



24-36 Langston Pl, Epping Mixed Use Development Green Travel Plan

Prepared for:
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The Transport Planning Partnership

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APPENDICES

A. TRANSPORT ACCESS GUIDE

1 Introduction

1.1 Background

The proposed development is located at 24-36 Langston Place, Epping. The proposed development involves the demolition of the existing buildings on-site and in their place, construction a new 27-storey building with 102 residential dwellings, 550m² of commercial floor area and 250m² of retail floor area.

The Transport Planning Partnership (TPPP) has been appointed to prepare a green travel plan (GTP) for the proposed development to assist in the management of future travel demand following the occupation of the development.

1.2 The Role of a Green Travel Plan

The purpose of a GTP is to encapsulate a strategy for managing travel demand that embraces the principles of sustainable transport. In its simplest form, this GTP encourages use of transport modes that have low environmental impacts, for example active transport modes including walking, cycling, public transport, and better management of car use.

Active transport presents a number of interrelated benefits including:

- improved personal health benefits
- reduced traffic congestion, noise and air pollution caused by motor vehicles
- greater social connections within communities, and
- cost savings to the economy and individual.

A GTP is a package of coordinated strategies and measures to promote and encourage active/sustainable travel. This GTP aims to influence the way people move to/from the proposed development site to deliver better environmental outcomes and provide a range of travel choices, whilst also reducing the reliance on private car usage, particularly single occupancy car trips.

The planning of the new developments would need to accommodate innovative ideas to better manage the transport demand arising from the developments. As part of an ongoing process, it will be necessary to review and/or introduce new measures to ensure that trips generated by the proposed development are not solely private car based, particularly single occupancy trips.

In order to ensure that the GTP meets its intended objectives, a review of 'best practice' guidelines such as the City of Sydney 'Guide to Travel Plans' and 'The Essential Guide to

Travel Planning prepared by the United Kingdom Department of Transport, has been undertaken.

From the above review, the key themes applicable to the GTP include:

- **Site audit and data collection:** A desktop audit has been undertaken in order to identify and document the existing issues and opportunities relevant to site and its accessibility particularly by non-car modes. Opportunities to improve amenity, incentivise non-car travel and remove barriers to the use of sustainable transport modes are then dealt with under the Site-Specific Measures, detailed in 5.1. Notably, as the site is not currently occupied by proposed development, current Journey to Work data in the area has been used to inform the baseline data for modal splits to/from the subject site.
- **Audit of policies:** An audit of key policy documents has been undertaken to assist with defining the direction and purpose of the GTP, aligned with the key targets and objectives from a local and regional perspective.
- **Bicycle parking and car parking management:** This GTP provides a strategy for management of both bicycle parking and car parking moving forward, and how they interact with travel choices.
- **Local alliances:** The development of relationships between the Proponent and various stakeholders (such as the Council, the Roads and Maritime Services and Transport for New South Wales) will assist the Proponent in delivering improved transport options.

1.3 Travel Plan Pyramid

The GTP will need to be tailored to the proposed development site to ensure appropriate measures are in place for the different land uses to promote a modal shift away from car usage.

The key elements of the GTP are shown in the Travel Plan Pyramid in Figure 1.1.

Figure 1.1: Travel Plan Pyramid



All elements in the Travel Plan Pyramid are critical to the success of the GTP, but Figure 1.1 illustrates that the key foundations to ensure the success of a GTP are:

- **Location** – proximity to existing public transport services and proximity to mixed land uses, e.g. shops and services, such that walking or cycling becomes the natural choices, and
- **Built Environment** – provision of high quality pedestrian and cycling facilities, end-of-trip facilities and reduced car parking provision to encourage sustainable transport choices.

1.4 Drivers of the Travel Plan

Further to the above, there are a number of social, environmental and economic drivers for developing and implementing a GTP for developments as detailed below.

1.4.1 Car Parking

Car parks utilise valuable land resources and impact amenity. If the area continues to grow and there is no modal shift towards non-car transport modes, the car parking demand could increase significantly. As such, the provision of car parking must reflect the site's proximity to public transport to influence a modal shift to more sustainable transport modes. With sites located adjacent to a well serviced public transport nodes with direct access to key employment hubs (e.g. Sydney CBD, Ryde, Parramatta etc), there is strong justification to provide reduced car parking compared to the maximum car parking rates as set out in Council's Local Environmental Plans and Development Control Plans.

Further to this, the cost of building underground parking is significant and therefore, there is strong economic imperative to reduce parking demand through supporting modal shift to sustainable transport modes.

1.4.2 Environmental Impacts

The transport sector (road, rail, air and ship) is Australia's third largest source of greenhouse gas emissions (GHG), accounting for 18 per cent of emissions in Australia in 2015 (Climate Council of Australia, 2016). Mitigating this impact is a key driver of the GTP. Within Australia, the transport sector has the highest rate of growth of GHG emissions per year having risen by 51 per cent since 1990 with private vehicles responsible for almost half of transport emissions. In comparison, travel modes such as walking and cycling have the lowest emissions while public transportation has significantly lower impact than the private vehicles.

1.4.3 Health Benefits

The use of sustainable transport modes can have wide-ranging health benefits due to a corresponding reduction in greenhouse gas emissions and increase in physical activity from walking and cycling. The shift from private cars to sustainable transport "can yield much greater immediate health "co-benefits" than improving fuel and vehicle efficiencies" (World Health Organisation, 2011). The potential benefits can include reduced respiratory diseases from better air quality, prevention of heart disease, some cancers, type 2 diabetes and some obesity-related risks.

1.4.4 Social Equity

Transport has a fundamental role in supporting social equity, that is the equitable distribution of services, amenities and opportunities. The provision of sustainable transport modes can provide a more affordable alternative to car use. As such, it offers better mobility for women, children, young people, the aged, persons with disabilities and the poor, who have less access to private vehicles, thereby enhancing social equity.

1.4.5 Site Attraction

Provision of high quality transport facilities (public transport, cycling and walking infrastructure) has a significant impact on the accessibility and therefore attractiveness of a site. As Sydney's population grows and road congestion alongside it, the need for alternative travel modes increases. A site with well provisioned transport systems becomes a key attractor for residents, employees, customers and visitors.

2 Existing Transport Policy Context

2.1 Summary of Key Policy Directions

The review of existing relevant policy clearly illustrates a number of themes that should inform the approach to ongoing management of transport demand, and investment in the transport network. These themes include:

- provision of high quality local transport infrastructure and improved bike paths and networks and improving accessibility and connectivity
- address car parking issues in key locations, including residential and business districts and encouraging active transport, and
- create connected, liveable communities where people can walk, cycle and use public transport to promote healthier, active communities.

A summary of the existing policy framework documents is provided in Table 2.1.

Table 2.1: Summary of Policy Framework

Policy/Strategy	Key Aims/Objectives/Goals
City of Parramatta Council	
Community Strategic Plan 2018-2038: Butbutt Yura Barra Ngurra	<p>The Community Strategic Plan 2018-2038 is the strategic plan for the City of Parramatta Local Government Area that identifies the community's main priorities and aspirations for the future and guides the delivery of Council services over the next ten years.</p> <p>The key goal for the Epping Town Centre is to introduce planning controls to better manage future growth, and address principles relating to heritage, commercial floorspace, public domain, traffic and planning processes.</p>
Delivery Program 2018-2019	<p>The Delivery Program 2018-2019 outlines Council's plans to achieve the community vision by translating the goals and outcomes of the Community Strategy Plan into service delivery and key initiatives.</p> <p>The key initiatives include:</p> <ul style="list-style-type: none"> ▪ delivering the Epping Town Centre Plan ▪ cycleway linking Epping to Carlingford ▪ Epping Town Centre renewal and improvement programs ▪ expanding leisure and learning activities, and ▪ delivering the Epping Aquatic Centre.
Parramatta Bike Plan 2016	<p>The aspiration of the Parramatta Bike Plan is to</p> <ul style="list-style-type: none"> ▪ to enhance the productivity and liveability of Parramatta through an increase in cycling ▪ for cycling to be safe and perceived as an attractive option for all ages ▪ to increase the mode share of cycling trips to work in Parramatta to 5%. <p>The strategy includes several dedicated local and strategic routes, including the <i>Epping to Macquarie University and Macquarie Park</i> and <i>Carlingford to Epping</i> routes.</p>
NSW State Government	
New South Wales Long Term Transport Masterplan (NSW State Government, 2012)	<p>The NSW Long Term Transport Masterplan guide the NSW Government's transport funding priorities over the next 20 years. As part of this Plan, construction of the Sydney Metro Northwest Rail link has begun. Once completed rail services to/from Epping will increase with services every four minutes during the peak.</p>

Policy/Strategy	Key Aims/Objectives/Goals
Future Transport Strategy 2056	The Strategy aims to increase the mode share of public transport services and reduce the use of single occupant vehicles. The Proposal will look to reduce private vehicle travel and aligning with the objectives of the Strategy.
Greater Sydney Region Plan: A Metropolis of Three Cities – Connecting People	The site is well located to contribute towards creating a 30-minute city. The mix of uses in the existing and future town centre means residents/employees can access easily access shops and the community facilities within the immediate vicinity. The site's links with public transport means there are numerous facilities including jobs, schools and medical centres within a 30-minute travel time for future residents. The proposed Sydney Metro rail link will further improve the accessibility of the site, with travel times to the CBD reduced from 40 to 30-minutes. The site thus aligns with the objects of the Plan.
Sydney's Cycling Future, Cycling for Everyday Transport (NSW State Government, 2013)	<p>Sydney's Cycling Future has targeted the 70% of residents in NSW who have indicated that they would cycle if it were safer to do so. Based on this, improving cycling infrastructure is a key focus of the strategy.</p> <p>The Three Pillars of Sydney's Cycling Future include:</p> <ul style="list-style-type: none"> ▪ investing in separated cycleways ▪ providing connected bicycle networks to major centres and transport interchanges promoting better use of our existing network; and, ▪ engaging with our partners across government, councils, developers and bicycle users. <p>The Parramatta Bike Plan 2016 supports the above objectives with several new bike routes proposed, including a mix of on-road lanes, mixed traffic and off-road facilities surrounding the site.</p>
Epping Town Centre Urban Activation Precinct	The Epping Town Centre Urban Activation Precinct is generally located within an 800m radius from Epping Railway Station. The Epping Town Centre is considered a strategic location with its proximity to existing public transport facilities and additional connections to be provided from proposed public transport infrastructure and there ideal in addressing Sydney's housing pressures. As such, a planning framework has been development for the precinct with a plan for rezoning, road and transport upgrades, public domain improvements, improvement to pedestrian and cycling connections and additional community facilities.

2.1.1 Greater Sydney Region Plans: 30-minute City

As indicated above, the Greater Sydney Commission's Greater Sydney Region Plan, the key purpose of the plan is to deliver a 30-minute city where jobs, services and quality public transport spaces in easy reach of people's home.

However, a recent study conducted by Deloitte Access Economics found that only 75 of the 313 Sydney neighbourhoods could currently be deemed to have easy access to major job hubs and other key services within half an hour. Based on the findings of the Deloitte study and work undertaken by Arup, a number of key performance criteria have been identified in order to achieve a 30-minute city:

- **Access to healthcare** – hospitals provide an important facility to many people and play a role for employment, education and training facilities. Parking is often limited at hospitals and as such, access via a variety of transport modes are required.
- **Access to retail services** – access to all forms of retail (supermarkets and specialist stores) is essential to achieve a 30-minute city. There has already been an increase in the number of mixed-use developments within Sydney to create micro-communities, which provide mixed retail services, residential, commercial and community facility uses.

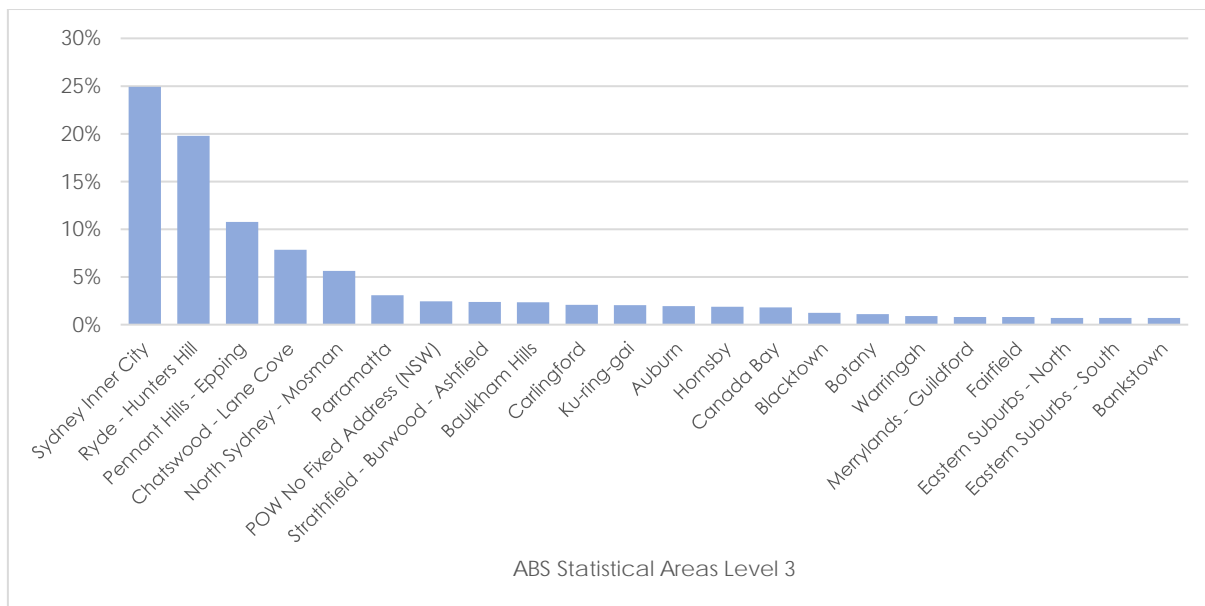
- **Access to schools** – access to good schools relies on housing affordability, which also shape where teachers live. In particular, many students have good access to local schools, however some have to travel outside their catchment areas for specialist and selective schools. As such, it is important to create strong transport link to provide good access to local schools and connect teachers with their place of residents and work.
- **Access to further education facilities** – public transport links for TAFE and universities are vital as students and teachers often travel out of the local catchment to the educational facility as they are often located in areas with high property prices.
- **Quality of public transport facilities** –Whilst Sydney is a liveable city; it is often constrained by transport issues. As such, the provision of good quality, reliable public transport facilities are essential to achieve a 30-minute city.
- **Access to jobs** – people being able to live close to their jobs is fundamental to delivering a 30-minute city. The current Sydney CBD has the highest concentration of jobs but as found by the Deloitte study, the average one-way commute for those travelling into the CBD from outside the city is 63 minutes. The locations with the best access to jobs currently are located near to railway stations, or close to major employment centres such as the Sydney CBD.
- **Access to residents** – a way of minimising travel needs is to locate jobs and services close to where residents live.

The Epping Town Centre is noted to include several community facilities, that is within walking distance from the subject development site, including medical centres, Coles supermarket, gym, restaurants, plus a number of nearby schools.

The site is also in proximity to several key employment hubs such as, Macquarie Park, Rhodes Chatswood and Sydney CBD.

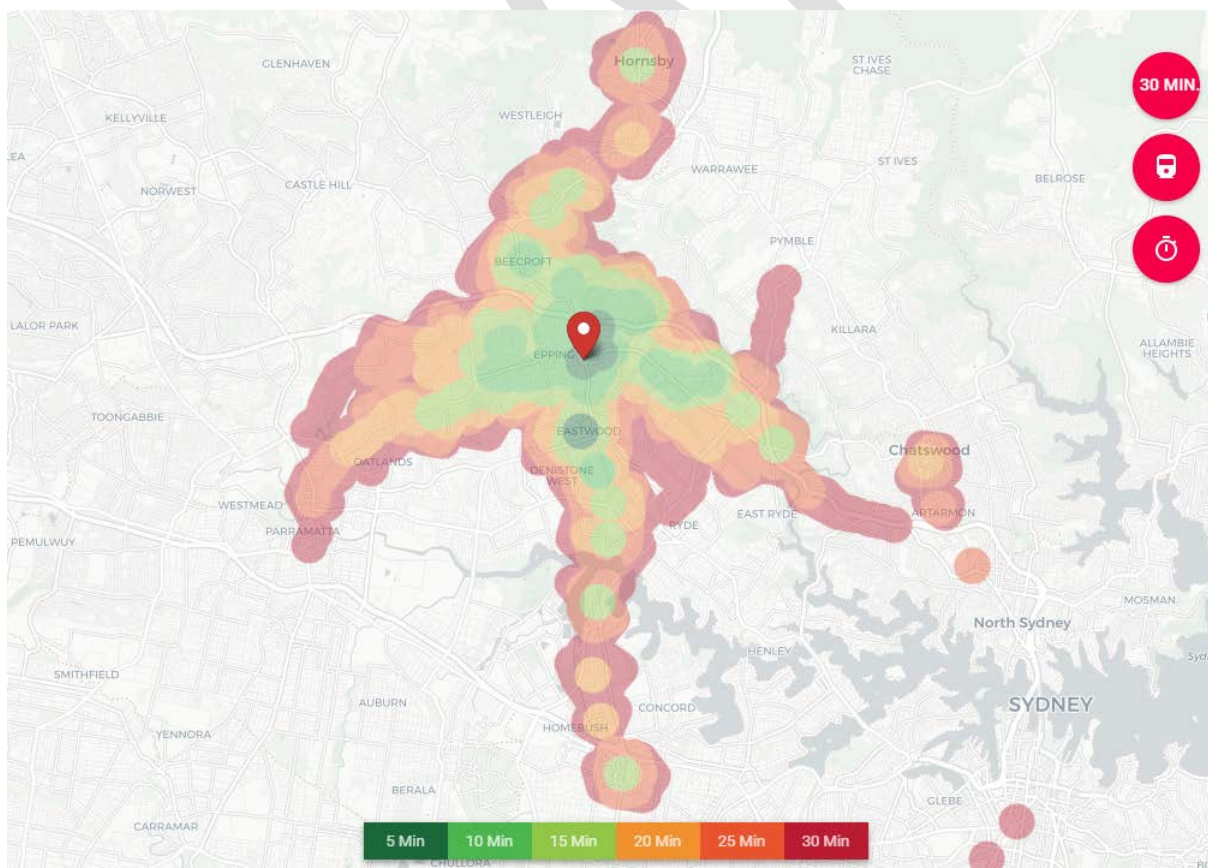
Based on 2016 census data, the top employment areas for residents living within an 800m radius of the development site, include 25 per cent at Sydney CBD, 20 per cent at Ryde-Hunters Hill, 10 per cent at Pennant Hills-Epping, 8 per cent at Chatswood-Lane Cove and 6 per cent at North Sydney as summarised in Figure 2.1.

Figure 2.1: 2016 Census – Resident Employment Areas



As an indication, the site's proximity to surrounding suburbs within a 30-minute commute by transit is shown in Figure 2.2.

Figure 2.2: 30-minute Catchment by Transit



Source: <https://www.targomo.com/en/>

Figure 2.2 indicates that the site is located within a 30-minute commute to key employment hubs for Epping residents including Ryde, Pennant Hills, Epping, Parramatta, Chatswood and North Sydney.

Following the completion of the Sydney Northwest Metro Project, the rail trip to the Sydney CBD from Epping is estimated to reduce from 40-minutes to 30 minutes with a service frequency of four minutes.

Based on this, the site is considered generally well located to key employment hubs with good public transport connectivity and is expected to improve following the opening of the Sydney Metro in 2019 (Rouse Hill to Chatswood section).

As such, the site is considered to align with the key objectives of the Sydney Greater Region Plan by contributing towards the creation of a 30-minute city.

3 Existing Transport Conditions

3.1 Rail Services

The subject site is located directly opposite Epping Railway Station across Langston Place. It is also in close proximity to the Epping bus terminus. The Epping Railway Station services the Sydney T1 Northern Line, T1 North Shore & Northern Line and the intercity, Central Coast & Newcastle Line. These facilities provide frequent services to Sydney CBD and other major destinations.

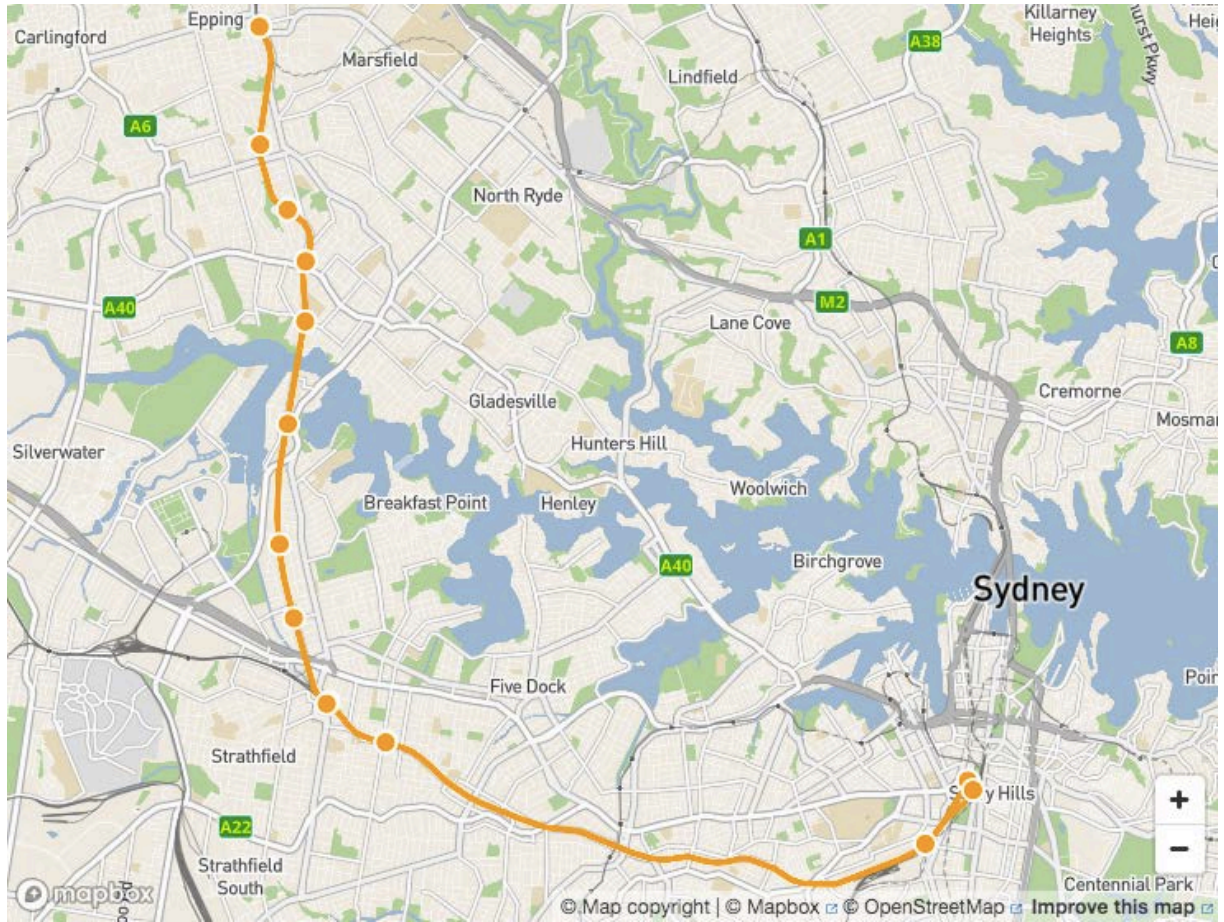
A review of railway services availability at Epping Railway Station is summarised in Table 3.1.

Table 3.1: Table Train Services at Epping Station

Route	Route Description	Typical Weekday Frequency During Peak Hour
T1 Northern Line	Hornsby and Epping to City via Strathfield	2-10 minutes
	City to Epping and Epping to Hornsby via Strathfield	4-10 minutes
T1 North Shore & Northern Line	Berowra to City via Gordon, Hornsby to City via Macquarie University	15 minutes
	City to Berowra via Gordon, City to Hornsby via Macquarie University	15 minutes
Central Coast & Newcastle Line	Newcastle to Central via Strathfield or Gordon	Every 15 to 30 minutes
	Central to Newcastle via Strathfield or Gordon	Every 30 minutes

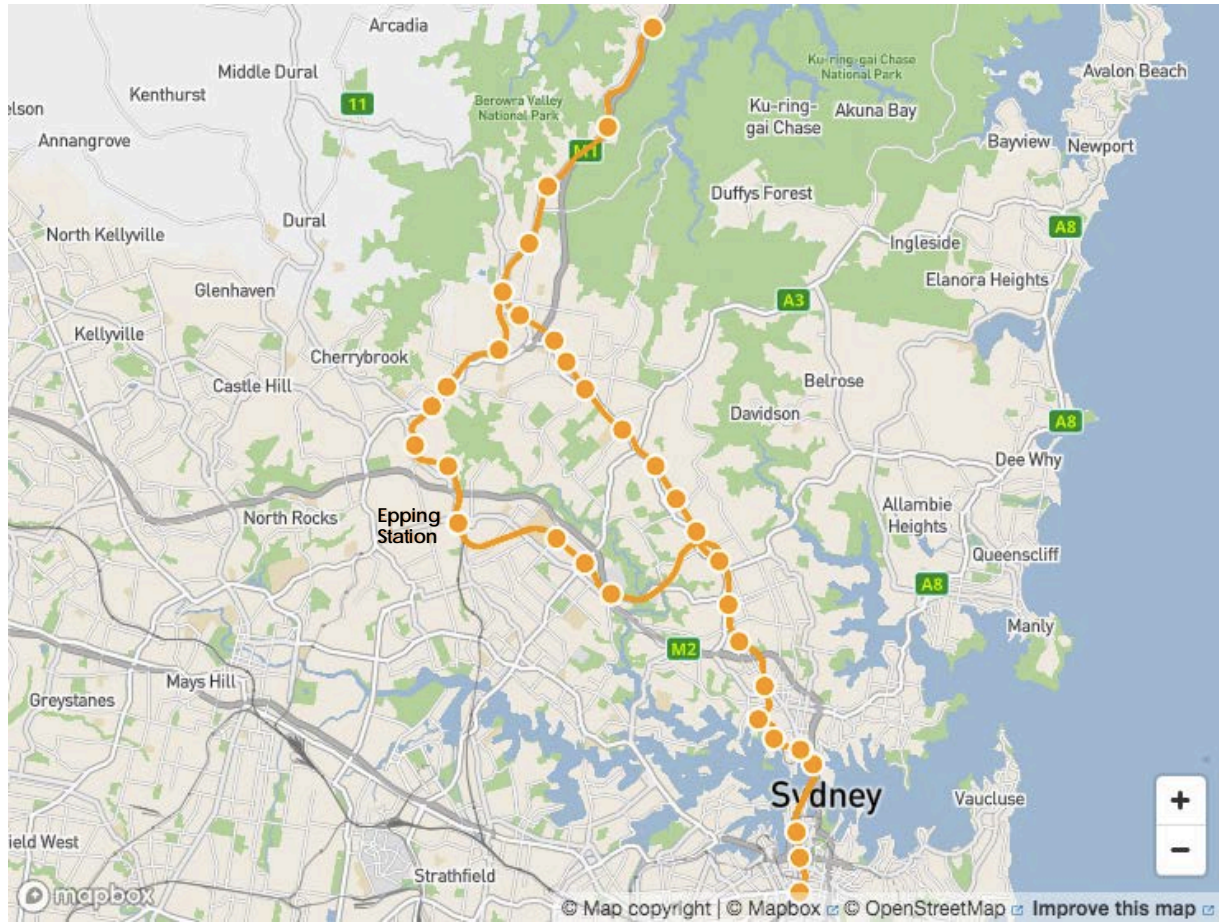
The T1 Northern, T1 North Shore & Northern and Central Coast & Newcastle routes are shown in Figure 3.1, Figure 3.2 and Figure 3.3 respectively.

Figure 3.1: T1 Northern Route



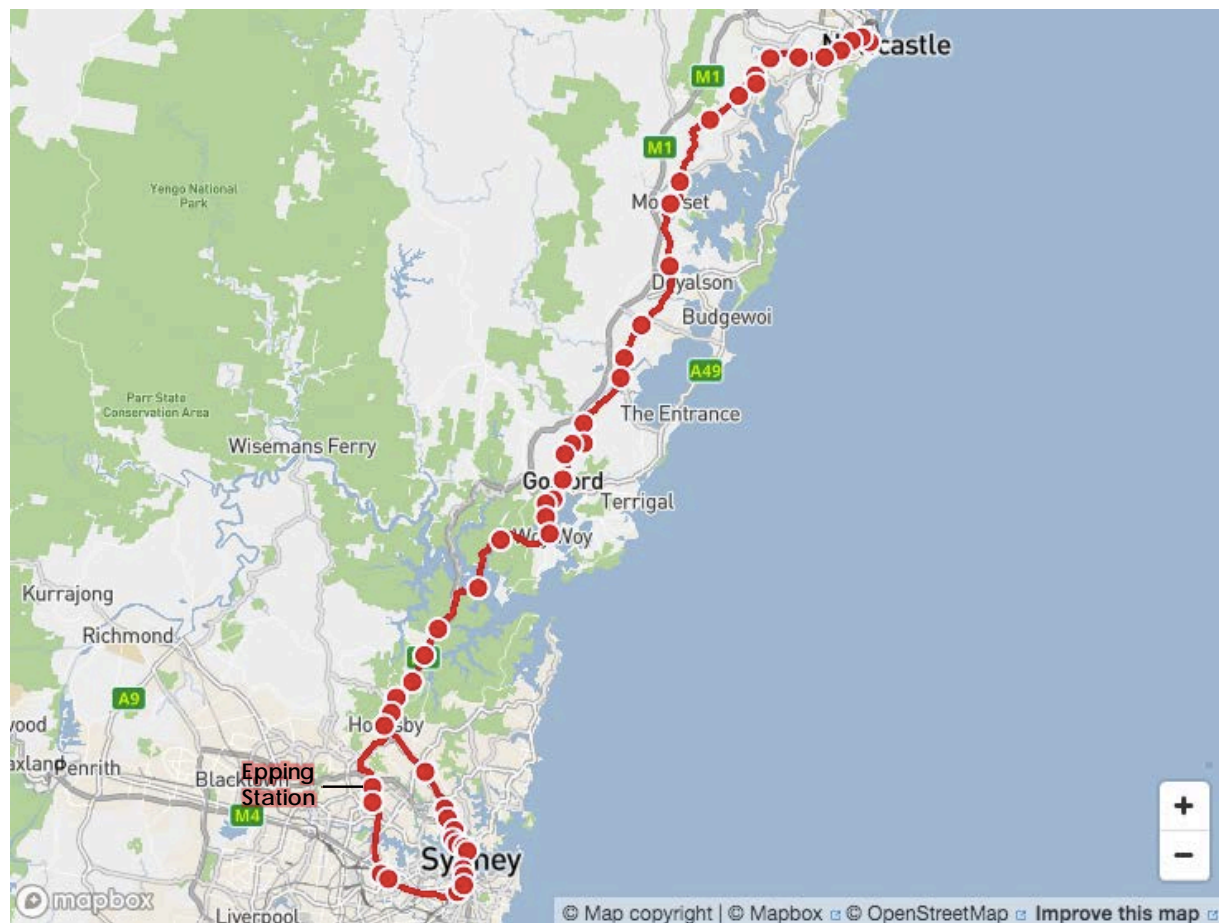
Source: TfNSW

Figure 3.2: T1 North Shore & Northern Line



Source: TfNSW

Figure 3.3: Central Coast & Newcastle Route



Source: TfNSW

3.1.1 Proposed Sydney Metro Upgrade

The NSW Government is implementing a new 66-kilometre railway line from Rouse Hill to Bankstown via Chatswood and the CBD. The Metro line will include 31 stations including an upgraded Epping Railway Station. It will include an upgrade of the existing rail line between Epping and Chatswood to Metro standards.

The Northwest section of the Metro (Rouse Hill to Chatswood) has an anticipated opening of 2019 and the City and Southwest section (Chatswood to Bankstown) has an anticipated opening of 2024. Following opening, the Metro is anticipated to provide rail services at Epping every four minutes during the peak and 15 minutes off-peak. In addition, customers are anticipated to have new direct metro services to Crows Nest, Barangaroo and Martin Place once the City and Southwest section opens.

3.2 Existing Bus Services

The Integrated Public Transport Service Planning Guidelines state that bus services influence the travel mode choices of sites within 400 metres (approximately 5 minutes) of a bus stop. Data collected by TfNSW Transport Performance and Analytics from the 2014/15 Household Travel Surveys supports this guidance, however, also suggests that walking trips to a bus stop extend further than the traditional 400m distance to a bus stop, as shown in Table 3.2.

Table 3.2: Population of Walkers to a Bus Stop (Weekday Trips)

Walking Distance	Population	Percentage of Population
Up to 400m	155,948	49%
401m to 800m	91,077	28%
801m and greater	73,632	23%
Total	320,657	100%

Data Source: TfNSW Transport Performance and Analytics Household Travel Surveys 2014/2015

Notably, there are a number of bus stops located within a 400m catchment radius of the site, at the Epping Railway Station and Bus Terminus, which provide good public transport access to a myriad of locations across Sydney. The site location with respect to the existing bus network surrounding the site is shown in Figure 3.4 with their descriptions and frequencies detailed in Table 3.3.

Figure 3.4: Existing Bus Network Map



Basemap source: Google Maps Australia

Table 3.3: Bus Services within Vicinity of Subject Site

Route No.	Route Connectivity Description	Typical Weekday Frequency During Peak Hour
295	Macquarie Centre & North Epping	10-15 minutes
288, 290	City & Epping	10-15 minutes
291	Epping to McMahons Point	20-30 minutes
M54	Macquarie Park & Parramatta	15 minutes
546	Epping/North Rocks & Parramatta	15 minutes
541	Eastwood & Epping	45 minutes
549	Epping & Parramatta via Eastwood	30 minutes
630	Blacktown & Macquarie Park via Baulkham Hills and Carlingford	40 minutes

Bus Route 82T1 and 86T1 are train replacement services that are operated on an infrequent basis.

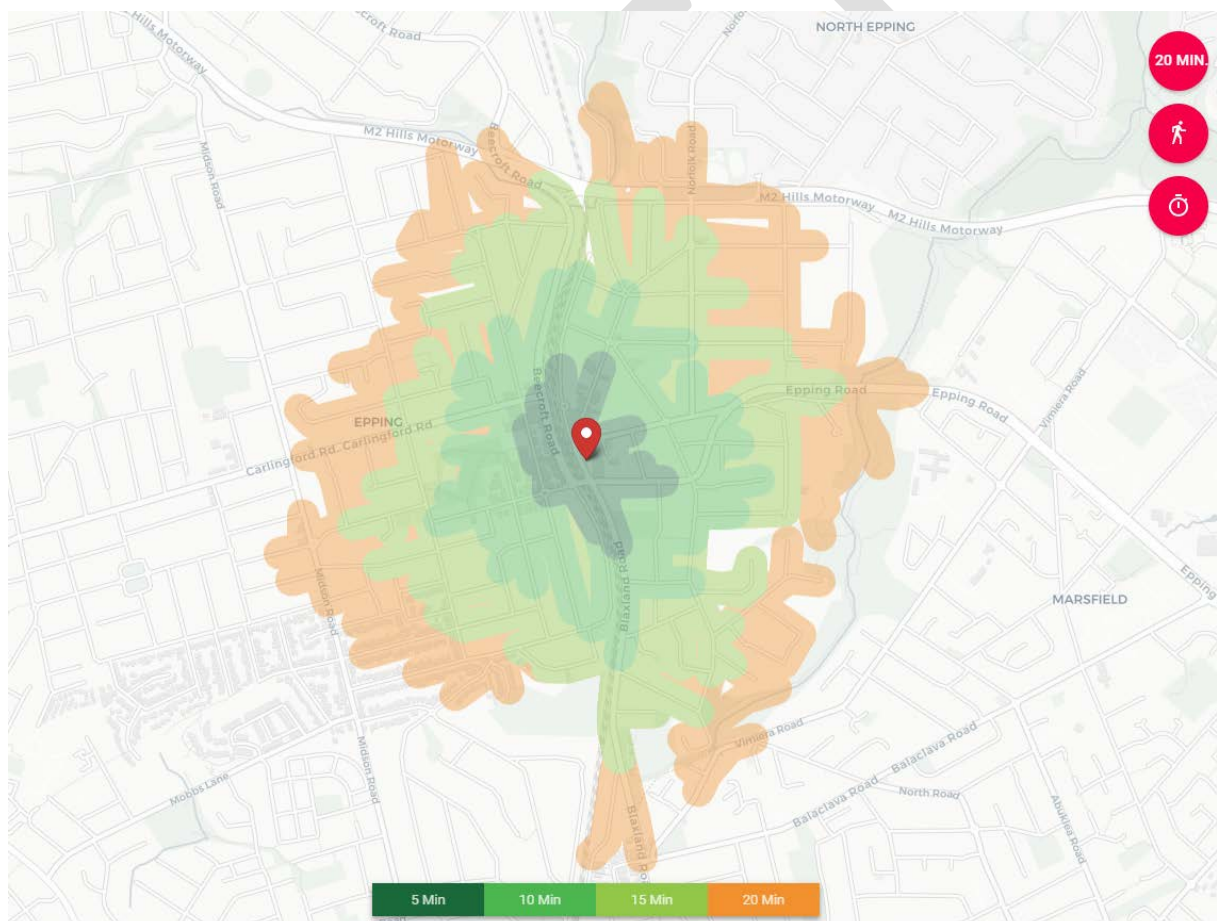
3.3 Existing Pedestrian Infrastructure

Well-established pedestrian facilities are provided within the vicinity of the site. Sealed pedestrian paths are provided on either side of Langston Place, which deliver good pedestrian access to the surrounding Town Centre and to Epping Railway Station which is located directly across the road from the site.

A signalised pedestrian crossing is provided 50m north of the site providing direct access to the Railway Station entrance.

The pedestrian catchment within a 20-minute walk distance from the site is graphically shown in Figure 3.5.

Figure 3.5: Existing Pedestrian Catchment (20-Minute Walk)



Source: <https://www.targomo.com/en/>

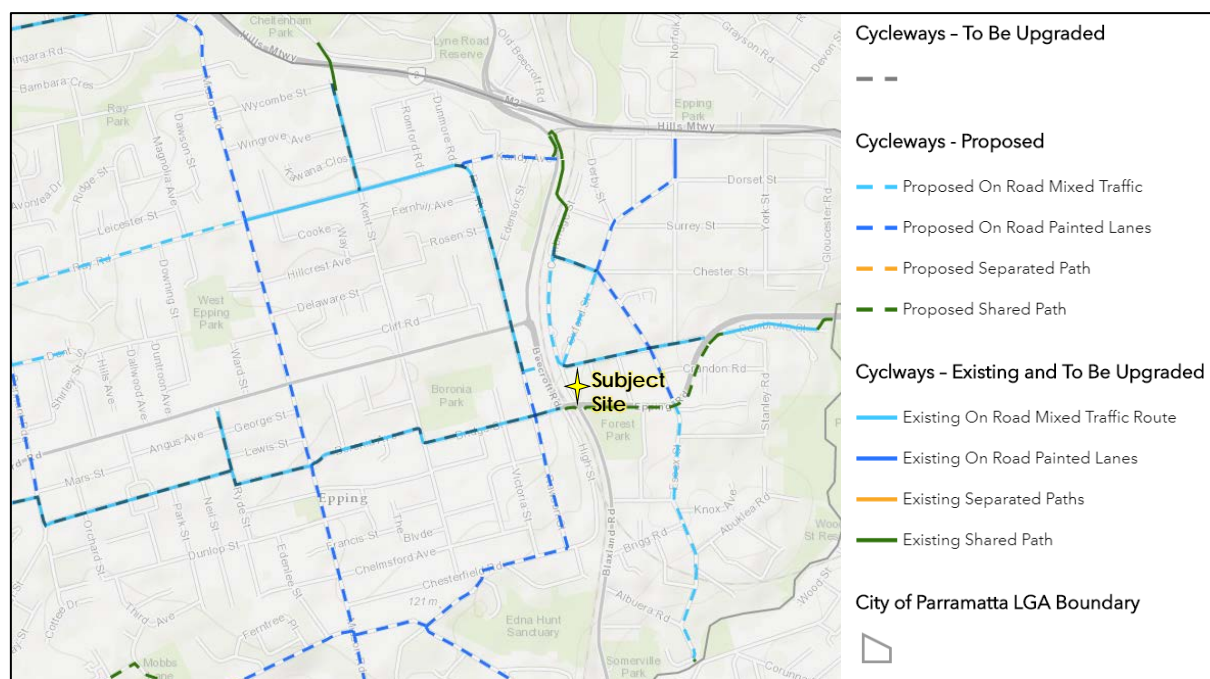
3.4 Existing Cycling Infrastructure

Limited and disconnected bicycle routes are provided in the vicinity of the site. On-road cycling routes are provided along Pembroke Street, Ray Road, and Boronia Avenue and a shared path is provided along Cambridge Street to Beecroft Road.

However, the City of Parramatta *Bike Plan 2017* proposes a more comprehensive cycling network within the Epping area with a combination on-road cycling lanes and mixed traffic routes.

The existing and proposed cycling network within the vicinity of the site is shown in Figure 3.6.

Figure 3.6: Epping Bicycle Network



Source: City of Parramatta, <https://www.cityofparramatta.nsw.gov.au/cycling>, accessed 18/07/2018

3.5 Car Share

Car share scheme is a flexible, cost effective alternative to car ownership and is a convenient and reliable way for residents to use a car when they need one. GoGet is a car share company operating in Australia, with a number of pods located within the area.

Car share is a concept by which members join a car ownership club, choose a rate plan and pay an annual fee. The fees cover fuel, insurance, maintenance, and cleaning. The vehicles are mostly sedans, but also include SUVs, station wagons and vans. Each vehicle has a home location, referred to as a "pod", either in a parking lot or on a street, typically in a highly-populated urban neighbourhood. Members reserve a car by web, telephone and use a key card to access the vehicle.

A study was commissioned by the International Carsharing Association in 2016¹, to review the impact of the car share services in Australia after more a decade of operation. The study focuses on the City of Sydney council area which had about 20,000 users and 805 car share

¹ Phillip Boyle & Associates, January 2016, *The Impact of Car Share Services in Australia*

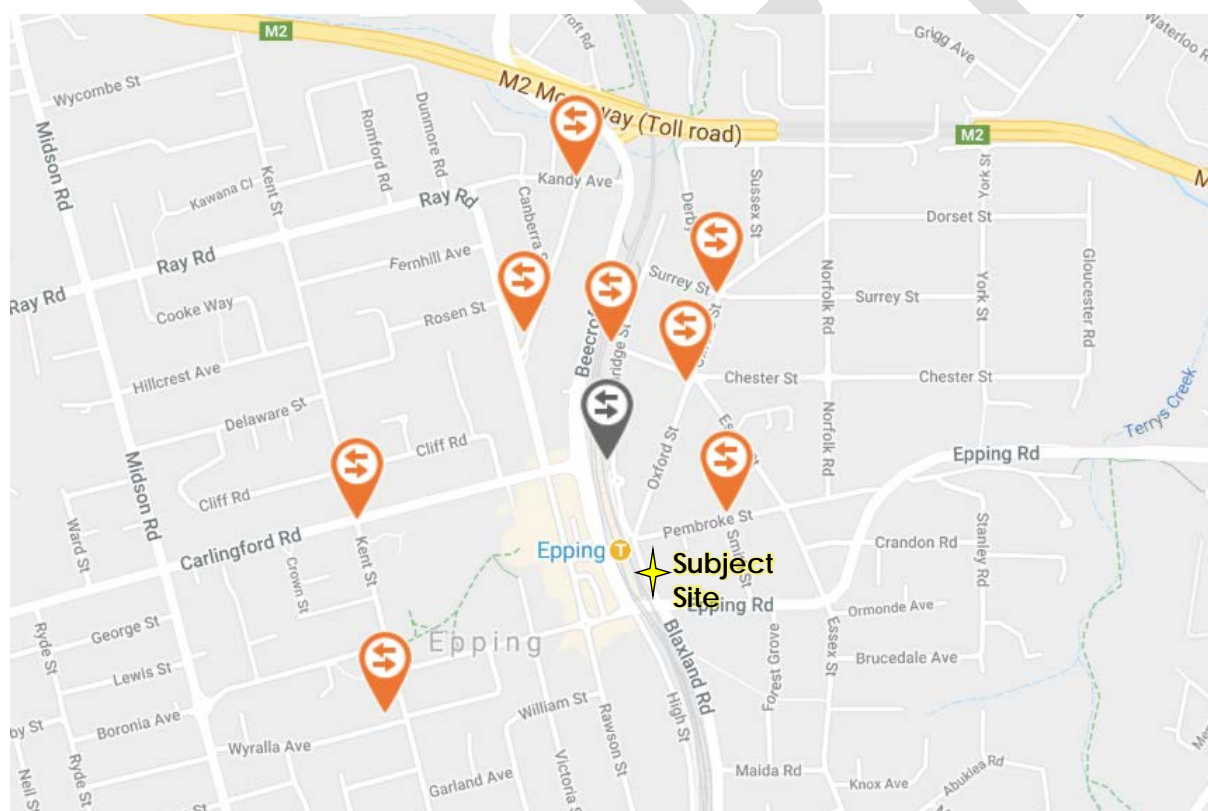
vehicles at the time of the study. The findings of the study indicate that car share users reduce their overall vehicle kilometres travelled (VKT) per year by 50 per cent compared people who own a private vehicle. The resulting impact is reduced congestion on roads, lower levels of CO₂ pollution, fewer casualty accidents and an increase in use of active transport methods.

Notably, the City of Sydney Council has reported that *“a single car share vehicle can replace up to 12 private vehicles that would otherwise compete for local parking”*.

As such, the provision of car sharing facilities should be able to reduce both the parking demand for the site and the traffic generated by it. The provision of car sharing facilities has been considered for the proposed development to encourage/promote sustainable modes of transport and is further detailed in Section 5.1.4.

Figure 3.7 shows the location of the existing GoGet pods within the immediate vicinity of the site.

Figure 3.7: Location of Existing GoGet Pods



Source: GoGet Australia, <https://www.goget.com.au/find-cars/>

3.6 Modal Split Analysis

Census data from the Australian Bureau of Statistics (ABS) has been obtained to understand the existing journey to work patterns of residents at and around the site, and to understand the effect of public transport infrastructure upgrades on the travel mode split of an area. The

2016 and 2006 Census data has been analysed to compare the travel mode split pre and post implementation of the Epping to Chatswood Rail Line in 2007. In turn the results of the data provide some insight to the potential impact of the proposed Sydney Metro which would run between Rouse Hill and Bankstown via Epping and Sydney CBD.

The 2006 and 2016 Census data has been analysed based on an approximate 400m, 800m and 1,000m distance from Epping Railway Station as shown in Table 3.4 and Table 3.5 respectively.

Based in the data shown in Table 3.4 and Table 3.5, the modal split within 800m of a railway station is relatively synonymous. Beyond 800m the modal split shifts to a lower public transport usage and a higher car usage.

The data verifies guidance provided by Transport for NSW (TfNSW) and Department of Planning and Environment (DoPE) that rail services influence the travel mode choices of sites within 800m of a railway station. Notably, the data also indicates that bus services also have a similar impact over an 800m radius, where authority guidance generally allow for a 400m radius of influence.

Table 3.4: 2006 Modal Split

Distance from Epping Station (Approx.)	Train	Bus	Car	Motorbike/ Scooter	Bicycle	Walked only	Other Mode	Worked at Home/ Did Not Go to Work	Total
0-400m	28%	6%	46%	1%	0%	5%	0%	13%	100%
400-800m	26%	4%	49%	0%	0%	4%	0%	16%	100%
800-1,000m	21%	3%	55%	0%	0%	2%	0%	17%	100%

Table 3.5: 2016 Modal Split

Distance from Epping Station (Approx.)	Train	Bus	Car	Motorbike/ Scooter	Bicycle	Walked only	Other Mode	Worked at Home/ Did Not Go to Work	Total
0-400m	48%	6%	30%	0%	0%	4%	0.5%	11%	100%
400-800m	45%	5%	37%	0%	0%	2%	0.2%	10%	100%
800-1,000m	34%	3%	46%	0%	0%	1%	0.3%	14%	100%

Table 3.4 summarises the 2006 census data and indicates that the mode share for train usage has increased by 20 per cent in recent years from 26-28 per cent in 2006 to 45-48 per cent in 2016, within an 800m radius. Bus mode share is unchanged since 2006.

In addition to this, as shown in Table 3.4 and Table 3.5, sites located closer to the Epping Railway Station generated a higher modal shift than those located further away, which is expected. This highlights the importance of providing appropriate land uses, such as

residential and employment near key public transport hubs (such as this development site). As such, the proposed development site shows the potential to generate a modal shift away from private vehicles to more sustainable transport following the opening of the Sydney Metro Project.

Notwithstanding the above, car ownership of residents was found to remain largely unchanged since 2006 with an average of 1.1 cars per dwelling within 400m and 1.7 cars per dwelling within 1,000m of Epping Railway Station during both the 2006 and 2016 census, as summarised in Table 3.6.

Table 3.6: Average Car Ownership

Distance from Epping Station (Approx.)	Average Car Ownership (Number of Cars per Dwelling)	
	2006 Census	2016 Census
0-400m	1.1	1.1
400-800m	1.4	1.2
800-1000m	1.7	1.7

The census data suggests that the key factor in changing mode splits of the area surrounding Epping Railway Station is the provision of new transport infrastructure and services, with car ownership remaining the same however there being a notable mode shift from car usage to public transport.

It is anticipated that the proposed Sydney Metro Line via Epping will further encourage a mode shift to public transport with services from Epping to the CBD anticipated to be more frequent in the peak periods and quicker with fewer stops than the existing Railway Line.

3.6.1 Rail Patronage

Train patronage surveys collected on Thursday, 23 February 2017 have been obtained to understand the existing rail services, frequencies and capacity of trains servicing the Epping area. A summary of the existing rail services at Epping Station is provided in Table 3.7.

Table 3.7: Summary of Rail Services at Epping Station

	AM Period		PM Period	
	7am-8am	8am-9am	4pm-5pm	5pm-6pm
From City	10	11	11	11
To City	13	13	14	13

Existing rail services at Epping can currently accommodate up to a total of 896 seated train patrons (people). Based on the train patronage surveys, existing train loads at Epping Station currently operate within capacity, with similar train loads experienced in both the morning and evening peak periods.

The train patronage surveys provide the following rail capacity classifications:

- Many Seats Available – occupancy on the train is less than 65% of the seating capacity
- Few Seats Available – occupancy on the train is more than 65% of the seating capacity, and
- Standing Room Only – occupancy on the train is more than 105% of the seating capacity of the train.

The existing train loadings/capacities at the Epping Station during the morning and evening peak periods are summarised in Figure 3.8 and Figure 3.9. The following graphs show how many trains currently operate during the peak periods and their associated train capacity classification (e.g. number of trains operating within or exceeding the seating capacity).

Figure 3.8: Existing Peak Train Capacity (Epping Station) - To Central

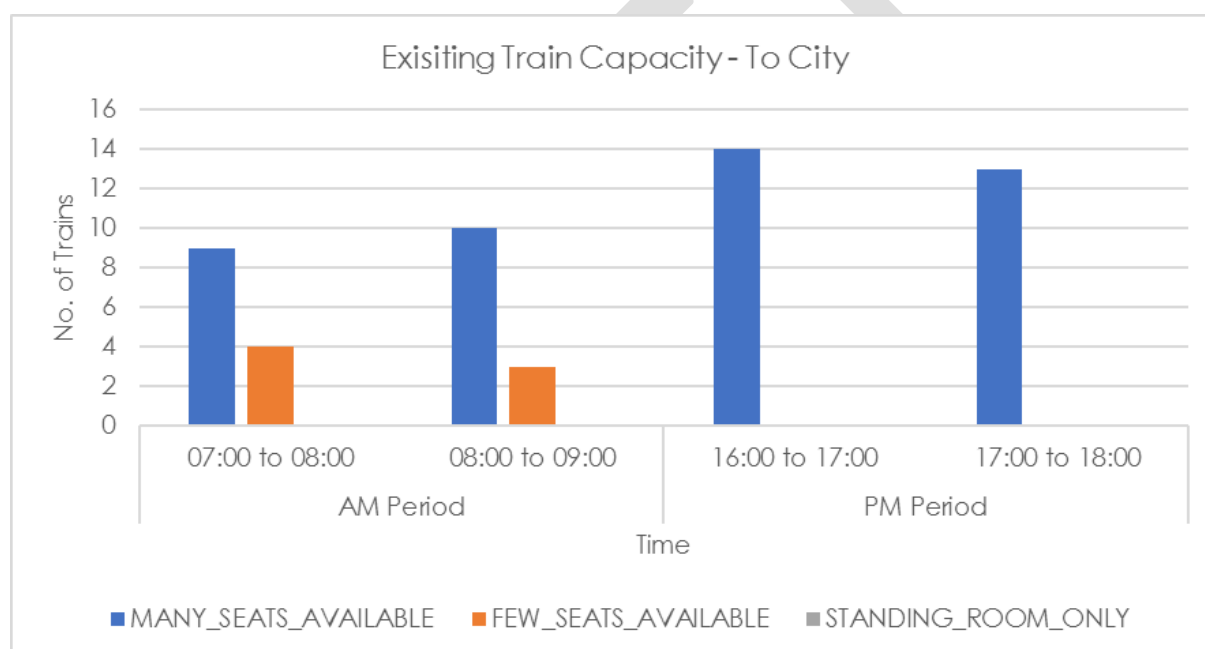
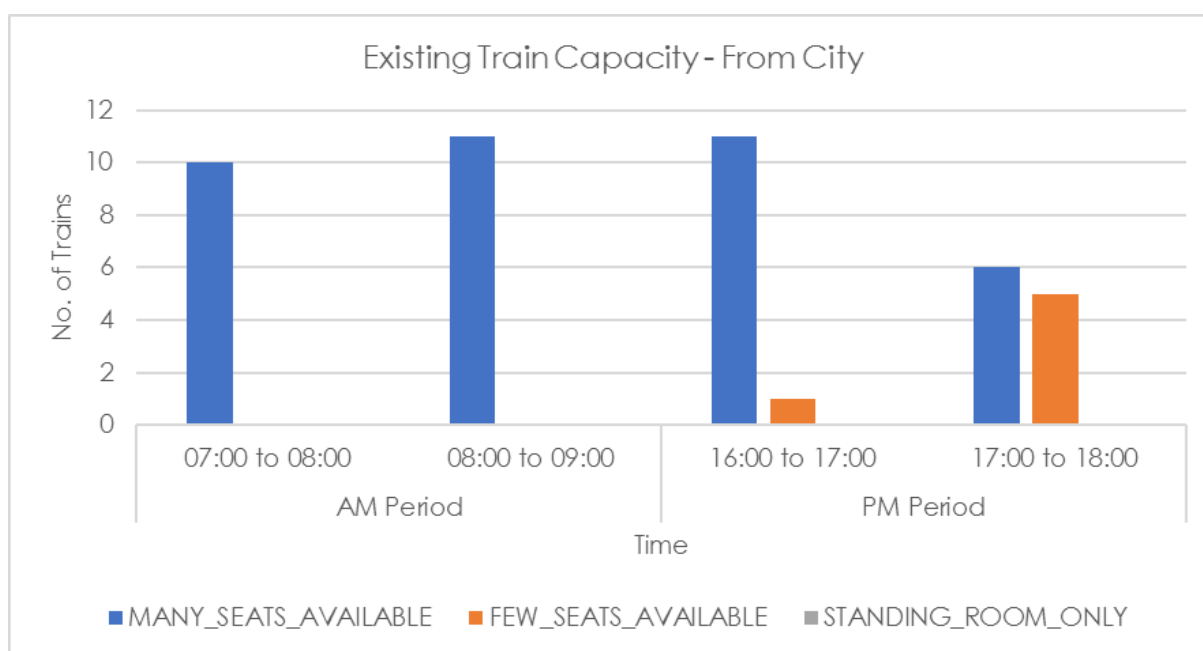


Figure 3.9: Existing Peak Train Capacity (Epping Station) - From Central



In this regard, the existing rail facility near the site currently operates within capacity. There is spare capacity to accommodate additional train trips generated by the proposed development site (e.g. residents and visitors).

3.6.2 Bus Patronage

3.6.2.1 Epping Station Existing Bus Loads

Bus patronage surveys collected on Thursday, 24 November 2016 (sourced from TfNSW's open data website) have been obtained to understand the existing bus services, frequencies and capacity within the immediate vicinity of the site.

The bus patronage surveys have been derived from the following three main sources:

- PTIPS – Public Transport Information and Prioritisation System
- Opal, and
- bus fleet capacity.

A summary of the existing bus frequencies at the nearest bus stops located at Epping Station is summarised in Table 3.8.

Table 3.8: Summary of Bus Frequencies near the Site

	AM Period		PM Period	
	7am-8am	8am-9am	4pm-5pm	5pm-6pm
Route 288*				
To City	1	2	2	1
Route 291*				
To McMahons Point	1	1	4	0
Route 295				
To North Epping (loop service)	4	3	3	4
Route 541*				
To Eastwood	1	2	1	2
Route 546*				
To Parramatta	2	2	1	2
Route 549*				
To Parramatta	3	2	1	2

*Note: These services terminate at Epping

Existing bus services can currently accommodate up to 110 bus patrons (people) depending on the bus type, with the following breakdown:

- Seating capacity = 61 people
- Standing capacity = 49 people

Based on the bus patronage surveys, existing bus loads within the immediate vicinity of the site currently operate within capacity, with similar bus loads experienced in both the morning and evening peak periods.

The bus patronage surveys provide the following rail capacity classifications:

- Many Seats Available – occupancy on the bus is less than 50% of the seating capacity (e.g. less than or equal 22 bus patrons)
- Few Seats Available – occupancy on the bus is more than 50% of the seating capacity (e.g. more than 22 bus patrons), and
- Standing Room Only – occupancy on the bus is more than the seating capacity of the bus (e.g. more than 45 bus patrons).

With the above in mind, the existing bus loadings/capacities at the selected bus stops at Epping Station, during the morning and evening peak periods are summarised in Figure 3.10, Figure 3.11, Figure 3.12, Figure 3.13 and Figure 3.14.

The following graphs show how many buses currently operate during the peak periods and their associated bus capacity classification (e.g. number of buses operating within or exceeding the seating capacity).

Figure 3.10: Existing Peak Bus Capacities (Bus Stop 212183) - To City

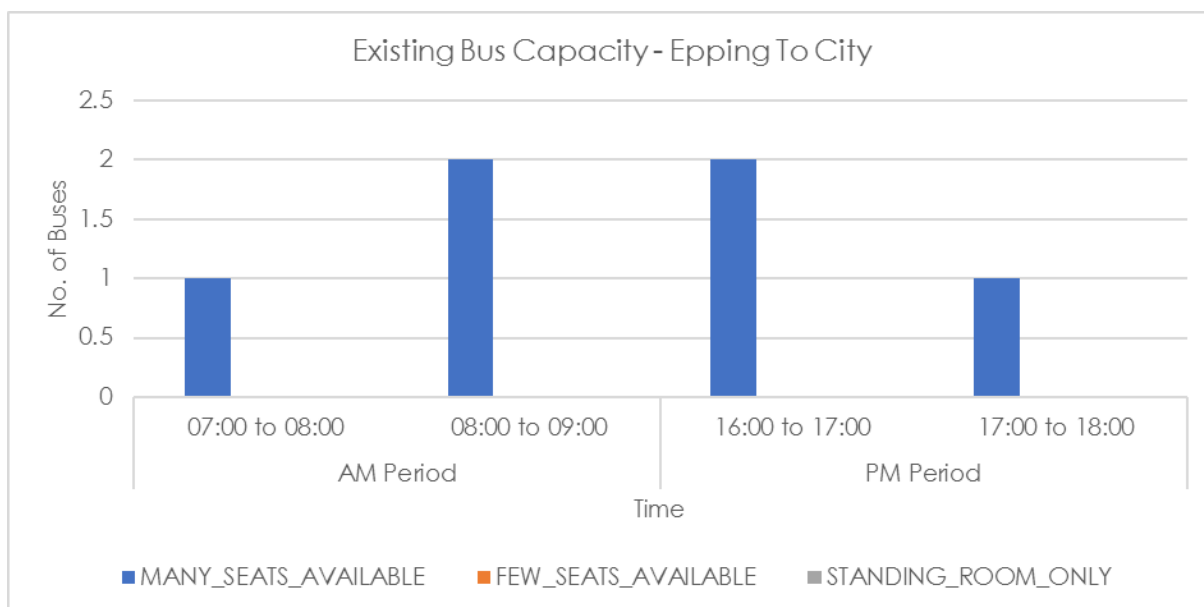


Figure 3.11: Existing Bus Capacities (Bus Stop 212183) - To McMahons Point

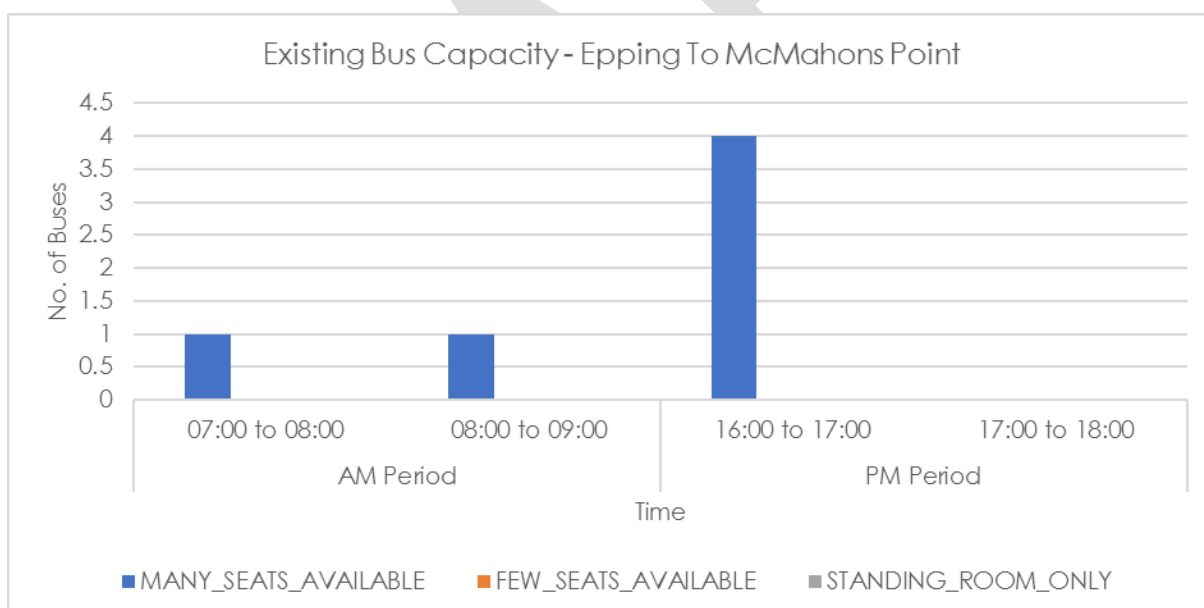


Figure 3.12: Existing Bus Capacities (Bus Stop 212183) - To North Epping

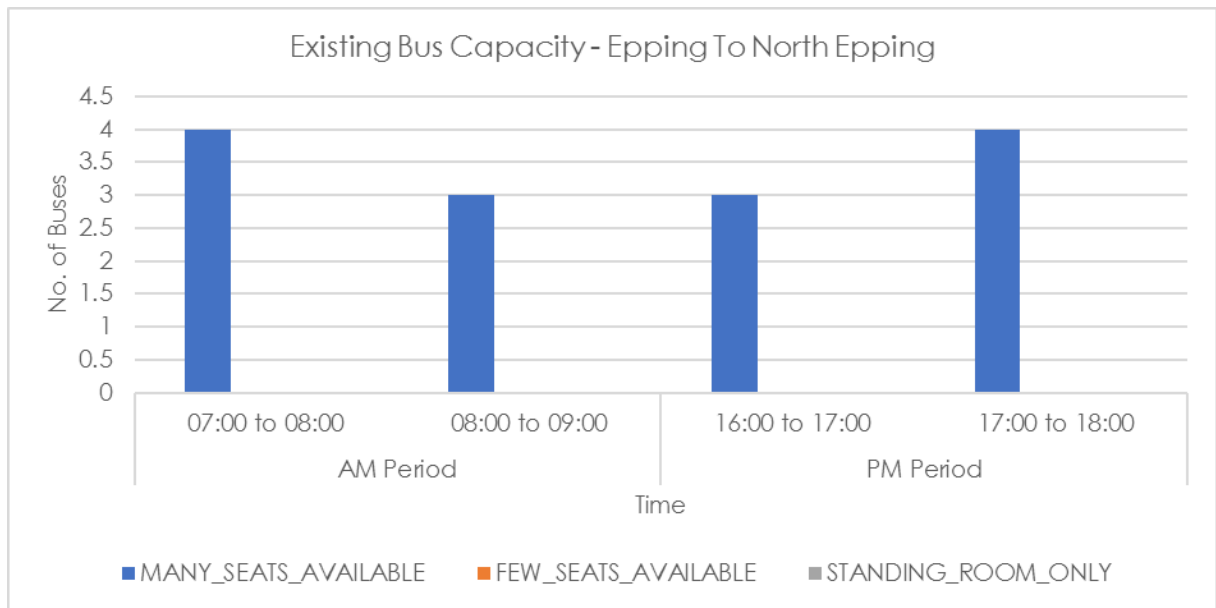


Figure 3.13: Existing Bus Capacities (Bus Stop 212114) - To Eastwood

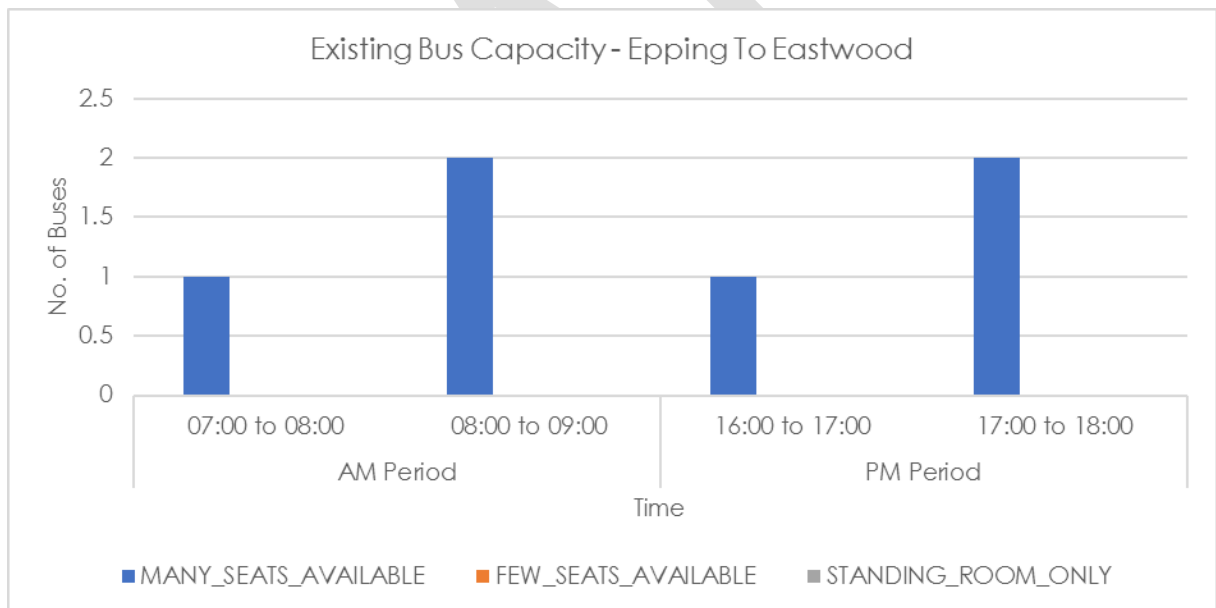
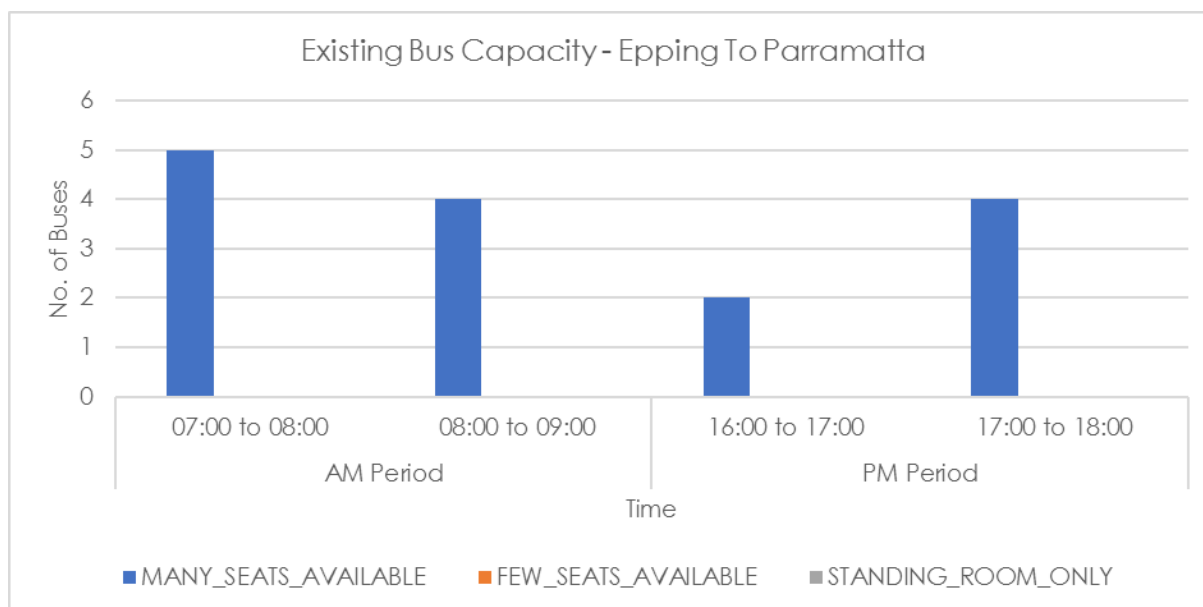


Figure 3.14: Existing Bus Capacities (Bus Stop 212140) - To Parramatta



It is noted that all surveyed buses had many seats available. As such, the existing bus facilities within the immediate vicinity of the site currently operate within capacity, with spare capacity for any additional bus trips generated by the proposed development site (e.g. residents and visitors).

4 Objectives and Targets

4.1 Future Population and Projected Mode Splits

The proposed development is envisaged to generate a net additional 34 (2-way) vehicle trips during the weekday peak periods². Based on this metric, the projected modal splits for the development are shown in Table 4.1.

Table 4.1: Method to Work (MTW) Modal Splits

Main Method of Travel	Existing MTW [1] (Proportion %)	Development Trips (No. of Trips)
Train	52%	48
Bus	6%	6
Car Driver/Passenger	37%	34
Motorbike/Scooter	1%	1
Bicycle	0%	0
Walk	4%	3
Total	100%	92

[1] "Worked at home", "Did not go to work" and "other" excluded from MTW splits in above table

Table 4.1 includes the average modal split of the area within 800m of the Epping Railway Station and subject site. Based on these splits, the proposed development is expected to generate a net additional 48 train trips, 6 bus trips, and 4 motorbike/walking/cycling trips during the peak periods. Based on approximately 20 trains per peak hour in either direction at Epping, the proposed development could equate to up to 3-4 additional people per train during peak periods.

However, it should be noted that these figures are based on the existing method to work data obtained from 2016 Census data and may not be representative of the conditions following the occupation of the site. However, for the purpose of this assessment and GTP, it provides a good baseline for this GTP, which would ultimately be updated based on traffic surveys conducted post-occupation.

Notwithstanding the above, based on the patronage survey detailed in Section 3.6.1 and 3.6.2, the anticipated trips generated by the development should be able to be appropriately accommodated by the existing train and bus services. However, with the intended future development uplift in the area, the planned public transport infrastructure upgrades in the area would provide some additional capacity on the public transport

² TTPP, September 2017, 24-36 Langston Pl, Epping, Proposed Mixed Used Development, Traffic and Parking Assessment Report

network to accommodate the envisaged development uplift in the area, including providing more incentives for car drivers to shift onto more sustainable modes of transport.

4.2 Objectives

The following have been identified as the key objectives of this GTP:

- provide incentives for sustainable travel and establish a culture of active and public transport use
- continue to encourage non-car based modes by limiting the convenience of car access to the site
- engage the residents in the development of the GTP to promote and gain support for the GTP measures, and
- improve access and mobility and enhance the sense of place.

4.3 Mode Share Targets

As indicated previously, the aim of the GTP is to encourage modal shift away from cars by implementing measures that influence the travel patterns of residents, visitors and staff. To ensure that the GTP is having the desired effect, the implementation of the GTP would be regularly monitored. The success of the GTP is measured by setting modal share targets and identifying the measures and actions that have the greatest impact.

The results of the 2016 MTW Census survey indicates that car driver mode share is 37 per cent in the area. It is noted that a modal shift of between 3-5 per cent is typically considered to be a significant achievement (based on knowledge of local and international GTPs, and as stated by experts in Land and Environment Court proceedings).

However, noting that the Epping Town Centre is to undergo major “urban activation” with new retail, commercial and public domain areas, plus improvements to the railway line by 2019, it is anticipated that the proposed site could achieve a greater modal shift. The enhancement to public domain areas and provision of new and additional retail/commercial services would promote residents to walk and cycle more frequently and to use services available within the local town centre.

On this basis, it is considered that the mode share target for car driver should be 27 per cent, which represents around a 10 per cent modal shift.

The targets for this GTP, for each travel mode is detailed in Table 4.2.

On this basis, the proposed development would need to influence a modal shift for about 10 people per hour to achieve a modal shift of 10 per cent.

Table 4.2: GTP Modal Split Targets

Main method of Travel	Existing MTW Split	Proposed Modal Split	Proposed Shift
Train	52%	60%	+8%
Bus	6%	7%	+1%
Car Driver	37%	27%	-10%
Motorbike/Scooter	1%	1%	0%
Bicycle	0%	1%	+1%
Walk	4%	4%	0%
Total	100%	100%	-

5 Methods of Encouraging Modal Shift

To achieve the objectives of the GTP, measures will be put in place to influence the travel patterns to/from the site, with a view to encouraging modal shift away from cars.

5.1 Site Specific Measures

The Proponent will implement the following measures to encourage more sustainable travel use.

5.1.1 Proposed Car Parking Provision

Based on parking requirements stipulated in the relevant development control plan, the proposed development is required to provide 104 resident car parking spaces plus an additional 13 car parking spaces for non-residential uses.

However, this GTP recommends that on-site car parking provision be reduced significantly below the parking requirements stipulated in the development control plan. Council has suggested for the parking provision rates stipulated in RMS guidelines for development sites located within metropolitan regional centres (CBD locations) be adopted. The relevant parking rates are as follow:

- 0.4 spaces per 1-bedroom apartment
- 0.7 spaces per 2-bedroom apartment
- 1.2 spaces per 3-bedroom apartment, and
- 1 visitor space per 7apartments.

Adopting the above RMS parking rates, the residential parking requirements will 76 car parking spaces. This is in addition to the 13 car parking spaces for the non-residential uses.

On this basis, it is recommended that the above RMS stipulated requirements be set as the maximum permissible parking requirement for this development.

In addition, the reduced on-site parking provision is to be coupled with an additional measure that stipulates residents living in the proposed development will not be permitted to apply for a residential parking permit scheme.

5.1.2 Visitor Parking

To encourage visitors accessing the site using more sustainable transport modes, this GTP recommends that the proposed development does not provide any visitor parking on the site.

5.1.3 Sales of On-Site Car Parking Spaces

This GTP recommends that the apartments and car parking spaces be sold separately. That is the apartments are to be marketed and sold without any inclusion of car parking spaces. If a buyer of the apartment requires car parking, it can be sold separately as an optional extra. This is similar to the purchase of a motor vehicle where the buyers can decide what vehicle accessories they want to include into their purchase of the vehicle.

In addition, car parking spaces are not permitted to be sold or rented out to non-occupants of the proposed development.

5.1.4 Car Ownership and Sharing

As detailed in Section 3.5, there are existing car sharing facilities within the vicinity of the site.

However, to reduce car ownership and single occupancy car trips, this GTP recommends the proposed development includes an additional **three [the client to confirm]** car parking spaces as car share spaces. This is in addition to the maximum permissible park discussed in Section 5.1.1.

The **three** additional car share parking spaces are to be provided to a commercial car share operator. For whatever reasons if commercial car share operators are not willing to operate at this development, the Body Corporate is to consider operating and managing these car share spaces themselves.

Further to this, a car pooling forum or board will be established to encourage residents and/or staff to travel in groups. The forum would provide a platform for people travelling on the same route to find each other and form groups. Information on the car pooling forum will be posted on the building website, noticeboards and/or newsletters.

Further to this, car space ownership will be coupled with either unit owners or the strata scheme. The sale and/rental of the car spaces to third parties or non-occupants of the building will be prohibited.

In addition to this, all residents/occupants at the development will not be permitted to apply for residential parking permits, which would be conditioned as part of the sale agreements.

5.1.5 Walking

Residents at the site will be encouraged to walk by implementing a '10,000 steps per day initiative'. This involves the provision of high quality pedestrian facilities, including pedestrian paths to/from key public transport hubs and bus stops. Residents who have achieved the 10,000-step goal over a set period could be rewarded.

The Proponent should consider establishing a resident walking group, where all residents would be invited to walk together around the local neighbourhood, followed by recreational activities/special event at communal area within or external of the development site. This initiative would help promote and encourage social inclusion, as well as promote walking as the choice of travel.

5.1.6 Cycling

Provision of high quality cycling infrastructure with end-of-trip facilities will be provided to encourage people to arrive by bicycle. Further to this, residents and visitors will be encouraged to travel to the site by bike through word of mouth and bicycle maps and routes posted on all noticeboards, newsletters, websites etc. to promote awareness. In particular, residents and visitors should be regularly updated and informed, as the City of Parramatta implements its proposed cycling network, as per their Bike Plan 2017.

To further encourage cycling the following measures could be considered:

- a recreational cycling group would be encouraged by organising a cyclist's breakfast or lunch at a nearby café
- promotion of annual events such as 'Ride to Work Day', and
- provision of bicycle maintenance toolkits e.g. a bike pump, puncture repair equipment, from the building manager or conveniently located in the car park.

5.1.7 Public Transport

Public transport noticeboards will be provided in prominent locations within the building to make residents and visitors more aware of the alternative transport options available. The format of the noticeboards will be based upon the travel access guide.

In addition to this, the initial occupants of the development will be provided with pre-loaded Opal cards with \$100 credit when a resident occupies the site so that travel patterns can be influenced from Day One.

The public transport information and pre-loaded \$100 Opal cards would be provided in the form of a welcome pack for all residents.

5.1.8 Off-site Measures

The Proponent will consult with Council with a view to implementing several off-site measures to improve the transport connections to and from the site including:

- improve signage and way finding from key public key locations existing public transport hubs, to improve the walking and cycling experience
- signage to include wayfinding information for cyclists to direct them to the best and safest route to the site and other key nearby destinations

- investigate with Council to facilitate additional car sharing facilities off-site
- investigate with Council to provide community cycling classes to assist unconfident riders to improve their cycling skills and learn to ride on-road, and
- provide high quality telecommunication services (internet, phone) to enable residents to work from home, rather than travelling off-site to work.

5.2 Transport Access Guide

The information provided within the GTP will be provided to residents and visitors in the form of a package of easy to understand travel information known as a Transport Access Guide (TAG). This will be included in the information pack provided to residents on day one.

TAGs provide customised travel information for people travelling to and from a particular site using sustainable forms of transport – walking, cycling and public transport. It provides a simple quick visual look at a location making it easy to see the relationship of site to train stations, light rail stations, bus stops and walking and cycling routes.

Such TAGs encourage the use of non-vehicle mode transport and can reduce associated greenhouse gas emissions and traffic congestion while improving health through active transport choices.

They can take many forms from a map printed on the back of business cards or brochures. Best practice suggests that the information should be as concise, simple and site centred as possible and where possible provided on a single side/sheet. If instructions are too complex, people are likely to ignore them.

This TAG should be available for pick up at various locations at the site such as, at front entrances and noticeboards.

A draft TAG has been prepared for the site and is provided in **Appendix A**.

5.3 Information and Communication

Several opportunities exist to provide residents and visitors with information about nearby transport options. Connecting residents and visitors with information will help to facilitate journey planning and increase their awareness of convenient and inexpensive transport options which support change in travel behaviour.

Transport NSW info

- Bus, train and ferry routes, timetables and journey planning are provided by Transport for New South Wales through their Transport Info website: <http://www.transportnsw.info/>

Cycleway Finder

- The Roads and Maritime Services provides a map with detailed cycling route information to encourage people of all levels of experience to travel by bicycle:
http://www.rms.nsw.gov.au/maps/cycleway_finder

Google Maps

- Google Maps is an excellent source of transport information including details of bicycle routes and a trip planning tool with transit timetable information.

Similarly, phone apps as TripView display Sydney public transport timetable data and shows a summary view showing current and subsequent services, as well as a full timetable viewer. This timetable data is stored on the phone, so it can be used offline.

Connecting residents and visitors via social media may provide a platform to informally pilot new programs or create travel-buddy networks and communication.

The above web links and any social media platforms may be included within the GTP/TAG.

5.4 Actions

A summary of the key strategy and framework action table is shown in Table 5.1. It should be noted that this framework action table will be updated as required. However, it is stressed that the availability of the suggested strategies on opening is a key factor in influencing travel patterns.

Table 5.1: Framework Action Table

Strategy	Action	Targeted Audience	Timeline	Responsibility
Managing Car Use				
Reduced Car Parking Provision	RMS parking rates set as the maximum permissible parking for the proposed development	Residents	Prior Occupation	Council/Proponent
Visitor Parking	No parking be provided for visitors on site	Visitors	On going	Council/Proponent
Resident Parking Scheme	Residents not permitted to apply for local parking permit scheme	Residents	Prior Occupation	Council/Proponent/Building Manager
Sales of Car Parking Spaces	Car parking spaces are to be sold separately. Car parking spaces are not permitted to be sold and/or rented out to non-occupants of the development	Residents	On going	Proponent/Building Manager/Residents
Car Sharing	Provide car sharing facilities to reduce car occupancy	Residents and visitors	Prior Occupation	Proponent/Building Manager
Car Pooling	Establish a car pooling system to reduce single car occupancy and promote social interaction	Residents and visitors	Upon Occupation	Building Manager/Travel Plan Coordinator
Promoting Public Transport				
Travel Pass	Provide a subsidised Opal pass	Residents and visitors	Upon Occupation	Proponent/Building Manager/Travel Plan Coordinator
Promoting Cycling and Walking				
Provision of End-of-Trip Facilities	Provide bicycle parking, showers, lockers and change rooms	Residents and visitors	Prior to Occupation	Proponent
Others				
Green Travel Plan	Provide residents and visitors with the Green Travel Plan to encourage active travel	Residents and visitors	Upon Occupation	Building Manager/Travel Plan Coordinator
Transport Access Guide	Provide residents and visitors with a TAG on day one of occupation and post the TAG on noticeboards, front entrances, online website, etc.	Residents and visitors	Upon Occupation	Building Manager/Travel Plan Coordinator
Ongoing Review	Ongoing review of the GTP to introduce additional measures as required	-	Ongoing	Travel Plan Coordinator

6 Management and Monitoring of the Plan

6.1 Management

There is no standard methodology for the implementation and management of a GTP. However, the GTP will be monitored to ensure that it is achieving the desired benefits. The mode share targets set out in Section 4.3 are used in this regard to ensure there is an overall goal in the management of the GTP.

The monitoring of the GTP would require travel surveys to be undertaken with a focus to establish travel patterns including mode share of trips to and from the Site.

The implementation of the GTP will need a formal Travel Plan Co-ordinator (TPC), who will have responsibility for developing, implementing and monitoring the GTP. The TPC will be an appointed staff member of the site (e.g. building manager) or an independent expert.

It will also be necessary to provide feedback to residents and visitors to ensure that they can see the benefits of sustainable transport.

Indeed, there are several keys to the development and implementation of a successful GTP. These include:

- Communication – Good communication are an essential part of the GTP. It will be necessary to explain the reason for adopting the plan, promote the benefits available and provide information about the alternatives to driving alone.
- Commitment – GTPs involve changing established habits or providing the impetus for people in new developments to choose a travel mode other than private car use. To achieve co-operation, it is essential to promote positively the wider objectives and benefits of the plan. This commitment includes the provision of the necessary resources to implement the plan, beginning with the introduction of the 'carrots' or incentives for changing travel modes upon occupation.
- Building Consensus – It will be necessary to obtain broad support for the introduction of the plan from the residents and visitors.

Once the plan has been adopted, it is essential to maintain interest in the scheme. Each new initiative in the plan will need to be publicised and marketing of the project as a whole will be important.

6.2 Remedial Actions

A continuous review will take place to identify remedial actions should the modal share targets not be achieved. The following measures could be considered as appropriate based on the outcome of the travel surveys:

- increased cycle parking
- increased/improved changing facilities /lockers
- increase in the provision of car share pods or additional promotional strategies to encourage residents and staff to obtain a membership for the service
- consultation with State Transit Authority or Transport for NSW to provide more public transport facilities to key locations based on feedback from residents and staff on where they are commonly travelling to.

Alternatively, the TPC could work with Council to see how the measures might be aligned with those identified in Council's active transport strategies.

6.3 Consultation

The results of the Green Travel Plan will be communicated with Council, resident and visitors via the noticeboard and/or newsletters.

As such, it is recommended that a summary letter is produced presenting the results of the survey within one month of the undertaking of the travel surveys (say 3-months post-occupation). The letter/report may be also appended to the GTP and submitted to Council for comment. Subsequent surveys would be undertaken after 1, 3 and 5 years.

Communication to residents and visitors may be carried out in a similar form by public display of the GTP on noticeboards. Alternatively, a news article on the matter could be included on newsletters and/or an online website.

7 Conclusion

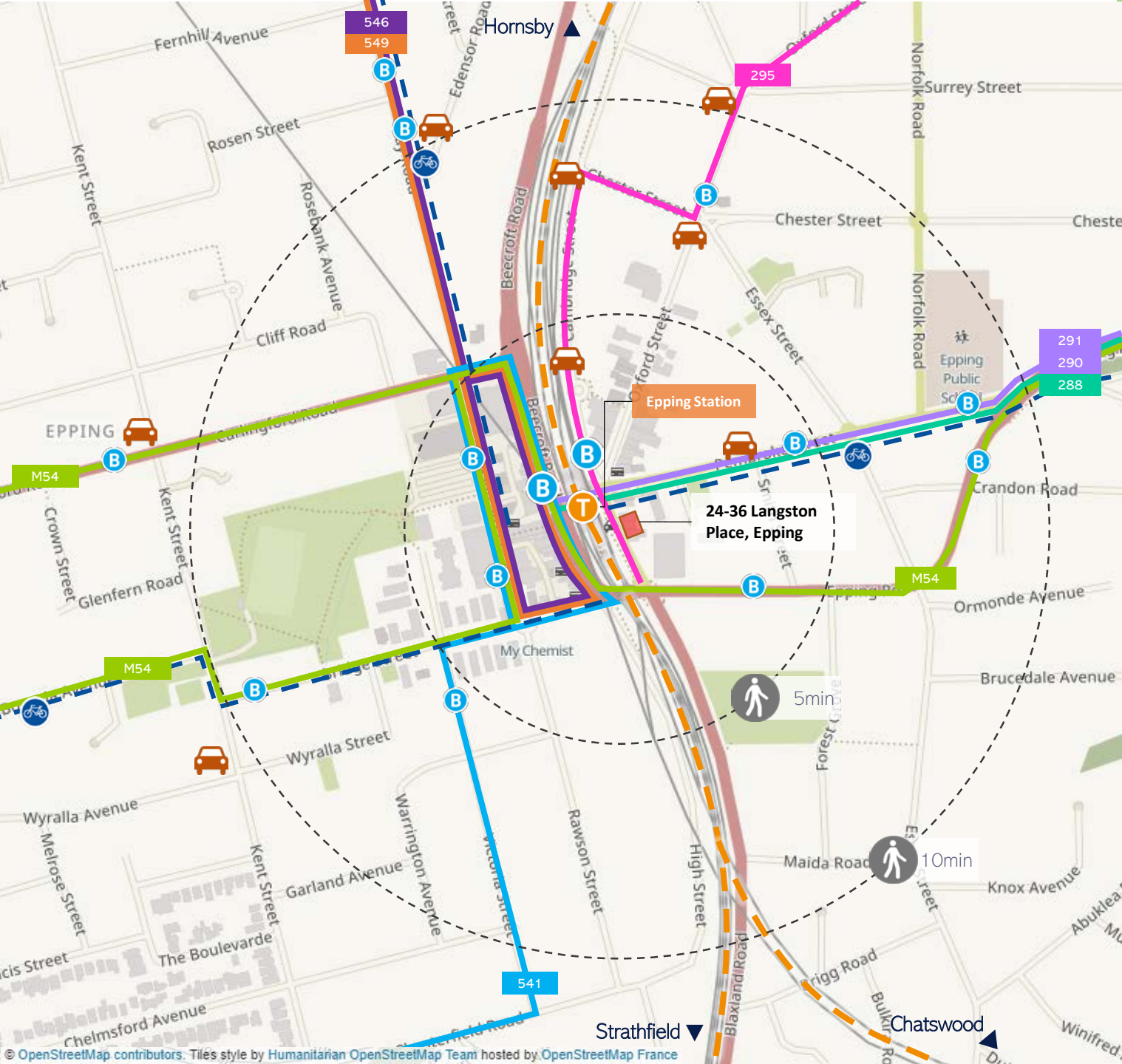
The proposed development at 24-36 Langston Place, Epping is located in close proximity to existing well serviced public transport hubs principally the Epping Railway Station which will be further upgraded as part of the Sydney Metro Project. It is also located within the Epping Town Centre with all major services and amenities located at its door step. As such, it is well placed for any the proposed development be leveraged off its excellent access to services and amenities.

This GTP has recommended a number of measures to manage travel demand to and from the site, in particular those that rely on private vehicles and single occupancy trips. Each measure by itself is unlikely to reduce vehicle trips in any noticeable manners. However, as a suite of measures implemented together, it will contribute to reducing travel and parking demand, and encourage more sustainable travel modes to and from the site. This will in turn will lead to a healthier and active lifestyle with reduction in noise and air pollution.

Appendix A

Transport Access Guide

DRAFT



Transport Access Guide



Use active transport and get your daily physical activity while you travel



24-36 Langston Pl, Epping

Mixed Use Development

Getting Here



Train



Epping Station

Service Lines	T1 Northern Line T1 North Shore & Northern Line Central Coast & Newcastle Line
Distance	1 minute walk away
Journey Time	32 minutes to Ryde 36 minutes to Parramatta 28 minutes to Chatswood

Route Description	Peak Hour Frequency
To City via Strathfield	2-10 minutes
To Hornsby via Strathfield	4-10 minutes
To City via Macquarie University	15 minutes
To Hornsby via Macquarie University	15 minutes
Newcastle to Central	15-30 minutes
Central to Newcastle	30 minutes



Adult Opal card holders get a \$2 discount for every transfer between train, ferry, bus or light rail as part of one journey



Start walking today to achieve a goal of 10,000 steps per day!



Bus

Frequent bus services are available on Beecroft Road, Cambridge Street and Epping Road within one to three minutes from the site.

Route	Description
295	Macquarie Centre & North Epping
288	City & Epping
290	Epping to McMahons Point
291	Macquarie Park & Parramatta
M54	Epping/North Rocks & Parramatta
546	Eastwood & Epping
541	Epping & Parramatta via Eastwood
549	Blacktown & Macquarie Park via Baulkham Hills and Carlingford
630	Macquarie Centre & North Epping



Epping Station is soon to be part of the new Sydney Northwest Metro, set to open in 2019.

Public Transport Information

For detailed route maps, departure and arrival times and service information, please contact Transport Info on 131 500 or visit transportnsw.info



Cycle

Bicycle parking facilities are provided in the basement for residents and employees of the site. Use Council designated bike routes or low traffic roads to travel to your destination.

For more information see:

Parramatta Bike Network:
<https://www.cityofparramatta.nsw.gov.au/cycling>

RMS Cycleway Finder:
http://www.rms.nsw.gov.au/maps/cycleway_finder



Car Share

Car share vehicles are provided in the basement car park and also available around the Epping Town Centre. A car share membership is typically cheaper than owning a car and you have the added benefit of having a range of vehicle types to drive.

Join now at goget.com.au.



Did you know?

Cycling and walking is a great way in which you can improve your health and wellbeing.

Regular physical activity will:

- Make you feel happier
- Increase your stamina
- Reduce your risk of chronic disease
- Improve your skin health
- Can improve brain health and memory
- Help relax your body and improve sleep quality

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