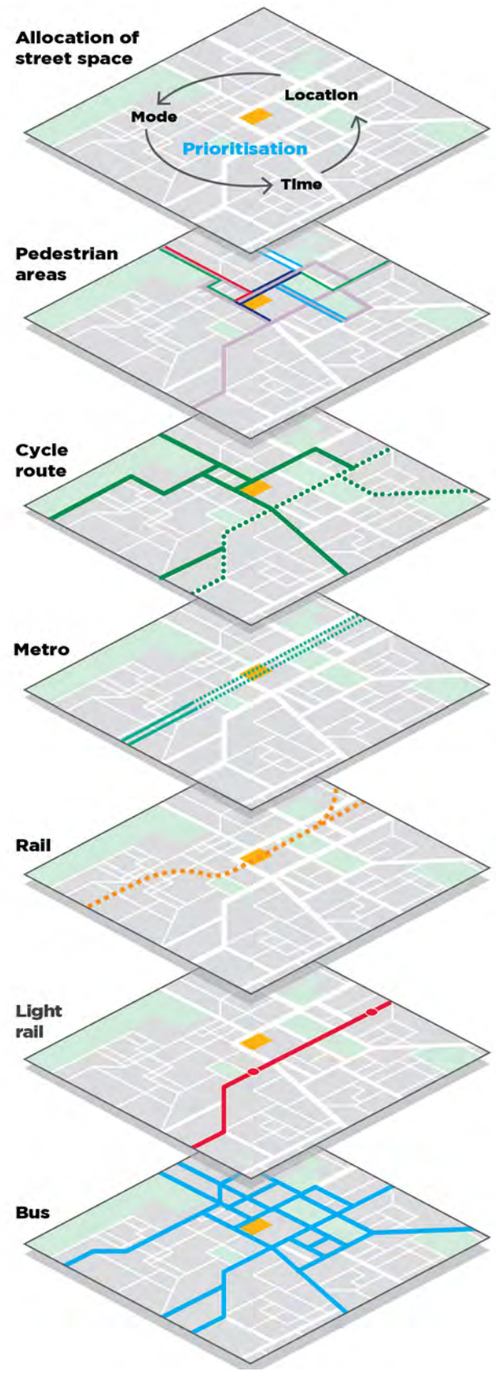
Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

Opportunities and constraints

Epping Station has the following urban design opportunities and constraints.

Opportunities	Constraints
• Integrate metro station with the existing road network to facilitate safe transfers to and from the station and customers' destinations. • Support enhanced amenity within and surrounding the station precinct. • Enhance connections, improving pedestrian and cyclist permeability through Epping and across the rail corridor.	• Road network configuration results in limited opportunities to improve transport facilities due to land constraints.

Epping – interchange and transfer requirements overview



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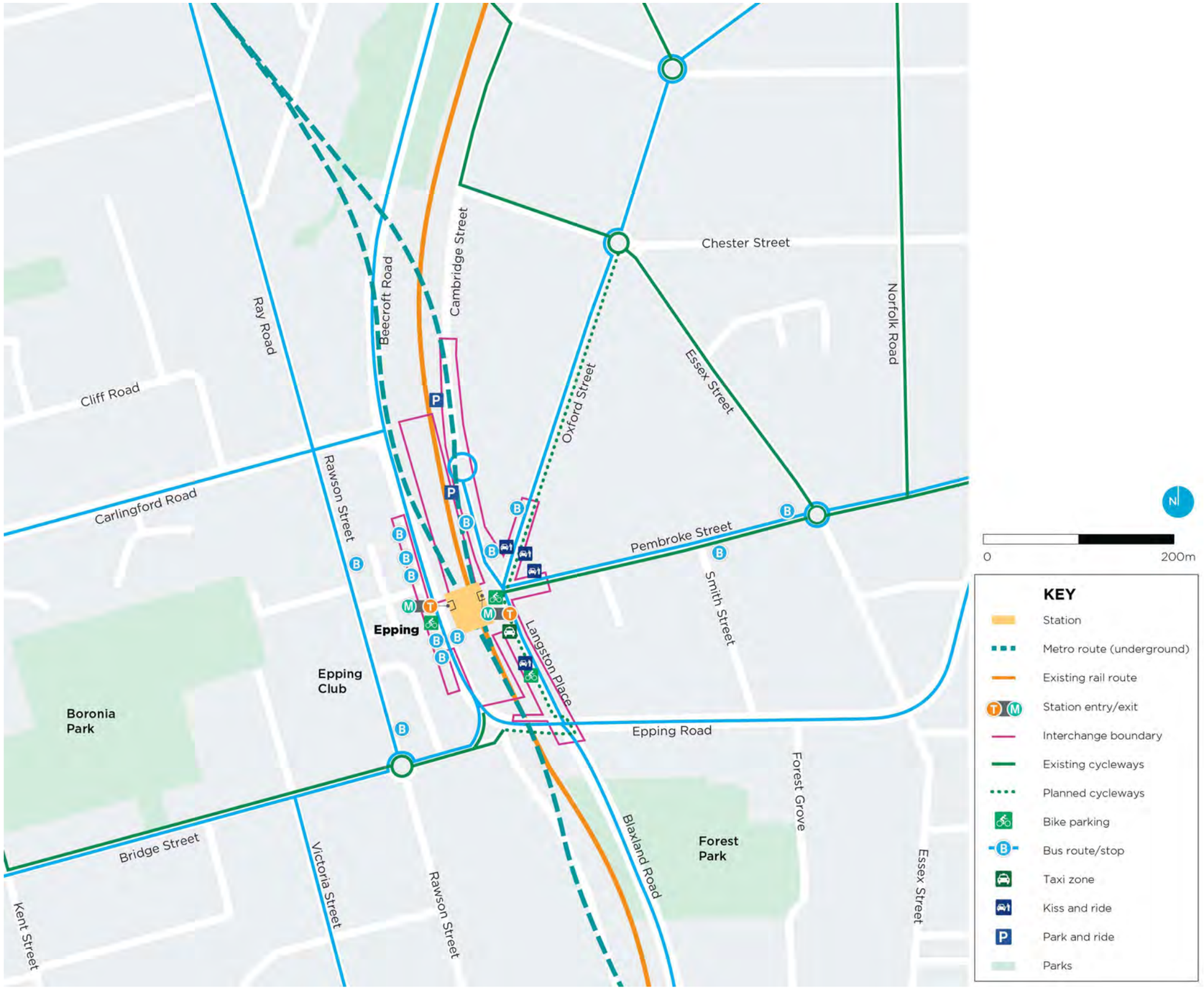

Epping Station – interchange and transfer requirements overview

Epping – walking interchange and transfer requirements

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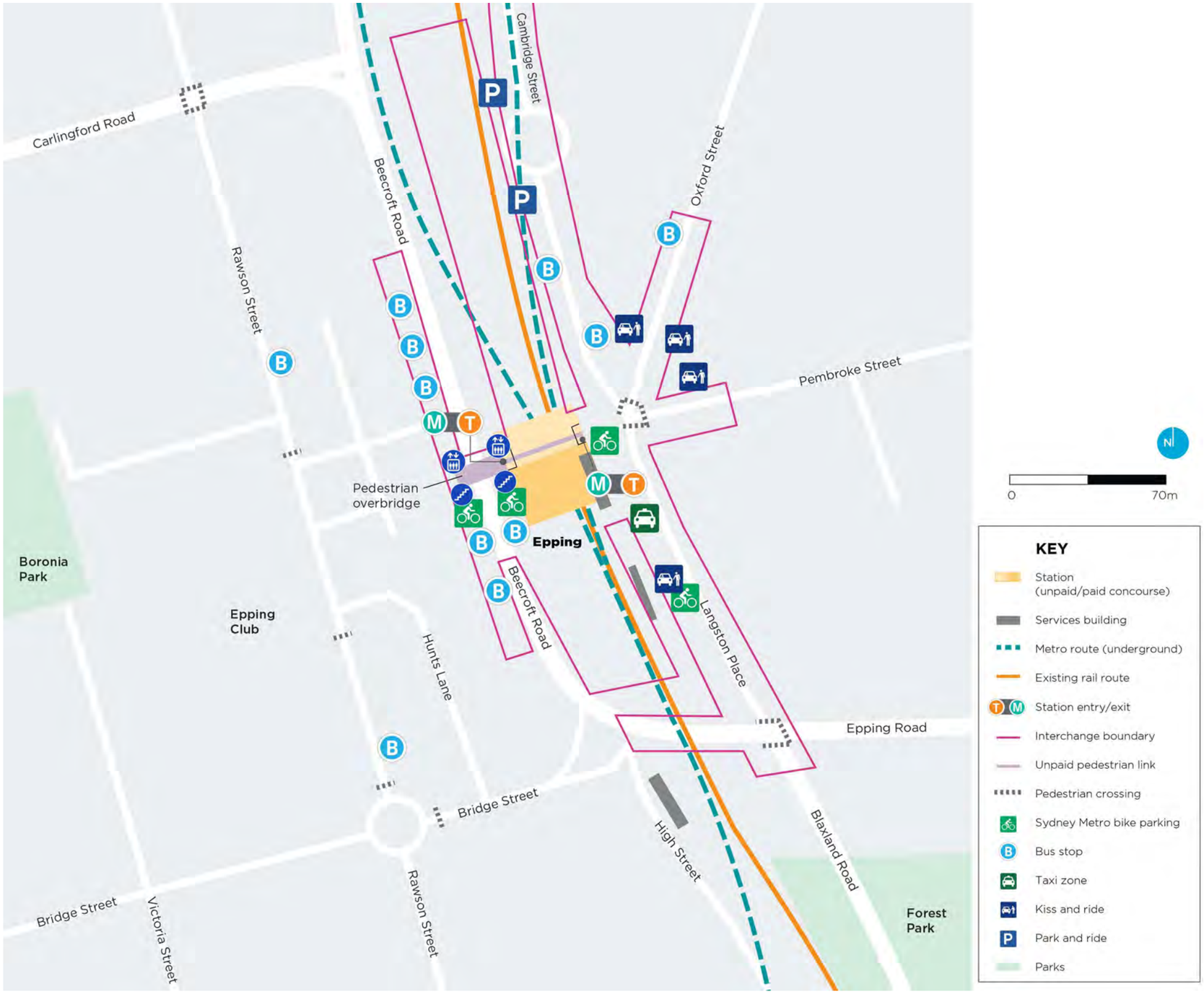
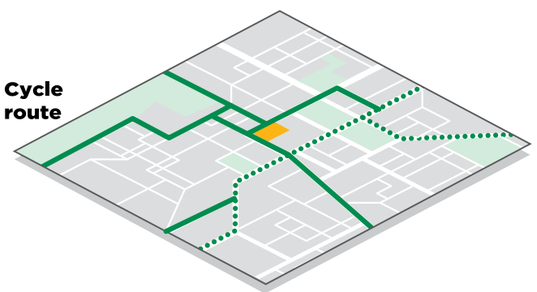


Epping Station – pedestrian interchange and transfer requirements

Epping – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Epping is an origin, destination and transfer station. An existing network of footpaths serves the pedestrian network immediately outside the station. The majority of pedestrian demand currently connects to the bus stop along Cambridge Street and across the pedestrian overpass to bus services and the town centre. The pedestrian bridge across Beecroft Road provides the only pedestrian connection to the town centre between Bridge Street and Carlingford Road.	Signalised pedestrian crossings are located at the intersections of Langston Place with Cambridge Street and Epping Road, which provide connection both east and south of the station. Customers for the park-and-ride facility north of the station, are required to use the footpath on the eastern side of Cambridge Street as no provisions are located at the facility.
Current mode splits and intermodal transfer	2013 3.5-hour AM peak: • 6,800 entries. • 1,400 exits.	Current mode share for pedestrians connecting to Epping Station is 55 per cent.
Integration		
Station access	The station supports two access points, which require safe, convenient and direct pedestrian routes: • The eastern access is on Langston Place, at the intersection of Cambridge, Oxford and Pembroke Streets.	• The western access is on Beecroft Road, north of Epping Road, and can also be accessed via a pedestrian overpass.
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with commercial, retail, educational, leisure and residential areas surrounding the station.	Limited pedestrian facility upgrades are required due to the introduction of Sydney Metro services at Epping Station.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by the City of Parramatta. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant.	• Eastern Station Access — Provide connectivity to the surrounding transport interchanges, residential, retail and commercial precincts. • Western Station Access — Provide for high pedestrian demand over Beecroft Road into the Epping town centre.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.	• Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from bike parking	The station provides easy transfer to existing bike parking facilities located at: • Langston Place – bike lockers • Langston Place and Beecroft Road – bike racks.	The station will provide easy transfer to future bike parking facilities located at: • Langston Place, north of Epping Road – bike shed. • Langston Place – uncovered bike racks outside the station entry.
Transfer to and from other rail	Convenient transfer between the new metro and the T1 Northern Line and the CCN Central Coast and Newcastle Line will be provided at Epping within the paid area.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will continue to provide easy transfer to bus stops on Beecroft Road, Rawson Street, Cambridge Street, Oxford Street and Pembroke Street.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	The station will continue to provide easy transfer to the existing taxi rank on Langston Place.	
Transfer to and from kiss-and-ride	The station will provide easy transfer to the existing kiss-and-ride zones on Langston Place and Pembroke Street.	
Transfer to and from park-and-ride	The station will continue to provide easy transfer to the existing park-and-ride zones on Cambridge Street.	

Epping – cycling interchange and transfer requirements



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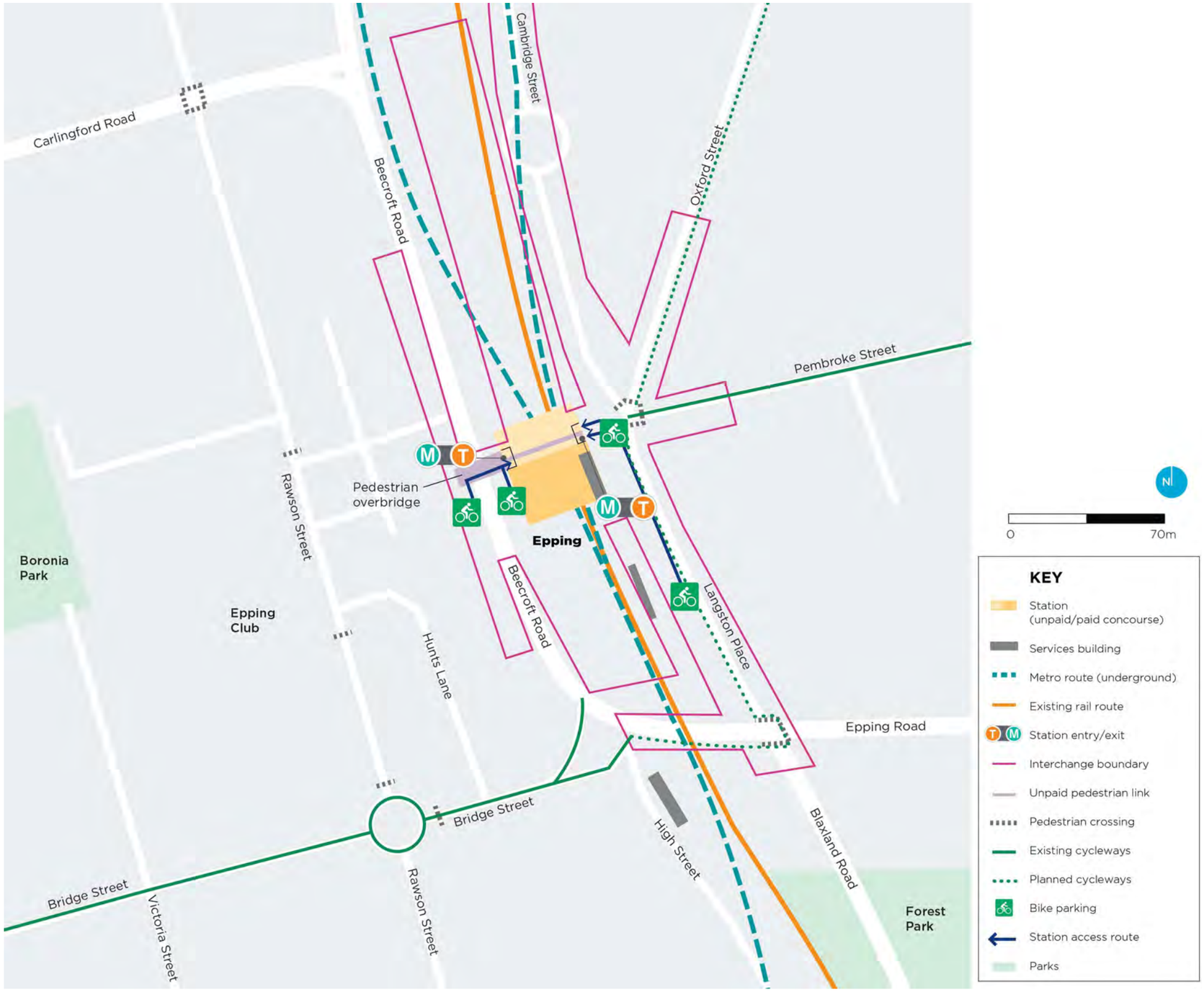
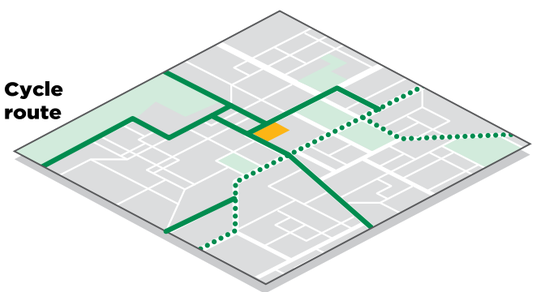


Epping Station – cycling interchange and transfer requirements

Epping – cycling interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	On-road bicycle symbol markings exist along Pembroke Street, Essex Street and Bridge Street. There is no marked cycling facility that connects to the: • Station's western entrance. • Bike parking on Langston Place.	The station and interchange will continue to allow bicycle riders to move through the station and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	*Note: 2014 Household Travel Survey (HTS) data resulted on a daily cycling mode share of up to 5 per cent. There is an information gap regarding cycling mode share from previous access surveys and forecast models.*	Observations made in May 2016 identified the following: • 22 bikes parked on the western side of Epping Interchange. • 50 bikes parked on the eastern side of Epping Interchange.
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 50 metres of the gateline or station entry. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	The current level of bike parking adheres to the following principles: • Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To continue to facilitate bicycle rider transfer within the interchange the following existing bike parking is located at: • Western entrance: — Bike racks – along Beecroft Road (eastern side) beneath the pedestrian bridge. — Bike racks – along Beecroft Road (western side), south of the pedestrian bridge stairs.	• Eastern entrance: — Bike racks – near Langston Place, at the intersection of Cambridge, Oxford and Pembroke Streets. — Bike lockers and bike racks – near Langston Place, approximately 90 metres south of the station. To improve cycling mode share to the station, the TfNSW Bike and Ride Program proposes a bike shed at the eastern entrance near Langston Place, approximately 90 metres south of the intersection (existing bike lockers are to move slightly to incorporate the bike shed).

Epping – cycling interchange and transfer requirements *continued*



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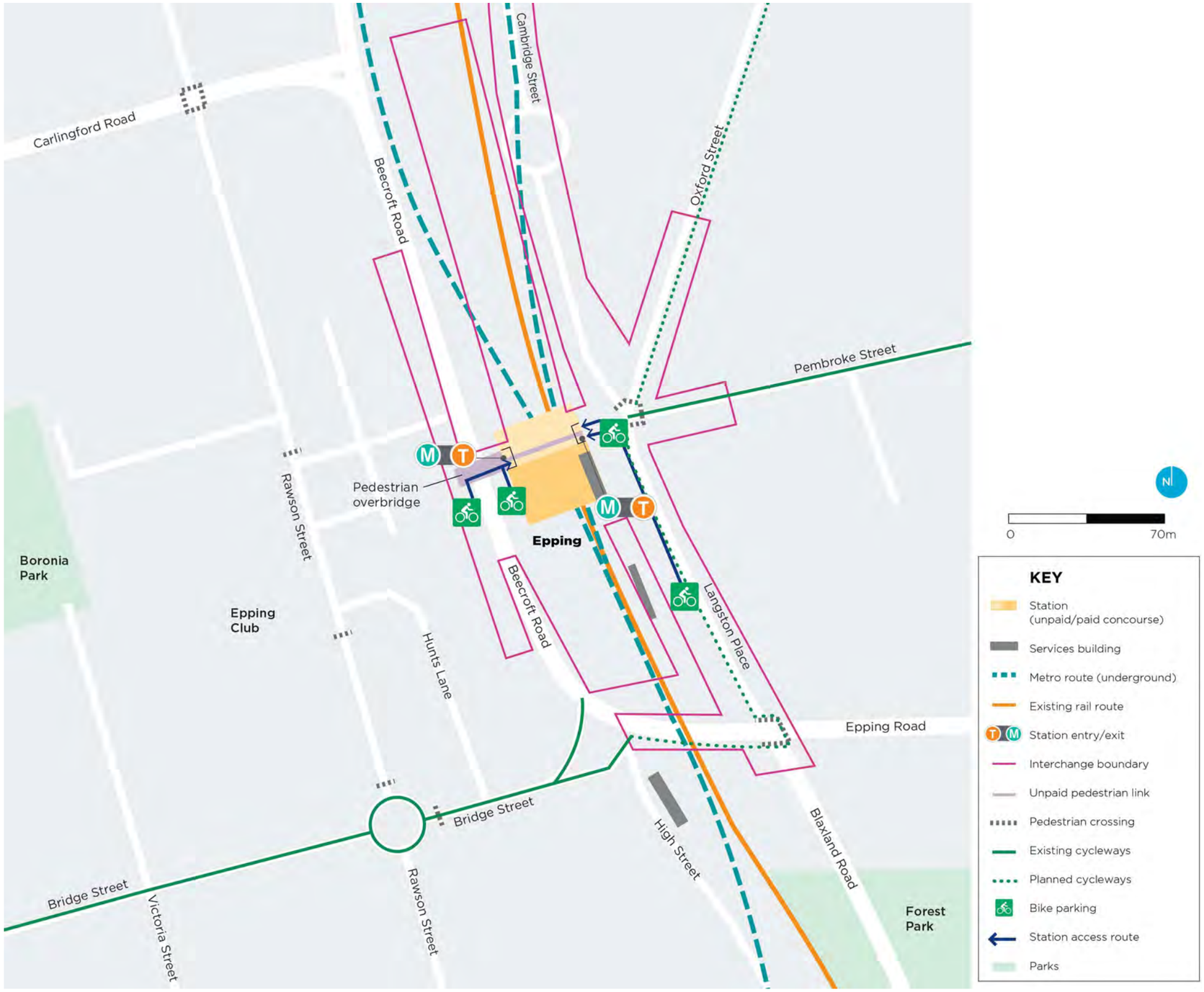
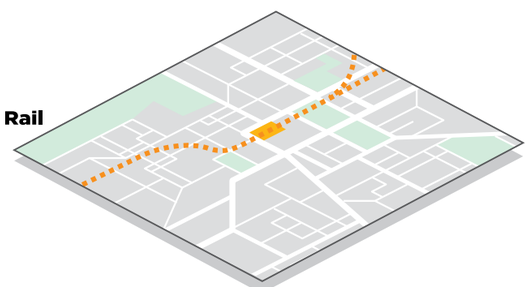


Epping Station – cycling interchange and transfer requirements

Epping – cycling interchange and transfer requirements *continued*

Item	Description	
Types of parking facilities	The bike parking provisions at the station are: • Western entrance: — Bike racks for 16 bicycles, on the eastern side of Beecroft Road outside the station entrance. — Bike racks for 8 bicycles, on Beecroft Road south of the pedestrian bridge stairs. — Bike racks for 4 bicycles on the western side of Beecroft Road, beneath the pedestrian bridge. • Eastern entrance: — Bike racks for 6 bicycles on Langston Place, at the intersection of Cambridge, Oxford and Pembroke Streets. — Bike racks for 8 bicycles on Langston Place, approximately 90 metres south of the station. — Bike lockers for 20 bicycles on Langston Place, approximately 90 metres south of the station.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shed for 40 bicycles, with electronic access facility. • Bike shelter for 20 bicycles. • Retain the existing supply of bike racks. This minimum requirement is taken from the NSW Government's Bike and Ride Program. In addition, the current supply of bike lockers should be maintained in accordance with the Bike Locker Program.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments.
Closest cycling routes	The existing cycling network surrounding the station consists mainly of on-road, mixed traffic cycling environments. On the western side of the station there is no direct cycling connection to the station's pedestrian overpass. The closest cycling route to the station is along Bridge Street.	On the eastern side of the station the cycling network includes: • Pembroke Street. • Essex Street. • Norfolk Road.
New cycle routes by Sydney Metro	• Improve wayfinding and delineation for on-road cycling routes on the following locals roads surrounding the station: — Langston Place — Pembroke Street — Oxford Street — Bridge Street	• Install a shared path along the western side of Langston Place to allow bicycle riders to connect to the bike parking facilities.
Cycle routes for consideration by others	The City of Parramatta propose the following roads for cycling routes: • Oxford Street – on-road local route. • Epping Road – off-road regional route (between Beecroft Road and Pembroke Street). • Rawson Street/Ray Road – on-road regional route (between Kandy Avenue and Bridge Street). • Rawson Street – on-road local route south of Bridge Street.	

Epping – train interchange and transfer requirements



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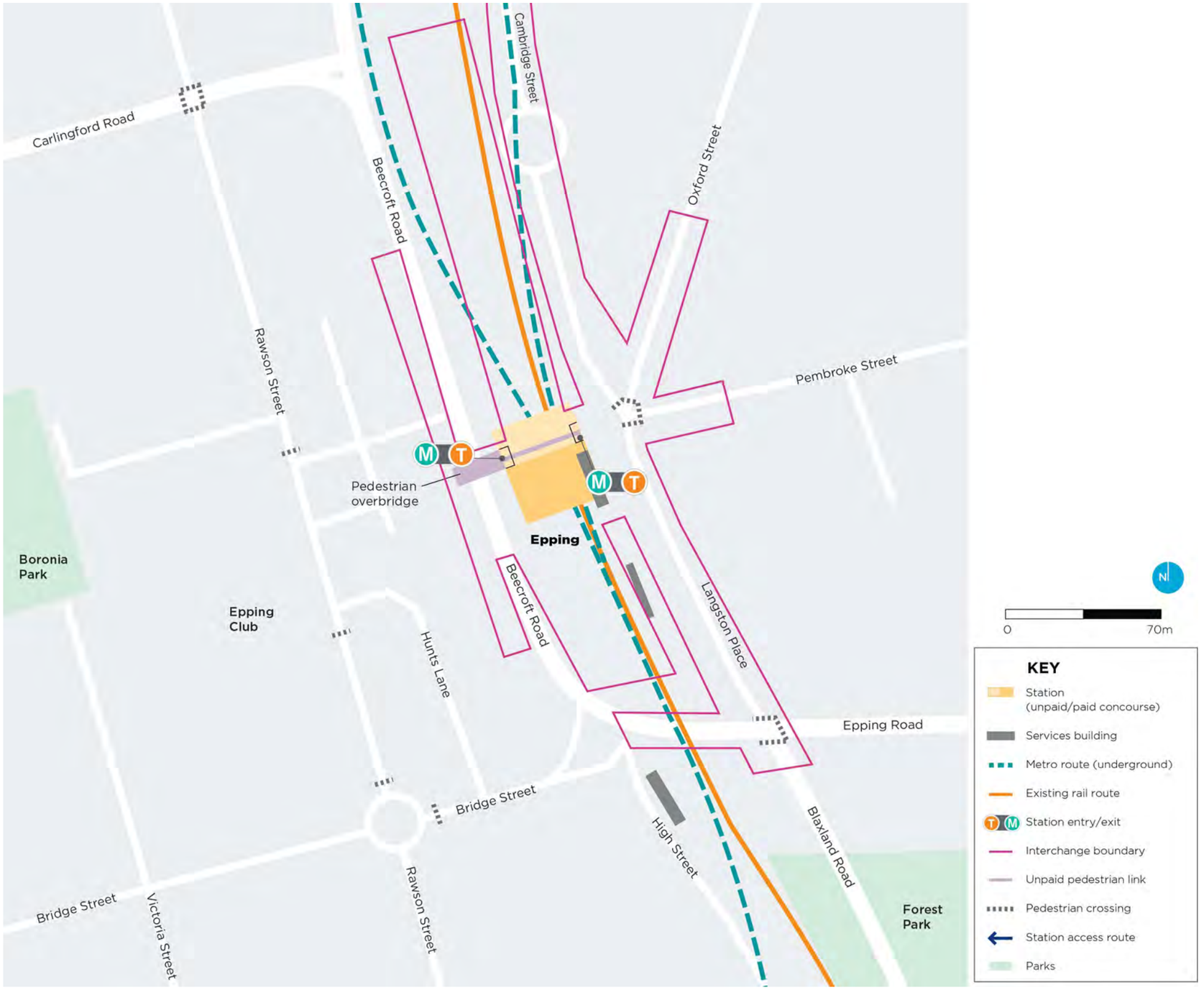

Epping Station – train interchange and transfer requirements

Epping – train interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Epping Station currently services the T1 Northern Line and the CCN Central Coast and Newcastle Line.
Current mode splits and intermodal transfer	• Current mode share for pedestrians connecting to Epping Station is over 55 per cent. • Current Sydney Trains passenger demand is approximately 9,000 customers per day.
Integration	
Closest rail stations	Epping Station.
Type of interchange	Direct connection within the paid areas of the station.
Transfer to and from rail	Surface connection within the paid areas of the station.

Epping – bus interchange and transfer requirements

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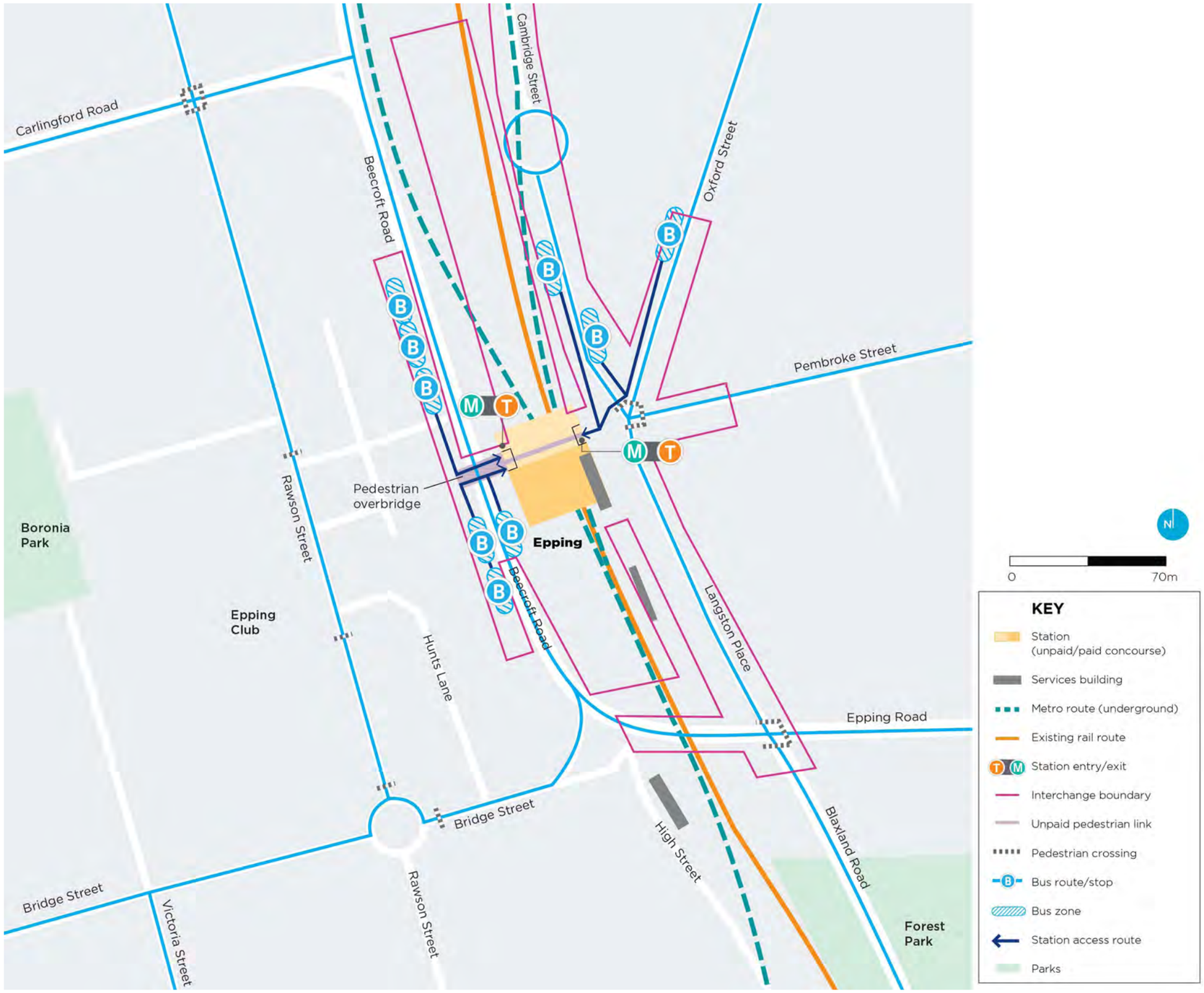
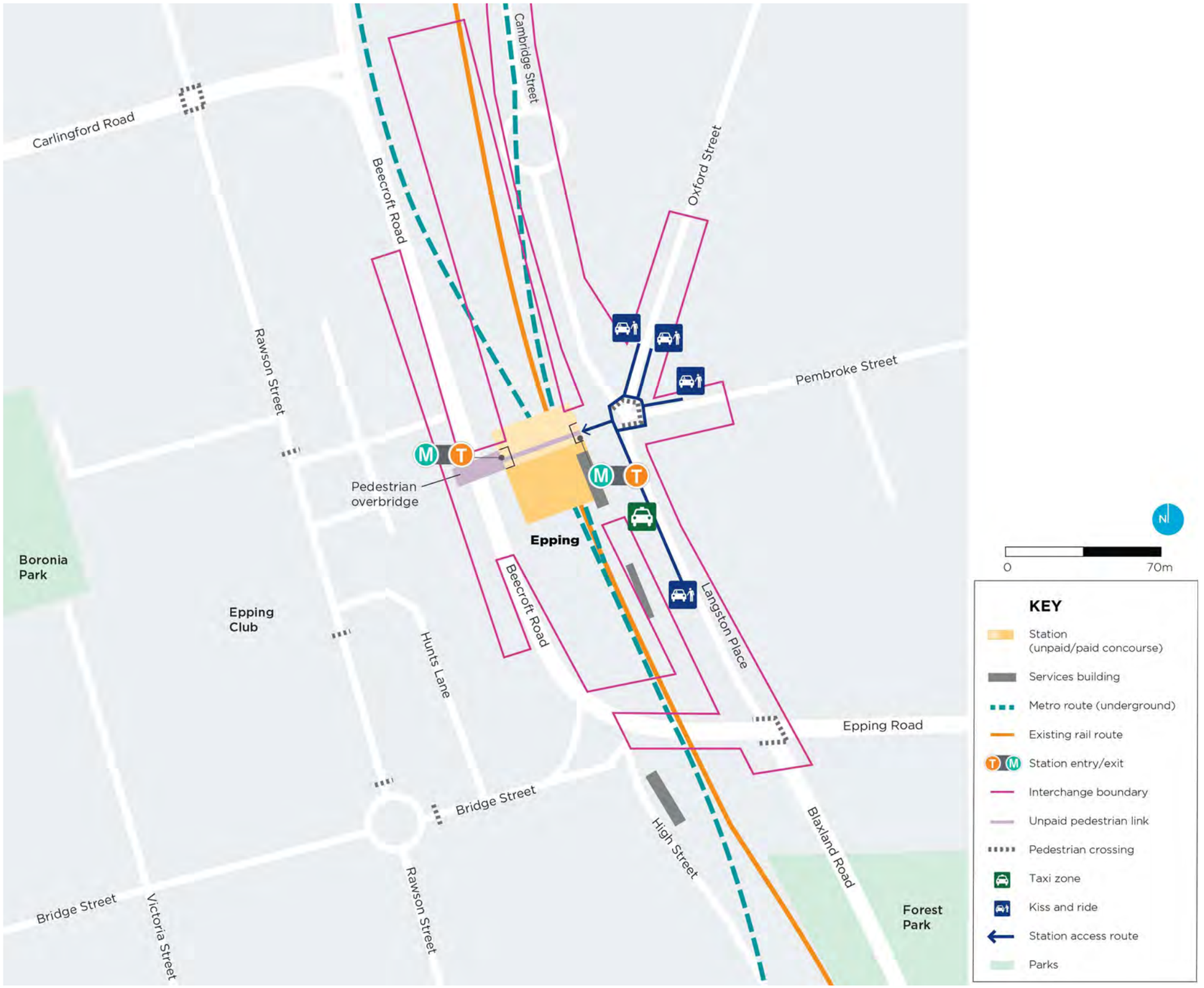


Epping Station – bus and light rail interchange and transfer requirements

Epping – bus interchange and transfer requirements *continued*

Item	Description			
Current state				
Current levels of access and service	A number of bus routes operate outside of Epping Station, from Beecroft Road, Pembroke Street and Cambridge Street. These routes primarily serve the north-west, northern Sydney CBD and Parramatta regions. There is also a dedicated school service from Oxford Street and a dedicated service for Optus employees from Cambridge Street.	These routes are: • 288 – Epping to City (QVB) via Macquarie Centre. • 290 – Epping to City (QVB) via Macquarie Centre and North Sydney. • 291 – Blackbutts Rd before Malbara Cr to Chatswood Station.	• 295 – North Epping to Epping (loop service). • 541 – Eastwood to Epping. • 546 – Epping to Parramatta. • 549 – Epping to Parramatta via North Rocks.	• 541 – Epping to Eastwood. • 630 – Blacktown to Epping. • 994 – Optus bus to Macquarie Park. • M54 – Macquarie Park to Parramatta. • N80 – Hornsby to City Town Hall via Strathfield.
Current mode splits and intermodal transfer	• The bus mode share at Epping Station is approximately 20 per cent (information taken from 2014 HTS data and 2013 TfNSW customer surveys).			
Integration				
Closest bus stops/routes	The primary bus stops within the interchange are: • East of station: — Stand A – Cambridge Street (eastern side). — Stand B – Cambridge Street (western side). — Bus stop on Oxford Street – school services.	• West of station: — Stand C – Beecroft Road (eastern side). — Stand D, E, F, G and H – Beecroft Road (western side). — Bus stops on Rawson Street near Carlingford Road and near Bridge Street.		
Potential changes to bus stops/route	There are no proposed bus stop or service changes at Epping Station prior to the temporary shutdown of the Epping to Chatswood line. Sydney Metro operations commence in 2019. High frequency Station Link services will run while the rail line between Epping and Chatswood is upgraded for around seven months, ahead of Sydney Metro opening in 2019.	Potential changes to bus routes to the station are under investigation.		
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Dedicated footways along local and regional roads.	• Signalised controlled pedestrian crossings at the eastern entrance. • Pedestrian overpass connection across Beecroft Road at the western entrance.		
Transfer to and from bus	Customers will continue to be able to transfer between bus stops at metro station entries using existing footpaths.			
Transfer to and from bus (overnight)	The N80 NightRide service operates from Stand C on Beecroft Road.			
Transfer to and from bus (school)	A designated school bus is located on Oxford Street, access to this stop from the station is via the signalised controlled pedestrian crossings at the eastern entrance.	School children utilise Sydney Bus services, which are accessed via: • Signalised pedestrian crossings at the eastern entrance. • Pedestrian overpass connection across Beecroft Road at the western entrance.		
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions.*			
Bus bays	The bus bays that are being modified for the TTP operations as well as for opening of Sydney Metro services meet the NSW state and Commonwealth guidelines for size and layout.			
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.			

Epping – vehicle drop-off interchange and transfer requirements



Epping Station – vehicle drop-off interchange and transfer requirements

Epping – vehicle drop-off interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Existing kiss-and-ride zones at: • West side of Langston Place, approximately 70 metres south of the eastern entrance. • North side of Pembroke Street, east of the eastern entrance. • West and east sides of Oxford Street, north-east of the eastern entrance. Existing taxi rank at: • Langston Place, approximately 60 metres south of the eastern entrance.
Current mode splits and intermodal transfer	The average weekday passenger drop-off volumes by taxi (Household Travel Survey 2014-15) were approximately: • 760 entries. • 260 exits.
Integration	
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from taxi	Customers will use existing footpaths along Langston Place (western side) to access the station.
Transfer to and from kiss-and-ride	Customers will use the following existing footpaths to access the station: • Langston Place. • Pembroke Street and signalised crossing at Langston Place/Cambridge Street intersection.
Taxi rank locations	Taxi ranks that service local centres as well as stations are supported as long as they are located within 100 metres of the station access point.
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.

Epping – vehicle parking interchange and transfer requirements

Epping Station – vehicle parking interchange and transfer requirements

Epping – vehicle parking interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Existing parking zones at: • Cambridge Street.
Current mode splits and intermodal transfer	2013 3.5-hour AM peak: • 100 entries.
Integration	
Park-and-ride spaces required	• There is a park and ride provision along Cambridge Street north of the eastern entrance.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from park-and-ride	Customers will use existing footpaths to access the station.
Accessible parking bays	DDA compliant spaces are provided along Cambridge Street.
Electric parking spaces	Not applicable.
Compact spaces	Not applicable.
Motorcycle parking	There are six motorcycle spaces along Cambridge Street.
Meeting point	Not applicable.

Epping – operations, maintenance and management provisions

Epping Station – operations, maintenance and management provisions

Epping – operations, maintenance and management provisions *continued*

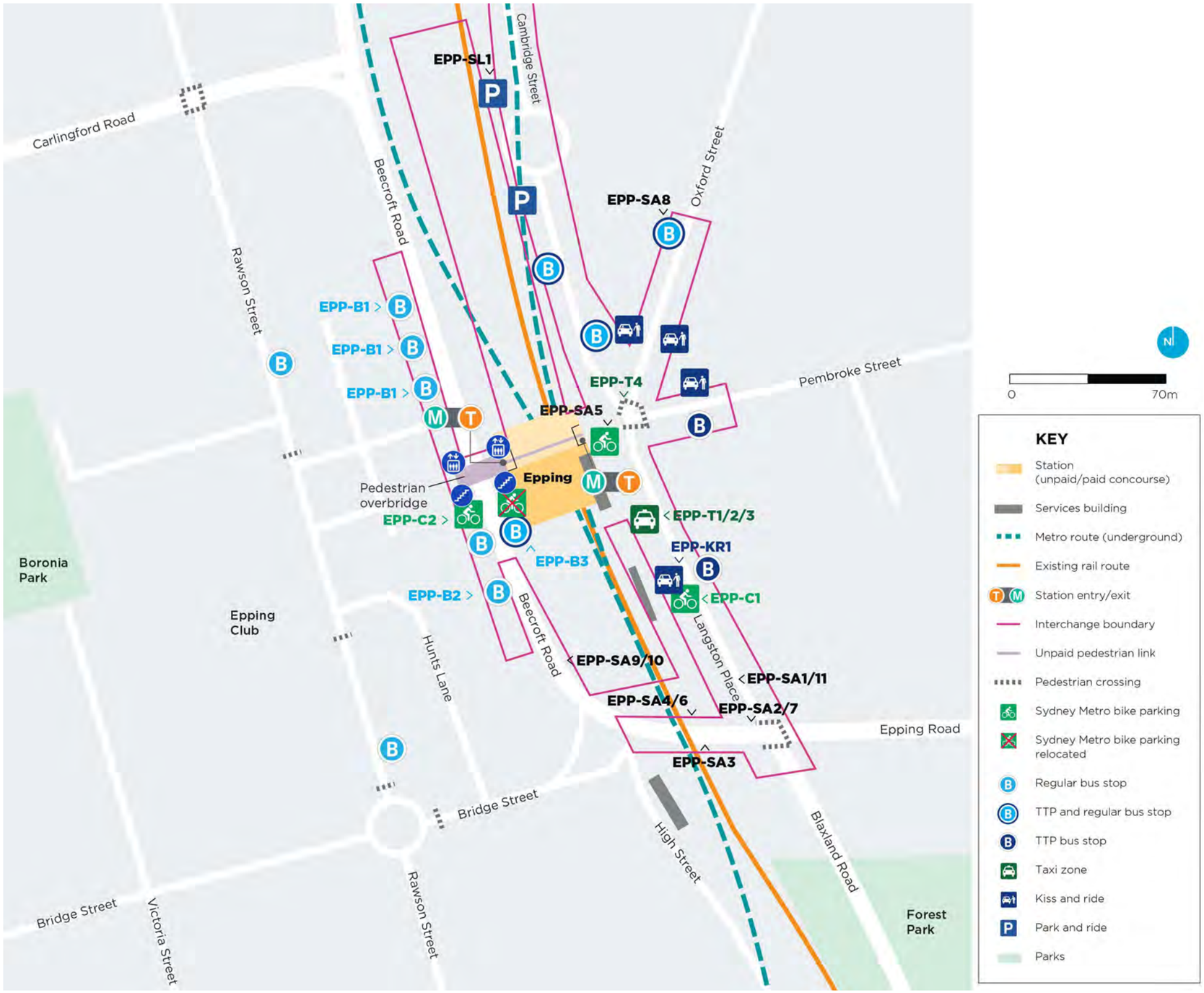
The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles use the existing on-street loading bays and designated service areas.
Servicing and maintenance access (major)	Service vehicles use the existing on-street loading bays and designated service areas.
Rail replacement bus service access	Rail replacement buses will use the existing bus zone on Beecroft Road.
Delivery access (retail and operational)	Delivery vehicles use the existing on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	Mail zones will be maintained at: • 1A Bridge Street, • 66 Rawson Street. • 1 Oxford Street.
Staff car parking	As staff will be encouraged to travel by public transport or active transport, no designated car parking is provided for staff.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

Epping – recommendations



Epping Station – recommendations

Epping – recommendations *continued*

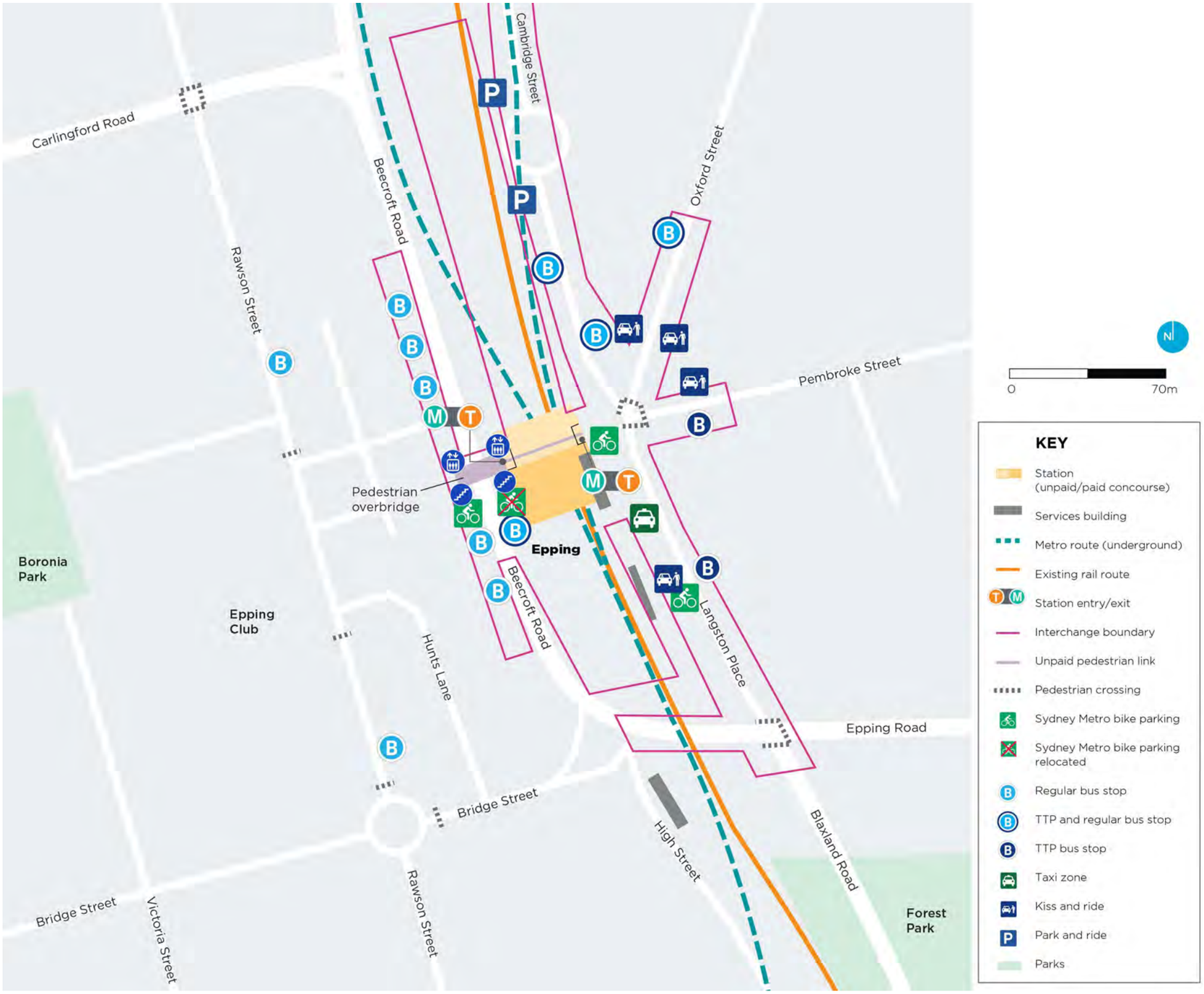
This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at Epping Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at Epping Station.

Action	
Cycling	
EPP–C1	Install signs and line marking to enable a shared path along Langston Place at the location of the bike lockers extending to Epping Road.
EPP–C2	Consider relocating the majority of bike parking under the eastern side of the Beecroft Road pedestrian overpass to the western side of Beecroft Road to accommodate the high demand.
Bus	
EPP–B1	Upgrade three bus stops on Beecroft Road (northbound, north of the pedestrian bridge, ID07, ID08, ID09) to address deficiencies in compliance with the DDA 1992 SFARP. *Proposed scope: Install seating, tactiles and allocated spaces.*
EPP–B2	Upgrade bus stop on Beecroft Road (northbound, south of the pedestrian bridge, ID10) to address deficiencies in compliance with the DDA 1992 SFARP. *Proposed scope: Install seating, tactiles and allocated spaces.*
EPP–B3	Upgrade bus stop on Beecroft Road (southbound, south of the pedestrian bridge, ID11) to address deficiencies in compliance with the DDA 1992 SFARP. *Proposed scope: Install additional shelter, replace existing shelter, install tactiles and allocated spaces, trim vegetation, install security fencing.*
Taxi	
EPP–T1	Install taxi zone road markings to improve delineation between the taxi rank and the kiss-and-ride facility in Langston Place.
EPP–T2	Consider providing side screens to the taxi shelter to improve weather protection.
EPP–T3	Construct kerb ramps to provide accessibility to the taxi rank.
EPP–T4	Replace existing R9-Q01 'BUSES EXCEPTED' signs to a R9-Q01 'BUSES TAXIS EXCEPTED' to allow taxis to enter Cambridge Street and perform a u-turn manoeuvre at the roundabout.
Kiss-and-ride	
EPP–KR1	• Replace signs to limit parking to two (or five) minutes during AM and PM peak periods in the Langston Place kiss-and-ride facility. • Extend Langston Place kiss-and-ride activities to 7pm. • Replace the Langston Place kiss-and-ride totem. • Install a shelter incorporating lighting and seating for Langston Place kiss-and-ride. • Install kerb ramps to improve access at Langston Place kiss-and-ride.

Action	
Safety	
EPP–SA1	Trim or remove vegetation on the western side of Langston Place near Epping Road/Beecroft Road intersection (same location as EPP-SA11).
EPP–SA2	Signalise pedestrian crossing on the slip lane from Beecroft Road (eastbound) into Langston Place (northbound) to reduce risk of pedestrians being hit when crossing.
EPP–SA3	Install fencing along the southern footpath of the bridge over the railway to prevent pedestrians entering the carriageway.
EPP–SA4	Resurface the existing footpath on the eastbound approach to the bridge over the railway.
EPP–SA5	Rationalise cycle parking provisions at the eastern station entrance as per the NSW Government's Bike and Ride Program and in accordance with the Bike Parking Facilities BRS to address non-compliant provisions and discourage bike parking along pedestrian barrier fence.
EPP–SA6	Install fencing along the northern footpath of the bridge over the railway to prevent pedestrians entering the carriageway.
EPP–SA7	Add "LOOK --->" pavement marking at the intersection of Epping Road/Langston Place.
EPP–SA8	Upgrade bus stop in Oxford Street to address deficiencies in compliance with the DDA 1992 SFARP. *Proposed scope: Remove bollards or limit stop to low-floor buses, raise footpath at boarding point, install tactiles, replace shelter (including seats and allocated spaces).*
EPP-SA9	Remove tree roots and repair affected footpath on the southbound carriageway of Beecroft Road between the bus stop and Epping Bridge.
EPP–SA10	Trim low hanging tree branches to clear footpath on the southbound carriageway of Beecroft Road between the bus stop and Epping Bridge.
EPP–SA11	Widen footpath on the western side of Langston Place near Epping Road/Beecroft Road intersection to increase visibility and sightlines to pedestrians (same location as EPP-SA1).
Street lighting	
EPP–SL1	Upgrade lighting in Cambridge Street north of the bus roundabout to P1 as part of the adjacent land development.
Management and maintenance	
EPP–M1	Document operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

Epping – temporary transport plan



Epping Station – temporary transport plan

Macquarie University

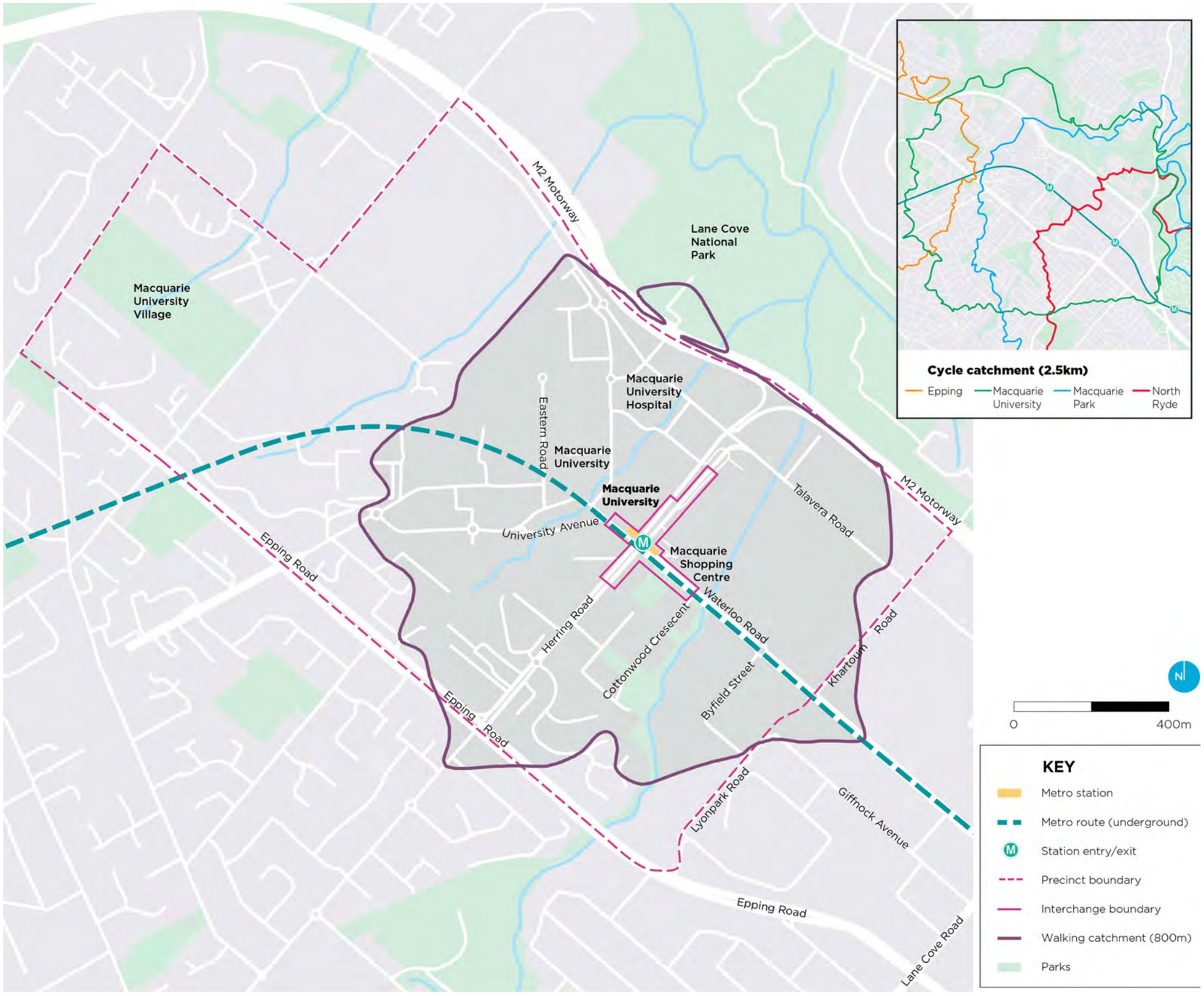
Macquarie University – local context

The existing Macquarie University Station will be converted to metro operations, using existing platforms and providing transfer to existing road-based transport services.

The two existing station entries will be retained.

The western entry located on the north-western side of the intersection of Herring Road and University Avenue provides access to the Macquarie University campus, Macquarie University Hospital and residential facilities.

The eastern entry located on the north-eastern side of the intersection of Herring Road and Waterloo Road provides access to Macquarie Centre, the Macquarie Park Corridor and the residential area to the south.



Macquarie University Station – local context

Macquarie University – local context *continued*

Macquarie University Station will continue to service the surrounding mixed-use catchment, with education, business, retail and residential areas.

The station is located beneath the Herring Road and Waterloo Road intersection. Sydney Metro will use the modified station facilities for operations.

Local destinations include large and small commercial and knowledge-industry businesses in medium-rise office blocks. Macquarie Centre is next to the station. Other retail in the area is mostly smaller-scale local shops, including cafes, take-away food and a station kiosk.

Herring Road and Waterloo Road are important arterial roads with extended clearway hours installed for the Station Link project.

Metro services at Macquarie University will support the growth and development of the Macquarie Park Planned Precinct, where increases to nearby residential and commercial areas are planned. Funding for the Planned Precinct works will also go towards upgrades to existing infrastructure and open space to support development and improve opportunities for outdoor recreation and amenity.

Feature	Description
Location	• At the site of the existing Macquarie University Station.
LGA	• City of Ryde.
Station entry	• The existing western entry from the north-western corner of the intersection of Herring Road and Waterloo Road will be retained. • The existing eastern entry from the north-eastern corner of the intersection of Herring Road and Waterloo Road will be retained.
Transport interchange	• Walking, cycling, bus, taxi and kiss-and-ride.
Main features and traffic arrangements	• Existing bus stops on Herring Road and Waterloo Road retained. • Taxi and kiss-and-ride shelter protection improved. • Wayfinding signage and Sydney Metro information will be provided.
Customers	• Commercial, retail, educational, leisure and residential.
Key attractions	• Lane Cove River Park. • Macquarie Centre. • Macquarie Park Corridor. • Macquarie University. • Macquarie University Graduate School of Management. • Macquarie University Hospital.

Station strategy

The station strategy for Macquarie University is to:

- Provide easy, safe and intuitive transfer to and from the metro station within the existing network and road environment.
- Support the development of the Macquarie Park Planned Precinct, which includes existing and future commercial, retail, residential and educational uplift.
- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Current land use and characteristics

Existing land use and characteristics

Sydney Metro services will operate from the existing Macquarie University Station. Existing station entries on Herring Road will be retained.

North-west of the station is dominated by Macquarie University, including Macquarie University Hospital. North-east of the station is Macquarie Centre, a large-scale retail shopping centre. South of the station are medium-density residential apartments and the commercial precinct of Macquarie Park Corridor.

Road network connections from the station lead to the M2 Motorway to the north and Lane Cove Road (A2) to the south-east, Epping Town Centre to the west via Epping Road, Sydney Olympic Park to the south and Lane Cove National Park and Chatswood to the east.

Existing station precinct strategic planning context

A Plan for Growing Sydney identifies Macquarie University as a Planned Precinct. The following priorities in the plan are potentially relevant to Macquarie University Station and the Project:

- Improve transit connections through the Global Economic Corridor to better link centres and transport gateways.
- Work with councils to identify suitable locations for housing and employment growth coordinated with infrastructure delivery (urban renewal) and rail services.
- Work with councils to investigate potential future employment and housing opportunities associated with a Sydney Metro station.

The Department of Planning and Environment (DP&E) has recently initiated a strategic investigation of the Macquarie University Station precinct. The investigation is being undertaken as a partnership between the City of Ryde and Parramatta Councils, TfNSW and DP&E, and is expected to identify a vision, proposed land uses, dwelling and population projections and the infrastructure (state and local) required to support growth.

The draft *North District Plan* (Greater Sydney Commission, 2016) sets priorities and actions for the North District, including driving the growth of the Eastern Harbour City through the planning and delivery of regionally significant infrastructure. The strategic centres of North Sydney, St Leonards, Chatswood, Macquarie Park and Northern Beaches are linked to the Eastern Harbour City and play an important economic role in supporting the growth of Sydney as a global city.

The area is identified as an urban renewal area, which includes considerations to leverage off the provision of metro services to Macquarie University Station to deliver additional employment and residential capacity.

Macquarie University – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Macquarie University, as these modes are not available at this station:

- Light rail.
- Ferry.
- Coach.
- Park and ride.

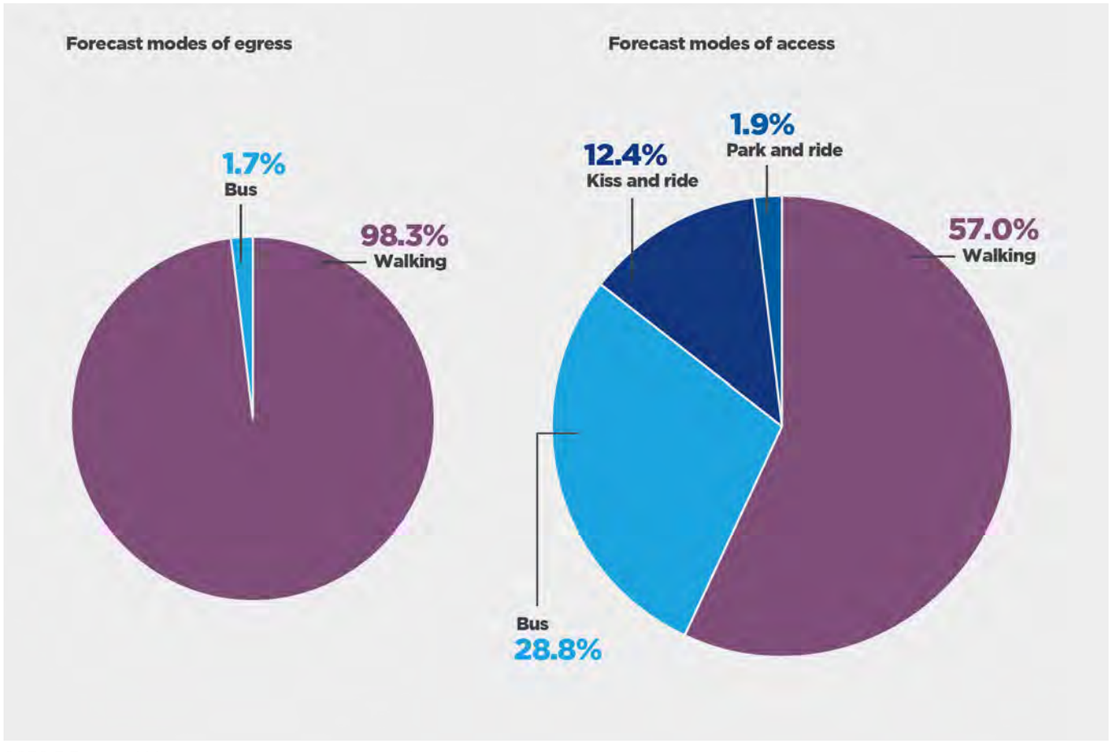
Future land use

Land use, transport integration and opportunities

Metro services at Macquarie University will support state and local strategic and planning controls by providing an incentive for investment within and surrounding the town centre, enhancing urban design and amenity, and improving connectivity in Macquarie University. It is expected that metro services at Macquarie University will have the following specific benefits:

- The station will continue to form part of an interchange that will continue to provide safe and direct access to residential and mixed-use land uses surrounding the station will directly benefit from additional transport connectivity to the Global Economic Corridor, with an increase in service frequency compared to existing rail services.
- The increase in rail services will provide the opportunity for further development of the area as a vibrant and active mixed-use centre with strong public transport links to North Sydney and the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure and educational facilities.
- The increase in rail services will contribute to the increased utilisation of the existing employment area extending along Herring Road and Waterloo Road, delivering an increase in new jobs in an area with levels of amenity, recreation opportunities and good access to public transport.
- The increase in rail services will provide opportunities to increase residential densities within walking distance of the station.

These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and the City of Ryde Council.



2036 3.5-hour AM peak demand and mode splits

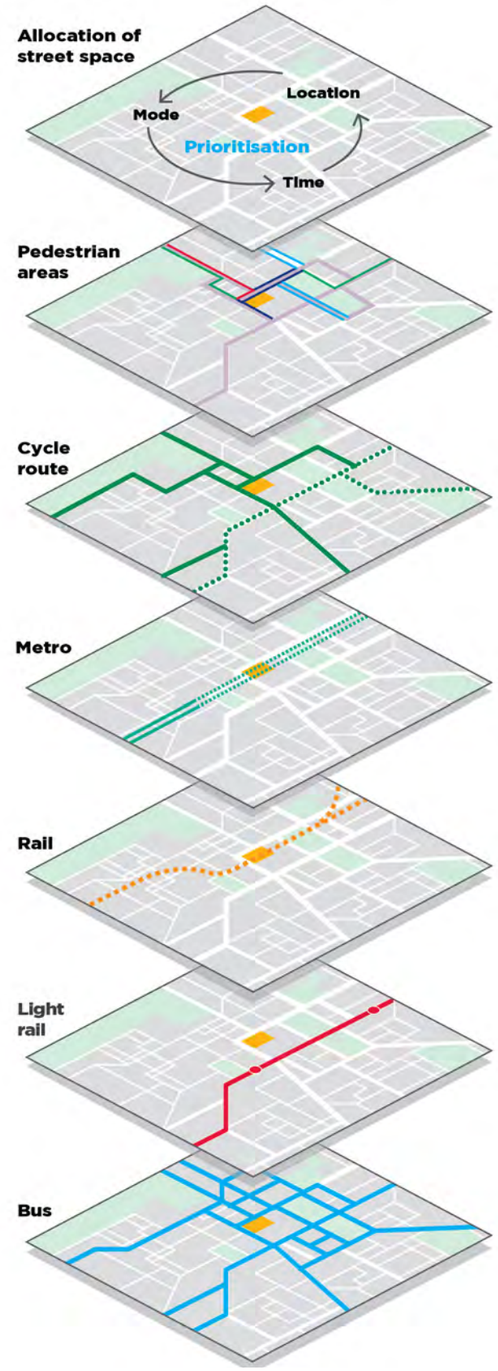
Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

Opportunities and constraints

Macquarie University Station has the following urban design opportunities and constraints.

Opportunities	Constraints
• Integrate the metro station with the existing road network to facilitate safe transfers to and from the station and customers' destinations. • Support enhanced amenity within and surrounding the station precinct. • Enhance connections, improving pedestrian and cyclist permeability through the Macquarie University station precinct. • Enhance bus network operations through road network upgrades.	• Road network configuration results in limited opportunities to improve transport facilities due to land constraints. • The need to respond to the future development expansion surrounding the station. • Street furniture and landscaping causes pinch points along the existing pedestrian footpath. • Footpath congestion due to passengers alighting from at-capacity buses on narrowed footpaths. • Limited information regarding the surrounding area and connecting transport modes is provided for customers at the interchange.

Macquarie University – interchange and transfer requirements overview



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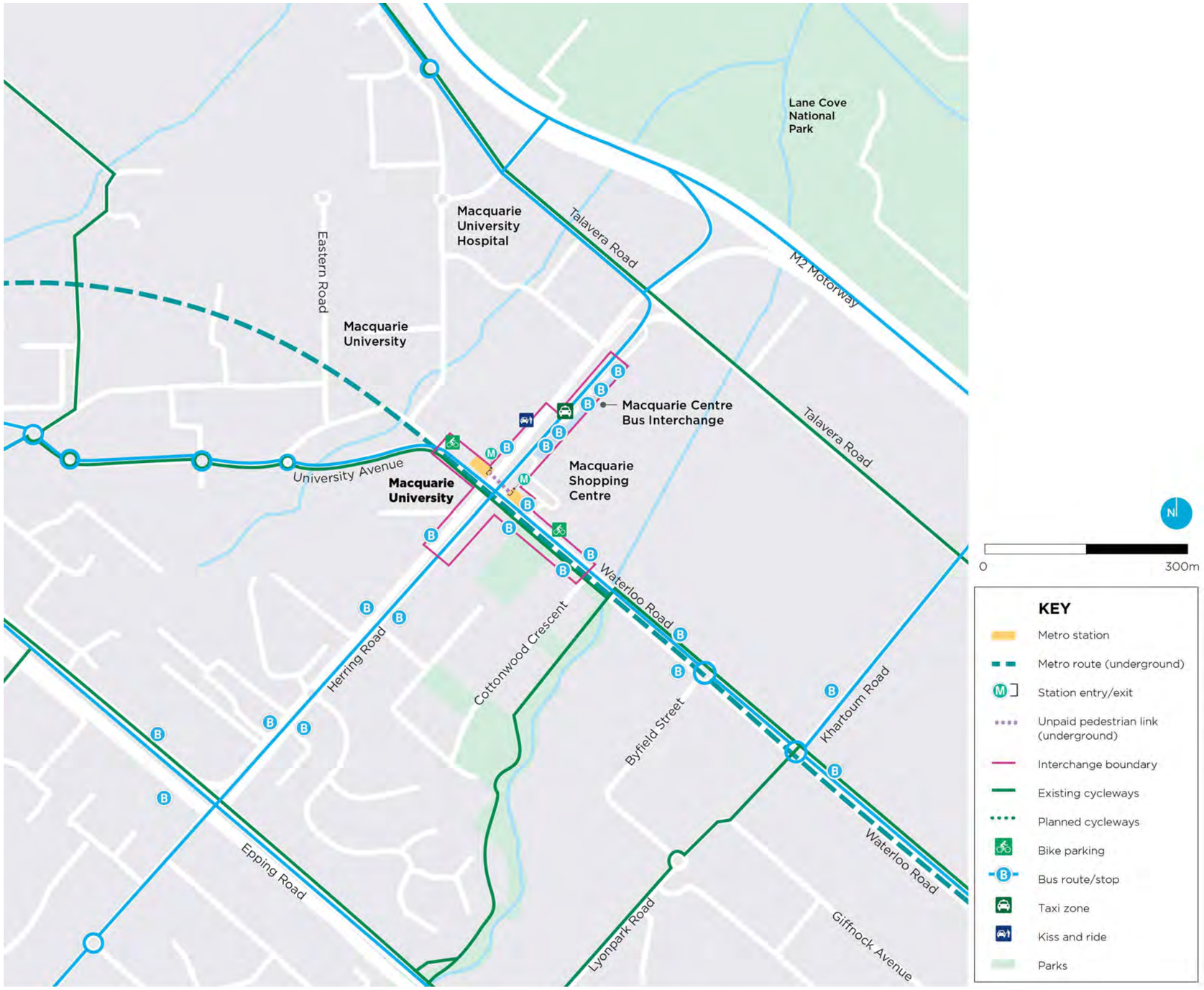

Macquarie University Station – interchange and transfer requirements overview

Macquarie University – walking interchange and transfer requirements

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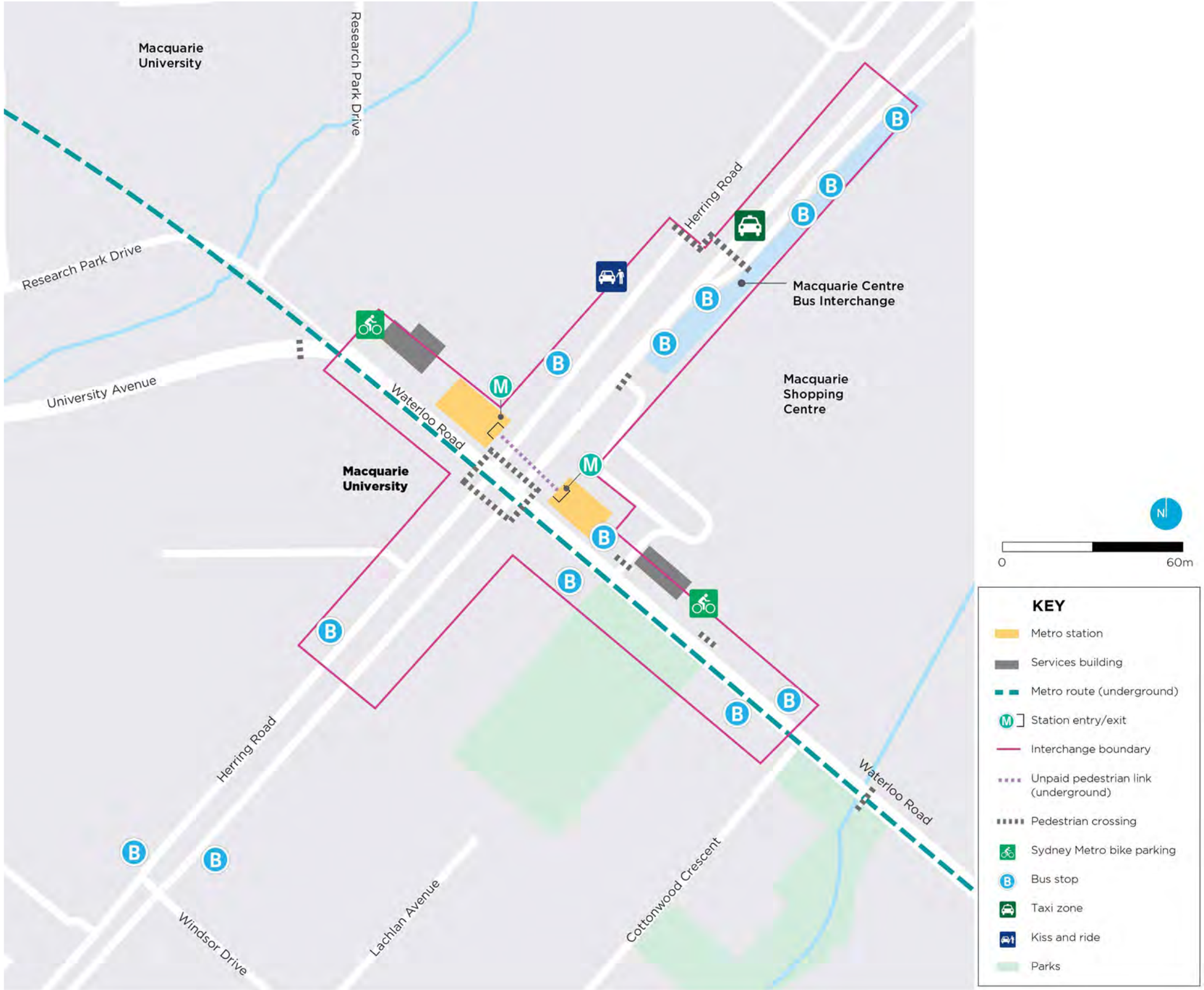
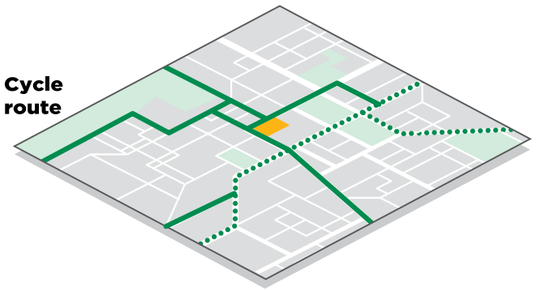


Macquarie University Station – pedestrian interchange and transfer requirements

Macquarie University – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Macquarie University is an origin and destination station. An existing network of footpaths serves the pedestrian network immediately outside the station.	The majority of pedestrian demand is currently east towards Macquarie Centre along Herring Road and north towards Macquarie University along University Avenue. There is also pedestrian demand south along Waterloo Road towards the Macquarie Park Corridor.
Current mode splits and intermodal transfer	2013 one-hour AM peak: • 3,076 entries. • 9,048 exits.	Current mode share for pedestrians connecting to Macquarie University Station is 83 per cent.
Integration		
Station access	The station supports two access points, which require safe, convenient and direct pedestrian routes: • The western access is on the north-western side of Herring Road, at the intersection of Waterloo Road.	• The eastern access is on the north-eastern side of Herring Road, at the intersection of Waterloo Road.
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with commercial, retail, educational, leisure and residential areas surrounding the station. Limited pedestrian facility upgrades are required due to the introduction of Sydney Metro services at Macquarie University Station.	Improvements to the pedestrian networks surrounding the interchange are proposed as part of the following plans: • Macquarie University Master Plan 2014. • Macquarie Centre Stage 1 Concept Development Application.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by the City of Ryde. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant. • Western Station Access — Provide connectivity to the surrounding transport interchanges, commercial, retail, educational, leisure and residential precincts.	— Provide for pedestrian movement at signalised pedestrian crossing across Waterloo Road. • Eastern Station Access — Provide connectivity to the surrounding transport interchanges, commercial, retail, educational, leisure and residential precincts. — Provide for pedestrian movement at signalised pedestrian crossing across Waterloo Road.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.	• Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from bike parking	The station provides easy transfer to existing bike parking facilities located at: • Waterloo Road, west of western entry – bike lockers and bike racks. • Waterloo Road, east of eastern entry – bike lockers and bike racks.	Future bike parking provisions are currently being investigated by TfNSW.
Transfer to and from other rail	No design provision is considered for this location.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will continue to provide easy transfer to bus stops on Herring Road and Waterloo Road.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	The station will continue to provide easy access to taxi ranks on the eastern side of Herring Road between Waterloo Road and Talavera Roads.	
Transfer to and from kiss-and-ride	Provides easy access to kiss-and-ride zone at Herring Road, south side, between Waterloo and Talavera Roads.	
Transfer to and from park-and-ride	No design provision is considered for this location.	

Macquarie University – cycling interchange and transfer requirements



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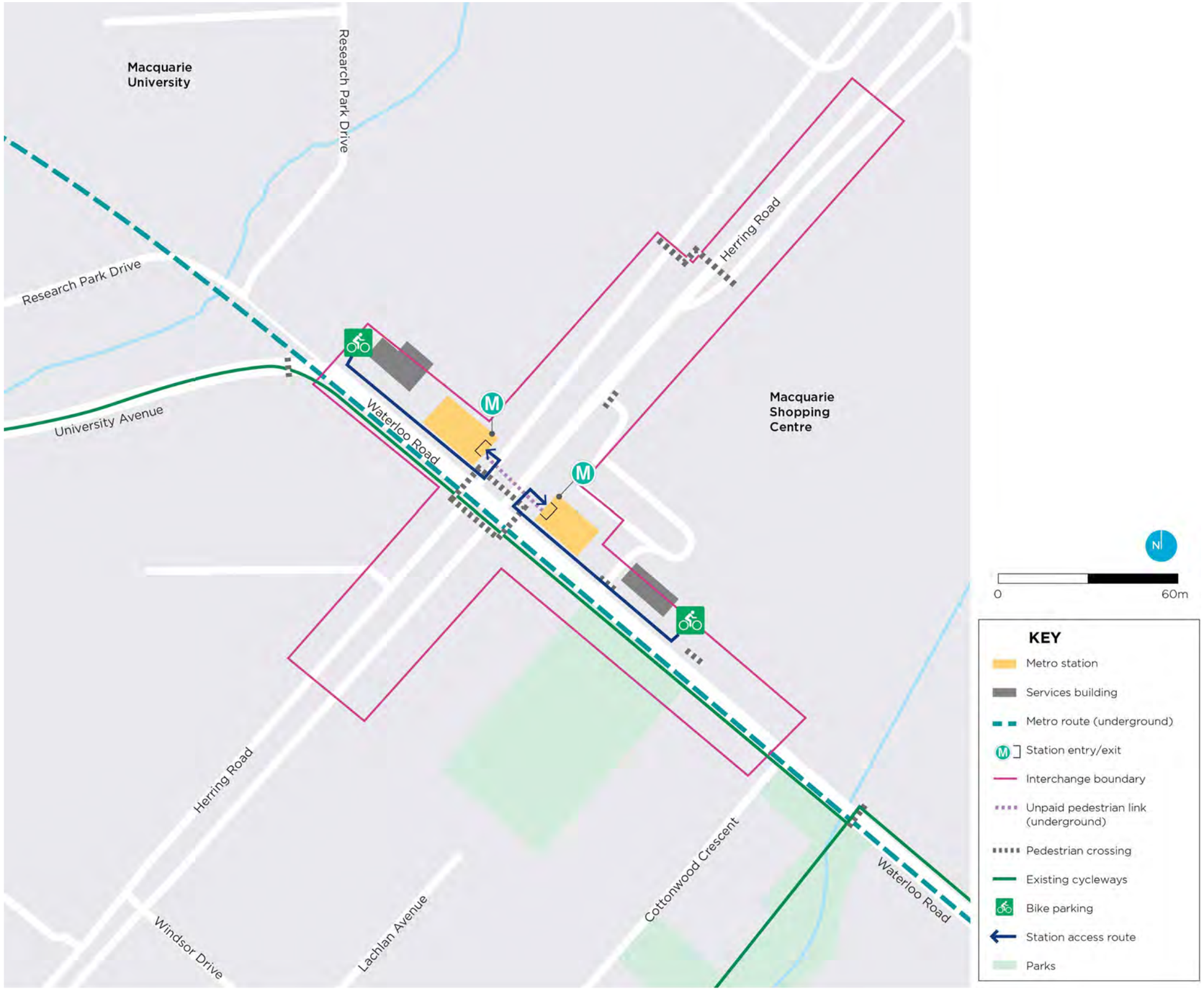
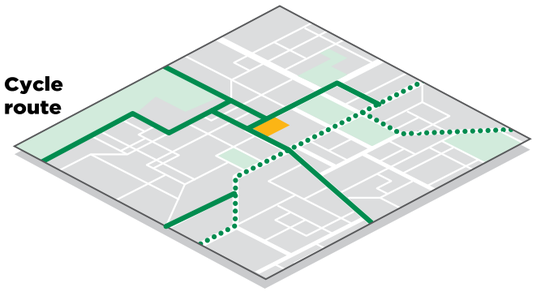


Macquarie University Station – cycling interchange and transfer requirements

Macquarie University – cycling interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	An off-road shared walking and cycling path passes the station on the southern side of Waterloo Road.	The station and interchange will continue to allow bicycle riders to move through the station and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	*Note: 2014 Household Travel Survey (HTS) data resulted on a daily cycling mode share of up to 5 per cent. There is an information gap regarding cycling mode share from previous access surveys and forecast models.*	Observations made in May 2016 identified the following: • 19 bikes parked on the western side of Herring Road at Macquarie University Interchange. • 7 bikes parked on the eastern side Herring Road at Macquarie University Interchange.
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 50 metres of the gateline or station entry. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	The current level of bike parking adheres to the following principles: • Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To continue to facilitate bicycle rider transfer within the interchange the following existing bike parking is located at: • Western entrance: — Bike lockers and bike racks – 60 metres west along the northern side of Waterloo Road, next to the services building.	• Eastern entrance: — Bike lockers and bike racks – 80 metres east along the northern side of Waterloo Road, next to the services building. To improve cycling mode share the TfNSW Bike and Ride Program are investigating the provision of a bike shed at this station.
Types of parking facilities	The bike parking provisions at the station are: • Western entrance: — Bike lockers for 4 bicycles, on Waterloo Road west of services building. — Bike racks for 8 bicycles, on Waterloo Road west of services building. • Eastern entrance: — Bike lockers for 4 bicycles, on Waterloo Road east of services building. — Bike racks for 8 bicycles, on Waterloo Road east of services building.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shed for 30 bicycles, with electronic access facility. • Bike shelter for 20 bicycles. • Retain the existing supply of bike racks. This minimum requirement is taken from the NSW Government's Bike and Ride Program. In addition, the current supply of bike lockers should be maintained in accordance with the Bike Locker Program.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments.

Macquarie University – cycling interchange and transfer requirements *continued*



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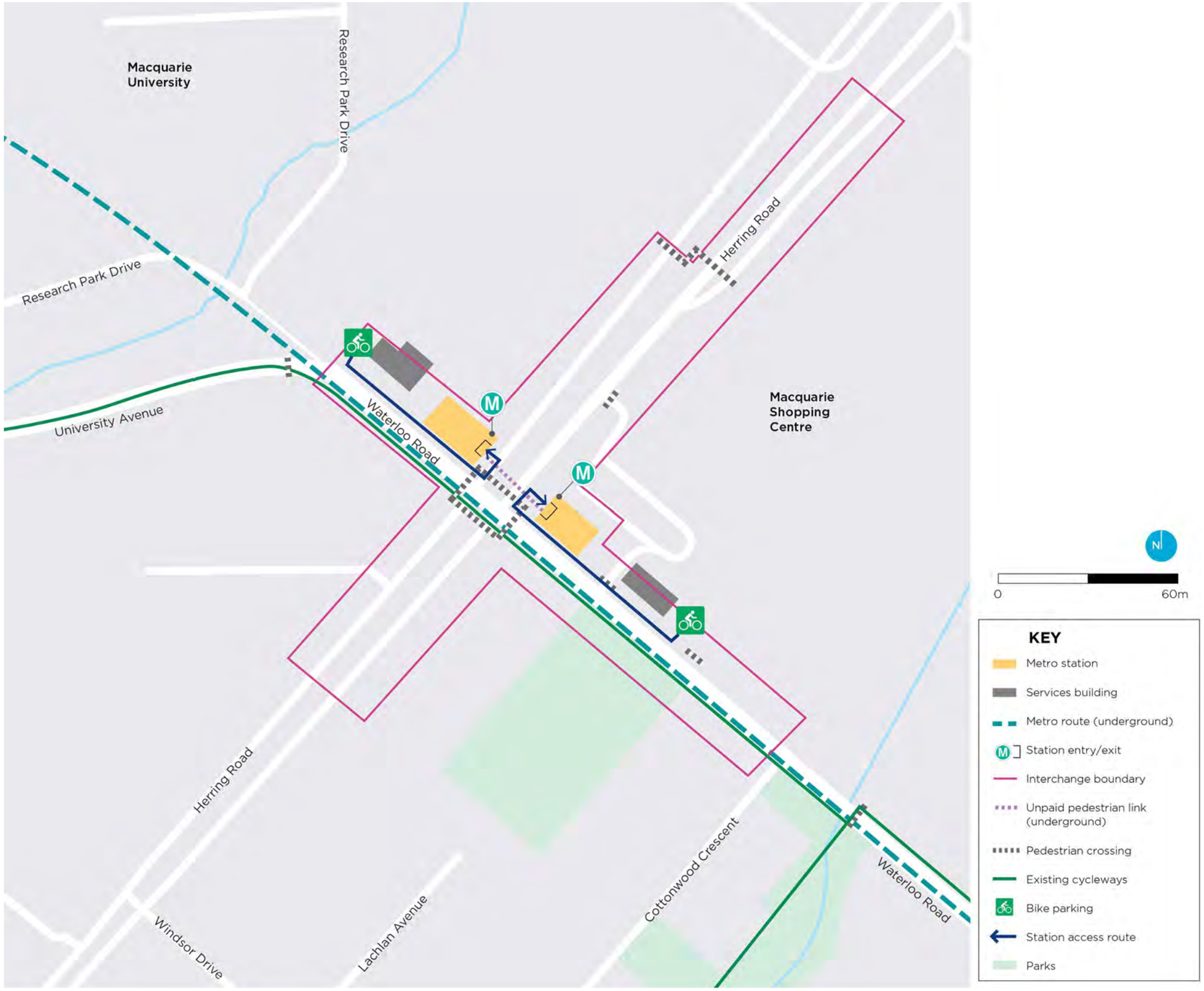


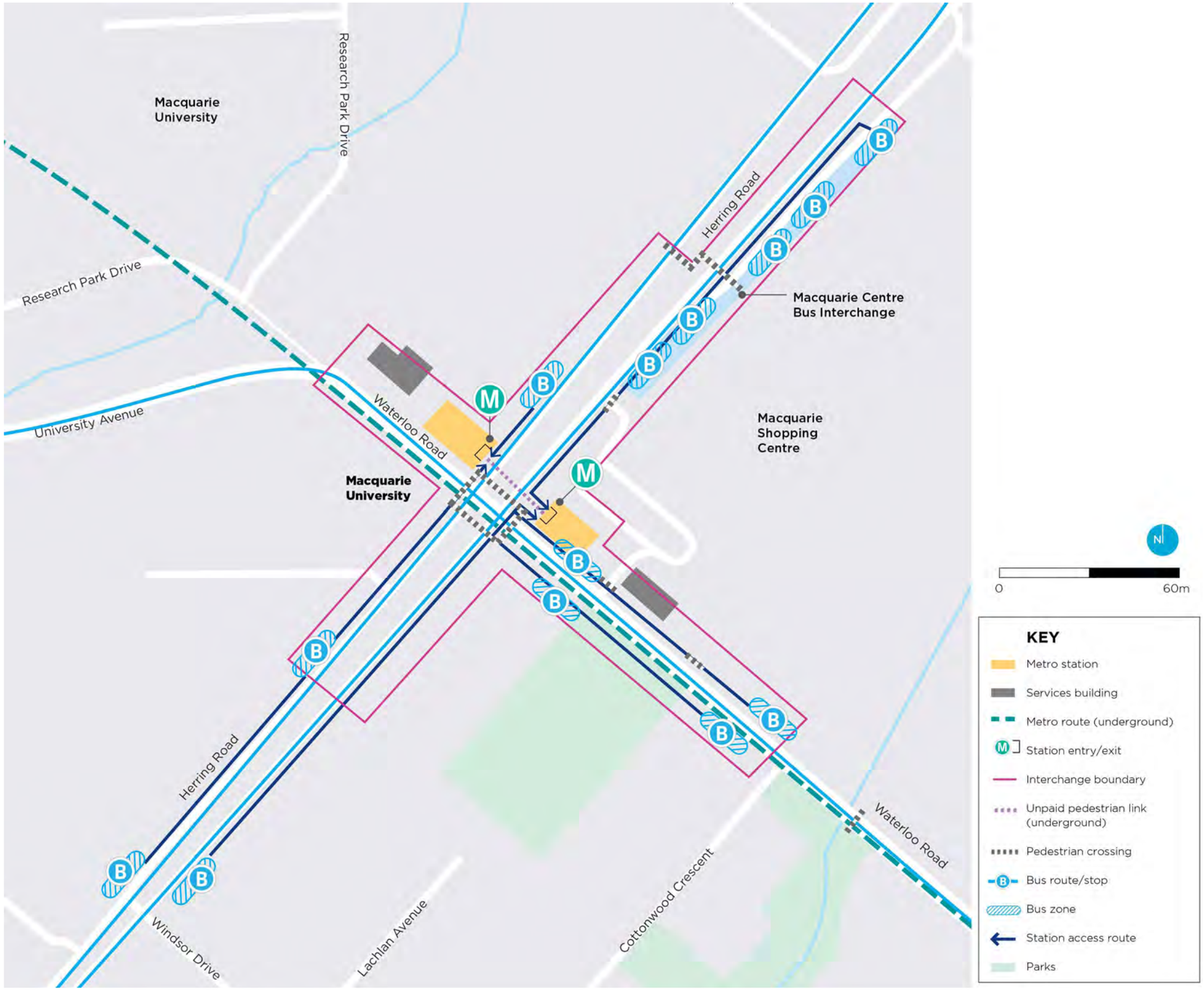
Macquarie University Station – cycling interchange and transfer requirements

Macquarie University – cycling interchange and transfer requirements *continued*

Item	Description	
Closest cycling routes	An extensive network of regional and local cycle routes connect to Macquarie University Station, including routes along the M2 Motorway, through Lane Cove National Park, and south to the Parramatta River. The existing bicycle network around and connecting to Macquarie University Station is predominantly off road local and regional bicycle routes. The closest cycle routes to the station are: • Waterloo Road – shared off-road east-west route, connecting the university to Macquarie Park and beyond.	• Talavera Road – shared off-road east-west route, connecting the university to the M2 Motorway cycleway. • Shrimptons Creek – southern off-road shared path connecting the interchange to the residential area to the south. • M2 Motorway – on-road route on road shoulder. • Epping Road – on-road route on road shoulder. • Epping Road – shared path on the northern side.
New cycle routes by Sydney Metro	Improve on-road cycling wayfinding and delineation on the following locals roads surrounding the station: • Install bicycle lanterns the southern leg across Herring Road at the Herring Road/ Waterloo Road intersection to allow bicycle riders to connect with the interchange without the requirement to dismount. • Install a cycleway on the northern side of Waterloo Road to provide customers with the ability cycle to the bike parking area without the requirement to dismount.	• Extend the shared path on the northern side of Waterloo Road east of Herring Road. • Install a shared path along Herring Road to increase access to the interchange.
Cycle routes for consideration by others	The City of Ryde is continually updating its bike plan.	

Macquarie University – bus interchange and transfer requirements

Mode layer

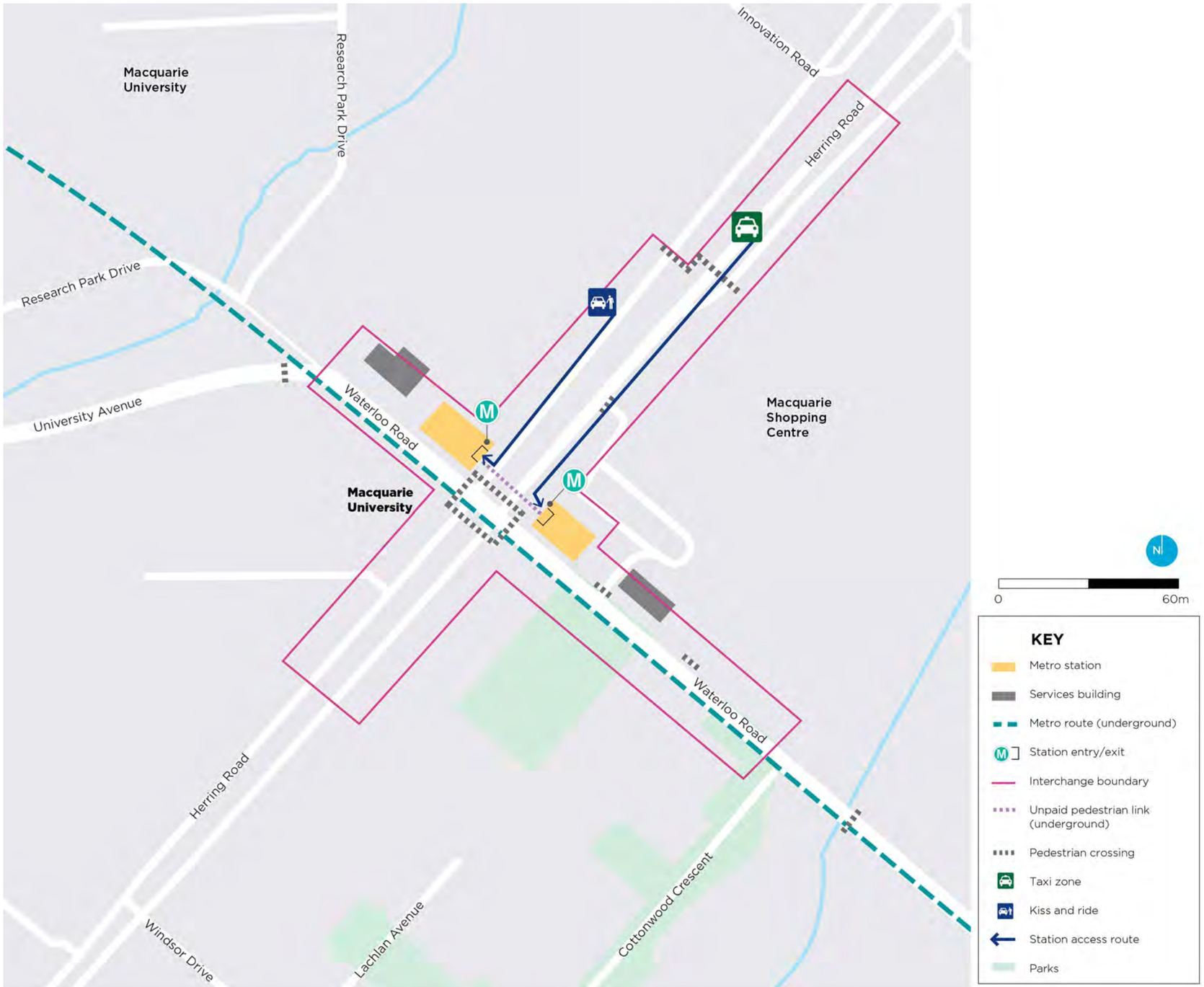


Macquarie University Station – bus and light rail interchange and transfer requirements

Macquarie University – bus interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	A number of bus routes operate within the vicinity of Macquarie University Station, particularly those that run along Herring and Waterloo Roads. These routes are: • 197 – Mona Vale to Macquarie University. • 259 – Macquarie Centre to Chatswood via Macquarie Park and North Ryde. • 288 – Epping to City Erskine Street. • 290 – Epping to City Erskine Street via Macquarie University and North Sydney. • 291 – Epping to McMahons Point. • 292 – Marsfield to City Erskine Street via Macquarie Park. • 294 – Macquarie University to City Wynyard. • 506 – Macquarie University to City Domain via East Ryde. • 507 – Macquarie University to City Circular Quay via Putney. • 518 – Macquarie University to City Circular Quay. • 544 – Macquarie Centre to Auburn via Eastwood. • 545 – Parramatta to Chatswood via Eastwood and Macquarie University. • 562 – Gordon to Macquarie University. • 565 – Chatswood to Macquarie University. • 572 – Turramurra to Macquarie University. • 575 – Hornsby to Macquarie University. • 611 – Macquarie Park to Blacktown via M2. • 619 – Macquarie Park to Rouse Hill Town Centre via M3. • 621 – Town Hall to Castle Hill via M2. • 628 – Macquarie Park to Northwest Business Park via M2. • 651 – Castle Hill via M2 Busway. • 740 – Macquarie Park to Plumpton via M2. • M41 – Hurstville to Macquarie Park. • M54 – Parramatta to Macquarie Park via Epping. • N91 – Bondi Junction to Macquarie Park via City Town Hall.
Current mode splits and intermodal transfer	• The bus mode share at Macquarie University Station is approximately 14 per cent (information taken from 2014 HTS data and 2013 TfNSW customer surveys).
Integration	
Closest bus stops/routes	The primary bus stops within the interchange are: • North of station: — Herring Road – one stop on either side, northbound and southbound, between Talavera Road and Waterloo Road. — Herring Road – Stands A to E within the bus interchange at Macquarie Centre on Herring Road. • South of station: — Herring Road – one stop on either side, northbound and southbound, between Waterloo Road and Epping Road. • East of station: — Waterloo Road – one stop on either side, westbound and eastbound, between Herring Road and Byfield Street.
Potential changes to bus stops/route	There are no proposed bus stop or service changes at Macquarie University Station prior to Sydney Metro operations commencing in 2019. High frequency Station Link services will run while the rail line between Epping and Chatswood is upgraded for around seven months, ahead of Sydney Metro opening in 2019.. The following bus stop or service changes will occur when Sydney Metro operations commence in 2019: • Potentially install bus priority measures along Waterloo Road to improve bus operations – TfNSW and RMS are currently investigating through the Bus Priority Infrastructure Program (BPIP). • The Macquarie Park Bus Priority and Capacity Improvements Project (Stage 1) aims to deliver changes that facilitate the operation of Station Link buses in the Macquarie Park Corridor during the upgrade of the Epping to Chatswood railway line.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Dedicated footways along local and regional roads. • Signalised controlled pedestrian crossings at the eastern entrance.
Transfer to and from bus	Customers will continue to be able to transfer between bus stops at metro station entries using existing footpaths.
Transfer to and from bus (overnight)	The N91 NightRide service operates from Stand B in the Macquarie Centre Bus Interchange.
Transfer to and from bus (school)	No design provision is considered for this location.
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions.*
Bus bays	The bus bays that are being modified for the TTP operations as well as for opening of Sydney Metro services meet the NSW state and Commonwealth guidelines for size and layout.
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.

Macquarie University – vehicle drop-off interchange and transfer requirements

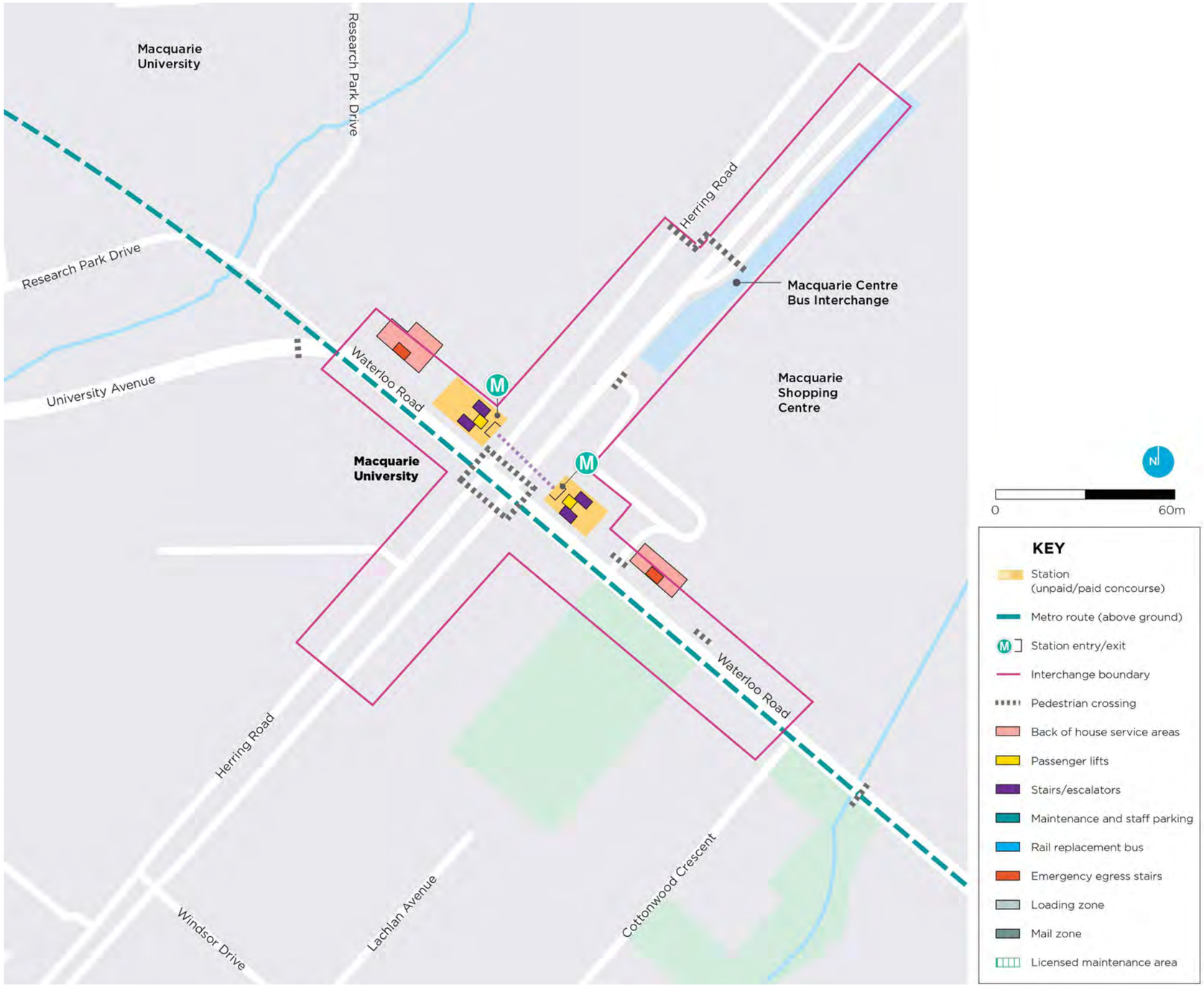


Macquarie University Station – vehicle drop-off interchange and transfer requirements

Macquarie University – vehicle drop-off interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Existing kiss-and-ride zone at: • Herring Road, north side, approximately 75 metres north of the station entry, between Waterloo and Talavera Roads. Existing taxi rank at: • Herring Road, south side, approximately 200 metres from the station entrance, between Waterloo and Talavera Roads.
Current mode splits and intermodal transfer	The average weekday passenger drop-off volumes by taxi (Household Travel Survey 2014-15) were approximately: • 112 entries (one-hour AM peak).
Integration	
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from taxi	Customers will use existing footpaths along Herring Road (eastern side) to access the station.
Transfer to and from kiss-and-ride	Customers will use the following existing footpaths to access the station: • Herring Road (western side).
Taxi rank locations	Taxi ranks that service local centres as well as stations are supported as long as they are located within 100 metres of the station access point.
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.

Macquarie University – operations, maintenance and management provisions



Macquarie University Station – operations, maintenance and management provisions

Macquarie University – operations, maintenance and management provisions *continued*

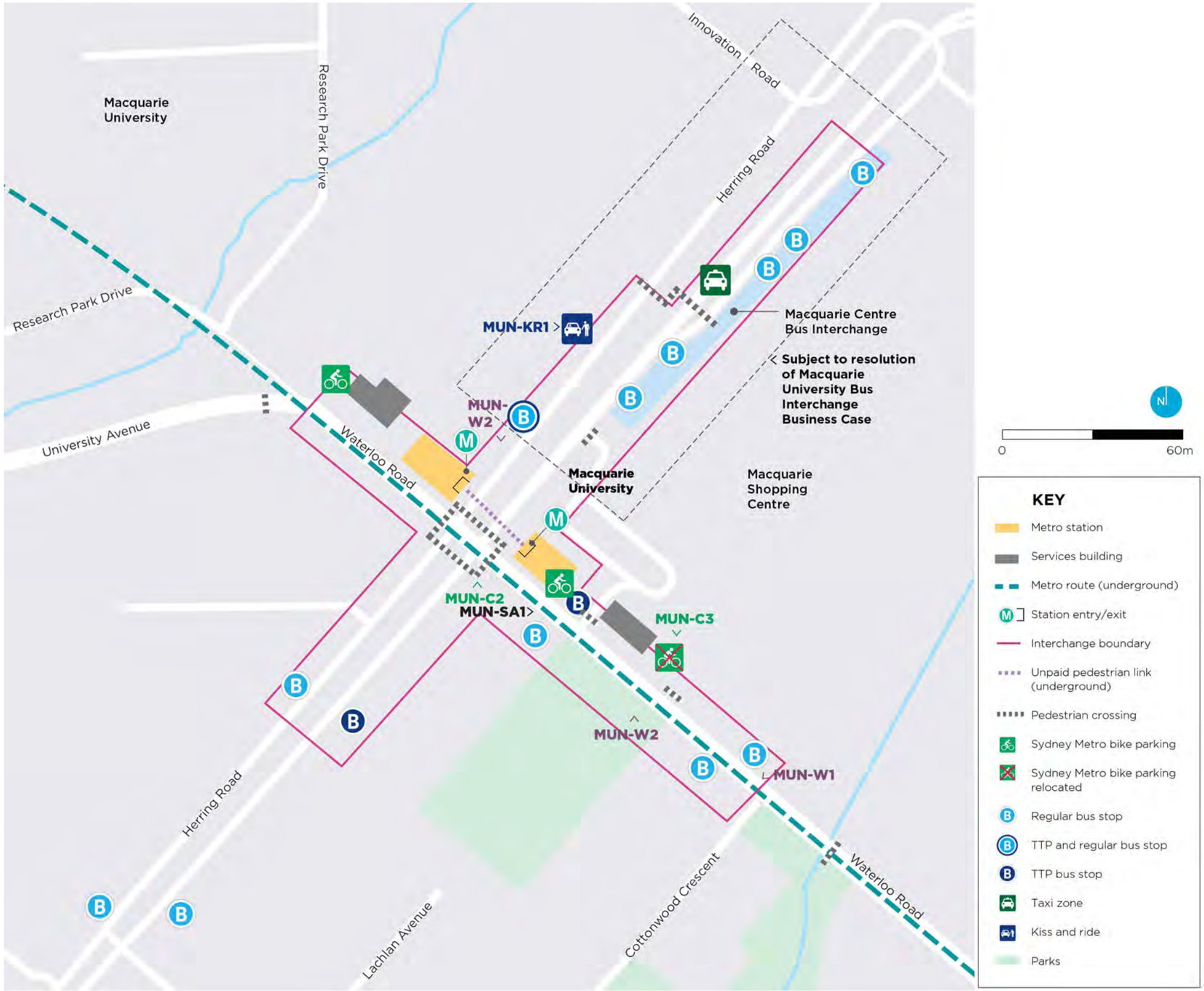
The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles use the existing on-street loading bays and designated service areas.
Servicing and maintenance access (major)	Service vehicles use the existing on-street loading bays and designated service areas.
Rail replacement bus service access	Rail replacement buses will use the existing bus zones on Herring Road and Waterloo Road.
Delivery access (retail and operational)	Delivery vehicles use the existing on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	Mail zones will be maintained at: • Macquarie Shopping Centre. • Corner of Herring Road and Windsor Drive.
Staff car parking	As staff will be encouraged to travel by public transport or active transport, no designated car parking is provided for staff.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

Macquarie University – recommendations



Macquarie University Station – recommendations

Macquarie University – recommendations *continued*

This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at Macquarie University Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at Macquarie University Station.

Action	
Walking	
MUN–W1	Provide granite paving in accordance with City of Ryde requirements – Waterloo Road bus stop opposite Cottonwood Crescent.
MUN–W2	Maximise effective width for pedestrians by maintaining landscaping and appropriately relocating street furniture along Herring Road and Waterloo Road (detail TBC).
Cycling	
MUN–C1	Improve wayfinding and general information for customers informing of the surrounding bicycle network.
MUN–C2	Install bicycle lanterns incorporated within the pedestrian crossings on the southern leg across Herring Road at the Herring Road/Waterloo Road intersection.
MUN–C3	Relocate currently underutilised bike parking located approximately 80 metres east of interchange along Waterloo Road (outside Macquarie Centre) to a location close to the eastern entry.
Bus	
MUN–B1	The future design of the Macquarie Centre bus interchanges is under investigation. *Proposed scope: To be determined.*
Kiss-and-ride	
MUN–KR1	Install a shelter incorporating lighting, seating and kiss-and-ride flags.
Safety	
MUN–SA1	Reconstruct shared user path to avoid multi-function light pole on Waterloo Road on the westbound approach to Herring Road.
Management and maintenance	
MUN–M1	Document operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

Macquarie University – temporary transport plan

Macquarie University Station – temporary transport plan


ROUSE HILL
Macquarie Park
Service
Time now
7:56
Chatswood
North Ryde
Chatswood
Departs
Now
Next service
Chatswood
Departs
4 min
Next service
Chatswood
Departs
8 min
Macquarie Park

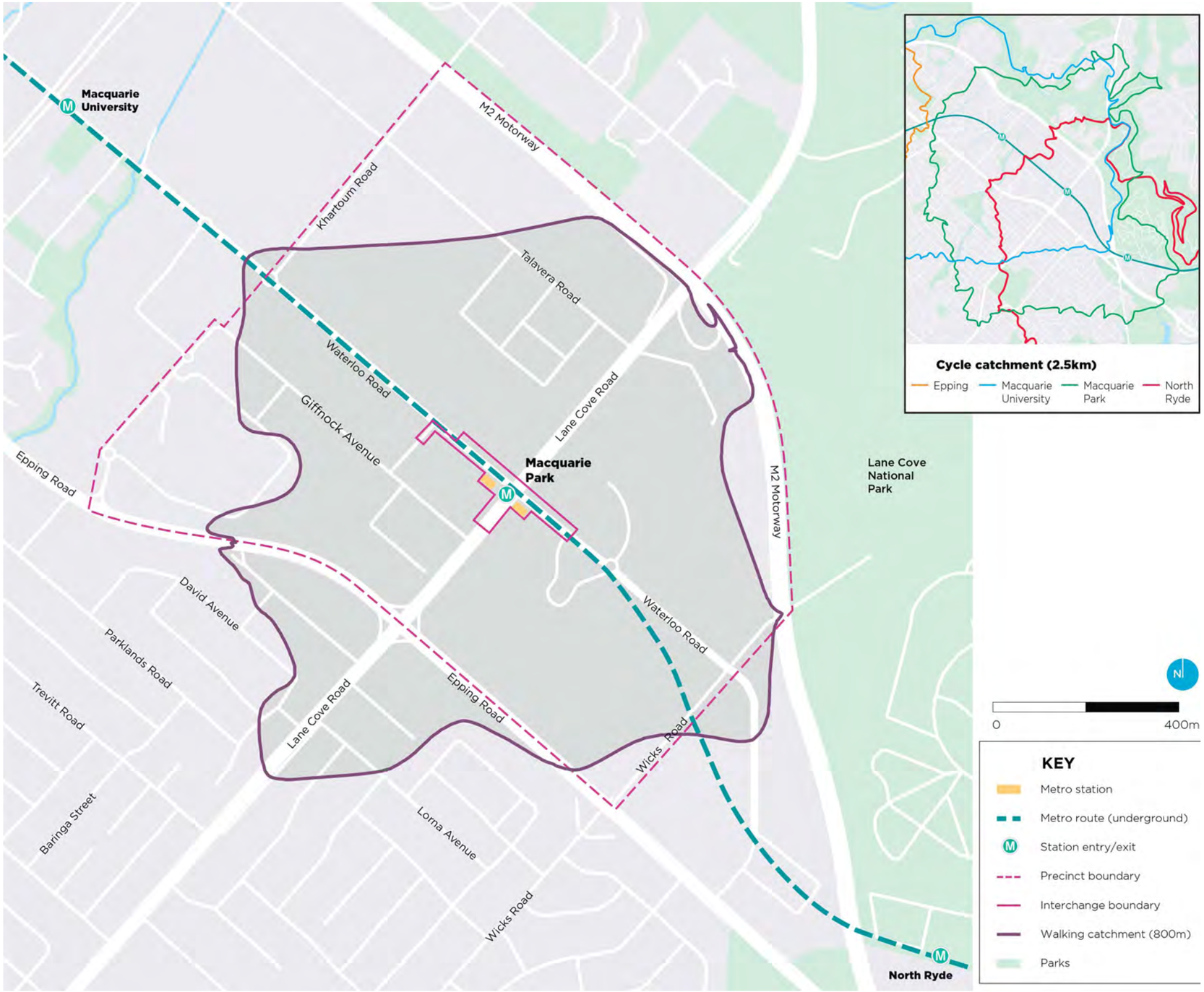
Macquarie Park – local context

The existing Macquarie Park Station will be converted to metro operations, using existing platforms and providing transfer to existing road-based transport services.

The two existing station entries will be retained.

The western entry on the south-western side of the intersection of Lane Cove Road and Waterloo Road provides access to the Macquarie Park Corridor and the residential area to the north.

The eastern entry on the south-eastern side of the intersection of Lane Cove Road and Waterloo Road provides access to business and residential areas to the south.



Macquarie Park Station – local context

Macquarie Park – local context *continued*

Macquarie Park Station will continue to service the surrounding mixed-use catchment, with business and residential areas.

The station is located beneath the Lane Cove Road and Waterloo Road intersection. Sydney Metro will use the modified station facilities for operations.

Local destinations include large and small commercial and knowledge-industry businesses in medium-rise office blocks, and light industrial units. Retail in the area is mostly smaller-scale local shops, including cafes, take-away food and a station kiosk.

Land Cove Road and Waterloo Road are important arterial roads with extended clearway hours installed for the Station Link project.

Metro services at Macquarie Park will support the growth and development of the Macquarie Park Planned Precinct, where increases to nearby residential and commercial areas are planned. Funding for the Planned Precinct works will also go towards upgrades to existing infrastructure and open space to support development and improve opportunities for outdoor recreation and amenity.

Feature	Description
Location	• At the site of the existing Sydney Trains Macquarie Park Station.
LGA	• City of Ryde.
Station entry	• The existing western entry on the south-western side of the intersection of Lane Cove Road and Waterloo Road will be retained. • The existing eastern entry on the south-eastern side of the intersection of Lane Cove Road and Waterloo Road will be retained.
Transport interchange	• Walking, cycling, bus, taxi and kiss-and-ride.
Main features and traffic arrangements	• Existing bus stops on Lane Cove Road and Waterloo Road retained. • Wayfinding signage and Sydney Metro information will be provided.
Customers	• Commercial, light industrial and residential.
Key attractions	• Lane Cove National Park. • Macquarie Park Corridor. • Ryde Hunters Hill District Hockey Club. • Sydney College of Divinity.

Station strategy

The station strategy for Macquarie Park is to:

- Provide easy, safe and intuitive transfer to and from the metro station within the existing network and road environment.
- Support the development of the Macquarie Park Planned Precinct, which includes existing and future commercial, and residential uplift.
- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Current land use and characteristics

Existing land use and characteristics

Sydney Metro services will operate from the existing Macquarie Park Station. Existing station entries on Lane Cove Road will be retained.

The station is predominately surrounded by the commercial precinct of Macquarie Park Corridor, with some medium-density residential apartments. To the north of the station is Lane Cove National Park.

Road network connections from the station lead to the M2 Motorway and Lane Cove Road (A2) to the north, Epping Town Centre to the west, Sydney Olympic Park to the south and Lane Cove National Park and Chatswood to the east.

Existing station precinct strategic planning context

A Plan for Growing Sydney identifies Macquarie Park as a Planned Precinct. The following priorities in the plan are potentially relevant to Macquarie Park Station and the Project:

- Improve transit connections through the Global Economic Corridor to better link centres and transport gateways.
- Work with councils to identify suitable locations for housing and employment growth coordinated with infrastructure delivery (urban renewal) and rail services.
- Work with councils to investigate potential future employment and housing opportunities associated with a Sydney Metro station.

The draft *North District Plan* (Greater Sydney Commission, 2016) sets priorities and actions for the North District, including driving the growth of the Eastern Harbour City through the planning and delivery of regionally significant infrastructure. The strategic centres of North Sydney, St Leonards, Chatswood, Macquarie Park and Northern Beaches are linked to the Eastern Harbour City and play an important economic role in supporting the growth of Sydney as a global city.

The area is identified as an urban renewal area, which includes considerations to leverage off the provision of metro services to Macquarie Park Station to deliver additional employment and residential capacity.

The following actions in the plan will be potentially relevant to the project:

- Create a sense of place, grow jobs and diversify activity in Macquarie Park.

Macquarie Park – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Epping, as these modes are not available at this station:

- Light rail.
- Ferry.
- Taxi.
- Coach.
- Park and ride.

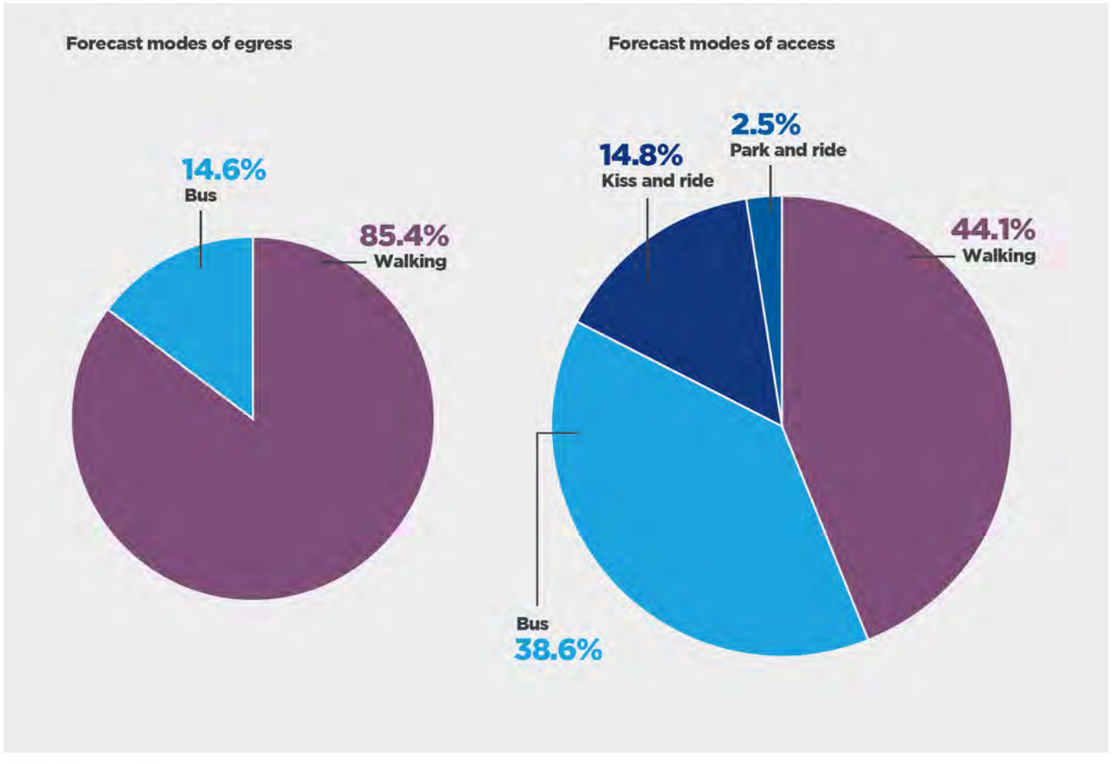
Future land use

Land use, transport integration and opportunities

Metro services at Macquarie Park will support state and local strategic and planning controls by providing an incentive for investment within and surrounding the town centre, enhancing urban design and amenity, and improving connectivity in Macquarie Park. It is expected that metro services at Macquarie Park will have the following specific benefits:

- The station will continue to form part of an interchange that will continue to provide safe and direct access to residential and mixed-use land uses surrounding the station will directly benefit from additional transport connectivity to the Global Economic Corridor, with an increase in service frequency compared to existing rail services.
- The increase in rail services will provide the opportunity for further development of the area as a vibrant and active mixed-use centre with strong public transport links to North Sydney and the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure and educational facilities.
- The increase in rail services will contribute to the increased utilisation of the existing employment area extending along Waterloo Road, Lane Cove Road and Epping Road, delivering an increase in new jobs in an area with levels of amenity, recreation opportunities and good access to public transport.
- The increase in rail services will provide opportunities to increase residential densities within walking distance of the station.

These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and the City of Ryde Council.



2036 3.5-hour AM peak demand and mode splits

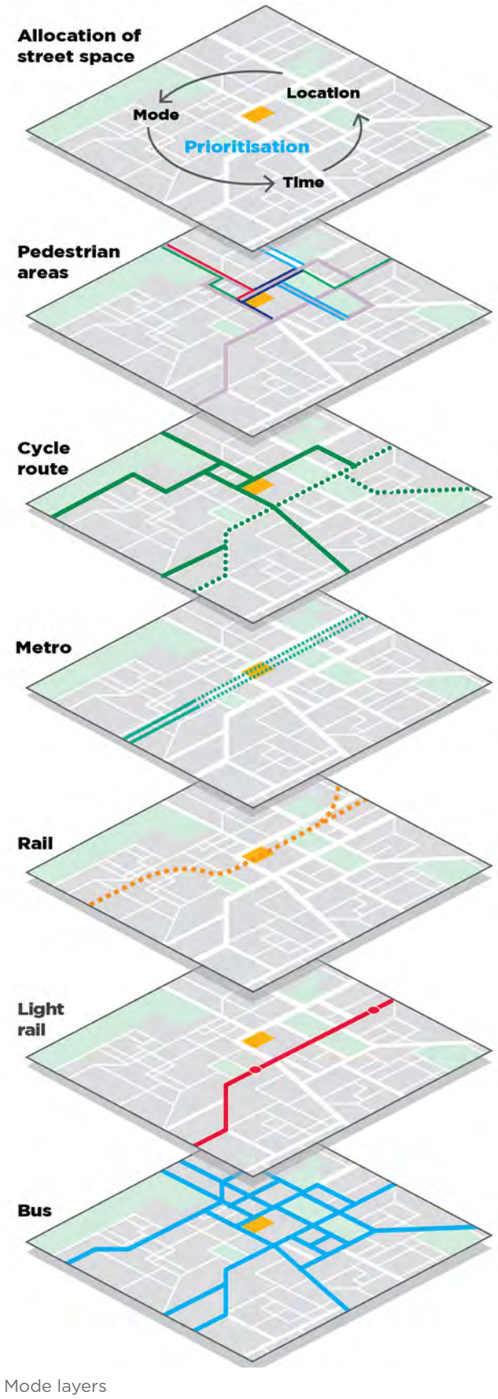
Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

Opportunities and constraints

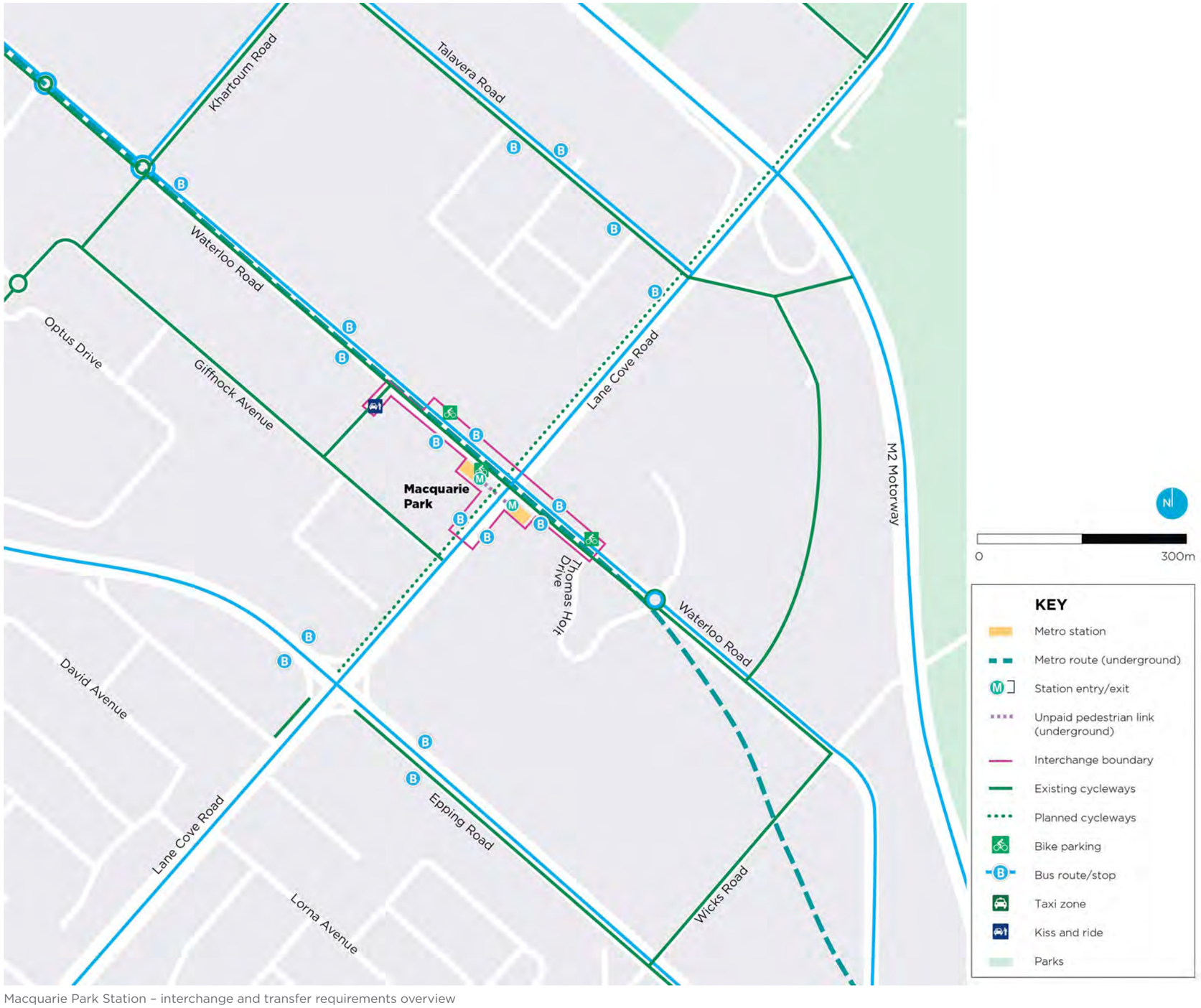
Macquarie Park Station has the following urban design opportunities and constraints.

Opportunities	Constraints
• Integrate the metro station with the existing road network to facilitate safe transfers to and from the station and customers' destinations. • Support enhanced amenity within and surrounding the station precinct. • Enhance connections, improving pedestrian and cyclist permeability through the Macquarie Park station precinct. • Enhance bus network operations through road network upgrades.	• Road network configuration results in limited opportunities to improve transport facilities due to land constraints. • The need to respond to the future development expansion surrounding the station. • Street furniture and landscaping causes pinch points along the existing pedestrian footpath. • Limited information regarding the surrounding area and connecting transport modes is provided for customers at the interchange.

Macquarie Park – interchange and transfer requirements overview

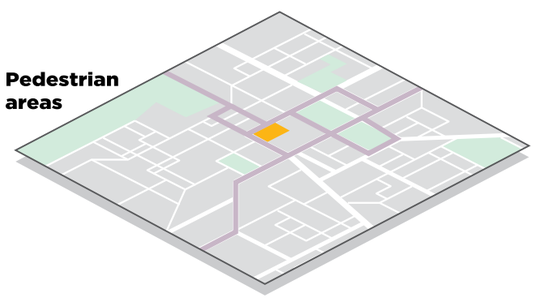


Mode layers



Macquarie Park Station – interchange and transfer requirements overview

Macquarie Park – walking interchange and transfer requirements



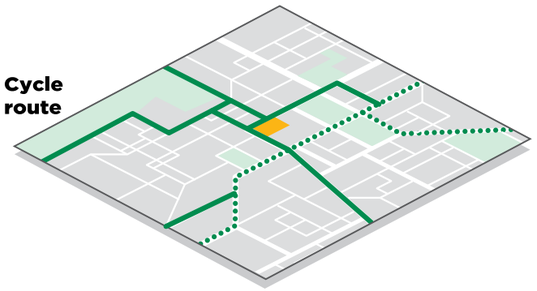
Mode layer

Macquarie Park Station – pedestrian interchange and transfer requirements

Macquarie Park – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Macquarie Park is an origin and destination station. An existing network of footpaths serves the pedestrian network immediately outside the station.	The majority of pedestrian demand is currently north towards the Macquarie Park Corridor along Waterloo Road and south towards the commercial precinct along Waterloo Road.
Current mode splits and intermodal transfer	2013 one-hour AM peak: • 206 entries. • 1,667 exits.	Current mode share for pedestrians connecting to Macquarie Park Station is 75 per cent.
Integration		
Station access	The station supports two access points, which require safe, convenient and direct pedestrian routes: • The western access is on the south-western side of Lane Cove Road, at the intersection of Waterloo Road.	• The eastern access is on the south-eastern side of Lane Cove Road, at the intersection of Waterloo Road.
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with commercial, retail, leisure and residential areas surrounding the station.	Limited pedestrian facility upgrades are required due to the introduction of Sydney Metro services at Macquarie Park Station.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by the City of Ryde. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant. • Western Station Access — Provide connectivity to the surrounding transport interchanges, commercial, retail, leisure and residential precincts. — Provide for pedestrian movement at signalised pedestrian crossing across Waterloo Road.	• Eastern Station Access — Provide connectivity to the surrounding transport interchanges, commercial, retail, leisure and residential precincts. — Provide for pedestrian movement at signalised pedestrian crossing across Waterloo Road.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.	• Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from bike parking	The station provides easy transfer to existing bike parking facilities located at: • Waterloo Road, 90 metres the western entry – bike lockers and bike racks. • Waterloo Road, 160 metres from the eastern entry – bike lockers and bike racks.	Future bike parking provisions are currently being investigated by TfNSW. A likely location could be in the vicinity of the western entry.
Transfer to and from other rail	No design provision is considered for this location.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will continue to provide easy transfer to bus stops on Lane Cove Road and Waterloo Road.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	No design provision is considered for this location.	
Transfer to and from kiss-and-ride	Provides easy access to kiss-and-ride zone at Coolinga Street, near Waterloo Road.	
Transfer to and from park-and-ride	No design provision is considered for this location.	

Macquarie Park – cycling interchange and transfer requirements



Mode layer

Macquarie Park Station – cycling interchange and transfer requirements

Macquarie Park – cycling interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	An off-road shared walking and cycling path passes the station on the southern side of Waterloo Road.	The station and interchange will continue to allow bicycle riders to move through the station and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	*Note: 2014 Household Travel Survey (HTS) data resulted on a daily cycling mode share of up to 5 per cent. There is an information gap regarding cycling mode share from previous access surveys and forecast models.*	Observations made in May 2016 identified the following: • 12 bikes parked on the west of Macquarie Park Interchange. • 3 bikes parked on the east side Herring Road at Macquarie Park Interchange.
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 50 metres of the gateline or station entry. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	The current level of bike parking adheres to the following principles: • Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To continue to facilitate bicycle rider transfer within the interchange the following existing bike parking is located at: • Western entrance: — Bike lockers and racks – 90 metres west of the station entry along the northern side of Waterloo Road.	• Eastern entrance: — Bike lockers and racks – 160 metres east of the station entry along the northern side of Waterloo Road. To improve cycling mode share the TfNSW Bike and Ride Program are investigating the provision of a bike shed at this station. The likely location would be in the vicinity of the western entry.
Types of parking facilities	The bike parking provisions at the station are: • Western entrance: — Bike lockers for 4 bicycles on Waterloo Road, 90 metres north of the station entrance. — Bike racks for 13 bicycles, on Waterloo Road beside station entrance. — Bike racks for 12 bicycles on Waterloo Road, 90 metres north of the station entrance. • Eastern entrance: — Bike lockers for 4 bicycles on Waterloo Road, 160 metres south of the station entrance. — Bike racks for 12 bicycles, on Waterloo Road 160 metres south of the station entrance.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shed for 30 bicycles, with electronic access facility. • Bike shelter for 20 bicycles. • Retain the existing supply of bike racks. This minimum requirement is taken from the NSW Government's Bike and Ride Program. In addition, the current supply of bike lockers should be maintained in accordance with the Bike Locker Program.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments

Macquarie Park – cycling interchange and transfer requirements *continued*

Mode layer

Macquarie Park Station – cycling interchange and transfer requirements

Macquarie Park – cycling interchange and transfer requirements *continued*

Item	Description
Closest cycling routes	An extensive network of regional and local cycle routes connect to Macquarie Park Station, including routes along the M2 Motorway, through Lane Cove National Park, and south to the Parramatta River. The closest cycle routes to the station are: • Waterloo Road – shared off-road route. • Talavera Road – shared off-road route. • Pittwater Road – on-road bike lane. • Epping Road/Paul Street – shared off-road route and on-road bike lane. • Lane Cove Road – informal on-road route with mixed traffic and no line markings. • M2 Motorway – on-road route on road shoulder.
Cycle routes for consideration by others	The City of Ryde is continually updating its bike plan.

Macquarie Park – bus interchange and transfer requirements

Mode layer

Macquarie Park Station – bus and light rail interchange and transfer requirements

Macquarie Park – bus interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	A number of bus routes operate within the vicinity of Macquarie Park Station, particularly those that run along Lane Cove and Waterloo Roads. These routes are: • 197 – Mona Vale to Macquarie University. • 259 – Macquarie Centre to Chatswood via Macquarie Park and North Ryde. • 292 – Marsfield to City Erskine Street via Macquarie Park. • 294 – Macquarie University to City Wynyard. • 506 – Macquarie University to City Domain via East Ryde. • 545 – Parramatta to Chatswood via Eastwood and Macquarie Centre. • 611 – Macquarie Park to Blacktown via M2. • 619 – Macquarie Park to Rouse Hill Town Centre via M3. • 621 – Town Hall to Castle Hill via M2. • 628 – Macquarie Park to Northwest Business Park via M2. • 651 – Castle Hill via M2 Busway. • 740 – Macquarie Park to Plumpton via M2. • M41 – Hurstville to Macquarie Park. • M54 – Parramatta to Macquarie Park via Epping. • N91 – Bondi Junction to Macquarie Park via City Town Hall.
Current mode splits and intermodal transfer	• The bus mode share at Macquarie Park Station is approximately 17 per cent (information taken from 2014 HTS data and 2013 TfNSW customer surveys).
Integration	
Closest bus stops/routes	The primary bus stops within the interchange are: • North of station: — Lane Cove Road – one stop on either side, northbound and southbound, between Talavera Road and Waterloo Road. • South of station: — Lane Cove Road – one stop on either side, northbound and southbound, between Waterloo Road and Epping Road. • West of station: — Waterloo Road – one stop on either side, westbound and eastbound, between Lane Cove Road and Coolinga Street. • East of station: — Waterloo Road – one stop on either side, westbound and eastbound, between Lane Cove Road and Thomas Holt Drive.
Potential changes to bus stops/route	There are no proposed bus stop or service changes at Macquarie Park Station prior to Sydney Metro operations commencing in 2019. High-frequency Station Link services will run while the rail line between Epping and Chatswood is upgraded for around seven months, ahead of Sydney Metro opening in 2019.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Dedicated footways along local and regional roads. • Signalised controlled pedestrian crossings at the eastern entrance.
Transfer to and from bus	Customers will continue to be able to transfer between bus stops at metro station entries using existing footpaths.
Transfer to and from bus (overnight)	The N91 NightRide service operates from Lane Cove Road.
Transfer to and from bus (school)	No design provision is considered for this location.
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions.*
Bus bays	The bus bays that are being modified for the TTP operations as well as for opening of Sydney Metro services meet the NSW state and Commonwealth guidelines for size and layout.
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.

Macquarie Park – vehicle drop-off interchange and transfer requirements

Macquarie Park Station – vehicle drop-off interchange and transfer requirements

Macquarie Park – vehicle drop-off interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Existing kiss-and-ride zone at: • Coolinga Street, near Waterloo Road.
Current mode splits and intermodal transfer	The average weekday passenger drop-off volumes by kiss-and-ride were approximately: • 49 entries (one-hour AM peak).
Integration	
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from taxi	No design provision is considered for this location.
Transfer to and from kiss-and-ride	Customers will use the following existing footpaths to access the station: • Coolinga Street. • Waterloo Road (southern side).
Taxi rank locations	No design provision is considered for this location.
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.

Macquarie Park – operations, maintenance and management provisions

Macquarie Park Station – operations, maintenance and management provisions

Macquarie Park – operations, maintenance and management provisions *continued*

The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles use the existing on-street loading bays and designated service areas.
Servicing and maintenance access (major)	Service vehicles use the existing on-street loading bays and designated service areas.
Rail replacement bus service access	Rail replacement buses will use the existing bus zone on Waterloo Road.
Delivery access (retail and operational)	Delivery vehicles use the existing on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	Mail zones will be maintained at: • 11 Waterloo Road.
Staff car parking	As staff will be encouraged to travel by public transport or active transport, no designated car parking is provided for staff.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

Macquarie Park – recommendations

Macquarie Park Station – recommendations

Macquarie Park – recommendations *continued*

This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at Macquarie Park Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at Macquarie Park Station.

Action	
Cycling	
MPA–C1	Improve wayfinding and general information for customers informing of the surrounding bicycle network.
MPA–C2	In conjunction with investigating the signalisation of the zebra crossing at the slip lane from Waterloo Road (eastbound) into Lane Cove Road (northbound), consider the installation of bicycle lanterns and increase the width of the signalised crossing facilities on the northern approach to the Lane Cove Road/ Waterloo Road intersection to allow connection for bicycle riders to the interchange.
MPA–C3	Install a bike shelter as per the NSW Government's Bike and Ride Program and in accordance with the Bike Parking BRS. The location is at the northern interchange entry.
MPA–C4	Investigate, and if thought appropriate, relocate the existing bike lockers and racks (two times) closer to the two station entrances (north and south).
Bus	
MPA–B1	Upgrade bus stop on Waterloo Road (westbound, west of Lane Cove Road) to address deficiencies in compliance with the DDA 1992 SFARP and pedestrian circulation constraints. *Proposed scope: Widen footpath, replace bus flag and regulatory signage and reposition, install tactiles, seats and allocated spaces and remove kerb crossing ramp.*
MPA–B2	Replace bus shelter at bus stop on Waterloo Road (westbound, west of Lane Cove Road) – Council shelter replacement program.
MPA–B3	Relocate the bus stop on Waterloo Road (eastbound, east of Lane Cove Road) further to the east to a new position yet to be determined as part of the development of the Macquarie Park Bus Priority and Capacity Improvements Project (MPBP&CIP).
MPA–B4	Upgrade bus stop on Waterloo Road (westbound, east of Lane Cove Road) to address deficiencies in compliance with the DDA 1992 SFARP. *Proposed scope: Install tactiles and regulatory signage.*
MPA–B5	Replace bus shelter at bus stop on Waterloo Road (westbound, east of Lane Cove Road) – Council shelter replacement program.
MPA–B6	Upgrade pathway between station portal and bus stop on Lane Cove Road (southbound, south of Waterloo Road) and upgrade bus stop, to address deficiencies in compliance with the DDA 1992 SFARP. *Proposed scope: Widen the footpath, install tactiles, new signage and bus flag.*
MPA–B7	Replace bus shelter at bus stop on Lane Cove Road (southbound, south of Waterloo Road) – Council shelter replacement program.

Action	
MPA–B8	Upgrade bus stop on Waterloo Road (eastbound, west of Lane Cove Road) to address deficiencies in compliance with the DDA 1992 SFARP and pedestrian circulation constraints. *Proposed scope: Replace bus flag, install tactiles.* Note: Bus stop will be affected and possibly deleted as part of completion of MPBP&CIP Stage 2.
Kiss-and-ride	
MPA–KR1	Change parking to 'No Parking' during peak times to signify a kiss-and-ride facility along Coolinga Street.
Safety	
MPA–SA1	Install a signalised pedestrian crossing of Lane Cove Road on the southern side of Waterloo Road.
MPA–SA2	Investigate the future signalisation of the zebra crossing of the slip lane from Waterloo Road (eastbound) to Lane Cove Road (northbound) or install additional advanced warning signs for motorists preparing to use the slip lane.
MPA–SA3	Widen the shared path on Waterloo Road near the intersection of Lane Cove Road to eliminate or minimise the narrowing effect created by the installation of a light pole and other services assets.
MPA–SA4	Reinstate the missing warning pedestrians crossing sign at the zebra-crossing of the slip lane from Waterloo Road (eastbound) to Lane Cove Road (northbound).
Street lighting	
MPA-SL1	Install two new poles and streetlights and upgrade two existing streetlights on the eastern side of Coolinga Street between Waterloo Road and Giffnock Ave to increase the lighting levels to achieve Category P1-ID:01 to ID:04 in the lighting concept design report L144LB-R01-P3. This is subject to council accepting the operating costs in perpetuity. Note council's comment that it 'will be able to make decision on the operational costs after the review of the comprehensive lighting design'.

Macquarie Park – recommendations *continued*

Action	
MPA-SL2	Improve lighting in the Macquarie Park Transport Interchange as follows: • Install one additional standard Ausgrid streetlight on the southern footpath in Waterloo Road between Lane Cove Road and Coolinga Street to achieve P1 lighting levels – ID:05 in the lighting concept design report L144LB-R01-P3. • Install four Road LED streetlights to supplement existing street lighting on the northern footpath of Waterloo Road east of Lane Cove Road to achieve P1 lighting levels – ID:08 to ID:11 in the lighting concept design report L144LB-R01-P3. • Install one Road LED streetlight to supplement existing street lighting on the southern footpath in Waterloo Road east of Lane Cove Road to achieve P1 lighting levels – ID:12 in the lighting concept design report L144LB-R01-P3. This is subject to council accepting the operating costs in perpetuity.
Management and maintenance	
MPA–M1	Document operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

Macquarie Park – temporary transport plan

Macquarie Park Station – temporary transport plan

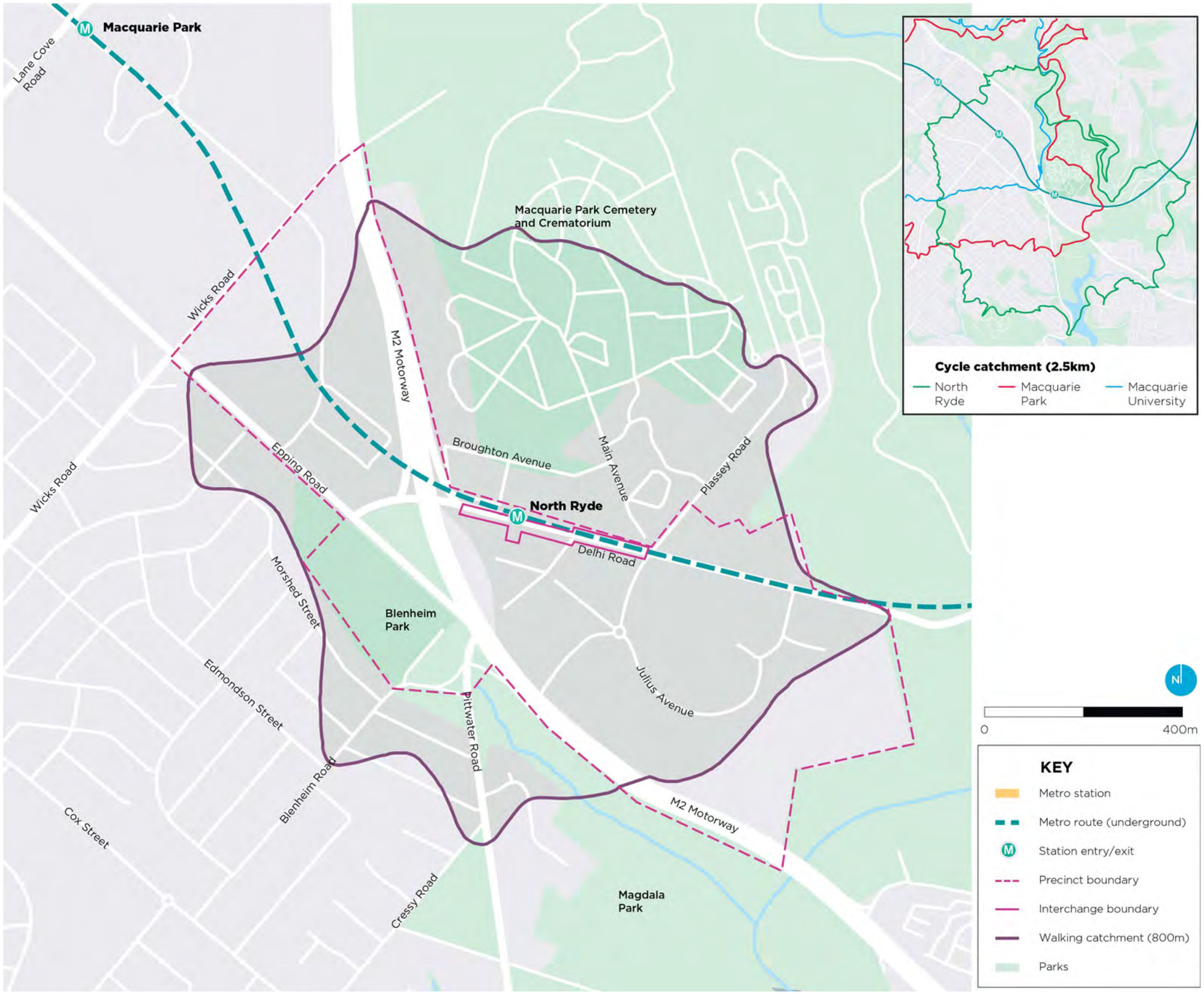
North Ryde

North Ryde – local context

The existing North Ryde Station will be converted to metro operations, using existing platforms and providing transfer to existing road-based transport services.

The single existing station entry will be retained.

The entry on the southern side of Delhi Road provides access to business and residential areas to the south, and Macquarie Park Cemetery and Crematorium to the north.



North Ryde Station – local context

North Ryde – local context *continued*

North Ryde Station will continue to service the surrounding mixed-use catchment, with business, residential and recreational areas.

The station is located on Delhi Road north of Epping Road and the M2 Motorway. Sydney Metro will use the modified station facilities for operations.

Local destinations include large and small commercial and knowledge-industry businesses in medium-rise office blocks. Retail in the area is mostly smaller-scale local shops, including cafes, take-away food and a station kiosk.

The station also provides a connection to the Lane Cove National Park, where people can camp, walk and cycle.

To the south of the station is Epping Road and the M2 that are important north-south arterial roads, with extended clearway hours, which dominates the station precinct and divides the area.

Feature	Description
Location	• At the site of the existing North Ryde Station.
LGA	• City of Ryde.
Station entry	• The existing entry on the southern side of Delhi Road will be retained.
Transport interchange	• Walking, cycling, bus, taxi and kiss-and-ride.
Main features and traffic arrangements	• Existing bus stops on Delhi Road and Epping Roads retained. • Taxi and kiss-and-ride shelter protection improved. • Wayfinding signage and Sydney Metro information will be provided.
Customers	• Industrial, commercial, retail, leisure and residential precincts.
Key attractions	• Blenheim Park. • Lane Cove National Park. • Macquarie Park Cemetery and Crematorium.

Station strategy

The station strategy for North Ryde is to:

- Provide easy, safe and intuitive transfer to and from the metro station within the existing network and road environment.
- Support the development of the Macquarie Park Planned Precinct, which includes existing and future commercial, and residential uplift.
- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Current land use and characteristics

Existing land use and characteristics

Sydney Metro services will operate from the existing North Ryde Station. The existing station entry on Dehli Road will be retained.

To the north of the station is the Macquarie Park Cemetery and Crematorium. Also to the north is the development Lachlan's Line, which is expected to house approximately 5,000 residents in high-density residential apartments. South of the station is a commercial precinct and low density residential housing.

Road network connections from the station lead to the M2 Motorway to the north and south, Epping to the west, Huntleys Point to the south and Lane Cove National Park and Chatswood to the east.

Existing station precinct strategic planning context

A Plan for Growing Sydney identifies North Ryde Station as a Planned Precinct. The following priorities in the plan are potentially relevant to North Ryde Station and the Project:

- Improve transit connections through the Global Economic Corridor to better link centres and transport gateways.
- Work with councils to identify suitable locations for housing and employment growth coordinated with infrastructure delivery (urban renewal) and rail services.
- Work with councils to investigate potential future employment and housing opportunities associated with a Sydney Metro station.

The draft *North District Plan* (Greater Sydney Commission, 2016) sets priorities and actions for the North District, including driving the growth of the Eastern Harbour City through the planning and delivery of regionally significant infrastructure. The strategic centres of North Sydney, St Leonards, Chatswood, Macquarie Park and Northern Beaches are linked to the Eastern Harbour City and play an important economic role in supporting the growth of Sydney as a global city.

The area is identified as an urban renewal area, which includes considerations to leverage off the provision of metro services to North Ryde Station to deliver additional employment and residential capacity.

North Ryde – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Epping, as these modes are not available at this station:

- Light rail.
- Ferry.
- Coach.
- Park and ride.

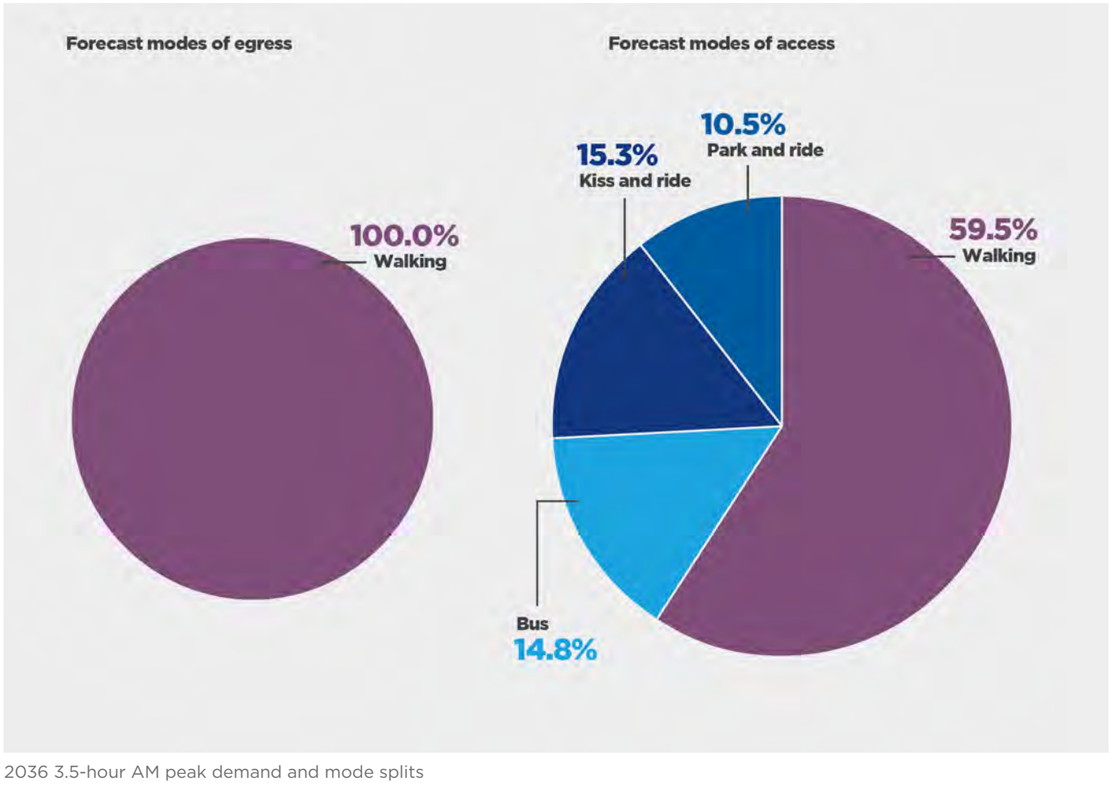
Future land use

Land use, transport integration and opportunities

Metro services at North Ryde will support state and local strategic and planning controls by providing an incentive for investment within and surrounding the town centre, enhancing urban design and amenity, and improving connectivity in North Ryde. It is expected that metro services at North Ryde will have the following specific benefits:

- The station will continue to form part of an interchange that will continue to provide safe and direct access to residential and mixed-use land uses surrounding the station will directly benefit from additional transport connectivity to the Global Economic Corridor, with an increase in service frequency compared to existing rail services.
- The increase in rail services will provide the opportunity for further development of the area as a vibrant and active mixed-use centre with strong public transport links to North Sydney and the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure and educational facilities.
- The increase in rail services will contribute to the increased utilisation of the existing employment area extending along Dehli Road and Epping Road, delivering an increase in new jobs in an area with levels of amenity, recreation opportunities and good access to public transport.
- The increase in rail services will provide opportunities to increase residential densities within walking distance of the station.

These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and the City of Ryde Council.



2036 3.5-hour AM peak demand and mode splits

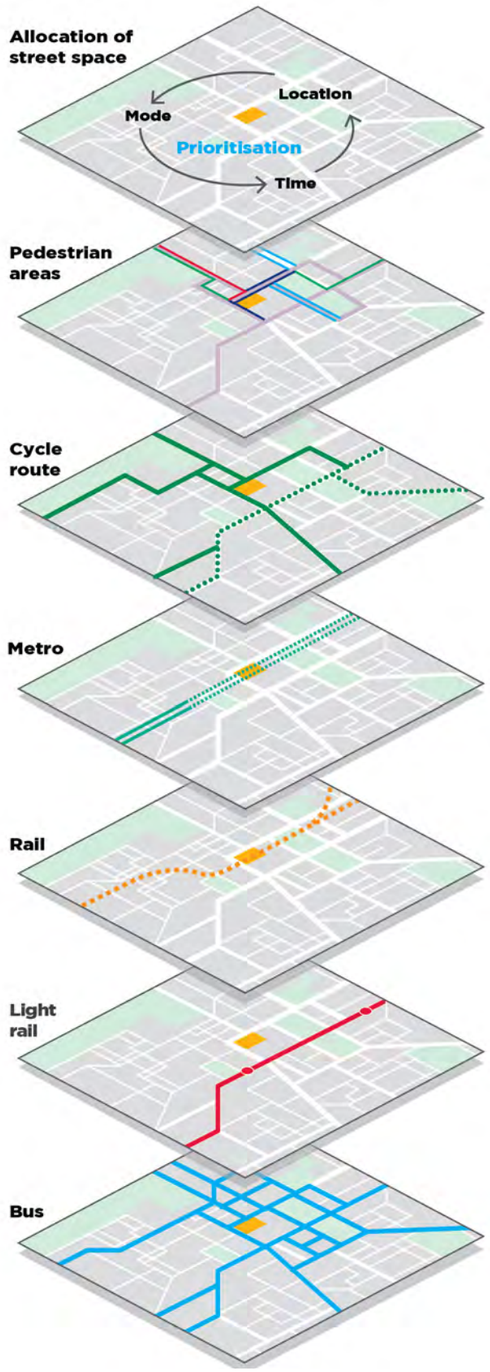
Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

Opportunities and constraints

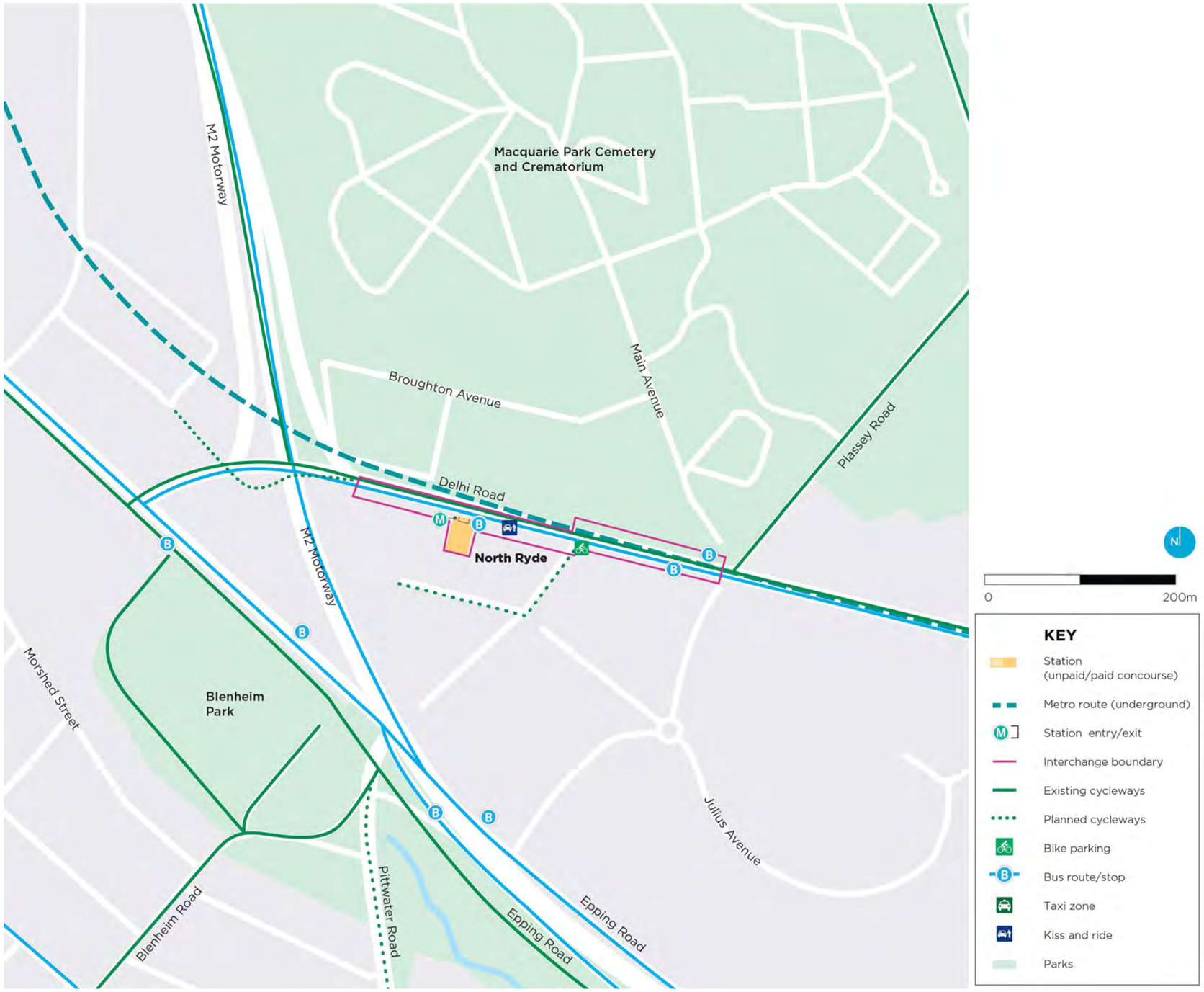
North Ryde Station has the following urban design opportunities and constraints.

Opportunities	Constraints
• Integrate the metro station with the existing road network to facilitate safe transfers to and from the station and customers' destinations. • Support enhanced amenity within and surrounding the station precinct. • Enhance connections, improving pedestrian and cyclist permeability through and to the North Ryde station precinct via the pedestrian bridge over Delhi Road, and road network improvements of Delhi Road. • Enhance road network operations through the widening of Delhi Road.	• The need to respond to the future development expansion surrounding the station. • A poor pedestrian environment at the intersections of Epping Road with Delhi Road and Pittwater Road. • Limited information regarding the surrounding area and connecting transport modes is provided for customers at the interchange.

North Ryde – interchange and transfer requirements overview



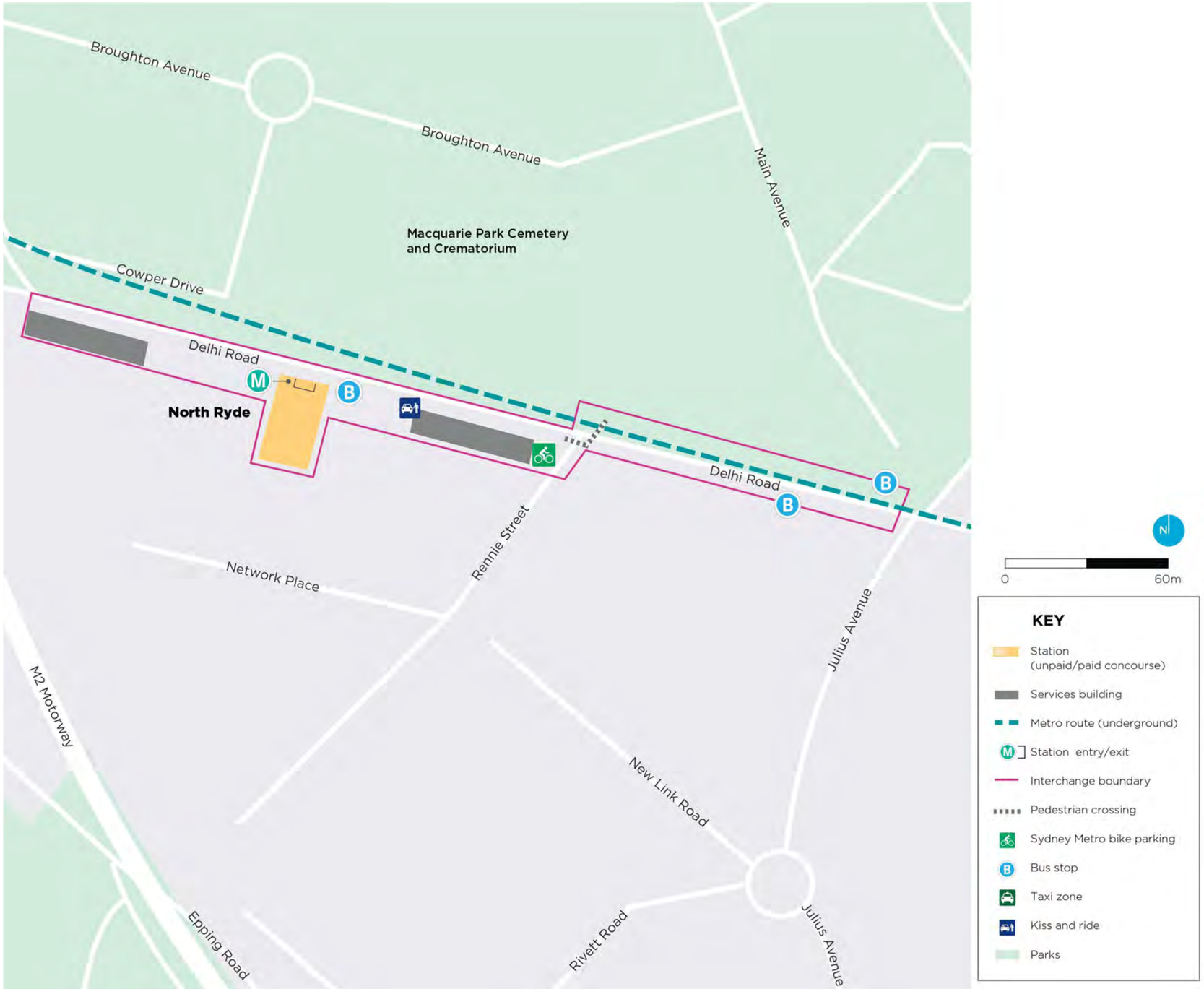
Mode layers



North Ryde Station – interchange and transfer requirements overview

North Ryde – walking interchange and transfer requirements

Mode layer

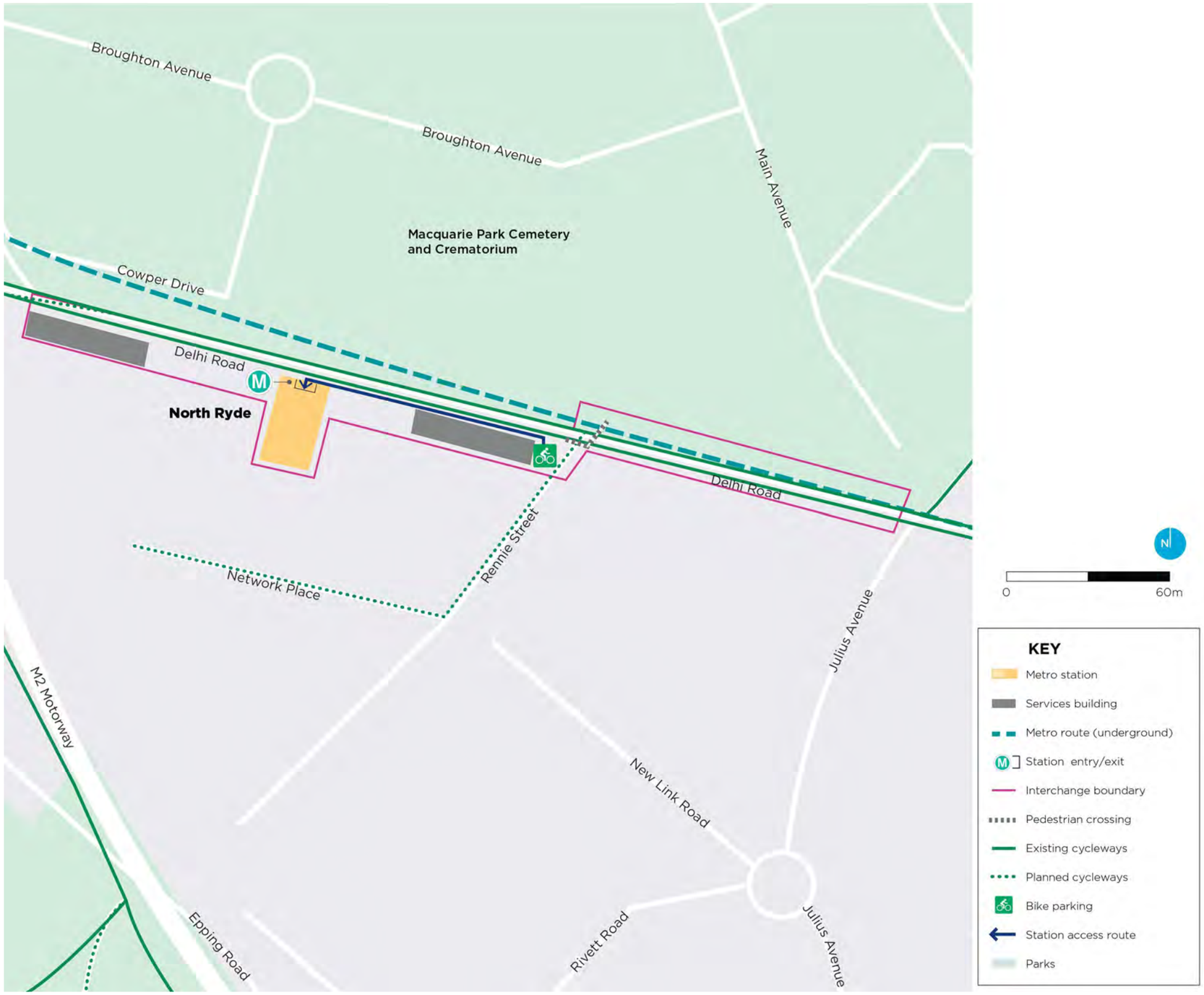


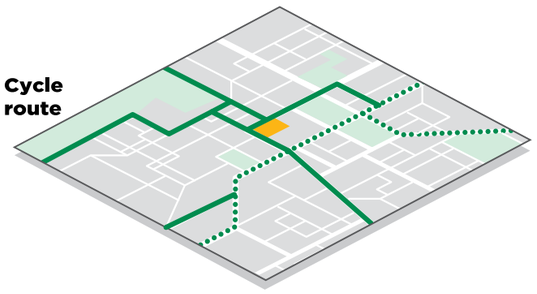
North Ryde Station – pedestrian interchange and transfer requirements

North Ryde – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	North Ryde is an origin and destination station. An existing network of footpaths serves the pedestrian network immediately outside the station.	The majority of pedestrian demand is currently east towards the commercial precinct along Dehli Road, and north to the Macquarie Park Cemetery and Crematorium and the Lane Cove National Park. Currently, there is lower pedestrian demand west, past Epping Road, towards residential areas.
Current mode splits and intermodal transfer	2013 one-hour AM peak: • 105 entries • 755 exists	Current mode share for pedestrians connecting to North Ryde Station is 71 per cent.
Integration		
Station access	The station supports one access point, which requires safe, convenient and direct pedestrian routes: • The access is on the south side of Delhi Road, between Epping Road and Julius Avenue.	
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with commercial, retail, leisure and residential areas surrounding the station.	Limited pedestrian facility upgrades are required due to the introduction of Sydney Metro services at North Ryde Station.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by the City of Ryde. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant.	• Station access — Provide connectivity to the surrounding transport interchanges, industrial, commercial, retail, leisure and residential precincts.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.	• Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from bike parking	The station provides easy transfer to existing bike lockers and racks facilities located approximately 100 metres east of the station entry.	
Transfer to and from other rail	No design provision is considered for this location.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will continue to provide easy transfer to bus stops on Delhi Road and Epping Road.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	No design provision is considered for this location.	
Transfer to and from kiss-and-ride	The station will provide easy transfer to the kiss-and-ride zone on Dehli Road.	
Transfer to and from park-and-ride	No design provision is considered for this location.	

North Ryde – cycling interchange and transfer requirements





Mode layer

North Ryde Station – cycling interchange and transfer requirements

North Ryde – cycling interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	On-road cycle lanes currently pass on the northern and southern sides of Delhi Road. Future Delhi Road widening maintained on-road cycling provisions both eastbound and westbound.	The station and interchange will continue to allow bicycle riders to move through the station and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	*Note: 2014 Household Travel Survey (HTS) data resulted on a daily cycling mode share of up to 5 per cent. There is an information gap regarding cycling mode share from previous access surveys and forecast models.*	Observations made in May 2016 identified the following: • 6 bikes parked on the east of North Ryde Interchange.
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 50 metres of the gateline or station entry. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	The current level of bike parking adheres to the following principles: • Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To continue to facilitate bicycle rider transfer within the interchange the following existing bike parking is located at: • Bike lockers and racks – along Delhi Road (southern side) 100 metres south of the station entry.	At this stage the TfNSW Bike and Ride Program proposes no additional bike parking provisions.
Types of parking facilities	The bike parking provisions at the station are: • Bike racks for 8 bicycles, on Delhi Road 100 metres south of the station entrance. • Bike lockers for 4 bicycles on Dehli Road, 100 metres south of the station entrance.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shelter for 20 bicycles. • Retain the existing supply of bike racks. This minimum requirement is taken from the NSW Government's Bike and Ride Program. In addition, the current supply of bike lockers should be maintained in accordance with the Bike Locker Program.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments.
Closest cycling routes	An extensive network of regional and local cycle routes connect to North Ryde Station, including routes along the M2 Motorway, through Lane Cove National Park, and south to the Parramatta River. The closest cycle routes to the station are: • Delhi Road – on-road bike lane. • Pittwater Road – on-road bike lane.	• Epping Road – shared off-road route. • Blenheim Road – informal on-road route with mixed traffic and no line markings. • Lane Cove National Park – informal on-road route with mixed traffic and no line markings. • Macquarie Park Cemetery and Crematorium – informal on-road route with mixed traffic and no line markings.
Cycle routes for consideration by others	The City of Ryde is continually updating its bike plan.	

North Ryde – bus interchange and transfer requirements

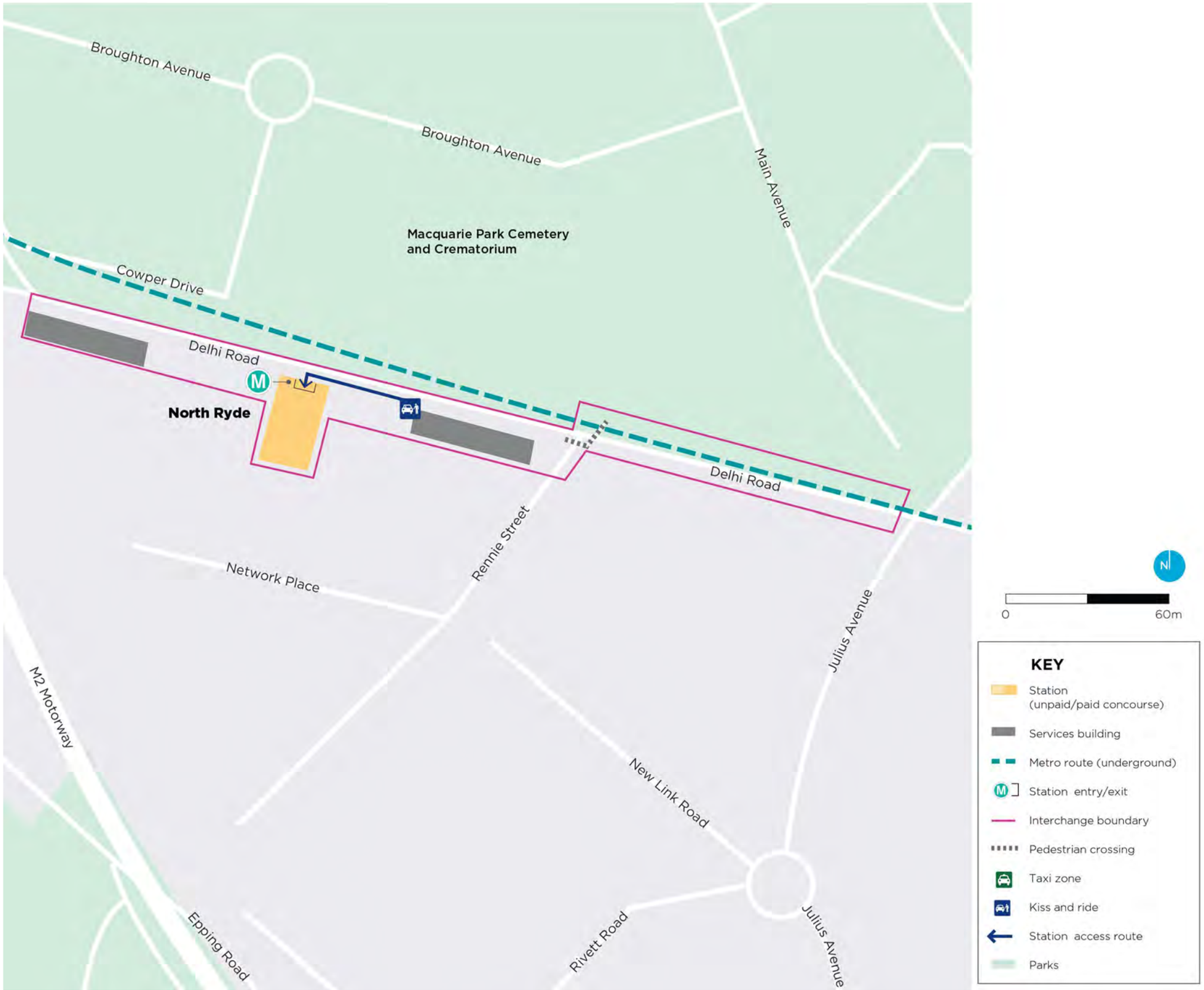
Mode layer

North Ryde Station – bus and light rail interchange and transfer requirements

North Ryde – bus interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Limited bus routes operate in the vicinity of North Ryde Station, along Dehli Road. These routes are: • 259 – Macquarie Centre to Chatswood via Macquarie Park and North Ryde. • N91 – Bondi Junction to Macquarie Park via City Town Hall.
Current mode splits and intermodal transfer	• The bus mode share at Macquarie Park Station is approximately 23 per cent (information taken from 2014 HTS data and 2013 TfNSW customer surveys).
Integration	
Closest bus stops/routes	The primary bus stops within the interchange are: • East of station: — Delhi Road – one stop on either side, westbound and eastbound, between Epping Road and Plassey Road/Julius Avenue.
Potential changes to bus stops/route	There are no proposed bus stop or service changes at North Ryde Station prior to Sydney Metro operations commencing in 2019. Sydney Metro operations commence in 2019. High-frequency Station Link services will run while the rail line between Epping and Chatswood is upgraded for around seven months, ahead of Sydney Metro opening in 2019.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Dedicated footways along local and regional roads. • Signalised controlled pedestrian crossings at the eastern entrance.
Transfer to and from bus	Customers will continue to be able to transfer between bus stops at metro station entries using existing footpaths.
Transfer to and from bus (overnight)	The N91 NightRide service operates from Delhi Road.
Transfer to and from bus (school)	No design provision is considered for this location.
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions.*
Bus bays	The bus bays that are being modified for the TTP operations as well as for opening of Sydney Metro services meet the NSW state and Commonwealth guidelines for size and layout.
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.

North Ryde – vehicle drop-off interchange and transfer requirements

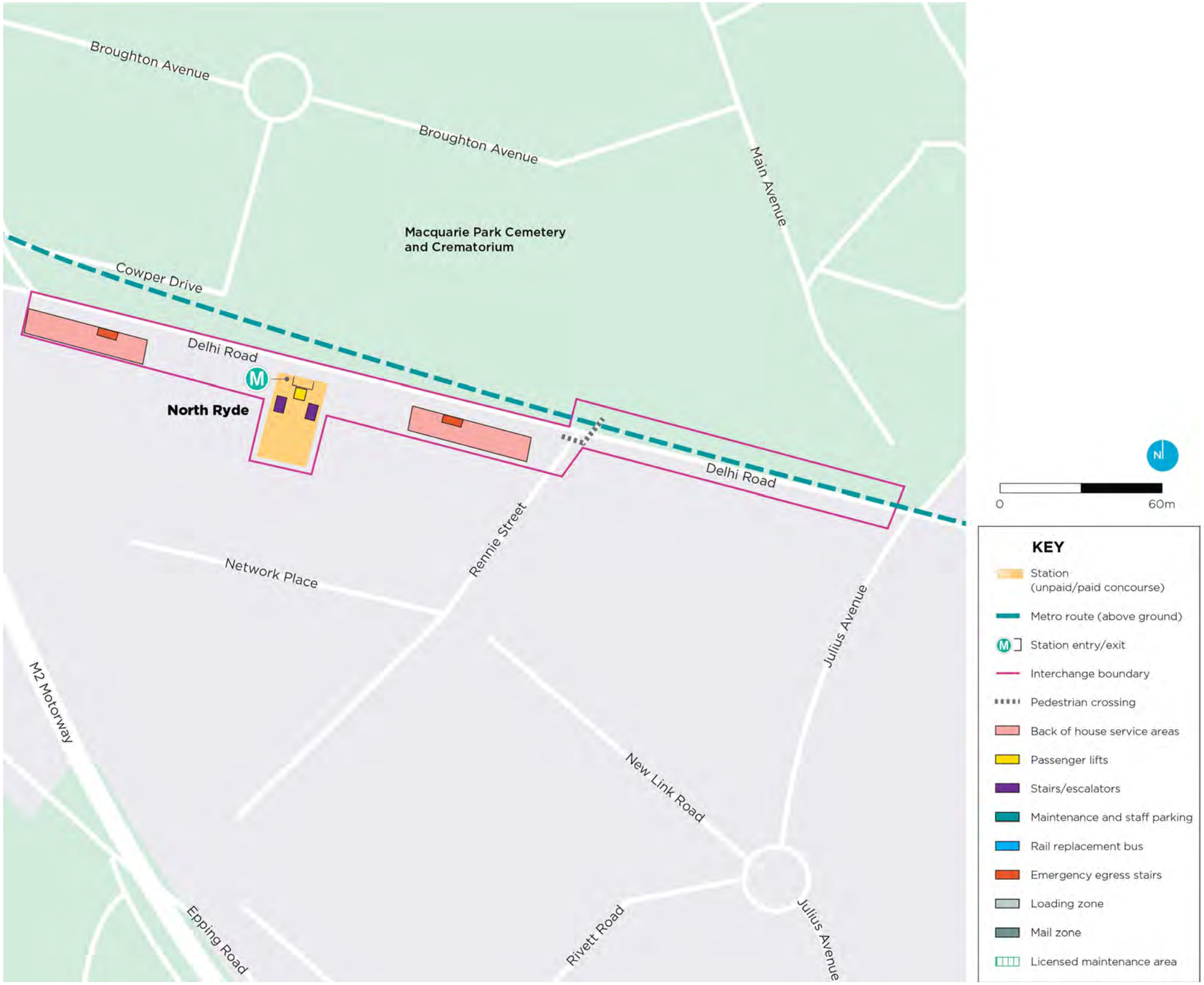


North Ryde Station – vehicle drop-off interchange and transfer requirements

North Ryde – vehicle drop-off interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Existing kiss-and-ride zone at: • Delhi Road, south side, between Epping Road and Rennie Street.
Current mode splits and intermodal transfer	No data available.
Integration	
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from taxi	No design provision is considered for this location.
Transfer to and from kiss-and-ride	Customers will use existing footpaths along Delhi Road to access the station.
Taxi rank locations	No design provision is considered for this location.
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.

North Ryde – operations, maintenance and management provisions



North Ryde Station – operations, maintenance and management provisions

North Ryde – operations, maintenance and management provisions *continued*

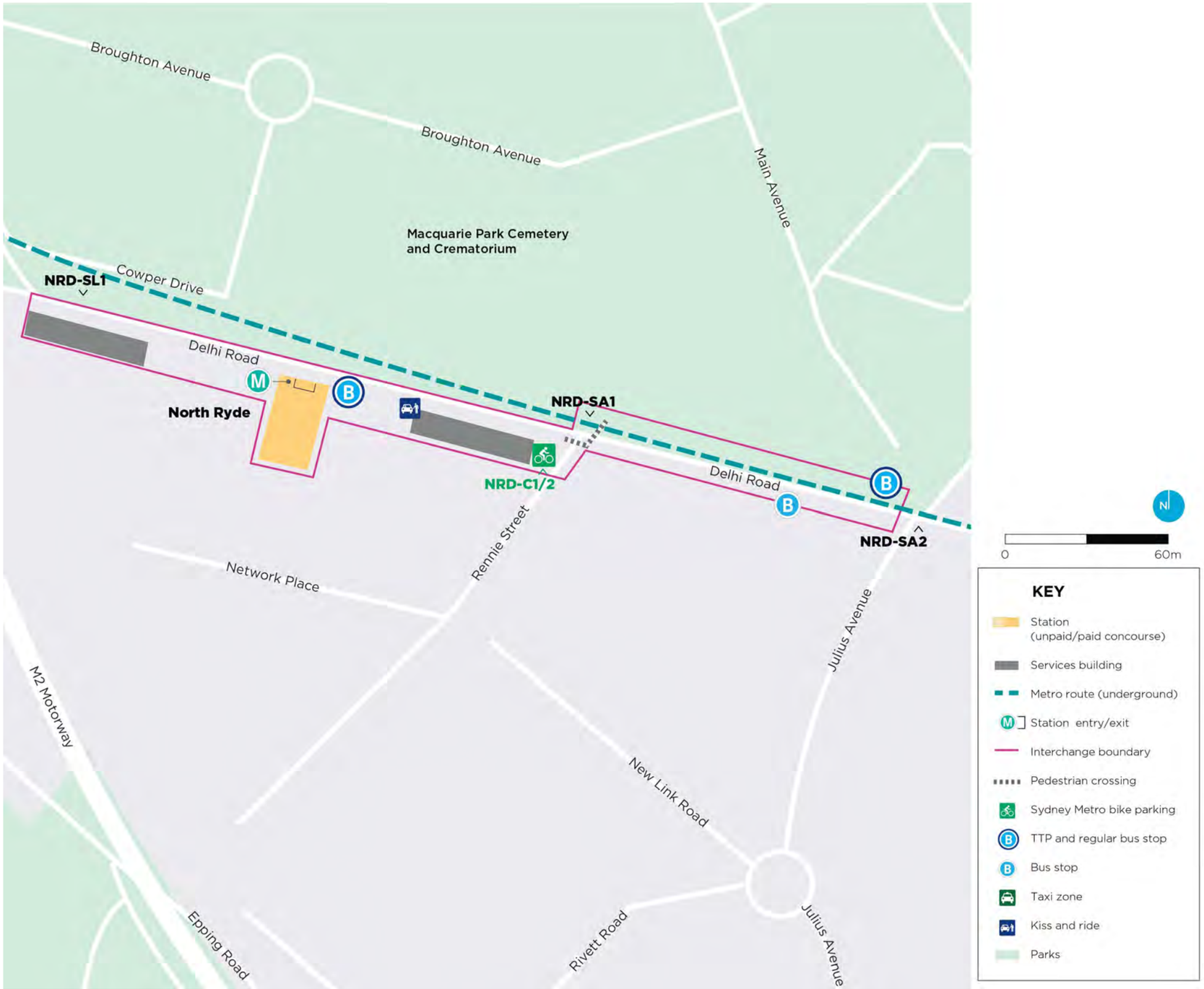
The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles use the existing on-street loading bays and designated service areas.
Servicing and maintenance access (major)	Service vehicles use the existing on-street loading bays and designated service areas.
Rail replacement bus service access	Rail replacement buses will use the existing bus zone on Delhi Road.
Delivery access (retail and operational)	Delivery vehicles use the existing on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	Mail zones will be maintained at: • 32 Delhi Road.
Staff car parking	As staff will be encouraged to travel by public transport or active transport, no designated car parking is provided for staff.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

North Ryde – recommendations



North Ryde Station – recommendations

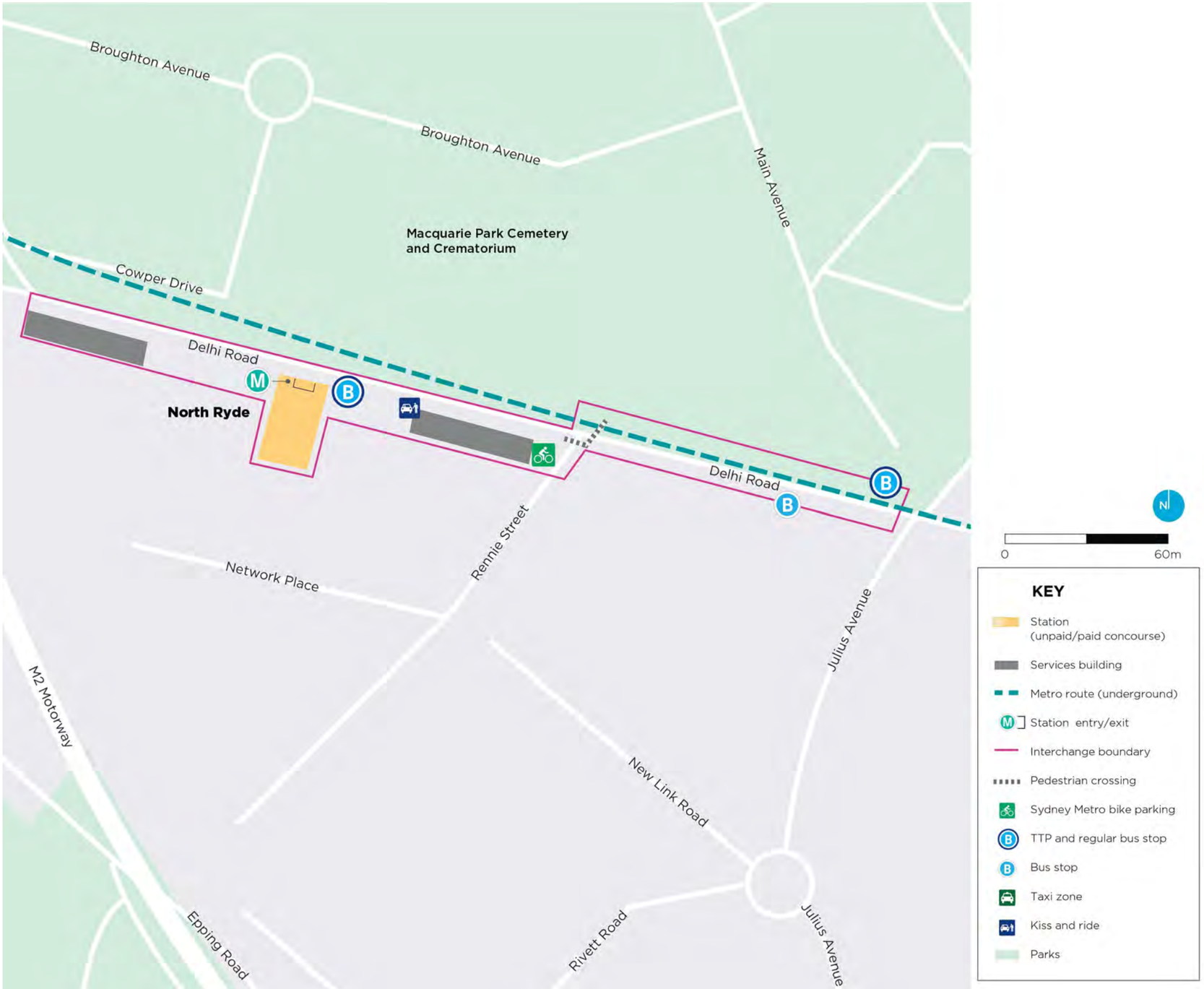
North Ryde – recommendations *continued*

This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at North Ryde Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at North Ryde Station.

Action	
Cycling	
NRD–C1	Install a bike shelter as per the NSW Government's Bike and Ride Program and the Bike Parking BRS. The location is at the existing eastern bicycle parking location.
NRD–C2	Investigate, and if thought appropriate, relocate the existing bicycle lockers and racks closer to the station entrance to increase use.
Safety	
NRD-SA1	Reconstruct footpath and kerb ramp and re-mark the faded pedestrian lines at the intersection of Delhi Road and the newly constructed access road to the new development.
NRD-SA2	Repair the uneven surface at the Delhi Road/Plassey Road/Julius Avenue West intersection.
Street lighting	
NRD-SL1	Provide street lighting in accordance with P1 standards. Note: SMDO has completed arrangements for Landcom to design lighting to meet Category P1. Ryde Council has approved UrbanGrowth Development Corporation plans for P1 lighting.
Management and maintenance	
NRD–M1	Document operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

North Ryde – temporary transport plan



North Ryde Station – temporary transport plan

Chatswood

Chatswood – local context

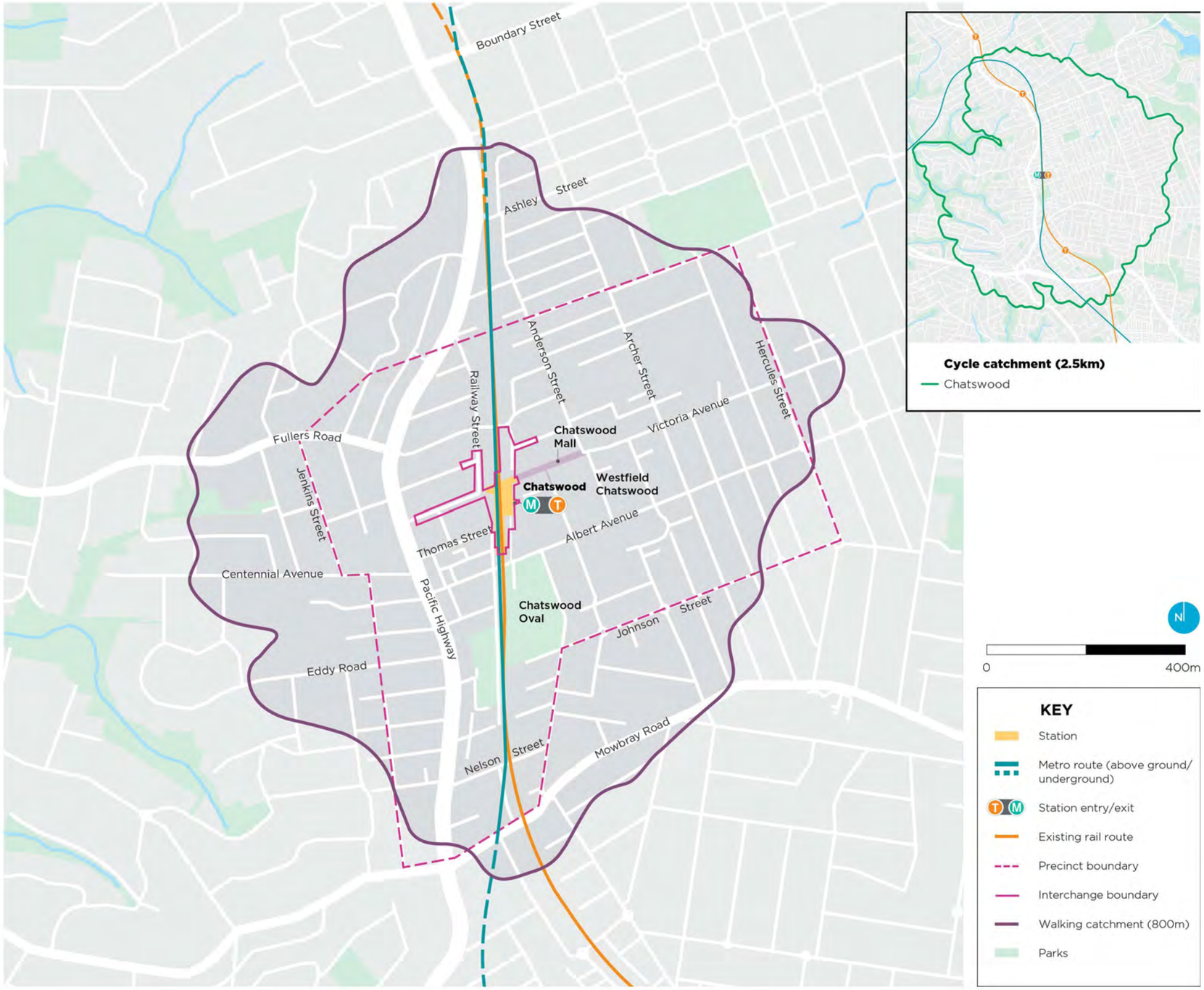
The existing Chatswood Station will provide metro services running from converted platforms 2 and 3, with direct connections to rail services and transfer to existing transport services at the existing station at Chatswood.

The four existing station entries will be retained.

The western entry from Victoria Avenue provides access to business and residential areas to the west.

The eastern entry from Victoria Avenue pedestrian mall provides access to Chatswood's major retail area, and business and residential areas to the east.

There are also two southern entries from Albert Avenue and Thomas Lane.



Chatswood Station – local context

Chatswood – local context *continued*

Chatswood Station will continue to service the surrounding mixed-use catchment, with business, retail and residential areas. Both Sydney Trains services and Sydney Metro services will operate from this station.

The station is located on the corner of Victoria Avenue and Railway Street. Sydney Metro will use the existing station facilities for operations.

Local destinations include commercial and retail areas, with medium- to high-density residential.

To the east of the station is the major retail area of Chatswood. To the west of the station is the Pacific Highway, an important north-south arterial road with extended clearway hours, which dominates the area and divides the commercial and retail area in the east from a mainly residential area in the west.

Feature	Description	
Location	• At the site of the existing Sydney Trains Chatswood Station, where platforms 2 and 3 will be repurposed for metro services.	
LGA	• City of Willoughby.	
Station entry	• The existing western entry from Railway Street and Victoria Avenue will be retained. • The existing eastern entry from Orchard Road and Victoria Avenue will be retained.	
Transport interchange	• Walking, cycling, suburban rail, bus, taxi and kiss-and-ride.	
Main features and traffic arrangements	• Existing bus stops on Victoria Avenue, Railway Street and Orchard Road retained. • Wayfinding signage and Sydney Metro information will be provided.	
Customers	• Commercial, retail, leisure and residential precincts.	
Key attractions	• Chatswood Bowling Club. • Chatswood Chase. • Chatswood Club. • Chatswood Croquet Club. • Chatswood High School. • Chatswood Park and Oval. • Chatswood Public School. • Chatswood RSL. • City of Willoughby Council. • Currey Park.	• Dougherty Community Centre. • Mandarin Centre. • Mercy Catholic College. • Our Lady of Dolours Catholic Primary School. • St Pius X College. • The Concourse Theatre. • Westfield Chatswood. • Willoughby City Library. • Willoughby Museum. • Zenith Centre and Theatre.

Station strategy

The station strategy for Chatswood is to:

- Provide easy, safe and intuitive transfer to and from the Sydney Trains and Sydney Metro platforms within the existing network and road environment.
- Support the existing and future commercial and retail opportunities within the Chatswood business centre and surrounding residential areas.
- Maximise legibility and connectivity with the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the sense of place.

Current land use and characteristics

Existing land use and characteristics

Sydney Metro services will operate from the existing Chatswood Station. Existing station entries will be retained.

The station will continue to service the T1 North Shore Line, connecting to Hornsby to the north and the Sydney CBD to the south.

The station is predominately surrounded by the commercial and retail precinct of Chatswood, along with high-density residential apartments. Further away from the station in all directions are low-density houses and medium-density apartments.

Road network connections from the station lead to Gordon and the M1 Motorway to the north, and Lane Cove and North Sydney via the Pacific Highway to the south, and also to Willoughby along Victoria Avenue.

Existing station precinct strategic planning context

A Plan for Growing Sydney identifies Chatswood as a Strategic Centre. The following priorities in the plan are potentially relevant to Chatswood Station and the Project:

- Improve transit connections through the Global Economic Corridor to better link centres and transport gateways.
- Work with councils to identify suitable locations for housing and employment growth coordinated with infrastructure delivery (urban renewal) and rail services.
- Work with councils to investigate potential future employment and housing opportunities associated with a Sydney Metro station.

The draft *North District Plan* (Greater Sydney Commission, 2016) sets priorities and actions for the North District, including driving the growth of the Eastern Harbour City through the planning and delivery of regionally significant infrastructure. The strategic centres of North Sydney, St Leonards, Chatswood, Macquarie Park and Northern Beaches are linked to the Eastern Harbour City and play an important economic role in supporting the growth of Sydney as a global city.

Chatswood – local context *continued*

Modes without provision

There is no design provision considered for the following modes at Epping, as these modes are not available at this station:

- Light rail.
- Ferry.
- Coach.
- Park and ride.

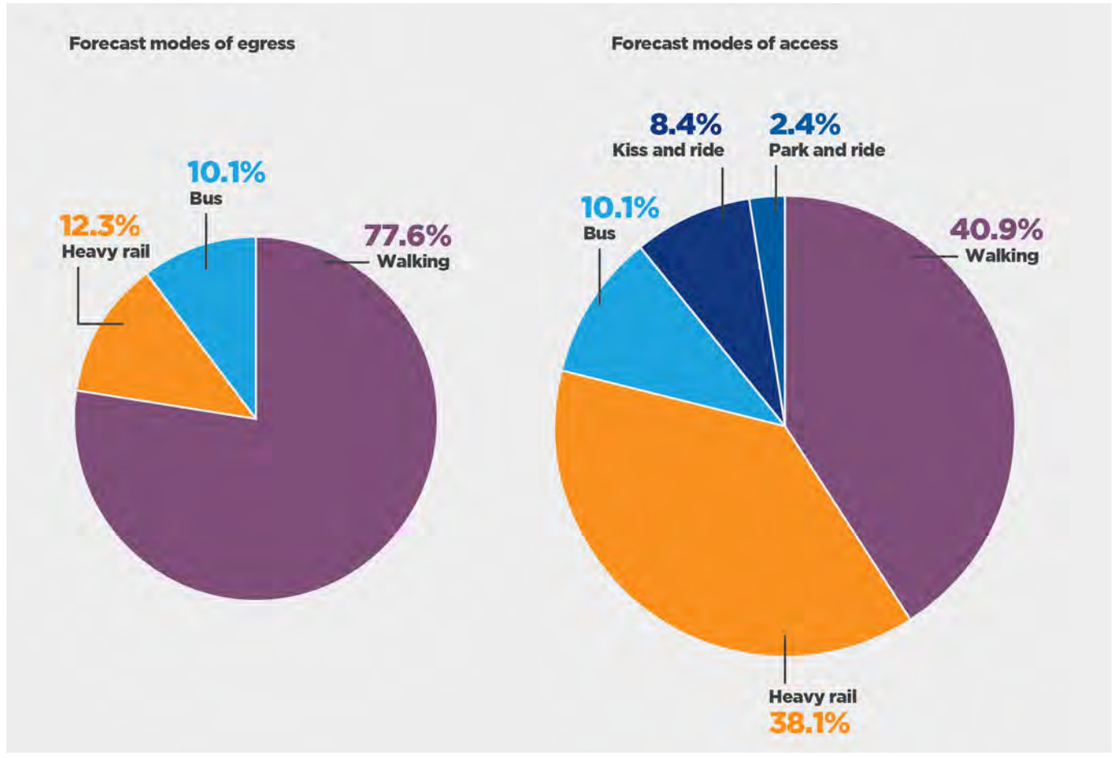
Future land use

Land use, transport integration and opportunities

Metro services at Chatswood will support state and local strategic and planning controls by providing an incentive for investment within and surrounding the town centre, enhancing urban design and amenity, and improving connectivity in Chatswood. It is expected that metro services at Chatswood will have the following specific benefits:

- The station will continue to form part of an interchange that will continue to provide safe and direct access to residential and mixed-use land uses surrounding the station that will directly benefit from additional transport connectivity to the Global Economic Corridor, particularly when the Metro at Chatswood is extended to Sydney Metro City & Southwest. The Metro will also provide an increase in service frequency compared to existing rail services.
- The increase in rail services and connections to new stations will provide the opportunity for further development of the area as a vibrant and active mixed-use centre with strong public transport links to North Sydney and the Sydney CBD and other centres throughout the Global Economic Corridor; as well as to offices, retail, housing, and community, recreational, cultural, leisure and educational facilities.
- The increase in rail services will contribute to the increased utilisation of the existing employment area extending along the Pacific Highway, Victoria Avenue, Railway Street, Albert Avenue and Archer Street, delivering an increase in new jobs in an area with levels of amenity, recreation opportunities and good access to public transport.
- The increase in rail services will provide opportunities to increase residential densities within walking distance of the station.

These strategies and opportunities will be further developed in consultation with the Department of Planning and Environment, the Greater Sydney Commission and the City of Willoughby Council.



2036 3.5-hour AM peak demand and mode splits

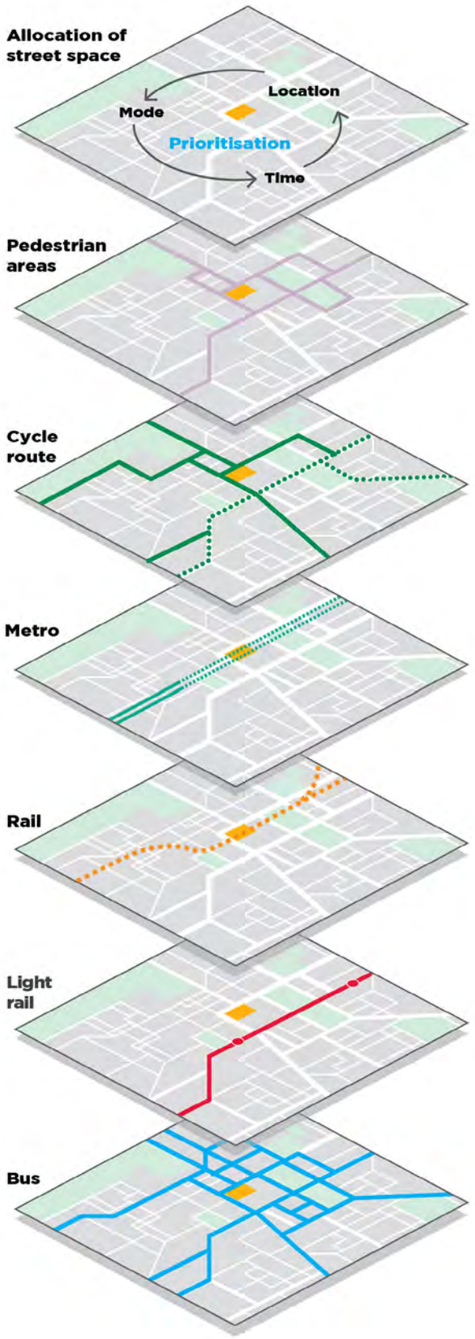
Note: The cyclist transfer volumes are not shown as they are not included in the modelling outputs, but are assumed to be 4 per cent mode share of residents within the 2.5-kilometre catchment of each station.

Opportunities and constraints

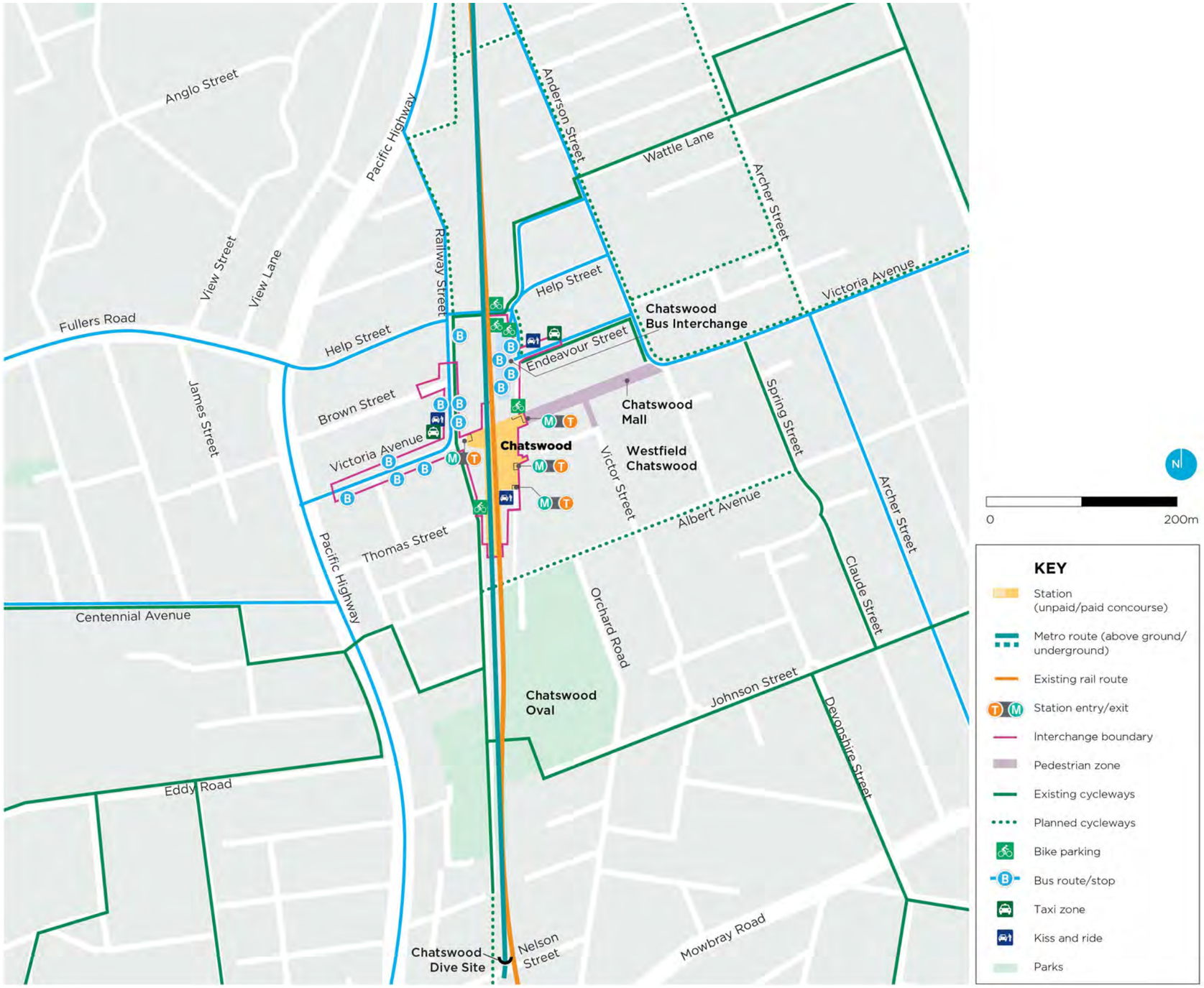
Chatswood Station has the following urban design opportunities and constraints.

Opportunities	Constraints
• Integrate the metro station with the existing road network to facilitate safe transfers to and from the station and customers' destinations. • Support enhanced amenity within and surrounding the station precinct. • Enhance connections, improving pedestrian and cyclist permeability through the Chatswood station precinct and across the rail corridor.	• Road network configuration results in limited opportunities to improve transport facilities due to land constraints. • The need to respond to the future development expansion surrounding the station. • Street furniture and landscaping causes pinch points along the existing pedestrian footpath. • Limited information regarding the surrounding area and connecting transport modes is provided for customers at the interchange.

Chatswood – interchange and transfer requirements overview

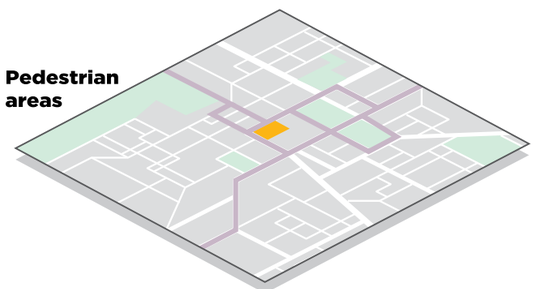


Mode layers



Chatswood Station – interchange and transfer requirements overview

Chatswood – walking interchange and transfer requirements



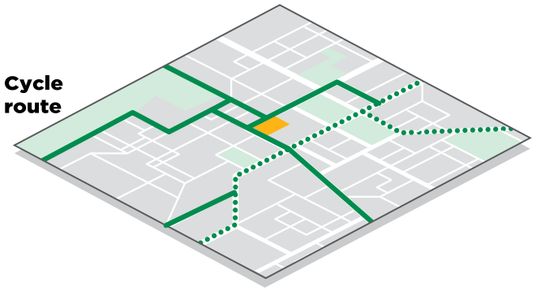
Mode layer

Chatswood Station – pedestrian interchange and transfer requirements

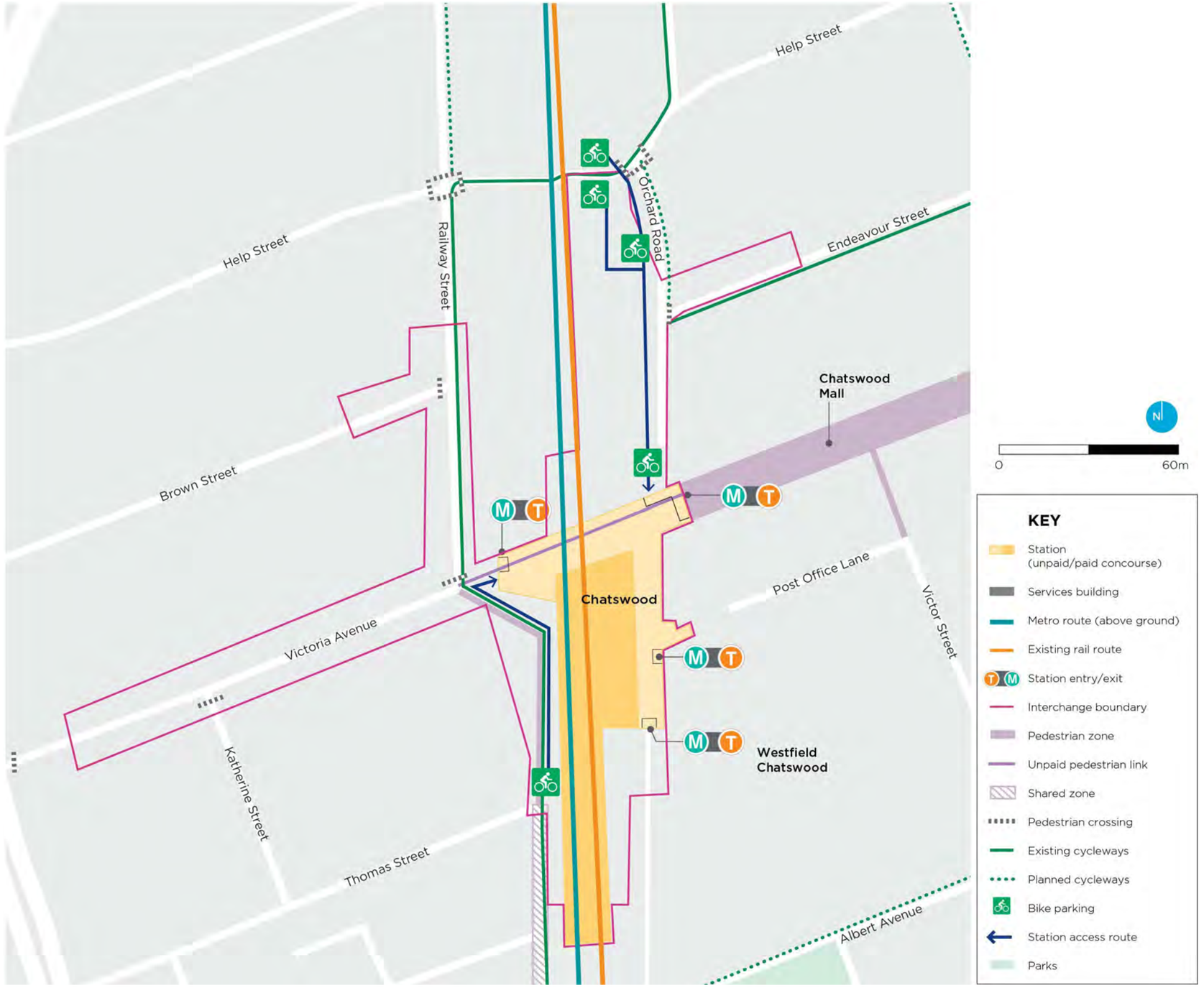
Chatswood – walking interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Chatswood is an origin, destination and transfer station. An existing network of footpaths serves the pedestrian network immediately outside the station. The majority of pedestrian demand is currently east towards the retail, commercial and	residential precinct along Victoria Avenue and west towards the commercial precinct on Railway Street and the Pacific Highway. There is also pedestrian demand further to the west, past the Pacific Highway, towards residential areas and south along Frank Channon Walk.
Current mode splits and intermodal transfer	2013 one-hour AM peak: • 6,872 entries • 15,751 exits	Current mode share for pedestrians connecting to Chatswood Station is 75 per cent.
Integration		
Station access	The station supports two access points, which require safe, convenient and direct pedestrian routes: • The western access is on Victoria Avenue, at the intersection of Railway Street.	• The eastern access is on Victoria Avenue, at the intersection of Orchard Road. • The northern access is from Help Street, via the Chatswood bus interchange. • The southern access is from Albert Avenue and Thomas Lane.
Pedestrian environment and design considerations	The overall pedestrian environment in the catchment accommodates pedestrian movement associated with commercial, retail, leisure and residential areas surrounding the station.	Limited pedestrian facility upgrades are required due to the introduction of Sydney Metro services at Chatswood Station.
Spatial considerations	The improvements to the function and operation of the station should consider plans set out by the City of Willoughby. The design should also ensure that transfer between modes within the defined station interchange allows for accessible provision that is DDA compliant. • Western Station Access — Provide connectivity to the surrounding transport interchanges, commercial, retail, leisure and residential precincts.	— Provide for pedestrian movement at signalised pedestrian crossing across Railway Street. • Eastern Station Access — Provide connectivity to the surrounding transport interchanges, commercial, retail, leisure and residential precincts.
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks.	• Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.
Transfer to and from bike parking	The station provides easy transfer to existing bike parking facilities located at: • Thomas Lane –bike lockers and bike racks. • Help Street – bike lockers and racks. • Orchard Road, within the bus interchange – bike racks.	• Victoria Avenue at the north eastern interchange entrance near the lift on the upper ground level – bike racks. Future bike parking provisions are currently being investigated by TfNSW.
Transfer to and from other rail	Convenient transfer between the new metro and the T1 Northern Line will be provided across the platform.	
Transfer to and from light rail	No design provision is considered for this location.	
Transfer to and from bus	The station will continue to provide easy transfer to bus stops on Victoria Avenue, Railway Street, Orchard Road and at the Chatswood Bus Interchange.	
Transfer to and from ferry	No design provision is considered for this location.	
Transfer to and from taxi	The station will provide easy transfer to the existing taxi ranks on: • Victoria Avenue.	• Endeavour Street.
Transfer to and from kiss-and-ride	The station will provide easy transfer to the existing kiss-and-ride zones on: • Railway Street.	• Endeavour Street. • Shared zone, entered at 69 Albert Avenue.
Transfer to and from park-and-ride	No design provision is considered for this location.	

Chatswood – cycling interchange and transfer requirements



Mode layer

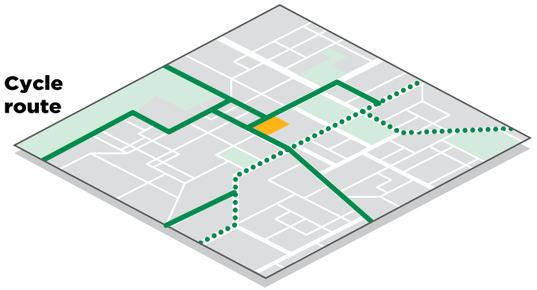


Chatswood Station – cycling interchange and transfer requirements

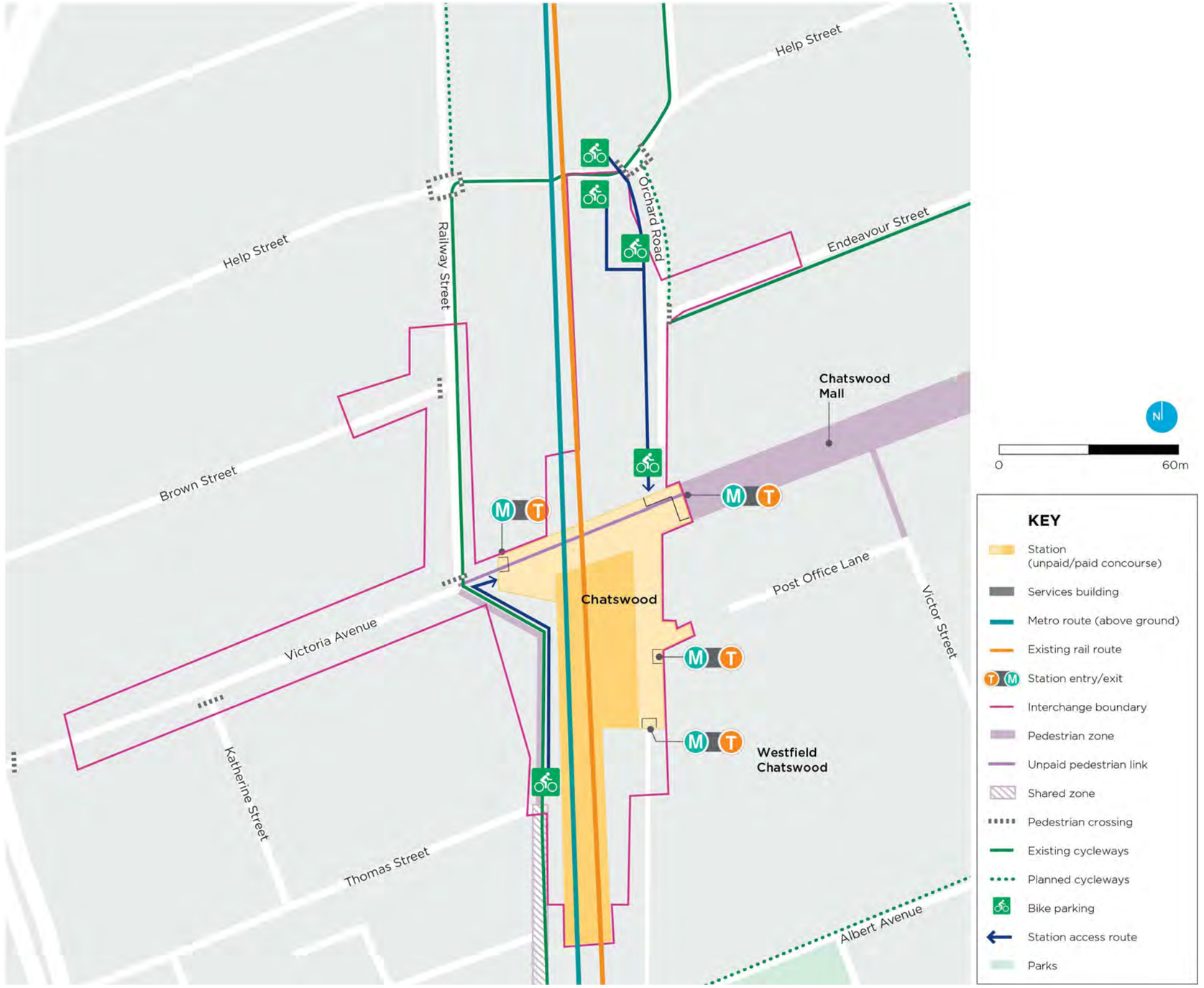
Chatswood – cycling interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	On-road mixed traffic cycle provision is provided along Thomas Lane, Albert Avenue, Railway Street and Help Street. An off-road shared walking and cycling path directs customers from the south via Frank Channon Walk	The station and interchange will continue to allow bicycle riders to move through the station and to be able to board Sydney Metro services.
Current mode splits and intermodal transfer	*Note: 2014 Household Travel Survey (HTS) data resulted on a daily cycling mode share of up to 5 per cent. There is an information gap regarding cycling mode share from previous access surveys and forecast models.*	Observations made in May 2016 identified the following: • 9 bikes parked on the north side of Chatswood Interchange. • 11 bikes parked on the east side of Chatswood Interchange. • 9 bikes parked on the south side of Chatswood Interchange
Integration		
Bike parking location requirements	• A bicycle rider must be able to ride within 30 metres of the bike parking entrance. • Bike parking must be within 50 metres of the gateline or station entry. • Bike parking facilities must be in accordance with Australian Standards, Austroads Guidelines and TfNSW requirements and standards.	• Bike sheds must be an enclosed facility incorporating electronic access, signs and customer information. • Bike shelters must be undercover and freely accessible.
Bike parking location principles	The current level of bike parking adheres to the following principles: • Entry/access to bike parking must be at street level, convenient, easily visible and intuitive for customers. • Bike parking should be at street level, where feasible, and entry/access to bike parking should not impede pedestrian customer flows to/from the station entry.	• Bike parking and vehicle parking locations and access arrangements should be separated (that is, there should be no access through a loading dock). • Bike parking must be located on the main desire line of the cycle network, where feasible.
Bike parking facilities	To continue to facilitate bicycle rider transfer within the interchange the following existing bike parking is located at: • Western entrance: — Bike lockers and racks– Thomas Lane. • Eastern entrance: — Bike lockers – southern side of Help Street.	— Bike racks – northern side of Help Street. — Bike racks – Orchard Road within the bus interchange. — Bike racks – Victoria Avenue at the north eastern interchange entrance near the lift on the upper ground level. To improve cycling mode share the TfNSW Bike and Ride Program are investigating the provision of a bike shed at this station. The likely location is yet to be determined.
Types of parking facilities	The bike parking provisions at the station are: • Western entrance: — Bike racks for 12 bicycles, on Thomas Lane. — Bike lockers for 11 bicycles on Thomas Lane. • Eastern entrance: — Bike lockers for 5 bicycles on Help Street. — Bike racks for 12 bicycles, on northern side of Help Street, near Orchard Road. — Bike Racks for 24 bicycles on Orchard Road within the bus interchange. — Bike racks for 20 bicycles on Victoria Avenue at the north eastern interchange entrance near the lift on the upper ground level.	Ultimately, the number of bike parking spaces surrounding the station should include, where possible: • Bike shed for 60 bicycles, with electronic access facility. • Bike shelter for 20 bicycles. • Retain the existing supply of bike racks. This minimum requirement is taken from the NSW Government's Bike and Ride Program. In addition, the current supply of bike lockers should be maintained in accordance with the Bike Locker Program.
Safe transfer	Ensure the safety of bicycle riders and protect them from other road users by providing: • Safe integration with existing networks.	• Separation from vehicles, where necessary. • Controlled crossing points along known cycling routes within low speed environments.

Chatswood – cycling interchange and transfer requirements *continued*



Mode layer



Chatswood Station – cycling interchange and transfer requirements

Chatswood – cycling interchange and transfer requirements *continued*

Item	Description	
Closest cycling routes	An extensive network of regional and local cycle routes connect to Chatswood Station, including routes through Lane Cove National Park, to Middle Harbour, and south to the Sydney CBD. The closest cycle routes to the station are: • Railway Street – on-road mixed traffic route. • Help Street – on-road mixed traffic route and off-road separated path.	• Cambridge Lane and McIntosh Street – on-road marked bike lanes. • Thomas Lane – on-road mixed traffic route. • Frank Channon Walk – off-road shared path. • Johnson Street/Centennial Avenue – on-road marked bike lane, with shared off-road section near station.
Cycle routes for consideration by others	The City of Willoughby is continually updating its bike plan.	

Chatswood – train interchange and transfer requirements

Mode layer

Chatswood Station – train interchange and transfer requirements

Chatswood – train interchange and transfer requirements *continued*

Item	Description
Current state	
Current levels of access and service	Chatswood Station currently services the T1 Northern Line.
Current mode splits and intermodal transfer	• Current Sydney Trains passenger demand is approximately 42,740 trips per day.
Integration	
Closest rail stations	Chatswood Station.
Type of interchange	Direct connection within the paid areas of the station.
Transfer to and from rail	Surface connection within the paid areas of the station.

Chatswood – bus interchange and transfer requirements

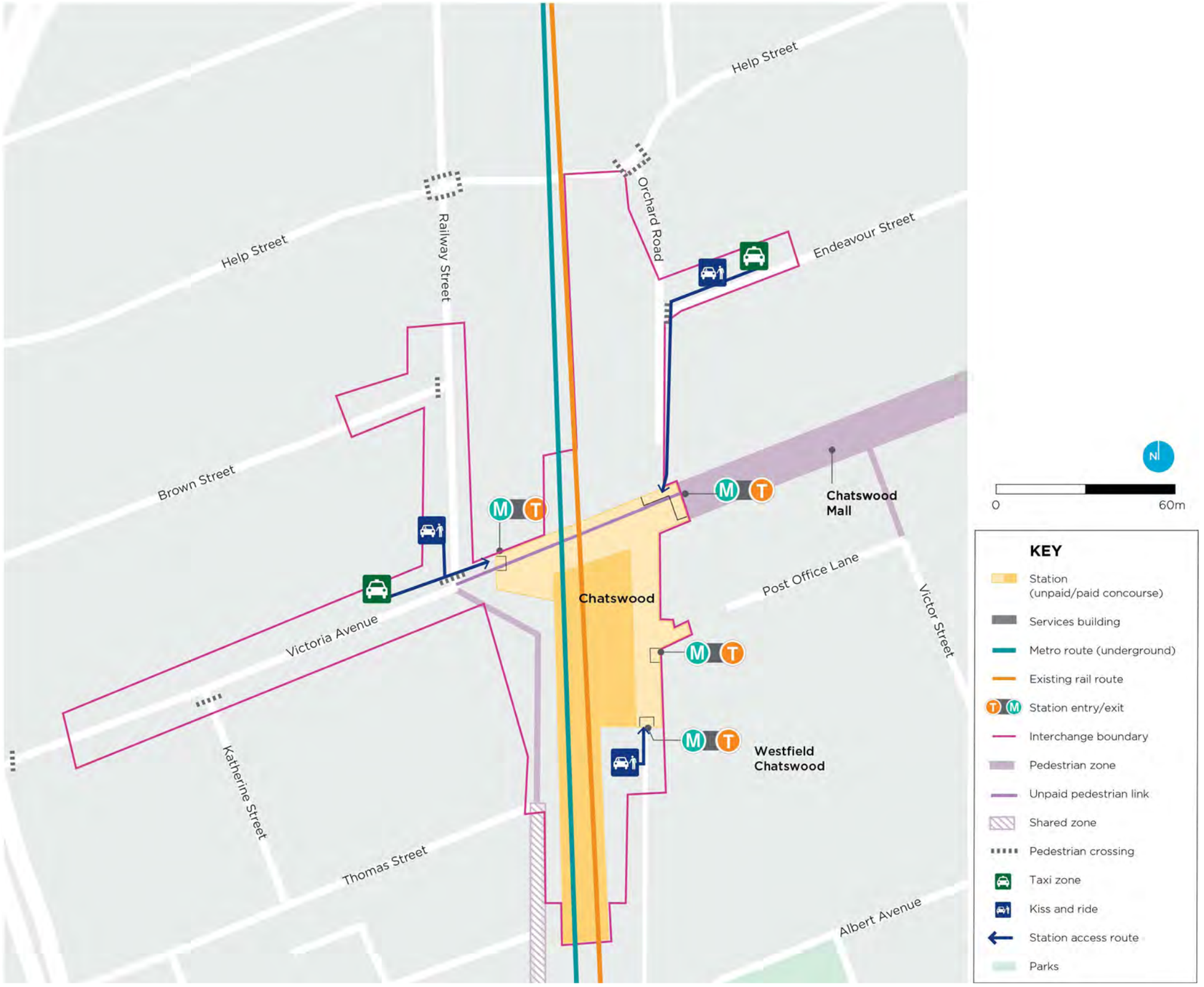
Mode layer

Chatswood Station – bus and light rail interchange and transfer requirements

Chatswood – bus interchange and transfer requirements *continued*

Item	Description			
Current state				
Current levels of access and service	A number of bus routes operate within the vicinity of North Ryde Station, particularly those that run along Delhi and Epping Roads. These routes are: • 102 – Chatswood to Roseville P.S (school service). • 136 – Chatswood to Manly. • 137 – Chatswood to Bantry Bay. • 143 – Manly to Chatswood via Balgowlah and St Leonards. • 144 – Manly to Chatswood via Royal North Shore Hospital. • 200 – Bondi Junction to Chatswood.	• 255 – Colwell Cres to Chatswood. • 256 – Chatswood to Fullers Road. • 257 – Chatswood to Balmoral via Crows Nest. • 258 – Chatswood to Lane Cove West. • 259 – Macquarie Centre to Chatswood via Macquarie Park and North Ryde. • 261 – Lane Cove to City King Street Wharf via Longueville. • 267 – Chatswood to Crows Nest. • 272 – North Willoughby to City Wynyard. • 275 – Castlecrag to Chatswood. • 277 – Chatswood to Castle Cove. • 278 – Killarney Heights via Forestville.	• 279 – Frenchs Forest to Chatswood. • 280 – Warringah Mall to Chatswood. • 281 – Chatswood to Davidson via Frenchs Forest. • 282 – Chatswood to Belrose via Frenchs Forest. • 283 – Belrose via Frenchs Forest • 284 – Duffys Forest via Frenchs Forest and Terrey Hills/Duffys Forest to Chatswood. • 343 – Kingsford to Chatswood. • 533 – Sydney Olympic Park to Chatswood via Rhodes and North Ryde. • 534 – West Ryde to Chatswood via North Ryde.	• 536 – Gladesville via Lane Cove and Hunters Hill. • 558 – Chatswood to Lindfield. • 565 – Macquarie via UTS, Lindfield and West Lindfield. • 627 – Castle Hill Interchange via Lane Cove. • 628 – Chatswood to Norwest via M2. • L60 – Mona Vale to Chatswood. • M40 – Bondi Junction to Chatswood. • N90 – Overnight services. • N91 – Bondi Junction to Macquarie Park via City Town Hall.
Current mode splits and intermodal transfer	• The bus mode share at Chatswood Station is approximately 12 per cent (information taken from 2014 HTS data and 2013 TfNSW customer surveys).			
Integration				
Closest bus stops/routes	The primary bus stops within the interchange are: • West of station: — Railway Street – one extended stop on either side, northbound and southbound, between Victoria Avenue and Brown Street. — Victoria Ave – one extended stop on either side, westbound and eastbound, between Railway Street and Pacific Highway. • East of station: — Chatswood Bus Interchange – interchange and terminus.			
Potential changes to bus stops/route	There are no proposed bus stop or service changes at Chatswood Station prior to Sydney Metro operations commencing in 2019.	Sydney Metro operations commence in 2019. High-frequency Station Link services will run while the rail line between Epping and Chatswood is upgraded for around seven months, ahead of Sydney Metro opening in 2019.		
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Dedicated footways along local and regional roads.	• Signalised controlled pedestrian crossings at the eastern entrance. • Pedestrian connection from Chatswood Bus Interchange.		
Transfer to and from bus	Customers will continue to be able to transfer between bus stops at metro station entries using existing footpaths.			
Transfer to and from bus (overnight)	Regular bus stops on Railway Street will be used for overnight bus operations.	• The N91 NightRide service operates from Stand J on Railway Street. • The N90 NightRide service operates from Stand H on Railway Street.		
Transfer to and from bus (school)	School children utilise Sydney Bus services, which are accessed via Victoria Avenue.			
Transfer to and from bus (possessions, degraded operations, incidents)	See *Operations, maintenance and management provisions.*			
Bus bays	The bus bays that are being modified for the TTP operations as well as for opening of Sydney Metro services meet the NSW state and Commonwealth guidelines for size and layout.			
Bus stop location	Bus services shall be easily and visibly accessible from the station entrance, located as close as feasible to the gateline and no more than 100 metres away.			

Chatswood – vehicle drop-off interchange and transfer requirements



Chatswood Station – vehicle drop-off interchange and transfer requirements

Chatswood – vehicle drop-off interchange and transfer requirements *continued*

Item	Description	
Current state		
Current levels of access and service	Existing kiss-and-ride zones at: • Railway Street. • Endeavour Street. • Shared zone, entered at 69 Albert Avenue.	Existing taxi ranks at: • Victoria Avenue. • Endeavour Street.
Current mode splits and intermodal transfer	The average weekday passenger drop-off volumes by taxi (Household Travel Survey 2014-15) were approximately: • 1,412 entries.	
Integration		
Safe transfer	Ensure the safety of pedestrians and protect them from other road users by providing: • Safe integration with existing networks. • Controlled (signalised), direct paths of travel along pedestrian desire lines within low speed environments.	
Transfer to and from taxi	Customers will use the following existing footpaths to access the station: • Victoria Avenue. • Railway Street.	• Endeavour Street. • Signalised crossing at corner of Victoria Avenue and Railway Street.
Transfer to and from kiss-and-ride	Customers will use the following existing footpaths to access the station: • Victoria Avenue. • Railway Street. • Signalised crossing at corner of Victoria Avenue and Railway Street.	• Endeavour Street. • Orchard Road. • Shared zone, entered at 69 Albert Avenue.
Taxi rank locations	Taxi ranks that service local centres as well as stations are supported as long as they are located within 100 metres of the station access point.	
Kiss-and-ride zone design	The dimensions of kiss-and-ride spaces shall comply with TfNSW and Australian Standards and Guidelines.	

Chatswood – operations, maintenance and management provisions

Chatswood Station – operations, maintenance and management provisions

Chatswood – operations, maintenance and management provisions *continued*

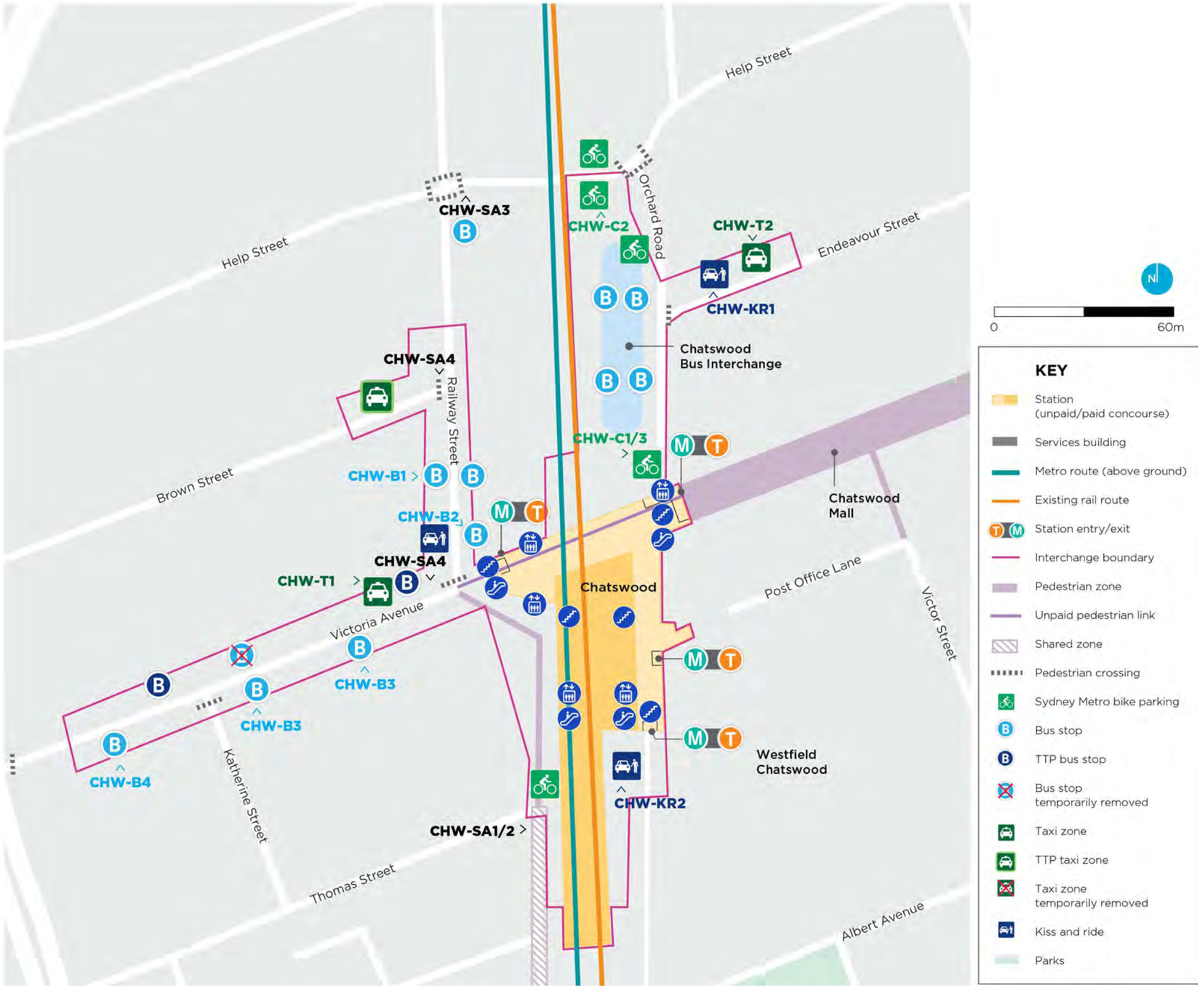
The operations and maintenance provisions will be documented, which will include:

- Description of the asset owners, operators and maintainers.
- Asset operations description.
- Asset maintenance arrangements.

The table below outlines the principles for access to assets for operational and maintenance purposes.

Item	Description
Integration	
Safe access	Ensure the safety of: • Maintenance workers and staff, and protect them from other road users by providing safe exclusion zones. • Pedestrians and protect them from service vehicles and working equipment.
Emergency vehicle access	Kerbside parking in the vicinity of the station should be managed to accommodate emergency vehicles.
Servicing and maintenance access (day-to-day)	Service vehicles use the existing on-street loading bays and designated service areas.
Servicing and maintenance access (major)	Service vehicles use the existing on-street loading bays and designated service areas.
Rail replacement bus service access	Rail replacement buses will use the existing bus zone on the northern side of Victoria Avenue.
Delivery access (retail and operational)	Delivery vehicles use the existing on-street loading bays and designated service areas.
Mail zone (Australia Post) requirements	Mail zones will be maintained at: • 2 Help Street. • 45 Victor Street.
Staff car parking	As staff will be encouraged to travel by public transport or active transport, no designated car parking is provided for staff.
Interchange operations, maintenance and management provisions	The operations, maintenance and management provisions document the assets within the interchange and who is responsible for their operation and maintenance.

Chatswood – recommendations



Chatswood Station – recommendations

Chatswood – recommendations *continued*

This Interchange Access Plan sets out the intended design and operating outcomes required for customers to achieve an easy, safe and seamless transfer between modes at Chatswood Station. A number of recommendations have been identified to support these outcomes, and are summarised below.

Some of these recommendations may be undertaken by Sydney Metro and other delivery agencies. Together they will support the effective provision, operation, and ongoing management and maintenance of the interchange at Chatswood Station.

Action	
Cycling	
CHW–C1	Install a bike shelter as per the NSW Government's Bike and Ride Program and in accordance with the Bike Parking BRS. The location is at the eastern interchange entrance (Chatswood Mall).
CHW–C2	Investigate, and if thought appropriate, relocate the existing bike lockers and bike racks on Help Street closer to the northern interchange entry (at the bus interchange) to increase use and visibility.
CHW–C3	Replace non-compliant bike parking racks with Australian Standard facilities (location at the eastern interchange entrance).
CHW–C4	Improve wayfinding and general information for customers informing of the surrounding bicycle network.
Bus	
CHW–B1	Upgrade bus stop on Railway Street (northbound between Victoria Avenue and Brown Street) to address deficiencies in compliance with the DDA 1992 SFARP and meet capacity requirements. *Proposed scope: Install tactiles, seating, allocated spaces and regulatory kerbside signage.*
CHW–B2	Upgrade two bus stops on Railway Street (southbound between Help Street and Victoria Avenue) to address deficiencies in compliance with the DDA 1992 SFARP. *Proposed scope: Install tactiles.*
CHW–B3	Upgrade two bus stops on Victoria Avenue (westbound between Railway Street and Katherine Street) to address deficiencies in compliance with the DDA 1992 SFARP and meet capacity requirements. *Proposed scope: Install seating, allocated spaces and regulatory kerbside signage.*
CHW–B4	Upgrade bus stop on Victoria Avenue (westbound between Katherine Street and Pacific Highway) to address deficiencies in compliance with the DDA 1992 SFARP. *Proposed scope: Install kerb crossing ramps.*
Taxi	
CHW–T1	Provide a kerb ramp at the rear of the first taxi space (on Victoria Avenue) to ensure the rank meets accessibility requirements.
CHW–T2	Consider, and if thought appropriate, remove the underutilised taxi zone in Endeavour Street and reallocate the space to bus layover.
Kiss-and-ride	
CHW–KR1	Provide one kerb ramp at the Endeavour Street kiss-and-ride facility.
CHW–KR2	Investigate, and if thought appropriate provide, additional kiss-and-ride spaces in the laneway south of the station.

Action	
Safety	
CHW–SA1	Remove existing and mark new directional pavement arrows in Thomas Lane (between the station entrance and Albert Avenue), with the arrows to direct traffic in the desired direction to prevent confusion.
CHW–SA2	Review and, if though appropriate, improve signage at the cul-de-sac end of Thomas Lane to reduce the risk to pedestrians of vehicles accessing properties.
CHW–SA3	Reconstruct two kerb crossing ramps at the Railway Street/Help Street intersection (southern approach) to correctly align pedestrians crossing Help Street.
CHW–SA4	Reconstruct two kerb crossing ramps at the Railway Street/Brown Street intersection to correctly align pedestrians crossing Brown Street.
Management and maintenance	
CHW–M1	Document operational management provisions for future operational requirements, including maintenance, security and management responsibilities.

Chatswood – temporary transport plan

Chatswood Station – temporary transport plan