

Hornsby Shire Council

Hornsby Integrated Land Use and Transport Strategy

Technical Paper 1
Annex 1 - Site by Site Analysis
[DRAFT]

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1.0 Introduction

- 1.1 Hornsby Shire Council is committed to developing a strategic land use and transport plan that will provide a framework for action and promote viable and sustainable transport for the Shire. Council's prime objective for the development of this Strategy is to reduce car travel by promoting other modes of transport, particularly in view of the unsustainable historical increase in motor vehicle traffic associated with population growth.
- 1.2 At a strategic level Hornsby Council has already expressed its intent of *creating a living environment*. The development of this integrated strategy will therefore build on a number of existing Council initiatives and policies including the Local Agenda 21 program, Hornsby Shire Housing Strategy and Council's Sustainable Management System.
- 1.3 The Hornsby Integrated Land Use and Transport Strategy (ILUTS) is intended to:
- Develop a series of Action Plans, consistent with the identified strategies, that will form a program of more detailed studies and investigations;
 - Define a range of indicators to assist Council in monitoring the implementation and effectiveness of the Strategy; and
 - Recommend an Implementation Program outlining a clear means of progressing the Strategy, including priorities and responsibilities.
- 1.4 To assist in the understanding of the issues to be addressed by the ILUTS, a position paper establishing existing conditions and the framework for developing an integrated land use and transport strategy has been developed. The site by site analysis is Annex 1 to Position Paper 1.
- 1.5 In total 14 local areas were visited. These sites were selected based on relative commercial and transport importance within the Shire. The following centres are included:
- Hornsby Town Centre,
 - Carlingford (district centre),
 - Pennant Hills (district centre),
 - Epping – in part (district centre),
 - Dural Service Centre (district centre)¹,
 - Berowra (local centre with station),
 - Mount Colah (local centre with station)¹,
 - Asquith (local centre with station)¹,
 - Thornleigh (local centre with significant commercial development and station),
 - Beecroft (local centre with station),
 - Cherrybrook (local centre),
 - Normanhurst (local centre with station),

- Waitara (local centre with development pressures and station), and
- Cheltenham (neighbourhood centre with station).

- 1.6 This Annex presents the site visit findings, and in particular describes the local conditions relating to:
- Land use,
 - Pedestrians,
 - Cyclists,
 - Public transport,
 - Roads, and
 - Parking.
- 1.7 The site by site analysis is intended to give a greater knowledge of local issues and develop the overall understanding of the Shire.

¹ To be included at a later stage.

¹ as above

¹ as above



2.0 Beecroft

General

- 2.1 Beecroft is a mid-sized local centre, based around Beecroft railway station and the shopping precinct west of the station on either side of Hannah Street. The area falls wholly within Hornsby Shire Council.
- 2.2 Beecroft is a significant local centre, with retail facilities, schools, community centres, churches and a library. At a regional level, Beecroft rail station acts as an attractor for commuters from the areas of West Pennant Hills and Castle Hill. Beecroft currently has some provision for these commuters by way of parking facilities at the rail station and a number of bus routes to the area.
- 2.3 The retail precinct of Beecroft is the largest shopping precinct for several kilometres in each direction. A relatively large amount of off-street parking is provided at these retail outlets, suggesting that residents from neighbouring suburbs are attracted to these facilities.
- 2.4 Due to the proximity of Beecroft station to Cheltenham station, approximately 20 percent of the study area of Beecroft overlaps the study area of Cheltenham in this report.

Topography

- 2.5 Beecroft Road runs along a ridge through the centre of the study area. The land slopes down through the Devlins Creek valley to the west of Beecroft Road and down through the Byles Creek valley to the east. The effects of the topography are more pronounced to the east where residential development has been constrained by the Byles Creek recreation reserve. A clear example of this undulating topography is the way in which the main street through the shopping precinct, Hannah Street, slopes steeply down from Beecroft Road to the rail station.
- 2.6 The affect of this topography is to make the area challenging for some cyclists and pedestrians.

Land Use

- 2.7 Summary – within a 1 km radius of Beecroft station -

Type	Total (1000 m ²)	Proportion
Residential High	0	0%
Residential Medium	0	0%
Residential Low	1625	70%
Business & Industrial	34	1%
Open Space & Env Protected	392	17%
Special Uses	283	12%
TOTAL	2334	100%

Commercial

- 2.8 Most commercial activity in Beecroft is in the retail sector, centred on the shopping precinct directly west of the railway station, bound by Chapman Avenue, Wongala Crescent and Beecroft Road.

Residential

- 2.9 The vast majority of the area is occupied by residential development, all of which is low density.

Open Space/Parklands

- 2.10 The Byles Creek reserve in the northeast and Beecroft Park in the southwest form the largest areas of open space and parklands in Beecroft study area. Other significant areas of open space include Pennant Hills Golf Course to the west, and Beecroft Village Green directly south of the station.

Other

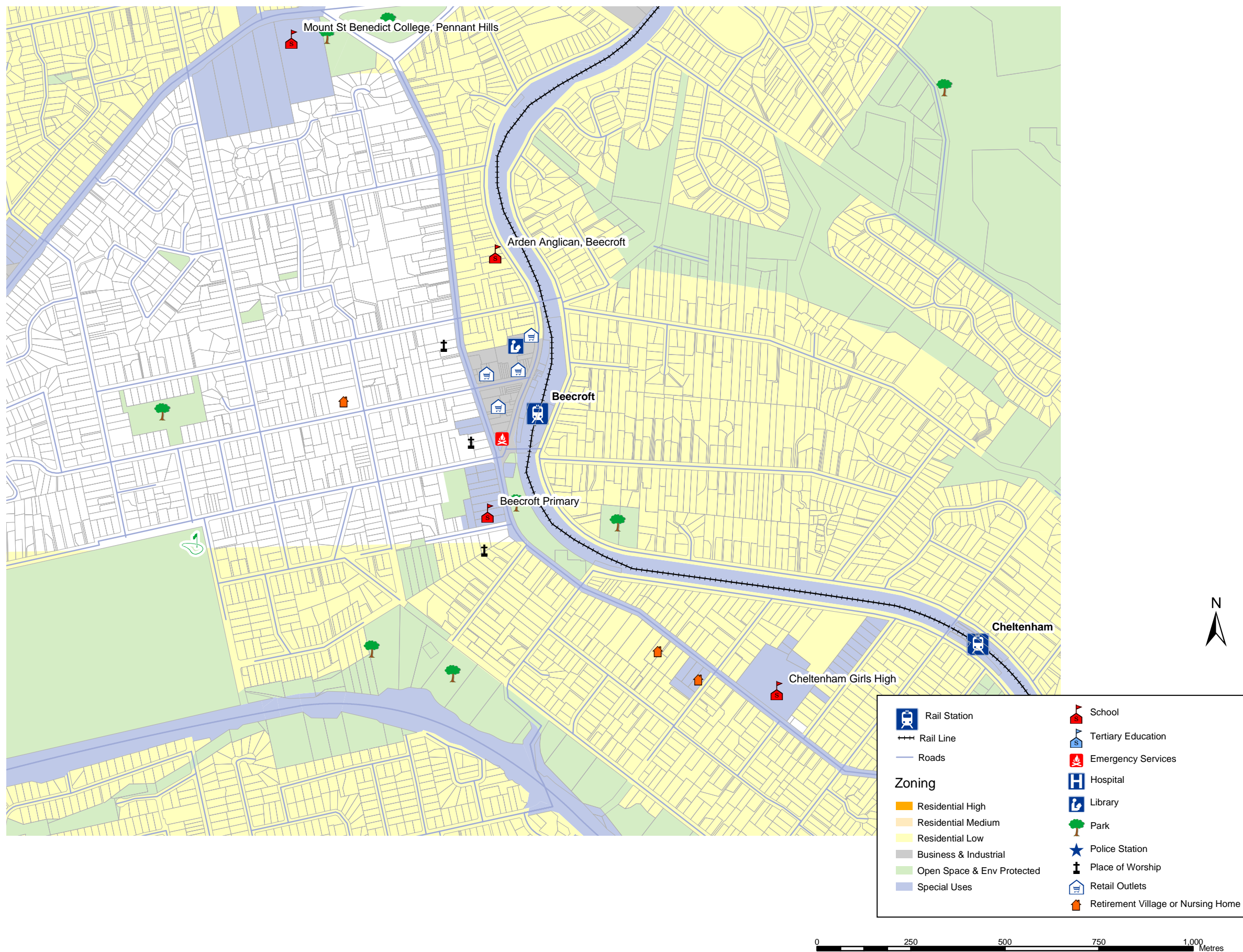
- 2.11 The study area contains three schools including Cheltenham Girls High School, which is situated in the extreme southeast of the study area. Cheltenham Girls High School is more relevant to the Cheltenham study area, and has been discussed in the Cheltenham section of this report.
- 2.12 The area also contains the following facilities:
 - Two nursing homes and a retirement village;
 - A kindergarten;
 - Three churches;
 - A community centre; and,
 - A children's library.

Relevant Plans/Strategies

- It is likely that the planned North West Rail Link will place development pressures on Beecroft, impacting land use and travel patterns in the area.

Issues

- Poor quality of bus stops, including main bus terminal at Beecroft Station.
- Commuter parking overflow on Sutherland Road.
- Lack of cycle routes and facilities.





Pedestrians

- 2.13 The majority of pedestrian activity in this area is related to the shopping precinct and the railway station. Pedestrian traffic is concentrated between the retail centres and parking provided by those facilities. At specific times throughout the day, the two schools in close proximity to the rail station generate pedestrian activity in the area.
- 2.14 Signalised crossings at Hannah Street and Copeland Road provide pedestrian access to the shopping precinct and station across the barrier created by Beecroft Road. Pedestrians attempting to cross Beecroft Road to the north or south of this area are forced to gap seek.
- 2.15 The rail line can be readily crossed by using the footpaths provided on either of the two road bridges at Copeland Road and Chapman Avenue. Alternatively, pedestrians may choose to use the pedestrian tunnel under the rail station. Use of this tunnel does not require a rail ticket, however personal safety issues due to limited visibility may be a factor in choosing this route, particularly at night.
- 2.16 In the northern section of the study area, east of the railway line, a series of footpaths and steps connecting cul-de-sacs improve pedestrian accessibility to Pennant Hills.
- 2.17 Other pedestrian facilities in the area include a number of pedestrian crossings and refuges, particularly near the rail bridges, and at the intersection of Hannah Road and Wongala Crescent.
- 2.18 Footpaths are provided on both sides of Beecroft Road. The eastern side of Beecroft Rd between Albert Road and Chapman Avenue is connected to the footpath by an unusual series of steps up a small embankment. The majority of other roads have a pedestrian footpath on one side. Several smaller local roads do not have footpaths.

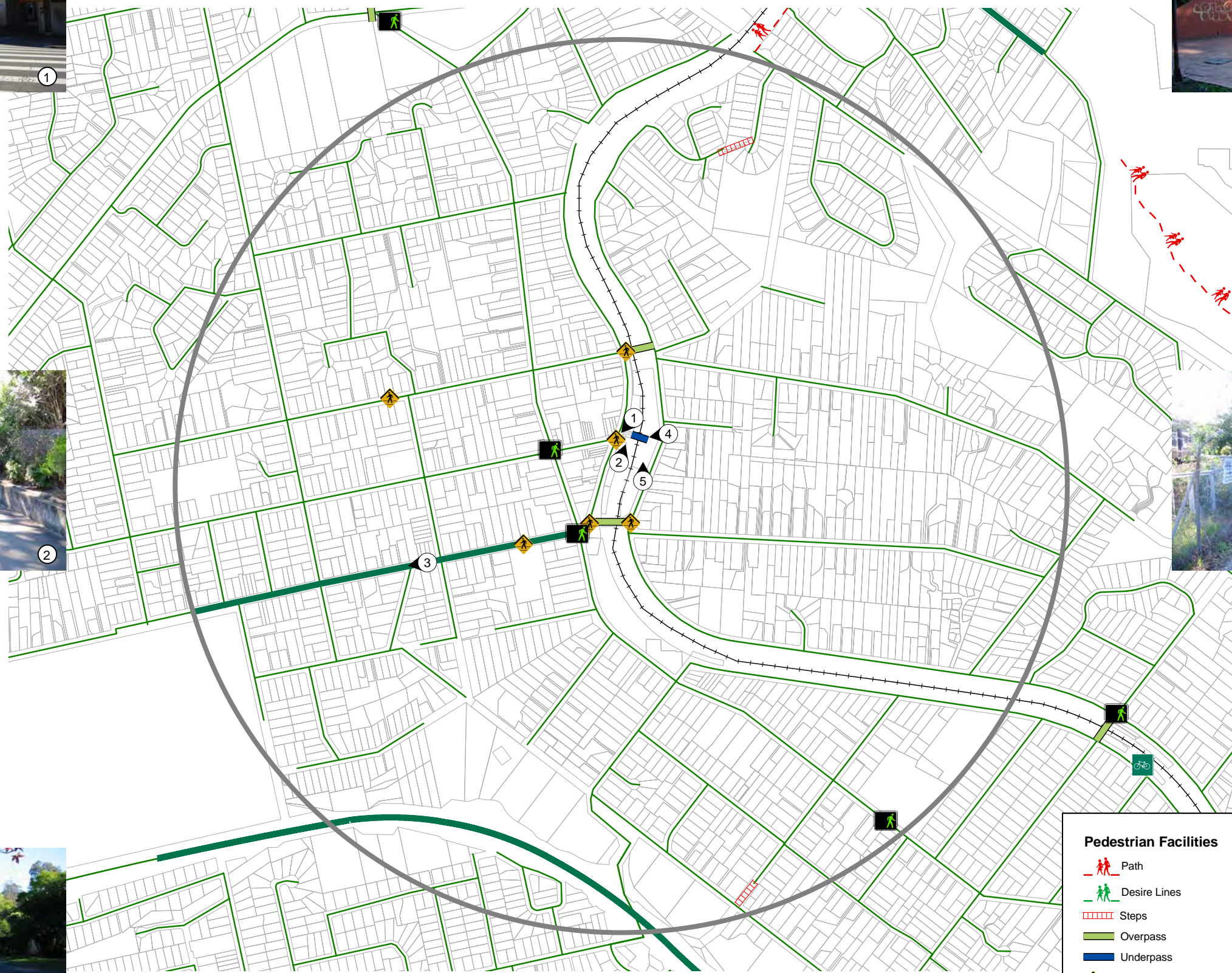
Cyclists

Routes

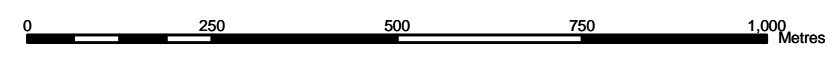
- 2.19 No bicycle parking facilities are present in or around Beecroft station. While the undulating terrain around Beecroft does not make the area particularly amenable to cycling, bicycles have been observed locked to fences in the commuter car parking areas.

Facilities

- 2.20 There are very few bicycle routes within Beecroft. A shared parking and bicycle lane exists for stretches along both sides of Copeland Road, however this is fragmented and not well posted. The M2 motorway, in the south of the study area, provides exclusive kerbside bicycle lanes in both directions but there is no access to this bicycle route from the Beecroft study area and cyclists are forced to travel to either the Pennant Hills Road/M2 or Beecroft Road/M2 intersection to connect to the M2 cycle path.



Pedestrian Facilities	Cycle Facilities
Path	Bicycle Route
Desire Lines	Bicycle Storage
Steps	Roads
Overpass	
Underpass	
Refuge or Crossing	
Signals	
	Photographs
	Location & Direction



BEECROFT : Pedestrians & Cyclists



Public Transport

Rail

Services

- 2.21 Beecroft station is not generally a stop for express services to and from Sydney CBD, and therefore experiences lower frequencies of service than Epping and Hornsby stations. A number of “limited stops” peak services, however, do stop at all stations between Hornsby and Epping (including Beecroft), and then run as express services into the city, reducing travel time for these passengers.

To City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	AM Peak
Weekdays	4:34:00 AM	1:18:00 AM	67	19	15
Weekends	4:50:00 AM	1:17:00 AM	41	30	30

From City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	PM Peak
Weekdays	4:37:00 AM	2:33:00 AM	65	20	12
Weekends	6:03:00 AM	2:33:00 AM	41	30	30

- A typical “all stations” service to Central station takes 40 minutes.
- A typical “limited stops” service to Central station takes 34 minutes.

Facilities

- 2.22 Beecroft station is manned with two staff between the hours of 5:30 am and 1:30 pm, and one staff in the afternoon, until 8:30pm. Two tracks are served via one island platform. All station facilities are provided on the station platform. A pedestrian tunnel under the rail line acts as the main entrance to the station.
- *Station Access:* A ramp down from Wongala Crescent links to the pedestrian tunnel on the western side of the rail line. The eastern side of the tunnel links to Sutherland Road, via a series of footpaths through a small area of bushland and a car park; although lighting is provided, the eastern side of the station may be avoided at night by some passengers for reasons of personal security.
 - *Platform Access:* Access to the island platform is via stairs up from the pedestrian tunnel under the station.
 - *Shelter:* The main station building and the section of the platform from the pedestrian tunnel to the station office is fully covered, comprising approximately 40% of the total platform length.
 - *Facilities:* The main station building includes the following facilities:
 - 1 ticket machine,
 - 1 ticket window,
 - 0 ticket gates,
 - Public toilets.
 - In addition, unrestricted off-street commuter parking for approximately 160 vehicles is provided in two separate car parks – one either side of the rail line.

Buses

Services

- 2.23 The following summarises the bus services that stop in the Beecroft study area:

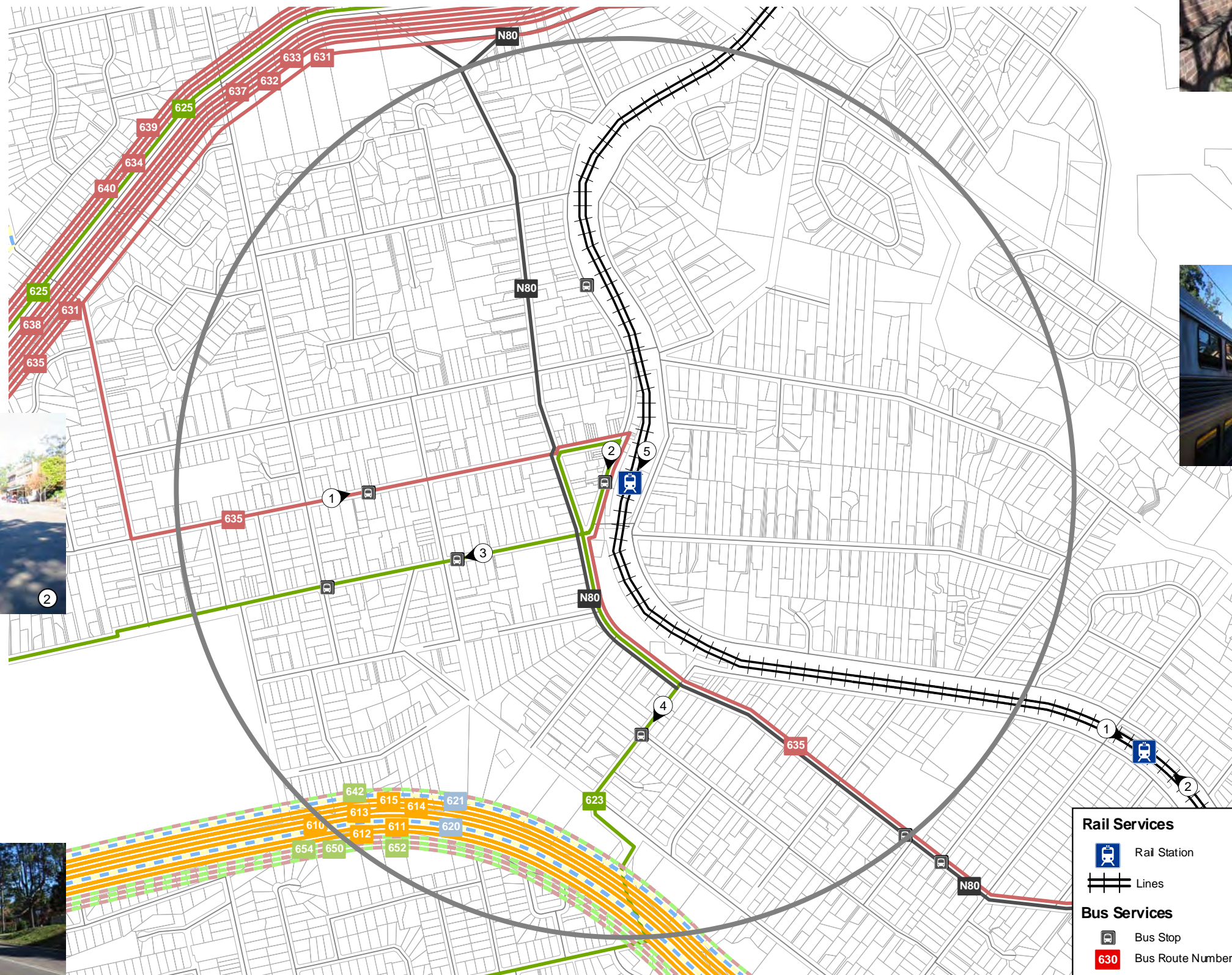
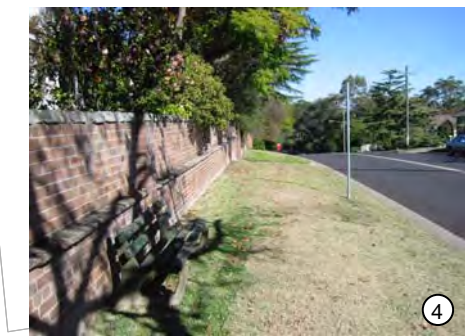
Route	Provider	From	To	Indicative Frequency	Days per Week
623	Harris Park	Parramatta	Beecroft	Med	6
635	Glenorie	Castle Hill	Macquarie	Med	7
N80	NightRide	Hornsby	City	Med	7

- 2.24 Of the bus services travelling on the M2 through Beecroft, none stop within the area. These include:

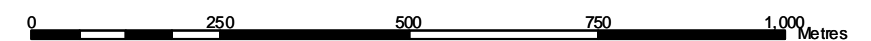
No.	Provider	From	To	Via
610	Westbus	Knightsbridge	City	M2
611	Westbus	Blacktown	Macquarie Centre	M2 and Epping
612	Westbus	Kellyville	Milsons Point	M2
613	Westbus	Bella Vista	City	M2
614	Westbus	Crestwood	City	M2
615	Westbus	Rouse Hill	City	M2
620	Citybus Direct	Dural	City	M2
621	Citybus Direct	North Rocks	City	M2
642	Hills Bus	Dural	City	M2
650	Hills Bus	West Pennant Hills	City	M2
652	Hills Bus	West Pennant Hills	City	M2
654	Hills Bus	Dural	City	M2

Facilities

- 2.25 To the west of the rail line, a series of bus zones on the east side of Wongala Crescent constitute the Beecroft station bus stop. The facilities are very basic, with only one basic shelter able to accommodate around six people. A number of unsheltered benches are also available for waiting passengers and simple timetable information is available for all routes. A low level of lighting is provided by the surrounding streetlights.
- 2.26 In general, bus stops in the area consist of a simple “Bus Stop” sign attached to an existing telegraph pole. The Glenorie and Shorelink operators share the routes in this area, and the bus stop style differs for each provider. In some circumstances a bench is available for waiting passengers but only the bus stop at the railway station offers shelter. In a number of areas, green benches can be found on street kerbsides. It is occasionally unclear whether these benches constitute a bus stop.
- 2.27 As with all rail stations in Hornsby Shire, a nightride bus stop is located in proximity to Beecroft station, and marked by a standard “night-ride” sign. Nightride bus stops typically include timetable information at each stop.



Rail Services		Bus Service Providers	
	Rail Station		Airbus
	Lines		Citybus Direct
	Bus Stop		Glenorie
	Bus Route Number		Harris Park
	Location & Direction		Hills Bus
			NightRide
			Red Arrow
			Shorelink
			Sydney Buses
			Westbus



BEECROFT : Public Transport



Vehicular Movement

Roads

2.28 The following table aggregates lengths of the road system within a 1 km radius of Beecroft station.

Type	Length (km)	Proportion
Motorway	0.7	3%
Arterial	2.1	8%
Sub Arterial	0.9	4%
Collector A	1.7	7%
Collector B	2.2	9%
Local A	0.9	3%
Local	16.5	66%
TOTAL	25.1	100%

2.29 The major roads through the area are the arterial road of Beecroft Road and the sub-arterial Copeland Road.

2.30 In addition, a short section of the M2 Motorway travels through the southern most section of the study area.

2.31 The major intersection in the area is at the corner of Beecroft Road and Copeland Road. Potential conflict arises between traffic at this intersection and Beecroft Primary School, situated on the southwest corner of this intersection. The construction of the M2 motorway has resulted in a dramatic reduction in traffic travelling along Copeland Road in recent years.

Parking

On-Street

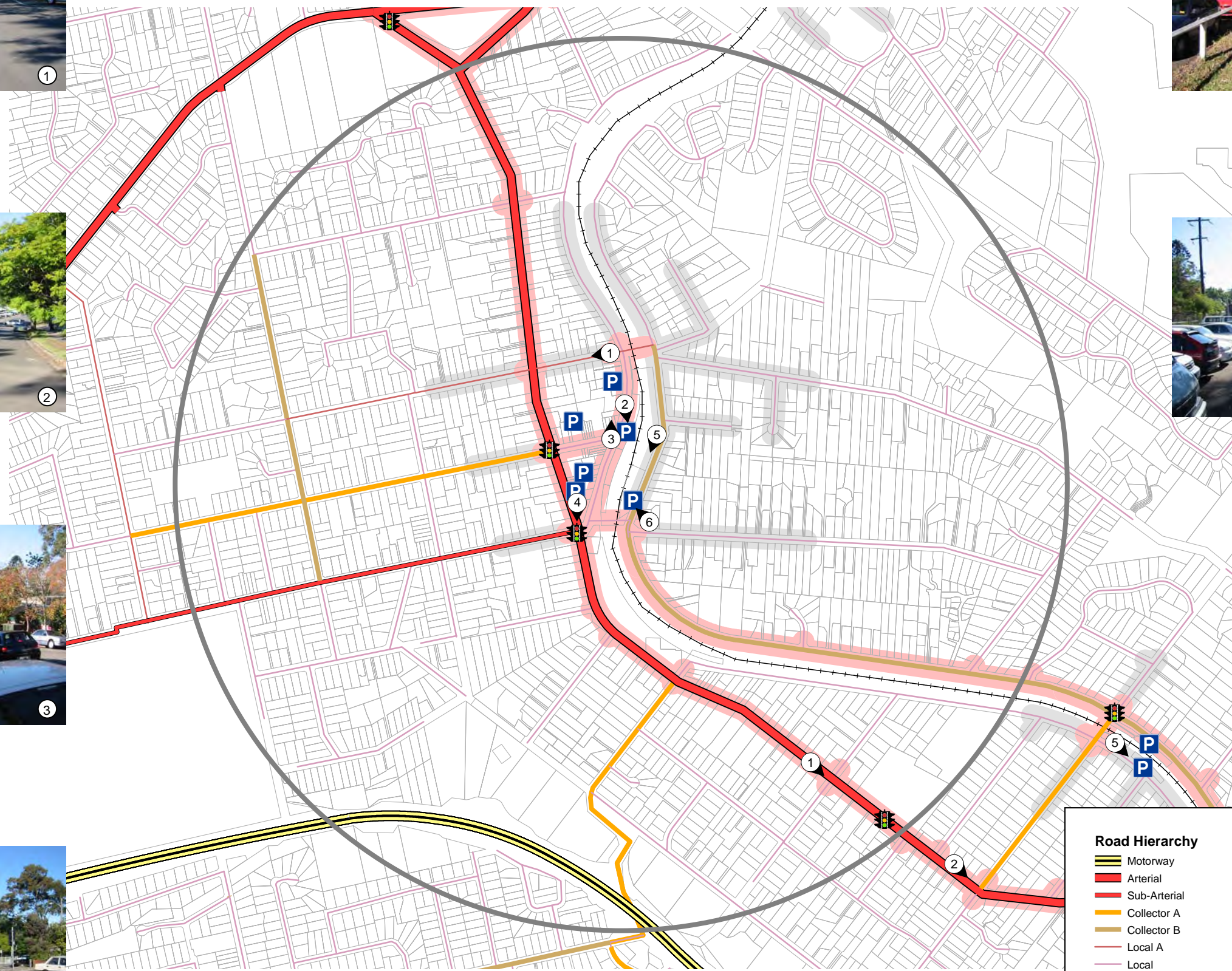
2.32 On-street parking is prohibited or restricted along most of Beecroft Road. Restrictions apply to those sections of Hannah Street and Wongala Crescent in close proximity to the shopping precinct, and south of the railway station along Sutherland Road. There are few on-street parking restrictions elsewhere in Beecroft.

2.33 The highest concentration of on-street parking typically occurs within 400 metres of the railway station. The effect of Beecroft Road as a barrier to pedestrian movement is demonstrated by the fact that on-street parking stretches further from the railway station in areas to the east of Beecroft Road. Sections of Sutherland Road immediately adjacent to the station are highly utilised by commuters, with cars observed parked across kerbsides and footpaths.

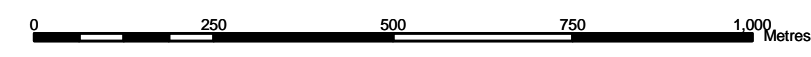
Off-Street

2.34 The quantity of off-street parking available at Beecroft indicates that it is a destination for people beyond the immediate local area. Several hundred restricted parking spaces are available for shoppers over a number of separate off-street car parks. These parking areas range in size from less than ten spaces to over a hundred. They are generally over 50 percent utilised during shopping hours.

2.35 In addition, unrestricted off-street commuter parking for approximately 160 vehicles is provided in separate car parks on either side of the rail line. These car parks are typically 100 percent utilised during weekdays.



Road Hierarchy	Parking
Motorway	On Street Restricted
Arterial	On Street Unrestricted Full
Sub-Arterial	Off Street Parking
Collector A	Photographs
Collector B	Location & Direction
Local A	
Local	
Controls	
Signals	



BEECROFT : Roads & Vehicles



3.0 Berowra

General

- 3.1 The Berowra study area is centred on the Berowra shopping precinct west of the Pacific Highway and railway station. The area is wholly within Hornsby Shire Council, however large sections of the area are under the jurisdiction of the National Parks and Wildlife Service. Berowra Heights, beyond the northwest limits of this study area is also a significant urban area, and has a strong influence on the area.
- 3.2 Berowra is situated at the crossroads of the Pacific Highway and the main road accessing the districts of Berowra Heights and Berowra Waters. Its facilities attract residents from these suburbs, as well as Cowan and Brooklyn to the north.
- 3.3 Both Berowra and Berowra Heights are classed as local centres within Hornsby Shire.

Topography

- 3.4 The topography of the area is dominated by the Cowan Creek valley in the east and the Berowra Creek valley in the west. The land between these two valleys forms ridges along which Berowra Waters Road and the Pacific Highway run.
- 3.5 The land is flattest in the residential areas to the southwest of the station, and alongside Berowra Waters Road.

Land Use

- 3.6 Summary – within a 1 km radius of Berowra station -

Type	Total (1000 m ²)	Proportion
Residential High	0	0%
Residential Medium	0	0%
Residential Low	1281	51%
Business & Industrial	24	1%
Open Space & Env Protected	666	27%
Special Uses	532	21%
TOTAL	2503	100%

Commercial

- 3.7 Berowra's commercial district contains a mix of retail outlets and other small businesses. Berowra Heights, located to the northwest of this study area, also contains significant retail facilities.

Residential

- 3.8 All residential development in the area is of a low density, with the most established residential areas are in the southwest and northwest.
- 3.9 There is a significant amount of new low density residential development in the north of the area, with much of this area still under development.

Open Space/Parklands

- 3.10 The Kuringai Chase National Park occupies all land to the east of the railway line. The land southwest of Berowra Waters Road is occupied by Berowra Valley Regional Park. Other significant areas of open space include Berowra Park and the area surrounding the community centre.

Other

- 3.11 The study area contains the following:

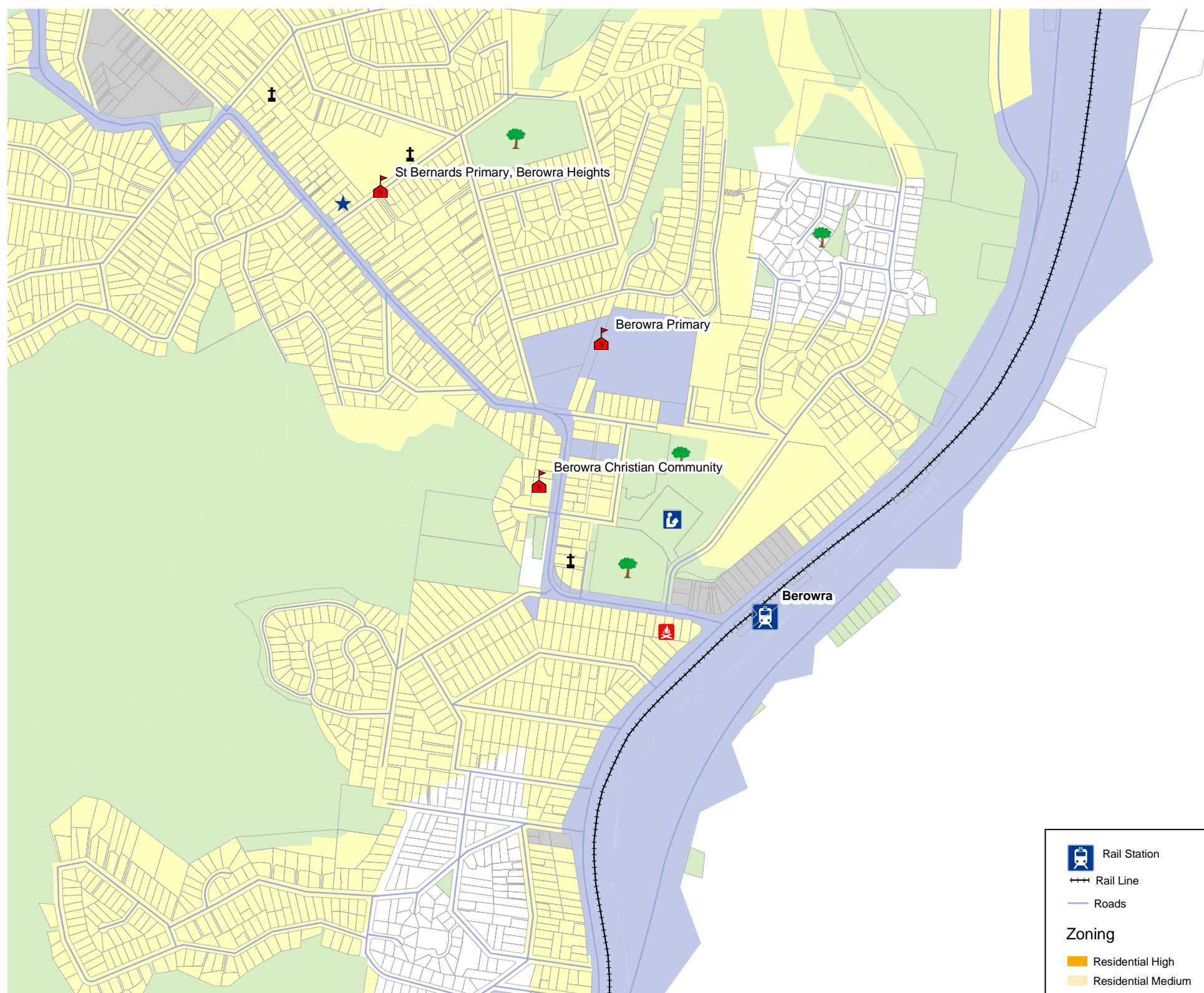
- Two schools
- Two churches
- A community centre
- A library
- A fire station
- Nearby Berowra Heights also contains two schools, a health care centre and police station.

Relevant Plans/Strategies

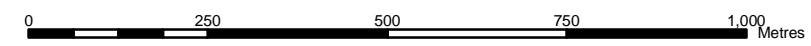
- Updated Interchange Study for Berowra Station October 2001 (recommended 400 space commuter car park, improved bus pull over area and lockable bicycle storage facilities)
- Sydney Transport Interchange Bicycle Parking Scheme (recommended 10 bicycle lockers be installed).

Issues

- Many bicycles locked to the station fence, with no formal bicycle storage/parking facilities.
- Bus stop quality poor.
- Berowra station is located at the edge of the residential catchment.
- Lack of cycle routes to Berowra Heights.



Rail Station	School
Rail Line	Tertiary Education
Roads	Emergency Services
Zoning	Hospital
Residential High	Library
Residential Medium	Park
Residential Low	Police Station
Business & Industrial	Place of Worship
Open Space & Env Protected	Retail Outlets
Special Uses	Retirement Village or Nursing Home





Pedestrians

- 3.12 The area generally experiences low levels of pedestrian activity, the majority of which occurs around the railway station and shops, and their associated car parking facilities. At specific times of the day a significant amount of pedestrian activity is evident around the two schools on Berowra Waters Road.
- 3.13 A signalised crossing of the Pacific Highway provides access to and from the station for pedestrians. Additional traffic signals offer a protected crossing of Berowra Waters Road at its intersection with the Pacific Highway.
- 3.14 The rail line and F3 freeway can be readily crossed via a pedestrian bridge immediately north of the railway station. This bridge provides pedestrian and service vehicle access to Ku-ring-gai Chase National Park.
- 3.15 In the areas of more recent residential development in the northern section of the study area, a series of short footpaths connecting cul-de-sacs improves pedestrian accessibility through the area.
- 3.16 Pedestrian desire lines can be seen linking the station to on-street commuter parking on the eastern side of the Pacific Highway, as well as through a small park on the corner of Berowra Waters Road and Hillcrest Roads.
- 3.17 The area also contains a number of recreational footpaths and fire-trails through the surrounding bushland.

Cyclists

Routes

- 3.18 Although steep valleys dominate the area, the main roads remain on ridges and are therefore relatively flat and conducive to cycling. In particular, much of the Pacific Highway has clearly marked exclusive cycle ways on both sides through this area. Berowra Waters Road is identified in the 1996 Hornsby Bike Plan as a significant local bicycle route and potentially provides a good connection for cyclists between Berowra Heights and Berowra Station.

Facilities

- 3.19 No bicycle parking facilities are present in or around Berowra station. Bicycles are commonly observed chained to the fence adjacent to the railway station. A large area of undeveloped land adjacent to the station provides an ideal space for locating bicycle locker facilities.



1



4



2



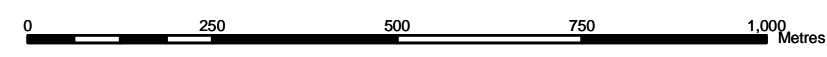
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3



Pedestrian Facilities	Cycle Facilities
Path	Bicycle Route
Desire Lines	Bicycle Storage
Steps	Roads
Overpass	
Underpass	
Refuge or Crossing	
Signals	
	Photographs
	Location & Direction



BEROWRA : Pedestrians & Cyclists



Public Transport

Rail

Services

- 3.20 Berowra station is the northern most station on the Sydney suburban rail network, marking the northern end of the Northern and North Shore lines. It is a stop for express services to and from the city, and therefore experiences above average levels of service for stations in Hornsby Shire. A summary of services is shown in the following tables:

To City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	AM Peak
Weekdays	4:26:00 AM	1:28:00 AM	74	17	10
Weekends	3:46:00 AM	1:28:00 AM	62	21	17

From City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	PM Peak
Weekdays	4:48:00 AM	3:45:00 AM	72	19	10
Weekends	4:48:00 AM	2:32:00 AM	64	20	20

- 3.21 The majority of Berowra services travel along the North Shore Line between Hornsby and Central. These services take around an hour to reach Central station.
- 3.22 “Express” services, from Berowra typically travel on the Northern Line taking around 45 minutes.

Facilities

- 3.23 Berowra station is a small to medium station, however it is staffed 24 hours per day. Three tracks run through the station (two northbound and one southbound), of which only two are accessible via one island platform. All station facilities are provided on the station platform. A bridge over the northern end of the platform acts as the main entrance to the station.
- *Station Access:* Pedestrian access to the station is via a short access road that runs onto and over the station bridge.
 - *Platform Access:* Access to the island platform is via stairs down from the station bridge.
 - *Shelter:* The station building provides the only shelter. Access to the station building is not covered. Around 15% of the total platform length is covered.
 - *Facilities:* The station includes the following facilities:
 - 1 ticket machine,
 - 1 ticket window,
 - 0 ticket gates,
 - Public Toilets.
 - In addition, unrestricted off-street commuter parking for approximately 145 vehicles is provided between the Pacific Highway and the rail line.

Buses

Services

- 3.24 The majority of services in this area are operated by Shorelink, although the Central Coast Airbus runs a limited service along the Pacific Highway between Sydney Airport and the Central Coast.
- 3.25 The following bus services operate in the Berowra study area:

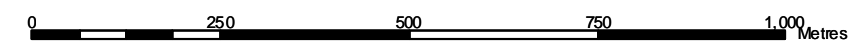
Route	Provider	From	To	Indicative Frequency	Days per Week
592	Shorelink	Brooklyn	Hornsby	Low	6
597	Shorelink	Berowra Heights	Berowra	Medium	6
597	Shorelink	Berowra Heights	Hornsby	Medium	7
597	Shorelink	Beaumont Rd	Berowra	Low	5
747	Airbus	Central Coast	Sydney Airport	Low	5

Facilities

- 3.26 The most significant bus facility in Berowra is located on the southbound side of the Pacific Highway adjacent to the rail station. It comprises a small, older style bus shelter with capacity for approximately six passengers. Only limited lighting is provided by surrounding street lights. Bus services are reliant upon a turning bay adjacent to this bus stop which can become blocked by kiss and ride vehicles in peak periods.
- 3.27 One additional sheltered bus stop exists at the intersection of Berowra Waters Road and Hillcrest Road, outside Berowra Primary School. All other bus stops take the form of a basic Shorelink style bus stop sign attached to a nearby telegraph pole.



Rail Services		Bus Service Providers	
	Rail Station		Airbus
	Lines		Citybus Direct
	Bus Stop		Glenorie
	Bus Route Number		Harris Park
	Location & Direction		Hills Bus
			NightRide
			Red Arrow
			Shorelink
			Sydney Buses
			Westbus





Vehicular Movement

Roads

- 3.28 The following table aggregates lengths of road system within a 1 km radius of Berowra station.

Type	Length (km)	Proportion
Motorway	2.0	13%
Arterial	2.2	14%
Sub Arterial	1.2	8%
Collector A	0.0	0%
Collector B	1.2	8%
Local A	0.7	5%
Local	8.0	52%
TOTAL	15.4	100%

- 3.29 The dominant feature of the road network in this area is the F3 Sydney – Newcastle Freeway. Northbound on-load and southbound off-load ramps are located to the north of Berowra, while southbound on-load and northbound on-load ramps are located to the south. The Pacific Highway is an arterial road running parallel to the railway line and F3.
- 3.30 Berowra Waters Road, a sub arterial road, is significant in linking Berowra to Berowra Heights and areas further west via the Berowra Waters Ferry. The intersection of Berowra Waters Road with the Pacific Highway is the most significant intersection in the study area.

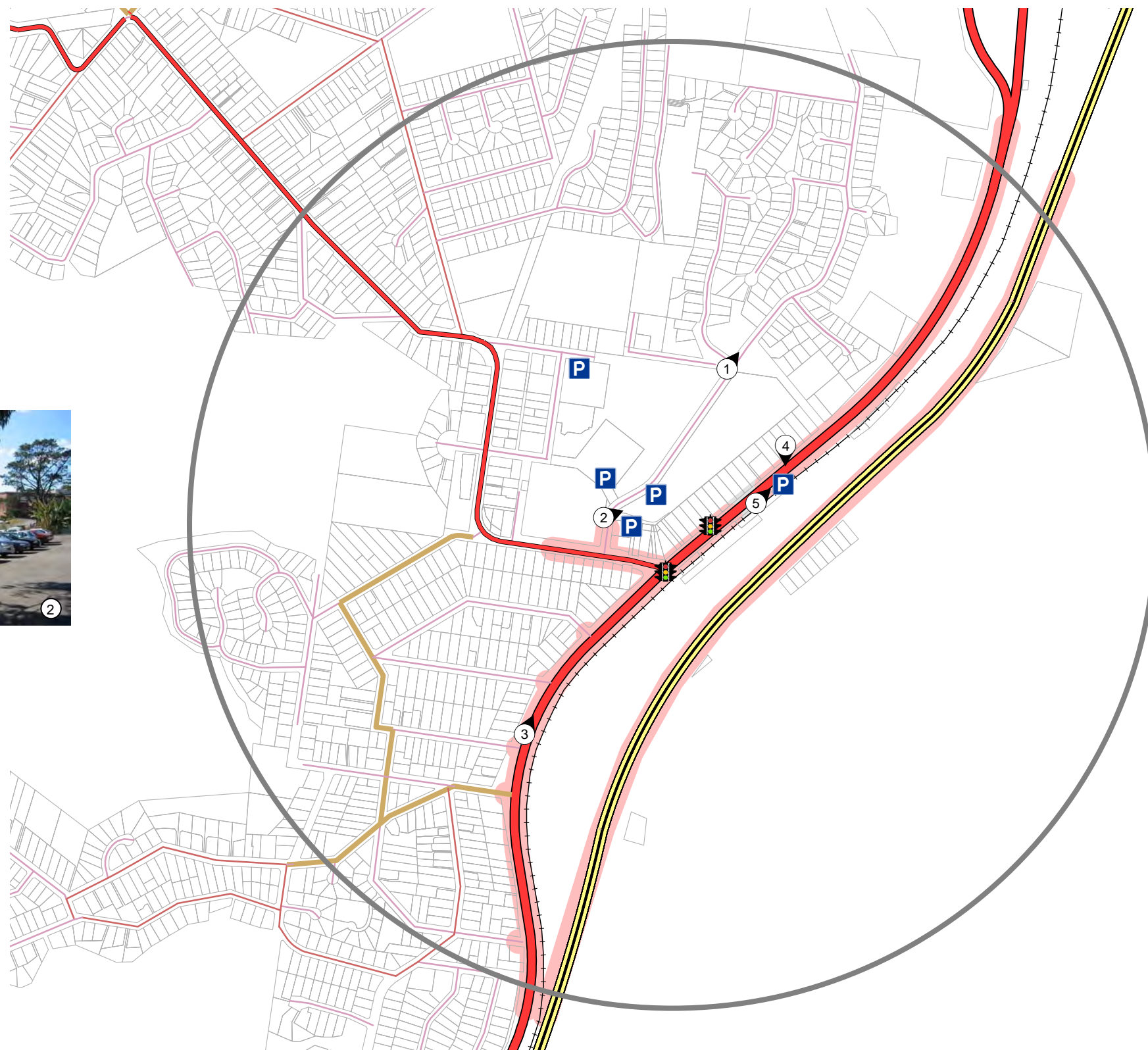
Parking

On-Street

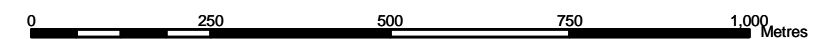
- 3.31 On-street parking is prohibited or restricted along most of the Pacific Highway, however a number of unrestricted spaces are available adjacent to the station along the eastern side of the Pacific Highway. These parking spaces are usually fully utilised on weekdays.
- 3.32 Beyond this area, the highest concentrations of on-street parking are within 200 metres of the station.

Off-Street

- 3.33 A commuter car park with 145 spaces is available at Berowra station. This car park is typically fully utilised during weekdays. An additional 100 spaces of 2 hour and 4 hour restricted parking are available behind the shops on the western side of the Pacific Highway. These car parks are typically less than 25 percent occupied on weekdays. Off street parking is also available adjacent to the community centre in Berowra Park.



Road Hierarchy		Parking	
	Motorway		On Street Restricted
	Arterial		On Street Unrestricted Full
	Sub-Arterial		Off Street Parking
	Collector A		Location & Direction
	Collector B		
	Local A		
	Local		
Controls			
	Signals		



BEROWRA : Roads & Vehicles



4.0 Carlingford

General

- 4.1 Carlingford is located in the south of Hornsby Shire. The suburb lies on the border with Baulkham Hill and Parramatta and is partially located in each LGA. This discussion is limited to the portion of Carlingford located in the Hornsby Shire LGA.
- 4.2 Carlingford Court shopping centre, at the corner of Pennant Hills Road and Carlingford Road, provides the local commercial focus and is located in Hornsby Shire. Carlingford station is located to the south-west of Carlingford Court, in Baulkham Hills Shire. Carlingford station is currently on the Carlingford line, but will form part of the second stage of the Parramatta Rail Link (PRL), with direct connections to Parramatta, Epping and the North Shore destinations of Chatswood, St Leonards and North Sydney. The PRL will improve public transport accessibility in Carlingford and lead to increased development pressures. While the station area is located beyond the Hornsby Shire boundary it is likely that public transport changes will impact on the commercial centre of the area, located within the Hornsby area.
- 4.3 Carlingford is classed as a district centre within Hornsby Shire due to its extensive retail facilities.

Topography

- 4.4 The topography of the area is dominated by a ridge, occupied by Pennant Hills Road. The land falls away to valleys created by Hunts Creek in the west and Devlins Creek in the east.

Land Use

- 4.5 Summary of Land uses within the Carlingford study area:

Type	Total (1000 m ²)	Proportion
Residential High	0	0%
Residential Medium	0	0%
Residential Low	1287	89%
Business & Industrial	41	3%
Open Space & Env Protected	22	2%
Special Uses	97	7%
TOTAL	1448	100%

Commercial

- 4.6 Carlingford Court and its associated land uses are located at the corner of Pennant Hills Road and Carlingford Road. While there is some strip shopping fronting onto Carlingford Road and Pennant Hills Road, the shopping centre is the focus of commercial activity in the area. Carlingford Court is the second largest shopping complex in the Hornsby shire.

Residential

- 4.7 Carlingford is dominated by low density residential development.

Open Space/Parklands

- 4.8 Carlingford has a number of pockets of open space, but no substantial areas of bush or park land as exists in other areas of the Shire.

Other

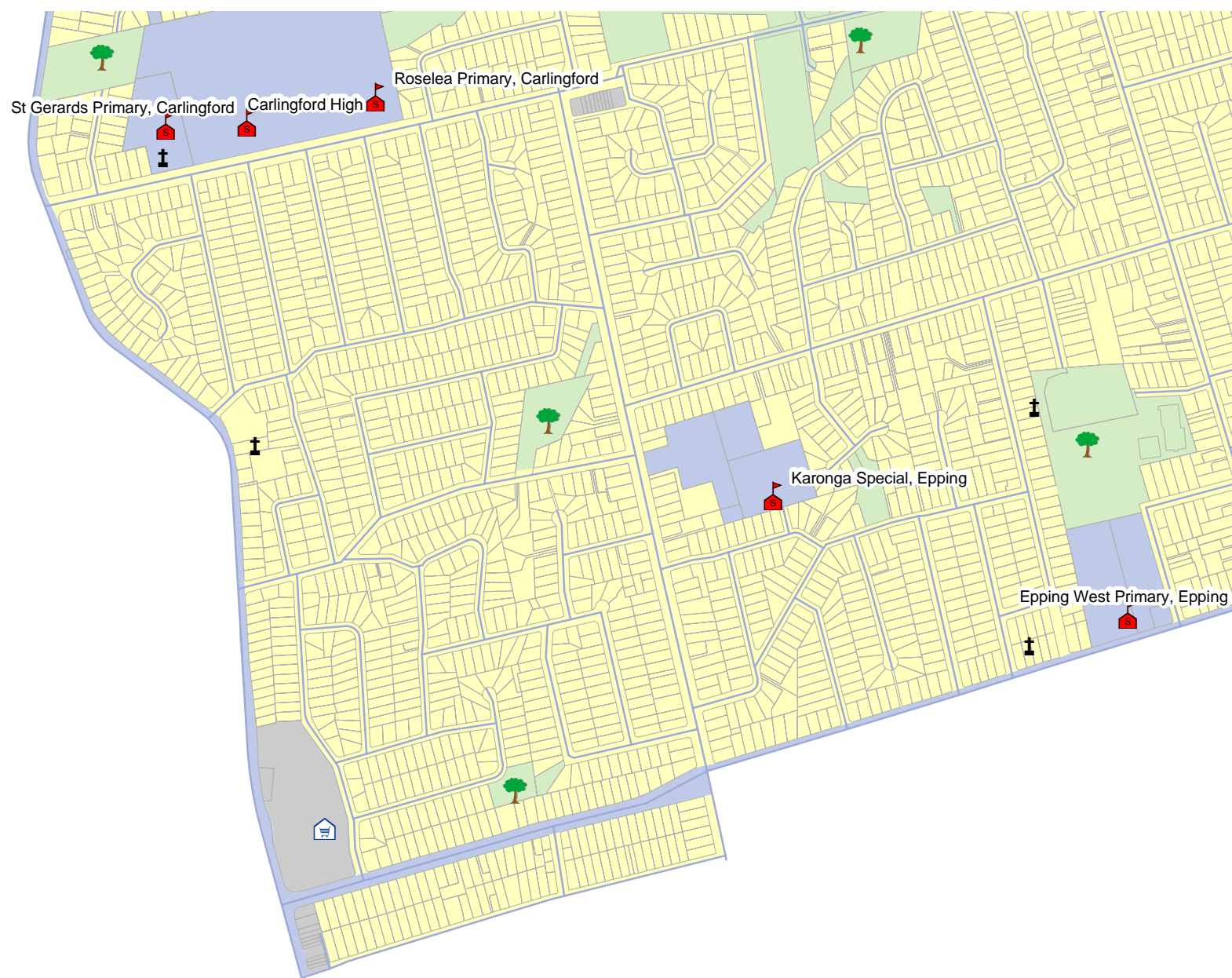
- 4.9 There are three school complexes to the north of the Hornsby Shire part of Carlingford and a further two schools to the west.

Relevant Plans/Strategies

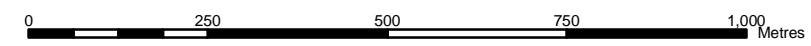
- It is likely that future development in the Carlingford area will be addressed through the planning processes for the PRL. Macquarie Park and Epping are being planned jointly by Planning NSW Living Centres and the relevant LGAs.

Issues

- Impact of Pennant Hills and Carlingford Roads on pedestrian amenity and the local environment.
- The poor visibility of buses within the area, particularly in comparison to the provision for car access and parking at Carlingford Court.
- Integration of the three LGA areas at Carlingford and the need to plan across the boundaries.
- Probability of pressure to increase residential densities close to central Carlingford, possibly influenced by the improved accessibility of the area following completion of the second stage of the PRL.
- Difficult for buses accessing Pennant Hills Road from local streets, particularly at the Dunrossil Avenue intersection.



	Rail Station		School
	Rail Line		Tertiary Education
	Roads		Emergency Services
Zoning			Hospital
	Residential High		Library
	Residential Medium		Park
	Residential Low		Police Station
	Business & Industrial		Place of Worship
	Open Space & Env Protected		Retail Outlets
	Special Uses		Retirement Village or Nursing Home





Pedestrians

- 4.10 Carlingford Court is the focus of pedestrian activity in the area. It sits on top of a ridge and is surrounded by car parking and arterial roads that do not make it accessible by those arriving on foot. The vehicular accesses into the car park areas create an additional hazard for pedestrians.
- 4.11 There are pedestrian crossing points on Carlingford Road at the intersections with Pennant Hills Road and Rembrandt Street. Footpaths are generally provided although there is a long section of missing path alongside Pennant Hills Road between Alamein Avenue and North Rocks Road. A noticeable 'goat track' indicates that a path in this location is desirable. There are a few pedestrian only connections through the residential area.
- 4.12 Pennant Hills Road and Carlingford Road represent major barriers to pedestrian movement, with limited opportunities to cross other than at the points already noted. Both are heavily trafficked and do not contribute to a pleasant pedestrian environment.
- 4.13 A number of signalised pedestrian crossings are provided in front of schools along North Rocks Road.

Cyclists

Routes

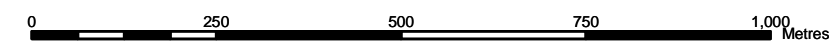
- 4.14 There is a cycle lane along Ray Road but few other facilities. The topography of the area does not encourage cycling. Pennant Hills Road occupies the least undulating land however this would generally be avoided by potential cyclists due to high traffic levels.

Facilities

- 4.15 Cycle parking provision at Carlingford Court is inadequate and does not enable cyclists to secure their bicycles properly.



Pedestrian Facilities	Cycle Facilities
Path	Bicycle Route
Desire Lines	Bicycle Storage
Steps	Roads
Overpass	
Underpass	
Refuge or Crossing	
Signals	
	Photographs
	Location & Direction





Public Transport

Rail

Services

- 4.16 Much of the Carlingford study area lies between the Northern Line and the Carlingford Line.
- 4.17 Both lines are over 15 minutes walking distance for the majority of Hornsby Shire Carlingford residents.

Facilities

- 4.18 Both Carlingford station and Epping station are used by Carlingford residents. A number of bus services act as feeders to both stations.
- 4.19 Facilities at these stations will improve with the construction of the Parramatta Rail Link. Carlingford station will be incorporated into the second stage of the PRL from Epping to Parramatta, while Epping station will undergo significant expansion during the first stage of the PRL from Epping to Chatswood.

Buses

Services

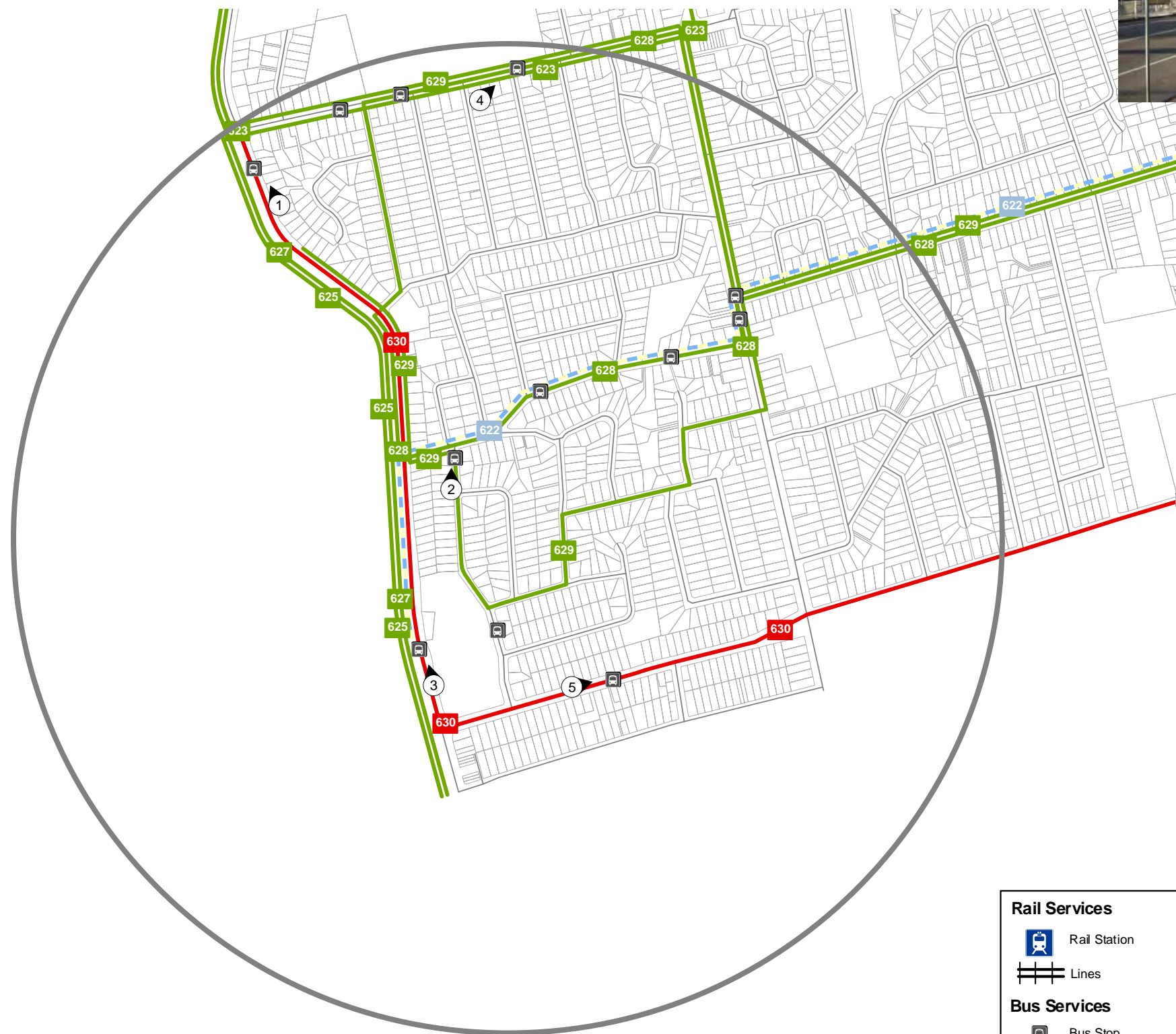
4.20 The following table summarises the bus services in Carlingford:

Route	Provider	From	To	Indicative Frequency	Days per Week
622	Harris Park	Carlingford	City	Medium	5
623	Harris Park	Parramatta	Beecroft	Medium	6
625	Harris Park	Parramatta	Pennant Hills	Medium	5
627	Harris Park	Wilkinson Rd	Parramatta Station	Low	5
628	Harris Park	Carlingford	Epping Station	Medium	5
629	Harris Park	North Rocks	Epping Station	Medium	7
630	Harris Park & Westbus	Blacktown	Macquarie	Medium	5

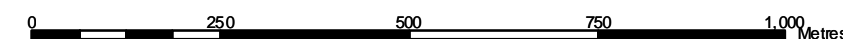
- 4.21 Carlingford is relatively well served by buses, with services linking to Epping in the east and Pennant Hills and West Pennant Hills in the north. To the west buses link with Carlingford and Parramatta stations.
- 4.22 The City Bus Direct service, provided by Harris Park Transport, has been made possible with the construction of the M2 and is popular with commuters, providing the most convenient commuter link to the city for many residents. Patronage levels on express services such as this are rising, in contrast with the general fall in patronage levels on most local services in the shire.

Facilities

- 4.23 The principle stop in the area is adjacent to Carlingford Court, on Pennant Hills Road, but is of a much lower standard than the bus terminals seen at Epping or Pennant Hills. Bus stops throughout the area are variable in terms of quality and facilities provided. The overall impression is poor. Only two of the ten stops surveyed had shelters and three had seating. Two of the stops in the area included clear information, but only for a selection of routes.



Rail Services		Bus Service Providers	
	Rail Station		Airbus
	Lines		Citybus Direct
	Bus Stop		Glenorie
	Bus Route Number		Harris Park
	Location & Direction		Hills Bus
			NightRide
			Red Arrow
			Shorelink
			Sydney Buses
			Westbus



CARLINGFORD : Public Transport



Vehicular Movement

Roads

4.24 The following table aggregates lengths of the road system within the Carlingford Study Area.

Type	Length (km)	Proportion
Motorway	0.0	0%
Arterial	2.7	15%
Sub Arterial	0.0	0%
Collector A	1.4	8%
Collector B	1.3	8%
Local A	2.1	12%
Local	10.1	57%
TOTAL	17.6	100%

4.25 The study area is bound by Pennant Hills and Carlingford Roads, both classed as arterials. There are no sub-arterials in the study area however North Rocks Road, Pennant Parade and Ray Road are significant collector A roads.

4.26 The major intersection in the area is Carlingford Road/Pennant Hills Road. Traffic signals are also provided at the following intersections:

- Pennant Hills Road/North Rocks Road.
- Carlingford Road/Rembrandt Streetl.

Parking

On-Street

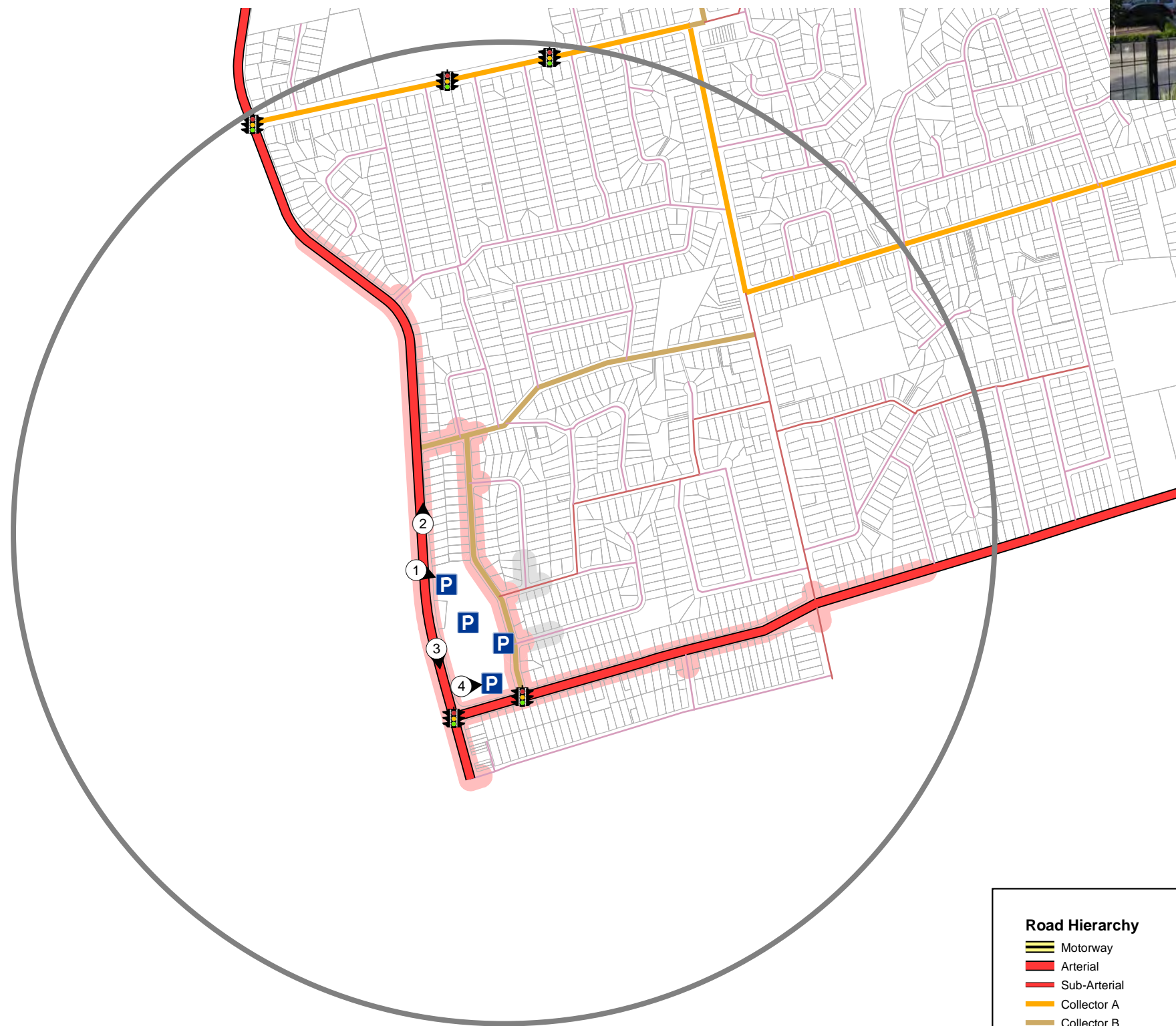
4.27 Little demand for on street parking in the area was observed, with the exception of a small area of on-street parking in Limited on-street parking in Darwin and Milton Streets immediately east of Carlingford Court.

4.28 Restricted parking along Rembrandt Street assists in avoiding congestion around vehicular access to Carlingford Court Shopping Centre, and facilitates bus movements along local routes in the area.

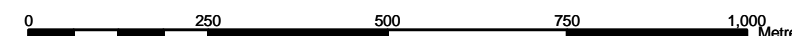
4.29 Parking is restricted or prohibited along the arterial roads through the area.

Off-Street

4.30 There is extensive off-street parking provided within the Carlingford Court shopping area, with spaces for well over a thousand vehicles.



Road Hierarchy	Parking
Motorway	On Street Restricted
Arterial	On Street Unrestricted Full
Sub-Arterial	Off Street Parking
Collector A	Photographs
Collector B	Location & Direction
Local A	
Local	
Controls	
Signals	



CARLINGFORD : Roads & Vehicles



5.0 Cheltenham

General

- 5.1 The Cheltenham study is centred on the Cheltenham rail station, and falls wholly within Hornsby Shire Council. The close proximity of Beecroft and Cheltenham rail stations has an influence on travel patterns in the area.
- 5.2 Cheltenham is a low density, residential area containing a major high school and a public school. There is little or no commercial activity in the area.
- 5.3 Cheltenham is classed as a neighbourhood centre within Hornsby Shire.

Topography

- 5.4 Cheltenham is surrounded by Devlins Creek and its tributaries to the north, east and south, and consequently the land slopes down to the creek in these directions, and slopes up as one travels westward towards Beecroft. The land is least undulating between the rail line and Beecroft Road, however the general topography of much of the area will present a hindrance to pedestrians and cyclists.

Land Use

- 5.5 Summary – within a 1 km radius of Cheltenham station -

Type	Total (1000 m ²)	Proportion
Residential High	0	0%
Residential Medium	0	0%
Residential Low	2114	68%
Business & Industrial	0	0%
Open Space & Env Protected	734	23%
Special Uses	280	9%
TOTAL	3128	100%

Commercial

- 5.6 There is no, or virtually no, commercial activity or development in Cheltenham.

Residential

- 5.7 The vast majority of the area is occupied by residential development, all of which is low density.

Open Space/Parklands

- 5.8 A significant proportion of the Cheltenham study area is comprised of parklands and open space, including the recreation reserves surrounding Devlins Creek. The largest section of this reserve is located in the north and east of the area, fringing Pennant Hills Park. In the south, the reserve extends along the northern side of the M2 to include Cheltenham Park. Other open space includes a tennis, bowling and recreation club, situated immediately south of Cheltenham rail station.

Other

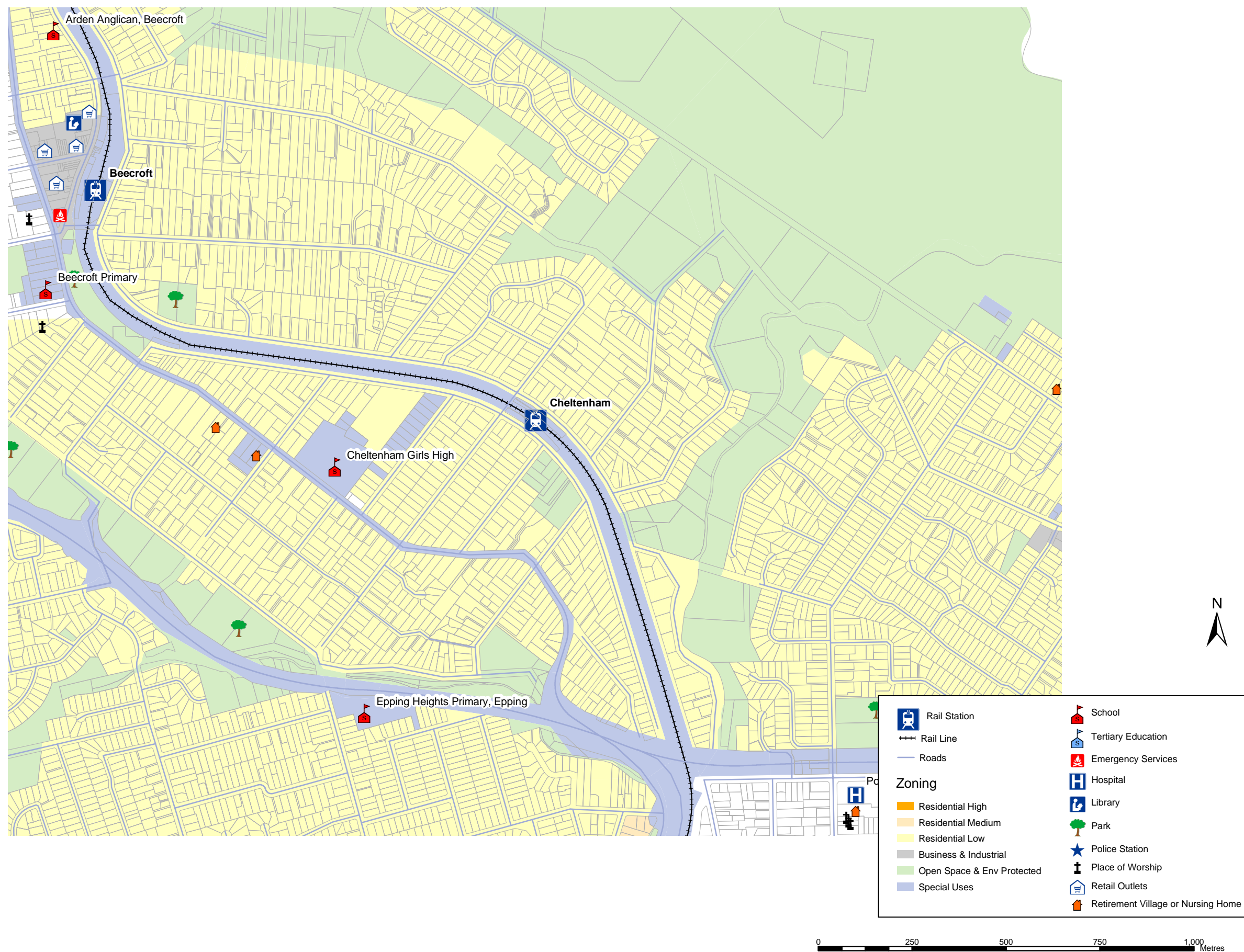
- 5.9 The study area contains two schools including Cheltenham Girls High School which is a major attractor to the area. In addition, two nursing homes, a kindergarten and community centre are located in the area along Beecroft Road.

Relevant Plans/Strategies

- It is likely that future development in Cheltenham will be addressed through the planning processes for the NWRL.

Issues

- Bus stop quality along Beecroft Road, and difficulty in distinguishing between current and disused bus stops.
- Beecroft Road as barrier to pedestrian access, and its Intersection with Cheltenham Road.
- Difficult access for residents at the southern end of Sutherland Road.





Pedestrians

- 5.10 The focus of pedestrian activity in this area is to and from the rail station. This is particularly prominent immediately before and after school hours, when there are high levels of pedestrian traffic between Cheltenham Girls High School and the station.
- 5.11 While much of North Epping is situated in relative proximity to Cheltenham station, the Devlins Creek recreation reserve with its associated valley and bushland presents a major barrier to pedestrians wishing to travel to a rail station from North Epping. Consequently, Epping station is the favoured railway station for residents of North Epping. A number of recreation paths through the reserve exist, however are not suitable for pedestrians wishing to travel to the rail station for commuting to the city.
- 5.12 Similarly, while some areas of Epping Heights are relatively close to Cheltenham station, the combined barrier of Devlins Creek and M2 in the south, combined with higher service levels at Epping station, result in Epping being the favoured station for these residents.
- 5.13 Beecroft road is a significant man-made barrier to pedestrians wishing to travel to the rail station from the south of Cheltenham, with only a single, signalised crossing point in front of Cheltenham Girls High School.
- 5.14 The rail line obstructs only a small number of pedestrian trips through the area because the station itself is the greatest attractor and producer of pedestrian trips in the area. Crossing of the rail line is provided at the station by way of a road bridge with a single footpath. Access across Sutherland Road is provided at the intersection with the rail bridge via a signalised crossing.
- 5.15 Other pedestrian facilities in the area include a pedestrian bridge over the M2 motorway, linking south Cheltenham with Epping Heights. This is of particular significance to Epping Heights Public School. A further pedestrian crossing of the M2 exists in the southeast of the study area, via a tunnel linking Derby Street in Epping to Sutherland Road in Cheltenham.
- 5.16 The intersection of the M2 and Beecroft Road, which is generally not a pleasant environment for pedestrians, provides two signalised crossings and pedestrian access through sound barrier walls erected during construction of the M2. This area is generally not frequented by pedestrians and these facilities are only occasionally used.
- 5.17 Beecroft Road has footpaths on both sides, while the majority of other roads have a pedestrian footpath on one side. Several smaller local roads do not have footpath facilities.

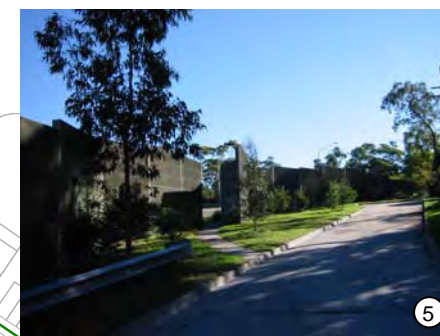
Cyclists

Routes

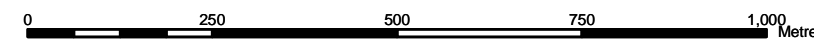
- 5.18 The only significant bicycle route runs through the southern tip of the study area on the M2. This route comprises of exclusive kerbside bicycle lanes in both directions, with provision for cyclists at the intersection of the M2 with Beecroft Road. Access to this bicycle route is from the Beecroft Road/M2 intersection only. The tunnel under the M2 at the southern tip of Sutherland Road is suitable for bicycles.
- 5.19 The bicycle lane on Norfolk Road in North Epping, while contained within this study area, is more pertinent to the Epping area and has been covered in the Epping section of this report.

Facilities

- 5.20 Eight bicycle u-rails are installed at the western entrance of Cheltenham station, on The Crescent. These facilities are situated under a tree near the western station car park, with little lighting and very low utilisation levels.



Pedestrian Facilities	Cycle Facilities
Path	Bicycle Route
Desire Lines	Bicycle Storage
Steps	Roads
Overpass	
Underpass	
Refuge or Crossing	
Signals	
	Photographs
	Location & Direction



CHELLENHAM : Pedestrians & Cyclists



Public Transport

Rail

Services

- 5.21 Cheltenham station is not generally a stop for express services to and from the city, and therefore experiences lower frequencies of service than Epping and Hornsby stations. A number of peak services, however, do stop all stations between Hornsby and Epping (including Cheltenham), and then run as express services into the city, reducing travel time for these passengers.

To City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	AM Peak
Weekdays	4:36:00 AM	1:20:00 AM	64	19	15
Weekends	4:52:00 AM	1:19:00 AM	41	30	30

From City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	PM Peak
Weekdays	4:34:00 AM	2:31:00 AM	64	21	13
Weekends	6:01:00 AM	2:31:00 AM	41	30	30

- A typical “all stations” service to Central station takes 38 minutes
- A typical “express” service to Central station takes 32 minutes

Facilities

- 5.22 Cheltenham station is a small station on the Northern Line. One staff-person mans the station between the 6:00am and 5:00pm. 2 tracks run through the station. The tracks are served via 2 side platforms, of which the eastern (city-bound) platform is manned for the majority of this time. The station experiences high utilisation levels at very specific times of the day due to students travelling to and from Cheltenham Girls High School.
- *Station & Platform Access:* Access to the eastern, city-bound platform is level with Sutherland Road. Access to the western platform is via a shallow ramp to The Crescent. Crossing of the rail line is via a road bridge with footpath at the northern end of the platform - no separate pedestrian crossing is provided.
 - *Shelter:* Each platform provides covered waiting areas for passengers. In total, less than 10 percent of each platform is sheltered.
 - *Facilities:* The station includes the following facilities:
 - 2 ticket machines – one on each platform
 - 1 manned ticket window on city-bound platform
 - 0 ticket gates
 - Kiosk/Newsagent on city-bound platform
 - Public Toilets on city-bound platform
 - Off-street parking for approximately 80 vehicles.

Buses

Services

- 5.23 There are no major bus terminals in the Cheltenham study area. All bus routes through the area follow either Beecroft Road or the M2 motorway.

- 5.24 The following summarises the bus services that stop in the Cheltenham study area:

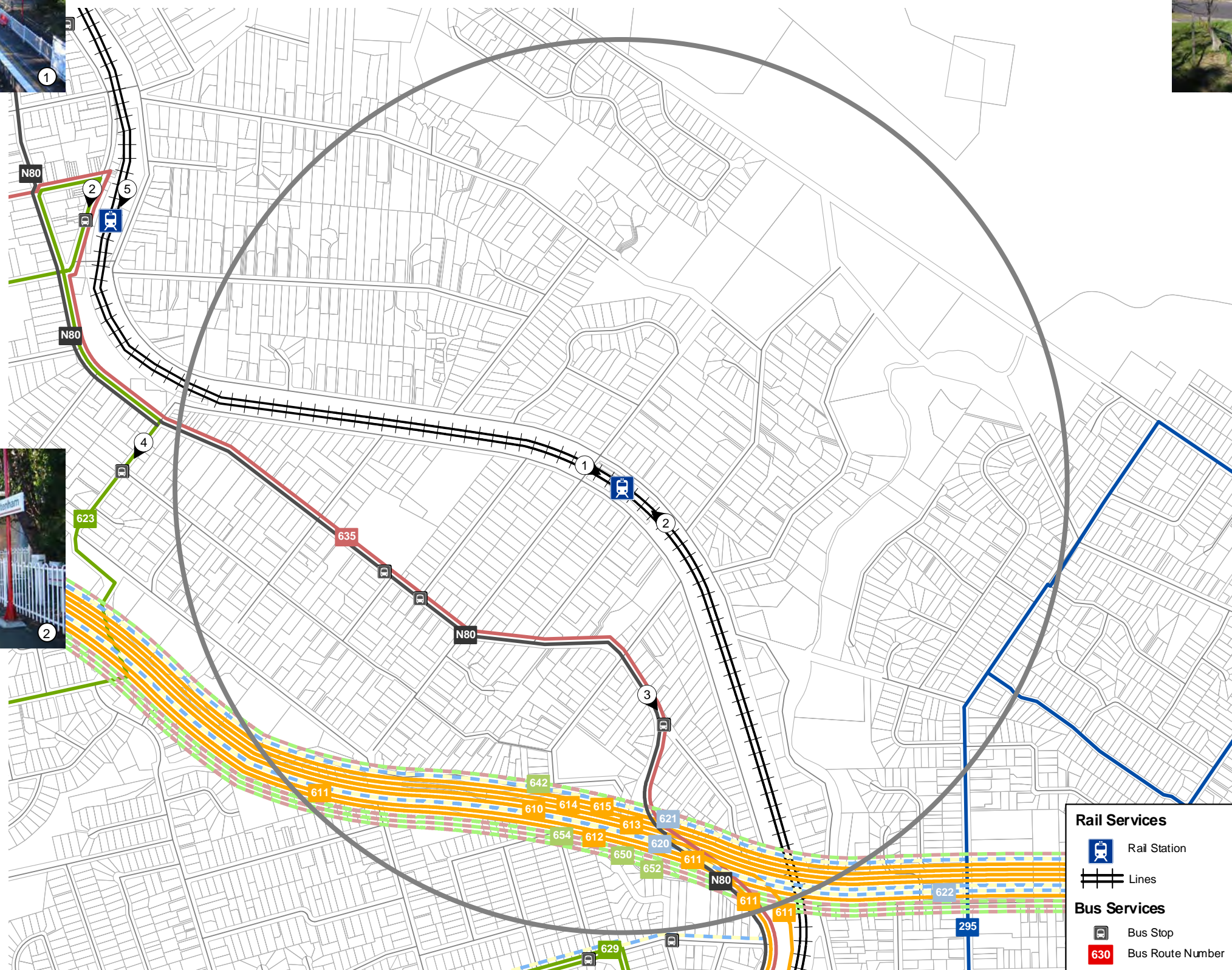
Route	Provider	From	To	Indicative Frequency	Days per Week
622	Citybus Direct	Carlingford	City	Med	5
635	Glenorie	Castle Hill	Macquarie	Med	7
N80	Shorelink	Hornsby	City	Med	7

- 5.25 In addition, a number of bus services travel through Cheltenham on the M2, without stopping within the area. These services are discussed in the Beecroft section of this report.

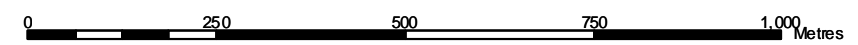
- 5.26 The 295 bus route operated by Sydney buses through North Epping, while falling partially within this study area, is more pertinent to Epping and has been discussed elsewhere in this report.

Facilities

- 5.27 In general, bus stops in the area consist of a simple “Bus Stop” sign attached to a telegraph pole. In some circumstances, a bench may be available for waiting passengers however no bus stops in the area offer shelter.



Rail Services		Bus Service Providers	
	Rail Station		Airbus
	Lines		Citybus Direct
	Bus Stop		Glenorie
	Bus Route Number		Harris Park
	Location & Direction		Hills Bus
			NightRide
			Red Arrow
			Shorelink
			Sydney Buses
			Westbus



CHELTEMHAM : Public Transport



Vehicular Movement

Roads

5.28 The following table aggregates lengths of the road system within a 1 km radius of Cheltenham station.

Type	Length (km)	Proportion
Motorway	1.3	5%
Arterial	1.9	8%
Sub Arterial	0.0	0%
Collector A	1.3	5%
Collector B	2.1	9%
Local A	0.3	1%
Local	16.4	72%
TOTAL	23.2	100%

5.29 The only arterial road through the area is Beecroft Road.

5.30 In addition, a short section of the M2 Motorway travels through the southern most section of the study area.

5.31 The major intersection in the area is at the Beecroft Road and M2 interchange. Other significant intersections are:

- Beecroft Road and Kirkham Street.
- Beecroft Road and Cheltenham Road.

Parking

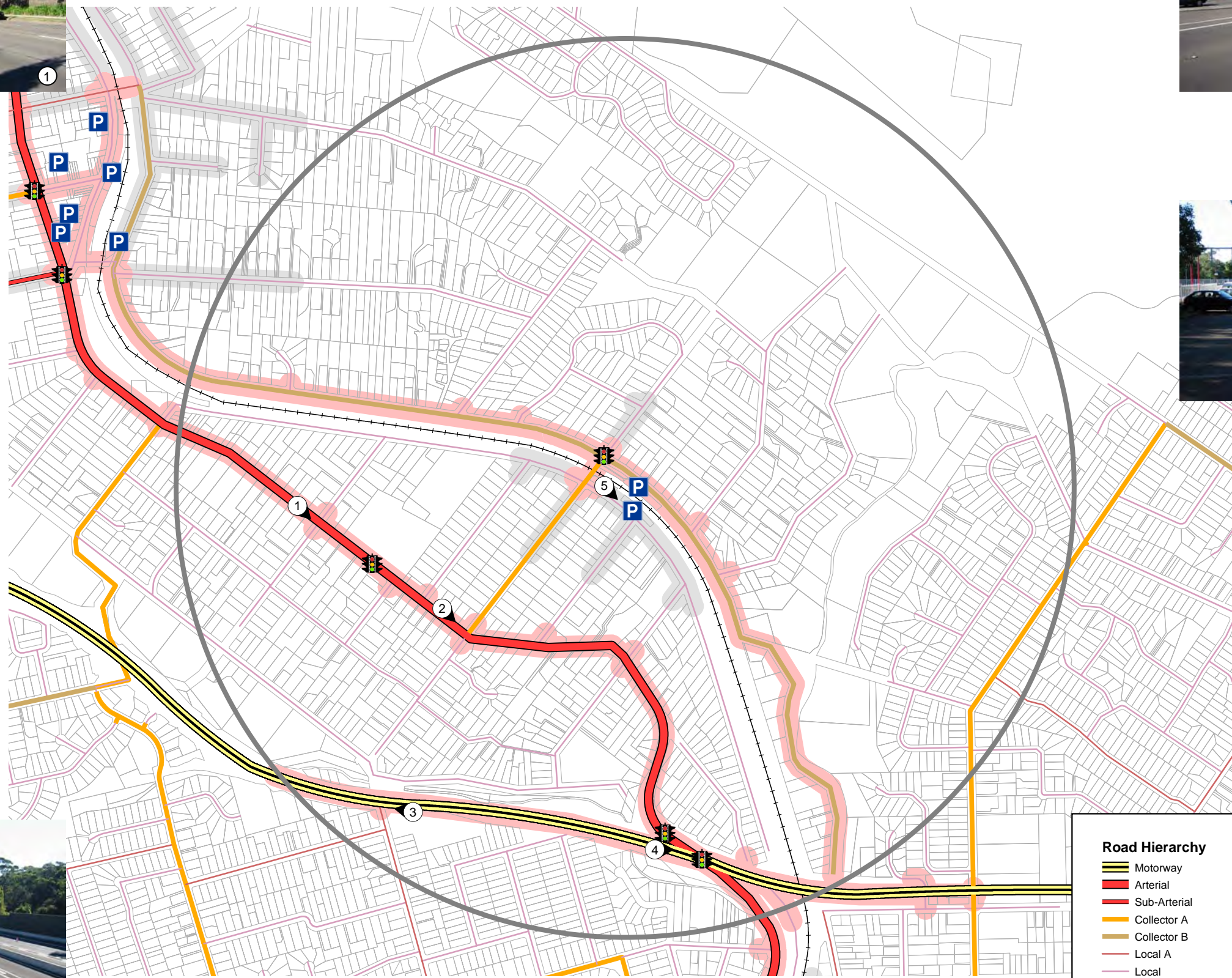
On-Street

5.32 On street parking is prohibited or restricted along most of Beecroft Road, Sutherland Road and the M2. There are very few on-street parking restrictions elsewhere in the Cheltenham study area.

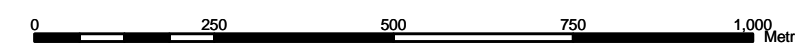
5.33 The highest concentration of on-street parking typically occurs within 250 metres of the station, mainly on the western side of the rail line, particularly along The Crescent.

Off-Street

5.34 The only off-street parking in the area is provided at the railway station, with space for approximately 65 vehicles on the western side of the rail line and 15 vehicles on the eastern side. These car parks are typically 100 percent utilised during weekdays.



Road Hierarchy	Parking
Motorway	On Street Restricted
Arterial	On Street Unrestricted Full
Sub-Arterial	Off Street Parking
Collector A	Photographs
Collector B	Location & Direction
Local A	
Local	
Controls	
Signals	



CHELTENHAM : Roads & Vehicles



6.0 Cherrybrook

General

- 6.1 Cherrybrook is a low density residential area spreading from Cherrybrook Village Shopping Centre. Access to Cherrybrook is from New Line Road and Boundary Road in the south and west, with the Berowra Valley Regional Park acting as natural barrier to access in the north and east. Cherrybrook was developed as an urban release area and is the newest suburb in the Shire.
- 6.2 Public transport is provided by a number of feeder bus services to Pennant Hills railway station, and a number of express commuter services to the city.
- 6.3 The planned North West Rail Link makes provision for a new rail station at Franklin Road, in the south of the study area. The installation of this station will have a significant impact on the land use and travel patterns in the area.
- 6.4 Cherrybrook is classed as a local centre within Hornsby shire.

Topography

- 6.5 Cherrybrook is situated in an undulating area that is less steep than many of the other urban centres in the Hornsby Shire. The dominant landforms in the area are the valleys formed by Berowra Creek in the east and Pyes Creek in the northwest.

Land Use

- 6.6 Summary – within a 1 km radius of Cherrybrook Shopping Village

Type	Total (1000 m ²)	Proportion
Residential High	0	0%
Residential Medium	0	0%
Residential Low	2877	85%
Business & Industrial	32	1%
Open Space & Env Protected	296	9%
Special Uses	174	5%
TOTAL	3379	100%

Commercial

- 6.7 The most significant commercial centre in the area is the Cherrybrook Shopping Village, containing a mix of retail outlets and a supermarket. The smaller commercial centres of Appletree Shopping Centre in the east and Oakhill Shopping Centre to the west serve more local convenience shopping needs.

Residential

- 6.8 The vast majority of Cherrybrook is residential, all of which is low density residential development.
- 6.9 The area continues to grow, with new residential development continuing to take place in land to the north of the study area, on Kentia Parade and Purchase Road.

Open Space/Parklands

- 6.10 Greenway Park to the north of Cherrybrook Shopping Village is the most significant open space in the area, consisting of sporting facilities and ovals.
- 6.11 The upper reaches of Berowra Valley Regional Park also spread into Cherrybrook, surrounding the area to the north and east. A section of the park extends into the land

immediately south of Cherrybrook Shopping Village, to form The Lakes Reserve. To the west of Cherrybrook, a further corridor of open space is created by the land either side of Pyes Creek.

- 6.12 The area also contains numerous small parks with recreational facilities.

Other

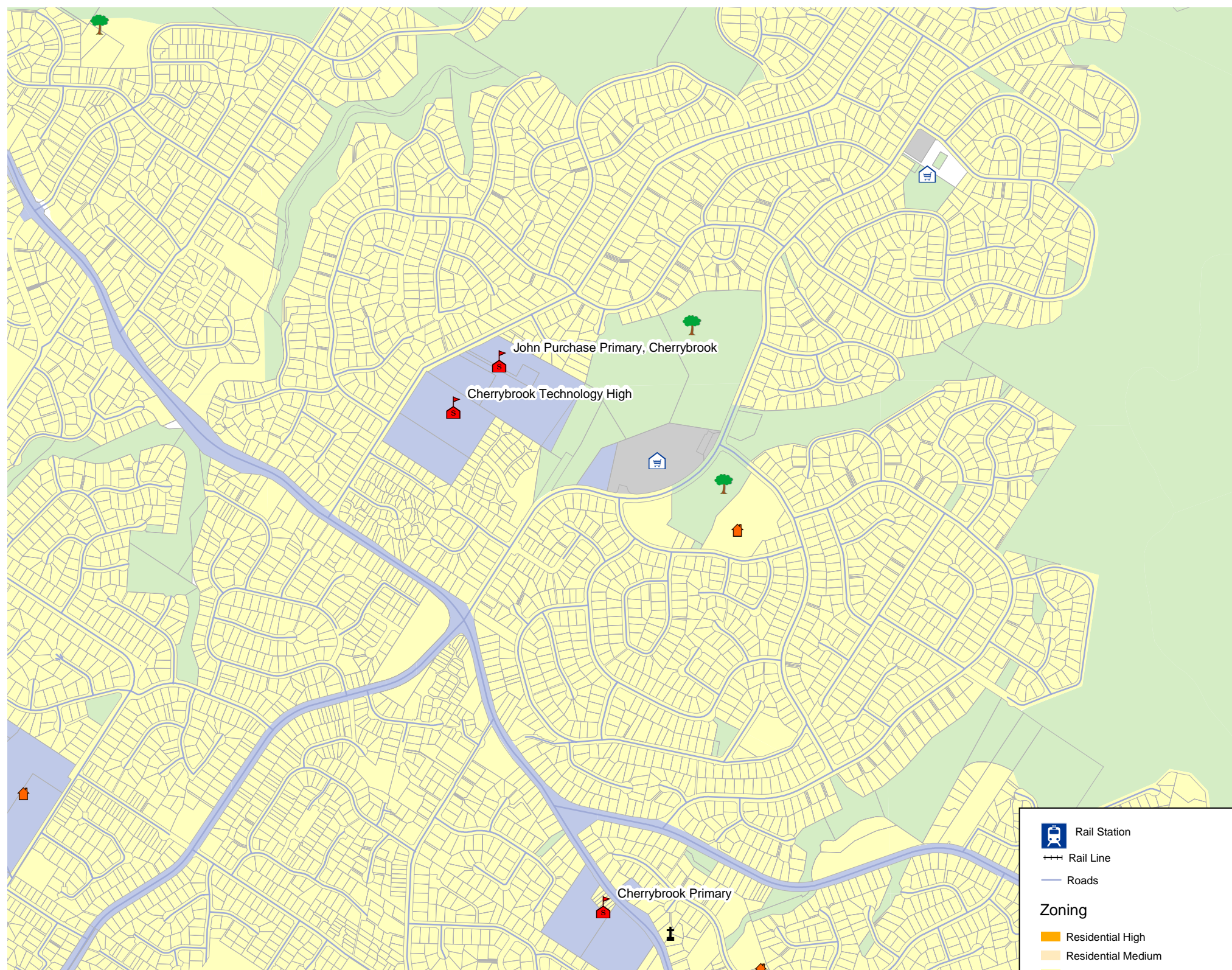
- 6.13 A high school and two primary schools are located within 1 kilometre of Cherrybrook Shopping Village. Two schools and a campus of the Australian Catholic University are situated to the west of the study area in Castle Hill. An additional two schools are located to the south, on Franklin Road.
- 6.14 The area also contains the following facilities:
- A large retirement village complex is situated at the intersection of Old Northern Road and Castle Hill Road, to the southwest of the study area. A smaller retirement village is located immediately south of The Lakes Reserve, on Macquarie Drive.
 - Sporting facilities including playing grounds and an aquatic centre, at Greenway Park.
 - A community centre.
 - Two churches are located, to the south and southwest of the study area.

Relevant Plans/Strategies

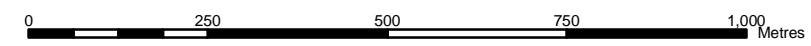
- Cherrybrook Integrated Local Transport Plan, February 2001.
- Cherrybrook Precinct DCP.

Issues

- Probability of pressure to increase residential densities and access to proposed NWRL station at Franklin Road.
- Generally poor public transport accessibility.



	Rail Station		School
	Rail Line		Tertiary Education
	Roads		Emergency Services
Zoning			Hospital
	Residential High		Library
	Residential Medium		Park
	Residential Low		Police Station
	Business & Industrial		Place of Worship
	Open Space & Env Protected		Retail Outlets
	Special Uses		Retirement Village or Nursing Home





Pedestrians

- 6.15 Roads classified as collector and above generally include a footpath on one side of the road. Other local roads usually have no footpaths, making pedestrian access difficult in wet weather.
- 6.16 A significant length of New Line Road north of Purchase Road has no footpaths on either side of the road. This area is a strong candidate for footpath construction, with evidence of pedestrian desire lines particularly as a result of students travelling to and from school.
- 6.17 Controlled pedestrian crossings are provided at the following traffic signals:
- New Line Road / Purchase Road intersection.
 - Boundary Road / Francis Greenway Drive intersection.
- 6.18 The majority of intersection controls are roundabouts. In comparison to signalised intersections, these facilities can help to smooth traffic flow, making pedestrian crossing more difficult by providing fewer opportunities to gap seek. Consequently, the section of New Line Road including the intersections with Shepherds Drive, and Boundary Road present a significant barrier to pedestrian movement in the southwest of the area.
- 6.19 Only one zebra crossing is located in the study area: on Purchase Road in front of John Purchase Primary. A signalised pedestrian crossing of New Line Road is provided outside Cherrybrook Public School to the south. Additional pedestrian refuges exist at the following locations on Shepherds Drive:
- South of Cherrybrook Shopping Village,
 - South of Greenway Park,
 - North of Appletree shops.
- 6.20 Cherrybrook Village Shopping Centre has a specific pedestrian set down area, and clear markings for disabled access. A very unpleasant, vandalised pedestrian underpass of Macquarie Drive near the shops would generally be avoided by pedestrians in preference for crossing at the pedestrian refuge provided at the single lane roundabout nearby.
- 6.21 Throughout the area, a large number of footpaths create pedestrian links through the meandering local road network particularly at the end of cul-de-sacs. These provide a far superior level of pedestrian accessibility than would otherwise be available.
- 6.22 The Callicoma recreational path runs through the Berowra Valley Regional Park from The Lakes Reserve and south of Francis Greenway Drive, linking to the Great North Walk.
- 6.23 Low levels of street lighting in the area may be a factor for people choosing to avoid travelling by foot at night.

Cyclists

Routes

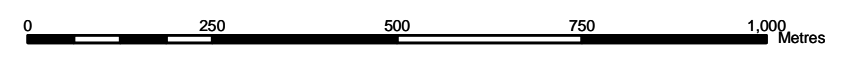
- 6.24 The gently undulating topography of the Cherrybrook area is more amenable to cycling than most urban areas in Hornsby Shire. The 1998 Hornsby Bike Plan outlines an extensive network of local routes through the area, and a trunk route that follows Boundary Road and New Line Road. To date, very few of the Cherrybrook routes have been implemented.
- 6.25 The area contains one of the most clearly marked local routes currently implemented in Hornsby Shire. Pavement line markings for shared bike/parking lanes or bike lanes are provided on both sides of the route following Francis Greenway Drive, Macquarie Drive and Shepherds Drive, from Boundary Rd in the south to Appletree Shops in the northeast. The route is currently isolated, as surrounding regional routes have not yet been implemented.
- 6.26 A signposted route is also provided along the remaining section of Francis Greenway Drive.
- 6.27 An off road, exclusive cycle path loops Greenway Park and the adjacent playing fields.
- 6.28 The roundabouts at the intersections of New Line Road/Shepherds Drive and New Line Road/Boundary Road are both significant.

Facilities

- 6.29 No parking or storage facilities were observed within the Cherrybrook Study Area.
- 6.30 A number of signs were observed that prohibit the use of bicycles in the Cherrybrook Village Shopping Centre car park. While these signs are designed to reduce the level of nuisance cycle activity, the visibility of these signs may impart negative notions to the community on general cycling in the area.



Pedestrian Facilities	Cycle Facilities
Path	Bicycle Route
Desire Lines	Bicycle Storage
Steps	Roads
Overpass	
Underpass	
Refuge or Crossing	
Signals	
	Photographs
	Location & Direction



CHERRYBROOK : Pedestrians & Cyclists



Public Transport

Rail

Services

6.31 Cherrybrook currently relies on neighbouring Pennant Hills for access to the Northern Line.

Facilities

6.32 The closest rail station to the area is Pennant Hills. The most popular commuter access to the station is by car or bus. These forms of access are troubled by the following issues:

- Delays caused by congestion on New Line Road and Boundary Road,
- Limited parking available at Pennant Hills Station,
- No bus priority, giving buses no time advantage over private vehicles.

6.33 The planned North West Rail Link makes provision for a new rail station in the vicinity of Franklin Road, to the south of the study area. The provision of this facility will have a significant impact on the land use and travel patterns in the area, and around Pennant Hills station.

Buses

Services

6.34 The following bus services run along and north of New Line Road:

Route	Provider	From	To	Indicative Frequency	Days per Week
620	Harris Park	Dural	City	High	5
626	Harris Park	Cherrybrook	Pennant Hills	Medium	7
627	Harris Park	Thomas Wilkinson Rd	Parramatta Station	Low	5
638	Glenorie	Berrilee & Galston	Pennant Hills	Low	7
639	Glenorie	Dural	Pennant Hills	Low	6

6.35 A number of services are provided in and around the Castle Hill Village retirement complex, southwest of the Cherrybrook study area. Bus routes in this area have been recently rerouted through the newly created intersection of County Drive and Castle Hill Road avoiding the associated closure of David Road.

Route	Provider	From	To	Indicative Frequency	Days per Week
632	Glenorie	Castle Hill	Hornsby	Low	5
632	Glenorie	Castle Hill	Pennant Hills	Medium	7
636	Glenorie	Glenhaven	Pennant Hills	Medium	7
642	Glenorie	Dural	City	Low	5
652	Glenorie	West Pennant Hills	City	Medium	5
654	Glenorie	Dural	City	Low	5

Facilities

6.36 Cherrybrook has one of the highest concentrations of bus shelters in the Hornsby Shire, providing cover for approximately six people at each of the following locations:

- On each side of Shepherd's Drive, in close proximity to Cherrybrook Shopping Village,
- Outside Appletree Shops, on Shepherd's Drive,
- Northbound on Purchase Road, near intersection with Beechwood Drive and southbound outside Cherrybrook Technology High School,
- Southbound on New Line Road, near intersection with Boundary Road,
- Eastbound on Boundary Road near intersection with Boundary Road,
- Northbound on Macquarie Drive, near intersection with Shepherds Drive.

6.37 In addition, a significant number of bus stops without shelters are provided along the following roads:

- Purchase Road,
- Shepherds Drive,
- Francis Greenway Drive,
- Beechwood Parade.

6.38 A large number of bus stops are also provided in the areas to the south of New Line Road. These are generally located at regular intervals along David Road, County Drive, John Road and Franklin Road.



CHERRYBROOK : Public Transport



Vehicular Movement

Roads

6.39 The following table aggregates lengths of road system within a 1 km radius of Cherrybrook Village Shopping Centre.

Type	Length (km)	Proportion
Motorway	0.0	0%
Arterial	1.8	6%
Sub Arterial	0.8	3%
Collector A	4.7	15%
Collector B	3.7	12%
Local A	1.8	6%
Local	17.6	58%
TOTAL	30.4	100%

6.40 The major arterial roads through the study area are New Line Road and Boundary Road. These roads form the major access routes to and from Cherrybrook. Congestion is experienced along these routes at peak times, resulting in delays for bus passengers and private vehicles.

6.41 Castle Hill Road, and Old Northern Road are major arterial roads running to the south and west of the area respectively.

6.42 The recently completed County Drive forms a convenient sub-arterial link from central Cherrybrook to Castle Hill and West Pennant Hills.

6.43 Major collector roads in the area include:

- The loop formed by Purchase Road and Shepherds Drive, connecting to New Line Road,
- The route along Macquarie Drive and Francis Greenway Drive, from Boundary Road to Shepherds Drive,
- David Road, Oakhill Drive and Woodgrove avenue, to the south of New Line Road,
- The loop formed by James Henty Drive, Thomas Wilkinson Avenue and Jenner Road, to the west.

6.44 All other roads in the area are local.

6.45 Traffic signals are installed on arterial roads at key entry points to residential areas, with the exception of the following intersections where roundabouts are located:

- New Line Road / Shepherds Drive,
- New Line Road / Boundary Road.

6.46 The majority of intersection controls on roads within residential areas are single lane roundabouts, the most significant of which is located near Cherrybrook Village shops at the Shepherds Drive / Macquarie Drive intersection.

Parking

On-Street

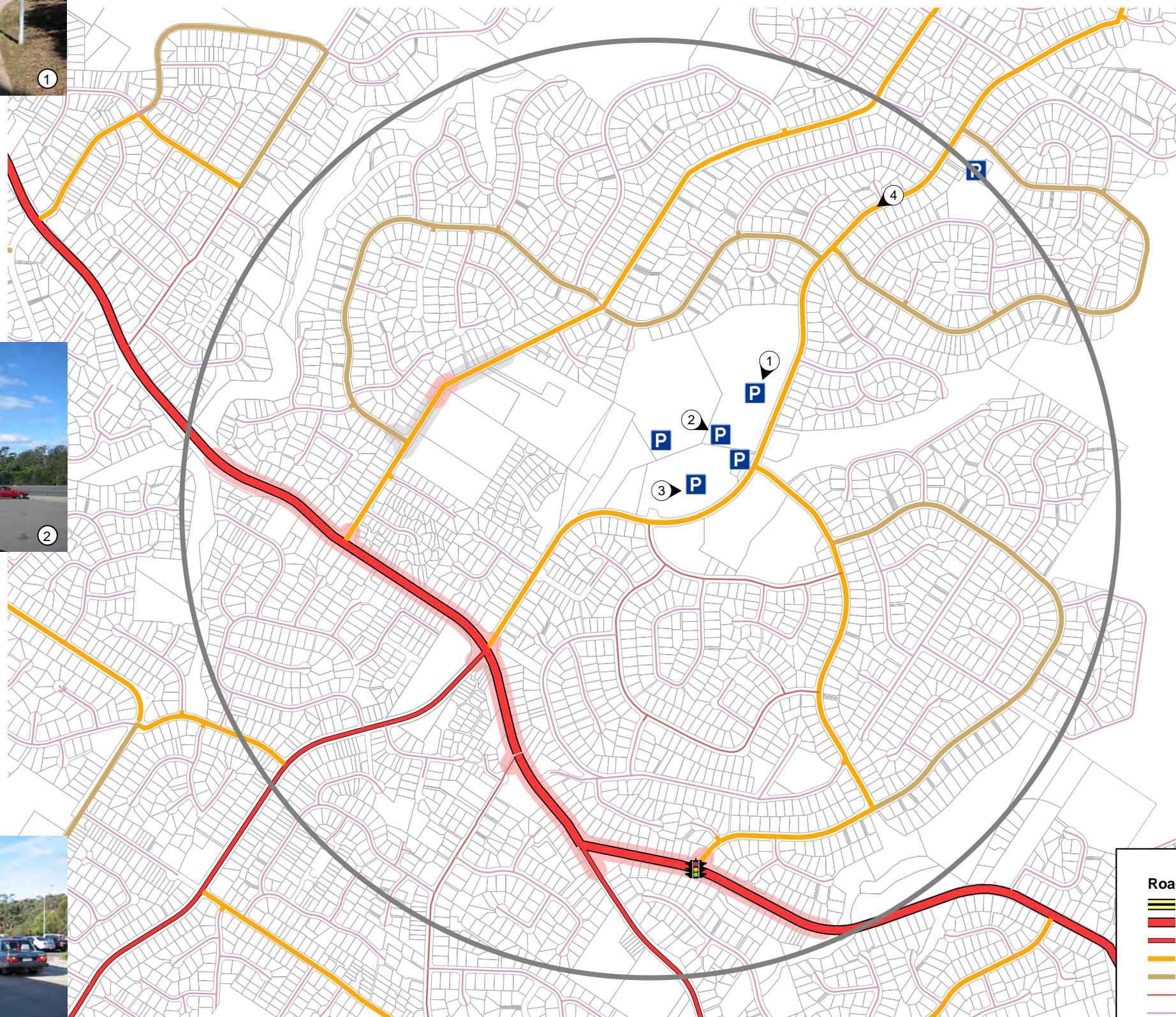
6.47 On-street parking is generally not an issue in Cherrybrook, however, the highest concentrations were observed along Purchase Road and Hancock Drive in areas close to Cherrybrook Technology High School, with parking demand exceeding the approximately 100 off-street spaces provided at the school. This on-street parking demand indicates a tendency for some students to drive to school.

6.48 Concentrations of on-street parking elsewhere in Cherrybrook are very low.

Off-Street

6.49 Over 350 spaces are provided at the Cherrybrook Village Shopping Centre car park. The most accessible of these are reserved for those with disabilities, and for parents with prams and young children. This area is 3 hour restricted and is typically over 75 percent utilised during average weekday shopping hours.

6.50 Approximately 300 spaces exist among three off-street car parks adjacent to Greenway Park and its associated sporting facilities and playing grounds. These car parks cater to specific demand created by the sporting facilities, with one of these car parks only opened during periods of high demand.



Road Hierarchy	Parking
Motorway	On Street Restricted
Arterial	On Street Unrestricted Full
Sub-Arterial	Off Street Parking
Collector A	Photographs
Collector B	Location & Direction
Local A	
Local	
Controls	
Signals	



CHERRYBROOK : Roads & Vehicles



7.0 Epping

General

- 7.1 The urban centre of Epping spreads across the following local government areas:
- Parramatta City Council to the South West,
 - Ryde City Council to the South East,
 - Hornsby to the North and North West,
 - This discussion is limited to the portion of the Epping within the Hornsby Shire Council.
- 7.2 Epping is a significant local centre, with retail facilities, schools, community centres, health care facilities, churches and a library.
- 7.3 At a regional level, Epping is situated at the crossroads of major road and rail routes, and marks the northwest limit of the Sydney Buses system. The area acts as an attractor for commercial and retail employment. Being the closest suburb of Hornsby Shire to Sydney CBD, Epping has higher residential densities than most suburbs in the Shire.
- 7.4 A number of large infrastructure projects planned in the medium and long term will have a great impact on the land use and transport demands of the area.
- 7.5 The portion of Epping within Hornsby Shire is classed as a district centre due to its strategic location and quantity of office space.

Topography

- 7.6 To the west, the land slopes steadily up along Carlingford Road. The land slopes down to the Terrys Creek valley in the south and east. Accessibility to North Epping is limited by the steep topography of the Devlins Creek valley.

Land Use

- 7.7 Summary – within a 1 km radius of Epping station -

Type	Total (1000 m ²)	Proportion
Residential High	0	0%
Residential Medium	134	7%
Residential Low	1257	70%
Business & Industrial	77	4%
Open Space & Env Protected	77	4%
Special Uses	257	14%
TOTAL	1801	100%

Commercial

- 7.8 Epping's commercial district contains a mix of small retail outlets, low-rise and medium-rise office buildings. The commercial precinct stretches over both sides of the railway line, with shopping facilities occupying the areas closest to the station. The majority of shopping is focussed on the area west of Beecroft Road, within Parramatta Council. A smaller shopping precinct exists in the Hornsby Shire are focussed around Langston Place. Office buildings are generally located on the fringe of the shopping precinct.

Residential

- 7.9 The vast majority of the area is occupied by low density residential development, with some med-high density development generally closer to the town centre.

Other

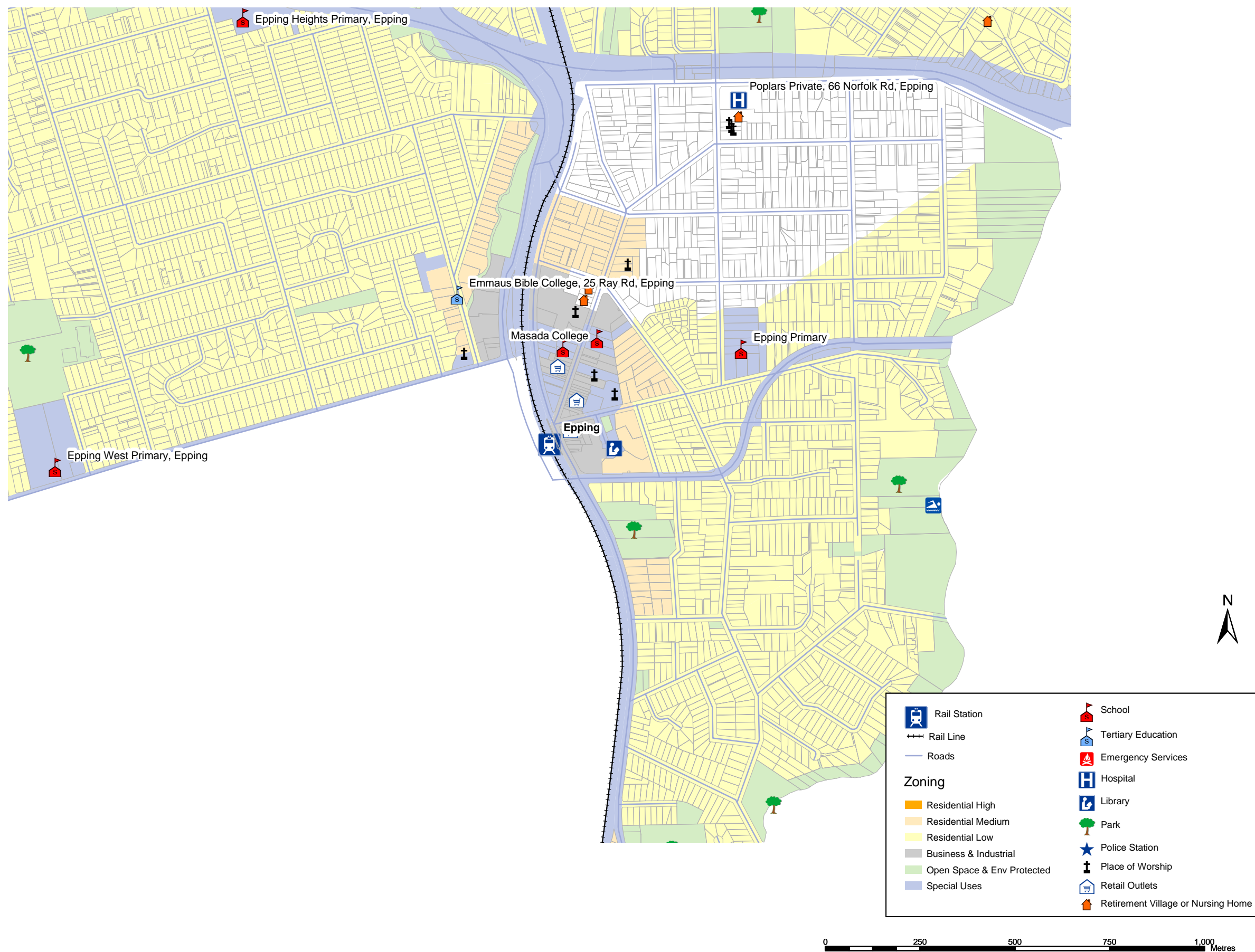
- 7.10 The study area contains three schools and one tertiary education institution. In addition, Epping Boys High School and Cheltenham Girls High School, which are just beyond the bounds of this area, act as significant attractors to the region.
- 7.11 A private hospital and three retirement villages are located in the north-east of the Epping area.

Relevant Plans/Strategies

- Macquarie Park and Epping are being planned jointly by Planning NSW Living Centres and the relevant LGAs.
- Masterplan and related studies for Epping to develop potential of PRL.

Issues

- Integration of the three LGA areas at Epping and the need to plan across the boundaries.
- Poor bus stop quality, particularly at Beecroft Road Bus station.
- Impact of Epping, Blaxland and Beecroft Roads on pedestrian amenity and the local environment.
- Probability of pressure to increase residential densities close to central Epping, possibly influenced by the improved accessibility of the area in conjunction with completion of the first and second stages of the PRL.





Pedestrians

- 7.12 The focus of pedestrian activity in this area is on and around the pedestrian bridges linking the station with the shopping precincts to the east of Langston Place and to the west of Beecroft Road.
- 7.13 The rail line, in conjunction with Blaxland Road and Beecroft Road presents a barrier to pedestrians wishing to travel in an east-west direction through the area. Pedestrians are limited to crossing this rail/road corridor via the pedestrian bridge through the rail station concourse and over Beecroft Road, or by using the footpaths on Epping Road Bridge. Of these, the bridge through the station concourse is most heavily utilised. This bridge connects level with Langston Place on the east and, less conveniently, via stairs and ramps with Beecroft Road on the west. A rail ticket is not required to use this bridge. The bus tunnel under the railway line, north of the station has no pedestrian facilities, and is not designed to carry pedestrians.
- 7.14 Carlingford Road and Epping Road present a barrier to pedestrians wishing to travel through the area in a north-south direction. Pedestrians have a choice of three signalised crossing points on Epping Road, and two crossing points on Carlingford Road.
- 7.15 In general, footpaths are provided on one side of the majority of local roads and on both sides of major roads. In addition, a number of recreational footpaths offer access to surrounding bushland, including a section of the Great North Walk that proceeds north from Epping station, along Langston Place and Oxford Street.
- 7.16 The tunnel under the M2 North of the rail station is suitable for pedestrians and cyclists.

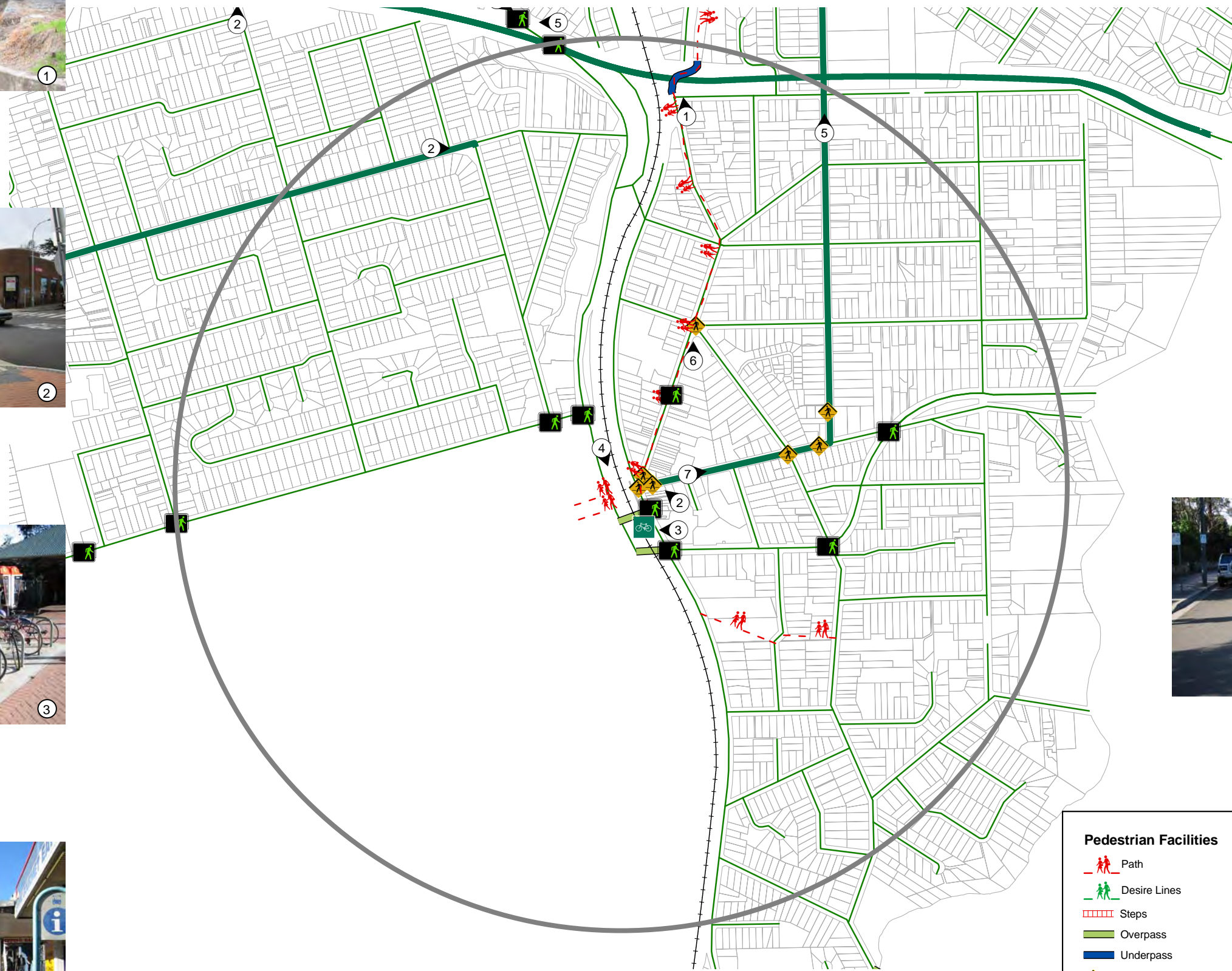
Cyclists

Routes

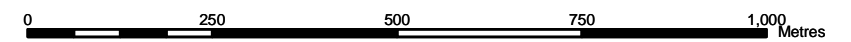
- 7.17 Within the Epping area, the northern section is best serviced with bicycle paths. On the east side of the railway line, sections of Norfolk Road include exclusive bicycle lanes, while Pembroke Street and Essex Street include shared parking and bicycle lanes. The shared bicycle lanes on Essex Street are of a width where there are commonly completely covered by parked vehicles. Ray Road and on the West side of the station includes shared parking and bicycle lanes west of Kandy Avenue, while Ray Road and of the area has most major cycle paths run along the following streets. The M2 motorway also includes exclusive bicycle lanes in both directions.
- 7.18 A number of intersections in the area also include limited provision for cyclists, including the Oxford and Essex Street roundabout and the intersection of Ray and Midson Roads. The intersections of the M2 Motorway and Beecroft Road also have provision for cyclists.
- 7.19 The M2 intersections with Beecroft Road restrict private vehicles entering the M2 to travelling in an easterly direction only. Similarly, private vehicles exiting the M2 at Beecroft Road can only do so if travelling in a westerly direction. Cyclists occasionally circumvent this restriction by using the bus ramps off and onto the M2. Cyclists also occasionally use the bus tunnel under the rail line north of the station.

Facilities

- 7.20 Four bicycle lockers are installed on the east entrance of Epping station, in Langston Place. Since their installation, the bicycle lockers have commonly experienced 100% utilisation.
- 7.21 There are a total of seven u-rails at the Langston Place station entrance, with cyclists preferring to use those that are most visible, well lit and accessible. Utilisation of these u-rails is commonly high. In addition, there is evidence of bicycles chained to rail-station fences.



Pedestrian Facilities	Cycle Facilities
Path	Bicycle Route
Desire Lines	Bicycle Storage
Steps	Roads
Overpass	
Underpass	
Refuge or Crossing	
Signals	
	Photographs
	Location & Direction



EPPING : Pedestrians & Cyclists



Public Transport

Rail

Services

- 7.22 Epping station is a stop for many express services both to and from the city, and therefore experiences a higher frequency of services than most stations on the Northern Line.
- 7.23 During peak times, express services to the city tend to be far more crowded than “all stations” services.

To City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	AM Peak
Weekdays	4:38:00 AM	1:46:00 AM	103	12	7
Weekends	4:05:00 AM	1:46:00 AM	61	21	20

From City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	PM Peak
Weekdays	4:32:00 AM	3:25:00 AM	106	13	7
Weekends	5:20:00 AM	2:29:00 AM	62	20	20

- A typical “all stations” service to Central station takes 36 minutes.
- A typical “express” service to Central station takes 26 minutes.

Facilities

- 7.24 Epping station is a major station on the Northern Line. As a result, it is staffed 24 hour per day with up to five staff during peak periods. Three tracks run through the station: one southbound, one northbound and one dual direction. The three tracks are served via two island platforms. In recent years, Epping station has been upgraded by the SRA to provide “Easy Access” for people with impaired mobility.
- **Station Access:** Access to the station concourse is via a pedestrian bridge that connects level with Langston Place on the East and via stairs or ramps with Beecroft Road on the west. This bridge is free to use, and is the preferred route for pedestrians travelling east-west through the Epping area.
 - **Platform Access:** Access to the platforms is via stairs and elevators down from the station concourse.
 - **Shelter:** The station concourse and eastern entrance are both fully covered. The station provides covered access to all platforms, with approximately 50% of total platform length being sheltered.
 - **Facilities:** The main station concourse includes the following facilities:
 - 3 ticket machines,
 - 2 ticket windows,
 - 8 ticket gates,
 - Kiosk/Newsagent,
 - Public toilets.

Buses

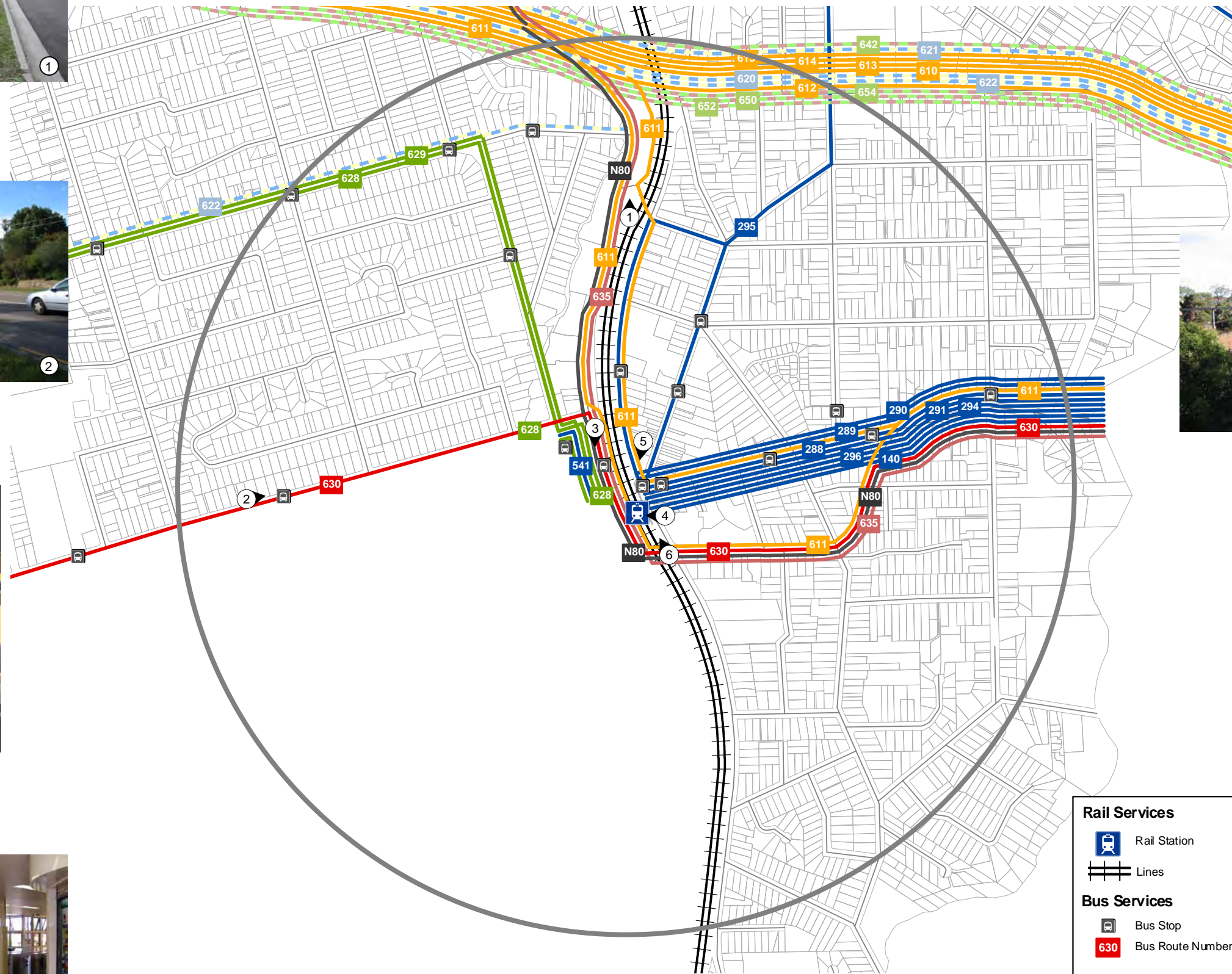
Services

7.24.1 Table of summary of bus services:

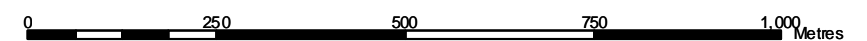
Route	Provider	From	To	Indicative Frequency	Days per Week
140	Sydney Buses	Manly	Epping	Low	5
288	Sydney Buses	Epping	City	High	7
289	Sydney Buses	Epping	City	Low	7
290	Sydney Buses	Epping	City	Med	7
291	Sydney Buses	Epping	City	High	6
294	Sydney Buses	Epping	City via	High	5
295	Sydney Buses	N. Epping	Macquarie Park	Med	7
296	Sydney Buses	Epping	Macquarie Centre	High	5
541	Sydney Buses	Epping	Eastwood	Med	6
611	Westbus	Blacktown	Macquarie Centre	Med	6
622	Citybus Direct	Carlingford	City	Med	5
624	Harris Park	Epping	Parramatta	High	7
628	Harris Park	Epping	Carlingford	Med	5
629	Harris Park	Epping	North Rocks	Med	7
630	Red Arrow	Blacktown	Macquarie Centre	Med	5
635	Glenorie	Castle Hill	Macquarie	Med	7
N80	Shorelink	Hornsby	City	Med	7

Facilities

- 7.25 There are two main bus terminals, situated either side of the railway station.
- 7.26 To the east of the rail line, the Langston Place bus terminal is a major destination for bus services running to and from North Epping, the M2 (via the bus tunnel north of Epping station) and areas east and south of Hornsby Shire along Epping Road to the City. This terminal has undergone improvement in recent years. The vast majority of buses using this terminal are operated by Sydney Buses. The area is well lit and sheltered and offers good accessibility to other transport facilities such as Epping station, taxi stands and bicycle facilities. Timetable and service information is generally clear and consistent.
- 7.27 The Beecroft Road terminal, while not within Hornsby Shire, is of significance as most of the bus routes using it service some part of the Shire. It is a major destination for bus services travelling to or from the west of Epping. The terminal consists of a number of bus zones in the leftmost lane of Beecroft Road. Shelter and lighting are provided by adjacent shops and shop awnings. There are limited seating facilities and basic service information available. The vast majority of buses using this terminal are privately operated. Conflicts arise between
- High levels of traffic on Beecroft Road and buses manoeuvring in and out of bus zones.
 - Through pedestrian traffic and pedestrians crowding footpaths waiting for bus services (particularly after school).
- 7.28 In contrast to the Langston Place bus terminal, accessibility to other transport facilities is more difficult, due largely to the Beecroft Road, with the only access to the station being via a high pedestrian bridge with stairs and ramps.
- 7.29 Other bus stops in the Epping area are generally of a poor quality.
- 7.30 In addition, a number of bus services travel through the Epping area on the M2, without stopping within the area. These services presented in the Beecroft section of this report.



Rail Services		Bus Service Providers	
	Rail Station		Airbus
	Lines		Citybus Direct
	Bus Stop		Glenorie
	Bus Route Number		Harris Park
	Location & Direction		Hills Bus
			NightRide
			Red Arrow
			Shorelink
			Sydney Buses
			Westbus



EPPING : Public Transport



Vehicular Movement

Roads

7.31 The following table aggregates lengths of the road system within a 1 km radius of Epping Station.

Type	Length (km)	Proportion
Motorway	0.5	2%
Arterial	4.2	17%
Sub Arterial	0.0	0%
Collector A	3.6	15%
Collector B	1.4	6%
Local A	1.0	4%
Local	14.3	56%
TOTAL	25.0	100%

7.32 The arterial roads through the area are:

- Epping Road,
- Beecroft Road,
- Blaxland Road,
- Carlingford Road,
- In addition, a short section of the M2 Motorway travels through the northern most section of the study area.

7.33 The major intersections in the area are:

- Beecroft Road and Carlingford Road,
- Epping Road and Blaxland Road.

Parking

On-Street

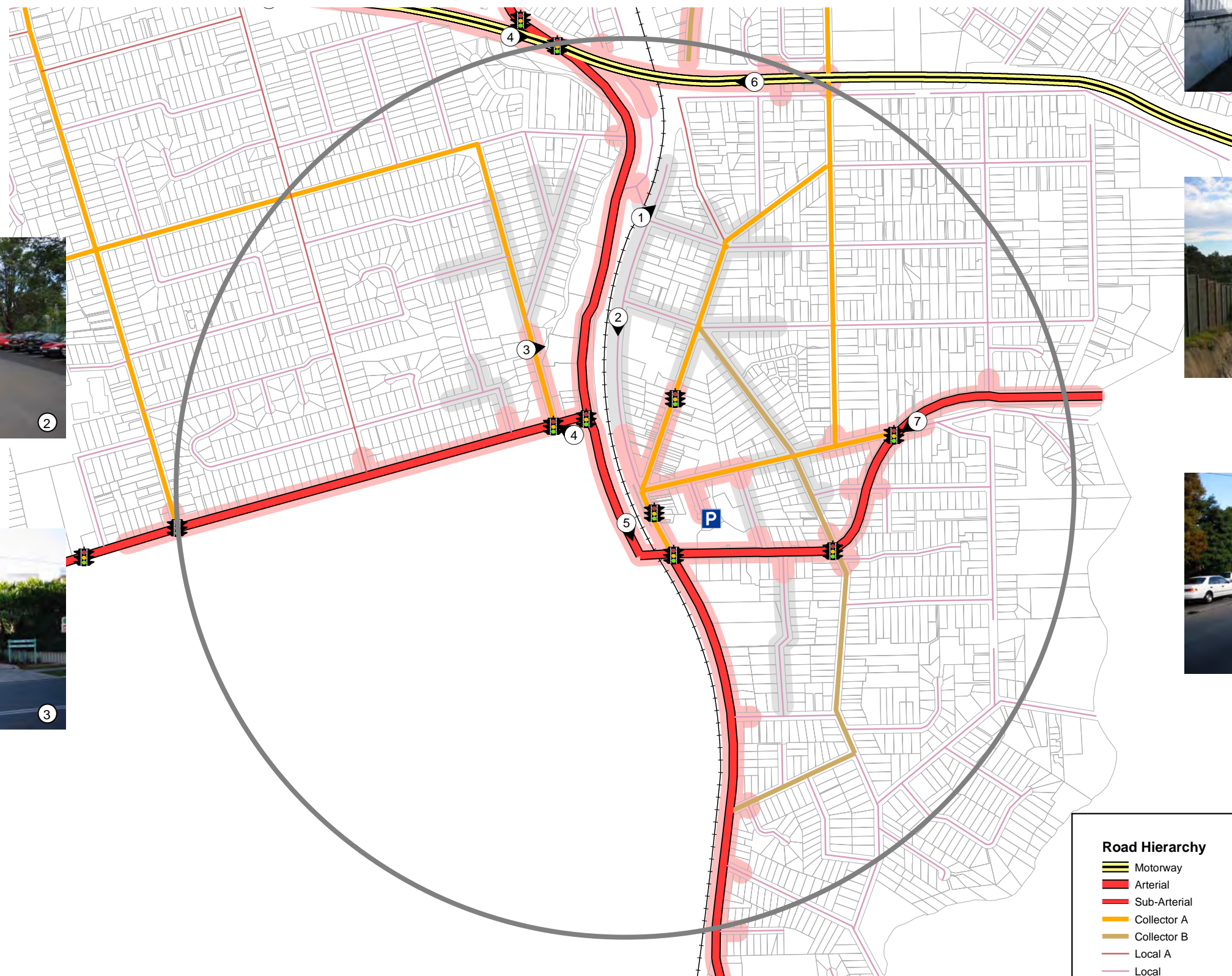
7.34 On-street parking is prohibited along most arterial roads, and restricted within 250 metres of the station. Beyond this area, high concentrations of on-street parking are commonly seen within a 600 metres radius of the station.

7.35 The highest concentration of on-street commuter parking occurs in the area northeast of the station, due largely to the ease of pedestrian accessibility to the station. This area includes angle on-street commuter parking along Cambridge Street, facing the railway line. The area in Parramatta Council, southeast of the station also experiences high levels of commuter parking. The areas northwest and southeast of the station experience lower concentrations of commuter parking, due largely to the poorer pedestrian accessibility of those areas to the station.

Off-Street

7.36 Major off-street parking facilities are in the following locations:

- Coles car park (Parramatta Council),
- Epping RSL club undercover parking (Parramatta Council),
- Various private office parking facilities, both east and west of the rail line.



Road Hierarchy	Parking
Motorway	On Street Restricted
Arterial	On Street Unrestricted Full
Sub-Arterial	Off Street Parking
Collector A	Photographs
Collector B	Location & Direction
Local A	
Local	
Controls	
Signals	



EPPING : Roads & Vehicles



8.0 Hornsby

General

- 8.1 Hornsby is the administrative centre of the Shire, with Hornsby Shire Council, courthouse and a number of secondary and tertiary education centres. It also provides a focus for commercial and retail activity within the locality, serving the Shire and other areas on the North Shore, particularly in neighbouring Ku-ring-gai.
- 8.2 Hornsby is well served by public transport with services on both the North Shore and Northern Lines passing through Hornsby Station. The rail line, Pacific Highway and George Street, segment Hornsby town centre. A large proportion of through traffic is carried by the F3 (Sydney – Newcastle Freeway) to the east of the town centre but congestion on the freeway can lead to increased traffic volumes through the town centre.
- 8.3 A Westfield Shoppingtown development was completed in 2001 and provides retailing, restaurants, cafes and a cinema to the east of the rail line and George Street. The commercial area to the west of the rail line, centred on Pacific Highway has undergone decline in recent years.
- 8.4 Hornsby is classed as a Sub-Regional centre, with by far the most commercial floor space of all urban centres in the shire.

Topography

- 8.5 Hornsby Town Centre occupies a relatively flat area of land to the east and north of the Pacific Highway. In the south the land slopes down to the Waitara Creek valley and in the west to the Berowra Creek valley.

Land Use

- 8.6 Summary – within a 1 km radius of Hornsby station -

Type	Total (1000 m ²)	Proportion
Residential High	88	3%
Residential Medium	455	15%
Residential Low	1008	34%
Business & Industrial	438	15%
Open Space & Env Protected	525	17%
Special Uses	489	16%
TOTAL	3003	100%

Commercial

- 8.7 Hornsby is the focus for commercial and retail activity in the Shire and is also the administrative centre. The council offices, courthouse and police station sit together fronting the Pacific Highway, to the north of the rail station.
- 8.8 The area to the east of the rail line is dominated by the Westfield Shopping Centre, and associated retail and commercial developments. The area to the west predominantly contains small retail units, with some banks and the main Hornsby post office. Commercial development in the western part of the town centre is low rise with higher buildings to the east of the town centre.
- 8.9 Light industrial and commercial development extends north of the Westfield development and is largely contained by George and Hunter Street. Businesses located in the locality include automotive repairs, light manufacturing and specialist and wholesale retail

Residential

- 8.10 There is an evident trend to develop high density housing in the vicinity of the rail line and in particular in the corridor between Hornsby and Waitara. A number of new developments have been completed recently and other sites are under construction.
- 8.11 In the west of the area, low density residential development dominates, while to the east of the town centre there is some medium to high density residential development, bounded by low density further east.

Open Space/Parklands

- 8.12 The Berowra Valley National Park extends to Hornsby town centre, occupying a significant corridor of land to the northwest.

Other

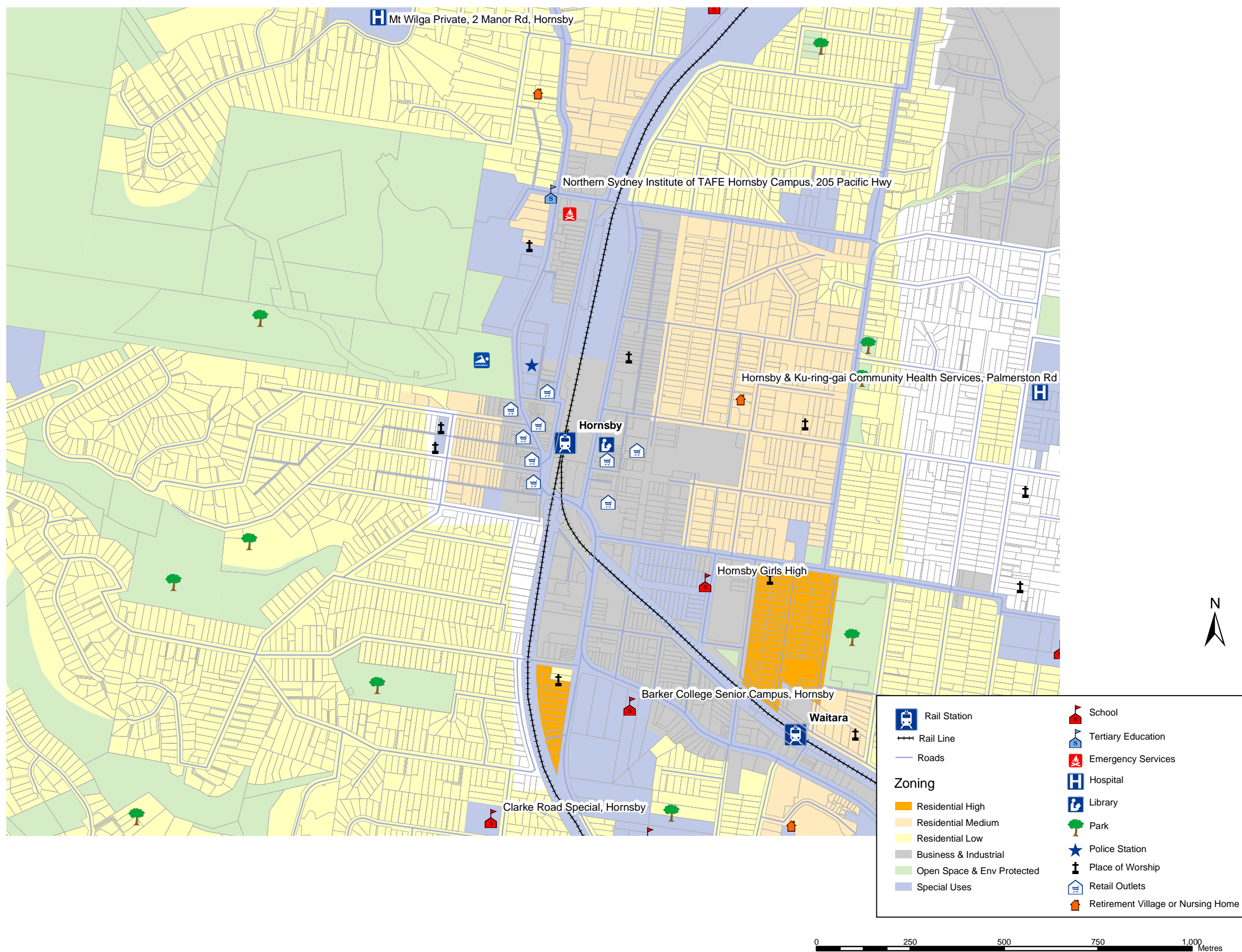
- 8.13 Hornsby contains two large high schools, and the Northern Sydney TAFE located on the Pacific Highway opposite the council offices.
- 8.14 Hornsby and Ku-ring-gai Hospital is located just beyond the study area, to the east of the town centre. The hospital provides emergency facilities.
- 8.15 The area also includes numerous community facilities, emergency services and a public library.

Relevant Plans / Strategies

- Hornsby Town Centre Draft DCP,
- Hornsby Commercial Centre Traffic and parking Study – Report on the Final Parking Strategies (December 1989),
- Parking Strategy for Hornsby CBD (May 1992),
- Report on Traffic Aspects of Proposed Modified Development, Westfield Shoppingtown, Hornsby (October 1998).

Issues

- Economic decline of western town centre,
- Impact of Westfield development,
- Commercial expansion along George Street,
- Poor quality bus stops, other than bus station,
- Relationship between F3 and Pacific Highway / George Street,
- Lack of bicycle routes and facilities other than current facilities at railway station.





Pedestrians

- 8.16 The rail line, Pacific Highway and George Street create significant barriers to pedestrian movement within Hornsby town centre.
- 8.17 The rail station is at the heart of Hornsby town centre. A pedestrian bridge leading from the main concourse provides a link from Pacific Highway across the rail line and George Street, to the Westfield development. There are no links across the rail line between the station and Bridge Road. While there are connections between the two sides of the town centre there is a strong perception of a town centre in two parts: east and west. This perception is exacerbated by the different characteristics of the east and west parts of the town centre. Anecdotal evidence suggests that longer stay shopping trips characterise the east part of the town centres, while those visiting the west side tend to be popping in to a specific shop rather than browsing more widely.
- 8.18 There are a number of signalised intersections with pedestrian facilities, pedestrian operated crossing points and uncontrolled (zebra) crossings within the town centre providing reasonably good access through the centre.
- 8.19 Most streets within and around the town centre have footpaths, although there are some exceptions with goat tracks evident in the nature strips around the intersection of Bridge Road and Sherbrook Road to the north-east of the town centre.
- 8.20 Pedestrian only spaces with alfresco dining around the Westfield development serve to enhance the quality of the environment and level of amenity enjoyed by pedestrians in the eastern part of the town centre.

Cyclists

Routes

- 8.21 Cycle routes are generally poor in the area. Shared parking/cycle paths run along the Pacific Highway to the north, and along Malsbury Road to the south, however neither of these extend into Hornsby town centre.
- 8.22 While there are no dedicated cycle paths or lanes to, from or within Hornsby town centre, local residential streets are relatively easy to negotiate and provide access.

Facilities

- 8.23 Twenty-four bicycle lockers are provided by Bicycle NSW around Hornsby Station, of which over 80 percent are typically utilised. Twelve of these are located in the station car park on the east side of the rail line. The remaining twelve bicycle lockers and an additional six bicycle u-rails are located to the northwest of the station. The u-rails are also typically well utilised. There is very little other public cycle parking in the centre.
- 8.24 A number of signs were observed that prohibit the use of bicycles in the Hornsby pedestrian precinct around the Westfield Shopping Town.



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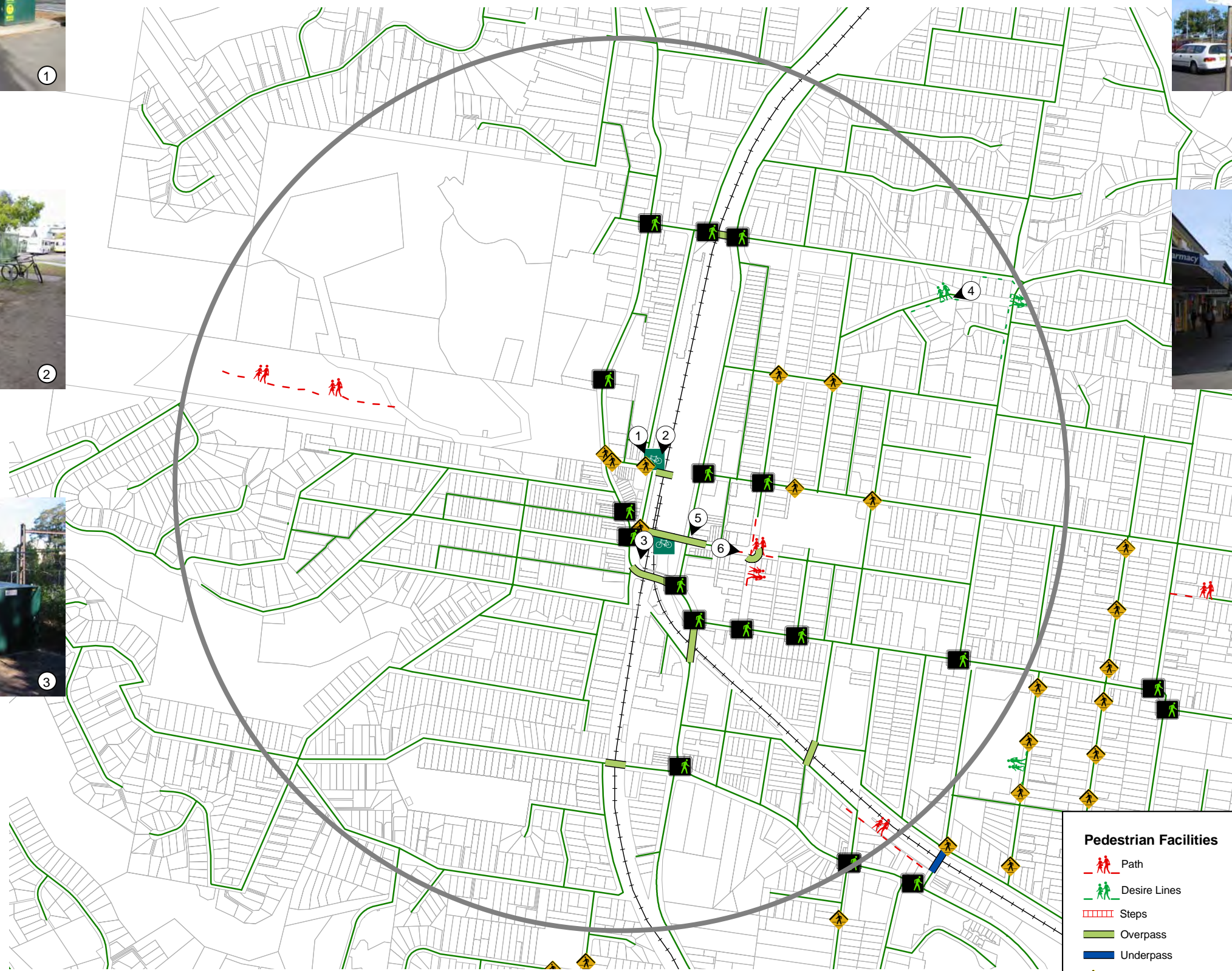
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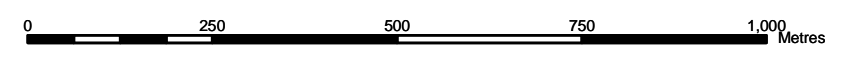
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Pedestrian Facilities	Cycle Facilities
Path	Bicycle Route
Desire Lines	Bicycle Storage
Steps	Roads
Overpass	
Underpass	
Refuge or Crossing	
Signals	
	Photographs
	Location & Direction



HORNSBY : Pedestrians & Cyclists



Public Transport

Rail

Services

- 8.25 Hornsby is a major stop on the North Shore and Northern Lines. The lines converge at Hornsby and continue north to the Central Coast and Newcastle. Trains terminate at and start from Hornsby and as the North Shore and Northern Lines diverge to the south of Hornsby it is a major interchange point on the rail network with people travelling north to Hornsby to access other destinations.

To City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	AM Peak
Weekdays	4:22:00 AM	1:38:00 AM	229	6	4
Weekends	3:56:00 AM	1:37:00 AM	116	11	10

From City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	PM Peak
Weekdays	4:36:00 AM	3:35:00 AM	235	6	4
Weekends	4:36:00 AM	2:44:00 AM	160	8	7

- A typical “all stations” service to Central station takes 55 minutes along the Northern Line and 45 minutes along the North Shore.
- A typical “express” service to Central station takes 34 minutes along the Northern Line. Limited stops services run along the North Shore line and typically take around 40 minutes to reach Central.

Facilities

- 8.26 Hornsby station is well staffed with 13 staff on duty through the morning period (6am to 2pm) and 10 staff present from 2pm to 11pm. Overnight (11pm to 6am) there are four staff on duty. The station represents a high quality transport facility with real time information provided on the concourse and platforms. There are security cameras and emergency help points.
- *Station Access:* The station can be accessed at grade from either side of the rail line. The eastern entrance connects to car parking facilities and a pedestrian bridge used to access the eastern shopping precinct and surrounds. The western entrance connects to the main Hornsby bus terminal and shops along the Pacific Highway.
 - *Platform Access:* Escalators, steps and lifts provide access between the platforms and concourse. A bridge at the northern end of the platforms provides an additional facility for passengers interchanging between lines.
 - *Shelter:* The platforms are generally covered and spacious with planting and present a pleasant waiting environment for rail passengers. Over 80% of the overall platform length is covered
 - *Facilities:* The following facilities are provided on the station concourse:
 - 2 ticket machines,
 - 3 ticket windows,
 - 9 automated ticket gates,
 - A kiosk/newsagent,
 - There are also vending machines and a kiosk on the central platforms.

Buses

Services

- 8.27 The following summarises the bus services that stop in Hornsby:

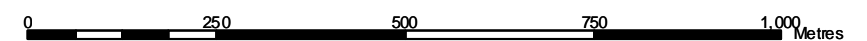
Route	Provider	From	To	Indicative Frequency	Days per Week
575	Shorelink	Hornsby Station	Hornsby Hospital	Medium	6
575	Shorelink	Hornsby Station	Turrumurra	Medium	7
587	Shorelink	Westleigh	Hornsby	Medium	7
588	Shorelink	Normanhurst	Hornsby	Medium	7
589	Shorelink	Hornsby	Pennant Hills	Low	5
589	Shorelink	Hornsby	Thornleigh	Low	6
592	Shorelink	Brooklyn	Hornsby	Low	6
593	Shorelink	Parklands Road	Hornsby	Medium	6
593	Shorelink	Hornsby	Leighton Place		
			Industrial Estate	High	5
595	Shorelink	Mt Colah Loops	Hornsby	Medium	7
596	Shorelink	Hornsby Heights	Hornsby	High	7
597	Shorelink	Berowra Heights	Hornsby	Medium	7
631	Glenorie	Castle Hill	Hornsby	Medium	5
632	Glenorie	Castle Hill	Hornsby	Low	5
633	Glenorie	Castle Hill	Hornsby	Low	5
747	Airbus	Central Coast	Sydney Airport	Low	5
N80	Shorelink	Hornsby	City	Medium	7
N90	Shorelink	Hornsby	City	Medium	7

Facilities

- 8.28 To the west of the station there are bus stops within a dedicated facility that provides shelter, seating and information. The bus bays are designed to accommodate low floor buses. There is also a taxi rank and site visit observations indicate it is well served by taxis.
- 8.29 As described above, the main bus stop facilities in Hornsby town centre are located to the west of the rail station. The proximity of the bus and rail services supports interchange between the two modes. The bus station is served by some twelve bus routes in addition to the night ride service.
- 8.30 Other bus stops through the town centre provide local access but are highly variable in quality and facilities provided. While some do have seating, most do not, many do not have any weather protection and none provide service or route information. Bus shelters tend to incorporate seating. Some bus stops do not have a hard standing or footpath access. The shelters are variable in terms of quality and appearance; some are likely to deter people from using public transport. Some stops are little more than a bus zone.



Rail Services		Bus Service Providers	
	Rail Station		Airbus
	Lines		Citybus Direct
	Bus Stop		Glenorie
	Bus Route Number		Harris Park
			Hills Bus
			NightRide
			Red Arrow
			Shorelink
			Sydney Buses
			Westbus
	Location & Direction		



HORNSBY : Public Transport



Vehicular Movement

Roads

8.31 The following table aggregates lengths of the road system within the Hornsby Study Area.

Type	Length (km)	Proportion
Motorway	0.0	0%
Arterial	2.7	10%
Sub Arterial	2.8	10%
Collector A	2.2	8%
Collector B	2.2	8%
Local A	0.5	2%
Local	18.4	62%
TOTAL	28.9	100%

8.32 The Pacific Highway is an arterial route on the approach to Hornsby town centre, to the intersection with George Street. Through Hornsby town centre the Pacific Highway is classified as 'collector A'. George Street is identified as the arterial connection through Hornsby and as the main route north via Jersey Street North. Pacific Highway is classified as arterial from the intersection with Bridge Street north to Hookhams Corner and the intersection with Galston Road, providing a link to Galston.

8.33 Edgeworth David Avenue and Sherbrook Road are classified as sub-arterial. Edgeworth David Avenue provides an east west link to Wahroonga, across the Sydney – Newcastle Freeway (F3). Sherbrook Road continues north to Asquith where it connects to the Pacific Highway.

8.34 There are several major intersections through the town centre including;

- Pacific Highway / College crescent,
- Pacific Highway / Edgeworth David Avenue,
- Pacific Highway / George Street,
- Bridge Road / George Street / Jersey Street North,
- Bridge Road / Pacific Highway,
- Edgeworth David Avenue / Sherbrook Avenue.

Parking

On-Street

8.35 Parking is restricted or prohibited along all arterial roads, and along many local roads adjacent to the rail station and shopping precincts. These areas of restricted parking extend furthest to the northeast, up to 700 metres from the station. These restricted on-street facilities are typically fully utilised during shopping hours.

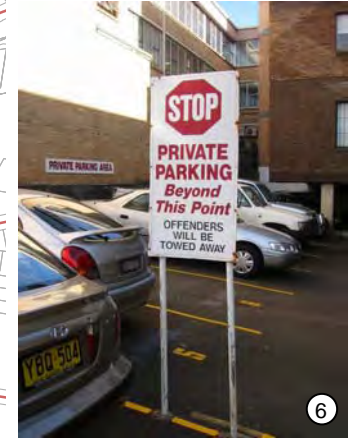
8.36 High concentrations of on-street parking can be observed during work hours in and around the industrial areas to the east of George Street, particularly along Hunter Lane.

8.37 High concentrations of unrestricted on-street parking extend up to 800 metres from the station on the eastern side of the study area. Much of this parking is related to the shopping facilities in that area. Further on-street parking can typically be observed stretching up to 300 metres to the southeast of the station.

Off-Street

8.38 Hornsby town centre contains significant quantities of off-street parking. The largest facility is provided for shoppers at the Westfield. A further restricted council car park is available for shoppers at the corner of George Street and Burdett Street. A number of restricted council car parks are also available in the streets behind the shops lining the Pacific Highway on the western side of the rail line.

8.39 Unrestricted commuter parking is available in three car parks, adjacent to the station. These include two car parks between George Street and the rail line, and one additional car park to the southwest of the station.



HORNSBY : Roads & Vehicles



9.0 Normanhurst

General

- 9.1 Normanhurst is a largely residential area, with the majority of retail and other commercial services supplied by neighbouring Hornsby to the north.
- 9.2 The area is split by Pennant Hills Road, the main arterial route around Sydney, carrying very large volumes of traffic. Plans to upgrade and/or replace the link between the F3 and M2, in conjunction with the construction of the Sydney Orbital, will have a significant impact on the area.
- 9.3 The area also contains a significant number of schools, and an industrial area in the west, towards Thornleigh.

Topography

- 9.4 Pennant Hills Road runs along a ridge between land that falls away to the Coups Creek Valley in the south, and Waitara Creek in the north. The ridge occupied by Pennant Hills Road is itself very undulating.
- 9.5 The area south of Pennant Hills Road is particularly steep.

Land Use

- 9.6 Summary – within a 1 km radius of Normanhurst station -

Type	Total (1000 m ²)	Proportion
Residential High	0	0%
Residential Medium	0	0%
Residential Low	2441	78%
Business & Industrial	43	1%
Open Space & Env Protected	210	7%
Special Uses	423	14%
TOTAL	3118	100%

Commercial

- 9.7 A small number of shops are located on Denman Parade, immediately south of the station. This area consists of food outlets, a post office and a number of other businesses that cater to local residents.
- 9.8 The Sefton Road industrial area is located to the southwest of the area. The majority of industry is building products related, with presence from CSR, Boral and Pioneer. The area also contains office, warehouse and distribution premises.

Residential

- 9.9 All residential land use in the area is of a low density.

Open Space/Parklands

- 9.10 The most significant area of open space is comprised of Normanhurst Park and the land surrounding Waitara Creek stretching to the northwest.
- 9.11 Other open space includes Kenley Reserve to the west of the station, bound by the rail line to the north and Pennant Hills Road to the south. A disused waste facility and brickyard, located to the west of and adjacent to Kenley Reserve, represent significant areas of vacant, open land.

- 9.12 In addition, Davidson Park occupies a small parcel of land, directly east of the railway station.

Other

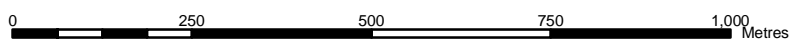
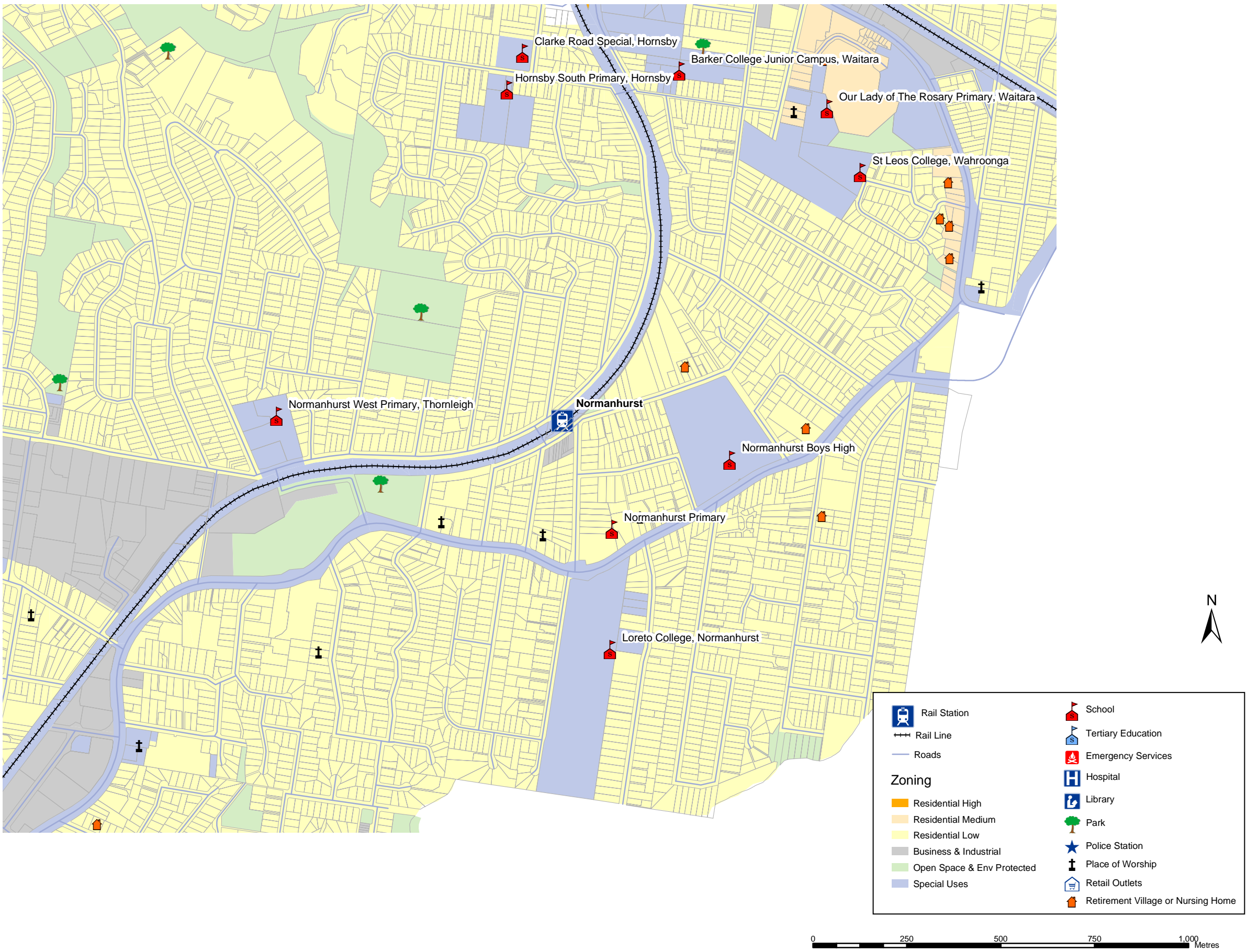
- 9.13 Five schools are located in Normanhurst. In particular, Normanhurst Boys High School and Loreto College occupy areas either side of Pennant Hills Road. A significant number of students from these schools use the train or school bus services to travel to school.

- 9.14 The area also contains the following facilities:

- 3 nursing homes/retirement villages,
- 4 churches,
- 2 child care centres/kindergartens.

Issues

- Impact of Pennant Hills Road on pedestrian amenity and the local environment.
- Lack of bicycle storage facilities





Pedestrians

- 9.15 The majority of pedestrian activity is generated by weekday commuters and, at specific times of the day, by school students in the area, many of which travel to school via Normanhurst station
- 9.16 The six lane Pennant Hills Road is a major barrier to pedestrian movement through Normanhurst. Five traffic signals in the area provide pedestrian crossing facilities across Pennant Hills Road, however these are clustered to the east and to the west of the study area. The most direct route to Normanhurst station for the majority of residents south of Pennant Hills Road is via a pedestrian overpass, running between Loreto College and Normanhurst Public School. This footbridge is accessed via ramps and stairs from Pennant Hills Road. The height of this pedestrian bridge may discourage some pedestrians, and a significant delay is caused by having to traverse the bridge.
- 9.17 The rail line obstructs only a small number of pedestrian trips through the area because the station itself is the greatest attractor and producer of pedestrian trips in the area. Four pedestrian overpasses of the rail line are provided. The most popular of these are located at the rail station, and include:
- A pedestrian only overpass located directly over the station is the most popular pedestrian crossing of the rail line, and
 - Footpaths on Buckingham Avenue road bridge also, immediately west of the station.
- 9.18 A number of footpaths help to improve access within the area. In particular, a pedestrian path runs along the eastern side of the rail line, linking the end of Edwards Road with the railway station.
- 9.19 A signalised pedestrian crossing of Malsbury Road at the station entrance provides access to the station from the north. The south entrance to the station is accessed via uncontrolled (zebra) crossing of Denman Parade and Normanhurst Road. Fences have been erected around the intersection of Normanhurst Road and Denman Parade to prevent jay-walking through the intersection.
- 9.20 Further pedestrian crossings and refuges are provided in front of schools within the area. These include:
- Signalised crossing of Osborne Road, adjacent to Loreto College,
 - Zebra crossing of Normanhurst Road in front of Normanhurst Primary School,
 - Zebra crossing of Dartford Road in front of Normanhurst West Public School,
 - Zebra crossing of Unwin Road, adjacent to St Leo's College, and
 - Zebra crossing of Clarke Road, adjacent to Barker College Junior School.

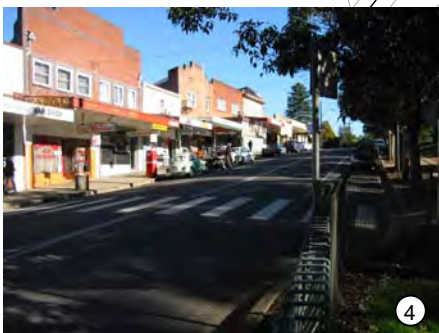
Cyclists

Routes

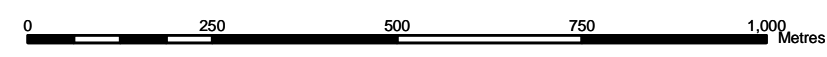
- 9.21 The undulating topography of the area is generally not amenable to cycling, however the 1998 Hornsby Bike Plan proposed a "trunk route" bicycle lane following the relatively level terrain to the immediately east of the railway line, and an "interim route" to follow Denman Parade, Edwards Road and Unwin Road. To date, the only marked bicycle routes through the area are:
- Kerbside bicycle lane on the western side of Milson Parade and Malsbury Road.
 - Well marked shared parking and bicycle lanes in each direction on Denman Parade, between the station and Edwards Road.

Facilities

- 9.22 No bicycle storage facilities are available in Normanhurst. There does not currently appear to be a great demand for bicycle storage facilities, with only one or two bicycles occasionally locked to fences at the rail station.



Pedestrian Facilities	Cycle Facilities
Path	Bicycle Route
Desire Lines	Bicycle Storage
Steps	Roads
Overpass	
Underpass	
Refuge or Crossing	
Signals	
	Photographs
	Location & Direction



NORMANHURST : Pedestrians & Cyclists



Public Transport

Rail

Services

9.23 Express services to and from the city do not stop at Normanhurst, however a number of “limited stops” peak services stop all stations between Hornsby and Epping (including Normanhurst), and then run as express services into the city, reducing travel time for these passengers.

9.24 Service Frequencies are as follows:

To City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	AM Peak
Weekdays	4:27:00 AM	1:11:00 AM	64	19	15
Weekends	4:44:00 AM	1:11:00 AM	41	30	30

From City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	PM Peak
Weekdays	4:44:00 AM	2:40:00 AM	64	21	12
Weekends	6:10:00 AM	2:40:00 AM	41	30	30

- A typical “all stations” service to Central station takes 47 minutes.
- A typical “limited stops” service to Central station takes 40 minutes.

Facilities

9.25 Normanhurst station is a small station on the Northern line, with only one staff on duty between the hours of 6:00am and 6:00pm. The two tracks running through the station are served by two side platforms.

- *Station Access:* The station can be accessed by either side of the rail line, at Denman Parade and Milson Parade.
- *Platform Access:* The platforms are accessed by short pedestrian ramps down from street level. The platforms are connected with a pedestrian bridge over the rail tracks. This bridge is accessed via stairs on each side. A rail ticket is not required to use this crossing.
- *Shelter:* A station building is provided on each platform, incorporating shelter and seating for waiting passengers. The larger of these main buildings is located on the city-bound platform. Less than 10% of the entire platform length is covered.
- *Facilities:* The station includes the following platforms.
 - One ticket machine is situated on each platform
 - A manned ticket window is located on the city-bound platform
 - 0 automated ticket gates
 - Public Toilets
 - Restricted parking on Denman Parade immediately south of the station provides a kiss and ride facility. A taxi zone is also located in this area.

Buses

Services

9.26 The following table summarises the bus services travelling through the Normanhurst study area:

Route	Provider	From	To	Indicative Frequency	Days per Week
587	Shorelink	Westleigh	Hornsby	Med	7
588	Shorelink	Normanhurst	Hornsby	Med	7
589	Shorelink	Hornsby	Pennant Hills	Low	5
589	Shorelink	Hornsby	Thornleigh	Low	6
631	Glenorie	Castle Hill	Hornsby	Med	5
632	Glenorie	Castle Hill	Hornsby	Low	5
633	Glenorie	Castle Hill	Hornsby	Low	5
N80	NightRide	Hornsby	City	Med	7

9.27 Routes 587 and 588 provide more local services to the surrounding suburbs of Westleigh, Thornleigh, Normanhurst and Hornsby, travelling along sub-arterial and collector roads near the rail line.

9.28 The 631 – 633 services provided by Glenorie Bus Company are more focused on linking Castle Hill to Hornsby station, limited to travelling along Pennant Hills Road through this area only.

Facilities

9.29 Bus facilities in Normanhurst are very basic.

9.30 The main bus stop for route 588 is situated at the northern entrance to the rail station, on Malsbury Road and consists of an older style shelter on the southern side of Malsbury Road, with capacity for around 5 passengers, basic timetable information and lighting provided by surrounding street lights. Across the road, the stop is more basic, with no shelter and only NightRide information provided. An additional sheltered stop is provided on this route adjacent to the schools near Neutral Road in the very north of the area.

9.31 Additional sheltered stops are provided on Pennant Hills Road outside Normanhurst Boys High School and on Hinemoa Avenue, near the intersection with Pennant Hills Road. These shelters have no information and appear to provide largely for school bus services.

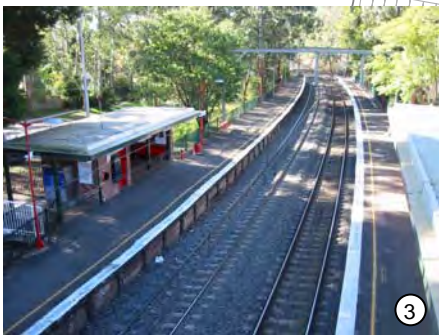
9.32 The remaining bus stops in the area are generally marked by standard bus zone signs, or are simple bus stop signs attached to existing telegraph poles.



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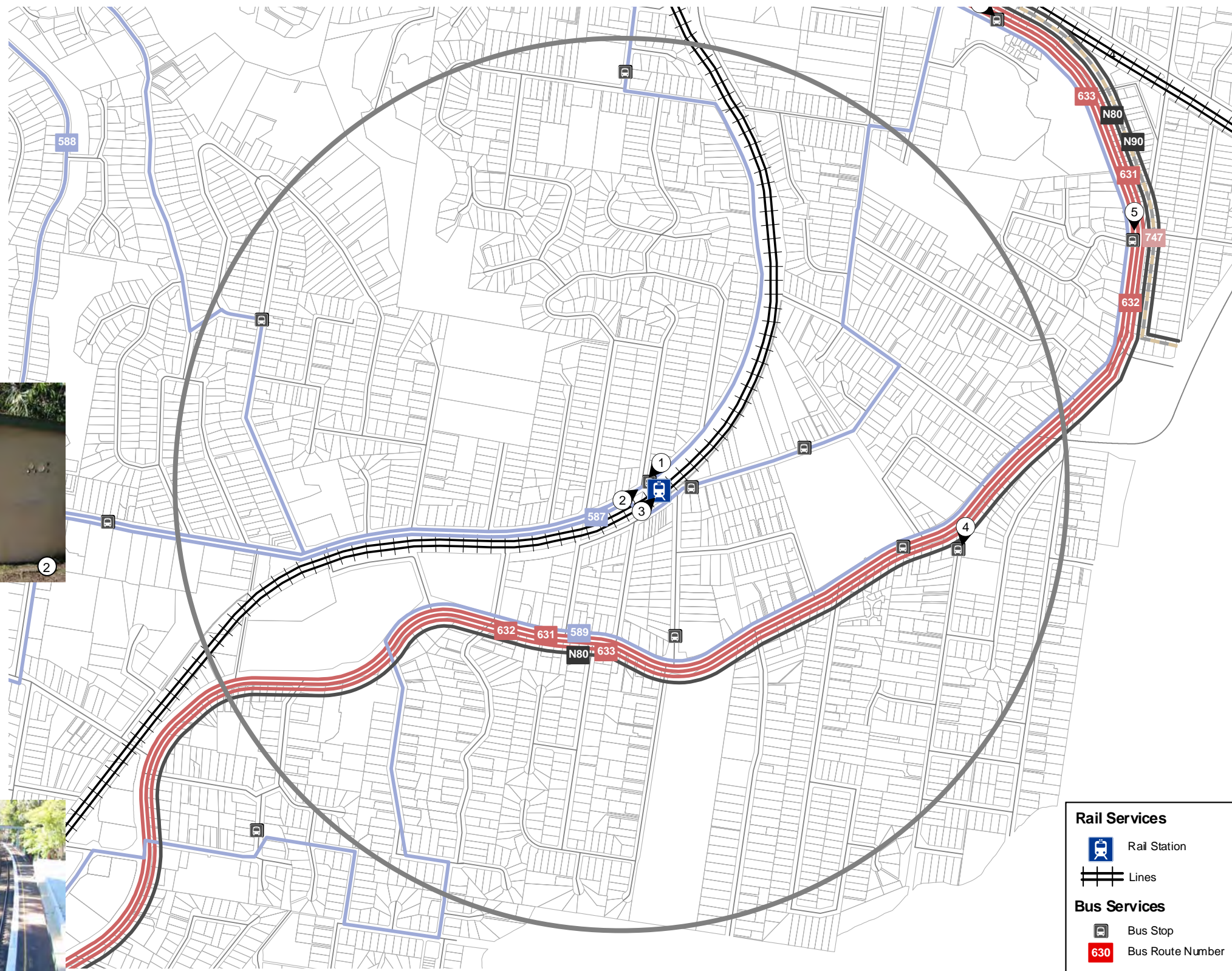
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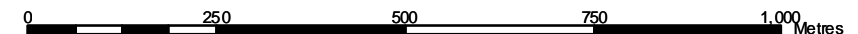
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Rail Services		Bus Service Providers	
	Rail Station		Airbus
	Lines		Citybus Direct
	Bus Stop		Glenorie
	Bus Route Number		Harris Park
	Location & Direction		Hills Bus
			NightRide
			Red Arrow
			Shorelink
			Sydney Buses
			Westbus



NORMANHURST : Public Transport



Vehicular Movement

Roads

9.33 The following table aggregates lengths of road system within a 1 km radius of Normanhurst Station.

Type	Length (km)	Proportion
Motorway	0.1	0%
Arterial	2.2	8%
Sub Arterial	2.9	11%
Collector A	1.8	7%
Collector B	0.9	3%
Local A	4.4	17%
Local	14.2	54%
TOTAL	26.5	100%

9.34 The road network in this area is dominated by Pennant Hills Road, forming the northern most section of the main arterial route around Sydney, National Route 7.

9.35 The intersection of the F3 and Pennant Hills Road is by far the most significant intersection in the study area.

9.36 Intersections of significance at the local level include:

- Milsons Road/Dartford Road,
- Pennant Hills Road/Normanhurst Road, and
- Normanhurst Rd/Denman Parade.

Parking

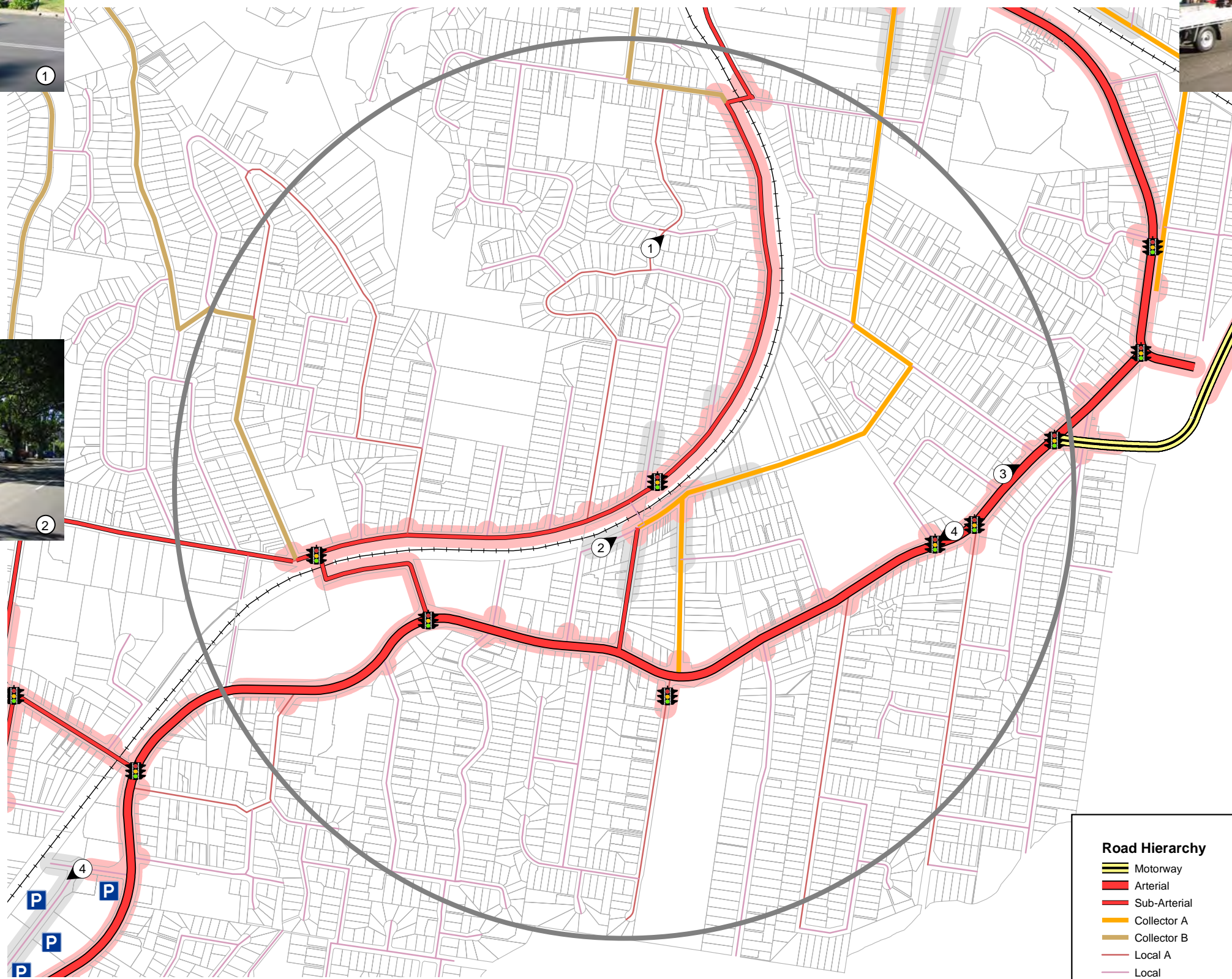
On-Street

9.37 There is only minimal on-street parking observed in Normanhurst, with most unrestricted on-street parking limited to a distance of only 100 metres from the station.

9.38 Parking is prohibited along Milson Parade and Malsbury Road, and is restricted in areas of Denman Parade immediately adjacent to the station.

Off-Street

9.39 There is no official off-street parking provided in Normanhurst, however a number of gravel bays to the west of Denman Parade accommodate perpendicular parking in land adjacent to the railway line.



Road Hierarchy		Parking	
	Motorway		On Street Restricted
	Arterial		On Street Unrestricted Full
	Sub-Arterial		Off Street Parking
	Collector A		Photographs
	Collector B		
	Local A		Location & Direction
	Local		
	Controls		
	Signals		





10.0 Pennant Hills

General

- 10.1 Pennant Hills is focused on Pennant Hills station and the adjacent shopping area in Yarrara Road. Pennant Hills Road presents a significant barrier to local access as does the rail line that runs parallel. To the south of the station the rail line bridges the Pennant Hills Road and diverges south, while the Pennant Hills Road continues west.
- 10.2 Pennant Hills is classed as a district centre, ranked as the third largest commercial centre in Hornsby Shire.

Land Use

- 10.3 Summary – within a 1 km radius of Pennant Hills station -

Type	Total (1000 m ²)	Proportion
Residential High	0	0%
Residential Medium	0	0%
Residential Low	2127	69%
Business & Industrial	136	4%
Open Space & Env Protected	573	19%
Special Uses	238	8%
TOTAL	3073	100%

Commercial

- 10.4 Pennant Hills is the second largest urban centre in Hornsby shire in terms of total commercial floor space, comprising of the City View Office Park alongside the Pennant Hills Road, and the Pennant Hills Market place in the shopping precinct adjacent to Pennant Hills station.
- 10.5 Other commercial activity in the area includes petrol stations, fast food outlets and motels. The shopping precinct to the west of the station also includes additional retail outlets serving the local community and facilities such as a fitness centre.

Residential

- 10.6 Pennant Hills is dominated by low-density residential development, bounded by the Pennant Hills Park to the south-east and Berowra Valley National park to the north-west.
- 10.7 Anecdotal evidence suggests densities in the area are increasing as large plots are subdivided with one or more separate dwellings built in the former garden of the original property, which is retained.
- 10.8 The topography and established trees in the area serve to reduce the impact of the changes, maintaining the feel of low-density development.

Open Space/Parklands

- 10.9 Pennant hills is well served for open space. The Pennant Hills Park, part of the Lane Cove National, lies to the south-east and Berowra Valley National park to the north-west. There are several smaller gardens and ovals available to the public.
- 10.10 Pennant Hills Park includes sporting facilities, including tennis courts, a hockey pitch and ovals.

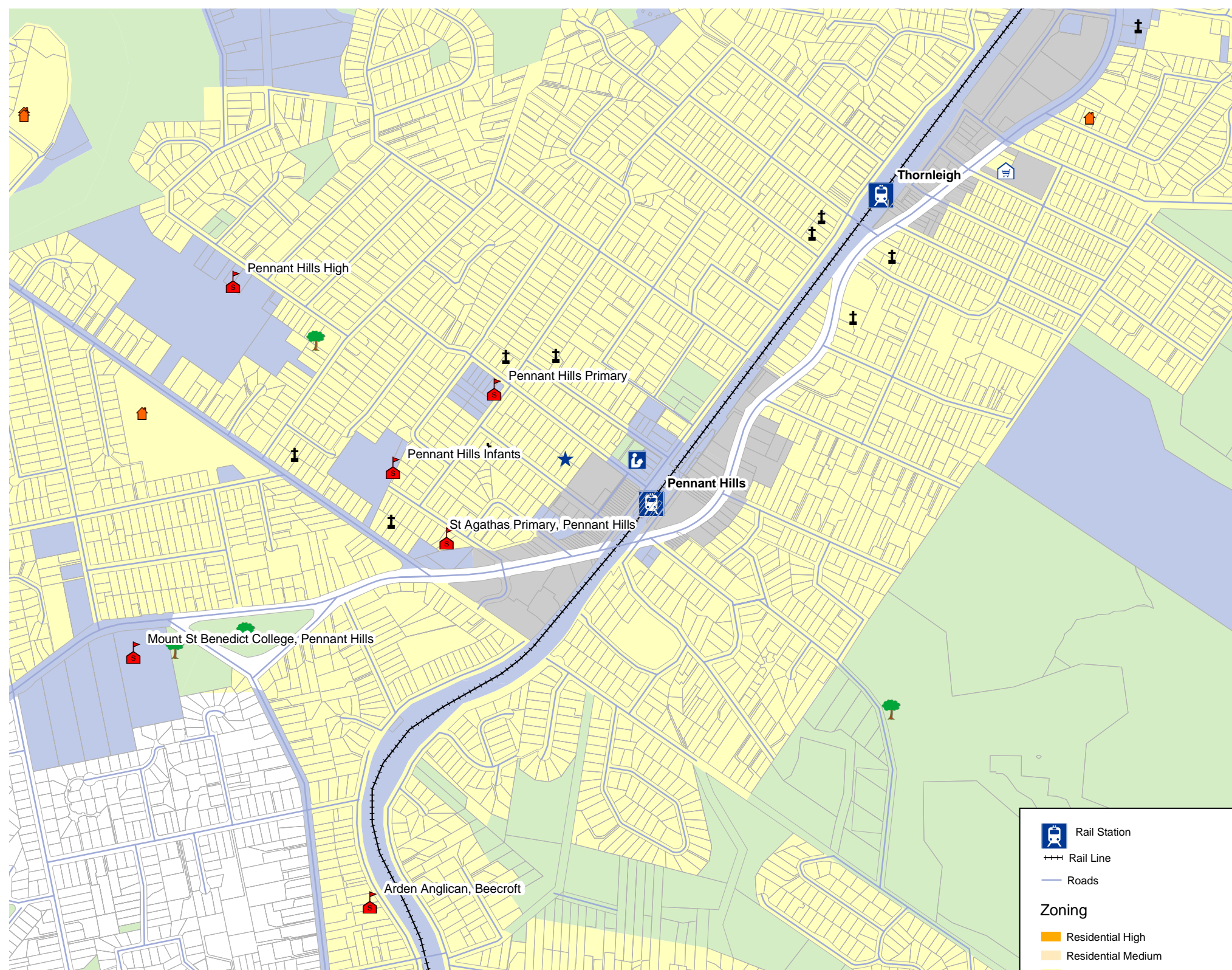
Other

- 10.11 There are several schools in the area, predominantly serving younger children.

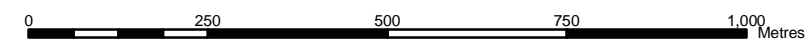
- 10.12 There are primary and high schools in the area in addition to other local community facilities.

Issues

- The most significant issue facing Pennant Hills is the future of the Pennant Hills Road. The investigation into the F3 to M2 link is ongoing.
- Pennant Hills Road creates a barrier to movement and severs the local residential community.
- There are good bus facilities.



	Rail Station		School
	Rail Line		Tertiary Education
	Roads		Emergency Services
Zoning			Hospital
	Residential High		Library
	Residential Medium		Park
	Residential Low		Police Station
	Business & Industrial		Place of Worship
	Open Space & Env Protected		Retail Outlets
	Special Uses		Retirement Village or Nursing Home





Pedestrians

- 10.13 Pennant Hills Road and the rail line present major barriers to pedestrian movement in the local area. There is a pedestrian bridge across Pennant Hills Road, just to the south of the station, and at grade crossing facilities at the intersection of The Crescent and Pennant Hills Road. Pennant Hills Station provides rail line crossing. Immediately to the south of the station, Pennant Hills Road crosses the rail line, providing an additional rail line crossing for pedestrians. The next crossing point to the south is at Chapman Avenue in Beecroft.
- 10.14 To the north there are no rail crossings before reaching Thornleigh Station.
- 10.15 Pedestrians are generally well served in the locality with footpaths along roads and also providing short cuts between streets. Longer distance walking paths are provided through the open land areas to the north and south.
- 10.16 Several intersections currently do not have crossing facilities but appear to both be on pedestrian desire lines and present relatively difficult crossings to pedestrians:
- Stevens Street / Bellamy Street,
 - Fisher Road, near Trebor Road,
 - Britannia Street / Cecil Avenue.

Cyclists

Routes

- 10.17 There are some on road bicycle lanes, for example in The Crescent. The residential nature of many of the local roads makes them suitable for cycling along, however, the local topography is unlikely to encourage cyclists. In addition the Pennant Hills Road is also recognised as a significant barrier to cycling although Yarrara Road and The Esplanade to the west do provide a 'bypass' to some extent.

Facilities

- 10.18 There are few dedicated cycle facilities in the area. Parking is provided at the station with 5 bicycle u-rails in Yarrara Road.



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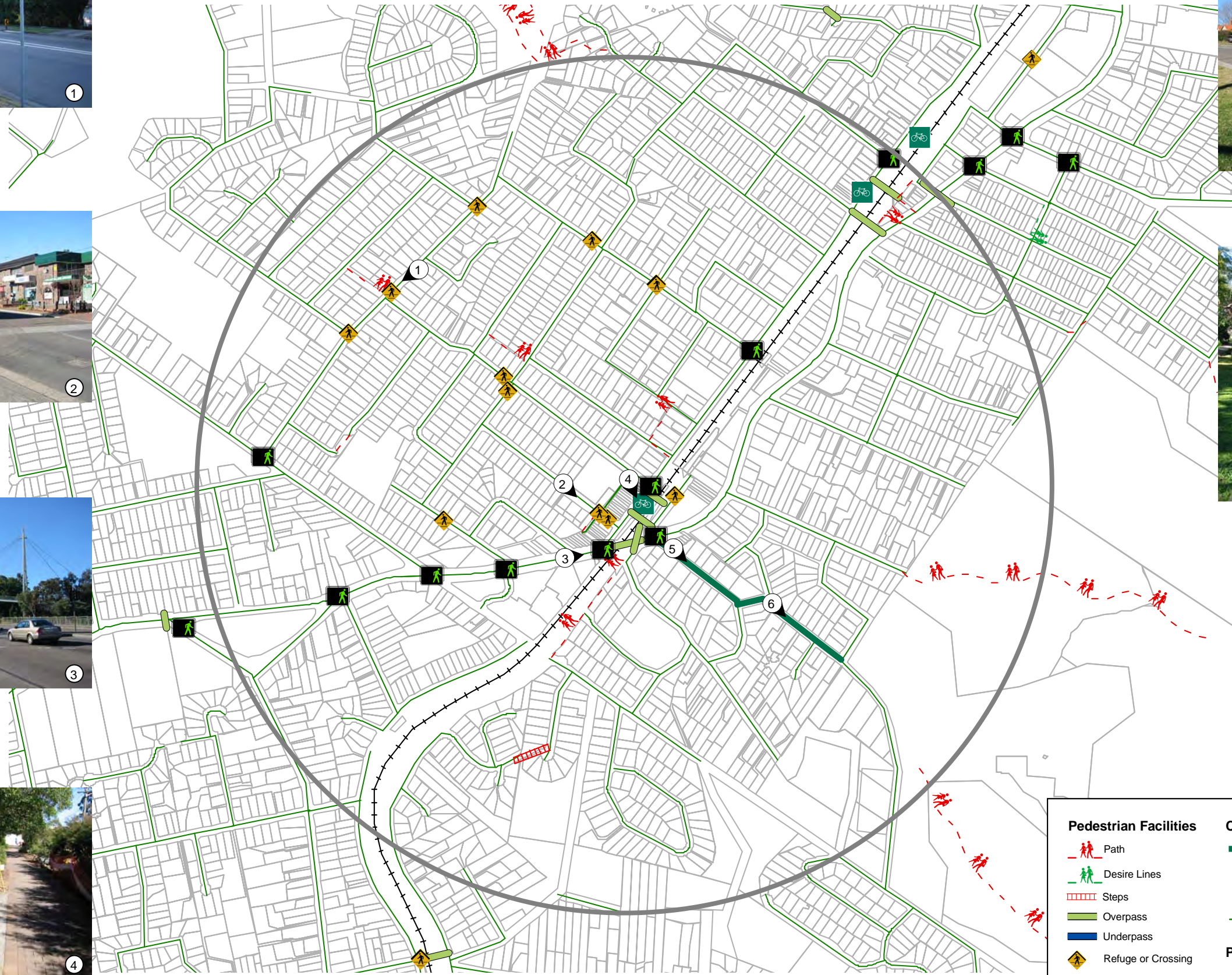
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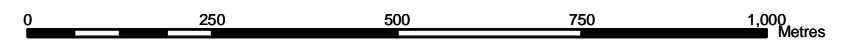
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Pedestrian Facilities	Cycle Facilities
Path	Bicycle Route
Desire Lines	Bicycle Storage
Steps	Roads
Overpass	
Underpass	
Refuge or Crossing	
Signals	
	Photographs
	Location & Direction



PENNANT HILLS : Pedestrians & Cyclists



Public Transport

Rail

Services

- 10.19 Pennant Hills station lies on the Northern Line with direct services north to Hornsby and beyond to the Central Coast and south to Sydney CBD via Strathfield.

To City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	AM Peak
Weekdays	4:31:00 AM	1:15:00 AM	67	19	15
Weekends	4:48:00 AM	1:15:00 AM	41	30	30

From City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	PM Peak
Weekdays	4:39:00 AM	2:36:00 AM	66	20	11
Weekends	6:06:00 AM	2:36:00 AM	41	30	30

- A typical “all stations” service to Central station takes 45 minutes.
- A typical “limited stops” service to Central station takes 35 minutes.

- 10.20 Local residents can travel directly to Hornsby and the Sydney CBD in addition to the Rhodes Peninsula, the focus of considerable mixed use development, and via connections at Strathfield to Parramatta and connections from Epping to North Ryde following the completion of the first stage of the Parramatta Rail Link.

Facilities

- 10.21 Pennant Hills Station is located on the west side of the Pennant Hills Road. It is a pleasant station, manned 24 hours per day, with three people on from 6am to 2pm, two staff from 2pm to 10pm and one through the night from 10pm to 6am. Lighting around the station is good and there are security cameras.

- *Station Access:* Two footbridges link Yarrara Road with Railway Street. One of these footbridges constitutes the main station concourse. Access to the main station concourse is via a ramp from Railway Street, and via stairs from Yarrara Road.
- *Platform Access:* Lifts provide access to both platforms for those with mobility difficulties.
- *Shelter:* The main concourse and platforms have good weather protection. Over 50 percent of the entire platform length is covered.
- *Facilities:* The main station concourse includes the following facilities:
 - Two ticket windows,
 - One auto ticket machine,
 - A newsagent kiosk on the bridge,
 - 0 automated ticket gates,
 - There are male and female toilets provided but a step up into the toilet facilities prohibits easy access by those with mobility impairments,
 - In addition, a local short-stay (15 minute) car park in Yarrara Road serve ‘kiss and ride’, and a sheltered taxi rank is located on Ramsay Road.

Buses

Services

- 10.22 The following summarises the bus services that stop in the Pennant Hills study area:

Route	Provider	From	To	Indicative Frequency	Days per Week
587	Shorelink	Westleigh	Pennant Hills	Medium	5
589	Shorelink	Hornsby	Pennant Hills	Low	5
589	Shorelink	Hornsby	Thornleigh	Low	6
625	Harris Park	Parramatta	Pennant Hills	Medium	5
626	Harris Park	Cherrybrook	Pennant Hills	Medium	7
626	Harris Park	Pennant Hills	Castle Hill Towers	Low	5
631	Glenorie	Castle Hill	Hornsby	Medium	5
631	Glenorie	Castle Hill	Pennant Hills	Low	5
632	Glenorie	Castle Hill	Hornsby	Low	5
632	Glenorie	Castle Hill	Pennant Hills	Medium	7
633	Glenorie	Castle Hill	Hornsby	Low	5
633	Glenorie	Castle Hill	Pennant Hills	Medium	6
		Castlewood			
634	Glenorie	Estate	Pennant Hills	Medium	6
636	Glenorie	Glenhaven	Pennant Hills	Medium	7
637	Glenorie	Glenorie	Pennant Hills	Low	7
		Berrilee &			
638	Glenorie	Galston	Pennant Hills	Low	7
639	Glenorie	Dural	Pennant Hills	Low	6
640	Glenorie	Kenhurst	Pennant Hills	Low	6
N80	Shorelink	Hornsby	City	Medium	7

- 10.23 Many of the bus routes originating from Pennant Hills Station serve communities to the west, such as Cherrybrook, West Pennant Hills and Dural, which are not on served directly by rail. Some services to run through the Beecroft area and two run north along the Pennant Hills Road.

- 10.24 To the west of the station, bus route 587 serves the local area and stops in Yarrara Road. The 587 bus stops are of a much poorer quality than those in Station Street.

Facilities

- 10.25 Railway Street, to the east of the station is a major focus for bus services. Pennant Hills Station is a terminus for all bus services travelling along the Pennant Hills Road. The facilities are very good with clear information provided at the stops, weather protection and seating. The proximity of the bus stops to the station facilitates interchange.

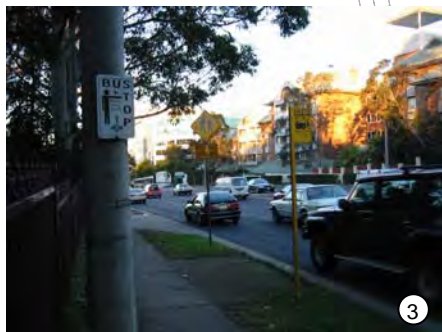
- 10.26 A number of older style bus stops are located on Yarrara Road, to the west of the station. These shelters currently only service one bus route.



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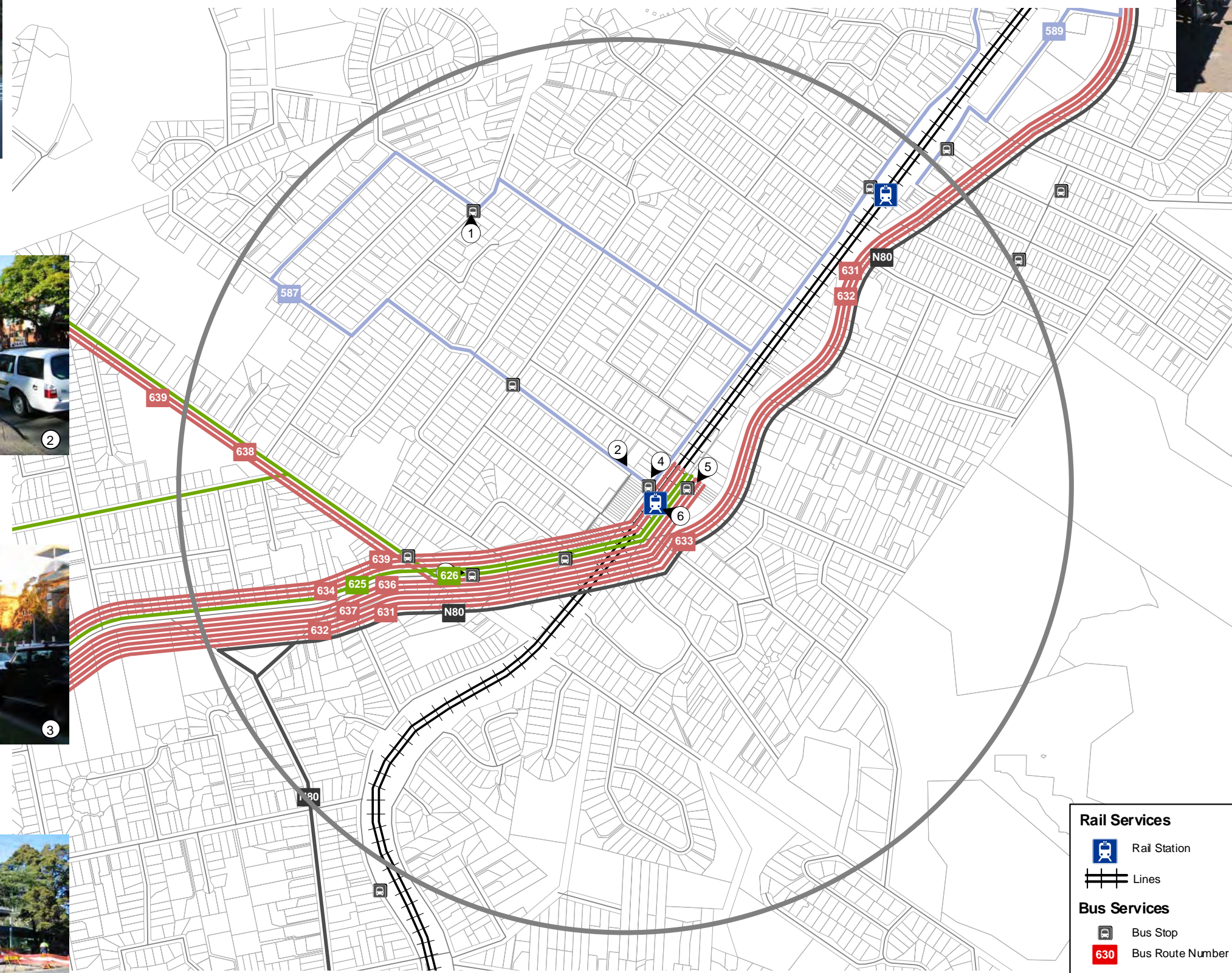
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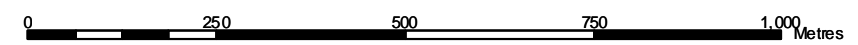
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Rail Services		Bus Service Providers	
	Rail Station		Airbus
	Lines		Citybus Direct
	Bus Stop		Glenorie
	Bus Route Number		Harris Park
	Location & Direction		Hills Bus
			NightRide
			Red Arrow
			Shorelink
			Sydney Buses
			Westbus



PENNANT HILLS : Public Transport



Vehicular Movement

10.27 The following table aggregates lengths of road system within a 1 km radius of Pennant Hills Station.

Type	Length (km)	Proportion
Motorway	0.0	0%
Arterial	2.9	11%
Sub Arterial	2.7	10%
Collector A	0.1	1%
Collector B	0.0	0%
Local A	1.7	6%
Local	19.2	72%
TOTAL	26.7	100%

10.28 The arterial roads through the area are Pennant Hills Road, Beecroft Road and Boundary Road. There are major intersections at Pennant Hills Road / Boundary Road and Pennant Hills Road and Beecroft Road.

10.29 Yarrara Road and The Esplanade are classified as sub-arterials, as are Bellamy Street and Stevens Street. The intersection of Pennant Hills Road and Yarrara Road is also a major intersection.

Parking

On-Street

10.30 Parking in the immediate vicinity of Pennant Hills Station is restricted, with extensive on-street parking in the streets immediately beyond the restricted areas on both the east and west sides of Pennant Hills Road. On-street parking, believed to be commuter related, extends to about 500m from the station to the north and about 300m from the station to the south.

10.31 No parking is permitted along the arterial roads.

Off-Street

10.32 There are a number of off-street car parks around the shopping precinct on Yarrara Road, serving the retail centre. There is no off-street car park for rail commuters.



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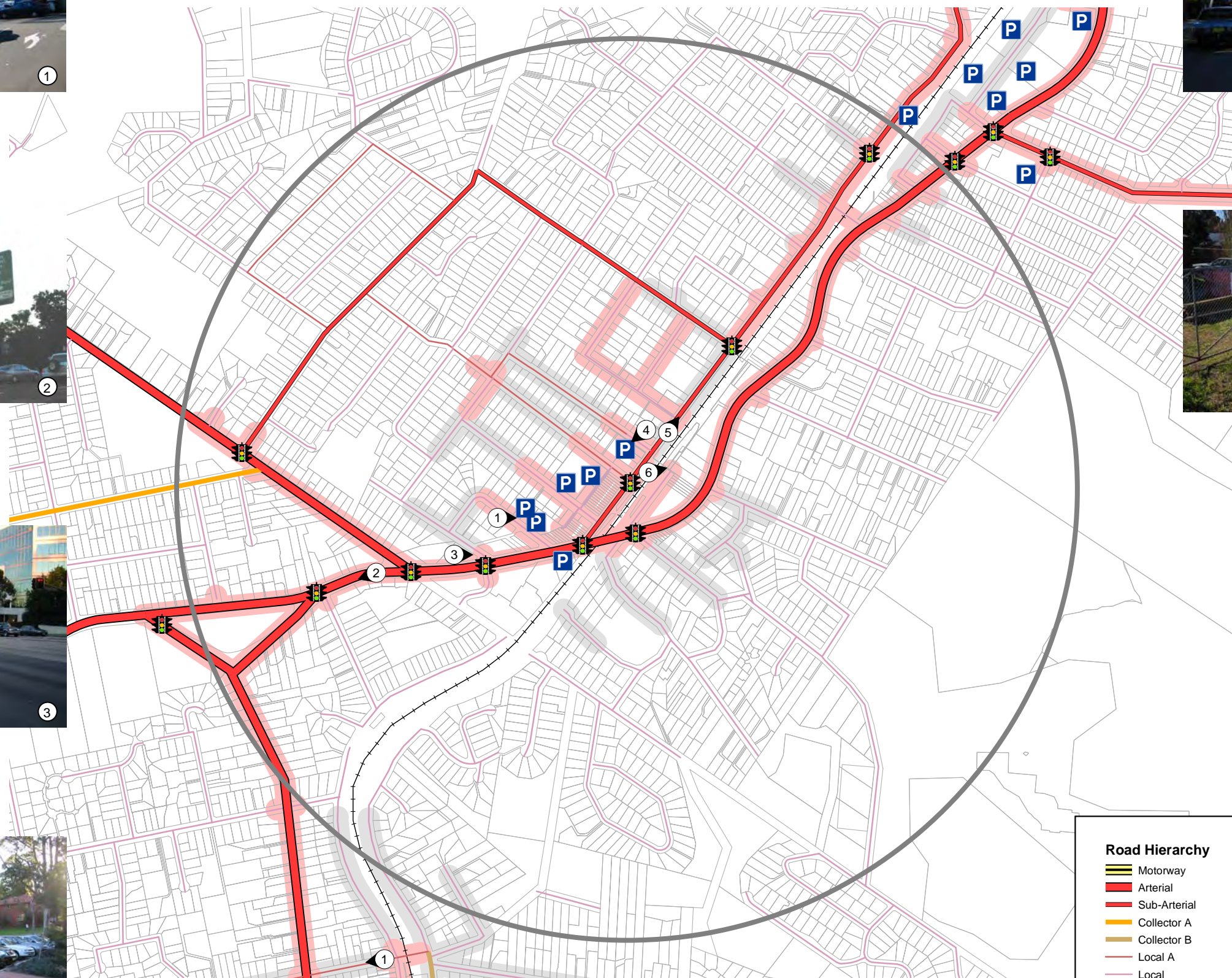
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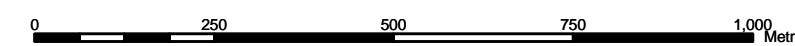
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Road Hierarchy		Parking	
	Motorway		On Street Restricted
	Arterial		On Street Unrestricted Full
	Sub-Arterial		Off Street Parking
	Collector A		Photographs
	Collector B		Location & Direction
	Local A		
	Local		
Controls			
	Signals		



PENNANT HILLS : Roads & Vehicles



11.0 Thornleigh

General

- 11.1 Thornleigh lies immediately to the north of Pennant Hills and is also focused on the train station and Pennant Hills Road. There is a reasonable concentration of commercial activity in the land bounded by Pennant Hills Road and the rail line.
- 11.2 The Pennant Hills Road and the rail line are major barriers to movement, separating the smaller part of Thornleigh, lying to the east of the rail line from the greater part of the suburb on the west.
- 11.3 Immediately to the east of Thornleigh is the boundary between Hornsby Shire and Ku-ring-gai.
- 11.4 Thornleigh's classification as a local centre is expected to be upgraded to a district centre in the near future.

Land Use

- 11.5 Summary – within a 1 km radius of Thornleigh station -

Type	Total (1000's m ²)	Proportion
Residential High	0	0%
Residential Medium	0	0%
Residential Low	2160	70%
Business & Industrial	299	10%
Open Space & Env Protected	353	11%
Special Uses	285	9%
TOTAL	3097	100%

Commercial

- 11.6 Thornleigh is the third largest urban centre in Hornsby shire in terms of total commercial floor space. There is a significant commercial complex just to the north of the station, occupying the land bounded by the rail line and Pennant Hills Road and centred on Central Avenue. A mix of business have premises in Thornleigh, including McDonalds (restaurant and training centre), RTA Motor Registry, bulky goods retail (hardware store) and other office and retail space.
- 11.7 There are numerous service stations along Pennant Hills Road, largely serving traffic heading to or from the F3. There are also some car dealerships, but these tend to be focused towards Pennant Hills.
- 11.8 To the east of the Pennant Hills Road is the Parkway Plaza shopping centre, offering local retail services. While this is a significantly smaller retail centre than offered at Pennant Hills it is likely to serve the immediate residential area and areas to the east, via The Comenarra Parkway.

Residential

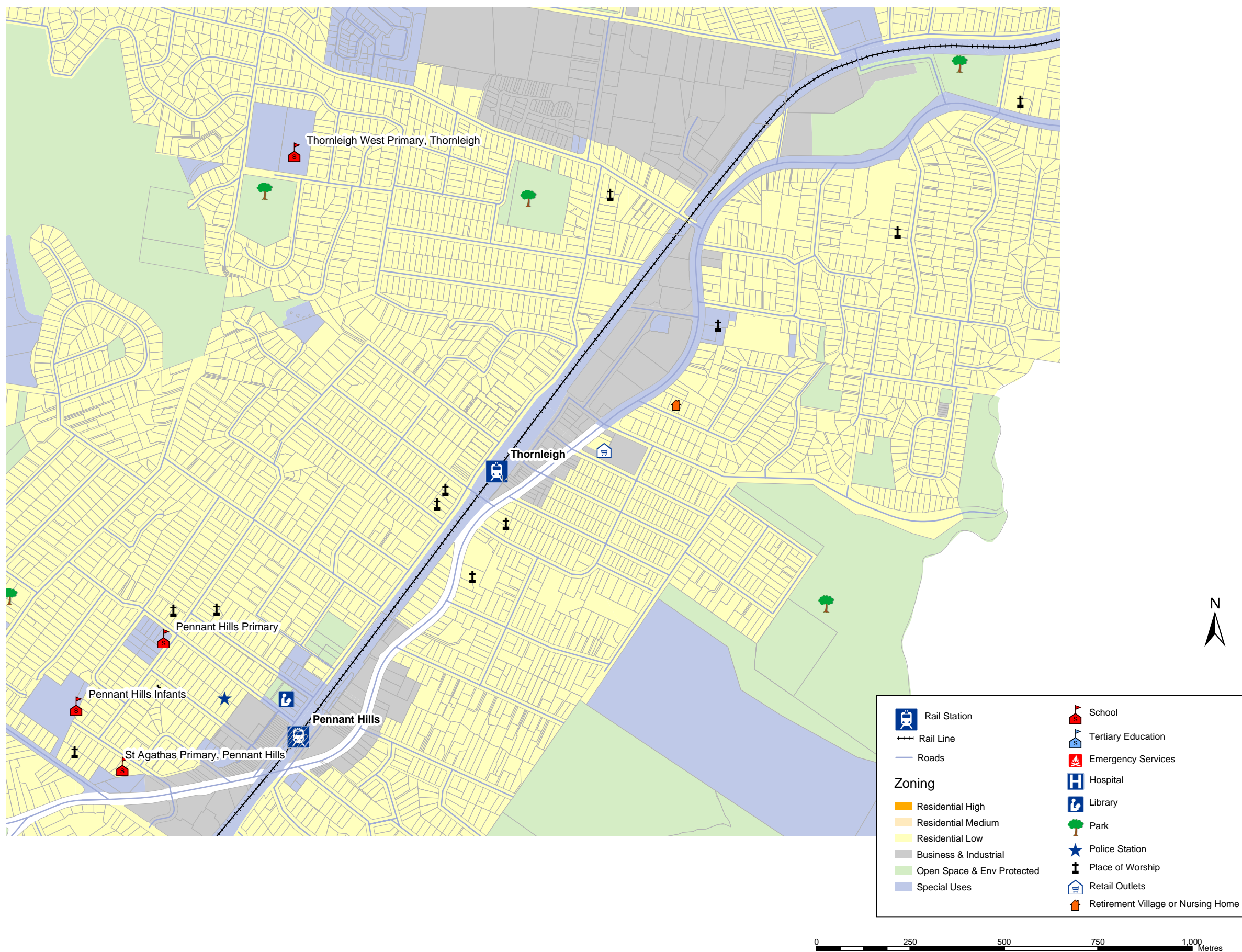
- 11.9 Low density residential development dominates Thornleigh. To the east the residential area is bounded by the Lane Cove National Park and the Sydney Adventist Hospital, just in to Ku-ring-gai Council area.
- 11.10 To the west of the rail line Thornleigh sits between Pennant Hills to the south and Normanhurst and Westleigh to the north. Berowra Valley National Park bounds Thornleigh to the west.

Other

- 11.11 Thornleigh is well served for open space with Lane Cove and Berowra Valley National Parks. There are also small parks and ovals within the residential area.
- 11.12 In contrast to neighbouring areas of the Shire, there is only one school in the Thornleigh area: Thornleigh West public School.
- 11.13 As mentioned above, Sydney Adventist Hospital lies just to the east of Thornleigh in the Ku-ring-gai Council area.

Issues

- Impact of Pennant Hills and Carlingford Roads on pedestrian amenity and the local environment.
- The poor visibility of buses within the area, particularly in comparison to the provision for car access and parking at Carlingford Court.
- Integration of the three LGA areas at Carlingford and the need to plan across the boundaries.
- Probability of pressure to increase residential densities close to central Carlingford, possibly influenced by the improved accessibility of the area following completion of the second stage of the PRL.
- Difficult for buses accessing Pennant Hills Road from local streets, particularly at the Dunrossil Avenue intersection.





Pedestrians

- 11.14 The rail line and Pennant Hills Road are significant barriers to pedestrians in the locality. Pennant Hills Road has pedestrian crossings at grade at the intersections with Bellevue Street, The Comenarra Parkway, Loch Maree Avenue and Duffy Avenue and there is a pedestrian footbridge over the road at the intersection with Station Street.
- 11.15 The only opportunities to cross the rail line are Wells Street, immediately to the south of the station and Duffy Avenue, some way north. Local topography further restricts access through the area.
- 11.16 Footpaths are generally provided but there are areas without them where 'goat tracks' are evident, particularly Bellevue and Wood Streets and in the Nicholson Avenue area, including side roads.
- 11.17 Recreational walking paths extend from the residential area in to the National Parks to the east and west.

Cyclists

Routes

- 11.18 There are few identified cycle paths or lanes in the area. Line marking and signs exist in Duffy Avenue and along Quarter Sessions Road.

Facilities

- 11.19 There are some facilities, mainly associated with the station. On the west side of the station there is a cycle rack that was not being used at the time of the site visit, however, it was a design that does not enable a cyclist to secure the bike frame and wheels properly. Cycle hoops are provided in the CityRail car park and one bicycle was parked at the time of the site visit.



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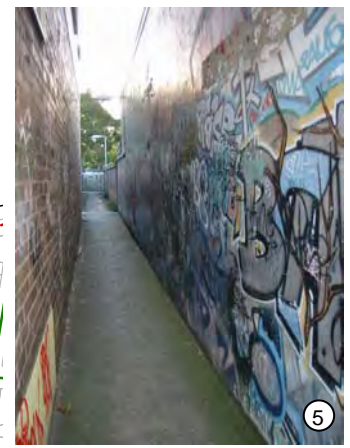
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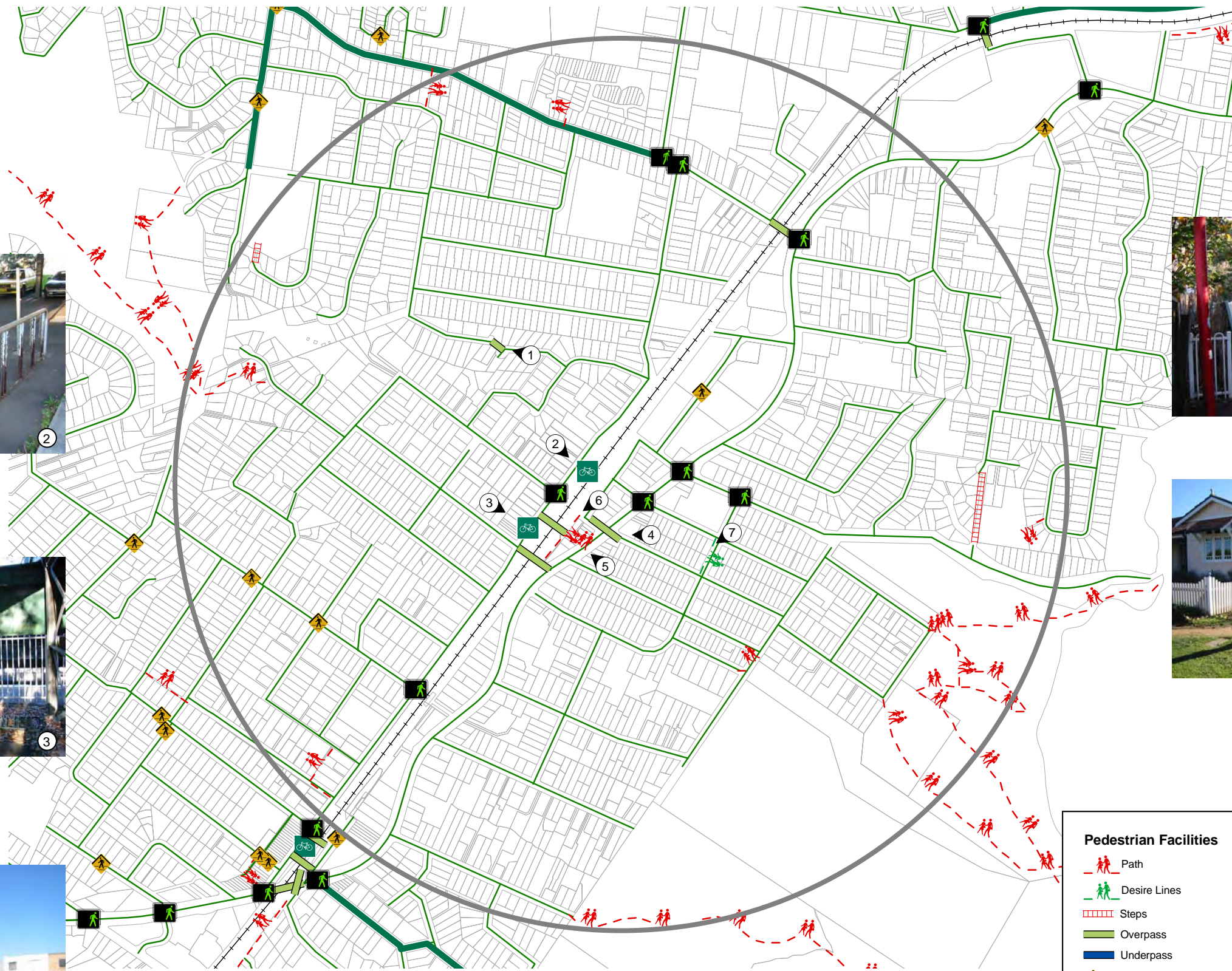
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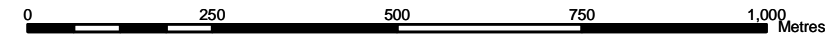
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Pedestrian Facilities	Cycle Facilities
Path	Bicycle Route
Desire Lines	Bicycle Storage
Steps	Roads
Overpass	
Underpass	
Refuge or Crossing	
Signals	
	Photographs
	Location & Direction



THORNLEIGH : Pedestrians & Cyclists



Public Transport

Rail

Services

11.20 Services from Thornleigh station are summarised as follows:

To City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	AM Peak
Weekdays	4:30:00 AM	1:13:00 AM	65	19	13
Weekends	4:46:00 AM	1:13:00 AM	41	30	30

From City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	PM Peak
Weekdays	4:41:00 AM	2:37:00 AM	65	20	12
Weekends	6:07:00 AM	2:37:00 AM	41	30	30

- A typical “all stations” service to Central station takes 47 minutes.
- A typical “limited stops” service to Central station takes 37 minutes.

11.21 Thornleigh Station is on the Northern Line, with services to Hornsby and the CBD. Passengers can change at Hornsby to access the North Shore Line or Strathfield for services to Parramatta.

Facilities

11.22 Thornleigh station has three platforms; a western platform for northbound (Hornsby) services and an eastern island platform for southbound (Sydney CBD) services. The station is manned from 5.30am to 9pm on weekdays, with one person on duty. At weekends there is one person on duty from 6am to 2pm.

- *Station Access:* Station access from the west is relatively easy with the platform being the same height as The Esplanade. From the east, the station is accessed via a series of narrow paths, with graffiti on adjacent walls and steps to the island platform. This access does not promote feelings of personal security and safety. As the car park is located to the west, the western access is considered to be the main station entrance. There is a newsagent/kiosk serving this entrance.
- *Platform Access:* The southbound platform can only be accessed via stairs and a pedestrian footbridge. The Northbound platform access is at grade with The Esplanade to the west.
- *Shelter:* A station building is located on each platform. These buildings offer the only shelter on the platforms and access to these buildings is not covered. In total, less than 10 percent of the platform length is covered.
- *Facilities:* The station includes the following facilities:
 - A station office with one ticket window located on the southbound, island platform. The ticket office on the northbound platform is no longer used.
 - A ticket vending machine on each platform.
 - No ticket gates.
 - There are male and female toilets provided but a step up into the toilet facilities prohibits easy access by those with mobility impairments.

Buses

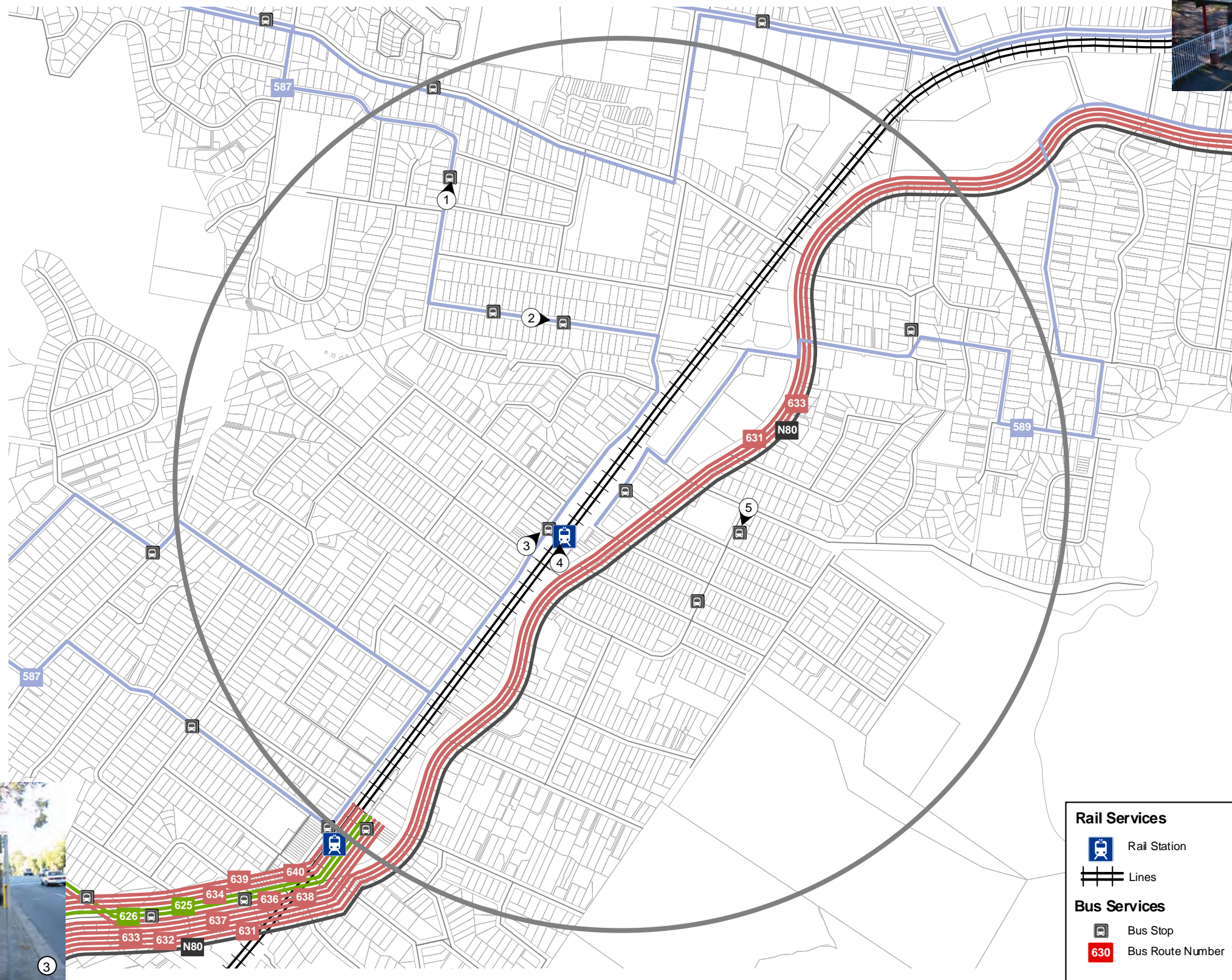
Services

11.23 The following summarises the bus services that stop in the Thornleigh study area:

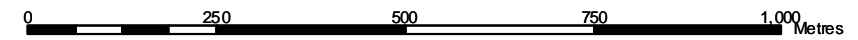
Route	Provider	From	To	Indicative Frequency	Days per Week
587	Shorelink	Westleigh	Hornsby	Medium	7
587	Shorelink	Westleigh	Pennant Hills	Medium	5
589	Shorelink	Hornsby	Pennant Hills	Low	Shorelink
589	Shorelink	Hornsby	Thornleigh	Low	Shorelink
631	Glenorie	Castle Hill	Hornsby	Medium	5
632	Glenorie	Castle Hill	Hornsby	Low	5
633	Glenorie	Castle Hill	Hornsby	Low	5
N80	Shorelink	Hornsby	City	Medium	7

Facilities

11.24 There are bus stops located on Pennant Hills Road to the east of the station and Yarrara Road / The Esplanade to the west. The bus stops vary in quality and only one has a shelter. Several have little more than a sticker on a telegraph pole and lack even a hard standing area, making them unpleasant to use in wet weather.



Rail Services		Bus Service Providers	
	Rail Station		Airbus
	Lines		Citybus Direct
	Bus Stop		Glenorie
	Bus Route Number		Harris Park
			Hills Bus
			NightRide
			Red Arrow
			Shorelink
			Sydney Buses
			Westbus
Photographs			
	Location & Direction		



THORNLEIGH : Public Transport



Vehicular Movement

11.25 The following table aggregates lengths of the road system within the Thornleigh:

Type	Length (km)	Proportion
Motorway	0.0	0%
Arterial	2.1	7%
Sub Arterial	4.1	14%
Collector A	0.5	2%
Collector B	0.0	0%
Local A	2.5	9%
Local	19.9	68%
TOTAL	29.1	100%

11.26 Pennant Hills Road is an arterial route. Yarrara Road / The Esplanade and Duffy Avenue are sub-arterials. Key intersections include:

- Pennant Hills Road / The Comenarra Parkway,
- Pennant Hills Road / Duffy Avenue,
- Duffy Avenue / The Esplanade / Chilvers Road.

Parking

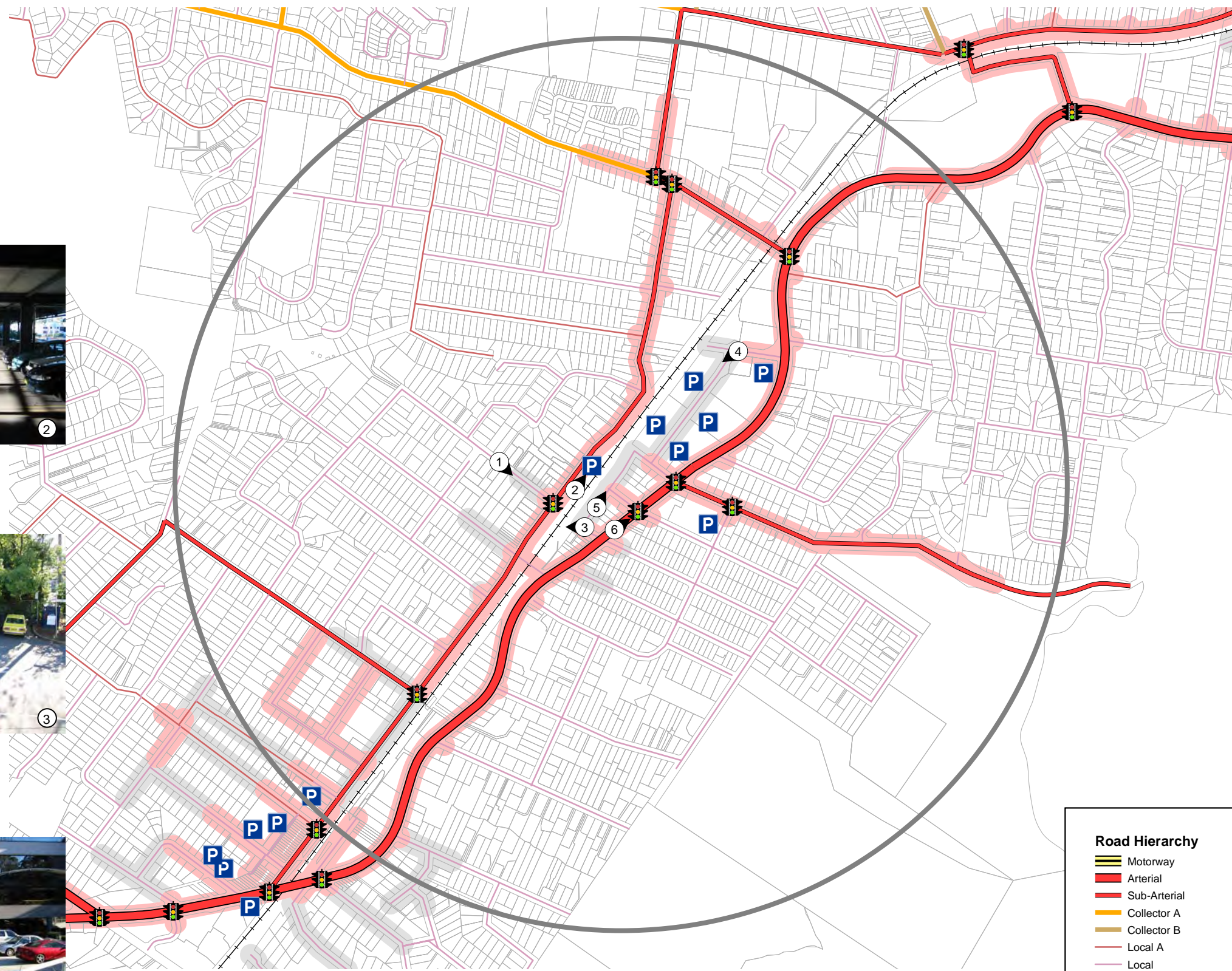
On-Street

11.27 There is angle parking on the east side of the station in Railway Parade.

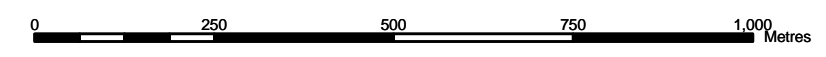
11.28 The commercial premises generally have their own parking but it is believed there is some spill over from both these areas and the CityRail car park on to local streets, however, on-street parking in the vicinity of the station is quite limited.

Off-Street

11.29 There is a large decked car park, located to the west of the rail line, provided by CityRail for rail commuters at the station.



<p>Road Hierarchy</p> <ul style="list-style-type: none"> Motorway Arterial Sub-Arterial Collector A Collector B Local A Local <p>Controls</p> <ul style="list-style-type: none"> Signals 	<p>Parking</p> <ul style="list-style-type: none"> On Street Restricted On Street Unrestricted Full Off Street Parking <p>Photographs</p> <ul style="list-style-type: none"> Location & Direction
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THORNLEIGH : Roads & Vehicles



12.0 Waitara

General

- 12.1 A large portion of the Study Area is contained within the Hornsby site analysis. This section of the report does not consider the portion of the study area within the suburb of Hornsby. The limits of the area are marked on the adjacent map. Refer to the Hornsby section of this report for a detailed discussion of Hornsby.
- 12.2 Waitara is located on the North Shore Line, just south of where it joins with the Northern Lines.
- 12.3 The commercial district and numerous public and private local schools attract many people to the area.

Topography

- 12.4 The area to the north of the Pacific Highway is relatively flat. The land is more undulating elsewhere in the study area. To the south of the highway, particularly in the southwest, the land slopes down to the upper reaches of Waitara Creek. To the east, the land slopes down from Myra Street to the valley formed by Cockle Creek, and now occupied by the F3 freeway.

Land Use

- 12.5 Summary – within a 1 km radius of Waitara station -

Type	Total (1000 m ²)	Proportion
Residential High	88	3%
Residential Medium	307	11%
Residential Low	1435	51%
Business & Industrial	347	12%
Open Space & Env Protected	78	3%
Special Uses	560	20%
TOTAL	2814	100%

Commercial

- 12.6 The Waitara industrial area is bounded by the Pacific Highway to the south and the North Shore railway line to the north. The dominating commercial land uses in this area are automotive related, with a significant number of car dealerships and related businesses. A small number of retail and food outlets also occupy this area. These areas of commercial activity are significant attractors of employment to the area.

Residential

- 12.7 A number of major high density residential developments are currently under development in the area immediately northwest of the railway station. This area represents some of the highest density residential development in the Hornsby Shire. Some areas of medium high density occupy land to the immediate northeast and northwest of the station
- 12.8 The majority of land use in the area is low density residential, however this proportion is one of the lowest in the Shire.

Open Space/Parklands

- 12.9 Waitara has a one of the lowest proportions of open space in Hornsby Shire, representing only 3 percent of total land in the study area. This is mainly comprised of Waitara Park, to the northeast of the station.

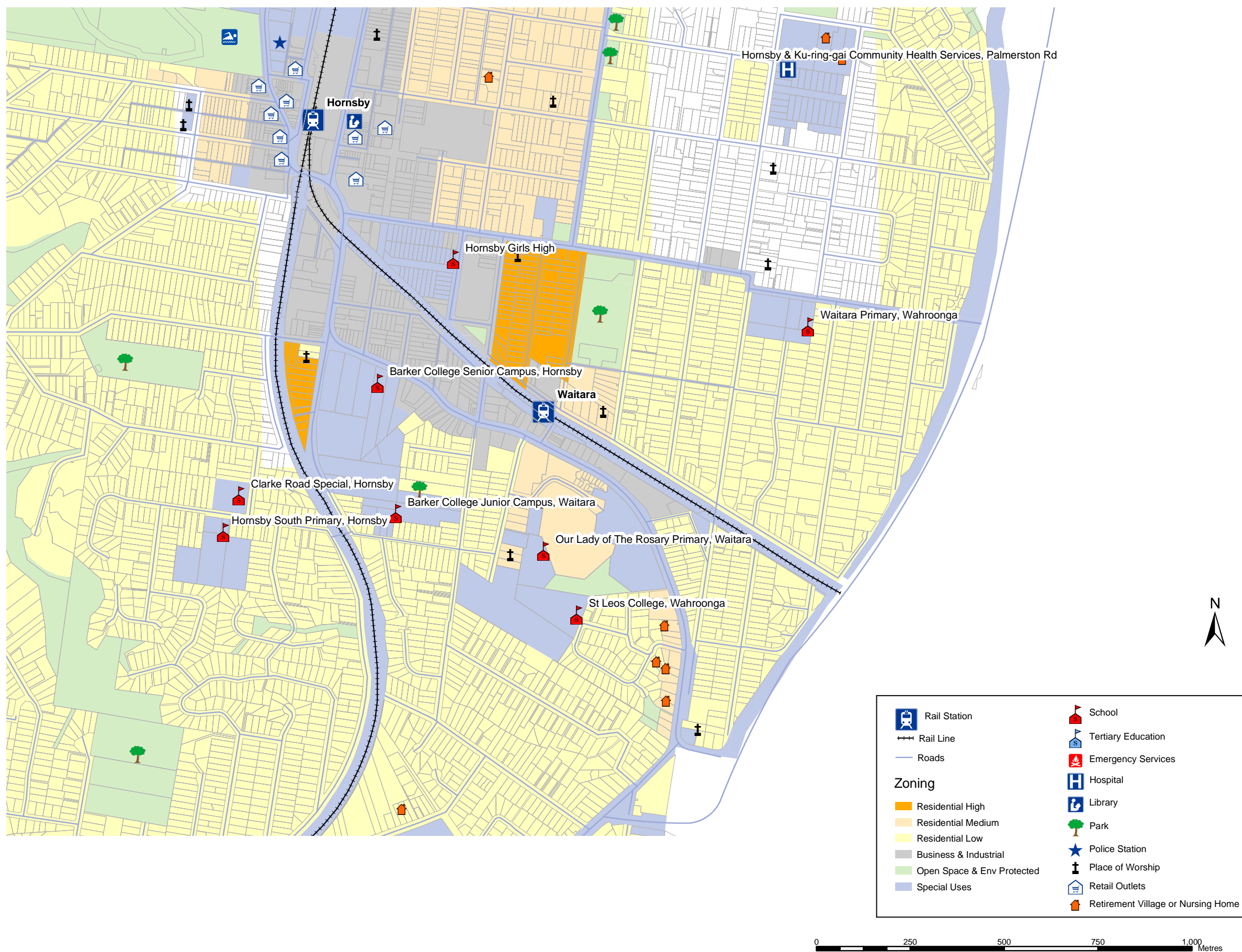
- 12.10 A number of large schools in the area contain playing fields and other significant areas of open space, however these are inaccessible to the general public.

Other

- 12.11 Of particular significance, eight schools are located in Waitara, including three large high schools. Of the students travelling to school by rail, the majority access the area via Waitara station, while a significant number also use Hornsby station. Some students do use Normanhurst station to access the schools in Waitara.
- 12.12 To the southeast of the study area, a number of nursing homes and retirement villages are located on the western side of the Pacific Highway. Hornsby Hospital is located in the far northeast of the study area. The area also contains eight churches

Issues

- Continuing pressure from high density developments.
- Consideration of high concentration of schools in the planning process.
- Poor bus access and facilities around station.
- Lack of cycle facilities and routes in the area.





Pedestrians

- 12.13 At specific times of the day, the schools in the area generate a significant quantity of pedestrian activity. The majority of students travel to school via Waitara rail station. The Hornsby and Waitara commercial districts generate further pedestrian activity in the area.
- 12.14 The rail line and the Pacific Highway form significant barriers to north-south pedestrian movement.
- 12.15 The following facilities exist to allow pedestrians to cross the rail line:
- A pedestrian underpass across the rail line at Waitara station,
 - To the east, by using footpaths alongside the Pacific Highway crossing of the rail line, and
 - Footpaths on the road bridge over the rail line at the station on Alexandria Parade, and to the west over the rail line on Ingram Road.
- 12.16 The most significant pedestrian crossing of the Pacific Highway is provided by signals immediately south of the station. Pedestrians can also cross the Pacific Highway using traffic signals in five other locations, of which the majority are towards Hornsby station.
- 12.17 Other significant pedestrian crossings in the area include:
- Two sets of traffic signals at the intersection of Edgeworth David Avenue with Ingram and Palmerston Roads,
 - A crossing of Alexandria Parade, at the rail station,
 - Traffic signals at the intersection with Ingram Road.
- 12.18 The area also includes a number of traffic calming devices that also act as pedestrian refuges.
- 12.19 A pedestrian footpath links the Waitara station commuter parking area to the small commercial area west of the station.
- 12.20 A number of pedestrian desire lines are evident to the east of Waitara Park.

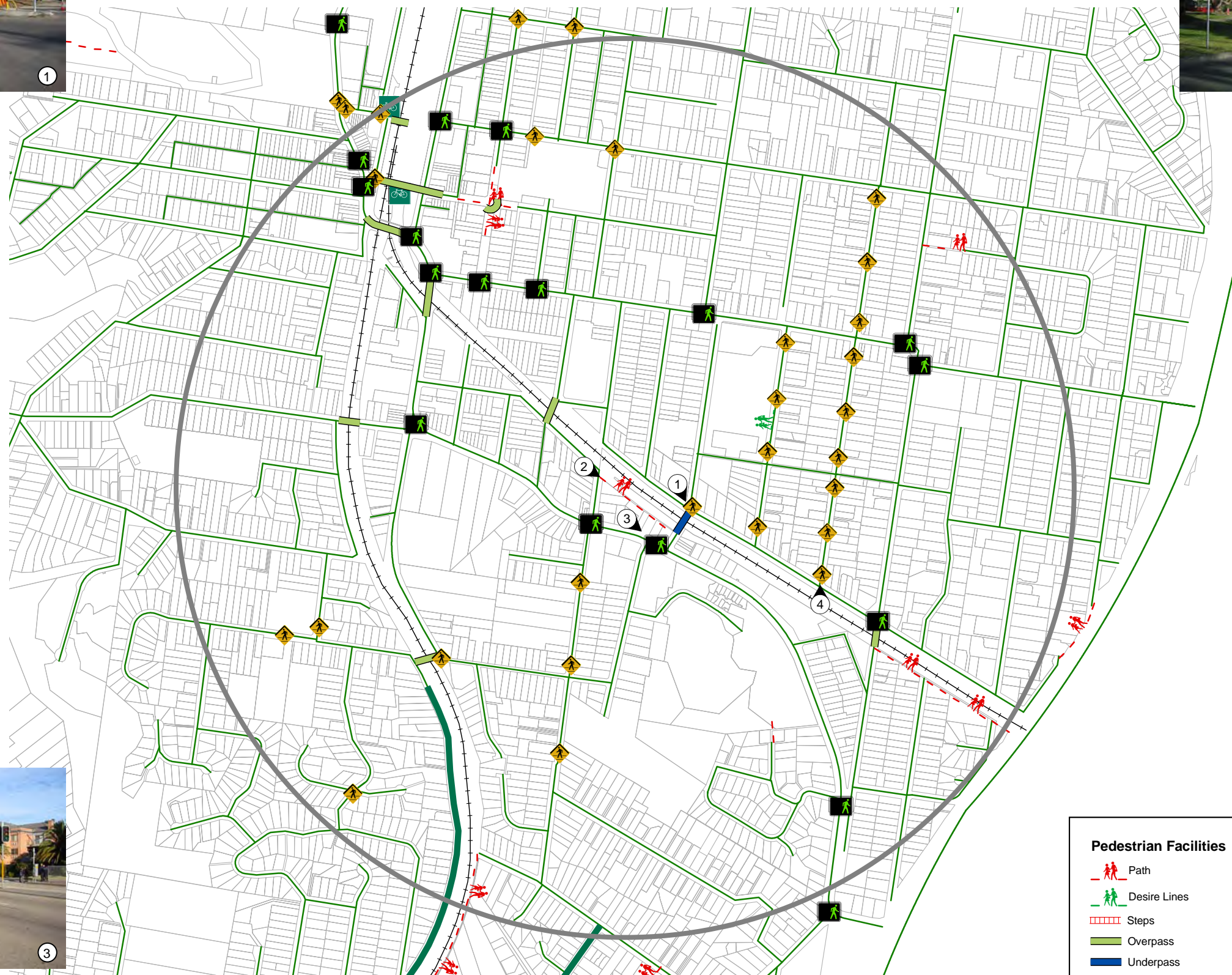
Cyclists

Routes

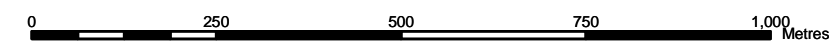
- 12.21 The only bicycle route in the area is on the western side of Malisbury Road., to the south of the study area. This bicycle route is more pertinent to Normanhurst, and has been discussed in section Normanhurst section of this report.

Facilities

- 12.22 There are no bicycle storage facilities within the Waitara study area. Bicycles are occasionally observed chained to the station fences.



Pedestrian Facilities	Cycle Facilities
Path	Bicycle Route
Desire Lines	Bicycle Storage
Steps	Roads
Overpass	
Underpass	
Refuge or Crossing	
Signals	
	Photographs
	Location & Direction



WAITARA : Pedestrians & Cyclists



Public Transport

Rail

Services

- 12.23 In comparison to the Northern Line, relatively few express services travel along the North Shore. Waitara is generally not a stop for express services.
- 12.24 North Shore services are generally more frequent than those on the Northern Line. As a result, Waitara enjoys far more frequent services than the smaller stations on the Northern Line.
- 12.25 Peak morning services typically depart Waitara with all seating capacity occupied.

To City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	AM Peak
Weekdays	4:24:00 AM	1:14:00 AM	102	12	9
Weekends	4:08:00 AM	1:25:00 AM	58	22	20

From City	First Train	Last Train	Number of Trains	Frequency (mins)	
				Total	PM Peak
Weekdays	4:46:00 AM	2:37:00 AM	109	12	10
Weekends	5:55:00 AM	2:37:00 AM	80	16	12

- A typical service takes 40 to 45 minutes to reach Central.

Facilities

- 12.26 Waitara station is a small station on the North Shore Line, manned with one to two staff during the morning and afternoon shifts. The two tracks are accessed via one island platform.
- *Station Access:* The station entrances lead to a pedestrian underpass situated under the station. A rail ticket is not required to use this underpass. Entrance to this underpass is via a level pedestrian crossing on Alexandria Parade from the north, and via stairs down from Waitara Avenue in the south.
 - *Platform Access:* The island platform is accessed via stairs from the pedestrian underpass at the eastern end of the platform.
 - *Shelter:* The only shelter is offered by the main station building, situated halfway along the platform. Approximately 10% of the total platform length is sheltered.
 - *Facilities:* The main station building includes the following facilities:
 - 1 ticket machine,
 - 1 ticket window,
 - 0 ticket gates,
 - Public toilets,
 - Unrestricted off-street commuter parking for 80 vehicles is provided to the south of the station, with access from Waitara Avenue.

Buses

Services

- 12.27 Shorelink is the main provider of bus services in the area. Their services include:

Route	Provider	From	To	Indicative Frequency	Days per Week
575	Shorelink	Hornsby	Hornsby Hospital	Med	6
587	Shorelink	Westleigh	Hornsby	Med	7
588	Shorelink	Normanhurst	Hornsby	Med	7
589	Shorelink	Hornsby	Thornleigh	Low	5
589	Shorelink	Hornsby	Pennant Hills	Low	6
631	Glenorie	Castle Hill	Hornsby	Medium	5
632	Glenorie	Castle Hill	Hornsby	Low	5
633	Glenorie	Castle Hill	Hornsby	Low	5
747	Airbus	Bateau Bay	Sydney Airport	Low	5
N90	Shorelink	Hornsby	City	Medium	7

- 12.28 Most bus services travel along the Pacific Highway, with primary focus on transporting passengers to and from Hornsby station from areas beyond Waitara. Waitara is generally not a significant stop for these services.
- 12.29 A bus route linking Hornsby Hospital to the station is also provided, travelling through the north of study area along Edgeworth David Avenue and Palmerston Road.

Facilities

- 12.30 Bus facilities in Waitara are very basic. The main bus stop in the area, situated on the Pacific Highway at Waitara station, is comprised of 2 benches placed under adjacent shop awnings, with a simple bus stop sign and timetable information for the nightride service. A more formal bus shelter exists at the intersection of the Pacific Highway and Ingram Road in the southeast of the study area.
- 12.31 In the north of Waitara, a number of simple bus stops support the Hornsby Hospital service operated by Shorelink.



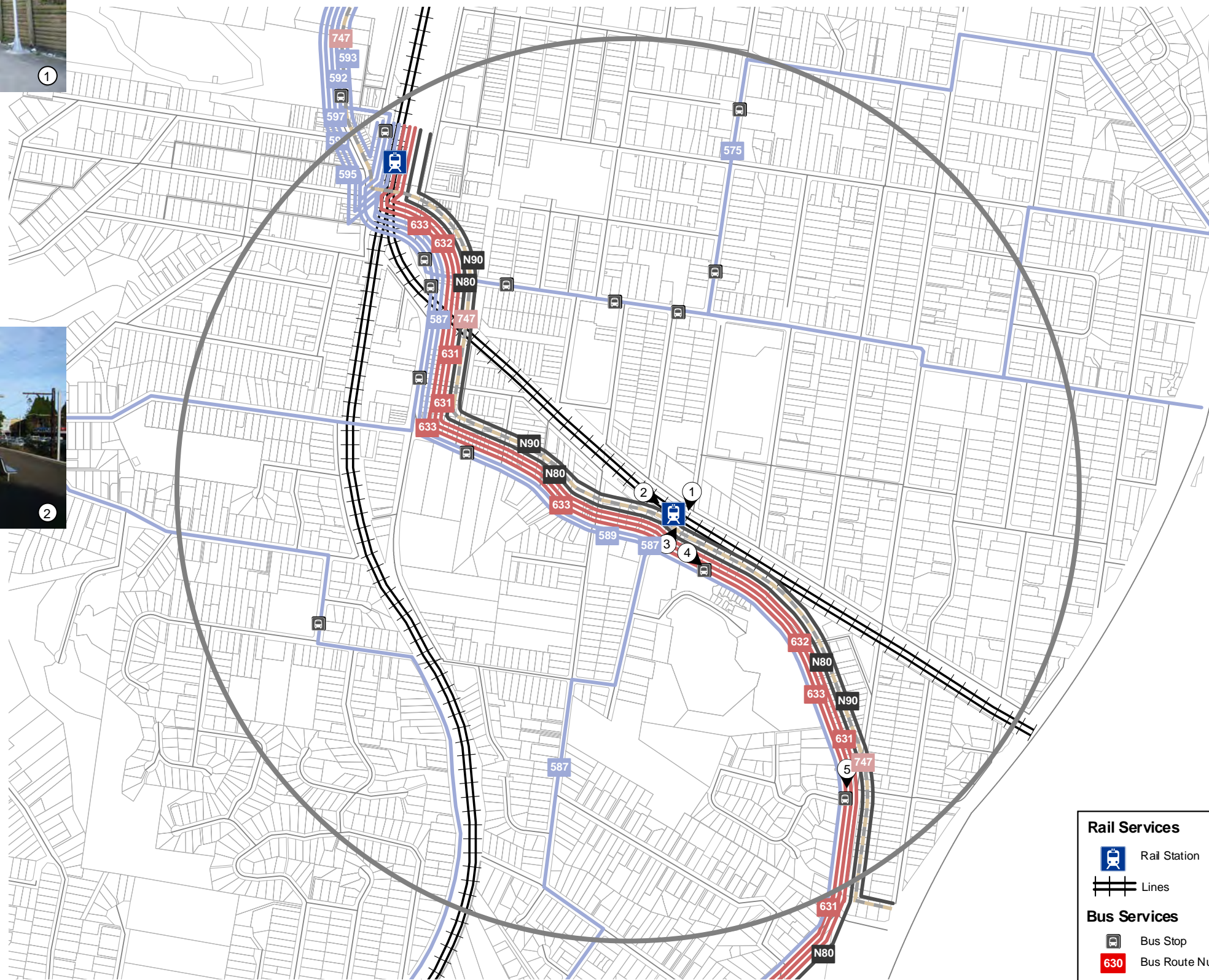
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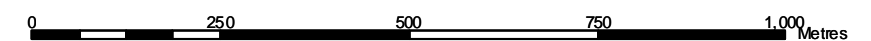


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Rail Services		Bus Service Providers	
	Rail Station		Airbus
	Lines		Citybus Direct
	Bus Stop		Glenorie
	Bus Route Number		Harris Park
			Hills Bus
			NightRide
			Red Arrow
			Shorelink
			Sydney Buses
			Westbus
	Location & Direction		



WAITARA : Public Transport



Vehicular Movement

Roads

12.32 The following table aggregates lengths of road system within a 1 km radius of Waitara Station.

Type	Length (km)	Proportion
Motorway	0.6	2%
Arterial	2.3	7%
Sub Arterial	3.4	11%
Collector A	3.8	12%
Collector B	1.4	4%
Local A	1.6	5%
Local	18.3	59%
TOTAL	31.4	100%

12.33 The Pacific Highway dominates the road network through area, passing just south of Waitara station as it travels from the southeast to the northwest of the study area. This is the arterial route for areas to the northwest, linking Hornsby and Hornsby Heights with the rest of the Sydney road network.

12.34 Pearce's Corner in the southeast marks the intersection of the Pacific Highway with Pennant Hills Road and the Sydney Newcastle Freeway (F3). The F3 continues north from Pearce's Corner, skirting the eastern edge of Waitara. The majority of traffic from the south joins the F3 at Pearce's Corner from Pennant Hills Road or the Pacific Highway, to continue to areas north of Asquith and therefore does not pass along the Pacific Highway at Waitara.

12.35 The route along Ingram Road, Myra Street and Sherbrook Road constitute the main north-south passage through the area for local traffic. Other north-south traffic has been discouraged along streets north of the station by use of a number of traffic calming measures on Balmoral Street and Park Avenue, and a road closure at the northern end of Waitara Avenue.

12.36 Edgeworth David Avenue forms a sub-arterial link between Hornsby and Turramurra via Wahroonga.

12.37 The railway line can be crossed at the following places:

- Ingram Road to the east
- Alexandria Parade, immediately west of the station
- Pacific Highway, further west.

12.38 Potential conflicts may arise in the area surrounding the significant intersection of Edgeworth David Avenue, Myra Street and Palmerston Road, adjacent to which the Waitara Shops and Waitara Public School are located.

12.39 Other significant intersections in the area include:

- Edgeworth David Avenue / Myra Street / Palmerston Road.
- Edgeworth David Avenue / Sherbrook Avenue
- Pacific Highway / Ingram Road
- Pacific Highway / College crescent

Parking

On-Street

12.40 On-street parking is prohibited or restricted along the Pacific Highway. Parking is also restricted along Edgeworth David Road, and in areas immediately adjacent to the station entrance on Alexandria Parade to the north and Waitara Avenue to the south.

12.41 The highest concentrations of unrestricted on-street parking are observed within 400 metres of the station, the majority of which occurs in the areas to the north of the railway line. This is particularly evident along Alexandria Parade, adjacent to the railway line, where approximately 180 perpendicular spaces are provided for commuters. The spaces are typically fully utilised. Waitara Avenue contains a significant amount of 45 degree parking adjacent to Waitara Park which is heavily utilised. Park Avenue and Orara Street also experience high concentrations of commuter parking. Parking facilities in Orara Street are particularly basic, with much of the street lacking kerb and guttering.

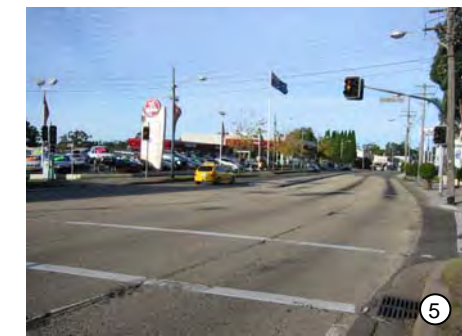
12.42 High concentrations of unrestricted on-street parking are also evident in the commercial area to the west of the station, between the railway line and Pacific Highway. It appears that this parking is largely associated with the surrounding businesses. This area includes a perpendicular parking bay for 12 vehicles on the north side of Pattison Avenue adjacent to the rail line. This parking bay is typically fully utilised during weekdays.

12.43 On-street parking is also evident to the south of the Pacific Highway along Unwin Road and Yardley Avenue, however this parking is largely associated with the schools in that area.

Off-Street

12.44 Unrestricted off-street commuter parking for 80 vehicles is available to the south of the Waitara station, with access from Waitara Avenue. This parking area is typically fully utilised during weekdays.

12.45 An off-street, gravel parking bay is situated adjacent to Waitara Tennis Courts, on the corner of Park Avenue and Park Lane. Observations indicate that this area may be used as commuter parking.



Road Hierarchy	Parking
Motorway	On Street Restricted
Arterial	On Street Unrestricted Full
Sub-Arterial	Off Street Parking
Collector A	Photographs
Collector B	Location & Direction
Local A	
Local	
Controls	
Signals	



WAITARA : Roads & Vehicles