Appendix L

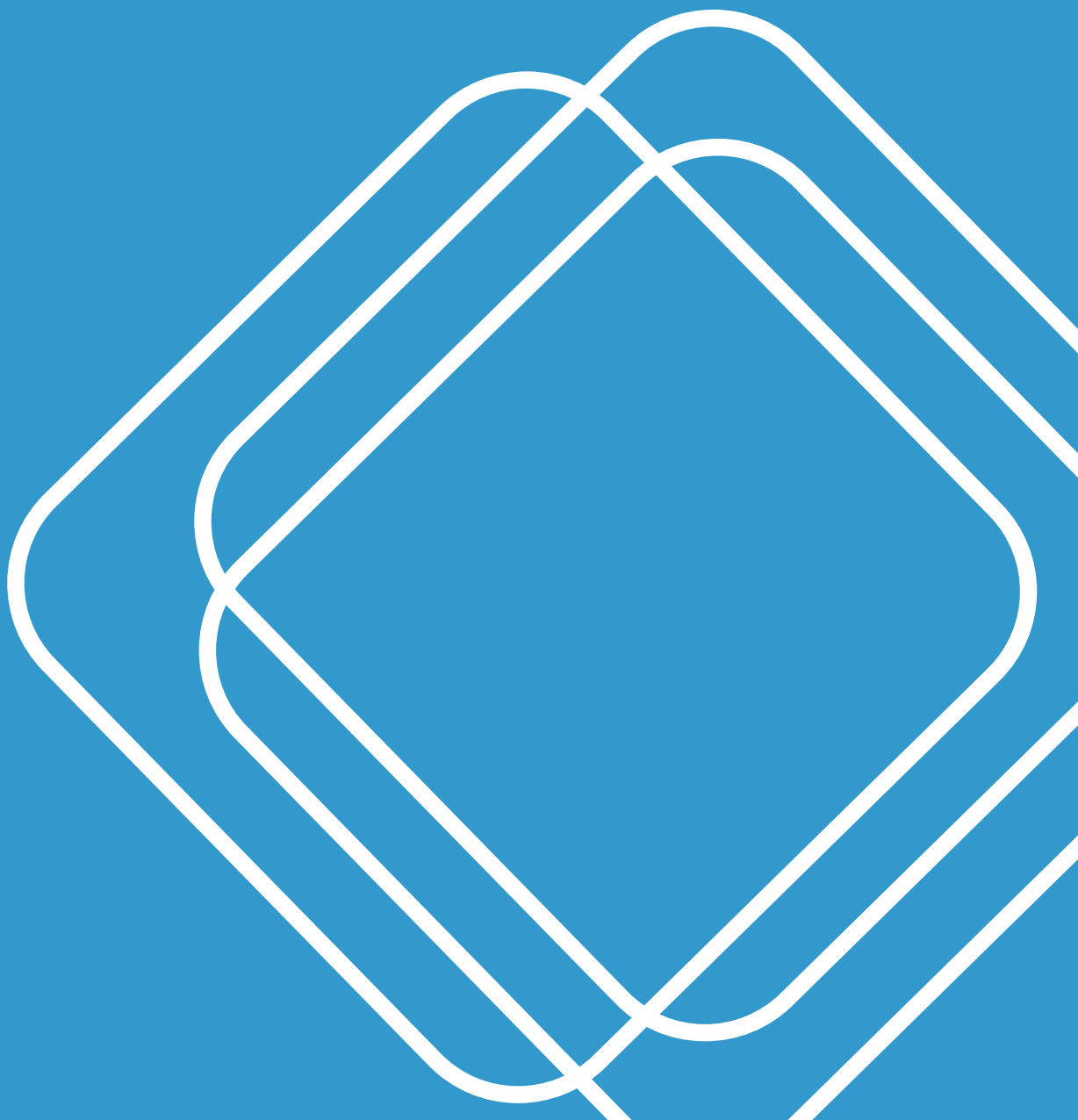
Traffic and Transport Study

SCT Consulting

CUDGEGONG ROAD STATION PRECINCT SOUTH

Traffic and Transport Study

18 May 2018



Quality Assurance

Project:	Cudgegong Road Station Precinct South		
Project Number:	SCT_00045		
Client:	Landcom	**ABN:**	79 268 260 688
Prepared by:	SCT Consulting PTY. LTD. (SCT Consulting)	**ABN:**	53 612 624 058

Quality Information	
Document name:	Cudgegong Road Station Precinct South
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Authorised:	Andy Yung, Associate Director

Revision	Revision Date	Details
A	7 December 2017	Draft report
B	3 February 2018	Revised Draft Report
0	7 February 2018	Draft Final Report
1	9 March 2018	Final Report
2	19 March 2018	Updated Final Report
3	18 May 2018	Updated Final Report

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Executive Summary

Background and introduction

The NSW Government is currently building the Sydney Metro Northwest (SMNW) that is due to start operations in 2019. The SMNW is Stage 1 of the overall Sydney Metro project and involves the construction of eight new metro stations supporting infrastructure between Cudgegong Road and Epping and converting five existing stations between Epping and Chatswood. Stage 2 will deliver a new metro rail line from Chatswood through Sydney's CBD to Sydenham (Sydney Metro City and Southwest).

Landcom and the Sydney Metro Delivery Office (SMDO), part of Transport for NSW (TfNSW), are working in collaboration to develop walkable, attractive, mixed use places around the SMNW stations. This includes using the surplus government owned land located around the Cudgegong Road Station.

The subject site, the Cudgegong Road Station Precinct South, is located between Cudgegong Road, Tallawong Road, Schofields Road and the Metro corridor and comprises around 7.8ha of government owned land. It is within the southern part of the broader Cudgegong Road Station Precinct (Area 20) of the North West Priority Growth Area, a substantial land release area for homes and jobs in Sydney's northwest.

SCT Consulting is engaged to carry out a Traffic and Transport Impact Assessment to support the State Significant Development Application (SSDA) for the Station Precinct South concept proposal. The concept proposal allows for approximately 1,100 dwellings and 9,000 sqm of retail, commercial and community uses. It also includes a central park, new streets and supporting public domain.

It should be noted that this is a concept proposal and certain details of the development may change with subsequent detailed design DA stage/s.

Study methodology

The Traffic and Transport Impact Assessment has considered:

– The existing and future context of the site, the wider Cudgegong Road Station Precinct and the surrounding transport network.

– The principles of a transit-oriented development and the implementation of targeted travel demand management measures and green travel initiatives to reduce the need and reliance on private vehicle travel. This is developed through meetings with Transport for NSW and SMDO as well as the design team.

– The potential cumulative impacts of net increase in development yield (currently proposed by Landcom), when compared to the 'baseline' assessment undertaken as part of the Cudgegong Road Station Precinct Finalisation Report (DP&E, 2015) as well as the approved dwelling numbers within the wider Cudgegong Road Station Precinct.

– Inputs and feedback from relevant stakeholders to the overall approach of the Traffic and Transport Impact Assessment.

Existing conditions

The bus services located in proximity of the site run along Schofields Road and provide good accessibility to key destinations such as Rouse Hill, Blacktown and Riverstone. All bus routes operate with between one and two services per hour, during both AM and PM weekday peak hours and throughout Saturdays and Sundays.

Shared paths in proximity of the site are provided in an east-west direction along Schofields Road, between Railway Terrace in the west and Windsor Road in the east. North-south cycle connectivity is provided along Windsor Road, also providing access to the wider cycle network. Pedestrian access across Schofield Road is provided at the signalised intersections of Schofields Road with Tallawong Road and Cudgegong Road. As part of Blacktown City Council's Draft Bike Plan 2016, additional cycle routes in proximity of the site are proposed.

The site is bounded by Cudgegong Road, Schofields Road and new internal roads. Previous assessment of performance of the signalised Schofields Road / Tallawong Road intersection suggests that it currently performs satisfactorily during peak hours, with a Level of Service C.

Peak hour traffic volumes along Tallawong Road and Schofields Road are within the nominal mid-block capacity, with 440 – 500 veh/hr (Tallawong Road) and 1,500 – 1,700 veh/hr (Schofields Road) during the peak hours.

Concept Development Proposal

The proposed development will include a central park, 3,000m^2 of commercial space, 4,500m^2 of retail space and 1,500m^2 of community uses, that will support approximately 1,100 dwellings. It is assumed that the retail and commercial areas were already considered in the approved ILP, and so no net increase in trip generation are associated with the retail and commercial uses considered as part of the Proposal.

Residents / employees of the proposed development will be located within a 300m walking distance of the new Cudgegong Road Station of the future SMNW project, which will provide direct access to Chatswood. Sydney Metro Northwest will be open in 2019, and customers will also have a new direct Metro service to Crows Nest, Barangaroo and Martin Place when Sydney Metro City and Southwest opens in 2024.

Vehicular accesses to the site are proposed at the collector roads of Cudgegong Road and Tallawong Road, which connect to a series of internal local streets that provide access to underground car parks. Internally the proposed development promotes pedestrian and cyclist movements with a permeable internal layout that provides good connection to the surrounding cycling and walking network and to public transport.

The proposed development supports best practice transit oriented development principles, by providing increased residential density in proximity of existing and planned transport infrastructure upgrades (such as the future Sydney Metro North West). The proposed infrastructure upgrades will provide residents with greater access to public transport and employment options, while promoting the use of sustainable travel options.

The number of car parking spaces provided as part of the Proposal complies with the RMS Guide to Traffic Generating Developments and is supported by the excellent level of access to frequent public transport (rail / metro and buses) within 400m walking distance to the site and good access to alternative cycle parking and facilities provided within the development.

Internally the proposal encourages sustainable transport use with a permeable layout providing easy access to existing and future pedestrian and bicycle infrastructure. Secure bicycle storage facilities are also provided for both residents and visitors, at rates that are significantly higher than those specified by the Blacktown City Council Growth Centre Precincts DCP 2016 to encourage use of active travel means for future residents.

The planning and implementation of a targeted Travel Plan with the above green travel initiatives / principles will support the delivery of a transit-oriented development at this location that provide significant opportunities for alternative travel options and reduce the need of car travel. TDM strategies generally guide all relevant customers (residents, employees and visitors) in changing the travel behaviour in the following ways:

– Reduce travel;

– Re-mode (consideration of travel via alternative modes);

– Re-time (consideration of travel at alternative times); and

– Re-route.

A Travel Plan should be developed and monitored for the Cudgegong Station Precinct community to deliver best practice travel programs and initiatives to manage travel demand for a transit-oriented development. Some of the key initiatives and measures are highlighted here and the details are included in **Section 4.3** of the main report:

– Reduce the need to travel

  - Planning of Cudgegong Station Precinct as a mixed-used community with the provision of medical, legal, commercial, retail and community services on site to maximise trip containment within the precinct and encourage use of active transport (walking and cycling) for short trips.

– Re-think the mode of travel

  - Walking and cycling:
    - A highly permeable and safe pedestrian network throughout the development.
    - Dedicated cycle routes that connects to the regional routes and major transport hubs.
    - High quality, safe and accessible end-of-trip facilities (centralised cycle hubs that are integrated within development at convenient locations, on-street secure bicycle storage located conveniently at end of cycle destinations, parking hubs for shared bikes, lockers and showers).

- Public transport:
  - Investigate on-demand transport options to service travel demand in areas / at times that cannot be served by regular bus routes.
  - Tailored information with clear mapping and walking catchments at public transport stops.
  - Provision of public transport information from home via television channel or community app.
- Parking measures as a mean to encourage alternative modes of travel:
  - Reduced parking rates with flexibility in parking arrangements such as decoupled parking, shared vehicles parking to accommodate parking needs of all residents.
  - No dedicated parking space for small (1-bedroom) apartments to increase housing affordability. Car travel needs can be addressed via carpooling and / or using shared vehicles.
  - Parking spaces dedicated to electric vehicles, with charging stations.
  - Parking spaces dedicated to car share scheme and community car-share vehicles, both on-street and incorporated in easily-accessed public car parks.

– Re-time and Re-route journeys:

- Development of specific community app / community engagement program to enable changing travel behaviour which includes:
  - Active and public transport maps
  - Personalised journey planner
  - Notifications to latest travel information
  - Shared vehicles information
  - Car-pooling opportunities
  - Other precinct-related information

Trip generation and traffic impacts

The net increase of 450 apartments compared to the approved Indicative Layout Plan would be expected to generate up to 87 and 68 additional vehicular trips in the AM and PM peak hour respectively. This level of trip generation is supported given the site's proximity and accessibility to good public transport services.

As a result of the increased yield of the proposed development (+450 apartments), the highest increase of peak hour traffic volumes would be expected to occur at the intersections of Schofields Road / Cudgegong Road and Schofields Road / Tallawong Road, with an increase of approximately 60 peak hour trips (approximately two percent increase of the total intersection traffic volumes).

Overall vehicle trips generated by the increased yield of the proposed development are considered to have an acceptable impact on the corridor performance, and on intersections in proximity of the site.

The net increase of 450 apartments would also expect to generate 40 additional public transport trips in the AM peak, 31 additional public transport trips in the PM peak and a total of 315 additional daily public transport trips. The provision of frequent metro and bus services in the vicinity of the development are expected to cater for these additional demands.

Conclusion

The Traffic and Transport Impact Assessment has concluded that:

– There will not be any adverse traffic implications on the public road as a result of the additional vehicle trips generated by the proposed development (compared to the approved ILP).

– The proposed vehicle, pedestrian and cyclist access will be suitable and appropriate and promote sustainable transport modes.

1.0 Introduction

1.1 Background / context

SCT Consulting is engaged to carry out a Traffic and Transport Impact Assessment to support the State Significant Development Application (SSDA) for the Station Precinct South concept proposal. The site is bounded by the Metro corridor to the north, Cudgegong Road to the east and Schofields Road to the south, as shown in **Figure 1–1**. The concept proposal allows for approximately 1,100 dwellings and 9,000 sqm of retail, commercial and community uses. It also includes a central park, new streets and supporting public domain.

The Cudgegong Road Station Precinct South area was rezoned by the Department of Planning and Environment (DP&E) as part of Cudgegong Road (Area 20) Precinct (the Precinct), located in Sydney's North West Growth Area within the Blacktown City Local Government Area. The town centre of the wider Precinct will become a local village centre with a range of housing typologies and provide convenient and lifestyle destinations for residents, workers and visitors, all within walking distance.

Figure 1–1 Location of the subject site

Source: Landcom, February 2018

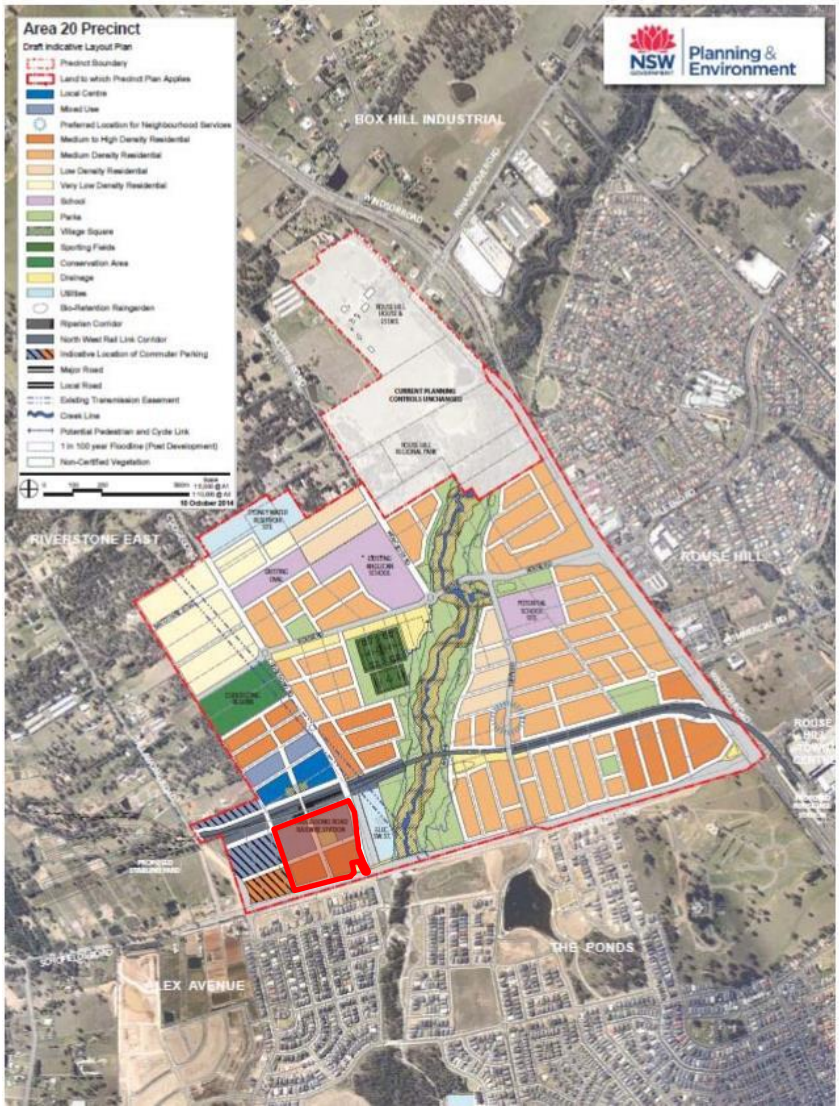
1.2 Planning Background

The site is located within the Cudgegong Road (Area 20) Precinct (as shown in **Figure 1–2**), which was one of the first release precincts to be developed as part of Sydney's North West Growth Area and provided for up to 2,500 dwellings, with a population of 6,400. The precinct was rezoned for development in October 2011, and covers an area of approximately 245 hectares.

As a result of the Sydney Metro North West project and a proposed station at Cudgegong Road, changes to the planning controls for the Precinct we proposed to support longer-term development outcomes, and the principles of Transit Oriented Development, through increases in maximum building height within, and surrounding, the Town Centre (including the site). The amendments surrounding Cudgegong Station provide support for an overall dwelling yield for the Area 20 Precinct of around 4,400 dwellings and a population of around 11,250.

The site at Cudgegong Road Precinct is one of eight urban transformation projects under the Sydney Metro Northwest Urban Transformation Program. The focus of the program is the development of surplus developable government owned land around new Metro Stations at Cherrybrook, Castle Hill, Showground, Northwest, Bella Vista, Kellyville and Cudgegong Road as well as around the existing Epping Station.

Figure 1–2 Cudgegong Road (Area 20) Precinct Indicative Layout Plan (ILP)



Source: Blacktown Growth Centres DCP Schedule 4 – Cudgegong Road (Area 20) Precinct, September 2016

1.3 Purpose of report

The purpose of this Traffic and Transport Impact Assessment is to support the SSDA for a proposed mixed-use development at the Cudgegong Road Station Precinct South within Cudgegong Road (Area 20) Precinct located in Sydney's North West Growth Area.

This report has addressed the Secretary's Environmental Assessment Requirements for the Stage 1 concept proposal for a mixed-use development at Cudgegong Road Station Precinct South, issued on 16 February 2019, for transport, traffic, parking and access, particularly it will address/provide:

- *Accurate details of the current daily and peak hour vehicle, public transport, pedestrian and bicycle movements from existing buildings/ uses on the site using the adjacent and surrounding road network;*
- *Forecast total daily and peak hour trips likely to be generated by the proposed development including vehicle, public transport, pedestrian and bicycle trips, together with cumulative impacts of existing, proposed and approved developments in the area and any transport/ traffic upgrade;*
- *Impacts of the proposed development on the operation of existing and future transport networks, including the public transport capacity and its ability to accommodate the forecast number of trips to and from the development;*
- *Detailed assessment of the existing and future performance of key intersections providing access to the site, supported by appropriate modelling and analysis to the satisfaction of RMS and TfNSW;*
- *Measures to mitigate impacts of the proposed development on the operation of existing and future traffic, public transport, pedestrian and bicycle networks, including any required upgrades;*
- *Proposed car and bicycle parking provision for workers and visitors, including consideration of the availability of public transport and the requirements of the relevant parking codes and Australian Standards;*
- *Loading dock and servicing arrangements;*
- *Measures to be implemented to encourage users of the development to make sustainable travel choices, including walking, cycling, public transport and car sharing, such as provision of adequate bicycle parking and end of trip facilities; and*
- *Identify potential work zones/construction areas and the functionality and impact on pedestrian amenity and public domain.*

The Traffic and Transport Impact Assessment report will assess the impact of the net increase in trips generated, connectivity and access to the surrounding road network, car parking requirements, public and active transport requirements and any mitigation measures required as a result of the development.

1.4 Study approach

The Traffic and Transport Impact Assessment has considered:

- The existing and future context of the site, the wider Cudgegong Road Station Precinct and the surrounding transport network.
- The principles of a transit-oriented development and the implementation of targeted travel demand management measures and green travel initiatives to reduce the need and reliance on private vehicle travel. This is developed through meetings with Transport for NSW and SMDO as well as the design team.
- The potential cumulative impacts of net increase in development yield (currently proposed by Landcom), when compared to the 'baseline' assessment undertaken as part of the Cudgegong Road Station Precinct Finalisation Report (DP&E, 2015) as well as the approved dwelling numbers within the wider Cudgegong Road Station Precinct.
- Inputs and feedback from relevant stakeholders to the overall approach of the Traffic and Transport Impact Assessment.

1.5 Report structure

This report has been structured into the following sections:

– **Section 2** considers the transport planning context;

– **Section 3** describes the existing transport conditions for all modes of transport;

– **Section 4** describes the proposed development and its access strategy as well as the likely trip generation as a result of the proposed development;

– **Section 5** describes the likely cumulative impacts for all transport modes and parking impacts as a result of the proposed development; and

– **Section 6** summarises the report content and presents the final conclusions.

2.0 Transport planning context

2.1 The NSW Government Future Transport 2056 Strategy

The Future Transport Strategy and Plans Future Transport (The NSW Government, March 2018) is an update of NSW's Long-Term Transport Master Plan. It is a vision for how transport can support growth and the economy of New South Wales over the next 40 years. The strategy is underpinned by the Regional Services and Infrastructure Plan and the Greater Sydney Services and Infrastructure Plan, as well as a number of supporting plans including Road Safety and Tourism.

The Future Transport Strategy sets the long-term vision for mobility and transport provision in NSW, explains how the customer experience of transport will change and what this means for NSW. The vision is built on six outcomes:

– A Customer Focus;

– Successful Places;

– A Growing Economy;

– Safety and Performance;

– Accessible Services; and

– Financial and Environmental Sustainability.

The Future Transport Strategy identifies that Sydney will grow as a global metropolis with benefits distributed more evenly across the City. It sets out a vision of three cities to guide many of the planning, investment and customer outcomes including faster, convenient and reliable travel times to major centres, as shown in **Figure 2–1**.

Existing and potential transit connections, together with new technology and innovation, will make the network surrounding the Site more responsive to demand and better able to manage congestion in the future.

For the three cities identified, more specific outcomes listed as part of the Strategy which will benefit the Site's transport context, include:

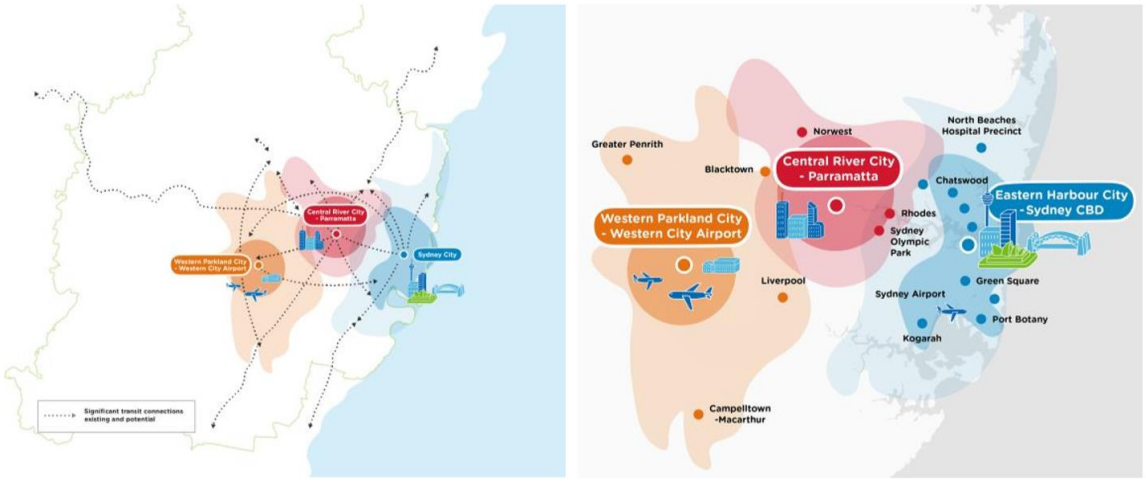
– A 30 minutes access for customers to their nearest Centre by public transport 7-days a week;

– Fast and convenient interchanging with walking times no longer than 5 minutes between services;

– Walking or cycling is the most convenient option for short trips around centres and local areas, supported by a safe road environment and attractive paths; and

– Fully accessible transport for all customers.

Figure 2–1 A future metropolis of three cities



Source: The NSW Government Future Transport 2056 Strategy

2.2 Guide to Traffic Generating Developments

The RMS Guide to Traffic Generating Developments (2002) (RTA Guide) sets out traffic generation rates based on survey data collected in New South Wales for a range of land uses. This guide is referred to in the AustRoads Guide which is used by Roads and Maritime Services, and is generally regarded as the standard for metropolitan development characteristics.

The RMS Guide to Traffic Generating Development, in particular Section 2 should be used as a guide to the detail required in the Transport Impact Assessment Study.

In relation to trip generation by vehicles, reference should be made to the 'RMS Guide to Traffic Generating Developments' which provides a summary of basic vehicular trip generating rates for both daily and peak hour vehicle trips. Surveys of existing developments similar to the proposal, can also be taken and comparisons drawn.

Over the past few years a number of surveys have been undertaken to update trip generation and parking information as part of the Guide. Th Technical Direction: TDT 2013/04a provides a summary of the updated information. Of particular relevance to this Traffic and Transport Impact Assessment are the reference trip rates for high density residential flat dwellings where traffic surveys were undertaken for developments that are close to public transport and greater than six storeys.

2.3 NSW Planning Guidelines for Walking and Cycling

Walking and cycling are environmentally-friendly, low-cost ways of getting around. They play an important role in our integrated transport system and provide a range of personal and community benefits too.

Cycling and walking for short local trips instead of driving reduces congestion on our roads and frees up capacity on public transport for customers travelling further.

Through effectively planning for an active future in NSW, the NSW Government will deliver the infrastructure, education programs and facilities to encourage people to walk and cycle. The NSW Government is working with councils, communities and the development industry to make walking and cycling more convenient, safer and enjoyable for people across NSW.

Currently there is a wide diversity of practice in the way that NSW local councils address walking and cycling issues in the planning of land use and control of development. To improve practice in planning for walking and cycling, the NSW Government departments have jointly developed and published a document, Planning Guidelines for Walking and Cycling.

The guidelines will help land use planners and related professionals to improve the consideration of pedestrians' and cyclists' requirements in their work. The guidelines have been designed to provide a walking and cycling focus for the NSW Government's *Integrating Land Use and Transport Planning Policy P*ackage, and to provide a planning complement to the RMS's *NSW Bicycle Guidelines* as well as to the RMS's *How to Prepare a Pedestrian Access and Mobility Plan*.

It is anticipated that improving practice in planning for walking and cycling provide will create more opportunities for people to live in places with easy walking and cycling access to urban services and public transport. This will help reduce car use and create healthier neighbourhoods and cities.

The principles specified in this guide have been used as one of the resources to define and refine the walking and cycling network in the Precinct such that the opportunities for future residents and employees to walk and ride are maximised.

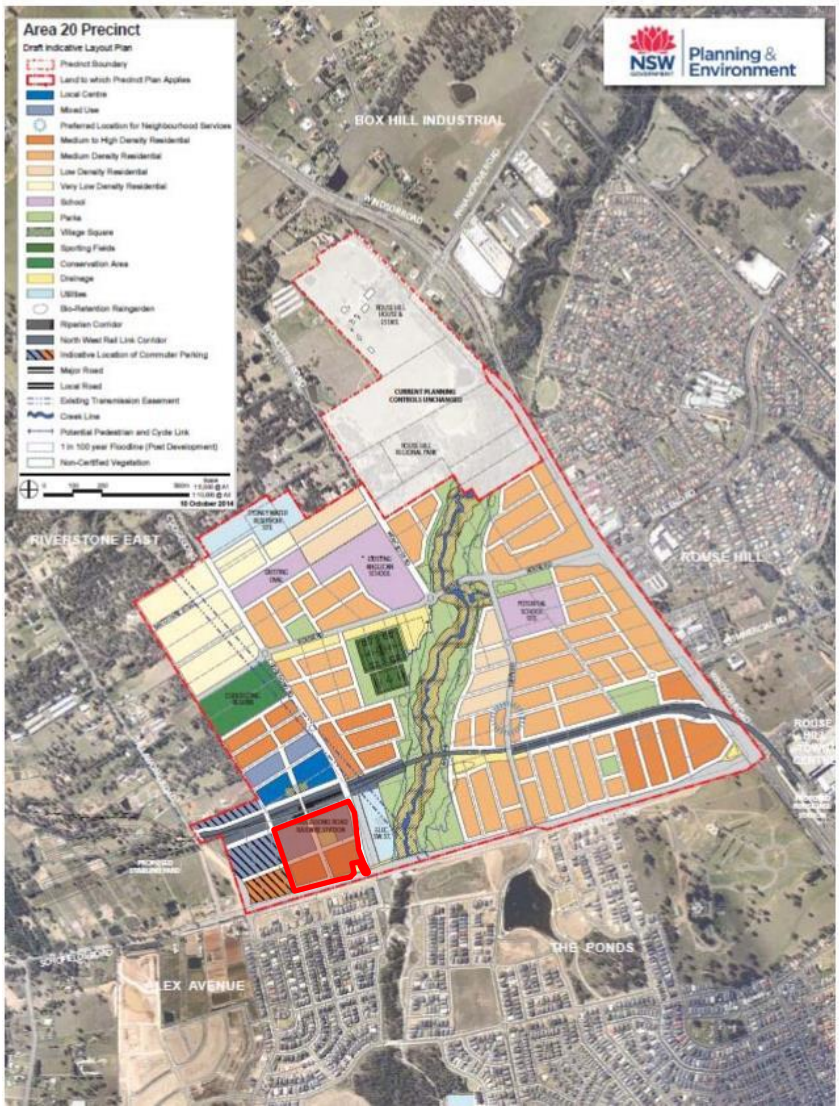
2.4 The Cudgegong Road (Area 20) Precinct Plan Finalisation Report

The Cudgegong Road (Area 20) Precinct Plan was initially finalised in October 2011, and amendments to the State Environmental Planning Policy (Sydney Regional Growth Centre) relevant to Precinct Plan were exhibited in late 2014. The changes proposed sought to address two key issues that were progressed since the original Precinct Plan was finalised in October 2011. One of these issues relate to the Cudgegong Road Precinct, being the:

– "Confirmation of the corridor and alignment for the North West Rail Link (NWRL) through the Precinct and the design of the Cudgegong Road Station and Town Centre."

As a result of the public exhibition, a number of amendments were done, including changes to the Indicative Layout Plan (ILP). The final ILP for the Precinct as a result of the public exhibition is shown in **Figure 2–2**.

Figure 2–2 Cudgegong Road (Area 20) Precinct Indicative Layout Plan (ILP)



Source: Blacktown Growth Centres DCP Schedule 4 – Cudgegong Road (Area 20) Precinct, September 2016

A traffic and transport assessment, which considered the traffic and transport implications arising from the proposed changes to the planning controls in the Precinct, was undertaken by Arup in March, 2015 (the Arup report) for the Department of Planning and Environment (DP&E). The Arup report has been reviewed and adopted as the baseline of this Traffic and Transport Impact Assessment such that cumulative impacts of development can be assessed.

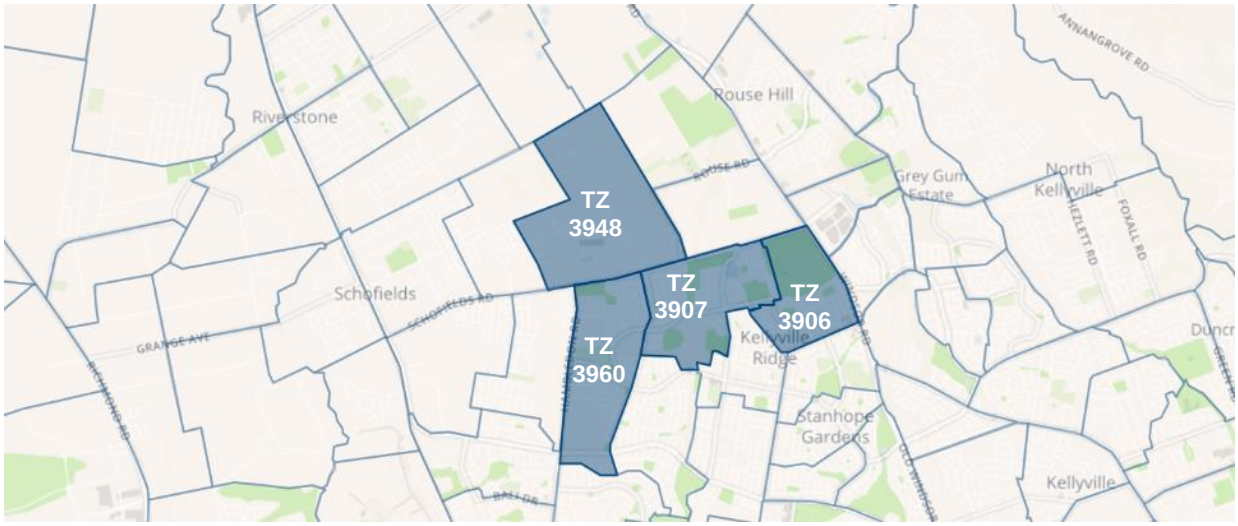
3.0 Existing conditions

3.1 Travel behaviour

3.1.1 Journey to Work Data

2011 Journey-to-work data from the Bureau of Transport Statistics was analysed to determine current travel behaviour of the existing residents of the site and surrounding areas. The site is located within Travel Zone 3948, but to get a better understanding of how people travel to and from a nearby, more developed residential areas, Travel Zones 3906, 3907 and 3960 (south of the site) were also included in the analysis. The travel zones analysed for travel behaviour are shown in **Figure 3–1**.

Figure 3–1 Travel zones analysed for the travel behaviour at the Currawong Road Precinct



Source: http://visual.bts.nsw.gov.au/jtwbasic/, November 2017

At the time of the journey-to-work (JTW) data being collected in 2011, approximately 1,870 people lived in the four travel zones analysed. Out of these, 80% travel to work by car (of these, 5% are passengers), 9% travel by train, 8% by bus, and only 1% of the local residents walked only to get to work. This demonstrates that residents in the area are (at the time of survey), heavily reliant on a car to get to work.

The most common destinations residents travel to for work include Baulkham Hills (14%) Sydney Inner City (11%), Blacktown North (11%) and Parramatta (9%). A total of 4% of residents have no fixed place of work.

At the time of the JTW data being collected, approximately 256 people worked in the four travel zones analysed. To get to work, approximately 89% of employees travelled to work by car (of these, 6% as passengers), while 3% arrived by bus, 3% by other mode and 2% respectively by train or walked only.

The most common origins employees arrived from included Blacktown North (50%), Baulkham Hills (8%), Blacktown (5%) and Rouse Hill – McGraths Hill (4%). Other origins included Penrith, Mount Druitt and Hawkesbury.

3.1.2 Household Travel Survey

The site sits within the statistical area “Blacktown North” as defined by the Australian Bureau of Statistic, 2015/2016 Household Travel Survey (HTS). However, for the purpose of analysis, it has been assumed that JTW data provides a suitable reflection of the travel characteristics during AM and PM peak hour periods.

Analysis of the 2015/2016 Household Travel Survey (HTS), which is reflective of travel characteristics of residents throughout an average weekday, indicates that the majority of trips done by residents of the statistical area “Blacktown North” are with the purpose of serving passenger (21%), social / recreation (18%) and work-related business (14%).

Vehicle driver and passenger as mode of transport account for 81% of all daily trips, while walk only, bus and train account for a total of 18%.

Table 3–1 and **Table 3–2** provides a summary of the purpose of travel and overall mode choice by residents of Blacktown North associated with these trip purposes.

Table 3–1: Household Travel Survey – residents within Blacktown North, trip purpose

Travel by purpose	Percentage
Commute	10%
Work related business	14%
Education / childcare	12%
Shopping	11%
Personal business	2%
Change mode of travel	11%
Social / recreation	18%
Serve passenger	21%
Other	2%

Source: https://www.transport.nsw.gov.au/performance-and-analytics/passenger-travel/surveys/household-travel-survey

Table 3–2: Household Travel Survey – residents within Blacktown North, mode choice

Mode	Percentage
Vehicle (Driver)	51%
Vehicle (Passenger)	30%
Train	4%
Bus	6%
Walk only	8%
Other	1%

Source: https://www.transport.nsw.gov.au/performance-and-analytics/passenger-travel/surveys/household-travel-survey

3.2 Walking and cycling

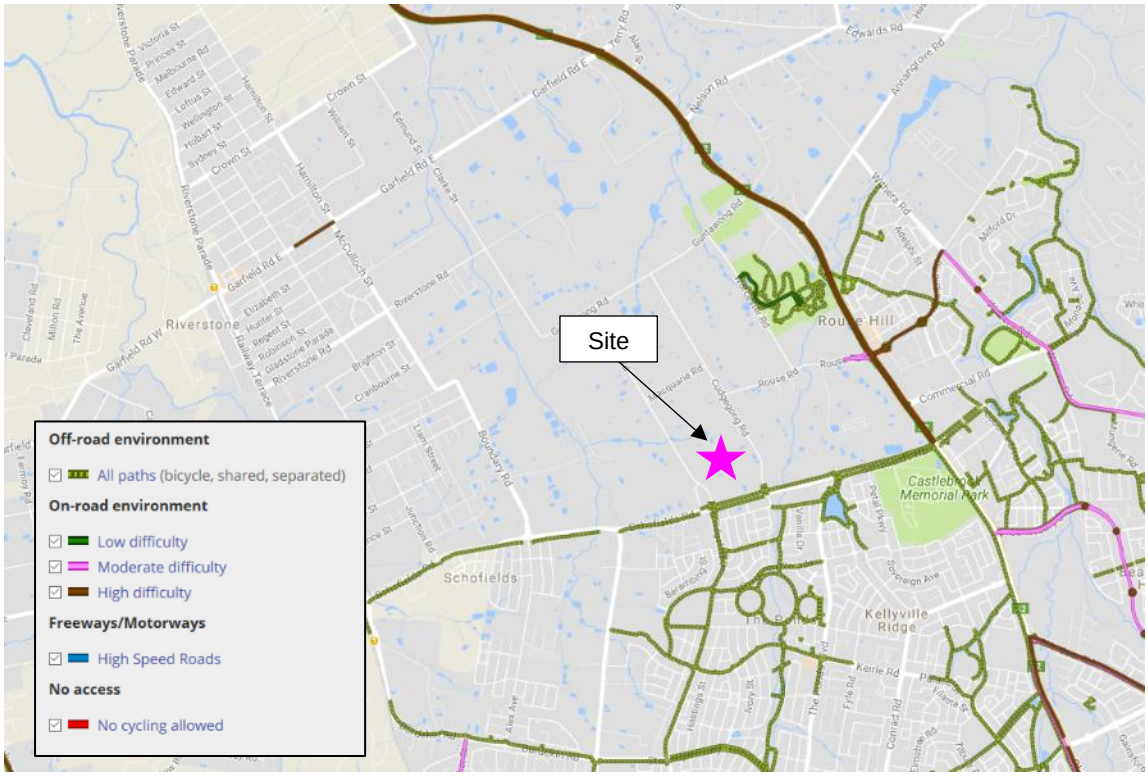
Shared paths, providing accessibility for both cyclist and pedestrians, in proximity of the site are provided in an east-west direction along Schofields Road, between Railway Terrace in the west and Windsor Road in the east.

North-south cycle connectivity is provided along Windsor Road, via a 'high difficulty' route north of Schofields Road and a shared path along the western side of Windsor Road south of Schofields Road. The cycleway along Windsor Road provides access to Rouse Hills, McGraths Hill and Western Sydney University Hawkesbury Campus in the north and to the Inner West to the south. Pedestrian access across Schofield Road is provided at the signalised intersections of Schofields Road with Tallawong Road and Cudgegong Road.

Currently, bus stops in proximity of the site are located on Schofields Road. The signalised crossings on Schofields Road are facilitating safe pedestrian access to the public transport services from the site.

The existing cycle network in proximity of the site is presented in **Figure 3–2**.

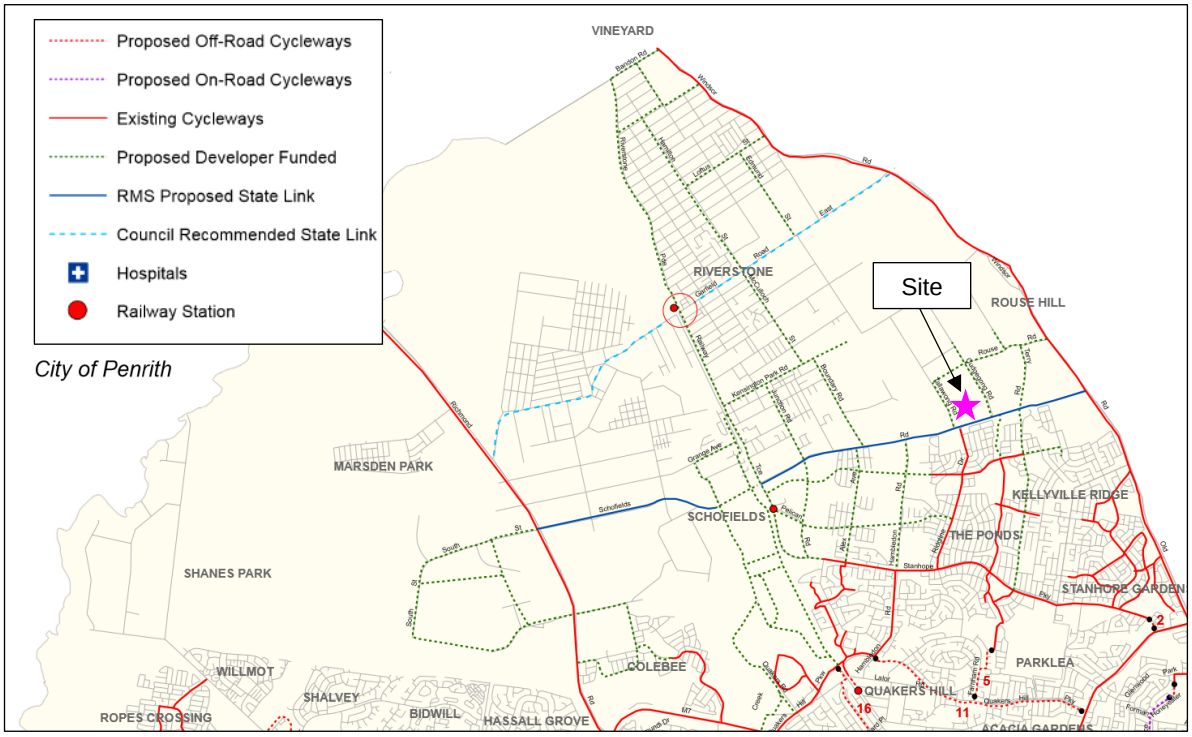
Figure 3–2 Existing cycle paths in proximity of the site



Source: http://www.rms.nsw.gov.au/roads/bicycles/cyclewayfinder/index.html, November 2017

As part of Blacktown City Council's Draft Bike Plan 2016, additional cycle routes in proximity of the site are proposed, as seen in **Figure 3–3**. These include north south connections along Tallawong Road and Cudgegong Road, west and east of the site and an 'RMS proposed State Link' along Schofields Road between Windsor Road and Richmond Road. The implementation of these links would significantly improve cycling access to the site in the future.

Figure 3–3 Existing and proposed cycle paths, as part of Blacktown City Council's 2016 Bike Plan



Source: https://www.blacktown.nsw.gov.au/Downloads/Blacktown-Bike-Plan.pdf, November 2017

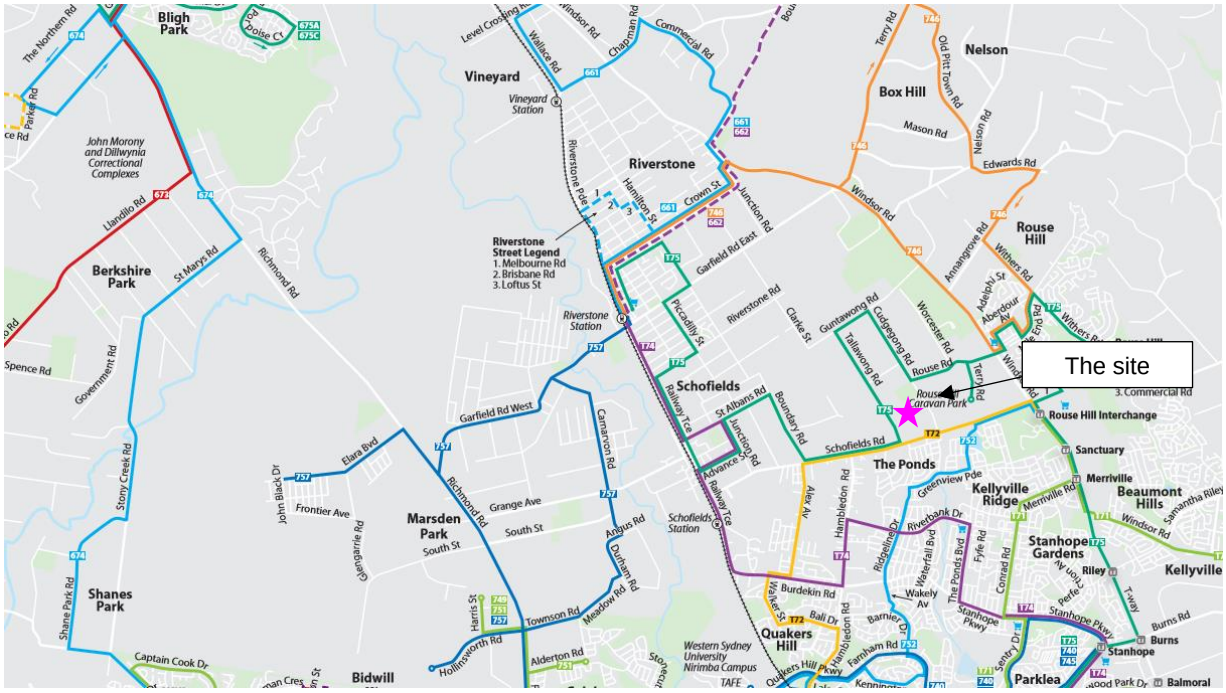
3.3 Public transport

There are three public bus service routes in proximity of the site, being routes T72, T75 and 752, as shown on **Figure 3–4**. The routes all run between Rouse Hill and Blacktown (with route T75 also running from Riverstone and route 752 running via Quakers Hill). Along Windsor Road, approximately 1.5km east of the site, runs route 746 and T71 (in addition to route T75), providing access between Box Hill and Rouse Hill (route 746) and between Castle Hill and Blacktown via Stanhope Gardens (route T71).

The bus services located in proximity of the site provide good accessibility between the site and other key destinations such as Rouse Hill, Blacktown and Riverstone. Routes T72 and T75 currently stop on Schofield Road, west of Tallawong Road, while route 752 stops further east (approximately 500m east of Cudgegong Road) along Schofields Road. Footpaths are provided between the nearby bus stops and the site.

The frequency of public transport services available in proximity of the site are shown in **Table 3–3**. All bus routes operate with between one and two services per hour, during both AM and PM weekday peak hours and throughout Saturdays and Sundays (with the exception of route T75, which does not stop along Schofield Road on Sundays). The most frequent bus route in proximity of the site is route T72 with two services per hour during all time periods (although one to two services per hour on Sundays).

Figure 3–4 Bus routes in proximity of the site



Source: http://www.busways.com.au/sites/default/files/network_maps/R1TimetableNetworkMap280517.pdf, November 2017

Table 3–3: Existing bus routes and service frequencies in proximity of the site

Route	Corridor	To	From	Average number of services / hour (both directions)			
				Weekday		Weekend	
				AM (6-9am)	PM (3-7pm)	Sat (6am-9pm)	Sun (6am-9pm)
T72	Schofield Road / Alex Avenue	Rouse Hill	Blacktown	2	2	2	1-2
T75	Schofield Road / Windsor Road	Riverstone and Rouse Hill	Blacktown	1-2	1-2	1	-
752	Cambridge St / Greenview Parade	Rouse Hill	Blacktown via Quakers Hill	1	2	1-2	1

Source: https://transportnsw.info/routes#/, August 2017

There is no train station in proximity of the site. The nearest train station is Schofield Train Station (on the T5 line between Campbelltown and Schofields), which is located approximately 3.5km west of the site. However, it should be noted that Sydney Metro Northwest project will be open in 2019 and the proposed development will be located within a 300m walking distance to the new Cudgegong Road Station of the future SMNW project.

3.4 Road network

The site is bounded by Cudgegong Road to the east, Schofields Road to the south and includes new internal roads under construction (recently named Themeda Avenue, Conferta Avenue and Arista Street. Schofields Road provides regional connections to Windsor Road (A2) in the east and to Railway Terrace to the west. Windsor Road provides a direct north-south connection to the wider road network such as the Westlink M7 to the south and to suburbs such as McGraths Hill, Richmond and Windsor in the north.

The characteristics of the key road network, as shown in **Figure 3–5**, surrounding the subject site are:

– Tallawong Road - a two-way undivided local road that provides access to the site from Schofields Road in the south and Guntawong Road in the north, as part of a future collector road connection. It currently carries a single lane of traffic in each direction, however, it is planned to provide two lanes in each direction, south of the site on approach to the signalised intersections.

– Cudgegong Road - a local road that generally runs in a north-south direction, to the east of the site. Cudgegong Road provides connection from Schofields Road in the south to Guntawong Road in the north. The road is partly currently closed for construction, but in the future, it is planned to provide a two-way, four-lane road to and from Schofields Road. There are a number of works currently being undertaken within the vicinity of the site along Cudgegong Road in preparation for the Sydney Metro Northwest.

– Schofields Road – a four lane, two-way divided classified arterial road that travels in the east-west direction south of the site, linking Windsor Road in the east and Railway Terrace in the west. Dedicated bus lanes are provided along sections of the road. Two new signalised intersections were constructed as part of the Schofields Road Upgrade at Tallawong Road and Cudgegong Road, which provide access to the site.

– Windsor Road – a four to six lane, two-way divided arterial road that travels in the north-south direction east of the site, linking the Westlink M7 to the south to Macquarie Street and Hawkesbury Valley Way to the north. It is the main connector between the site and the arterial road network. No on-street parking is provided on Windsor Road.

– Railway Terrace – a two lane, two-way undivided collector road connecting to Windsor Road (via Riverstone Parade in the north) and Schofields Road to the south.

Figure 3–5 Road network surrounding the site

Source: SCT Consulting, November 2017

3.5 Existing traffic conditions

The traffic report prepared for the 34 – 42 Tallawong Road, Rouse Hill Concept DA TIA (Ason Group, September2017) shows that the existing (May 2017) intersection performance assessment of the signalised Schofields Road / Tallawong Road intersection suggests that the intersection currently performs satisfactorily in both the AM and PM peak hours, with a Level of Service C.

Peak hour traffic volumes along Tallawong Road were extracted from the intersection counts undertaken in May 2017, as part of the report, and are presented below:

– Tallawong Road: 439 veh/hr (179 northbound, 260 southbound) in the AM peak and 495 veh/hr (298 northbound, 197 southbound) in the PM peak; and

– Schofields Road: 1,564 veh/hr (646 westbound, 918 eastbound) in the AM peak and 1,714 veh/hr (766 westbound, 948 eastbound) in the PM peak.

These volumes are within the nominal mid-block capacity of approximately 900 veh/hr one-way per lane for an undivided road and approximately 1,000 veh/hr for a divided road.

4.0 The proposal

4.1 Cudgegong Road Station Precinct

Landcom and the Sydney Metro Delivery Office (SMDO), part of Transport for NSW (TfNSW), are working in collaboration to develop walkable, mixed use precincts around the SMNW stations, including the Cudgegong Road Station Precinct South. The Precinct is within the southern part of the broader Cudgegong Road Station (Area 20) of the North West Priority Growth Area, a substantial land release area for homes and jobs in Sydney's northwest.

The Cudgegong Road Station Precinct will evolve into a series of attractive neighbourhoods centred on the Cudgegong town centre and connected by a revitalised Second Ponds Creek parkland. New pedestrian and cycling networks will improve connectivity with and between the surrounding communities of the Ponds, Rouse Hill and Riverstone.

In the Town Centre sub-precinct, Sydney Metro is delivering part of the infrastructure and public domain (as highlighted in blue in **Figure 4–1**). This includes:

– The station and station plazas or forecourts

– Themeda Avenue to the south of the station running east-west connecting Tallawong Road and Cudgegong Road, including station interchange facilities and dedicated pedestrian crossing.

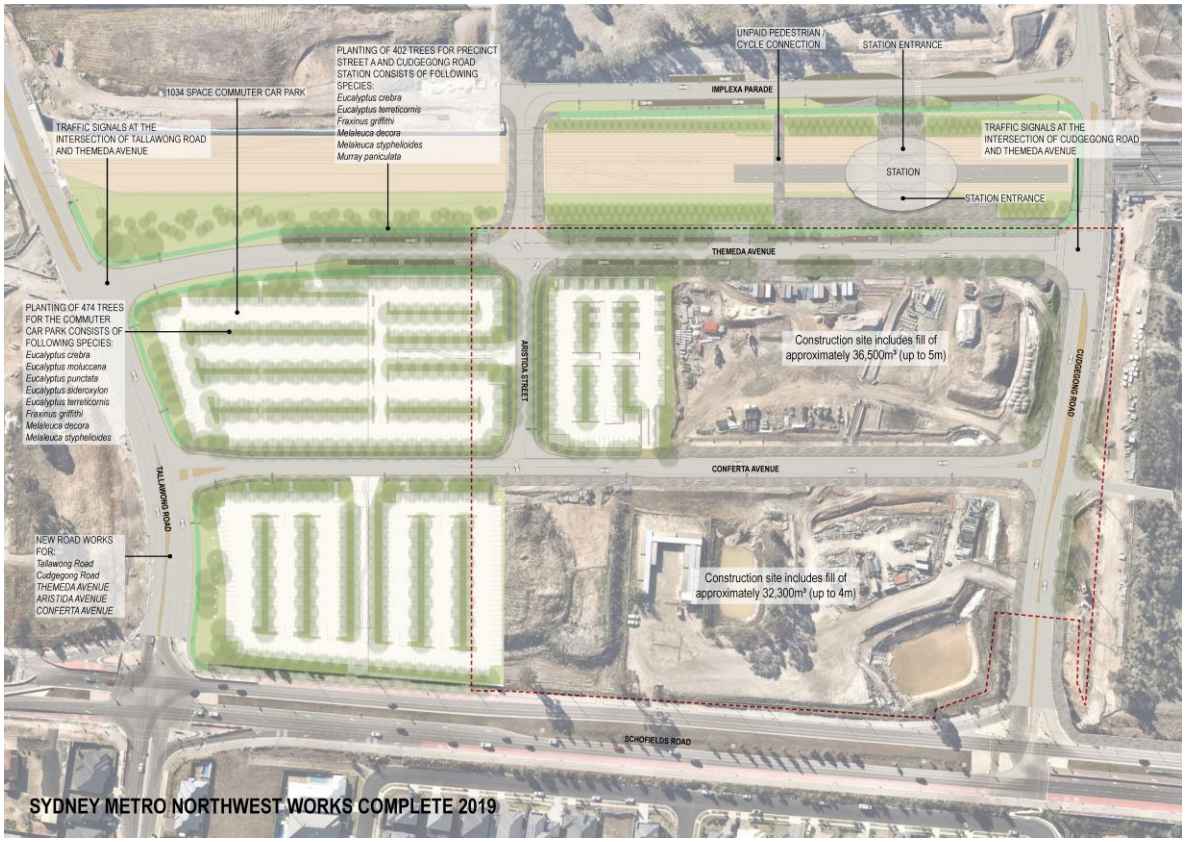
– Implexa Parade to the north of the station running east-west connecting Cudgegong Road and Arista Street, including station interchange facilities and dedicated pedestrian crossing.

– The commuter car parks, consisting of 1,034 car parking spaces.

– Arista Street running north-south to service the car park and across the rail corridor, parallel to Cudgegong and Tallawong Road, connecting Implexa Parade, Themeda Avenue and Conferta Avenue.

– Conferta Avenue to the south of Themeda Avenue running east-west connecting Tallawong Road and Cudgegong Road and servicing the commuter car park.

Figure 4–1 Infrastructure and Public Domain being delivered by Sydney Metro



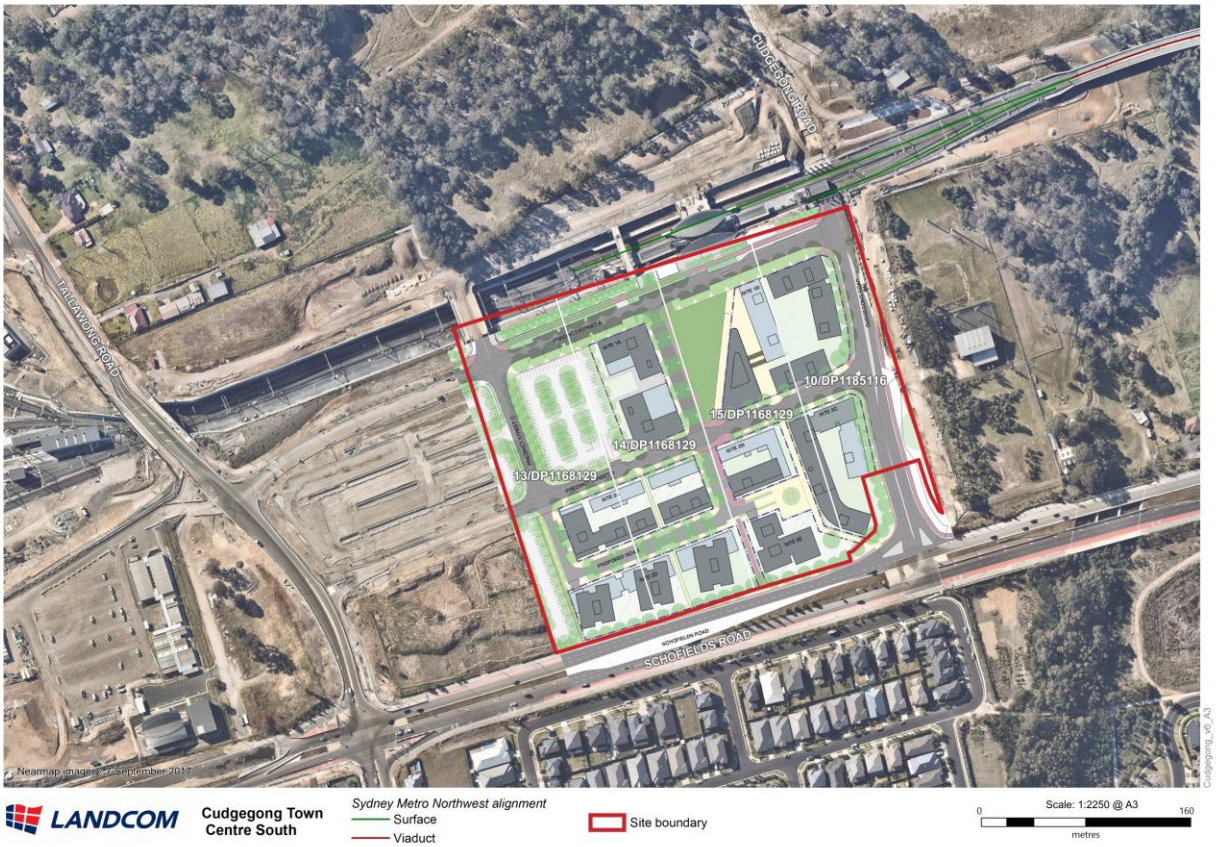
Source: Landcom, March 2018

4.2 Proposed development

The proposed development at Cudgegong Road Station Precinct South is located in the Blacktown City Council LGA, to the south of the Cudgegong Road Metro Station, as shown in **Figure 4–2**. It is located just north of The Ponds and 2km west of Rouse Hill Town Centre.

The Cudgegong Road Station Precinct South, is located south of the railway corridor, and comprises around 7.8ha of government owned land. The public realm in the new urban town centre will create an attractive place and deliver a functional network. Key streets, parks and town squares will be created to offer great amenities and comfortable connections to the station.

Figure 4–2 The Location of the Proposed Development



Source: Landcom, February 2018

The concept proposal allows for approximately 1,100 dwellings and 9,000 sqm of retail, commercial and community uses. It also includes a central park, new streets and supporting public domain. The Concept Proposal (The Proposal) is shown in **Figure 4–3** and comprises of:

– Building envelopes for residential and non-residential development varying in height up to 8 storeys;

– An indicative residential yield of approximately 1,100 dwellings (with a GFA of approximately 85,000m^2);

– Approximately 3,000m^2 of commercial GFA, including offices for small business (such as real estate agents, lawyers and solicitors, local businesses, doctor suites) and potentially a smart work hub;

– Approximately 4,500m^2 of retail GFA;

– Approximately 1,500m^2 of community uses;

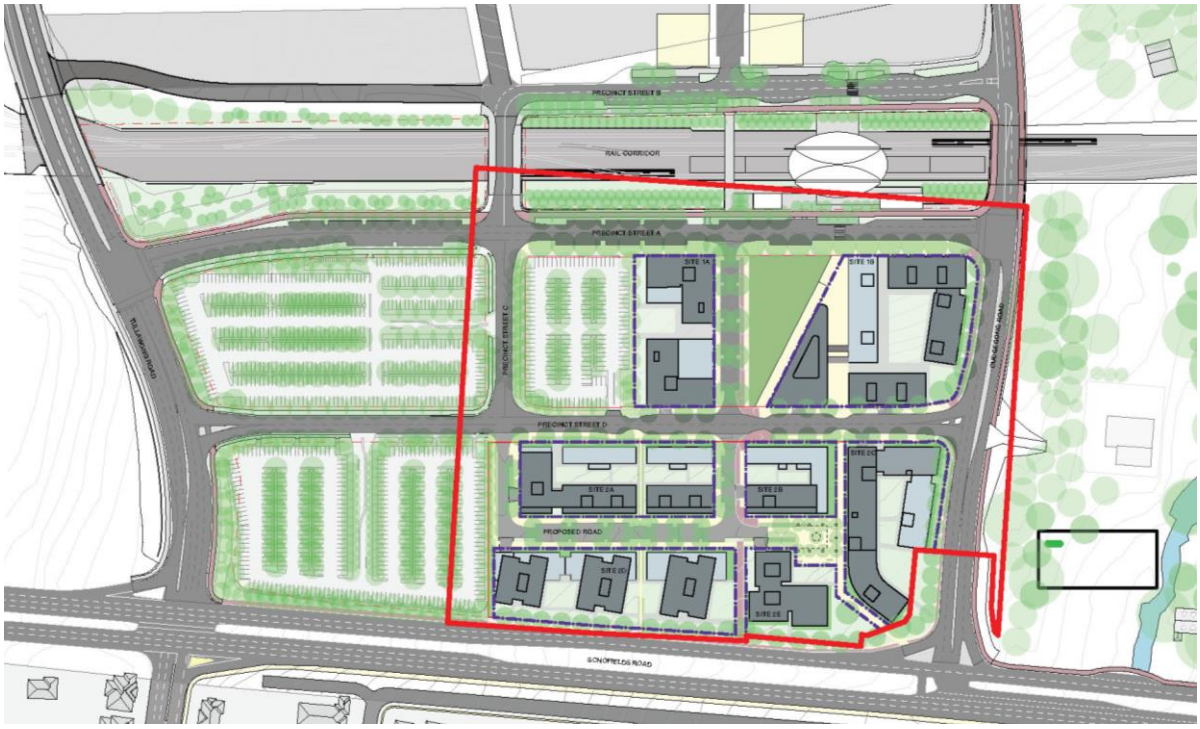
– A 2,900m^2 central park;

– Road layout (internal local road network);

– Landscape concept for public and private domain;

– Provision of car parking facilities for the retail, commercial and residential components underground.

Figure 4–3 The proposed concept proposal



Source: Bennett and Trimble, March 2018

4.3 Travel Demand Management measures

Sustainable transport and Travel Demand Management (TDM) strategies involve the application of policies, objectives, measures and targets to influence travel behaviour, to encourage uptake of sustainable forms of transport, i.e. non-car modes, wherever possible. TDM measures have proven to reduce congestion created by growth within urban areas and unlock urban renewal opportunities. They result in travel behaviour that uses less road space than single occupant vehicle commute and takes advantage of spare transport capacity outside the morning and afternoon peaks.

TDM strategies generally guide all relevant customers (residents, employees and visitors) in changing the travel behaviour in the following ways:

– Reduce travel;

– Re-mode (consideration of travel via alternative modes);

– Re-time (consideration of travel at alternative times); and

– Re-route.

A Travel Plan should be developed and monitored for the Cudgegong Station Precinct community to deliver best practice travel programs and initiatives to manage travel demand for a transit-oriented development. Key initiatives and measures could be developed to:

– Reduce the need to travel

  - Planning of Cudgegong Station Precinct as a mixed-used community with the provision of medical, legal, commercial, retail and community services on site to maximise trip containment within the precinct and encourage use of active transport (walking and cycling) for short trips.
  - Use of internet to reduce the need to travel such as Australia Post, parcel drop-off /pick-up facilities.
  - Use of internet and technology to facilitate remote working via smart work hubs with high quality facilities or working from home.
  - Develop and use of carpooling app for wider precinct and community.

– Re-think the mode of travel
  - Walking and cycling:
    - A highly permeable and safe pedestrian network throughout the development.
    - Dedicated cycle routes that connects to the regional routes and major transport hubs.
    - Key design principles to integrate walking and cycling network and facilities into the planning and delivery of the development.
    - High quality, safe and accessible end-of-trip facilities (centralised cycle hubs that are integrated within development at convenient locations, on-street secure bicycle storage located conveniently at end of cycle destinations, parking hubs for shared bikes, lockers and showers).
    - Promotion of bicycle initiatives – NSW bicycle week, cycle to work day, free bike check-up events.
    - Establishment of a Bicycle User / Consultation Group
  - Public transport:
    - Investigate on-demand transport options to service travel demand in areas / at times that cannot be served by regular bus routes.
    - Early provision of frequent public transport services to establish a non-car travel behaviour.
    - Good quality public transport stops in the vicinity of the development.
    - Tailored information with clear mapping and walking catchments at public transport stops.
    - Provision of public transport information from home via television channel or community app.
  - Parking measures as a mean to encourage alternative modes of travel:
    - Reduced parking rates with flexibility in parking arrangements such as decoupled parking, shared vehicles parking to accommodate parking needs of all residents.
    - No dedicated parking space for small (1-bedroom) apartments to increase housing affordability. Car travel needs can be addressed via carpooling and / or using shared vehicles.
    - Parking spaces dedicated to electric vehicles, with charging stations.
    - Parking spaces dedicated to car share scheme and community car-share vehicles, both on-street and incorporated in easily-accessed public car parks.

– Re-time and Re-route journeys:
  - Development of specific community app / community engagement program to enable changing travel behaviour which includes:
    - Active and public transport maps
    - Personalised journey planner
    - Notifications to latest travel information
    - Shared vehicles information
    - Car-pooling opportunities
    - Other precinct-related information
  - Real-time information embedded into development and public transport stops.
  - Employers to promote and encourage flexible working hours and arrangements.

While it is important to develop a Travel Plan that is aimed at managing travel demand and reducing reliance on car travel, it is more important to monitor and evaluate the effectiveness of individual measures and the need to adjust the measures. The planning and implementation of a targeted Travel Plan with the above green travel initiatives / principles will support the delivery of a transit-oriented development at Cudgegong Station Precinct that provide significant opportunities for alternative travel options and reduce the need of car travel.

4.4 Proposed access arrangements

4.4.1 Public transport access

Residents / employees of the proposed development will be located within a 300m walking distance to the new Cudgegong Road Station of the future SMNW project (as shown in **Figure 4–4**), which will provide direct access to Chatswood, with fifteen services in an hour during the peak. Sydney Metro Northwest will be open in 2019, and customers will also have a new direct Metro service to Crows Nest, Barangaroo and Martin Place when Sydney Metro City and Southwest opens in 2024.

Figure 4–4 Sydney Metro Line including Sydney Metro North West Project

Source: Sydney Metro, March 2018

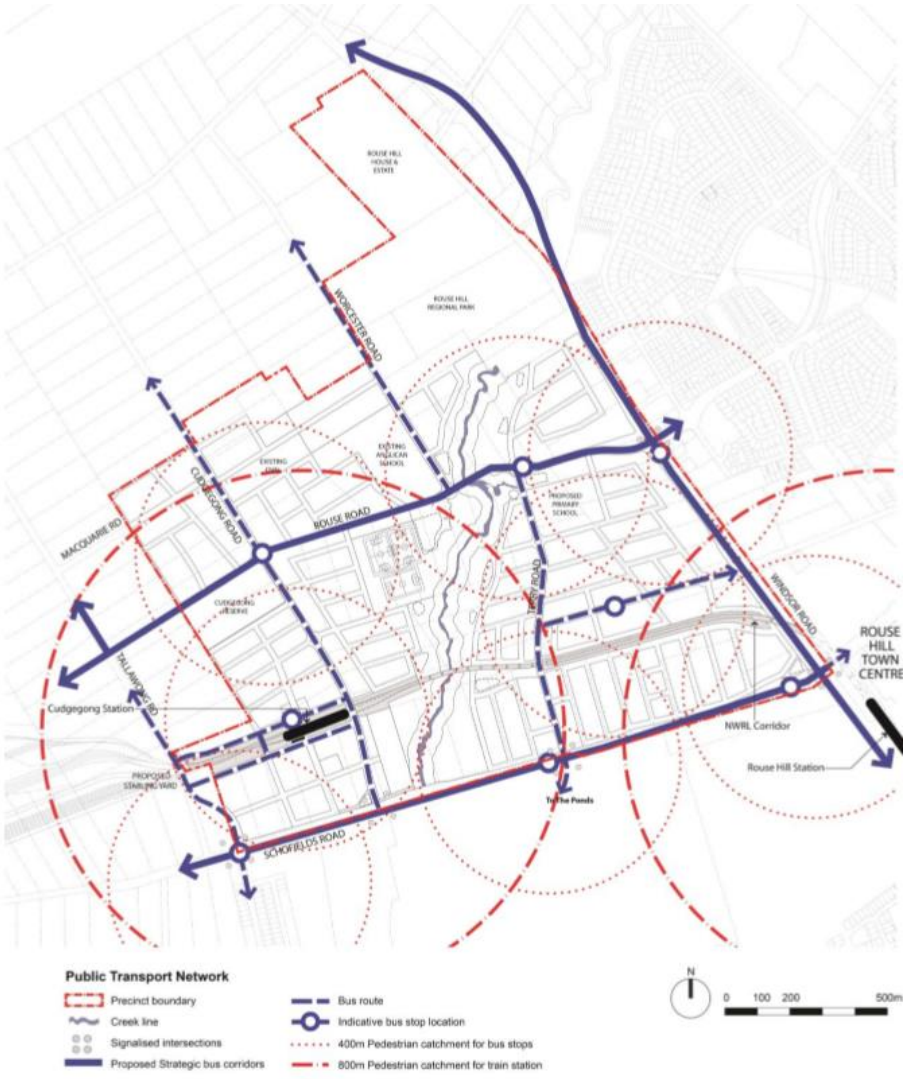
The increased network coverage, train frequency, journey-time reliability and improved customer offering of the Sydney Metro Project, will encourage public transport usage and increase journey to work trips by non-car modes. Safe pedestrian access to the new Cudgegong Road Station will be provided via footpaths throughout the site and pedestrian crossings across Themeda Avenue and Conferta Avenue, south of the station.

The site is located in proximity of three existing public bus service routes, being routes T72, T75 and 752, which all run between Rouse Hill and Blacktown (with route T75 also running from Riverstone and route 752 running via Quakers Hill).

Schofields Road, Rouse Road and Windsor Road in proximity of the site are proposed as strategic bus corridors with frequent bus services connecting various centres and transport interchanges in the north-west subregion. As part of the Blacktown Growth Centres DCP Schedule 4 – Cudgegong Road (Area 20) Precinct, bus routes are also proposed along Cudgegong Road, Tallawong Road and Themeda Avenue and Implexa Parade (that provides bus connections to the future Metro station. Transport for NSW is currently preparing an updated bus plan for the North West region to improve connections to the Metro stations, to be implemented in 2019 post-opening of the Sydney Metro services. Details of specific bus routes will be available once the updated bus plan is completed.

The proposed development supports best practice transit oriented development principles, by providing increased residential density in proximity to existing and planned transport infrastructure upgrades. The proposed Metro services will provide residents / employees with greater access to public transport and employment options, while promoting the use of sustainable travel options. The indicative public transport network in proximity of the site is shown on **Figure 4–5**. This diagram shows potential future public transport connections following the completion of the proposed road network in Area 20.

Figure 4–5 Indicative public transport network and access to the site



Source: Blacktown Growth Centres DCP Schedule 4 – Cudgegong Road (Area 20) Precinct, September 2016

4.4.2 Pedestrian and cyclist access

One of the key principles in changing travel behaviour is to design a highly permeable and safe pedestrian and cycle network throughout the development, as discussed in **Section 4.3**.

Pedestrian and cyclist access to the site will be provided mainly via the proposed north-south shared paths on Cudgegong Road and Tallawong Road, as well as the north-south street to the west of Cudgegong Road. These three routes will connect cyclists and pedestrians to the existing east-west shared path on Schofields Road south of the site and Rouse Road north of the site.

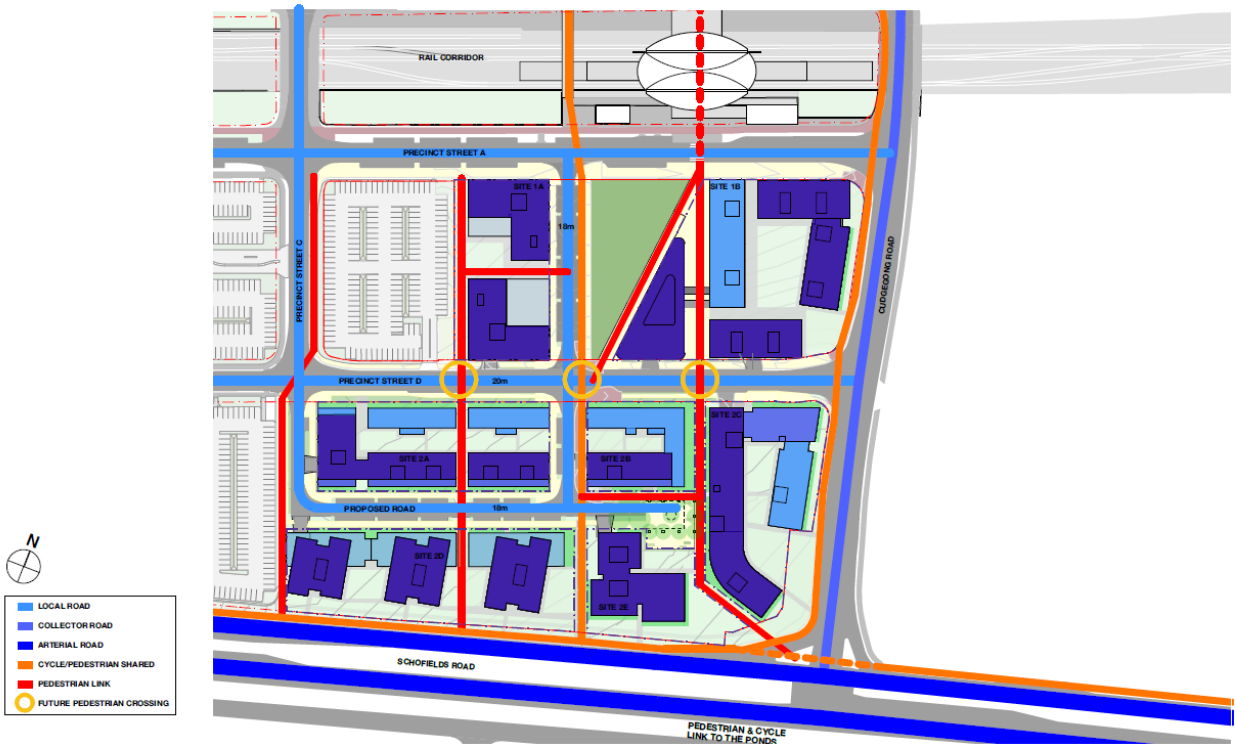
The connections to Schofields Road will provide excellent cycle access to the wider cycle network via the cycle routes along Windsor Road in the east and Richmond Road in the west, as identified in **Section 3.2**. Pedestrian and cycling access to the site from the wider road network will also be facilitated with the provision of crossing opportunities at the signalised intersections of Themeda Avenue with Cudgegong Road and Tallawong Road.

Pedestrian crossings are proposed across Themeda Avenue to provide safe crossing opportunities for pedestrians to access between Cudgegong Road Station and the development. A strong north-south pedestrian and street environment is created to link both sides of the Station Precinct area and the Station Concourse, while a new park is identified on this axis in the south to serve the new residents.

A strong pedestrian desire line between Schofield Road and the Cudgegong Road Station is expected through the design of the site, so three potential pedestrian crossings at Conferta Avenue south of the park, as shown in **Figure 4–6** should be considered to facilitate safe crossing opportunities between Schofield Road and the station along this

desire corridor. Further consideration needs to be given to whether the pedestrian crossing should be combined with a crossing for cyclists, or whether an additional (separate) crossing opportunity needs to be provided for cyclists.

Figure 4–6 Proposed pedestrian and cycle network within the development



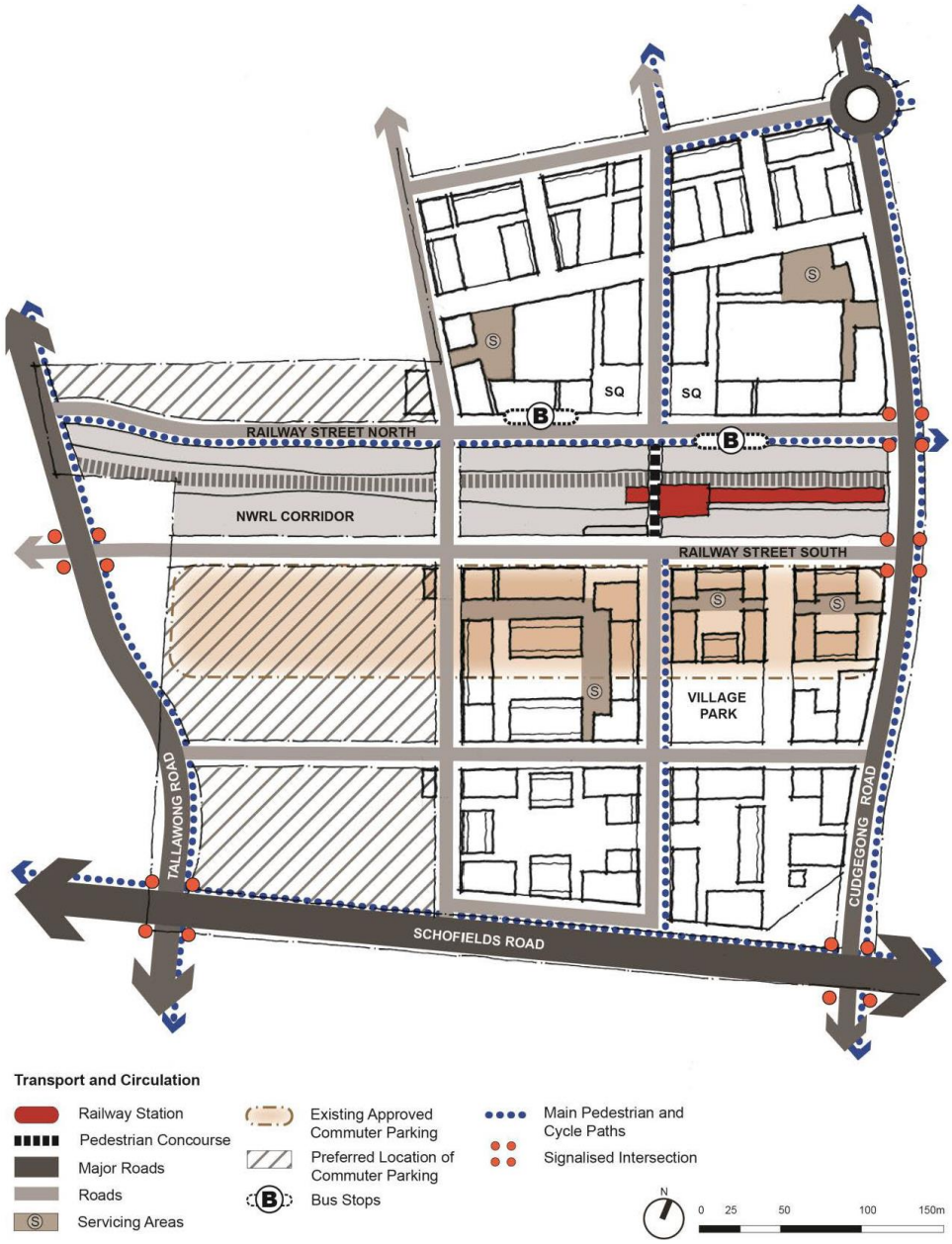
Source: Bennett and Trimble, March 2018

The proposed development promotes pedestrian and cyclist movements with a permeable internal layout that provides good connection to the surrounding cycling and walking network as prescribed in the Blacktown Growth Centres DCP Schedule 4 – Cudgegong Road (Area 20) Precinct, as illustrated in **Figure 4–7** and **Figure 4–8**.

Figure 4–7 Proposed pedestrian and cycle network surrounding the site

Source: Blacktown Growth Centres DCP Schedule 4 – Cudgegong Road (Area 20) Precinct, September 2016

Figure 4–8 Proposed pedestrian and cycle network surrounding the site



Source: Blacktown Growth Centres DCP Schedule 4 – Cudgegong Road (Area 20) Precinct, September 2016

4.4.3 Vehicular access

Vehicular accesses to the site are proposed at the collector roads of Cudgegong Road and Tallawong Road, which connects to a series of internal local streets that provide access to underground car parks. Cudgegong Road and Tallawong Road are then connected to the regional road network of Schofields Road as well as Windsor Road (via Rouse Road). The proposed internal road network will provide easy and direct access to the surrounding wider road network including Windsor Road, via Schofields Road (and also Hambledon Road) to the south and Guntawong Road to the north. Windsor Road then provides direct access to the arterial road network including the Westlink M7 in the south and suburbs such as Rouse Hill, Windsor and Richmond to the north.

Themeda Avenue, located to the north of the site is connected to Cudgegong Road and Tallawong Road via two set of traffic signals. The proposed signalised intersections will be all-movement permitted intersections. Therefore, safe access and egress can be made on Themeda Avenue, providing ample opportunities for vehicles to safely egress.

On the other hand, Conferta Avenue connects with Cudgegong Road and Tallawong Road via two left in / left out priority intersections to minimise conflicts with traffic on the two collector roads Cudgegong Road and Tallawong

Road and also preserve Conferta Avenue with a local street function. Residents / visitors accessing the site from the north can enter via the signalised intersections at both end of Themeda Avenue.

The combination of the different access options to the site will also provide easy and direct connections to and from the surrounding road network in all directions. The proposed access arrangements together with surrounding street hierarchy is compliant with the Blacktown Growth Centres DCP Schedule 4 which is illustrated in **Figure 4–9**.

Figure 4–9 Proposed vehicular access and surrounding street hierarchy

Source: Blacktown Growth Centres DCP Schedule 4 – Cudgegong Road (Area 20) Precinct, September 2016

4.4.4 Street cross-section

The new internal streets proposed within the site (to be delivered as part of this development and not including any streets / roads currently being delivered by Sydney Metro such as Themeda Avenue, Conferta Avenue and Astrida Street) were developed according to following street sections illustrated in the Cudgegong Road (Area 20) Precinct DCP and the Blacktown City Council Growth Centre Precincts DCP:

– The double-sided parking roads were based off DCP Figure 3-11 and have two travel lanes and a parking lane on each side hence a 11m carriageway (2.5m parking + 3m lane + 3m lane + 2.5m parking = 11m). Wider footpaths or a 3m wide shared path are proposed to cater for the expected high demand of pedestrian and cyclists in the town centre and along key desire lines to and from the Cudgegong Road Station.

– The single side parking roads were based off DCP Figure 3-12 and have two travel lanes and a parking lane on one side of the road hence a 8.5m carriageway (2.5m parking + 3m lane + 3m lane = 8.5m). Lane widths are kept the same as double sided parking roads.

While the road widths comply with the Blacktown City Council DCP requirements, they are narrower than typical Blacktown City streets within the town centre. This departure from the typical road width has been supported by the Council's City Architect. Indented parking was used to achieve a superior urban outcome and allow the establishment of larger trees further from the property boundaries.

The details of cross-section of all new internal streets are included in the SSDA Civil Engineering Drawing package.

4.4.5 Intersection and street design

The new streets, intersections and building access points within the Cudgegong Road Station Precinct South Development were designed by AECOM based on the following:

– Tracking for intersection turning circles and building carparks; and

– Safe intersection sight distance (SISD) checks for internal intersections of proposed north-south streets with Conferta Avenue and Themeda Avenue.

Sight distance checks were undertaken to ensure that the proposed road conditions provide a safe environment. The SISD checks confirmed that the intersections listed above were designed appropriately according to design requirements with enough sight distances given the low speed environments of Conferta Avenue and Themeda Avenue.

Swept path analysis of the new streets has been undertaken using AutoTrack vehicle swept path analysis software. The design vehicle used for intersection turning circles was the Blacktown City Council refuse vehicle. The swept path analysis was completed using the following assumptions.

– Waste collection will occur during times where there are minimal vehicles on the road. As such, it is acceptable that the waste vehicle crosses the centreline when entering and exiting driveways, as well as turning at intersections; and

– Waste collection is expected to be infrequent and only occur once or twice per week.

The vehicle swept path analysis undertaken on the intersections with the BCC Garbage Truck parameters and used to inform the intersection designs are included in the SSDA Civil Engineering Drawing package.

4.5 Parking requirements and provision

4.5.1 Parking guidelines and DCP requirements

Guidance on parking rates in a number of relevant state and local planning frameworks as well as RMS Guide to Traffic Generating Developments could be applied to estimate likely parking provision for the site.

Transit-oriented developments must aim to adopt car parking rates that provide a balance between meeting car parking demand whilst encouraging sustainable and active transport by residents. New developments are encouraged to minimise car parking provision and demonstrate the inclusion of transport alternatives or strategies to discourage private motor vehicle use.

The guidelines considered appropriate for review, for the residential and non-residential components of the proposed development, are the Roads and Maritime Guidelines, the Blacktown City Council Growth Centre Precincts DCP (2016) and the Parramatta DCP (2011) rates.

Car parking facilities

A comparison of the relevant parking rates applicable to the residential component of the proposed development is presented in **Table 4–1**.

Table 4–1: Car parking requirements for residential developments

Dwelling type	Proposed no. of units	Number of parking spaces required		
		RMS Guidelines for Metro Regional CBD Centres	RMS Guidelines for Metro Sub-Regional CBD Centres	Blacktown City Council Growth Centre Precincts DCP (2016)
1 Bed	220	0.4 space	0.6 spaces	1 space
2 Bed	660	0.7 space	0.9 space	1 space
3 Bed	220	1.2 space	1.4 spaces	1.5 spaces
Visitor		0.14 spaces per dwelling	0.2 space per dwelling	0.2 space per dwelling
Total	**1,100**	**971**	**1,254**	**1,430**

By applying the car parking requirements of State Environmental Planning Policy No 65 - Design Quality of Residential Apartment Development (SEPP 65) and the Apartment Design Guide, it states that:

"Car parking is provided based on proximity to public transport in metropolitan Sydney and centres in regional areas"

"For development on sites that are within 800m of a railway station or light rail stop in the Sydney Metropolitan Area the minimum car parking requirement for residents and visitors is set out in the Guide to Traffic Generating Developments, or the car parking requirement prescribed by the relevant council, whichever is less"

Given the transit oriented nature of the development and the excellent access from the site to future transport infrastructure, the RMS Guidelines for Metro Regional CBD Centres are however considered appropriate when determining the required number of parking spaces. Based on a review of all relevant parking guidelines to the site, the estimated number of parking spaces to be provided should be approximately 970 spaces.

Reduced car parking provision would encourage a balance between meeting car parking demand whilst encouraging sustainable and active transport by residents. The car parking needs of future residents can still be met through a number of flexible and sustainable parking management measures / options such as:

– Decoupled parking, shared vehicles parking to accommodate parking needs of all residents.

– No dedicated parking space for small (1-bedroom) apartments to increase housing affordability. Car travel needs can be addressed via carpooling and / or using shared vehicles.

– Parking spaces dedicated to electric vehicles, with charging stations.

– Parking spaces dedicated to car share scheme and community car-share vehicles, both on-street and incorporated in easily-accessed public car parks.

A comparison of the relevant parking rates applicable to the non-residential component of the proposed development is presented in **Table 4–2**. It is noted that the parking rates for non-residential uses from RMS guidelines as well as the Blacktown Council DCP are not specified provided for sites near railway / Metro stations. Therefore, other relevant DCP rates such as the Parramatta DCP for Epping Town Centre were used and considered as appropriate

to benchmark car parking requirements for commercial / retail uses of the site which will be within walking distance to the future Cudgegong Road Station.

Table 4–2: Car parking requirements for non-residential developments

Type of use	GFA (m^2)	Number of parking spaces required			
		The Parramatta DCP – Epping Town Centre (2011)	RMS Guidelines for Metro Regional CBD Centres	RMS Guidelines for Metro Sub-Regional CBD Centres	Blacktown City Council Growth Centre Precincts DCP (2016)
Commercial	3,000	1/70 m^2 GFA	1/40 m^2 GFA	1/30 m^2 GFA	1/40 m^2 GFA
Retail / Community	6,000	1/60 m^2 GFA	6.1/100 m^2 GFA	1/22 m^2 GFA	1/22 m^2 GFA
Total	**9,000**	**143**	**441**	**373**	**348**

As described for the residential car parking component, it is considered acceptable to adopt the lower rates given the transit-oriented nature of the development and the excellent access from the site to future transport infrastructure. The estimated number of required parking spaces for the non-residential component is approximately 140 spaces.

It can be confirmed that a total of 1,100 parking spaces should be provided for the residential and non-residential components of the development, and this level of parking provision can be accommodated within the building envelop envisaged.

Strategies have also been considered to minimise the potential impacts of reduced off-street parking provision as follows:

– Timed / Restricted on-street parking in areas surrounding the station and the development.

– Commuter car park use only if it is linked to public transport trips via Opal Card.

The Blacktown City Council Growth Centre Precincts DCP (2016) Part 6.8 – Car Parking also states the following in relation to car parking, loading and waste facilities:

– Opportunities for shared parking provision for complementary uses within centres are to be provided.

– In mixed developments, dedicated on-site parking is to be provided for the residential component of the development.

– Rear lanes and right of ways are to be used to provide access to parking areas, loading docks and waste collection areas. Lanes will need to accommodate heavy vehicles where access to loading areas and waste collection is required.

– On-street parking is to be provided on all streets to create a buffer between pedestrian and street traffic and promote casual surveillance.

– Basement, semi-basement or decked parking is preferred over large expanses of at-grade parking.

– The parking area per vehicle is to be in accordance with AS 2890:1.

Bicycle parking

For residential developments within the study area, the minimum number of bicycle parking spaces is specified by the Blacktown City Council Growth Centre Precincts DCP 2016, as being one bicycle parking space per three residential dwellings. The DCP also states that bicycle parking is to be in secure and accessible locations and, for employees, is to have weather protection. There are no bicycle parking requirements stated in the Blacktown City Council Growth Centre Precincts DCP 2016 for non-residential developments.

As discussed in **Section 4.3**, one of the key principles to change local residents' travel behaviour is to provide high quality, safe and accessible end-of-trip facilities such as centralised cycle hubs that are integrated within development at convenient locations, lockers and showers. Research of other Council DCPs and best practice for cycle parking provision for residential development, it is proposed that 1 cycle parking space per apartment for residents plus 1 space per 10 dwellings for visitors, to be provided for this development. This rate is significantly higher than the requirements specified by the Blacktown City Council Growth Centre Precincts DCP 2016 and is more aligned with those specified by Councils in more urbanised such as City of Parramatta Council and City of Sydney Council where cycle usage is demonstrated to be relatively higher than other areas in Sydney.

Applying the required residential bicycle parking rates to the 1,100 proposed residential dwellings, would equate to a total of approximately 1,210 bicycle parking spaces being required to be provided in safe and accessible locations within the buildings and / or appropriate public domain locations that would encourage higher use of active transport.

Other relevant guidelines

Other guidelines relevant to traffic and transport as listed in the Blacktown Growth Centres DCP Schedule 4 – Cudgegong Road (Area 20) Precinct (September 2016), for the local centre adjacent to Cudgegong Station, include:

- The Centre is pedestrian and public transport orientated with walking and cycling taking priority over vehicles;
- The rail-bus interchange has direct pedestrian access to the Main Street and the retail core area;
- The north-south axis is the main pedestrian and cycle spine for the Local Centre;
- The street layout allows easy access to and within the Local Centre while allowing for traffic to bypass the Centre on Cudgegong Road and other perimeter roads; and
- Carparking for retail, commercial and residential uses to be primarily underground.

4.6 Trip generation and distribution

A strategic review of key travel destinations for different trip purposes has been undertaken to identify the likely / available mode of transport to access these locations. With the opening of SMNW project, the metro line would definitely encourage public transport usage and increase journey to work trips by non-car modes to key employment centres such as Norwest, Parramatta, Macquarie Park and Sydney CBD. Other key centres are also connected to this development via train and bus network.

The existing and proposed (known) primary schools and high schools are all connected to major transport hubs via public buses and school buses. However, it is acknowledged that some students could be driven to schools by parents on a linked trip to work or other purposes. Future childcare centre / pre-school in the Cudgegong Town Centre will be walking distance to the proposed development, while other centres will most likely be accessed by cars.

Future retail shopping areas in the Cudgegong Town Centre will be walking distance to the proposed development, while other local shopping centres such as The Ponds Shopping Centre can be accessed by cars or buses, depending on the type and time of shopping. On the other hand, a number of larger shopping centres and entertainment centres will be connected by the metro services, providing a fast and efficient alternative travel options to local residents.

Some of the local sports fields are located along key bus routes, however due to the timing of the sports sessions these trips would most likely be made by cars.

The strategic analysis demonstrates that a large proportion of trips that would generally be made by future residents of this development could be undertaken via sustainable modes of transport (public transport, walking and cycling).

Table 4–3: Strategic travel destination analysis

Trip purposes	Top travel destinations (travel modes highlighted in colour)					
Work / commute	Norwest	Parramatta	Blacktown	Sydney CBD (post-2023)	Macquarie Park	*Marsden Park*
Education	Rouse Hill Anglican School	The Ponds School	The Ponds High School	Rouse Hill High School / Ironbark Ridge Public School	Rouse Hill Public School	*Future school site at Terry Road*
Pre-school / childcare	Cudgegong Town Centre	Other preschools / childcares				
Convenience shopping	Cudgegong Town Centre	The Ponds Shopping Centre				
Experience shopping / Entertainment	Rouse Hill Town Centre	Castle Towers	Norwest Market Town	Blacktown Westpoint		
Sports and recreation	Peel Reserve	Bruce Purser Reserve	Kellyville Netball Courts			*Future playing fields at Rouse Road*
Mode of transport	Metro / train	Public Bus	Cycling / Walking	Car		

Source: SCT Consulting, January 2018

Locations shown in italics are future known destinations

4.6.1 Vehicular trip generation

The average trip rate for high density residential flat dwellings that have good access to public transport services within Sydney urban areas, as published by the Roads and Maritime Services[1], is identified as 0.19 and 0.15 trips per dwelling within the AM and PM peak hour periods respectively and 1.52 daily trips per dwelling.

Given the site's proximity and accessible to good public transport services, implementation of TDM measures as included in **Section 4.3** including the reduced parking provision for a transit-oriented development, the above peak hour vehicular trip rates are considered most appropriate. These trip generation rates are also consistent with the rates used for the Area 20 Traffic Assessment report (Arup, March 2015). The Area 20 Traffic Assessment report also suggested peak hour traffic generation rates for retail and commercial land uses.

The total peak hour traffic generation for the proposed development is summarised in **Table 4–4**. The proposed development could generate between 322 to 344 peak hour vehicular trips.

Table 4–4: Overall development vehicular trip generation

Land uses	Yield	AM Peak		PM Peak	
		Trip rate	Trip generation	Trip rate	Trip generation
Residential	1,100 apartments	0.19 per dwelling	209	0.15 per dwelling	165
Retail	4,500m^2	1.94/100m^2	87	2.7/100m^2	121*
Commercial	3,000m^2	1.6/100m^2	48	1.2/100m^2	36
Total			**344**		**322**

Source: SCT Consulting (March 2018)

*- It should be noted that the retail trip rates quoted in the Arup report were based on surveys of centres with unconstrained parking provisions as prescribed in the RMS Guide to Traffic Generating Developments. Hence a revised trip rate for retail has been estimated for this assessment due to the proximity of these retail facilities to the station and the proposed restrained parking conditions, based on the ratio of proposed parking provision to the RMS Guide.

[1] Technical Direction TDT 2013/04a, Guide to Traffic Generating Developments – Updated traffic surveys (Roads and Maritime Services, 2013)

The retail and commercial floor area within the Local Centre may be in the order of 12,500m^2 to15,000m^2 to ensure that the Centre functions with its position in the regional centres hierarchy. This level of commercial / retail floorspace has been considered in the original and the Arup traffic assessment. It is understood that a separate DA for 43-53 Cudgegong Road proposes 9,600m^2 of retail/commercial in the B2 zone north of the station, is being considered by Council. Although this DA is not approved, the potential commercial / retail floorspace could reach 17,100m^2 if both developments were approved.

As a worst case scenario, the additional 2,100m^2 of commercial / retail floorspace could attribute to less than 40 vehicular trips during the peak hours. This level of net trip increase is considered to be higher than expected especially during the peak hours as the commercial / retail areas in the town centre (B2 zone) would be mainly serving a walking catchment surrounding the station and / or passing trade for customers getting on / off the metro rather than single purpose driving trips to the more conventional retail areas. Therefore, it is considered this level of net increase in retail / commercial areas at this location will have negligible impacts of the operations of the surrounding road network.

As the purpose of this report is to consider the implications of the net increase in development (in additional to what was considered in the 2015 ILP), the following sections of the report determined the net increase in residential development and the associated vehicular trip increases.

Base Case – approved Cudgegong Road (Area 20) Precinct Plan

A traffic and transport assessment was undertaken by Arup in March, 2015 (the Arup report) for the Department of Planning and Environment (DP&E), which considered the traffic and transport implications arising from the proposed changes to the planning controls in the Precinct. The Arup report considered the impacts of the 4,400 dwellings, now approved in the latest Precinct Plan.

The residential dwelling assumptions based on the approved Cudgegong Road Precinct Plan are presented in **Table 4–5**.

Table 4–5: Residential dwelling assumptions as part of the approved Cudgegong Road Precinct Plan

Dwelling type	Number of Dwellings (as part of the approved Cudgegong Road Precinct Plan)	Number of Dwellings (estimated within the site)
Low Density Development	149	N/A
Medium Density Development	1,282	N/A
Medium to High Density Development (R3)	1,421	~250 (15-20% of all R3 zones)
Very Low-Density Development	61	N/A
B2/B4 Apartments	968	~400
Total Dwellings	**4,400**	**~650**

To determine an indicative baseline dwelling yield within the site based on the approved Precinct Plan, the following assumptions were made:

– 200 apartments are assumed in the B2 zone north of the Metro line (page 3 of Cudgegong Road Station Finalisation Report, June 2015);

– 768 apartments are assumed in the B4 zone across the Precinct (balance of the 968 apartments assumed in the Arup report in the B2/B4 areas). These 768 apartments have been distributed accordingly to the areas north and south of station. Therefore, 400 apartments are assumed in the base case before any uplift in the B4 zones south of station being considered within the site; and

– 1,421 Medium to High Density development dwellings are assumed in all the R3 (Medium to High Density) zones. Based on proportion of the R3 zones across the Precinct, the Medium to High Density development within the site accounts for 15-20% of all the R3 zones across the Precinct. Therefore, 250 dwellings are assumed in the base case before any uplift in the R3 zones south of station being considered within the site.

Based on the above assumptions, the site under the approved ILP has approximately 650 dwellings (the base case). Using the 0.19 and 0.15 trips per hour in the AM and PM peak hour rates, 650 dwellings would generate approximately 124 and 98 vehicles per AM and PM peak hour respectively. The daily base case trip generation for the site would equate to 988 vehicle trips.

Approved Development

Despite the allowance of 4,400 dwellings rezoned for the wider Cudgegong Road Precinct Plan in 2015, it is acknowledged that a total of 5,700 dwellings have already been approved for development in the wider Precinct. According to the assessment of the base case in the previous section that approximately 650 medium to high density dwellings are included in the overall 4,400 dwelling, the approved dwellings could be up to 2,000 in additional to the 2015 Precinct Plan.

It is not known to us at the time of preparing this report that any of these approved applications have assessed the cumulative impacts of the increase in development. The likely additional trips may have further implications to the surrounding road network and intersections. However, given these network and intersections are recently constructed / upgraded and the opening of the Metro will influence mode shifts towards public transport, it is unlikely that the surrounding road network and intersections will need augmentation at this stage.

Net Increase Trip Generation

The Proposal is to provide approximately 1,100 residential dwellings within the site. Applying the residential trip rates of 0.19 and 0.15 trips per hour in the AM and PM peak hour, the residential component would generate 209 and 165 trips per AM and PM peak hours respectively. Compared to the base case scenario with an allowance of 650 apartments, the trip generation for the Site (the net increase trip generation) would equate to **87** and **68 additional trips** per AM and PM peak hour respectively. The number of daily trips would increase with **684 trips per day** as a result of the proposed density uplift.

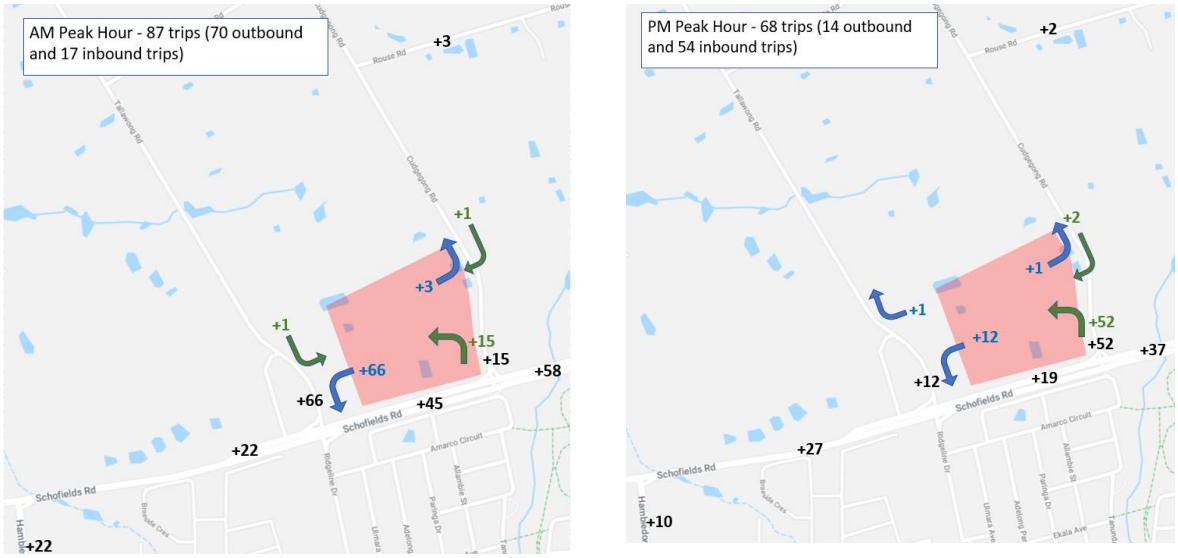
4.6.2 Trip distribution

The likely trip distribution of the additional number of vehicular trips has been based on the journey-to-work data presented in **Section 3.1.1**, for residents travelling to work from the area and people travelling to within the area for work. The proportion of vehicles leaving and arriving the area in the AM peak hour has been assumed as an 80 percent (leaving) / 20 percent (arriving) split. During the PM peak hour, this proportion is reversed, with 80 percent arriving and 20 percent leaving the site.

Based on these assumptions, the expected vehicular trip increase during the AM and PM peak hours on the surrounding road network as a result of the proposed development is shown in **Figure 4–10**.

During the AM peak hour, the maximum increase on the immediate surrounding road network is along Tallawong Road and Schofield Road (east of the site), with an increase of 66 and 58 vehicles per hour in the AM peak hour. During the PM peak hour, the highest number of additional trips will be on Cudgegong Road and Schofield Road (east of the site) with 52 and 37 trips respectively.

Figure 4–10 Net vehicular trip generation and distribution in the AM and PM peak hours



Source: SCT Consulting, March 2018

The 2036 traffic flows, as per the approved ILP, were presented in The Area 20 Traffic Assessment (Arup, March 2015). A comparison between these mid-block flows (which have been extracted from the intersection counts undertaken as part of the report) and the additional mid-block flows generated by the increased yield of the proposed development (+450 apartments) is presented in **Table 4–6**.

Table 4–6: Net vehicular trip increase compared to 2036 forecast traffic flows for approved ILP by road

Location	AM Peak Mid-block traffic flows		AM Peak Mid-blcok traffic flows	
	2036 (as per approved ILP)	Trips net increase	2036 (as per approved ILP)	Trips net increase
Schofields Road (east of the site)	2,161	+58	2,313	+37
Schofields Road (west of the site)	2,195	+22	2,318	+27
Cudgegong Road (north of Schofields Road)	423	+15	421	+52
Tallawong Road (north of Schofields Road)	904	+66	1,431	+12
Rouse Road	2,302	+3	1,094	+2

Source: SCT Consulting (March 2018) and The Area 20 Traffic Assessment (Arup, March 2015)

Proportionally, the highest net increase in traffic compared to the baseline 2036 traffic forecasts was found to be on Tallawong Road in the AM peak hour and on Cudgegong Road in the PM peak hour, with an increase of approximately seven and 12 percent respectively as a result of the density uplift. This is however considered acceptable given that there is significant spare capacity (the volumes are within the nominal mid-block capacity of approximately 900 veh/hr one-way per lane for an undivided road) on these roads in 2036, with the approved ILP.

The proportional traffic increase as a result of the additional number of trips generated by the development along Schofields Road and Rouse Road is less than two percent in the AM and PM peak hours.

It should also be acknowledged that, as a result of the approved development yield, that the proportional increase in traffic as a result of this proposal could be even lower.

4.6.3 Public transport demand

Journey-to-work travel mode data indicates that during the peak hour period public transport trips currently accounts for approximately 17 per cent outbound trips and five per cent of inbound trips. Train trips account for nine per cent and two per cent of these trips respectively, whilst bus trips account for the remaining eight per cent of outbound and three per cent of inbound trips. Household travel data indicates that approximately four per cent of all daily trips are undertaken by train, while six per cent of all trips throughout the day are undertaken by bus.

However, a significant mode shift towards public transport and active transport and can be expected because of the new Metro line, implementation of TDM measures as well as a Green Travel Plan for the development including reduced parking provision. Based on research undertaken by the Customer Division of Transport for NSW[2], a future mode shift of approximately 15 percent towards public and active transport can be achieved, resulting in a mode split of 65 percent vehicular trips, 20 percent train / Metro trips, 10 percent bus trips and five percent walking and cycling trips. The targeted mode splits are similar to other areas which are close to existing railway stations within Blacktown LGA.

Based on these assumptions, a summary of the additional train / Metro and bus trips that area likely to be generated by the net increase in proposed development (+450 apartments) is presented in **Table 4–7**. At full development, this accounts for a total of 40 additional public trips in the AM peak, 31 additional trips in the PM peak and a total of 316 additional daily public transport trips.

Table 4–7: Public transport net trip generation for the site, by mode

Mode of Transport	AM Peak[3]		PM Peak[4]		Daily[5]
	Inbound	Outbound	Inbound	Outbound	
Train / Metro	5	21	17	4	210
Bus	3	11	8	2	105

Source: SCT Consulting; March 2018

4.6.4 Walking (pedestrian) and cycling demand

Journey-to-work travel mode data indicates that during the peak hour period “walked only” trips accounts for approximately one and two per cent of outbound and inbound trips respectively during the peak hour periods.

However, as mentioned above, a mode shift towards active transport can be expected based on factors such as proposed improvements to the cycle and walking networks. As a result, walking and cycling is expected to account for approximately five percent of all trips, which equates to a total of seven and five trips in the AM and PM peak hour respectively.

In addition to residents walking or cycling to work, an additional number of trips would also be generated by patrons accessing public transport. Therefore, it is expected that the net increase in proposed development (+450 apartments) would generate up to approximately 50 additional walking trips during the peak hours (inclusive of the first / last legs of the public transport trips).

[2] Selection of Travel Demand Management measures for Priority Growth Areas, TfNSW
[3] Based on JTW Data
[4] Based on JTW Data
[5] Based on HTS Data

5.0 Traffic and transport impact assessment

5.1 Public and active transport

5.1.1 Public transport impacts

As described in **Section 3.5.1**, residents and employees of the proposed development will be located within a 300m walking distance to the new Cudgegong Road Station of the future SMNW project which will provide direct access to Chatswood. The increased network coverage, train frequency, journey-time reliability and improved customer offering of the Sydney Metro Project, will encourage public transport usage and increase journey to work trips by non-car modes. Pedestrian access to the new Cudgegong Road Station will be provided via footpaths throughout the site and pedestrian crossings across Themeda Avenue and Conferta Avenue.

The proposed development supports best practice transit oriented development principles, by providing increased residential density in proximity to existing and planned transport infrastructure upgrades. The Sydney Metro will provide residents with greater access to public transport and employment options, while promoting the use of sustainable travel options.

On this basis, **Table 4–7** provides a summary of the number of additional train and bus trips that are likely to be generated as a result of the increased yield of the proposed development (+450 apartments). At full development, this accounts for 40 additional public transport trips in the AM peak, 31 additional public transport trips in the PM peak and a total of 316 additional public transport daily trips (including train / Metro and bus trips).

As detailed in **Section 2.3**, there are approximately five bus services per hour in the peak travel demand direction during AM and PM peak hour periods. The additional number of bus trips only is expected to be 14 and 10 trips in the AM and PM peak hours. At full development this would equate to approximately two additional passengers per bus service. It is therefore anticipated that the bus network can cater for this increase in demand.

5.1.2 Walking and cycling impacts

Pedestrian and cyclist access to the site will be provided mainly via the proposed north-south shared paths on Cudgegong Road and Tallawong Road, as well as the north-south street to the west of Cudgegong Road (through the station pedestrian concourse). These routes will connect cyclists and pedestrians to the existing east-west shared path on Schofields Road south of the site and Rouse Road north of the site.

The connections to Schofields Road will provide excellent cycle access to the wider cycle network via the cycle routes along Windsor Road in the east and Richmond Road in the west, as identified in **Section 3.2**. Pedestrian and cycling access to the site from the wider road network will also be facilitated with the provision of crossing opportunities at the signalised intersections of Themeda Avenue with Cudgegong Road and Tallawong Road.

To provide continuity and a safer route for pedestrians walking between Schofield Road and the Station, further consideration should be given to whether additional pedestrian / cyclist crossings be implemented at Conferta Avenue. The proposed development promotes pedestrian and cyclist movements with a permeable internal layout that provides good connection to the surrounding cycling and walking network.

As discussed in **Section 4.6.4**, the increased yield of the proposed development (+450 apartments) could generate up to 50 walking trips and up to five cycling trips during a typical peak hour. The surrounding active transport network is expected to be able to handle this level of demands.

5.2 Road network

As discussed in **Section 4.6.2**, the increased yield of the proposed development (+450 apartments) has the highest increase in traffic on Tallawong Road in the AM peak hour and on Cudgegong Road in the PM peak hour. This is however considered acceptable given that there is significant spare capacity (the volumes are within the nominal mid-block capacity of approximately 900 veh/hr one-way per lane for an undivided road) on these roads in 2036, with the approved ILP.

The proportional traffic increase along Schofields Road and Rouse Road as a result of the increased yield of the proposed development (+450 apartments) is less than two percent in the AM and PM peak hours.

The Area 20 Traffic Assessment report (Arup, March 2015) intersection assessment results, with the development traffic of the Area 20 Precinct included, in the future year 2036 are summarised in **Table 5–1**. The results demonstrate that the intersections will operate satisfactorily during both the AM and PM peak hours for the forecast

year 2036, with the development traffic as a result of the Area 20 Precinct, and that there will be spare capacity available.

Table 5–1: Performance of critical intersection surrounding the site (Year 2036, with Area 20 development traffic)

Intersection	Control	Level of Service with approved ILP		Intersection volumes		Volumes as a result of proposed development	
		AM peak	PM peak	AM peak	PM peak	AM peak	PM peak
Schofields Road / Cudgegong Road	Signals	C	C	2,308	2,453	+52	+47
Schofields Road / Tallawong Road	Signals	C	C	2,900	3,232	+58	+11
Rouse Road / Windsor Road	Signals	D	D	4,231	5,058	+3	+2

Source: The Area 20 Traffic Assessment (Arup, March 2015)

As a result of the increased yield of the proposed development (+450 apartments), the highest increase of peak hour traffic volumes would expectedly occur at the intersections of Schofields Road / Cudgegong Road and Schofields Road / Tallawong Road, with an increase of approximately 60 peak hour trips (approximately two percent increase of the total intersection traffic volumes).

On this basis, vehicle trips generated by the increased yield of the proposed development (+450 apartments) are considered to have an acceptable impact on the corridor performance, and on intersections in proximity of the site. The provision of dual vehicular accesses from both Cudgegong Road and Tallawong Road will also minimise conflicts with traffic on the two collector roads Cudgegong Road and Tallawong Road and preserve Conferta Avenue with a local street function.

The likely increase of traffic at each of the access points is also expected to have negligible cumulative impacts to the operations of Tallawong Road and Cudgegong Road. The left in / left out access at Tallawong Road is expected to generate up to 60 vehicles during the AM peak hour and is expected to operate satisfactorily. The proposed left in / left out access at Cudgegong Road is expected to generate up to 50 vehicles during the PM peak hour and is also expected to operate satisfactory with this net increase.

5.3 Parking

The number of car parking spaces provided as part of the Proposal complies with the RMS Guide to Traffic Generating Developments and is supported by the excellent level of access to frequent public transport (rail / metro and buses) within 400m walking distance to the site and good access to alternative cycle parking and facilities provided within the development. As discussed in **Section 4.5.1**, the Proposal is not considered to have an adverse impact on the surrounding on-street parking, while encouraging sustainable transport use.

Strategies have also been considered to minimise the potential impacts of reduced off-street parking provision as follows:

– Timed / Restricted on-street parking in areas surrounding the station and the development.

– Commuter car park use only if it is linked to public transport trips via Opal Card.

The Proposal also provides secure bicycle parking within development as well as well-designed facilities at appropriate locations along cycle routes / shared paths which will encourage residents to adopt sustainable transport modes.

6.0 Summary and conclusions

6.1 Summary

This report has been prepared by SCT Consulting, to support the Concept State Significant Development Application (SSDA) approval for the Cudgegong Road Station Precinct South development area. The proposed development allows for approximately 1,100 dwellings and supporting retail, office and community uses to be located within the site.

The report considers the potential cumulative impacts of the increase in development yield (net increase of 450 apartments), when compared to the 650 apartments estimated to be assumed in the 'baseline' traffic assessment undertaken as part of the Cudgegong Road Station Precinct Finalisation Report (DP&E, 2015). It also considers the cumulative traffic and transport impacts associated with the approved dwelling numbers within the wider Cudgegong Road Station Precinct.

In summary:

– The proposal is supported by a targeted Travel Plan with a number of green travel initiatives / principles developed specifically for a transit-oriented development at this location that provide significant opportunities for alternative travel options and reduce the need of car travel.

– Residents and employees of the proposed development will have excellent access to the public transport system, with the new Cudgegong Road Station of the future Sydney Metro North West located approximately 300m from the site. The increased network coverage, journey-time reliability and improved customer offering of the Sydney Metro Project together with nearby frequent bus services, will encourage public transport patronage and increase all trips to be made by non-car modes.

– The proposed development promotes pedestrian and cyclist movements with a permeable internal layout that provides good connection to the surrounding cycling and walking network, and to public transport. Pedestrian and cycling access to the site will also be facilitated with crossing opportunities at the signalised intersections of Themeda Avenue with Cudgegong Road and Tallawong Road.

– Vehicular accesses to the site are proposed at the collector roads of Cudgegong Road and Tallawong Road. These access points connect to a series of internal local streets that provide access to underground car parks.

– The number of car parking spaces provided as consistent with the RMS Guide to Traffic Generating Developments, to reduce reliance on vehicular traffic and taking full advantage of a transit-oriented development.

– A total of 1,210 bicycle spaces will be provisioned, equivalent to a rate of one space per apartment plus one visitor space per 10 apartments significantly more than the Blacktown Growth Centres DCP, to encourage use of active travel means to cater for short distance trips. This will be supported by future cycle links to the surrounding locality and sub-regional centres.

– The proposed development (+450 apartments compared to the approved Indicative Layout Plan) would expect to generate up to 87 and 68 additional vehicular trips in the AM and PM peak hour respectively. This level of additional trip generation is supported given the site's proximity and accessibility to good public transport services.

– The net increase of 450 apartments as part of the proposed development would also expect to generate 40 additional public transport trips in the AM peak, 31 additional public transport trips in the PM peak and a total of 316 additional daily public transport trips. The provision of frequent metro and bus services in the vicinity of the development are expected to cater for these additional demands.

6.2 Conclusions

The traffic and transport impact assessment has concluded that:

– There will not be any adverse traffic implications on the public road as a result of the additional vehicle trips generated by the proposed development (when comparing with the approved ILP).

– The proposed vehicle, pedestrian and cyclist access will be suitable and appropriate and promote sustainable transport modes.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