

Proposed Mixed Use Development

**2-4 Cambridge Street,
Epping**

TRAFFIC AND PARKING ASSESSMENT REPORT

1 November 2016

Ref 16332

VARGA TRAFFIC PLANNING Pty Ltd
Transport, Traffic and Parking Consultants 

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Document Verification

Location:	2-4 Cambridge Street, Epping	Job Number		16332	
Revision	Details	Prepared		Approved	
Final	Final for DA submission	By	Date	By	Date
		DL	01/11/16	CP	01/11/16

1. INTRODUCTION

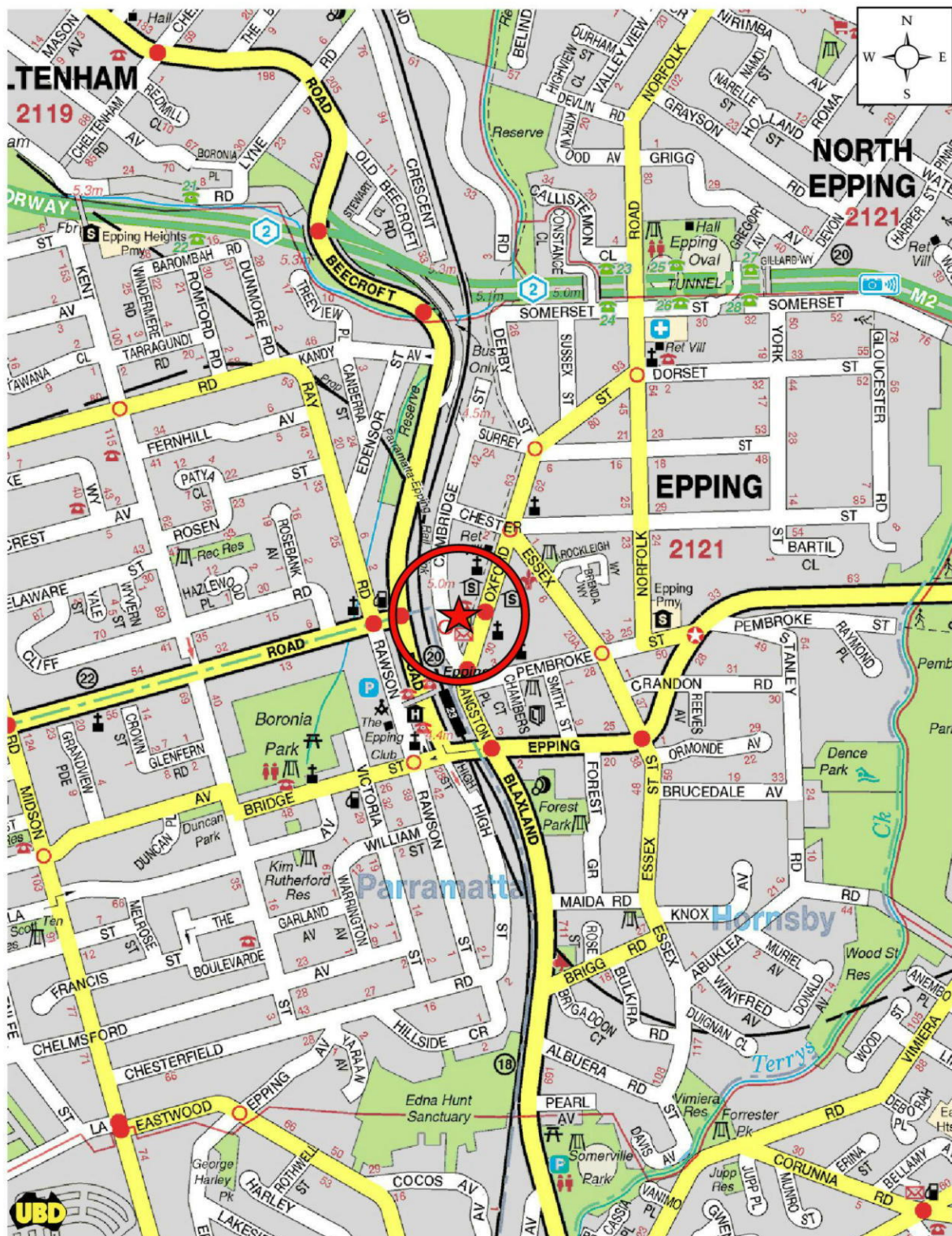
This report has been prepared to accompany a development application to Council for a mixed use development proposal to be located at 2-4 Cambridge Street, Epping (Figures 1 and 2).

The site lies within the Epping Town Centre Core and is situated approximately 150m north of the pedestrian entrance to Epping Railway Station.

The proposed development involves the demolition of the existing commercial building on the site to facilitate the construction of a new mixed use residential/commercial/retail building. Off-street parking is to be provided in a new multi-level basement and mezzanine car parking area in accordance with Council's requirements.

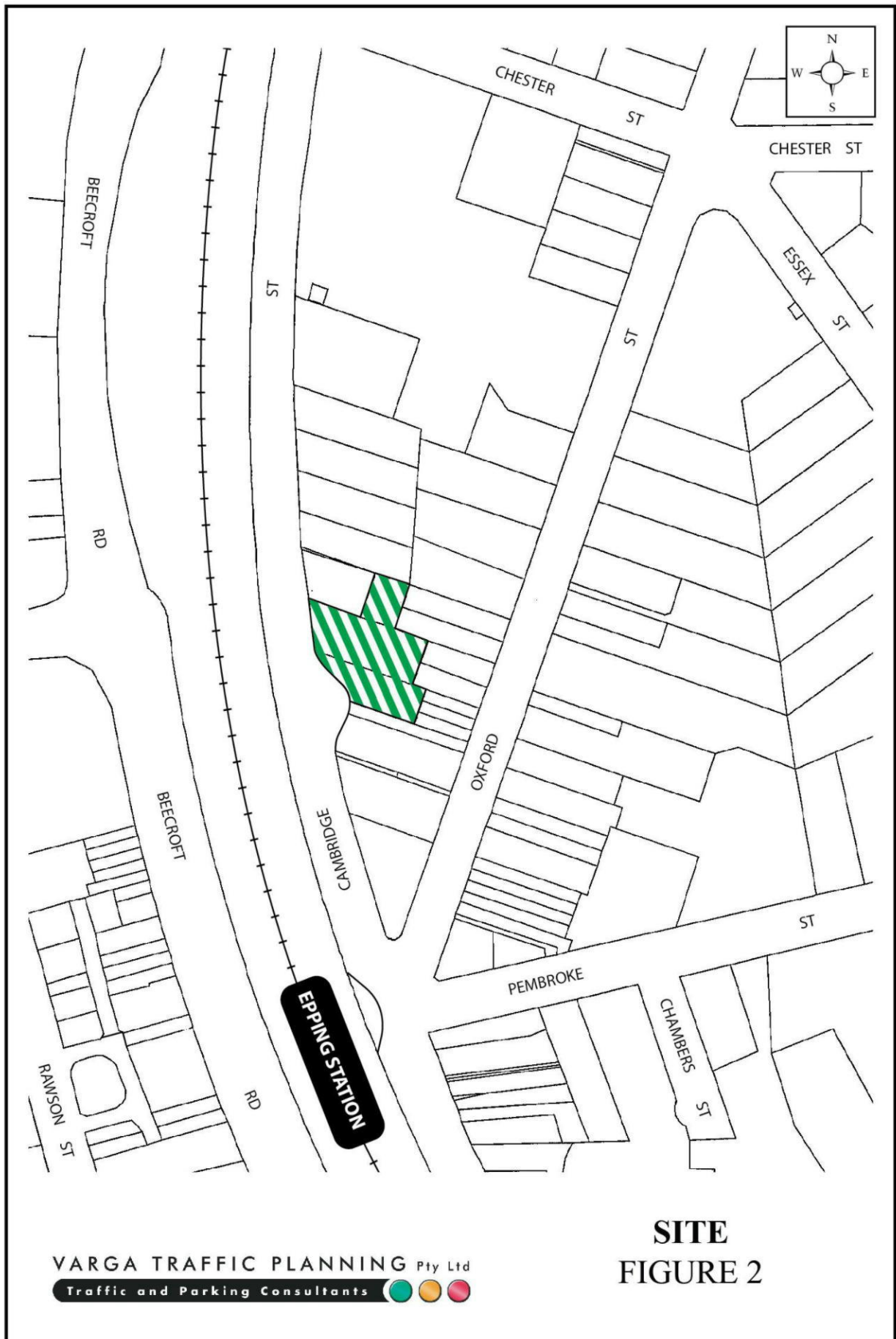
The purpose of this report is to assess the traffic and parking implications of the development proposal and to that end this report:

- describes the site and provides details of the development proposal
- reviews the road network and public transport services in the vicinity of the site
- estimates the traffic generation potential of the development proposal
- assesses the traffic implications of the development proposal in terms of road network capacity
- reviews the geometric design features of the proposed car parking and loading facilities for compliance with the relevant codes and standards
- assesses the adequacy and suitability of the quantum of off-street car parking and loading provided on the site.



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LOCATION
 FIGURE 1



2. PROPOSED DEVELOPMENT

Site

The subject site is located on the eastern side of Cambridge Street, approximately 120m north of the Oxford Street/Pembroke St/Langston Place intersection. The site has a street frontage of approximately 55m in length to Cambridge Street and occupies an area of approximately 1,785m².

The subject site is currently occupied by a three-storey commercial building with a cumulative floor area of approximately 3,000m². Off-street parking is provided within basement and at-grade off-street parking areas. Vehicular access to the basement car parking area is provided via a single driveway located at the northern end of the Cambridge Street site frontage. Vehicular access to the at-grade car parking area is provided via a shared right-of-carriageway located in between No.9 and No.11 Oxford Street.

Epping Town Centre Urban Activation Precinct

The NSW Department of Planning & Infrastructure prepared the *Structure Plan 2013* document outlining a vision for the precinct including preferred land uses, built form and public domain strategy. Key features of the *Structure Plan* are:

- the potential for 3,000-4,000 new dwellings over a 20 year period with most being provided in the town centre core
- built form in the core to be 2-4 level podiums at the lower levels for retail/commercial, with taller residential built form up to a total of 22 storeys above

More recently, Council prepared the *Epping Town Centre – Public Domain Guidelines (December 2015)* document which builds on the *Structure Plan 2013* document and further outlines various requirements for the precinct including preferred land uses, built form and public domain strategy. Additional key features of the *Guidelines* are:

- improved public domain, pedestrian and cycle connections through the centre

- road and intersection upgrades.

Plan extracts from the *Epping Town Centre – Public Domain Guidelines (December 2015)* are reproduced in Appendix A which show potential new pedestrian through links between Oxford Street and Cambridge Street, along with other proposed infrastructure upgrades.

Proposed Development

The proposed development involves the demolition of the existing commercial building on the site to facilitate the construction of a new mixed use residential/commercial/retail building.

The commercial/retail component of the proposed development comprises a retail tenancy on the ground floor level plus office premises located on the upper ground floor level, both fronting Cambridge Street. The cumulative floor area of the commercial/retail component is as follows:

Retail:	175m ²
Office:	1,175m ²
TOTAL:	1,350m²

A total of 83 residential apartments are proposed in the new building on the upper levels as follows:

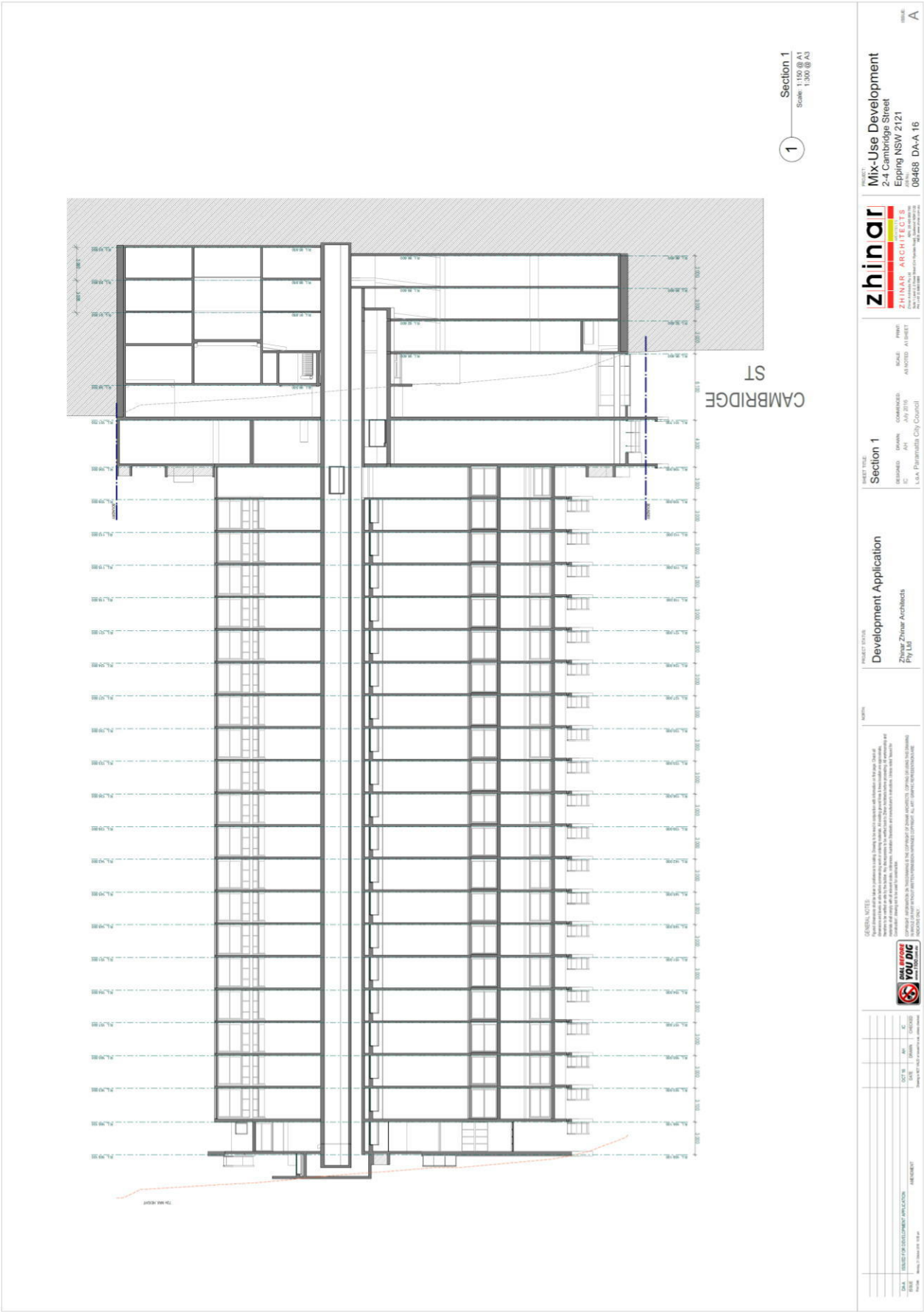
1 bedroom apartments:	11
2 bedroom apartments:	64
3 bedroom apartments:	8
TOTAL APARTMENTS:	83

Off-street parking is proposed for a total of 128 cars, comprising 91 residential spaces, 9 visitor spaces and 28 commercial spaces, in a new multi-level basement/mezzanine car parking area. Vehicular access to the car parking facilities is to be provided via a new entry/exit driveway located towards the northern end of the Cambridge Street site frontage.

Loading/servicing for the proposed development is expected to be undertaken by a variety of commercial vehicles from courier vans and utilities up to and including 8.8m long medium rigid trucks. A loading bay is to be located on the lower ground floor level, at the rear of the retail tenancy. Vehicular access to the loading bay is to be provided via the abovementioned proposed site access driveway in Cambridge Street.

Plans of the proposed development have been prepared by *Zhinar Architects* and are reproduced in the following pages.





3. TRAFFIC ASSESSMENT

Road Hierarchy

The road hierarchy allocated to the road network in the vicinity of the site by the Roads and Maritime Services is illustrated on Figure 3.

Epping Road and Beecroft Road are classified by the RMS as *State Roads* and provide key road links in the area. Beecroft Road also provides access to the M2 Motorway which connects to the Sydney CBD. These roads typically carry two traffic lanes in each direction in the vicinity of the site. Kerbside parking is prohibited along both sides of the roads, in the vicinity of the site.

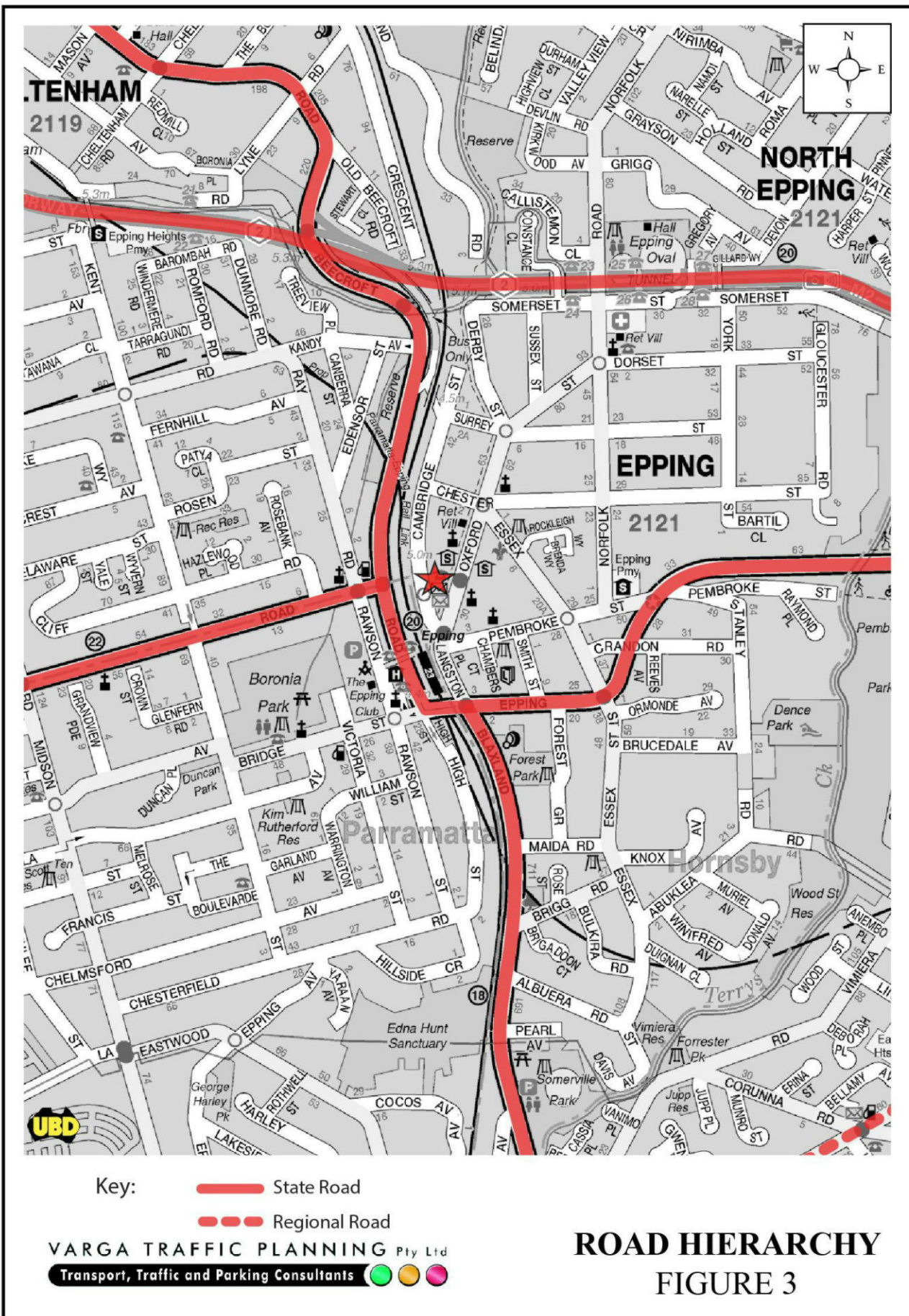
Blaxland Road is also classified by the RMS as a *State Road* and also forms part of the key north-south road link in the area, linking Epping and Eastwood. It typically carries two traffic lanes in each direction in the vicinity of the site, with turning bays provided at key locations.

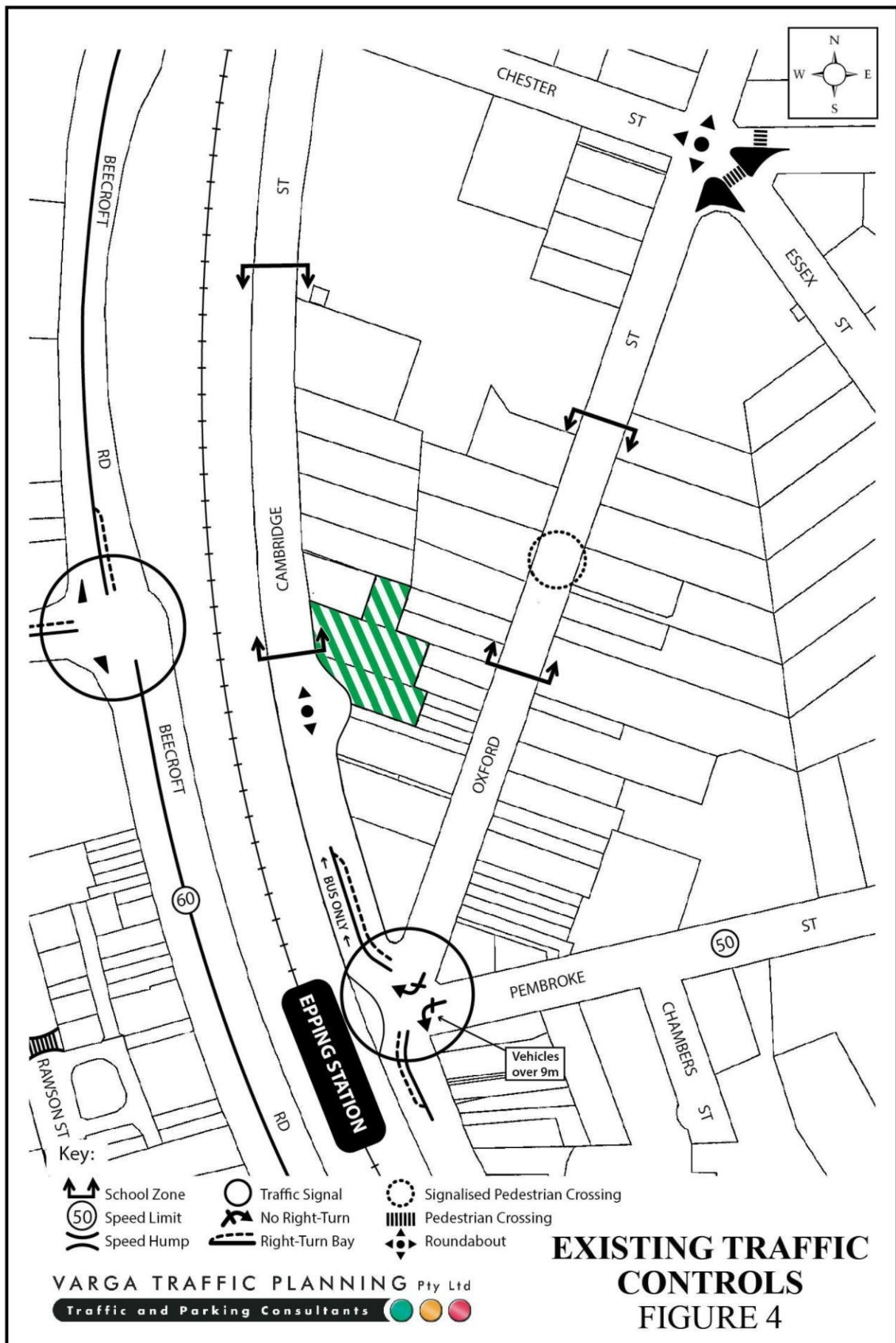
Cambridge Street is a local, unclassified road which is primarily used to provide vehicular and pedestrian access to frontage properties. A mixture of time-restricted and all-day commuter parking is generally permitted along both sides of the road.

Existing Traffic Controls

The existing traffic controls which apply to the road network in the vicinity of the site are illustrated on Figure 4. Key features of those traffic controls are:

- a 50 km/h SPEED LIMIT which applies to Cambridge Street and all other local roads in the area
- a 40 km/h SCHOOL SPEED ZONE which applies to Cambridge Street in the vicinity of the adjacent primary school
- a ROUNDABOUT in Cambridge Street directly outside the site





- TRAFFIC SIGNALS at the intersection of Oxford Street/Cambridge Street/Pembroke Street/Langston Place
- NO ENTRY for northbound vehicles into Cambridge Street from the Oxford Street/Pembroke Street/Langston Place traffic signals (Buses Excepted).

Existing Public Transport Services

There are currently in the order of nine bus routes travelling within approximately 400m walking distance of the site including the high-frequency intra-regional *Metrobus M54*. The *M54* service operates between Macquarie Park and Parramatta via Carlingford seven days per week, with weekday services every 15 minutes (every 10 minutes during the morning and afternoon peak) and weekend services every 20 minutes.

Epping Railway Station is situated on the T1 Northern Line, operating between Hornsby and the City, and is located approximately 150m walking distance south-west of the site. Train services operate out of Epping Railway Station every 5-15 minutes during peak and off-peak periods. The station is also soon to be serviced by the new Sydney Metro Northwest which will provide services between Cudgegong Road and Epping via Kellyville, Norwest and Castle Hill.

As mentioned in the foregoing, the site lies with the Epping Town Centre Core which includes a wide range of essential shops and services such as a supermarket, fruit market, butchery, bakery, seafood shop, bottle shop, post office, pharmacy, optometrist, newsagency, hair dresser and beautician.

The site is therefore considered to be highly accessible to essential services and public transport options and an ideal location for high density living.

Projected Traffic Generation

The traffic implications of a development proposal primarily concern the effects of the *additional* traffic flows generated as a result of a development and its impact on the

operational performance of the adjacent road network during the morning and afternoon weekday commuter peak periods.

An indication of the traffic generation potential of the development proposal is provided by reference to the RMS's *Technical Direction (TDT 2013/04a)* document. The *TDT 2013/04a* is based on extensive surveys of a wide range of land uses and nominate the following traffic generation rates which are applicable to the development proposal:

Office Blocks

AM: 1.6 peak hour vehicle trips per 100m² GFA

PM: 1.2 peak hour vehicle trips per 100m² GFA

High Density Residential Flat Dwellings

AM: 0.19 peak hour vehicle trips per unit

PM: 0.15 peak hour vehicle trips per unit

The RMS *Guidelines* do not nominate a traffic generation rate for small, local shops, referring only to major regional shopping centres incorporating supermarkets and department stores. For the purpose of this assessment therefore, the traffic generation rate nominated in the *TDT 2013/04a* for *office blocks* has been adopted in respect of the small retail component of the development proposal.

Application of the above traffic generation rates to the various components of the development proposal yields a traffic generation potential of approximately 38 vehicle trips per hour (vph) during the AM commuter peak period and approximately 29 vph during the PM commuter peak period, as set out below:

Projected Future Traffic Generation Potential

	AM	PM
Residential (83 apartments):	16 vph	13 vph
Commercial (1,175m ²):	19 vph	14 vph
Retail (175m ²):	3 vph	2 vph
TOTAL TRAFFIC GENERATION POTENTIAL:	38 vph	29 vph

That projected future traffic generation potential should however, be offset or *discounted* by the volume of traffic which could reasonably be expected to be generated by the existing uses

of the site, in order to determine the *nett increase* in traffic generation potential of the site which is expected to occur as a consequence of the development proposal.

Office Blocks

AM: 1.6 peak hour vehicle trips per 100m² GFA

PM: 1.2 peak hour vehicle trips per 100m² GFA

Application of the above traffic generation rates nominated in the *TDT 2013/04a* to the existing commercial buildings on the site (~3,000m²) yields a traffic generation potential of approximately 48 vph during the AM commuter peak period and approximately 36 vph during the PM commuter peak period.

Accordingly, it is likely that the proposed development will result in a *nett reduction* in the traffic generation potential the site of approximately 10 vph during the AM commuter peak period and approximately 7 vph during the PM commuter peak period as set out below:

**Projected Nett Decrease in Peak Hour Traffic Generation Potential
of the site as a consequence of the development proposal**

	AM	PM
Projected Future Traffic Generation Potential:	38 vph	29 vph
Less Existing Traffic Generation Potential:	-48 vph	-36 vph
NETT DECREASE IN TRAFFIC GENERATION POTENTIAL:	-10 vph	-7 vph

That projected *reduction* in traffic activity as a consequence of the development proposal is consistent with the zoning objectives of the area and will clearly not have any unacceptable traffic implications in terms of road network capacity.

4. PARKING IMPLICATIONS

Existing Kerbside Parking Restrictions

The existing kerbside parking restrictions which apply to the road network in the vicinity of the site are illustrated on Figure 5 and comprise:

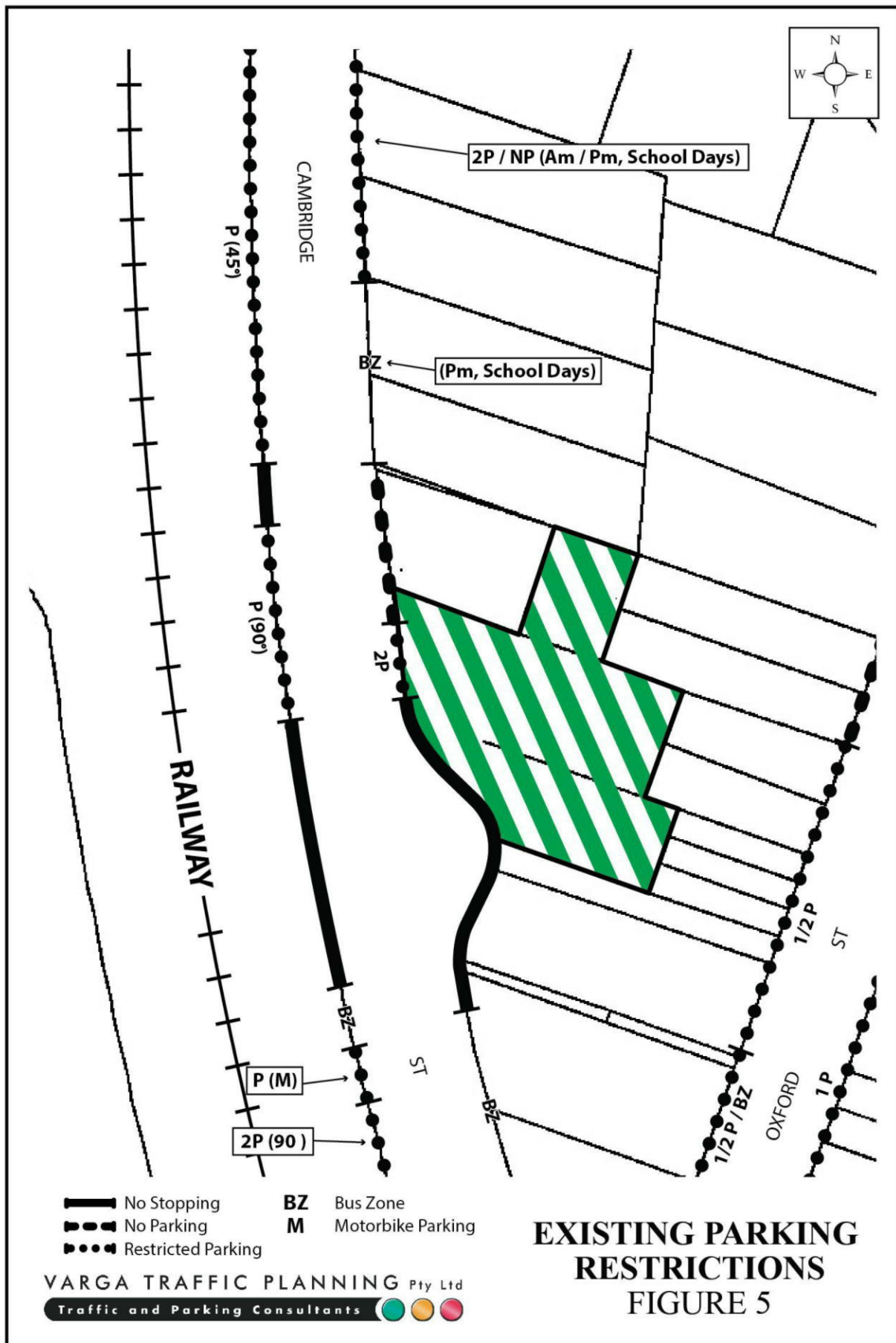
- NO STOPPING restrictions in Cambridge Street in the vicinity of the site roundabout directly outside the site
- a small section of 2 HOUR PARKING restrictions located directly outside the Cambridge Street site frontage, just north of the roundabout
- NO PARKING restrictions along the remainder of the Cambridge Street site frontage
- generally UNRESTRICTED COMMUTER PARKING along the western side of Cambridge Street, north of the roundabout
- BUS ZONES located on both sides of Cambridge Street, south of the roundabout, directly outside Epping Railway Station.

Off-Street Parking Provisions

The off-street parking requirements applicable to the development proposal are specified in the *Hornsby Development Control Plan 2013 – Section 1C.2.1 Transport and Parking* document in the following terms:

Medium and High Density Dwellings (Epping Town Centre Core)

1 bedroom apartments:	0.75 spaces per dwelling
2 bedroom apartments:	1 space per dwelling
3 bedroom apartments:	1.5 spaces per dwelling
Visitors:	1 space per 10 dwellings



Business or Office Premises (Epping Town Centre Core)

1 space per 70m² GLFA (min) and 1 space per 50m² GLFA (max)

Shops (Epping Town Centre Core)

1 space per 60m² GLFA (min) and 1 space per 30m² GLFA (max)

Application of the above parking requirements to the various components outlined in the development proposal yields an off-street parking requirement of between 112 parking spaces and 122 parking spaces as set out below:

Residential (83 apartments):	84.3 spaces (min)
Visitors:	8.3 spaces (min)
Office (1,175m ²):	16.8 spaces (min) and 23.5 spaces (max)
Retail (174m ²):	2.9 spaces (min) and 5.8 spaces (max)
TOTAL:	112.3 spaces (min) and 121.9 spaces (max)

The proposed development makes provision for a total of 128 off-street parking spaces, comprising 91 residential spaces, 9 visitor spaces and 28 commercial spaces, thereby satisfying the *HDGP 2013* minimum and maximum parking requirements for the respective components.

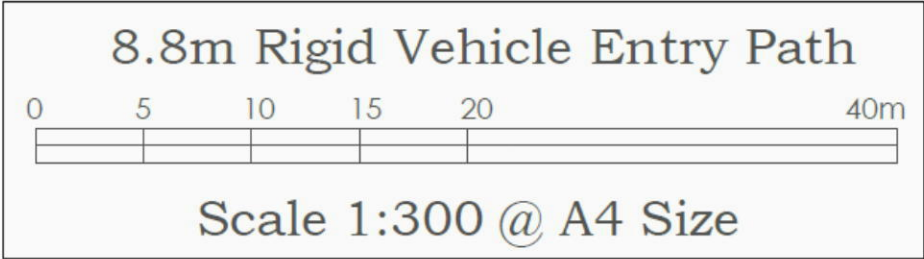
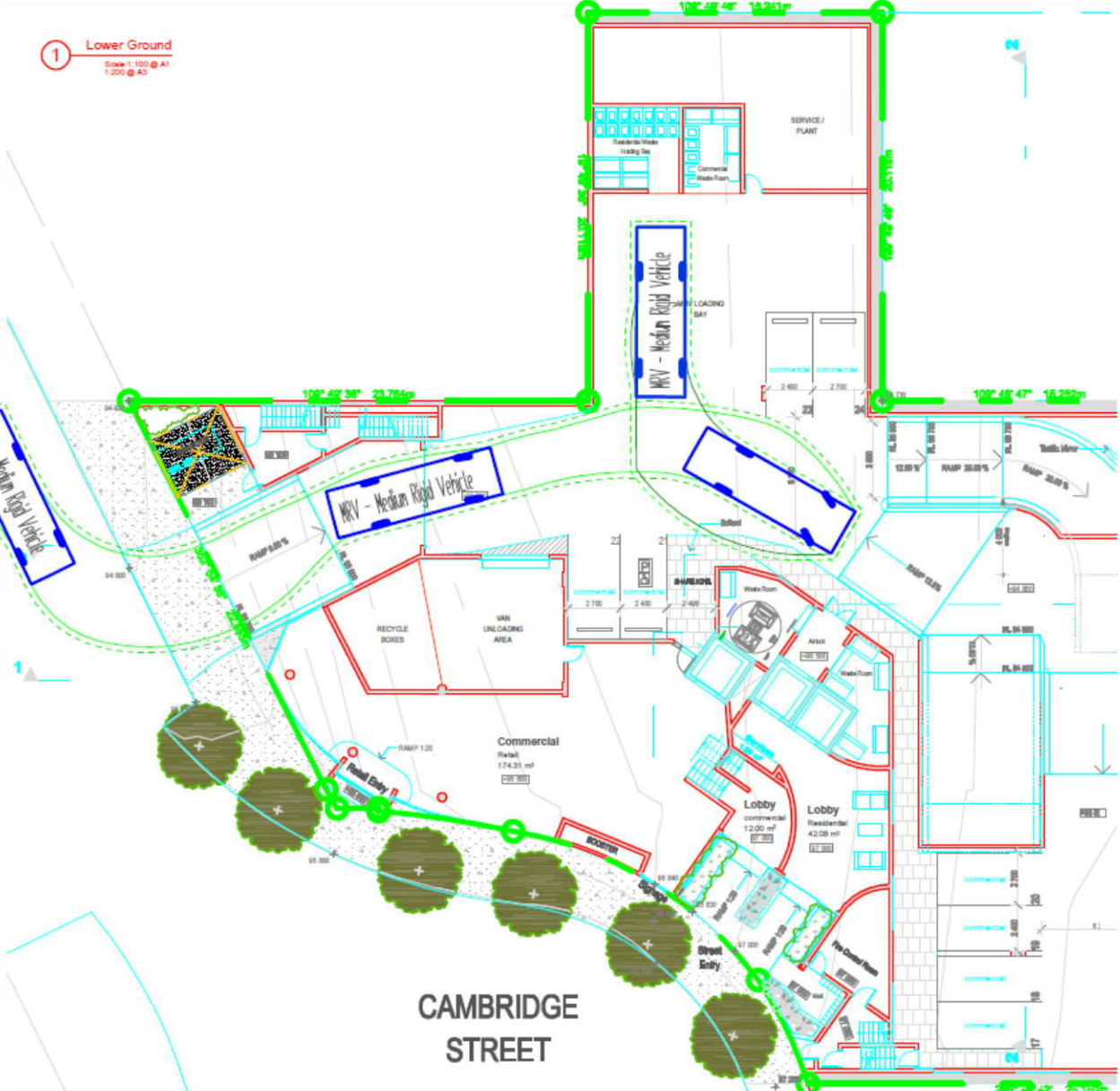
The geometric design layout of the proposed car parking facilities has been designed to comply with the relevant requirements specified in the Standards Australia publication *Parking Facilities Part 1 - Off-Street Car Parking AS2890.1 - 2004* in respect of parking bay dimensions, ramp gradients and aisle widths.

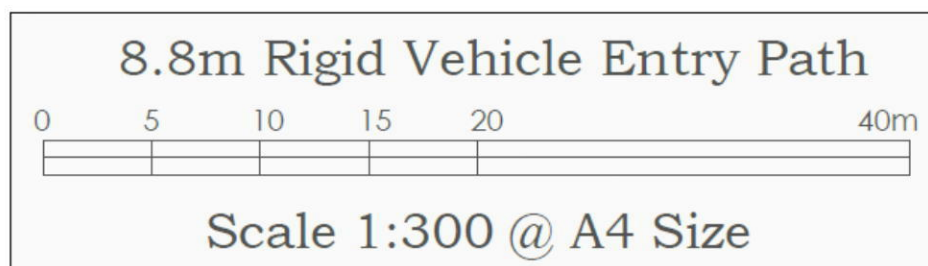
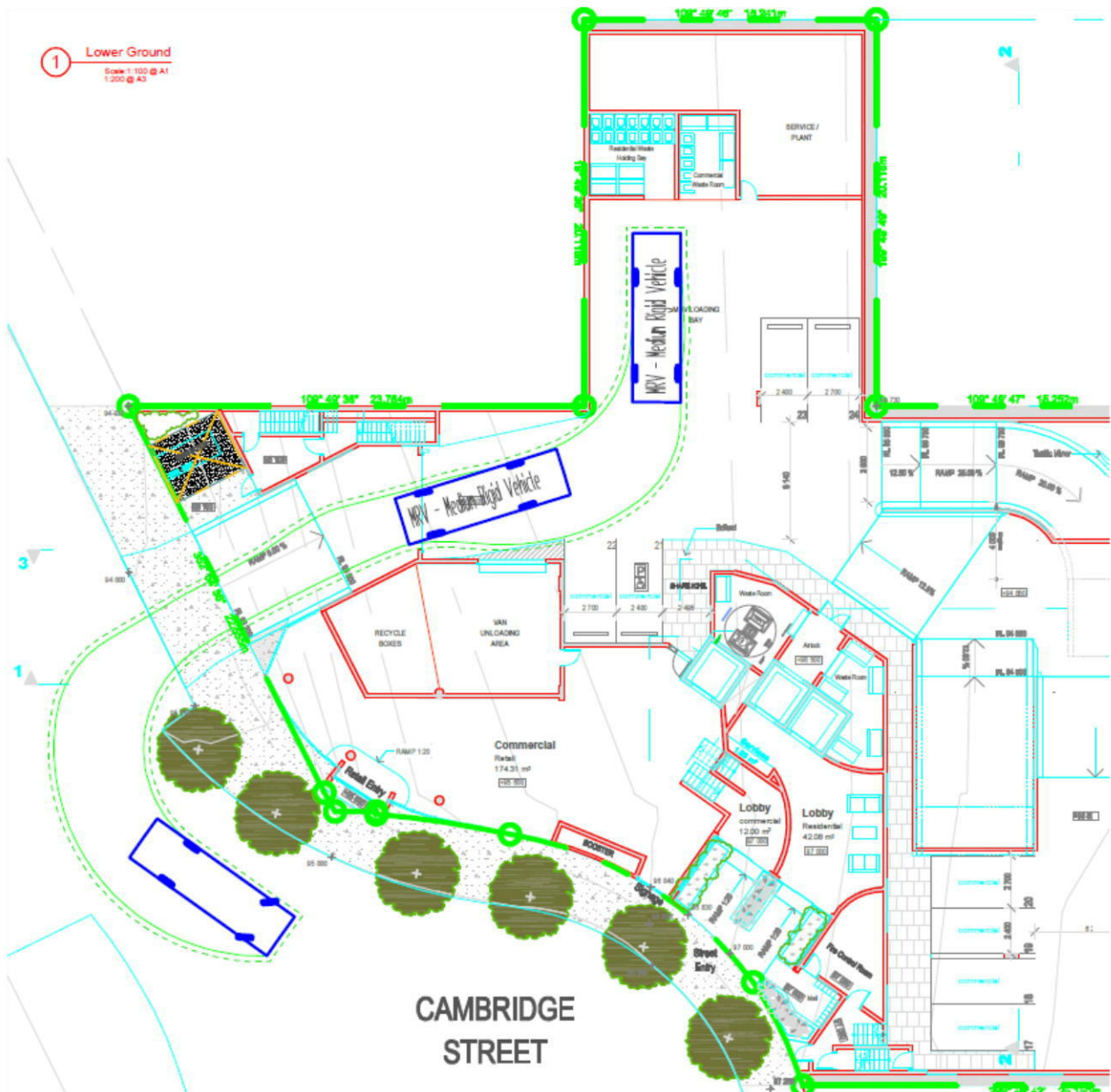
Loading/Service Provisions

Loading/service for the proposed development is expected to be undertaken by a variety of commercial vehicles from courier vans and utilities up to and including 8.8m long medium rigid trucks. A loading bay is to be located on the lower ground floor level, at the rear of the retail tenancy. The manoeuvring area has been designed to accommodate the swept turning path requirements of these medium rigid trucks, allowing them to enter and exit the site in a forward direction at all times.

The geometric design layout of the proposed loading facilities have been designed to comply with the relevant requirements specified in the Standards Australia publication *Parking Facilities Part 2 - Off-Street Commercial Vehicle Facilities AS2890.2* in respect of loading bay dimensions, ramp gradients, overhead clearance and service area requirements for MRV trucks.

In summary, the proposed parking and loading facilities satisfy the relevant requirements specified in both Council's *HDCP 2013* as well as the Australian Standards and it is therefore concluded that the proposed development will not have any unacceptable parking or loading implications.





APPENDIX A

**EPPING TOWN CENTRE PUBLIC DOMAIN GUIDELINES
PLAN EXTRACTS**

3.0 Urban Framework

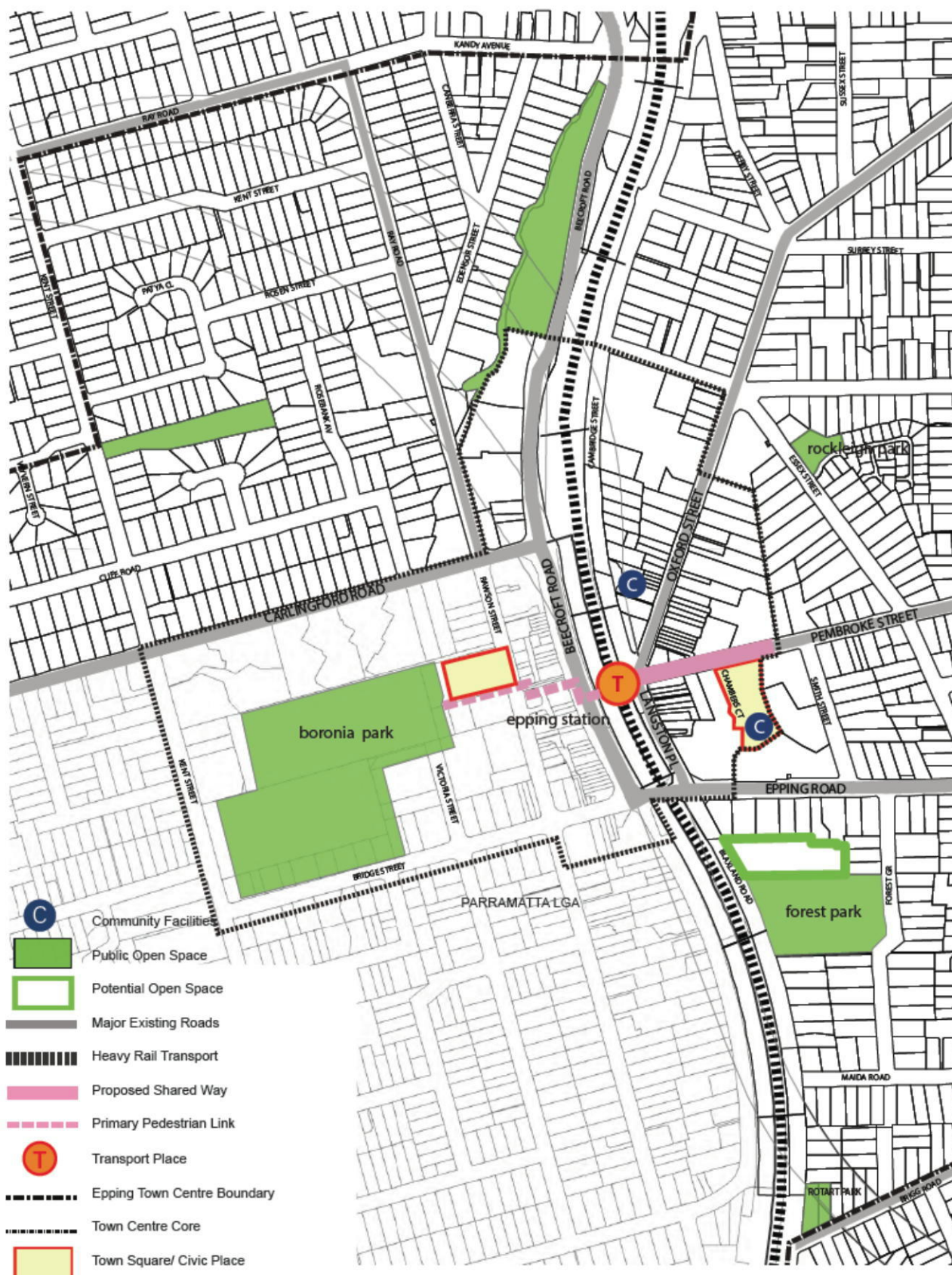
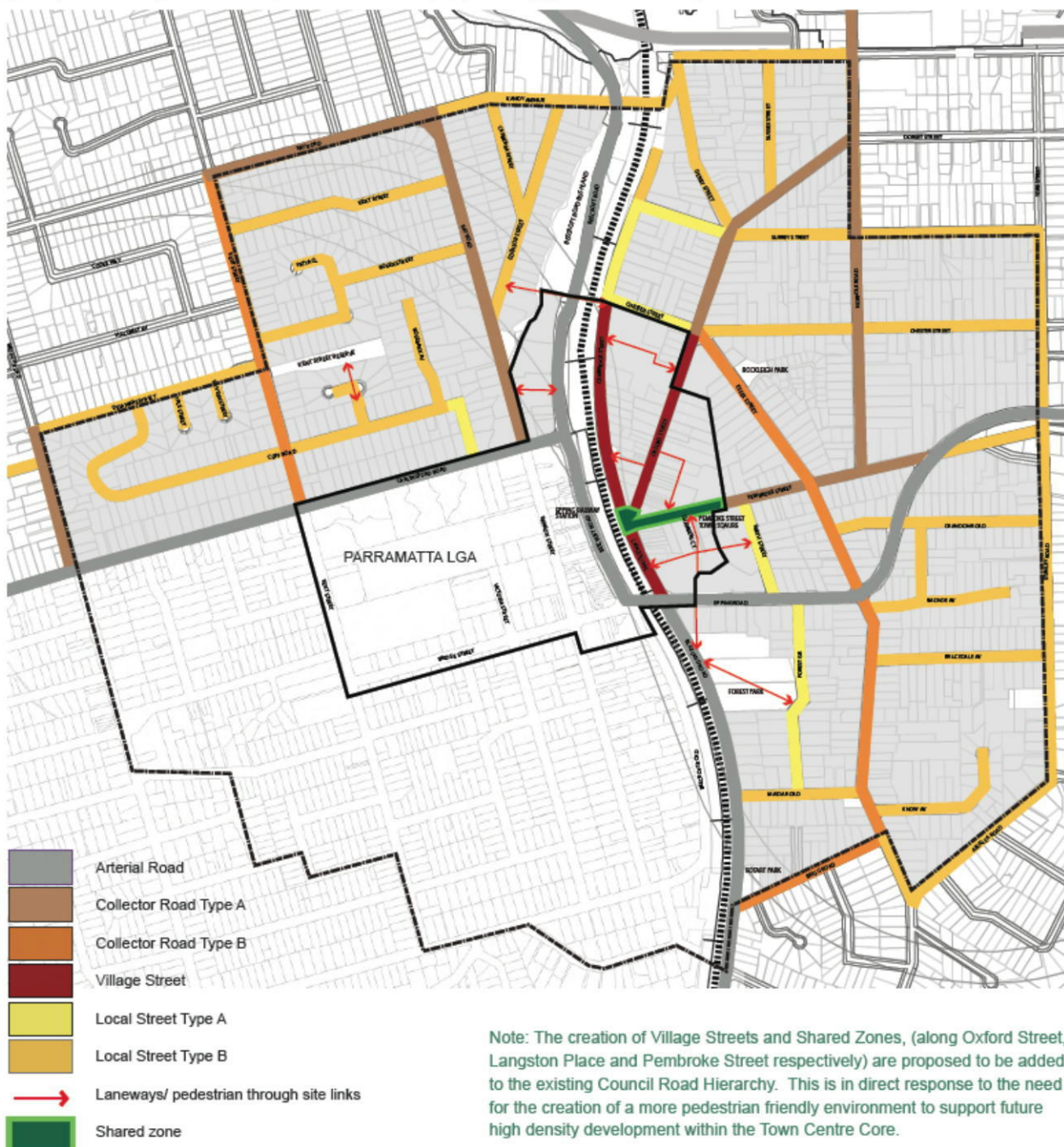


Fig 3.1

3.2 Street Typologies

The Arterial Roads and Collector Roads are the primary organising streets and through routes for vehicles, directing traffic flow away from the Town Centre Core and linking to the local street network. The Village Streets in turn become vibrant connectors leading to and away from the train station. They serve as secondary vehicular and primary pedestrian/ cycle through routes and linkages. Pembroke Street Shared Zone will present as the formal pedestrian/ cycle boulevard supporting a balanced movement function between traffic and pedestrians. It forms the key link between Transport Place and Pembroke Street Square and Cultural Hub. Oxford Street, Langston Place and Pembroke Street become the primary north- south, east west pedestrian/ cycle axis whilst Epping Road presents the primary east-west vehicular linkage across the railway. It also provides an alternative entry into the Town Centre.

Village streets and shared zones are defined by high pedestrian priority, ground floor retail, services and entertainment. Local streets, through-site linkages and laneways will facilitate a fine urban grain allowing active residential frontages, good permeability, varied uses, and soft landscape, providing good connectivity to the natural environment.



3.4 Transport and Access

The Town Centre is well served by Epping Station, Epping Road, Beecroft Road and the M2 motorway as well as east-west bus connections. Additional connectivity will be provided by the North West Rail Link. Epping will become a key interchange on this train route. The station also serves as an interchange for a range of bus services.

Separated cycleways (where possible), pedestrian priority streets and bicycle storage areas (short and long term) will be provided to promote alternative modes of green transport and enhance the overall walkability of the precinct.

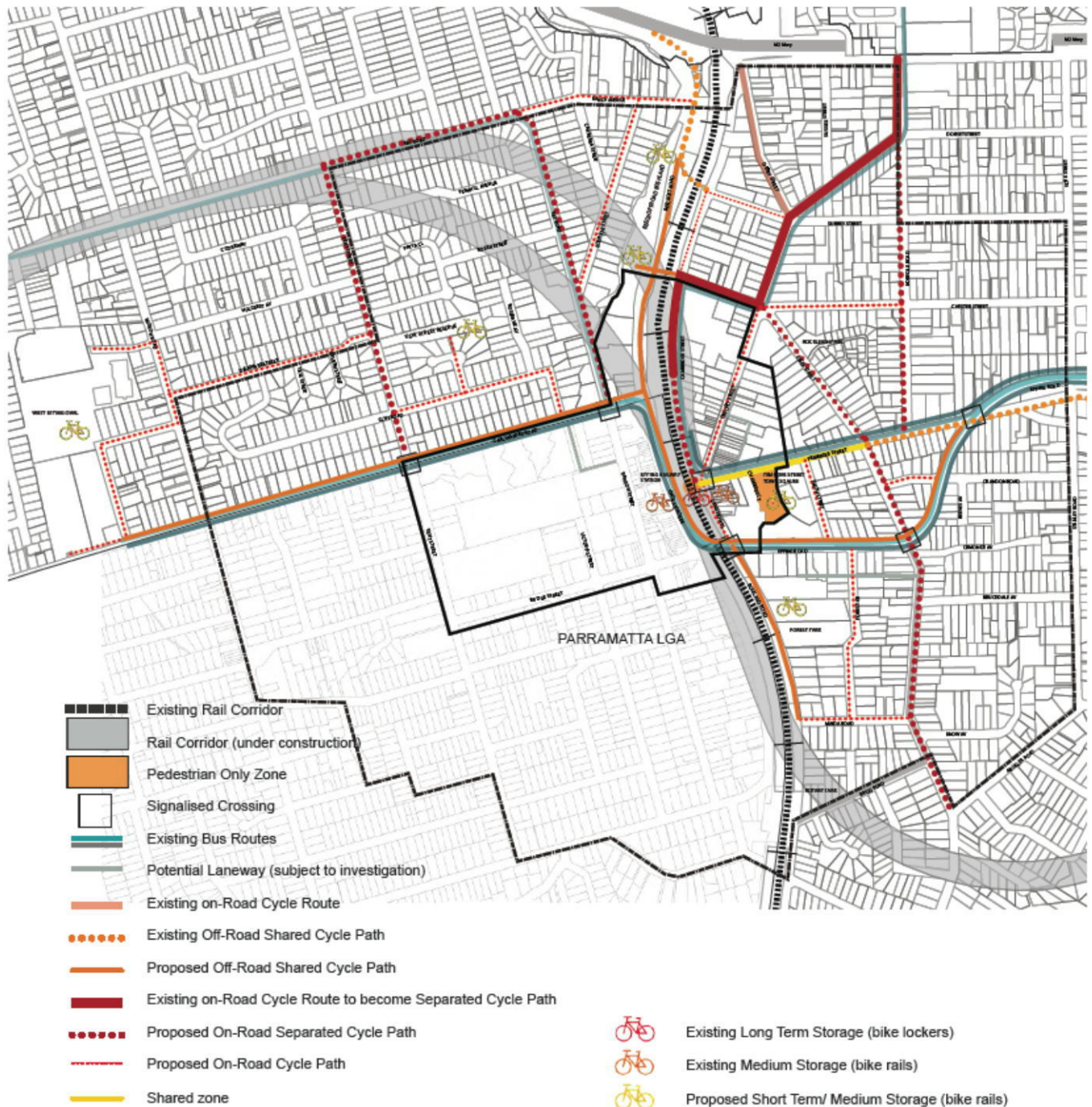


Fig 3.5

3.5 Pedestrian Movement

The east-west pedestrian spine links key open spaces across the Town Centre including Pembroke Street Town Square, Epping Station/ Transport Place, a proposed civic plaza adjacent to Rawson Street and Boronia Park on the Parramatta side of the railway. Walkability is fundamental to delivering vibrant and connected public spaces.

New east-west and north south pedestrian links through the Pembroke Street/ Langston Place Precinct and Between Oxford Street and Cambridge Street will provide a feeling of safety and encourage more people to walk through the centre. Potential pedestrian bridges across the railway and Epping Road would provide additional connectivity between the high density residential precincts, open space destinations and the train station.

High pedestrian concentrations are expected to occur along Oxford Street, Pembroke Street and Langston Place, and the diagonal desire lines across Forest Park. It is anticipated that the majority of pedestrian movements will occur at peak times. Lunchtime office employees and local residents will congregate in the Town Centre during the day. This pattern will be reversed in the evenings and weekends, where local residents and visitors will socialise, shop and dine.



Fig 3.6

Village Streets

(refer to Street Layout Table - Fig 6.1 and Fig 6.2 - for recommended footpath and carriageway widths)

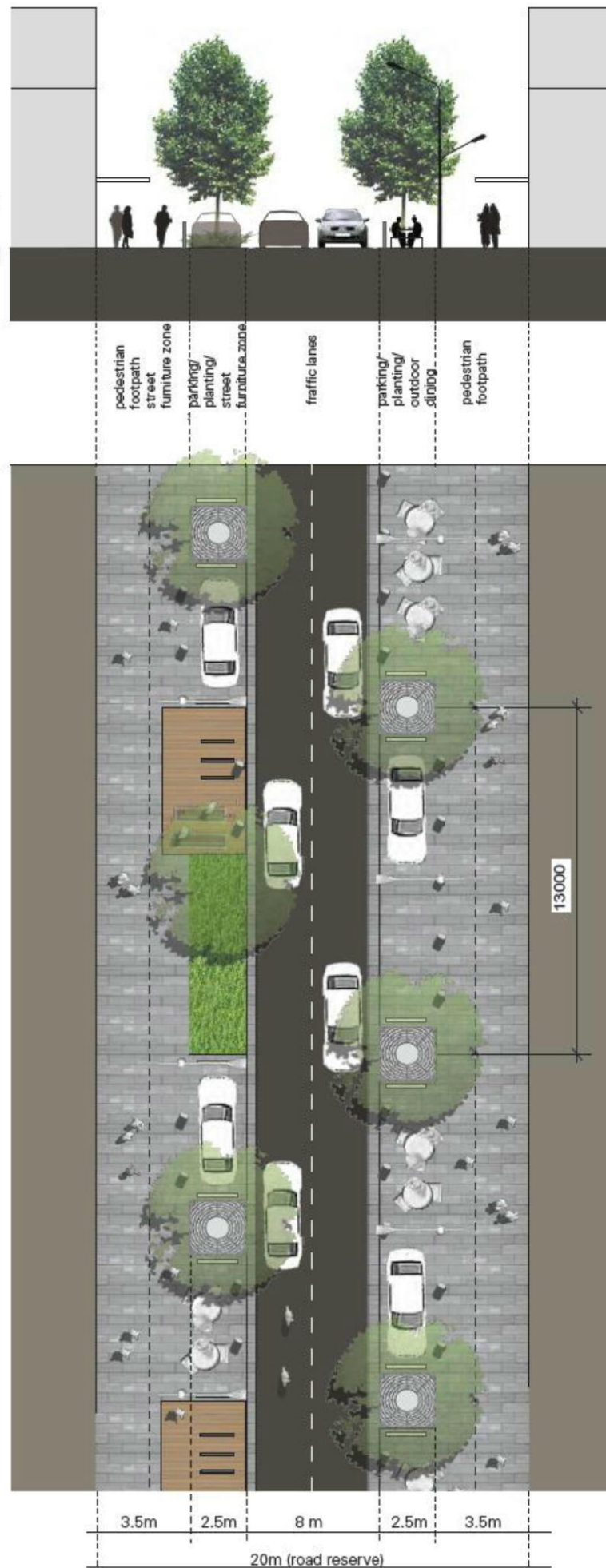


Fig 6.7

Key Places and Spaces **Oxford Street** 4



Oxford Street is the main retail strip within the commercial/residential district of the Town Centre. It forms part of the gateway into the Town Centre Core leading to Epping Railway Station.

The street corridor will access a variety of fine grain and larger retail facilities. The Village Street is programmed to become the buzzing shopping strip within the Town Centre, able to accommodate large numbers of pedestrian activities. The adjacent laneways and shared zones will provide extensions for al-fresco dining and protected seating areas.

Placement of trees in association with urban furniture and Water Sensitive Urban Design elements will assist in creating pedestrian zones of respite and social interaction. Some improvements have already been made to Oxford Street, including improved paving, footpath extensions and street tree planting, however there are still more opportunities for enhancement.

Objectives

- Design and program the street to become the main shopping street within the precinct with high pedestrian priority applications and opportunities for outdoor dining.
- Maximise pedestrian comfort by
 1. Providing a fine grain street frontage at ground level
 2. Providing awnings along the street frontage for weather protection
 3. Encouraging outdoor uses
 4. Creating widened footpaths
 5. Combining tree locations with public domain furniture and WSUD applications to create zones of respite and social interaction.
- Maintain the human scale of the streetscape by providing built form setbacks.
- Establish trees suited to the local climate and that will positively contribute to the micro-climate and built form character of the street.

Streetscape Improvements

- Consider raised pedestrian thresholds at street entry points.
- Create special crossings at strategically important locations such as laneway entry points. These pinchpoints provide opportunities for gatherings.
- Undertake streetscape upgrades to include additional furniture and lighting, signage, planting, wayfinding and public art (Refer to Part E - Street Design)
- Maintain the flexible removable bollard and dish drain solution to control vehicle access and allow for widened footpath zones for outdoor dining (Refer to Part E - Street Design).1

Considerations

1. Consideration of existing heritage elements/ items needs to be taken in any future development of Oxford Street.
2. Removal of existing redundant bus shelters needs to be undertaken alongside any future streetscape upgrades.

Key Principles



Provide a street with 2 travel lanes, 2 parking lanes for short term and special parking such as car sharing and electric fuel etc. Vehicle access controlled by removable bollards and dish drain which allows for the flexibility to create additional widened footpath zones.



Activate street frontage with fine grain retail façades and awnings and opportunities for outdoor dining.



Use street trees strategically in combination with public domain furniture and WSUD applications to create zones of respite and social interaction.



Create safe and legible pedestrian crossings (paved crossings or similar) where large volumes of pedestrian movement is expected.



Create new and improved pedestrian/ cycle links



Potential new laneway subject to further investigation.



Gateway/ Way-finding Signage

Fig 10.5

10.2 Improved Connections

Opportunities exist to enhance and supplement existing/ pedestrian/ cycle linkages between key activity nodes to activate the streets as well as provide new streets/ laneways for vehicle access.

New Accessways/ Streets

- Provide new rear laneway linking Oxford Street with Pembroke Street.
- Provide new access road from Forest Grove providing street access for sites along Epping Road.

Pedestrian and Cycle Links

New and improved pedestrian/ cycle links will be designed to be easily accessible and improve the feeling of safety to encourage more people to walk through the centre.

New Pedestrian Shared Crossings:

- Provide new at-grade shared crossing over Beecroft Road, adjacent to the existing pedestrian bridge.
- Provide separated shared pedestrian and cycle bridges over the Bridge Street rail overpass, over Epping Road to link to Pembroke Square and across the railway at Chester Street. (requires further investigation)
- Provide shared crossing facilities at the intersection of Beecroft Road/ Carlingford Road.
- Provide new scrambled crossing at the intersection of Pembroke Street, Langston Place, Oxford Street and Cambridge Street to link to development on the west side of the railway.

Widen footpaths:

- Along Beecroft Road (South of Epping Station) through the removal of existing street furniture to accommodate a shared pathway.
- Along Langston Place and Pembroke Street, as part of streetscape upgrades, reduced carriageway widths and private redevelopment of the site.

New and improved laneways and pedestrian connections:

- Provide new east-west pedestrian links between Oxford Street and Cambridge Street.
- Provide new east-west open laneway on the site of the existing Epping Bowling Club through to Forest Grove.
- Provide east-west/ north-south pedestrian links through the Pembroke Street/ Langston Place Precinct with longer term establishment of pedestrian connections to Smith Street.

Pedestrian Connections Diagram

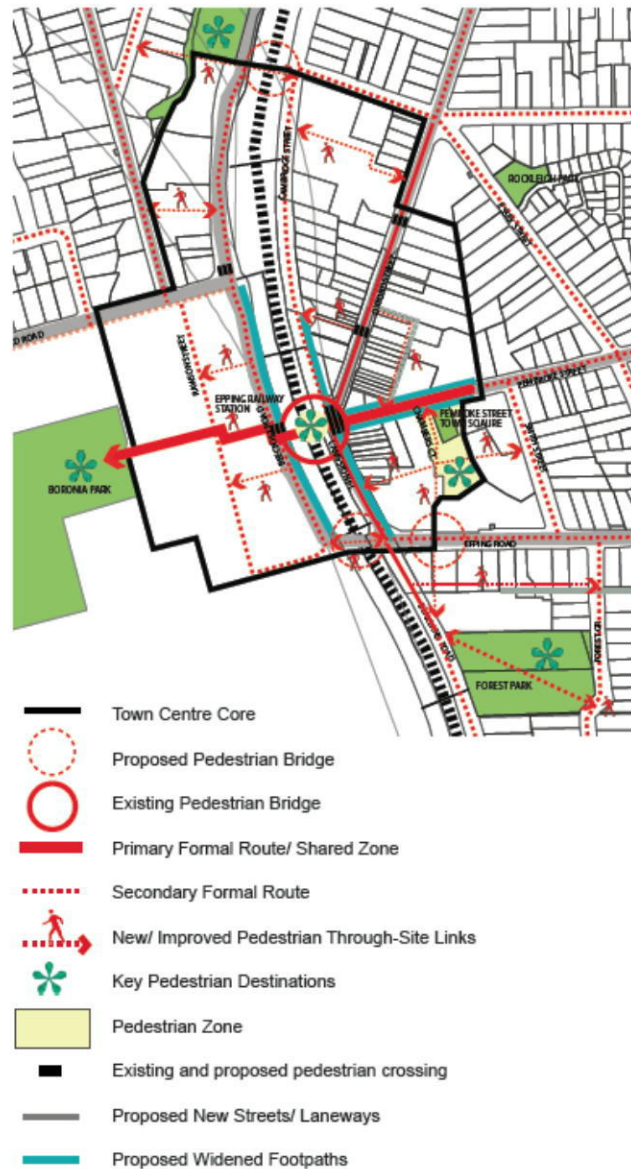


Fig 10.8

Improved bicycle paths will also include new designated on road routes and separated cycle paths, as well as increased bicycle parking spaces and facilities. (Refer to Fig. 3.5 - Transport and Access Diagram). New and improved cycle links:

- Provide/ upgrade to new separated on-road cycle path along Essex, Norfolk, Chester, Cambridge, Ray and Kent Streets and the northern part of Oxford Street.
- Provide new off - road shared cycle paths along Blaxland, Beecroft and Carlingford Roads .

Roadworks Infrastructure Improvements Diagram

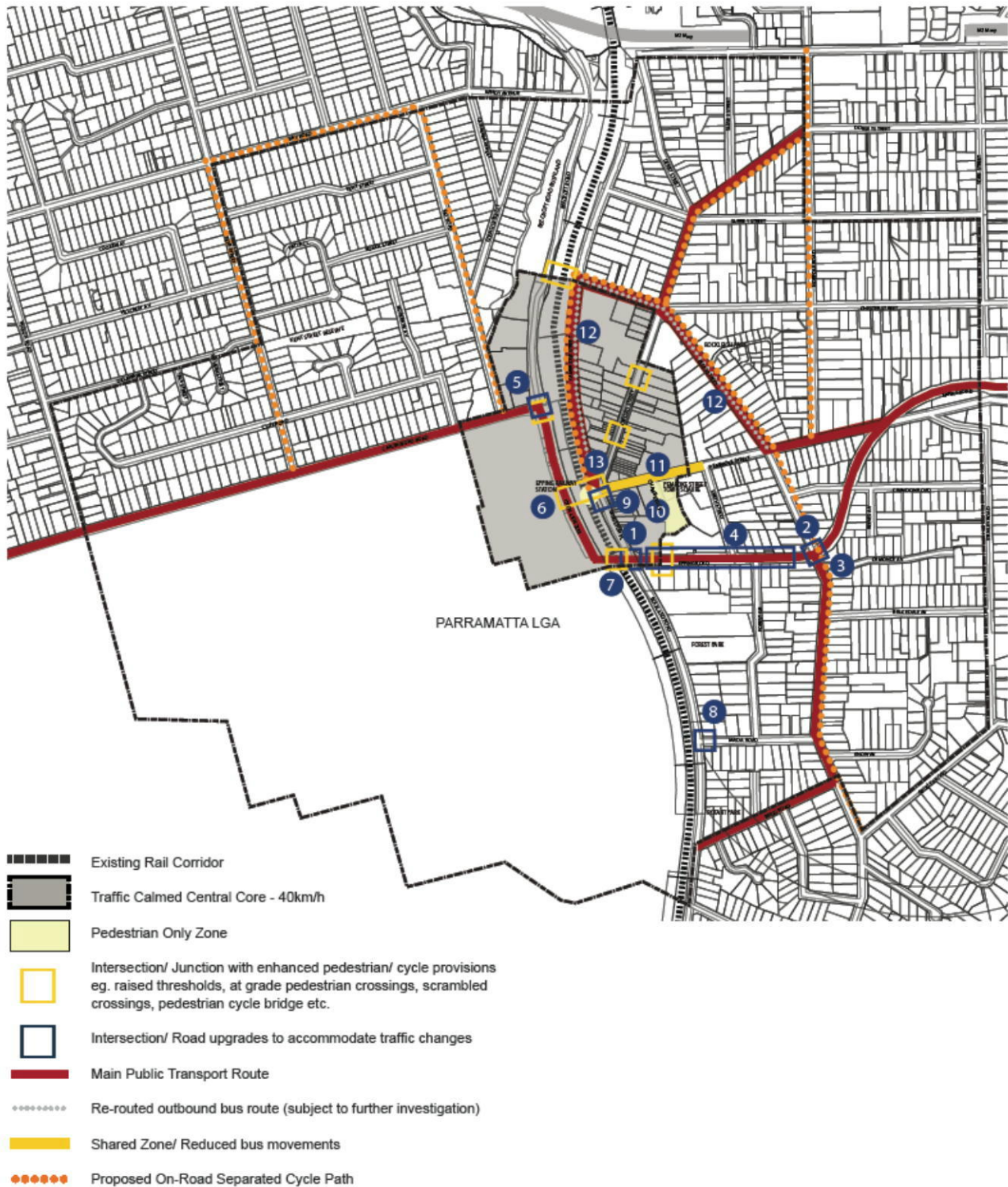


Fig 10.9