

An architectural rendering of a modern school building with brick and wood cladding, large windows, and balconies. In the foreground, there is a paved courtyard with a large tree, a brick play area where children are playing, and a paved path with more children walking. The sky is blue with some clouds.

Upgrades to Chatswood Public School and Chatswood High School

Appendix 22 - Green Travel Plan

SSD 9483

Prepared by The Transport Planning Partnership (TPPP)
For School Infrastructure NSW, Department of Education



Upgrades to Chatswood Public School and Chatswood High School Green Travel Plan

Prepared for:
School Infrastructure NSW

17 March 2020

The Transport Planning Partnership

Upgrades to Chatswood Public School and Chatswood High School

Green Travel Plan

Client: School Infrastructure NSW

Version: V04

Date: 17 March 2020

TTPP Reference: 17356

Quality Record

Version	Date	Prepared by	Reviewed by	Approved by	Signature
V01	29/01/20	Lalaine Malaluan Jessica Ng	Jason Rudd	Jason Rudd	
V02	19/02/20	Lalaine Malaluan Jessica Ng	Jason Rudd	Jason Rudd	
V03	25/02/20	Lalaine Malaluan Jessica Ng	Jason Rudd	Jason Rudd	
V04	16/03/20	Lalaine Malaluan Jessica Ng	Jason Rudd	Jason Rudd	

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APPENDICES

A. TRAVEL ACCESS GUIDE

1 Introduction

1.1 Background

The Transport Planning Partnership (TPPP) has been engaged by School Infrastructure NSW to prepare a Green Travel Plan (GTP) to support a State Significant Development (SSD) application for the proposed delivery of educational facilities as part of the '*Upgrades to Chatswood Public School and Chatswood High School*' project.

This GTP has been prepared to support the proposed upgrades and sets out measures to manage travel behaviour of students and staff in a sustainable manner.

The proposed upgrades to Chatswood Primary and High Schools represented in the SSD application are designed to facilitate the demands for enrolment at the schools along with planning for other existing and planned future schools in the surrounding locality and more broadly across the State.

The SSD application for the Chatswood Primary and High Schools is about providing buildings and infrastructure rather than establishing set levels of school populations (ie. number of students and staffs).

Notwithstanding the above, the travel demands of any school is determined by the number of school student and school staff attending the school. The modes of transport used to access a school is determined by a range of factors including:

- availability and accessibility of public transport modes
- extent of school catchment and walkability from home to school
- age of the students
- availability of on site parking for staff and students.

To address the traffic and transport aspects of the Secretary's Environmental Assessment Requirements (SEARs), it has been necessary to consider future potential school populations following the implementation of the Chatswood Primary School and High School upgrade works.

In order to understand the existing travel demands and mode choice behaviour of the Chatswood Primary School and High School, extensive surveys, observations and interviews have been undertaken for the existing school populations.

It is understood that the NSW Government has committed to the construction of a new primary school in the Chatswood area which will reduce future demands for primary school places at Chatswood Primary School.

Thus, to address the SEARs, the traffic and transport assessment presented in this report has been based on the following school population scenarios:

- **moderate occupancy:** 3,200 students
 - 1,200 primary school students +
 - 2,000 high school students)
- **high occupancy:** 3,600 students
 - 1,600 primary school students +
 - 2,000 high school students).

For assessment purposes it is anticipated that the 'high occupancy' scenario would represent a temporary worst-case scenario until the new primary school is constructed.

Once the new primary school is operational the 'moderate occupancy' scenario would represent the worst case scenario.

This GTP has been prepared on the basis of the proposed high-occupancy scenario (i.e. 1,600 primary students and 2,000 high school students) to consider the worst case scenario.

The Transport and Accessibility Impact Assessment¹ (TAIA) prepared for the proposed Chatswood Primary and High Schools upgrade works similarly considered a 'High Occupancy' worst case scenario.

The TAIA identified that under a High Occupancy Scenario (worst case) that school generated traffic flows would increase by approximately 16 percent compared to existing traffic generation levels of the schools.

Thus, the specific measures set out in this GTP have been designed to achieve a target reduction in traffic generation of at least 16 percent for the High Occupation scenario without the implementation of travel demand measures.

Notwithstanding the above, the measures set out herein would be equally relevant to the moderate occupancy scenario.

1.2 The Role of Travel Plans

The purpose of a Green Travel Plan (GTP) is to encapsulate a strategy for managing travel demand that embraces the principles of sustainable transport. In its simplest form, this GTP

¹ *Upgrades to Chatswood Public School and Chatswood High School -Transport and Accessibility Impact Assessment* (TTPP, 19 February 2020)

encourages use of transport modes that have low environmental impact, such as activate transport modes (e.g. walking, cycling), public transport, and better management of car use.

Active transport presents a number of interrelated benefits including:

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

A GTP is a package of coordinated strategies and measures to promote and encourage active and sustainable travel. This GTP aims to influence the way students, staff, parents and visitors travel to and from the school to deliver better environmental outcomes and provide a range of travel choices, whilst also reducing reliance on private car usage, particularly single occupancy car trips (for staff and high school students) and single passenger car trips (for students).

The planning of the proposed upgrades should accommodate innovative ideas to better manage the transport demand of the project. It will be necessary to introduce new measures to ensure that trips generated by the future expansion of the school are not solely private car based. Key drivers for the GTP are detailed in Section 1.4.

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', has been undertaken.

From the above, the key themes applicable to this 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 use of sustainable transport modes are then dealt with under the Site-Specific Measures.
- **Audit of Policies:** An audit of key policy documents has been undertaken to assist define 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 will assist the Proponent in delivering improved transport options.

1.3 Travel Plan Pyramid

The GTP will need to be tailored to the schools to ensure appropriate measures are in place for the different users (e.g. students, staff, parents and visitors) 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

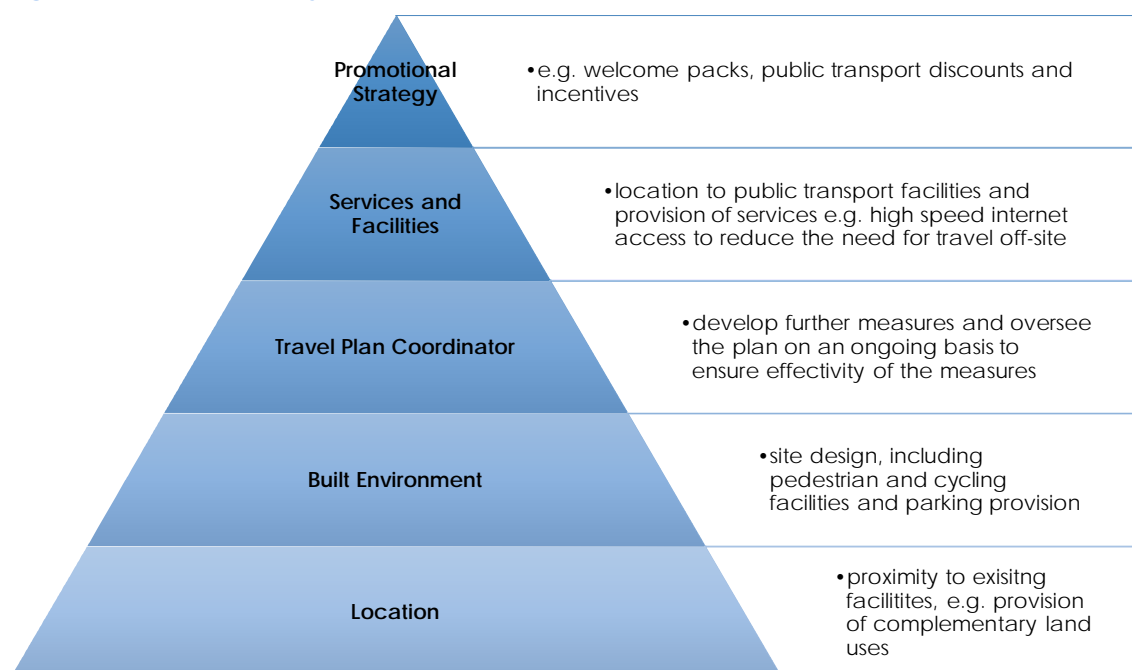


Figure 1.1 demonstrates that the key foundations to ensure the success of a GTP are:

- **Location** – i.e. 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 choice
- **Built Environment** – i.e. 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 the schools 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 sustainable transport modes. In this instance, the site is located within close proximity to high frequency public transport facilities being within walking distance from the Chatswood Interchange. On this basis, there is strong imperative to less car parking (if any) to promote sustainable travel.

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 about 63 per cent since 1990, with cars and light commercial vehicles responsible for over 60 per cent of Australia's transport pollution levels (Climate Council of Australia, 2018). In comparison, travel modes such as walking and cycling have the lowest emissions while public transportation has significantly lower impact than 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 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.

Active transport modes also provide more sustained health benefits because physical activity becomes part of everyday routine. Sustainable transport modes also improve air quality by reducing air pollution and reducing exposure to particulates, sulphates and atmospheric ozone. According to a report prepared by Australian Institute of Health and Welfare in 2007, air pollution is responsible for causing about 3,000 premature deaths in Australia each year, which represents 2.3 per cent of total deaths in Australia per year – more than the number of deaths from car accidents. Reducing pollution has both environmental and health benefits.

1.4.4 Social Equity

Transport has a fundamental role in supporting social equity through providing access to essential amenities, employment opportunities and social and recreational goods. Greater levels of walking and cycling hold significant benefits in terms of equity and community

cohesion. Car dependency accentuates inequalities of access amongst certain groups who are less likely to drive including the unemployed, persons on low incomes, children and young people, the aged, and persons with disabilities. As such, sustainable transport modes can provide a more affordable alternative to car use.

1.4.5 Staff and Student Attraction

Ease of access has a significant impact on choices of work and living. Negative experiences and costs associated with travel can reduce the competitiveness of a commercial, retail, industrial, educational and community precinct. High quality and efficient transport systems are key to attracting and retaining students and staff. Support for active transport modes is also highly desired by employers and employees, students and staff because it improves health and productivity.

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
- 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
Willoughby City Council	
Willoughby City Strategy – Community Strategic Plan 2010-2025	<p>Willoughby City Strategy is a long term vision and plan for the future of the local government area in the next 15 years. The Strategy aims to identify the values, issues and challenges of the community and set strategies to achieve the goals in order to address these issues.</p> <p>The Strategies' goal in relation to transport and mobility is to manage the transport needs of the community in a sustainable manner by reducing car dependency and increasing active and public transport use.</p>
Willoughby City Council Sustainability Action Plan 2014-2018	<p>The Sustainable Action Plan (SAP) primarily focuses on ecological sustainability of Willoughby City. The SAP outlines the actions to be undertaken by Council in order to improve the sustainability and to set key performance indicators to measure annual performance. The actions and key indicators presented in the SAP are aligned with other Council's planning documents such as the Willoughby City Strategy.</p> <p>The plan includes actions which are applicable to the school setting such as:</p> <ul style="list-style-type: none"> • engage the community to adopt a healthier and more sustainable lifestyle • guide and motivate the community to reduce GHG emissions through the Council's education campaign (previously ClimateClever) • strengthen mobility by improving access to sustainable transport and active transport infrastructure and services.
Our Green City Plan 2028 – Sustainability Action Plan for Willoughby City Council (for consultation)	<p>The purpose of the draft SAP 2028 is to build on the SAP 2014-2018 and present how environment protection will be achieved. One of the strategies is the 'Live Well in Willoughby' which is Council's major campaign to promote sustainable lifestyle. This includes encouraging active transport through bicycle workshops and promotions such as 'Share the Path' and 'Ride2Work Day'.</p>

NSW State Government	
NSW State Infrastructure Strategy 2018-2038: Building Momentum	<p>As part of the Strategy, the NSW Government has committed to the planning and construction of Sydney Metro City and South West project with Chatswood being one of the Metro stations.</p> <p>Roads and Maritime Services is also implementing contraflow lanes on several key roads including Pacific Highway which is considered as the main road link to/from the school. This strategy has been implemented to increase throughput along the key roads.</p>
Future Transport Strategy 2056	<p>The Strategy aims to increase the mode share of public transport services and reduce the use of single occupant vehicles. The proposed school expansion will look to reduce private vehicle travel and aligning with the objectives of the Strategy.</p>
Greater Sydney Region Plan: A Metropolis of Three Cities – Connecting People	<p>The subject site is ideally located to contribute towards creating a 30-minute city. The proximity of the schools to Chatswood Transport Interchange means that staff, students, parents and visitors can easily access the site via various transport modes. The site thus aligns with the objectives of the Plan in creating jobs near public transport, including education precincts, to contribute towards a 30-minute city.</p>
Sydney's Cycling Future, Cycling for Everyday Transport (NSW State Government, 2013)	<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 and promoting better use of existing network • engaging with partners across government, councils, developers and bicycle users.

3 Existing Transport Conditions

3.1 Proximity to Public Transport Services

The Chatswood Interchange provides a number of high frequency public transport services for both rail and bus services. It is located east of the site, approximately 250m (5-minute walk) from Chatswood Public School and 650m (10-minute walk) from Chatswood High School. The site's proximity to existing public transport services is shown in Figure 3.1.

Figure 3.1: Proximity to Public Transport Services



Basemap Source: Google Maps Australia

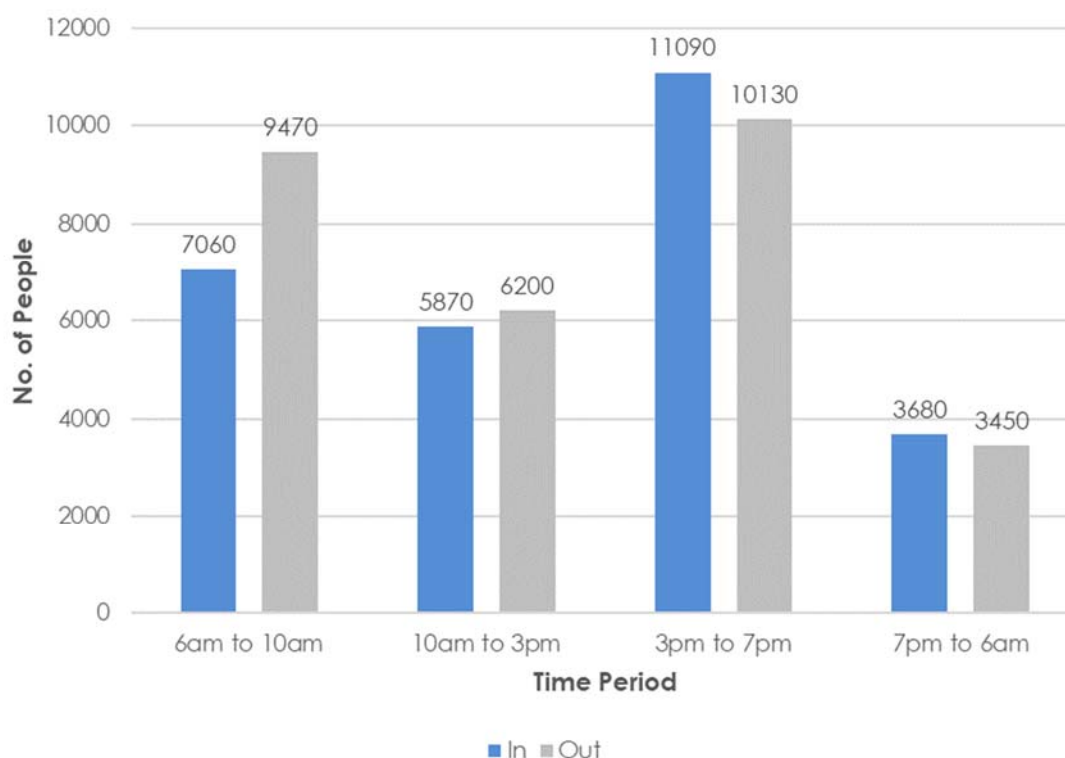
3.2 Rail Services

Rail services are available at Chatswood Train Station and Chatswood Metro Station located approximately 250m (5-minute walk) from Chatswood Public School and 650m (10-minute walk) from Chatswood High School.

Chatswood Train Station is identified as the seventh busiest station in Sydney based on Transport for NSW's latest Train Station Entries and Exits survey data (2016 to 2018). The 2018 survey results indicate that a total of 27,700 people enter and 29,250 exit Chatswood Train Station within a 24-hour period.

A summary of the latest 2018 station barrier counts is provided in Figure 3.2.

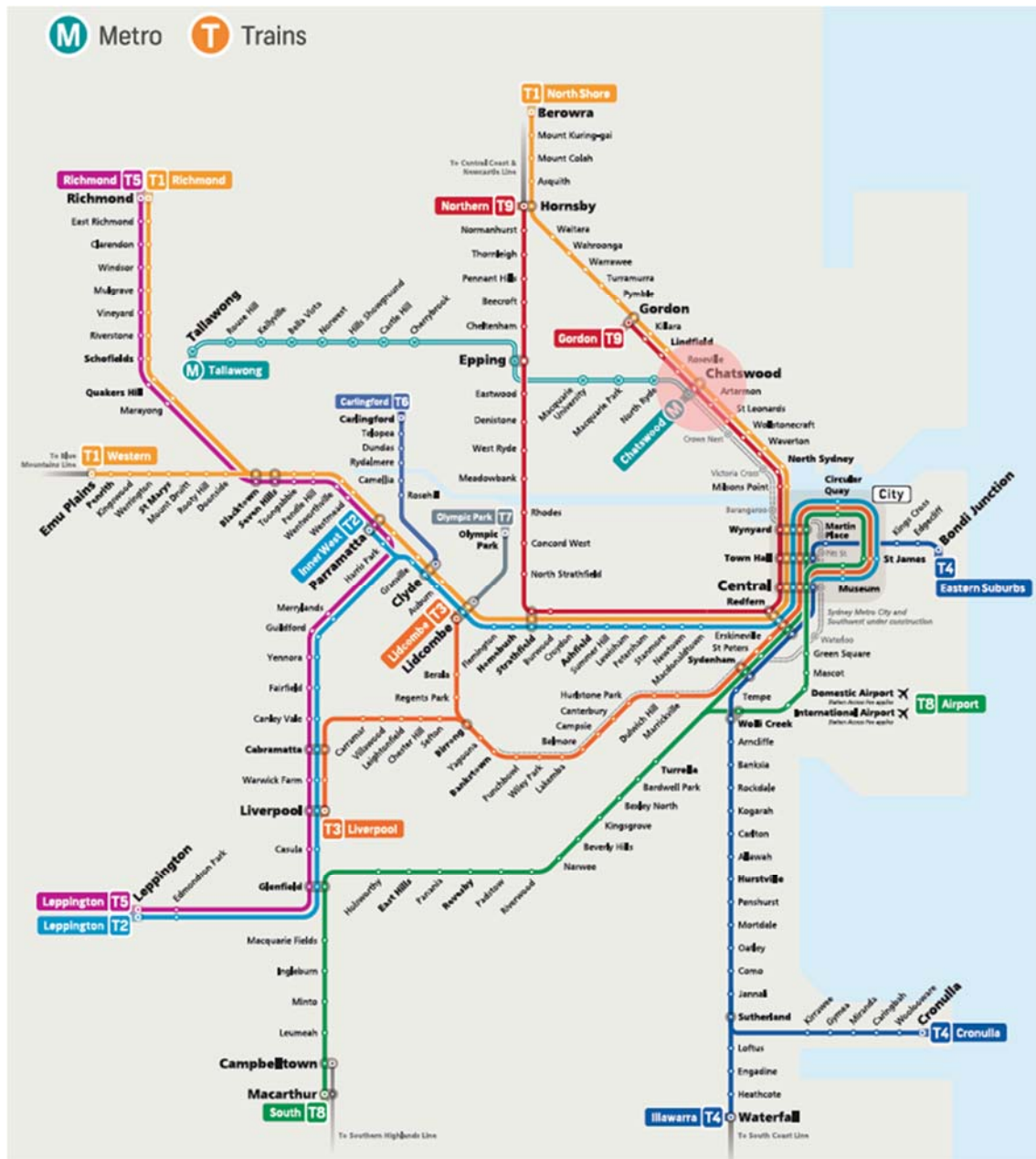
Figure 3.2: Summary of 2018 Station Barrier Counts at Chatswood Station



Chatswood Train Station provides frequent train services for T1 North Shore, Northern, and Western Line. During peak hours, T1 trains traveling from Chatswood to Sydney CBD, northern and western suburbs arrive at the station approximately every two minutes. In addition to this, the new Sydney Metro between Chatswood Station and Tallawong Station arrives every four minutes during peak periods and every 10 minutes outside of peak periods.

A map of the existing rail network is provided in Figure 3.3.

Figure 3.3: Existing Railway Network



Source: Transport for NSW (retrieved 02 May 2019)

Train timetable obtained from Transport for NSW indicate that there are currently about 426 train services that run on weekdays and 308 train services on weekends at Chatswood Station in both directions. A total of 108 trains service Chatswood Station during the school AM and PM peak (i.e. from 7am to 9am and from 2pm to 4pm on weekdays).

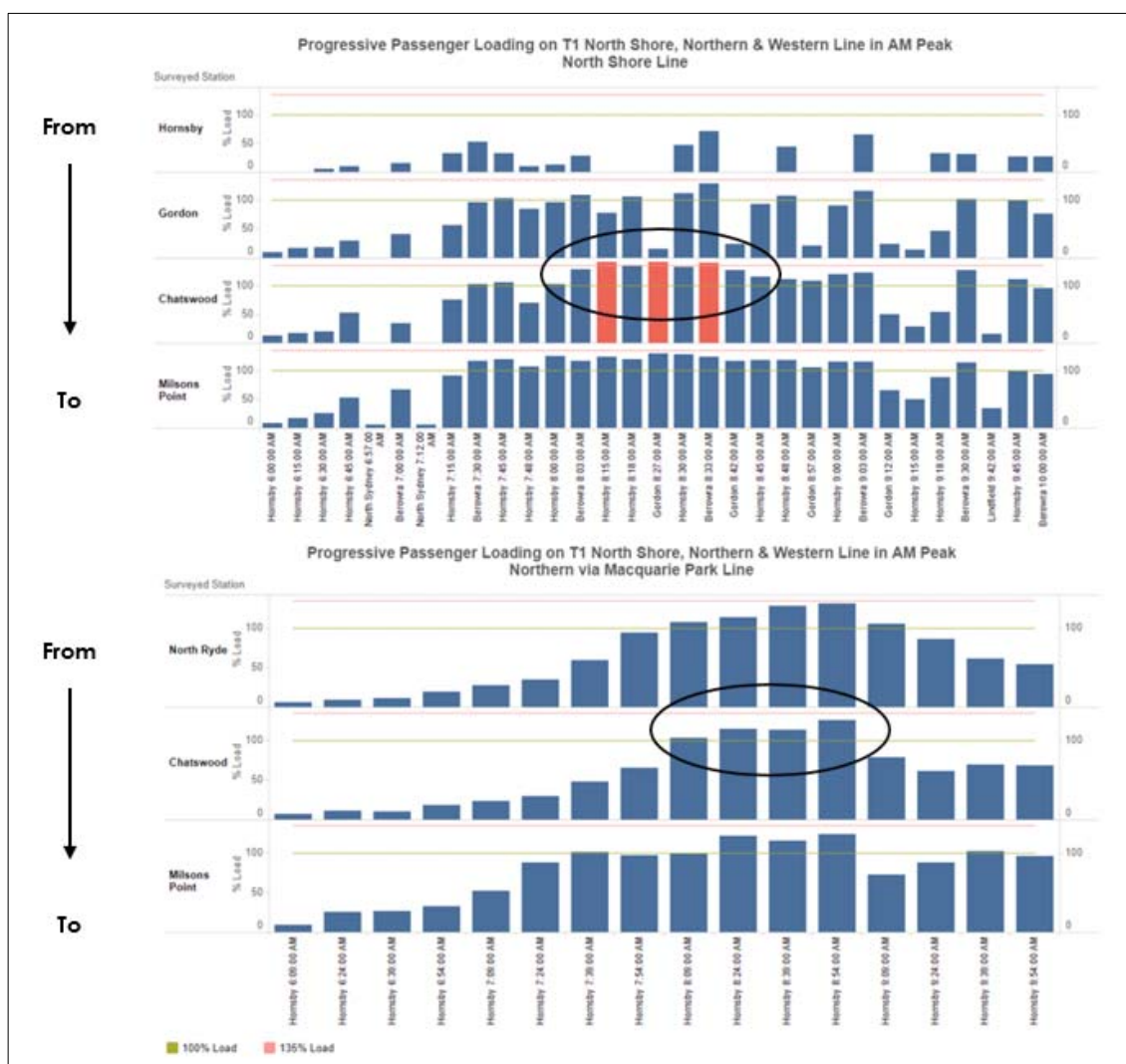
A summary of the existing rail services frequency at Chatswood Station during school peak hours is provided in Table 3.1.

Table 3.1: Summary of Rail Services at Chatswood Station During School Peak Hours

Cordon	AM Period		PM Period	
	7am-8am	8am-9am	2pm-3pm	3pm-4pm
From City	13	13	13	13
To City	14	14	14	14
Total	27	27	27	27

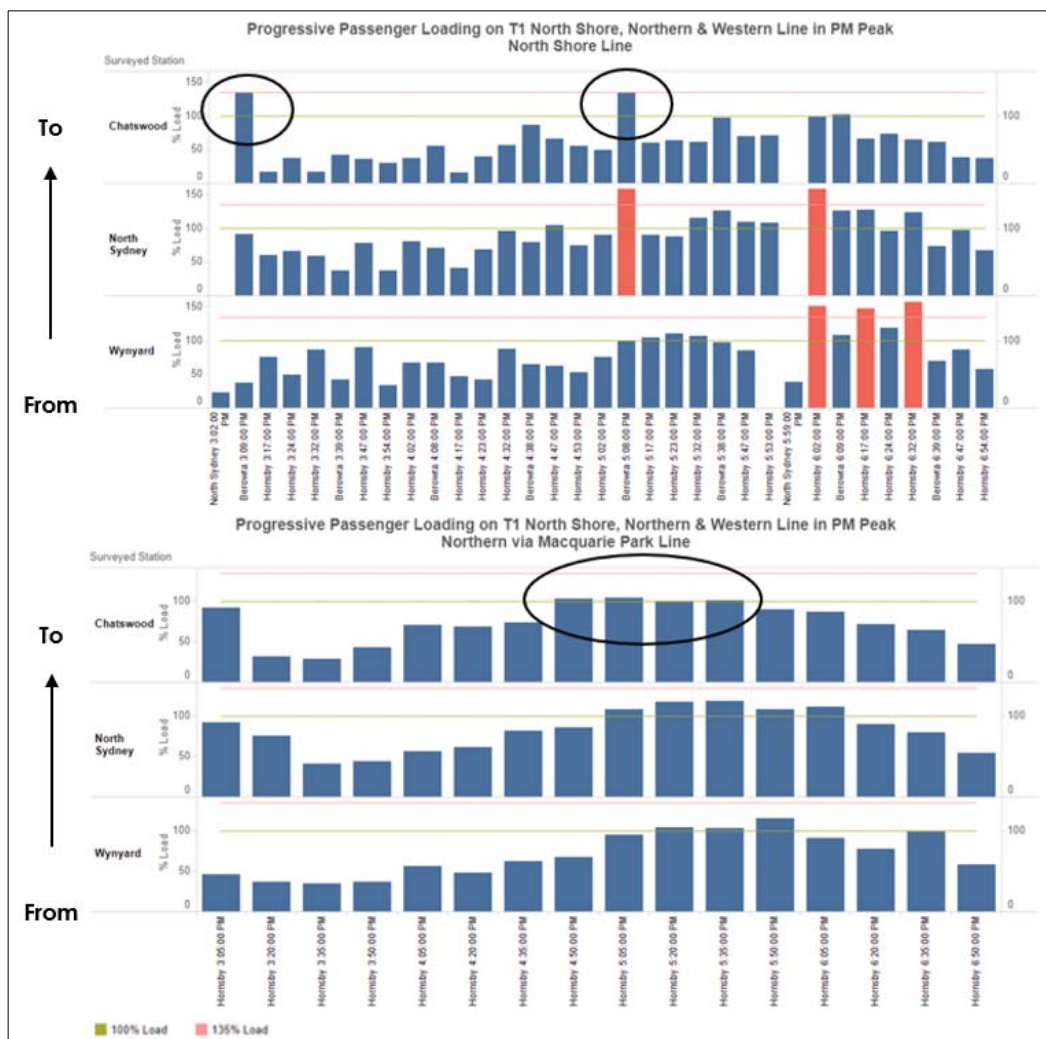
Further to this, a summary of the latest train load survey data available on the T1 North Shore, Northern and Western Line provided by Transport for NSW is shown in Figure 3.4 and Figure 3.5. It is however noted that this train load data is dated back in March 2016, when the Sydney Metro was not operational at the time and therefore, may not be best representative of current train load conditions.

Figure 3.4: AM Peak Train Load Surveys – March 2016



Source: Transport for NSW

Figure 3.5: PM Peak Train Load Surveys – March 2016



Source: Transport for NSW

Based on the above, the existing T1 North Shore, Northern & Western Line experiences relatively heavy loadings on approach to Chatswood, with seating capacity generally reached well before this station, particularly during the morning peak period. In addition to this, existing train load data indicates that the nominal capacity (135% load) is well-exceeded on approach to Chatswood Station in the morning peak period.

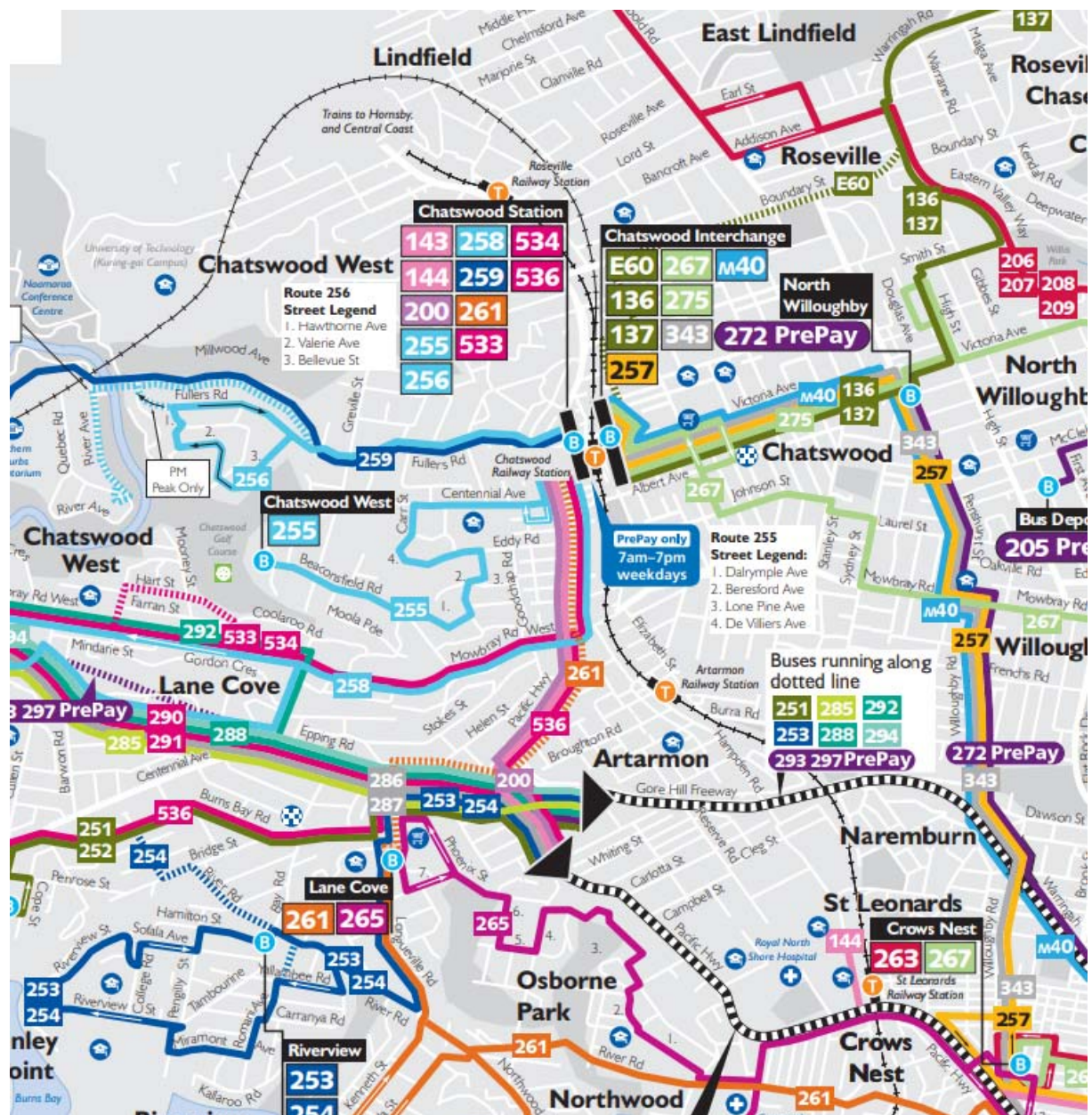
Notwithstanding the above, with the Sydney Metro now in operation, train loads on approach to Chatswood have been observed by TTPP to be high, generally with standing spare capacity only during peak periods, particularly during the evening peak period. It is however expected that the future Sydney Metro extension between Chatswood and Bankstown will assist to alleviate pressure on the rail line once complete.

3.3 Bus Services

Chatswood Bus Interchange provides good connection to a wide range of bus services operating to/from areas of Sydney CBD, Northern Beaches, North Shore, Willoughby, Parramatta, Macquarie University, and Bondi. Chatswood Interchange bus stands are located along Victoria Avenue, Railway Street and Orchard Road.

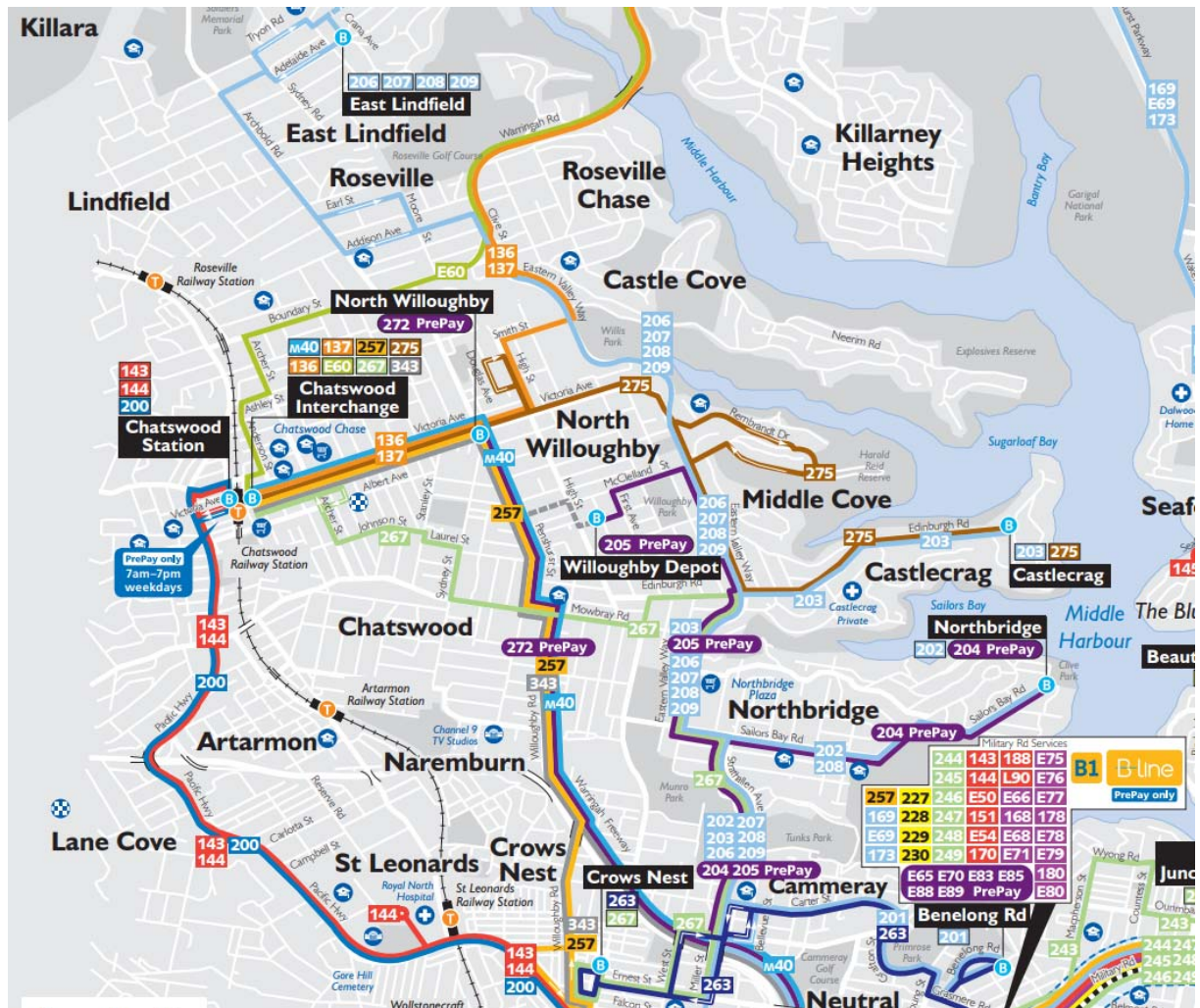
The existing bus network maps are presented in Figure 3.6 and Figure 3.7.

Figure 3.6: Existing Bus Network Map – North Shore and West Network Map



Source: Transport for NSW (State Transit), North Shore & West Bus Network Map

Figure 3.7: Existing Bus Network Map – Northern Beaches and Lower North Shore Network Map

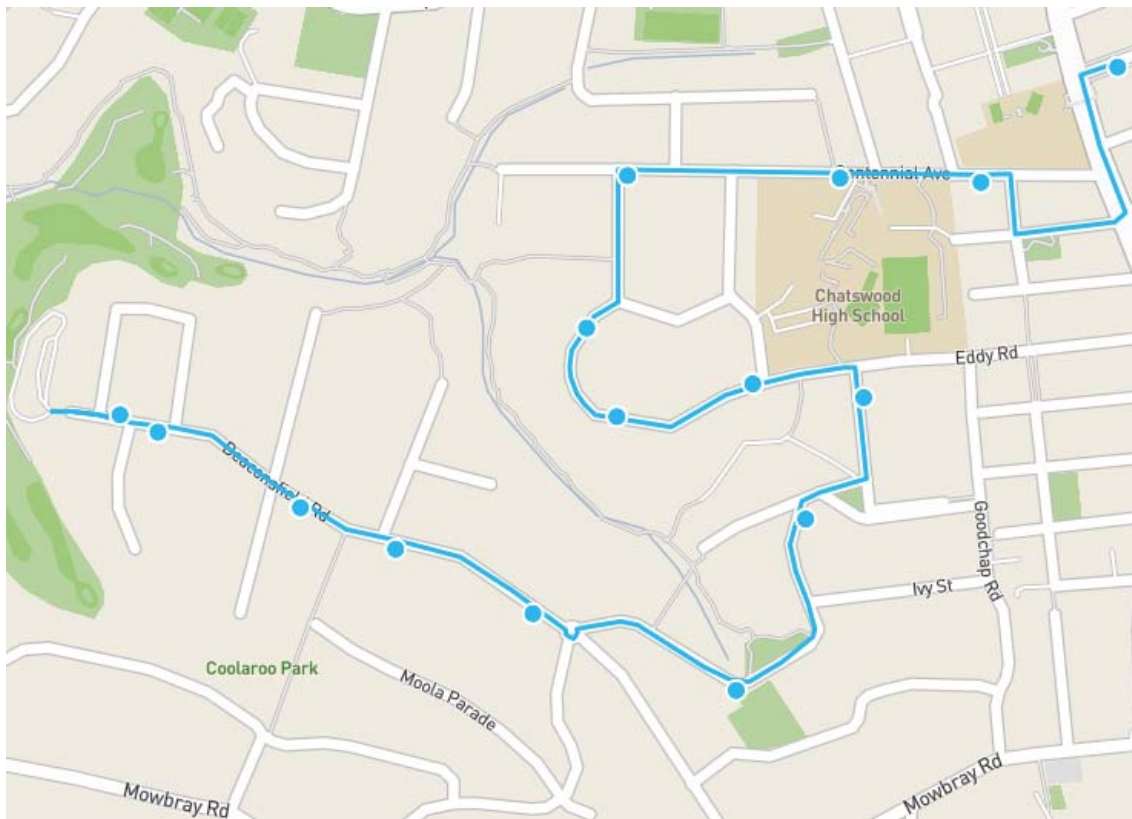


Source: Transport for NSW (State Transit), Northern Beaches and Lower North Shore Bus Network Map

As shown in Figure 3.6, Bus Route 255 service the stops along the local roads surrounding the site. This bus route provides link between Chatswood Station to Beaconsfield Road via Chatswood Public School and Chatswood High School.

A more detailed map showing the bus route is presented in Figure 3.8.

Figure 3.8: Existing Bus Network Map – Bus Route 255



In addition to the above bus services, shuttle buses currently service Chatswood Public School for eligible students. It is understood that these shuttle buses use the bus stop located directly in front of the public school, as shown in Figure 3.9.

Figure 3.9: School Shuttle Bus



3.4 Existing Pedestrian Infrastructure

Well-established pedestrian facilities are available in the immediate vicinity of the site with a network of paved footpaths on both sides of the roads. Victoria Avenue, Pacific Highway and Centennial Avenue are the most utilised roads in terms of pedestrian activity as these roads provide direct connection to the Chatswood Transport Interchange.

The following pedestrian facilities are currently provided within the vicinity the site:

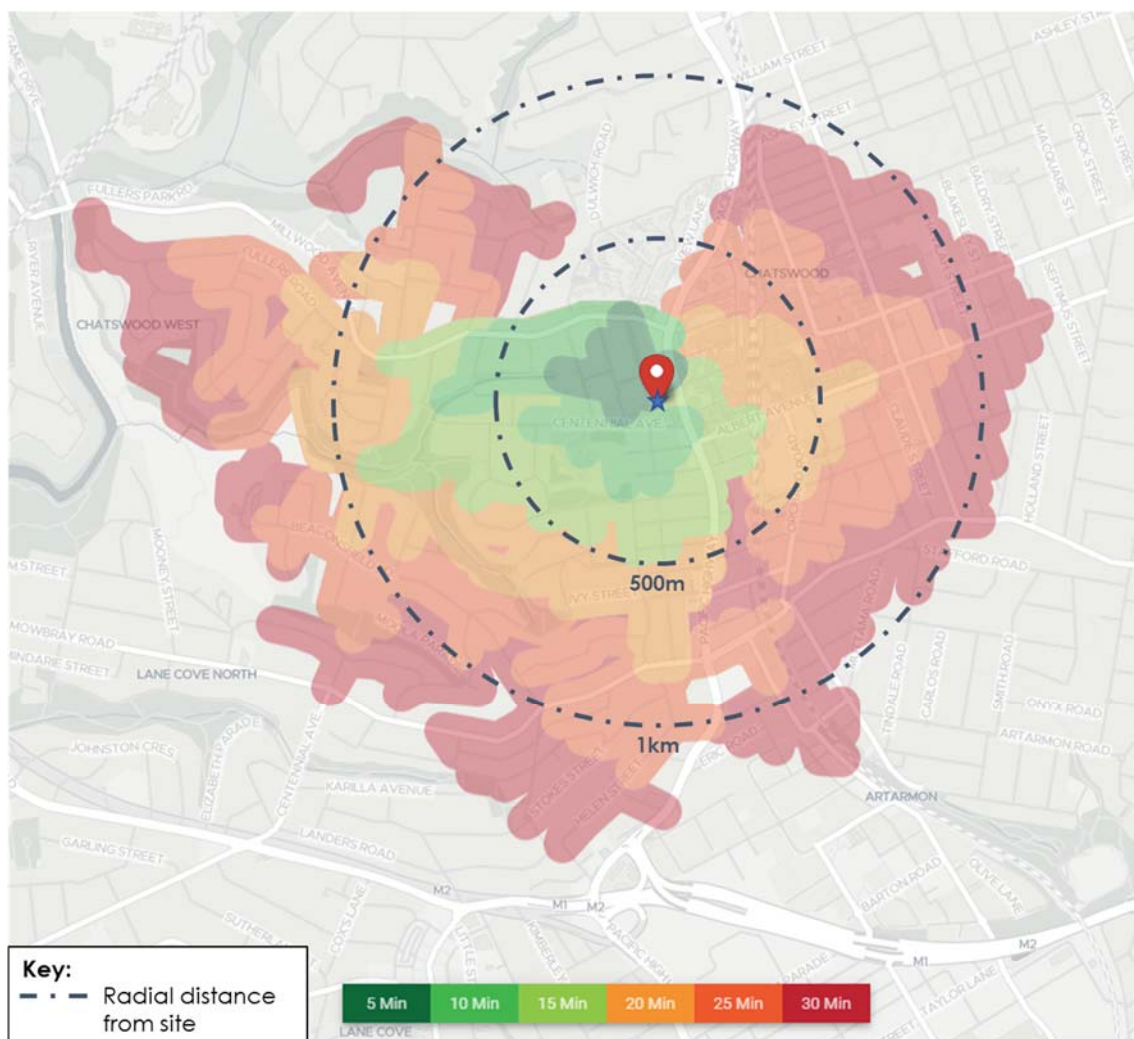
- signalised pedestrian crossing on all approaches at the intersection of Pacific Highway and Victoria Avenue
- pedestrian overpass on the southern leg of Pacific Highway and Victoria Avenue intersection, equipped with escalators and stairs on both ends
- signalised pedestrian crossing on west approach at the intersection of Pacific Highway and Centennial Avenue
- signalised pedestrian crossing on the east, west and south approaches at the intersection of Pacific Highway, Albert Avenue and Oliver Road, and
- pedestrian (zebra) crossings along Centennial Avenue and Edgar Street.

These provide good connectivity between the schools and key transport nodes and attractions in the area.

In addition, a dedicated children's crossing is provided across Centennial Avenue, with a Roads and Maritime accredited traffic controller, during school hours to manage the safe and efficient movement of pedestrians across Centennial Avenue.

The existing pedestrian catchment within a 30-minute radius to/from the school is presented in Figure 3.10. Notably, the majority of these streets within this catchment have well-established pedestrian paths available.

Figure 3.10: 30-Minute Pedestrian Catchment

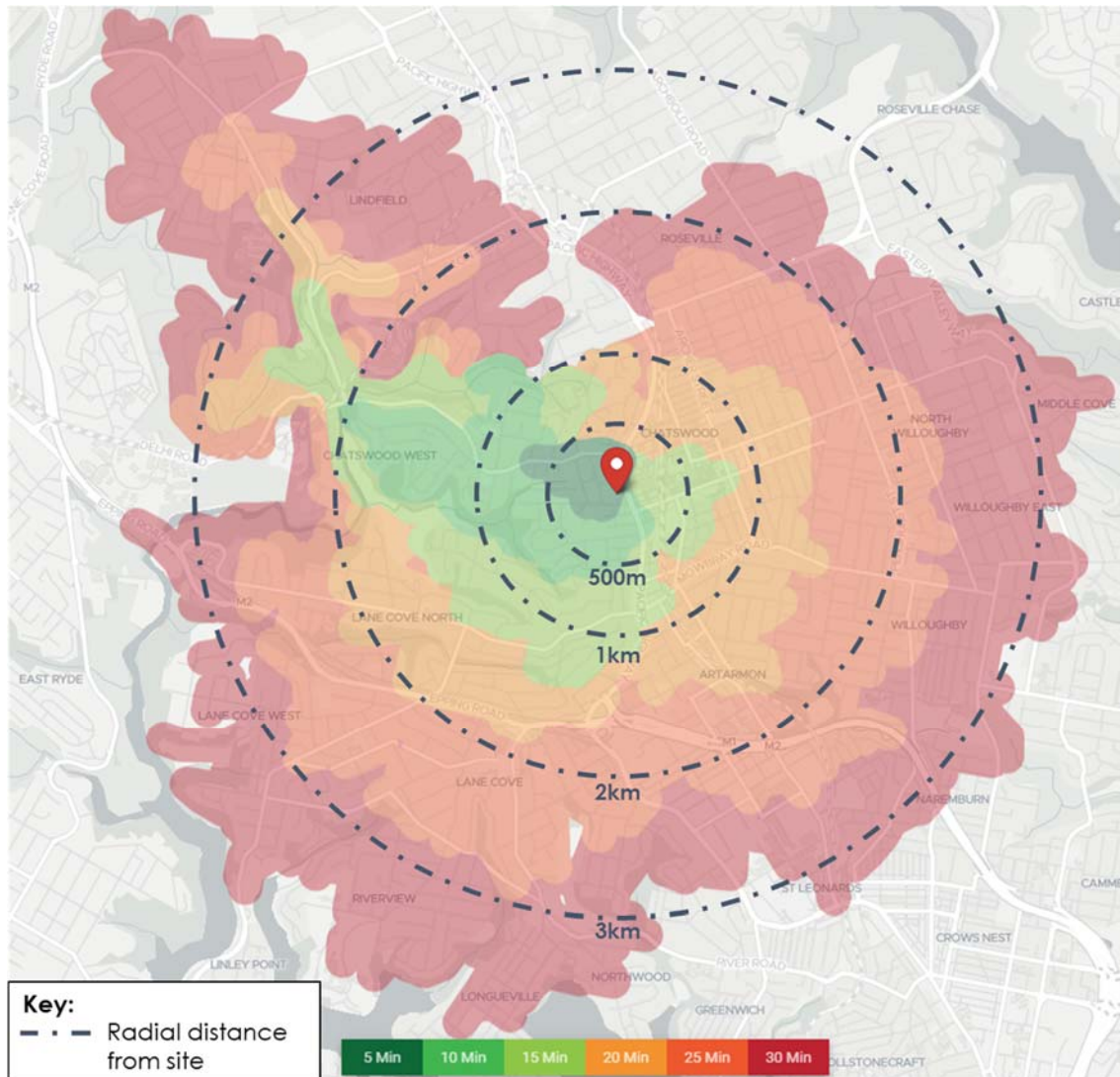


Source: Targomo

3.5 Existing Cycling Infrastructure

A well-established cycling network providing a number of dedicated shared cycling paths and routes in the vicinity of the site. The existing cycle catchment within a 30-minute radius to/from the school is presented in Figure 3.11.

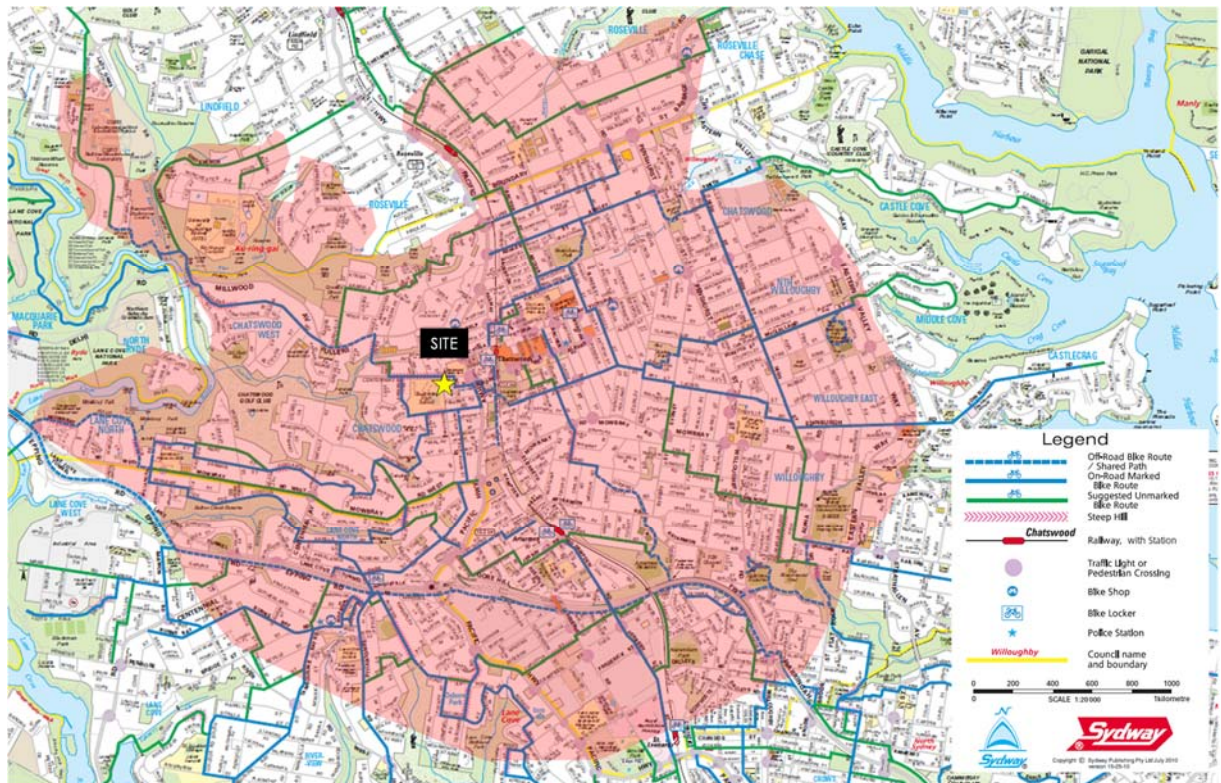
Figure 3.11: 30-Minute Cycle Catchment



Source: Targomo

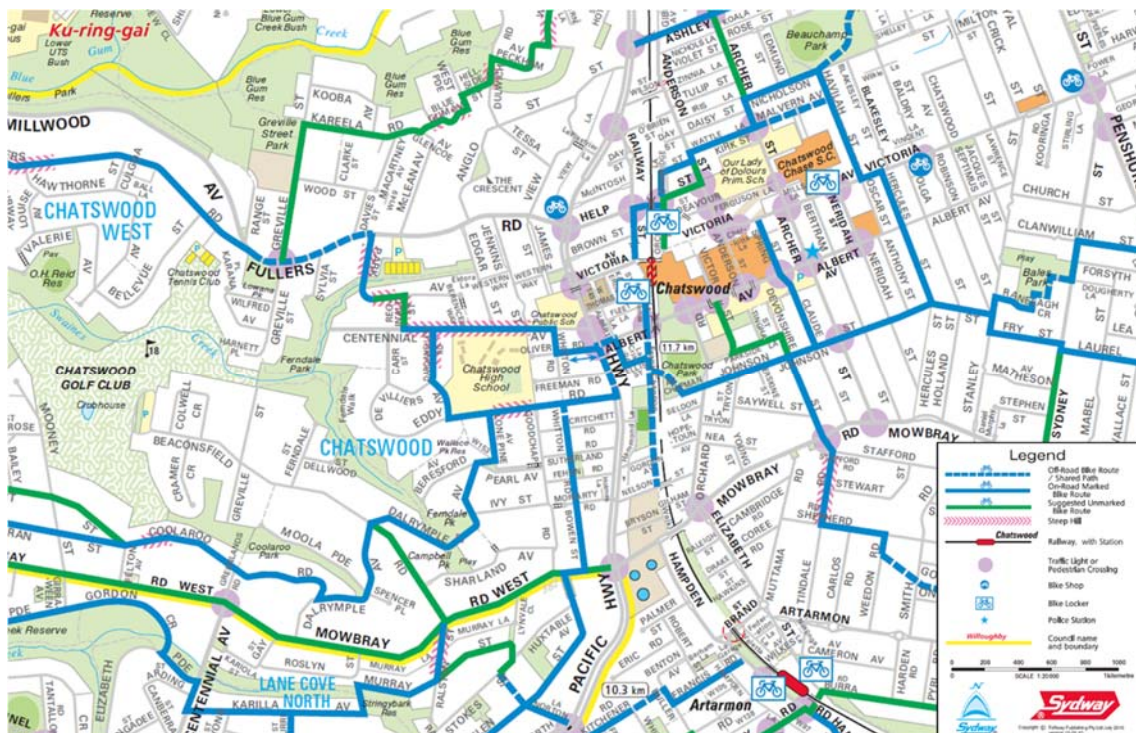
The existing bicycle network within an approximate 30-minute catchment is shown in Figure 3.12, with the cycle network within the immediate vicinity of the site shown in Figure 3.13.

Figure 3.12: Cycling Network 30-Minute Catchment



Source: Northern Sydney Cycling Map

Figure 3.13: Cycling Network Catchment within Immediate Vicinity of the Site



Source: Northern Sydney Cycling Map

In addition to this, signage and pavement markings are provided within the vicinity of the site to indicate dedicated on-road cycle routes, including Eddy Road and De Villiers Avenue/ Dardanellles Road. Directional signage is also provided to guide cyclists to recommended routes within the wider cycle network.

3.6 Car Share

Car sharing is a flexible, cost effective alternative to car ownership and is a convenient and reliable way for staff to use a car when they need one. GoGet is a car share company operated in Australia, with a number of vehicles positioned within the area.

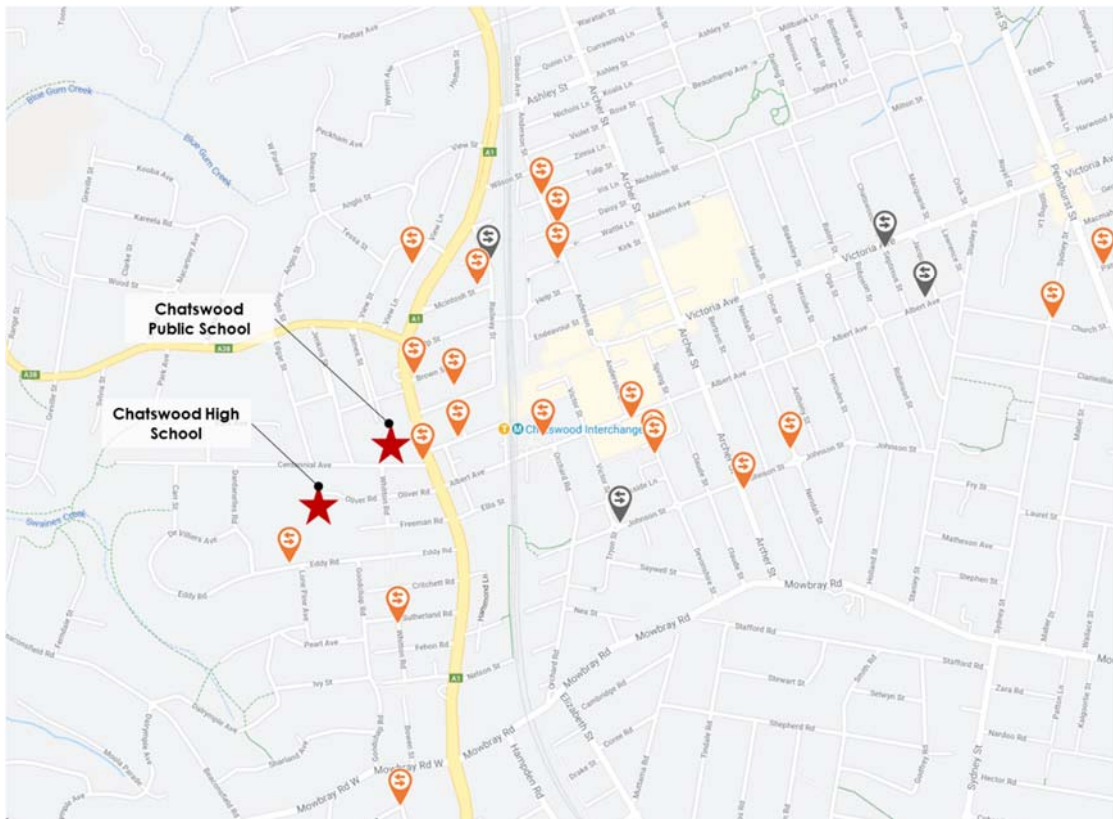
Car share is a concept by which members join a car ownership club, choose a rate plan and pay an annual fee. The fees cover fuel, insurance, maintenance, and cleaning. The vehicles are mostly sedans, but also include SUVs and station wagons. Each vehicle has a home location, referred to as a "pod", either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

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 or the promotion of using existing car sharing facilities in the vicinity should be able to reduce both the parking demand for the site and the traffic generated by it.

There are currently three operators within the Chatswood area, namely GoGet, Car Next Door and PopCar. The nearest car share pod is located along Centennial Avenue in front of Chatswood Public School. This car share pod is operated by GoGet.

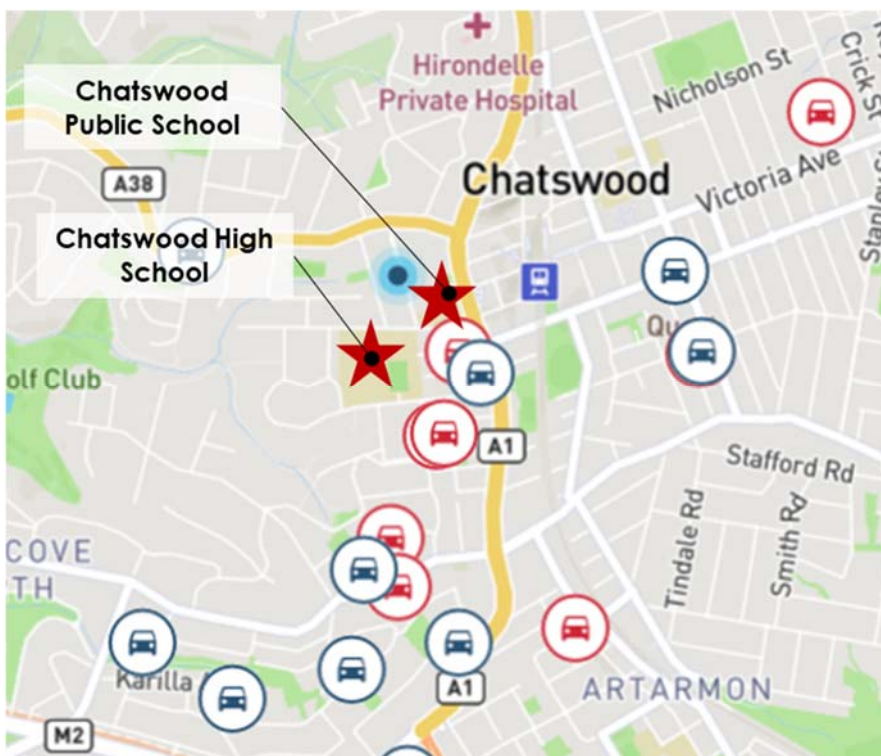
The location of existing car share pods within the site vicinity is shown in Figure 3.14 to Figure 3.16.

Figure 3.14: Location of Existing Car Share Vehicles – GoGet



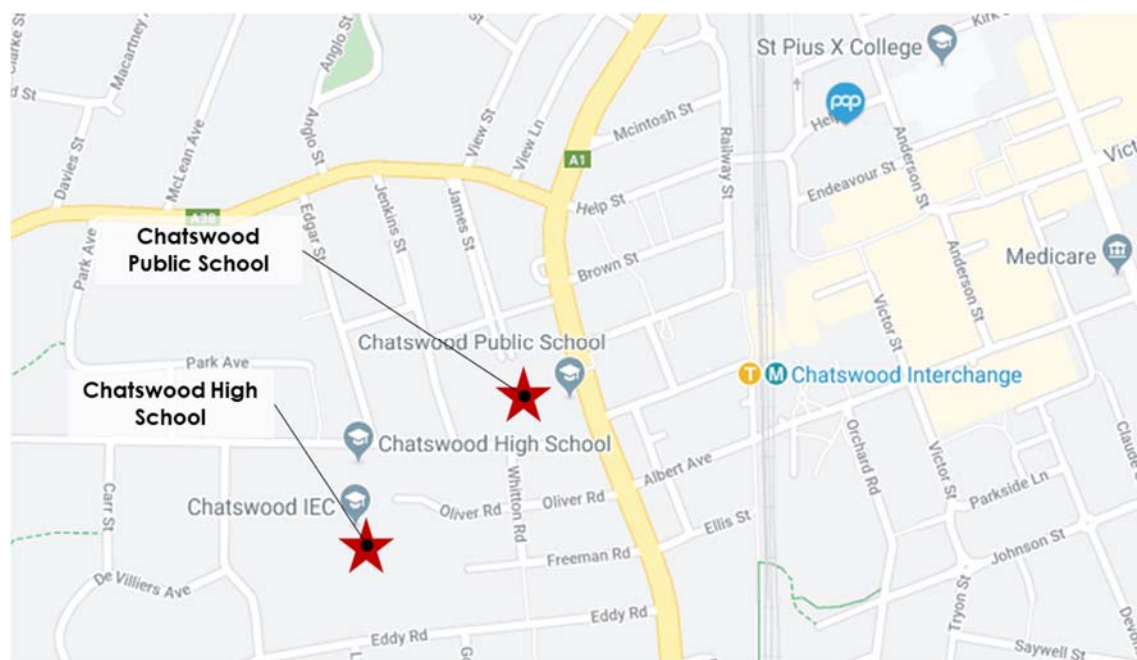
Source: GoGet Australia (accessed on 21/01/20: <https://www.goget.com.au/find-cars/>)

Figure 3.15: Location of Existing Car Share Vehicles – Car Next Door



Source: Car Next Door Australia (accessed on 21/01/20: <https://www.carnextdoor.com.au/>)

Figure 3.16: Location of Existing Car Share Vehicles – PopCar



Source: PopCar Australia (accessed on 21/01/20: <https://popcar.com.au/>)

3.7 Mode Split Analysis

Online questionnaires were distributed to school staff and parents to determine their travel mode choice and behaviour.

A summary of existing staff and student travel modes is provided in Table 3.2.

Table 3.2: Summary of Existing Staff and Student Travel Mode

Method of Travel	Staff		Students	
	Chatswood Public School	Chatswood High School	Chatswood Public School	Chatswood High School
Car Driver	64%	80%	-	1%
Car Passenger	5%	5%	30%	16%
Train	11%	12%	5%	24%
Bus	8%	2%	4%	27%
Bus and Train	2%	1%	1%	6%
Cycle	0%	0%	1%	0%
Walk	10%	0%	59%	26%
Total	100%	100%	100%	100%

4 Objectives and Targets

4.1 Future Staff and Student Numbers

For a conservative assessment, the measures discussed in this GTP assumes the high-occupancy scenario (i.e. 1,600 primary students and 2,000 high school students). This is to consider the worst case scenario in the event that the planned new potential school would not be built.

4.2 Objectives

From the results presented in the Traffic Report, a 16% reduction in the car trips would be needed such that there would be no net additional school traffic even if the school population increased to the high-occupancy scenario.

It is noted that a modal shift of between 3-5 per cent is a more realistic target for a school and is also considered to already be a significant achievement (as stated by the experts in the LEC).

Nonetheless, this GTP has been prepared to aim a 16% reduction in car use, especially single car trips.

The following have been identified in order to achieve the vision of the GTP.

Objective 1: Facilitate a shift towards more sustainable transport modes

- Improve access, safety, amenity and convenience of sustainable transport modes for travel to and from the site.
- 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.

Objectives 2: Make the site a great place to live, work and visit

- Improve access and mobility and enhance the sense of place.
- Reduce the need to travel by co-locating of complementary land uses.

4.3 Mode Share Targets

The aim of the GTP is to encourage modal shift away from cars by implementing measures that influence the travel patterns of 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 modal split analysis indicated that private car is the predominant mode share type among staff. Nonetheless, significant car use is also observed among students especially primary students.

As indicated previously, a 16% reduction in car trips is required to achieve no net additional traffic even if the population increased to 3,600 students. However, this does not necessarily translate to a 16% mode shift from car use because of the following factors:

- some car trips occur outside the identified peak hour
- students who travel by car has an average occupancy rate of 1.65 to 1.76 students per car, and
- the assumed directional split during the morning peak hour is 85% inbound and 15% outbound (reverse in the afternoon peak) and therefore a student or staff who travel by car could potentially generate two car trips per hour (i.e. one trip inbound and one outbound).

The above assumptions are used in determining the school traffic generation which is further discussed in the traffic report.

On the above basis, the same method of determining the school trip generation rate used in the traffic assessment has been used to identify the required modal shift from car use such that the resulting future peak hour car trips would not result in any additional traffic as compared with the existing peak hour car trips.

The resulting mode share target for staff and students are summarised in Table 4.1 and Table 4.2 respectively. Additionally, a comparison of the existing traffic generation and the resulting future traffic generation with modal shift is summarised in Table 4.3.

Table 4.1: Existing and Projected Modal Splits – Staff

Method of Travel	Existing		Mode Shift		Proposed	
	Chatswood Public School	Chatswood High School	Chatswood Public School	Chatswood High School	Chatswood Public School	Chatswood High School
Car Driver	64%	80%	-5%	-5%	59%	75%
Car Passenger	5%	5%	0%	0%	5%	5%
Train	11%	12%	+2%	+2%	13%	14%
Bus	8%	2%	+1%	+1%	9%	3%
Bus and Train	2%	1%	0%	0%	2%	1%
Cycle	0%	0%	+1%	+1%	1%	1%
Walk	10%	0%	+1%	+1%	11%	1%
Total	100%	100%	-5%	-5%	100%	100%

Table 4.2: Existing and Projected Modal Splits – Students

Method of Travel	Existing		Mode Shift		Proposed	
	Chatswood Public School	Chatswood High School	Chatswood Public School	Chatswood High School	Chatswood Public School	Chatswood High School
Car Driver	0%	1%	0%	0%	0%	1%
Car Passenger	30%	16%	-5%	-5%	25%	11%
Train	5%	24%	+1%	+1%	6%	25%
Bus	4%	27%	+1%	+1%	5%	28%
Bus and Train	1%	6%	0%	0%	1%	6%
Cycle	1%	0%	+2%	+2%	3%	2%
Walk	59%	26%	+1%	+1%	60%	27%
Total	100%	100%	-5%	-5%	100%	100%

Table 4.3: Future Traffic Generation (with GTP Measures)

	Future Population	Future Peak Hour Trip Generation		Existing Peak Hour Trip Generation		Net Difference	
		AM	PM	AM	PM	AM	PM
CPS Staff	122	77	73	71	67	+6	+6
CPS Student	1,600	276	293	276	293	0	0
CHS Staff	134	99	93	79	75	+20	+18
CHS Student	2,000	163	102	201	123	-38	-21
Total		615	561	627	558	-12	+3

As shown on the above tables, a mode shift of 5% away from car use would result to a future traffic generation which is comparable with the existing case. With the proposed mode shift, the future traffic generation associated with the proposed high-occupancy population would result in a reduction of 12 vehicles in AM and increase of three cars in the PM as compared with the existing school traffic generation.

This net change in trip generation is considered minimal and is not expected to create any noticeable impact on the surrounding road network operations.

4.4 School Feedback

As part of the survey questionnaire distributed to both staff and students at the schools, staff and students were asked what initiatives and/or improvements would encourage them to use active and public transport to travel to/from the schools.

4.4.1 Staff Feedback

Based on the survey, 38 per cent of the staff may consider trying an alternative form of transport to travel to/from the schools. A summary of some of the key features that staff would like to see more to encourage walking, cycling and public transport is presented in Figure 4.1 to Figure 4.3.

Figure 4.1: Staff Measures to Encourage Walking/Cycling

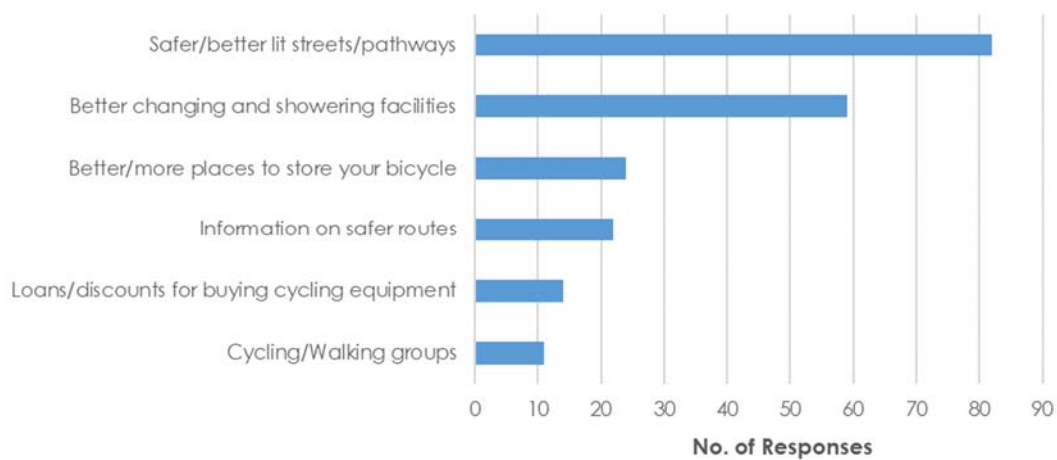


Figure 4.2: Staff Measures to Encourage Public Transport Use

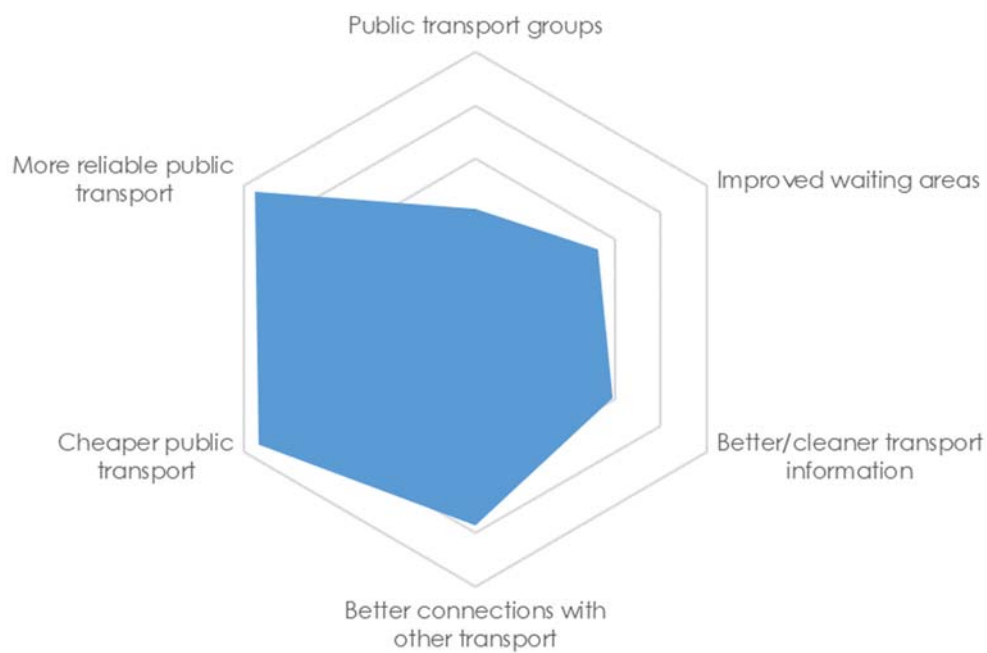
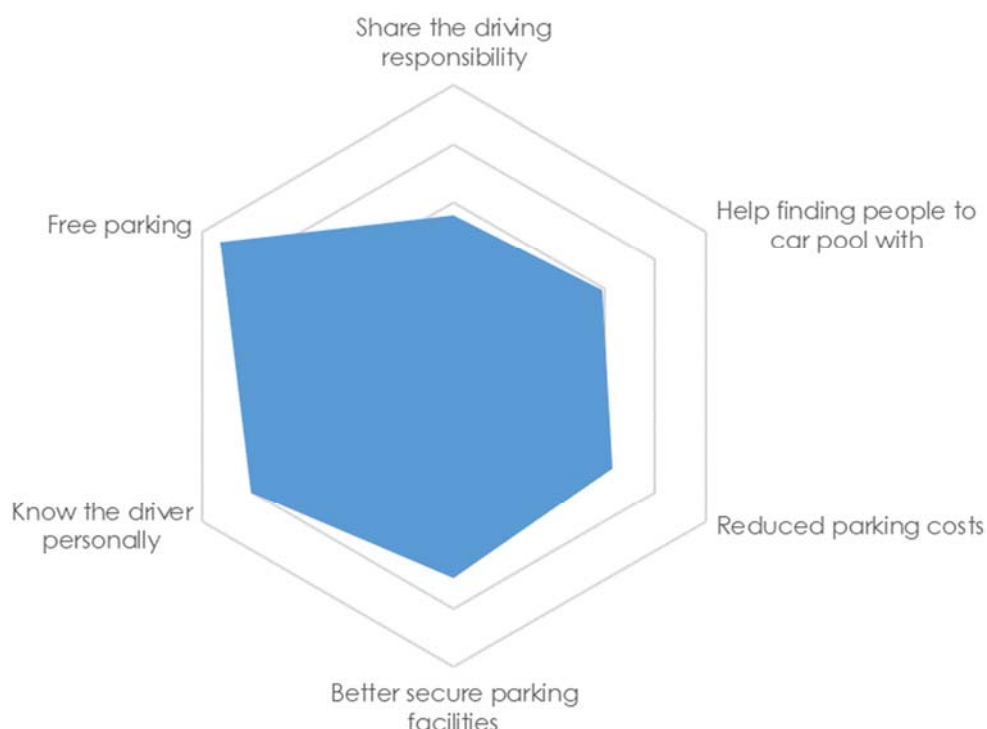


Figure 4.3: Staff Measures to Encourage Car Pool



Based on staff feedback, the following points are noted:

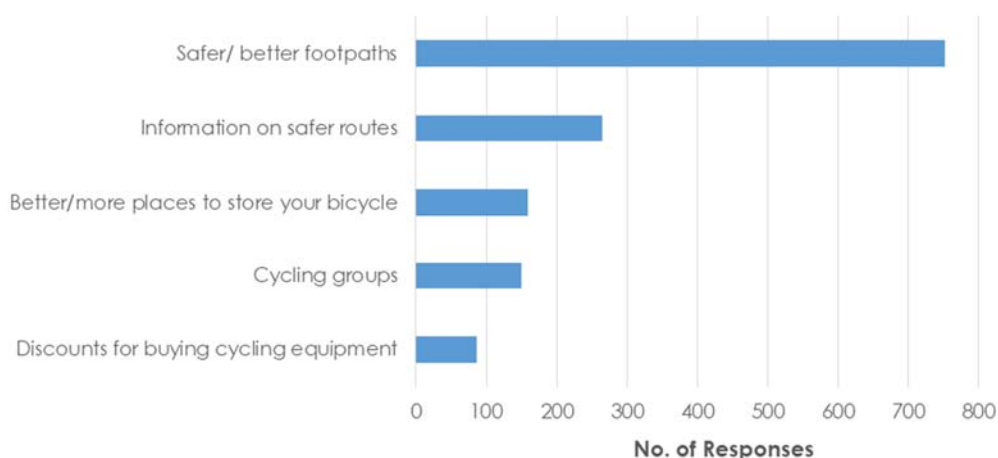
- staff would like to see safe/better lit streets and pathways, as well as better changing/shower and end-of trip facilities to encourage them to cycle to work
- staff would be encouraged to use public transport if there were more reliable public transports (e.g. trains and buses arriving on schedule) and if the fares were more affordable
- only 35 per cent of staff would consider carpooling with other staff to/from the school. Irrespective of this, measures that would encourage these staff members to participate in carpooling would be if free car parking is available for car pool groups and if they know the driver and/or passengers personally.

4.4.2 Student Feedback

Based on the survey questionnaire, it is noted that a high percentage of students travel to/from the school by walking (i.e. 26 to 56 per cent of students). Comparably, a low number of students currently cycle to/from the schools, with only 1 per cent of the primary school respondents travelling by bicycle.

As shown in Figure 4.4, there are generally only on-road cycle paths provided within the immediate vicinity of the site. One of the key measures that would encourage students to walk and cycle to school would be safer and better footpaths, as shown in Figure 4.4.

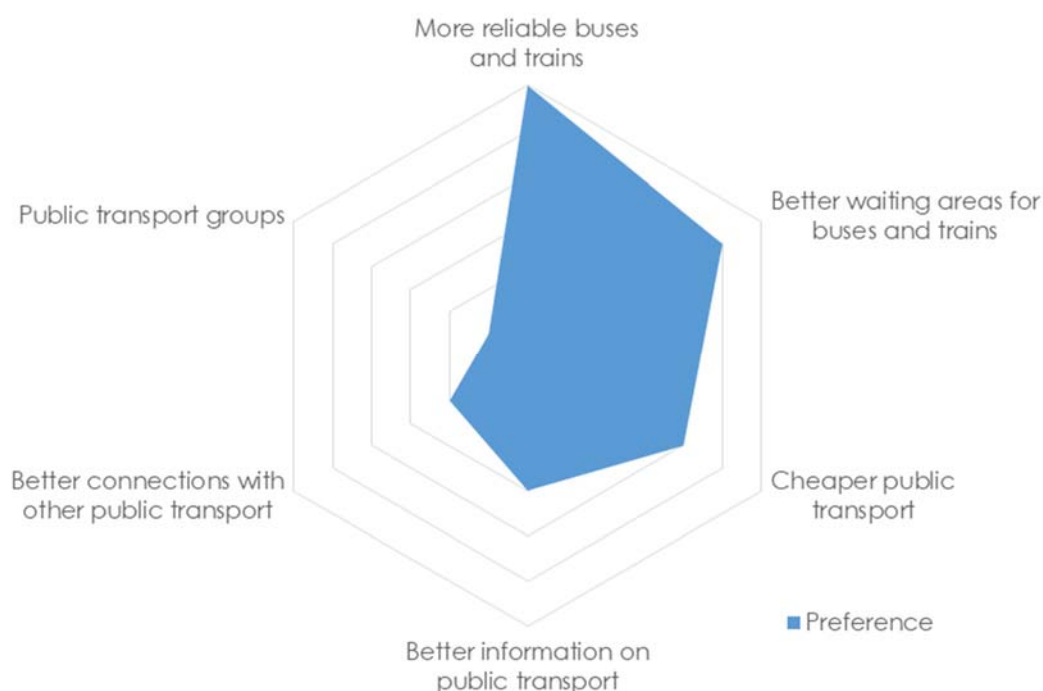
Figure 4.4: Student Measures to Encourage Walking/Cycling



Whilst there are existing good pedestrian facilities provided within the immediate vicinity of the schools in the form of sealed pedestrian paths, supervised pedestrian crossings and signalised pedestrian crossings, there are only on-road cycle paths generally provided within the immediate vicinity of the site (i.e. not off-road cycle paths). On this basis, parents may be discouraged to allow their child to cycle to/from school due to perceived safety concerns with riding on the road next to live traffic.

In relation to potential measures to encourage public transport, Figure 4.5 shows that most students would be encouraged to use public transport if there were more reliable public transport services and better waiting areas which are safe for students.

Figure 4.5: Student Measures to Encourage Public Transport Use



4.5 Case Study – Brisbane Active School Travel Programme

In 2004, Brisbane City Council implemented an Active School Travel (AST) programme at various schools to implement a number of initiatives to reduce the number of car trips made to and from Brisbane Schools.

Based on this programme, a summary of the key successes between 2008 and 2009 are as follows:

- 24.8 per cent decrease in car trips
- 19.1 per cent increase in students walking to the school
- 3.1 per cent increase in students cycling to school
- 2.5 increase in students carpooling with other families.

The key initiatives implemented include:

- **Walking Wheeling Wednesday** – a weekly campaign to encourage students to actively travel to school every Wednesday. This enabled a ‘spill over’ effect where students chose to actively travel to school for the whole week.
- **Park and Stride** – encourage students who have no alternative but to be driven to school to walk part of the way. A site was selected within a 5-10 minutes walking distance from the school and parents were encouraged to drop their children off there. This assisted to alleviate congestion experienced around the school gates.
- **Walking School Bus** – group of children walking to and/or from school with trained and approved Walk Leaders from the school community. This walking route include key bus stop to pick up and drop off children along the route as required.
- **Car Pooling** – encourage families to reduce the number of car trips from one family to provide some time and cost saving benefits by not having to do the ‘school run’ every day.
- **RACQ ‘Streets Ahead; Road Safety Program’** – RACQ officers would visit schools to teach students how to be safe pedestrians and passengers. This presentation is interactive and engaging to encourage children to practice correct road safety behaviours, making it easier for them to learn how to be safe road users in real-life situations.
- **Public Transport Orientation** – this is an activity to education students how to use buses safely and how to behave safely at bus stops. This motivated some parents to allow their children to use public transport to school.
- **Bike Skills Training** – offered to students to improve their cycling competency, cycling confidence, safely cross the road, understand road rules and demonstrate to their parents they have attained sufficient skills to allow them to cycle to/from the school.
- **Bike Cage Construction** – provision of secure bike storage areas to alleviate students’ and parents’ fear of bicycle theft and/or vandalism.

- **Active Travel Maps** – specific active travel maps for each school to detail public transport services in the area, cycle and walking routes.
- **Road Star and Assembly Presentations** – a mascot who appears at launch events and school assemblies to promote active travel.
- **Adopt a Cop** – an initiative to pair a school up with their own police officer. This was found to provide reassurance to parents to allow their child to actively travel.
- **Active School Travel (AST) E-News** – a monthly newsletter to detail best practice models for initiatives and publishes the Walking Wheeling Wednesday statistics allowing schools to compare results and achievements.
- **Legacy Program** – provide schools with an additional two years of support in further developing and maintaining their travel plan.

A comprehensive evaluation was undertaken at the end of each year which highlights both successes and areas for improvement.

The above successful initiatives have been considered as part of this GTP.

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 and from the site, with the view to encourage modal shift away from cars.

5.1 Potential Site-Specific Measures

The school will consider the following measures to encourage more sustainable travel use. Measures to encourage more sustainable travel use for primary school student trips would be targeted towards parents/caretakers at the school since these students are clearly not old enough to drive.

A school newsletter will be distributed to all parents to encourage walking and active travel to school. In addition to this, a small committee of interested people, including students and parents, will be established to represent the school to promote initiatives for safe, greener and more active travel. A number of teachers will be appointed to attend/organise the committee meetings with the students and parents and represent the school to promote active travel.

5.1.1 Walking

School staff will be encouraged to walk by implementing a '10,000 steps per day' initiative. Staff members who have achieved the 10,000 step goal over a set period could be rewarded.

In addition to this, school walking groups would be established so the people who live locally in the same area would walk together to get to school. The group could be participated by staff, students and parents. Information regarding the walking groups would be sent via email, posted on noticeboards and school website and discussed in parent meetings.

If successful, this could form the basis of a walking bus. A 'Walking School Bus' is a community and parent initiative that forms a group of school students who walk to and from school along a safe and enjoyable set route, accompanied by a minimum of two parents or supervisors per 'bus'. In this way the teachers could also be the accompanying adults.

5.1.2 Cycling

Provision of high-quality bicycle parking and end-of-trip facilities will encourage people to travel by bicycles. As part of the project, a total of 156 bicycle parking spaces will be provided across the two sites, which is a significant improvement as no bicycle facilities are currently provided at the schools.

To further encourage staff and students to use these bicycle parking facilities, it is recommended that adequate weather protection and security features will be in place to ensure safe bicycle storage.

Similar to walking groups, cycling groups would be established to encourage staff and students to arrive by bicycles. All staff and students will be encouraged to travel to the site by bicycles through word of mouth and bicycle maps posted on noticeboards, newsletter and school website. In addition, school will participate in active travel events such as Ride2Work or Ride2School day and National Bike Week.

The school could also implement "Learn to Ride" program to educate students, especially the primary students, on how to ride a bicycle and to inform them on safe riding practices and cycleways to/from the school.

Other measures could include engaging a local bicycle retailer and service centre to provide discounts for staff and students, as well as the organisation of further educational programmes to teach staff and students how to properly and safely ride a bike.

5.1.3 Public Transport

Public transport noticeboards will be provided to make staff, students, visitors parents 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 school could consider assigning teachers or other qualified school staff at key hubs within the Chatswood Transport Interchange to pick-up/drop-off students who use bus or trains to go to school. This will give the parents some peace of mind that their children will arrive at the school safely.

5.1.4 Shuttle Bus Services

Shuttle bus services in the local catchment (for those who are not eligible for a free Opal School Card) could also be provided along key hot spots with more affordable fares and/or a periodic payment scheme (e.g. monthly, per term, annual or to be taken from staff salaries) to encourage alternative modes.

The introduction of a shuttle bus services could potentially be sufficient to reduce the overall development traffic to improve intersection performance to the same level that would occur in the future base case.

It is further noted if additional shuttle bus services are provided and utilised this would further improve the intersection performance to a level better than the future base case.

Separately, it should be noted that the proposed shuttle bus service should have adequate capacity to accommodate not only passengers who have changed from car use to the

shuttle bus service, but also be made available for any other students who want to use the shuttle bus service.

However, further detailed consultation with staff and students/parents would need to be conducted to understand if the students/parents/staff are likely to use a shuttle bus service and how it is to be operated to ensure maximum usage.

5.1.5 Travel Share

There are some existing car sharing facilities within the vicinity of the site. To reduce car ownership and single occupancy car trips, it is recommended that the school consider the provision of membership on car share services to staff to utilise existing and/or future car sharing facilities. This will enable staff to only use cars on demand for personal, official or emergency use.

In addition to this, a carpooling forum will be developed to encourage 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. The forum will be posted on the staff website, noticeboards, lunch rooms and newsletters.

A number of staff parking spaces could also be dedicated for carpool users only (i.e. cars with 2 or more staff passengers), which was identified as a potential measure to encourage staff to carpool to/from the site.

5.2 Staggering Arrival and Departure Times

At present, start and finish times are not staggered. It may therefore be desirable to stagger start and finish times for each year group. Staggering drop off and pick up times for school children can help alleviate congestion during peak periods. It is therefore recommended that the start and finish times be amended for each year group to assist distribute school related trips during school drop off and pick up times.

In addition to this, schemes can also be easily implemented by the schools through the School News Bulletin (or similar) to provide parents with a general guideline as to what time they should drop off and pick up their child for each year group. This however may raise some concerns for parents who have more than one child in different year groups at the school.

Further detailed consultation with staff and students/parents would need to be conducted to understand if amending the existing start and finish times are viable. It may become necessary that an "after class" room be established with a supervising teacher to accommodate any students who are waiting for their sibling in a different year group at the school. It may also be the case that before and after school activities be reviewed and

promoted in order to stagger to student levels to suit the proposed staggered start and finish times.

5.2.1 Off-site Measures

The school will consult with Council and relevant authorities to implement several off-site measures to improve the transport connections to and from the site including:

- improve walking and cycling facilities surrounding the site
- provide safe and dedicated cycling paths
- investigate dedicated school bus and/or additional bus routes that will service the schools
- improve signage and wayfinding from key public transport hubs to improve walking and cycling experience
- investigations to facilitate additional car sharing facilities within the vicinity
- extend the area covered by existing on street parking restrictions (i.e. resident parking area) to discourage school use of on street parking within close proximity to the school.

It is noted that Council currently implements a Resident Parking Scheme (RPS) on some areas within the LGA. This scheme provides on-street parking priority to eligible residents in an RPS area.

The travel questionnaire survey results indicate that 77% of the primary school staff who travel by car park on surrounding streets which is mainly due to limited on-site parking facility at Pacific Highway site. These staff generally park along De Villiers Avenue, Dardanelles Road, Eddy Road, and Carr Street, where unrestricted street parking is provided.

If a RPS scheme will be implemented on these streets, the staff would have to park on locations further from the school and therefore could be discouraged to travel by car.

However, implementing a RPS on the area should be consulted with the residents and with the school. Although the residents would have priority on on-street parking, they would have to apply for a permit in order to be eligible to park unrestricted in an RPS area.

5.3 GTP Information

The information provided within the GTP will be provided to staff and parents in the form of a package of easy to understand travel information known as a Travel Access Guide (TAG).

This will be included in the information pack provided to staff on day one during their induction.

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, school website and noticeboards for visitors and parents.

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

5.4 Information and Communication

Several opportunities exist to provide staff with information about nearby transport options. Connecting staff with information would 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/>

Willoughby Council Cycling

- Willoughby Council provides a number of services and a range of information to encourage people of all levels of experience to travel by bicycle.
<http://www.willoughby.nsw.gov.au/your-neighbourhood/getting-around/cycling/>

Similarly, such phone apps as Trip View 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 staff 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.

5.5 Actions

A summary of the key strategies and framework action table is presented in Table 5.1.

Table 5.1: Framework Action Table

Strategy	Action	Targeted Audience	Timeline	Responsibility
Promoting Cycling and Walking				
Walking/Cycling Events	Implement '10,000 steps per day' initiative and participate in Ride2Work, Ride2School and National Bike Week	Staff	Ongoing	School
Walking/Cycling Groups	Establish walking and cycling groups	Staff, parents and students	Ongoing	School
End-of-Trip Facilities	Provide safe and secure bicycle parking, showers, lockers and change rooms	Staff and students	Prior school expansion	School
Bicycle services	Engage local bicycle retailer and service centre for discounted rates	Staff and students	Ongoing	School
Bike Riding Education	Organise programs to teach students on how to properly ride a bike	Students	Once per school term/school year	School
Promoting Public Transport				
Bus/Train	Consider providing Opal Card with monthly allowance to encourage public transport use	Staff	Start of staff employment	School
Shuttle Bus Services	Provision of shuttle bus services in local catchment subject to demand analysis	Staff and students	Demand Analysis to be Undertaken prior to implementation of GTP	School
Managing Car Use				
Car Sharing	Consider providing car sharing membership to staff	Staff	Prior school expansion	School
Car Pooling	Establish a car pooling system to reduce single car occupancy and promote social interaction	Staff	Ongoing	School
On Street Parking	Investigate with Council potential to expand the existing on street residential parking scheme	Students and Staff	Ongoing	School & Council
Other				
Green Travel Plan	Provide staff with the Green Travel Plan to encourage active travel	Staff, parents and students	Staff induction/student orientation	Travel Plan Coordinator
Transport Access Guide	Provide a TAG on day one of induction and post the TAG on noticeboards, front entrances, the School's online website, etc.	Staff, parents and students	Staff induction/student orientation	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 school or an independent expert.

It will also be necessary to provide feedback to staff and parents 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:

- Communications – Good communications 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.
- Consensus – It will be necessary to obtain broad support for the introduction of the plan from the staff.

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.

However, the following measures are proposed both as discrete measures (e.g. car share) and those being proposed as part of the proposed expansion of the school:

- Provision of bicycle parking and end-of-trip facilities
- Provision of shuttle bus services
- Increase use of car share amongst staff.

Alternatively, the TPC could work with Council to see how the measures might be aligned with the Council's strategies.

6.3 Consultation

The results of the Green Travel Plan will be communicated with Council, staff, parents and to the wider community via the school website 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 expansion).

The letter/report may be also appended to the GTP and submitted to Council for comment. Subsequent surveys would be undertaken after one, three and five years.

Communication to staff and the wider community may be carried out in a similar form by public display of the GTP on the school website. Alternatively, a news article on the matter could be included on the website.

7 Conclusion

It is recommended that travel surveys be conducted each year to highlight both successes and areas for improvement.

The findings of these surveys should be reported every year after the recommended green travel initiatives have been adopted to measure the effectiveness of these measures. This GTP would need to be updated accordingly to reflect the findings of the updated travel surveys.

If required, additional measures may be required to achieve the modal split targets.

Appendix A

Travel Access Guide



Bus Services

Bus stops are located along Centennial Avenue, Fullers Road, Victoria Road and Chatswood Transport Interchange

Route	Description	Nearest Bus Stop Location
255	Chatswood to Colwell Crescent and Beaconsfield Road	Centennial Avenue
256	Chatswood to Fullers Road (Loop Service)	Fullers Road
259	Chatswood to Macquarie Centre via North Ryde and Macquarie Park	Fullers Road
A number of bus services are also available at Chatswood Transport Interchange		



Parking, Drop-off and Pick-up

- Chatswood Public School staff parking access at Jenkins Road
- Chatswood High School staff parking access at De Villiers Avenue
- Drop-off/pick-up zone for parents and students is provided along Centennial Avenue
- Drop-off/pick-up bays are available off Oliver Road for Special Education



Cycling

- A number of bike routes are available in the area. Check [Northern Sydney Cycling Map](#) for more information.
- Bicycle parking areas are provided on both Chatswood Public School and High School sites.



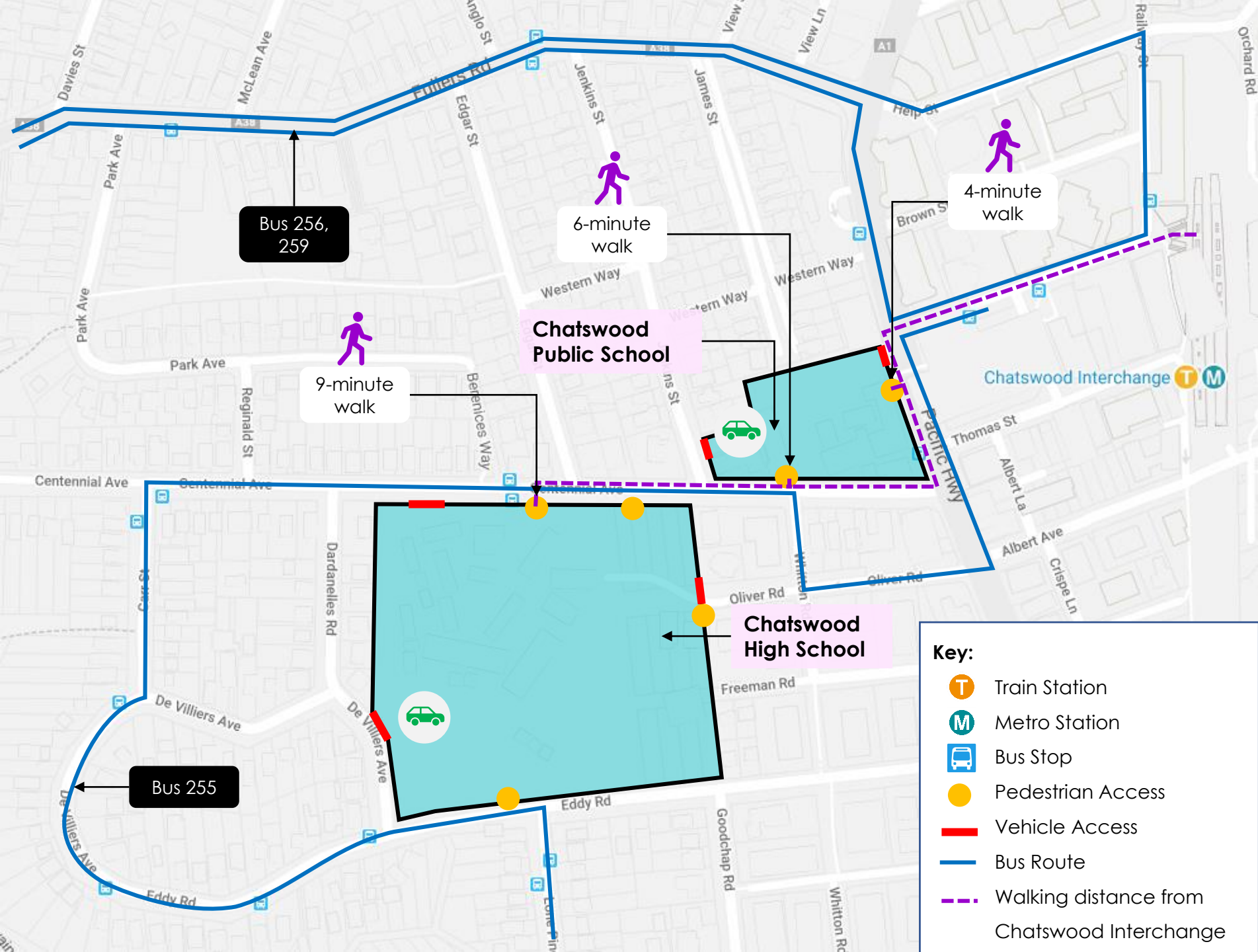
For more transport options, visit <https://transportnsw.info/>



**Chatswood
Public
School and
Chatswood
High School**

**Transport
Access Guide**

TRAVEL GUIDE MAP



The Transport Planning Partnership
Suite 402 Level 4, 22 Atchison Street
St Leonards NSW 2065

P.O. Box 237
St Leonards NSW 1590

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www.tpp.net.au