

The background of the entire page is a blurred photograph of a bus in motion, likely taken with a long exposure. The bus is white with green and yellow accents. The motion blur is horizontal, suggesting the bus is moving from left to right. The background is dark, possibly at night or in low light.

URBIS

LEPPINGTON RESIDENTIAL CORE MASTERPLAN – STRATEGIC TRANSPORT ASSESSMENT

Prepared for Aland
September 2023

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1. INTRODUCTION

BACKGROUND

OVERVIEW

Aland has engaged Urbis to prepare a Transport Masterplan to inform the Strategic Assessment of the Residential Core Master Plan and Planning Proposal. The Aland Leppington Residential Core Planning Proposal seeks to amend State Environmental Planning Policy (Precincts – Western Parkland City) 2021 (Parkland City SEPP) for the lots located at 156-166 Rickard Road (referred to as ‘the site’). The site is strategically located, towards the centre of the Leppington Town Centre, within the Southwest Growth Area (SWGA) and to the south of the Leppington train station and immediately north of Leppington Public School. It is intended for the site to serve a central and residential accommodating function within the context of the town centre. The Planning Proposal is supported by the Leppington Residential Core Master Plan which facilitates the realisation of the Leppington Town Centre vision through the provision of mixed-use zoned land, that is intended to primarily facilitate residential uses, with some retail and other community-serving uses on the ground.

The site is under the single control of the proponent and presents a highly capable land parcel, to the near south of the Leppington train station, that by its nature and location will function as an exemplary transit-oriented development in the Leppington Town Centre and South West Growth Area (SWGA). As such, the site presents an immediate opportunity to deliver new homes and jobs as part of a holistic and integrated land use and transport-oriented development. To the west of the Leppington Residential Core is an adjoining Aland landholding at 173-183 Rickard Road, Leppington which will form part of future development stages and will be subject to a separate planning application.

The proposal seeks to rezone the site comprising 4.2ha of land in the Leppington Town Centre Precinct which was first identified by the NSW Government in 2013 as a key strategic centre within the SWGA to deliver new homes and jobs in close proximity to public transport. This was followed by the announcement of the Western Sydney International Airport (WSI) in 2014 and in anticipation of the delivery of the Leppington Train Station in 2015.

In 2017, the Department of Planning and Environment (DPE) commenced a review of the Leppington Town Centre, to investigate a potential new vision and associated land use controls for the area. Following this review, DPE announced a new approach to precinct planning in 2019, returning precinct planning and rezoning powers back to Liverpool and Camden Council. Both Councils have since consulted with key Government agencies in relation to the Leppington Town Centre and conducted a number of technical studies to inform a new planning proposal and rezoning of the town centre.

The Leppington Residential Core proposal provides a site-specific planning framework that will help support Council's vision for the Leppington Town Centre and enable it to transition into a new thriving transit-oriented residential community that builds on the NSW Government's vision and aspirations under the Western Sydney Growth Area program.

The Leppington Residential Core Master Plan is a potential ‘catalyst project’ that would complement the delivery of the wider Leppington Town Centre plan proposed by Camden Council. The proposal leverages the unique opportunity offered by the site's strategic location within the town centre and its close proximity to transport and educational infrastructure, by rezoning the site to enable transit-oriented development within a town centre and increasing building height and floor space ratio development standards to enable additional housing supply and diversity.

1. INTRODUCTION

SITE OVERVIEW

The land to which this proposal relates is 156-166 Rickard Road, Leppington. The site is accessed via Rickard Road and is located within the Leppington Town Centre. Leppington Town Centre extends across both the Camden and Liverpool LGA; however, the site is located entirely within the Camden LGA portion of the town centre.

TABLE 1 KEY FEATURES OF RESIDENTIAL CORE

Feature	Description
Street Address	156-166 Rickard Road, Leppington
Legal Description	Lot 37 DP 8979 (166 Rickard Road)
	Lot 38A DP 8979 (156 Rickard Road)
Site Area	4.2 Ha
Site frontage	180 m frontage to Rickard Road
Site Topography	The topography and slope of the site is generally low to moderate. The site generally falls from the southwest to the northeast with high points along the Rickard Road frontage.
Vegetation & Biodiversity	<p>The site is partly cleared. The rear of 166 Rickard Road is sparsely populated with remnant vegetation, while 156 Rickard is mostly cleared with a small only number of trees lining its northern boundary. The remaining remnant vegetation is comprised of Cumberland Plain Woodland.</p> <p>The entirety of the site is biodiversity certified.</p>
Bushfire	Both sites are mapped as being affected by bushfire risk. This is largely associated with the patch of clustered vegetation in the adjoining lots to the west – 163 Rickard Road, Leppington.
Existing Services and Utilities	<ul style="list-style-type: none">▪ Potable Water: There is an existing 250 mm water main along Rickard Road.▪ Sewer: There is an existing 225 mm sewer main approximately 230 m to the west.▪ Electricity: The site is located within the Endeavour Energy electrical supply zone. The North Leppington Zone Substation is located approximately 1 km northwest of the site, on Bringelly Road, while along Rickard Road there is an existing 11 kV HV main feeder.▪ Gas: The site is currently not serviced by the Jemena natural gas network.
Hydrology	The site is not flood affected by mainstream flooding in either the 1% Annual Exceedance Probability (AEP) and Probable Maximum Flood (PMF) storm event.

1. INTRODUCTION

SITE OVERVIEW

LOCAL CONTEXT

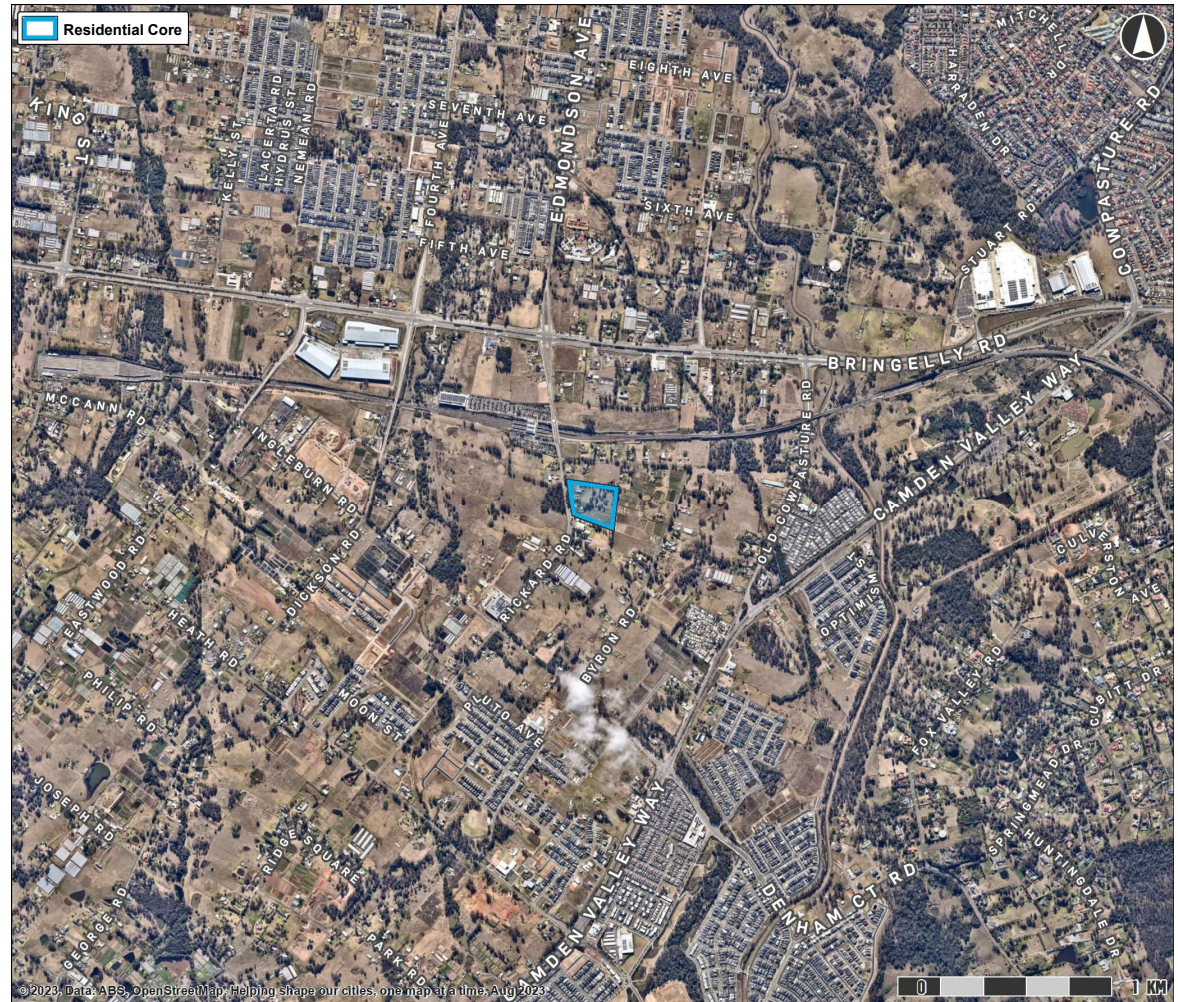
The site and its surrounds are generally made up of large rural residential landholdings. The topography is generally low to moderately sloped, with high points around the site's frontage to Rickard Road.

Rickard Road is a key north-south movement corridor within the SWGA. The site is within immediate proximity to transport infrastructure, being approximately 140 m in distance from Leppington Train Station. It is one of the closest privately held landholdings to the train station in the entire Leppington Town Centre.

To summarise, the site is surrounded by the following:

- **North:** North of the site is Leppington Train Station. On the other side of the station is Austral, which is similarly comprised of rural residential and agricultural lands that are transitioning to that of low and medium-density precincts.
- **East:** The east of the site is characterised by a number of rural residential and agricultural landholdings. Some of these are still comprised of market gardening land uses. Further east are a number of key arterial roads, such as Old Cowpasture Road and Camden Valley Way, which are framed by several new residential estates.
- **South:** To the immediate south of the site is Leppington Public School. To note, the site is separated from the heritage-listed portion of the school. Further south is a number of rural residential and agricultural land holdings. At the intersection of Rickard and Ingleburn Road to the south, a number of these land uses are undergoing progressive residential subdivisions and urban development.
- **West:** The west is similarly characterised by rural residential and agricultural land holdings that are similarly undergoing residential subdivision and urban development.

FIGURE 1 SITE LOCATION



Source – Urbis



2. EXISTING CONDITIONS

2. EXISTING CONDITIONS

TRANSPORT CONTEXT

PUBLIC TRANSPORT CONNECTIONS

BUS NETWORK

There are currently two bus stops situated at Leppington Station, Stand A and Stand B. The following services run through these stops

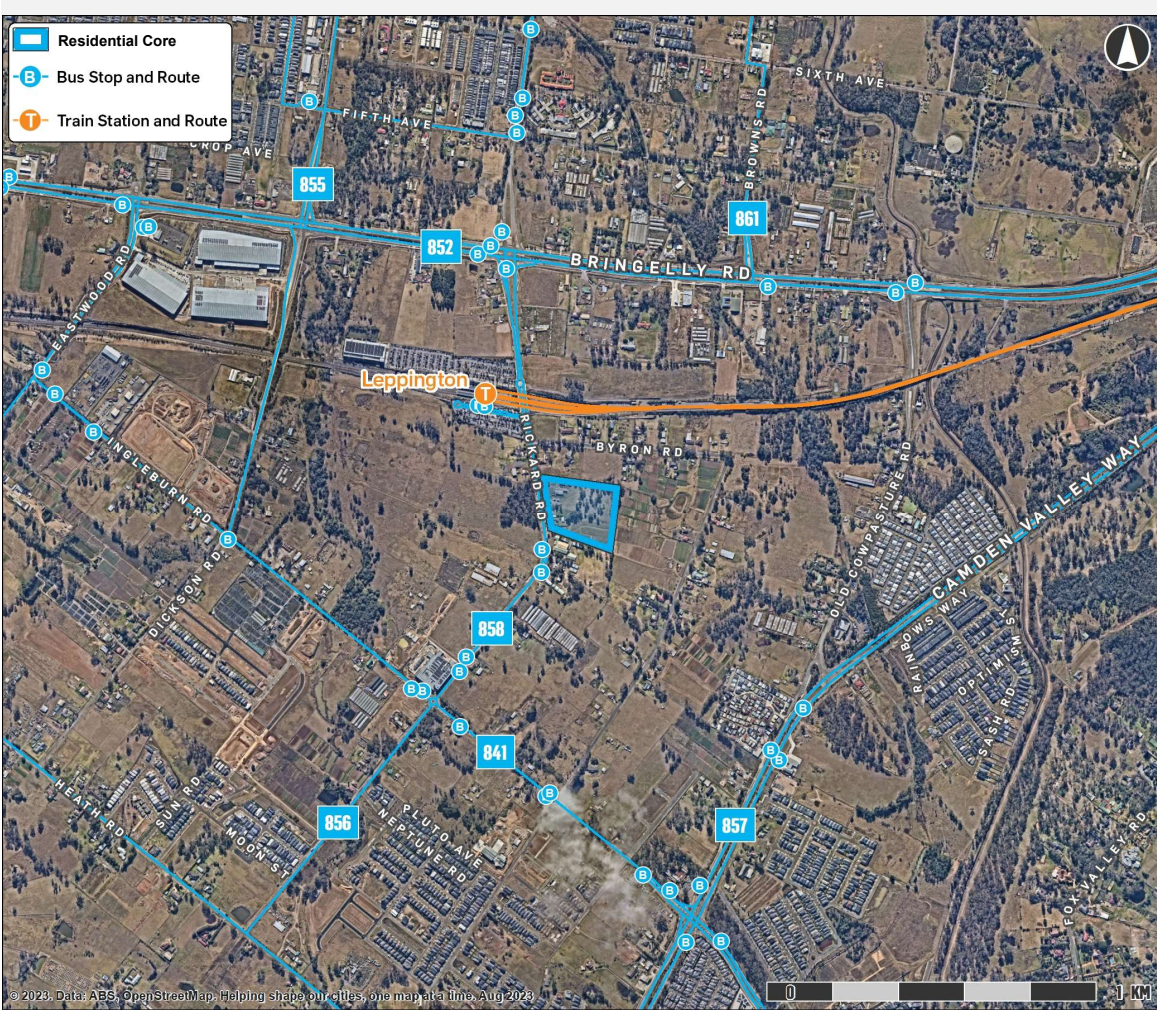
TABLE 2 LOCAL BUS ROUTES

ROUTE	DESCRIPTION	FREQUENCY
856	Bringelly to Liverpool	Peak Hour Service
858	Oran Park Town Centre to Leppington	30 Minutes
861	Denham Court to Carnes Hill via Austral	30 Minutes / 60 Minutes
N31	Leppington to Liverpool (Night)	Night Service
841	Narellan to Leppington via Gregory Hills	15 Minutes / 30 Minutes
855	Rutleigh Park to Liverpool via Austral & Leppington Station	Peak Hour Service

TRAIN NETWORK

Leppington Station is served by the T2 Parramatta or Leppington to City and T5 Richmond to Leppington lines. The frequency of the T2 service to Sydney City is currently every four to 30 minutes, and at most every 15 minutes during the AM and PM peaks.

FIGURE 2 TRANSPORT CONNECTIONS TO THE SITE



Source –Nearmap modified by Urbis

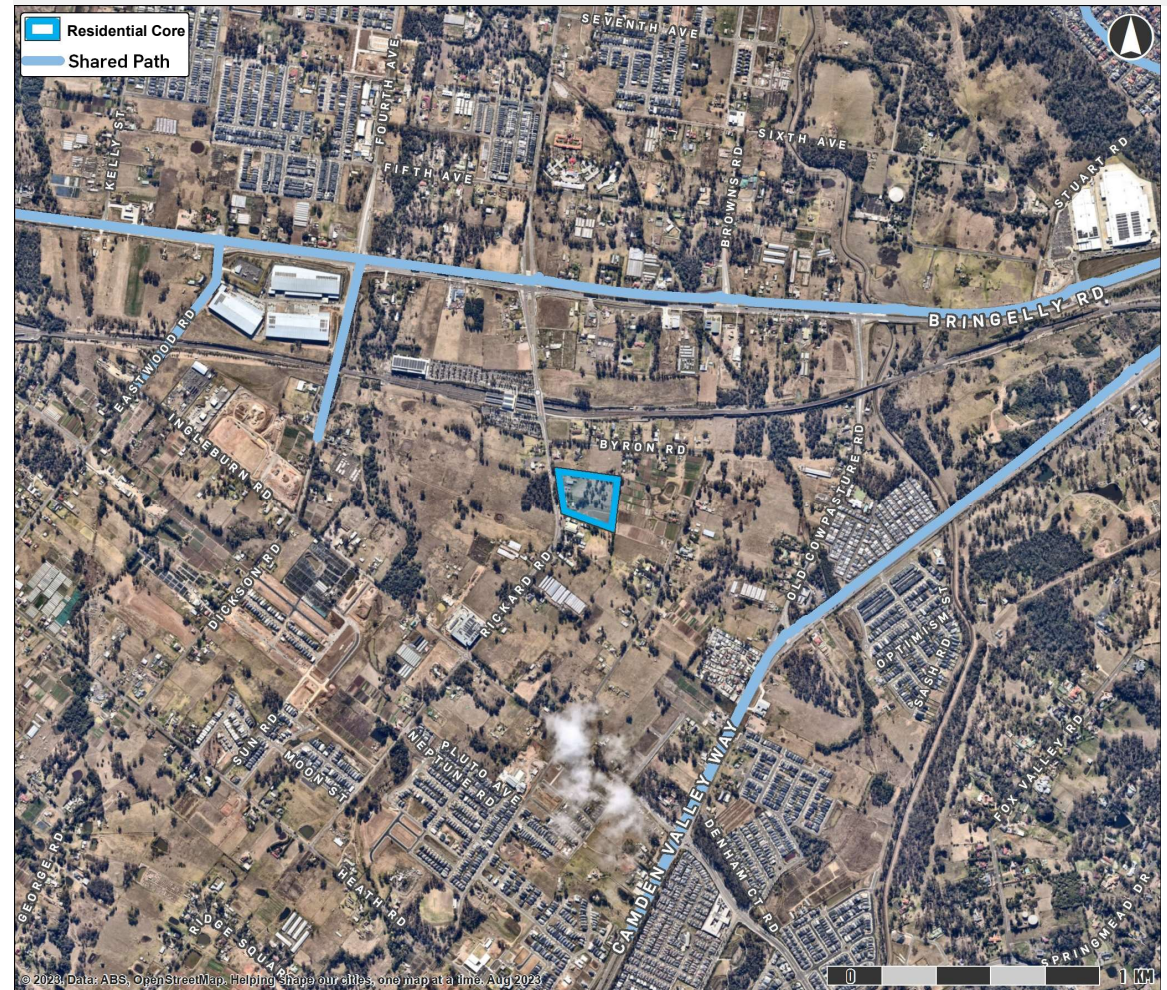
2. EXISTING CONDITIONS

ACTIVE TRANSPORT CONTEXT

ACTIVE TRANSPORT NETWORK

The Residential Core is accessible via active transport from Bringelly Road to the north of the site. The shared path running along Dickson Road from Bringelly Road, and the cycle lane along Rickard Road both allow for active travel connection to the site.

FIGURE 3 ACTIVE TRANSPORT CONNECTIONS TO THE SITE



Source – Nearmap modified by Urbis

2. EXISTING CONDITIONS

CRASH HISTORY

CRASH HISTORY

The road crash data from Transport for NSW (TfNSW) has been analysed between the years 2016 and 2020. During this time period, approximately 30 crashes occurred along the roads within the vicinity of the site, as shown in **Figure 4**. The majority of crashes resulted in non-casualty (towaway) at 40 per cent. This is followed by serious injuries at 37 per cent. The majority of collisions occurred at X-intersections (50 per cent) and were the result of cross-traffic collisions.

TABLE 3 SUMMARY OF COLLISION LOCATIONS

Type of location	Percentage
X-intersection	50%
T-junction	27%
2-way undivided	13%
Roundabout	7%
Divided road	3%

TABLE 4 SUMMARY OF RUM DESCRIPTIONS

RUM - code	RUM - description	Percentage
10	Cross traffic	50%
20	Head on	10%
21	Right through	10%
13	Right near	7%
71	Off road left -> object	7%
11	Right far	3%
19	Other adjacent	3%
90	Fell in / from vehicle	3%
40	U turn	3%
51	Out of control overtake	3%

FIGURE 4 LOCAL AREA CRASH HISTORY



Source – Nearmap modified by Urbis based on NSW Road Crash Data, Centre for Road Safety TfNSW



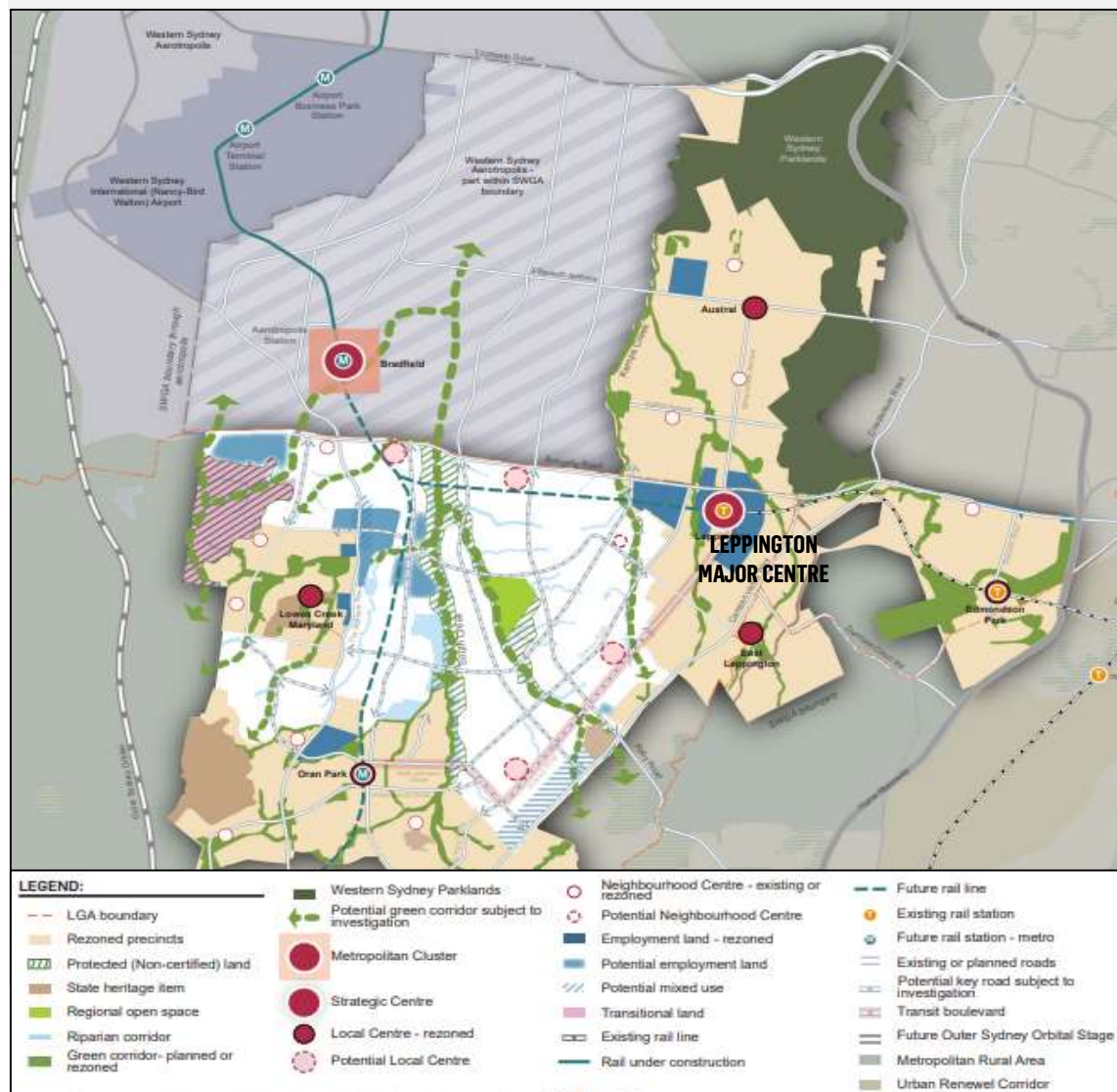
3. STATE TRANSPORT PLANNING

SURROUNDING STRATEGIC PLANNING CONTEXT

The South West Growth Area is one of three growth areas within the South West Sydney region. It comprises approximately 10,000 hectares adjoining the Western Sydney Aerotropolis and the Glenfield to Macarthur Urban Renewal Corridor. This Growth Area includes 14 precincts and several sub-precincts.

- Proximity to Western Sydney Airport and Aerotropolis attracting residents who work at these key locations, and visitors accessing these areas.
- Proximity to transport infrastructure including Leppington Station on the Southwest Rail Link and proposed future transport services.
- Potential additional housing supply due to Leppington Town Centre as a planned precinct.
- Proximity to the Western Economic Corridor running adjacent to the site.
- The Western Parkland City is projected to have the largest population growth of Greater Sydney over the coming decades, with an additional 120,000 residents anticipated to reside in the Growth Area by 2041.

FIGURE 5 SOUTH WEST GROWTH AREA STRUCTURE PLAN



15/09/2023

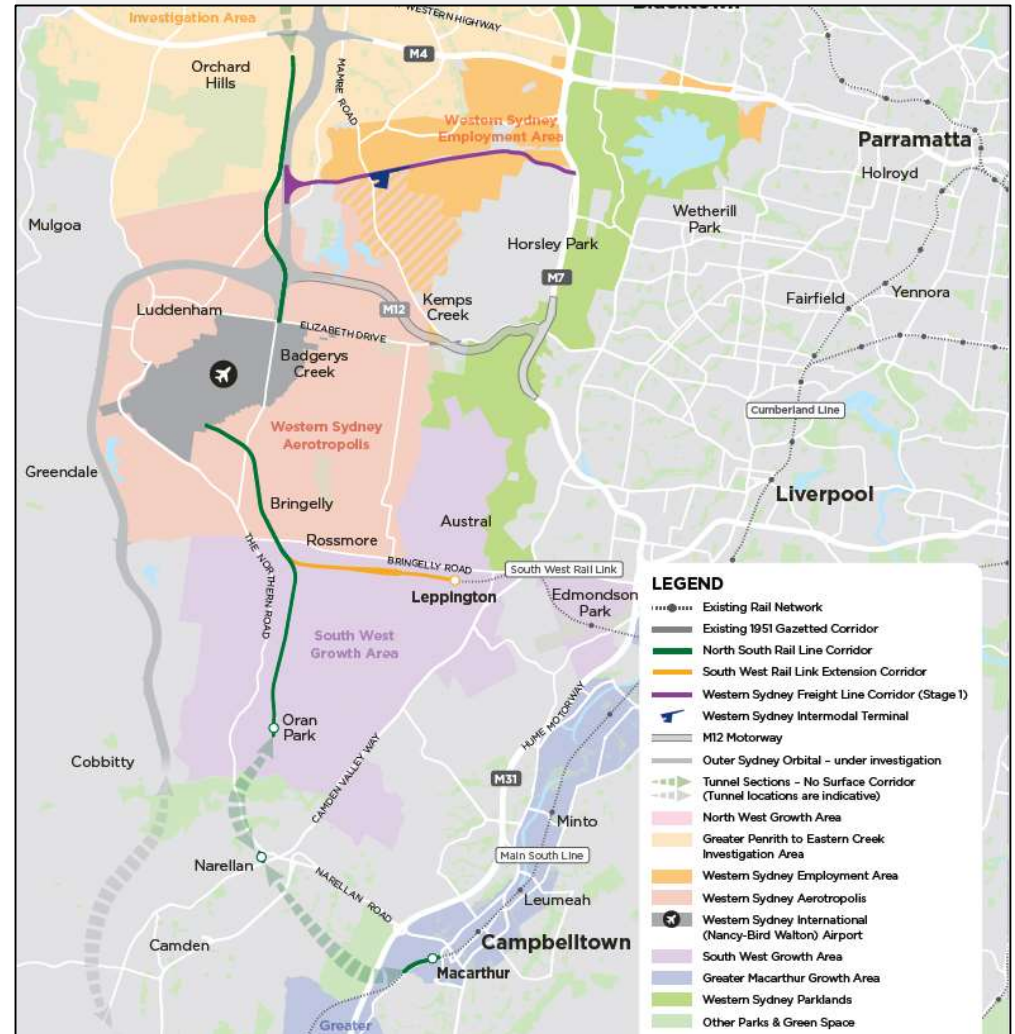
PLANNED UPGRADES

PLANNED UPGRADES

Figure 6 displays the Future Transport Links for Western Sydney, Transport for NSW provides high-level guidance for the future links to South West Growth Area, Western Sydney Aerotropolis and North West Growth Area. The transport upgrades outlined in this plan include

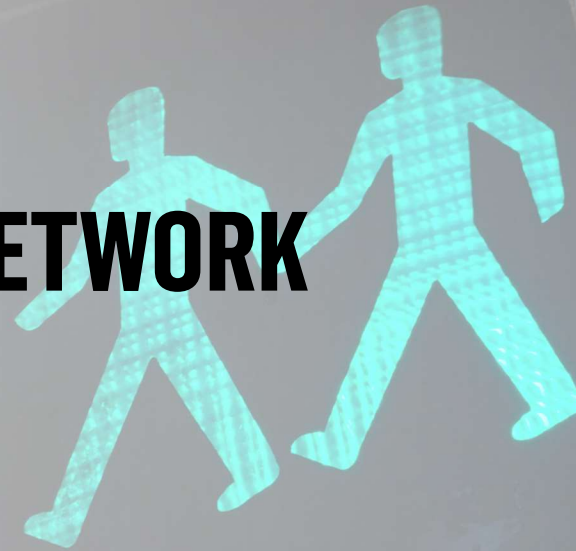
- The Southwest Rail Link Extension corridor will provide for the extension of the existing passenger rail line from Leppington Station to the Aerotropolis.
- The North-South Rail line corridor will provide an important transportation link between the Northwest, Western Sydney Airport, the Southwest and greater Macarthur growth areas. The service will provide transportation options to support western Sydney's population growth, jobs and economic growth across western Sydney.
- A new rail link connecting the Western Sydney International (Nancy-Bird Walton) Airport to the T1 Rail Line at St Marys Station. The link will provide mass rapid transport access to the new airport and supports the vision for a 30-minute city and will be operational when Western Sydney Airport opens for passenger services.
- North South Rail Link – Bradfield to Macarthur, Extension of Western Sydney Aerotropolis (stage 1) metro line from the Aerotropolis to Macarthur to increase accessibility from new areas of the southwest to T2 and T5 Rail Lines.
- Rapid Bus Services, Rapid Transit services are proposed to connect the centres of Liverpool, Campbelltown, Greater Penrith, Blacktown and the Airport.
- Rickard Road extension to the south between Ingleburn Road and Springfield Road, which is proposed to include a corridor of 34.9 metres, dedicated bus lanes in each direction, and active transport infrastructure.
- The Bringelly Road upgrade will deliver new and upgraded roads to support integrated transport in the region and capitalize on the economic benefits from developing the Western Sydney Airport at Badgerys Creek. It will also improve safety, increase road capacity and reduce congestion and travel times in the future.

FIGURE 6 PLANNED TRANSPORT LINKS



Source – Transport for NSW – Future Transport Links Western Sydney

4. EXISTING TRAFFIC NETWORK



4. EXISTING TRAFFIC NETWORK

BASE TRAFFIC VOLUMES

The base case scenario volumes for 2031 and 2041 were sourced from TfNSW’s EMME Strategic Traffic Forecasting Model (STFM) data. The assumptions used for calculating the base traffic volumes are listed in **Section 8** of the report. Since the strategic model outputs are modelled for two hours, to calculate the one-hour volumes, the model volumes were multiplied by 0.55.

FIGURE 7 2031 AM & PM PEAK HOUR BASE TRAFFIC VOLUMES

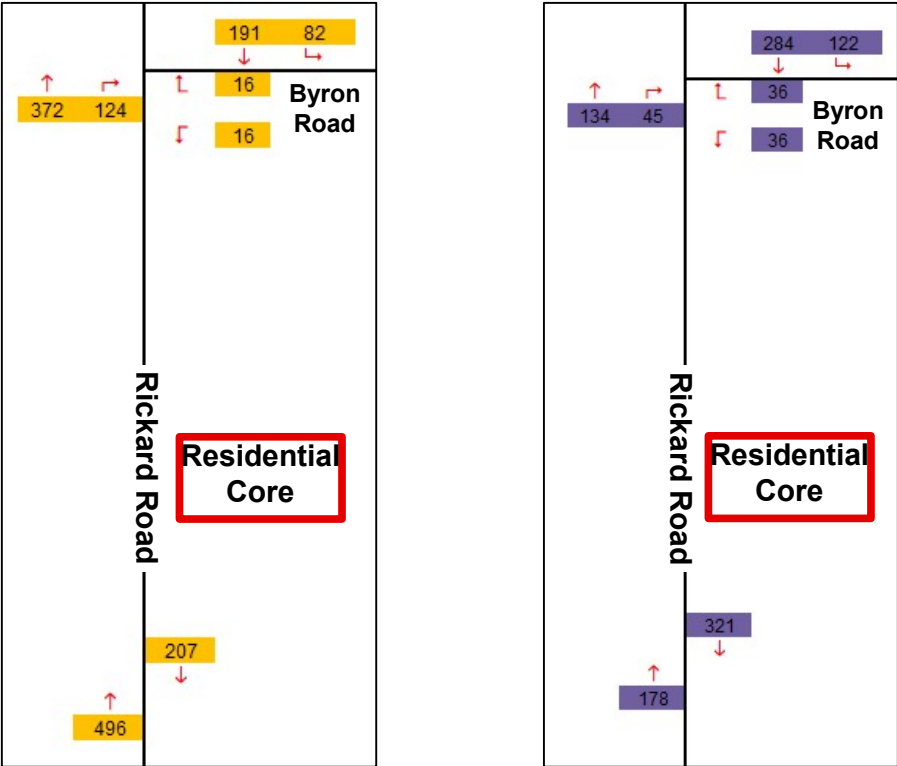
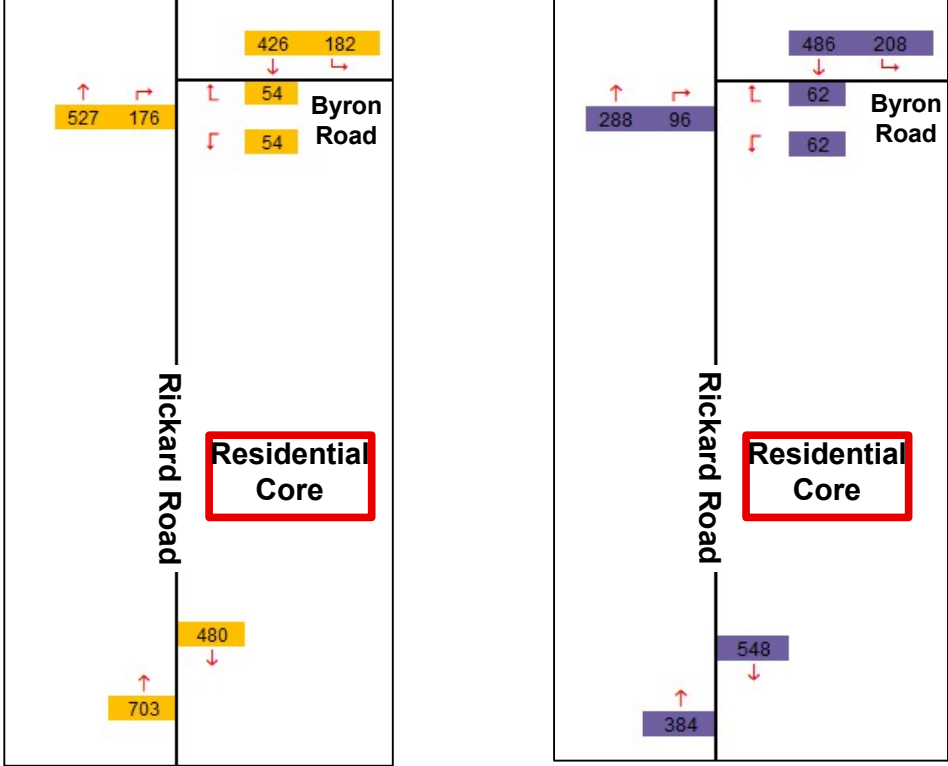


FIGURE 8 2041 AM & PM PEAK HOUR BASE TRAFFIC VOLUMES



Source –Transport for New South Wales (TfNSW) EMME Strategic Traffic Forecasting Model (STFM) data modified by Urbis

- AM peak volume
- PM peak volume

EXTERNAL INTERSECTION OPERATION

INTERSECTION OPERATION

Using the data obtained from TfNSW's STFM model, the operation of the key external intersections fronting the subject site has been assessed using SIDRA Intersection. The commonly used measure of intersection performance, as defined by TfNSW, is vehicle delay. SIDRA determines the average delay that vehicles encounter and provides a measure of the level of service (LOS).

SIDRA INTERSECTION results for key intersections surrounding the site for 2031 Base are shown in Table 5, which provides a summary of the operation of the intersections. Based on the results shown below, the base models are operating at a LOS (Level of Service) of A.

TABLE 5 EXTERNAL INTERSECTION OPERATION 2031

Intersection ID	Location (ID)	Time	Level of Service	Degree of Saturation	Average Delay (s)	Average Queue Length (m)
2031 Base						
1	RR / BR	AM Network Peak	A	0.256	2 s	1 m
1	RR / BR	PM Network Peak	A	0.199	2 s	4 m
2041 Base						
1	RR / BR	AM Network Peak	A	0.380	2 s	5 m
1	RR / BR	PM Network Peak	A	0.415	3 s	17 m

RR – Rickard Road, BR – Byron Road, WC – West Connector

Note – For this modelling exercise, it was assumed that during the peak hour, 20 buses will operate along the Rickard Road Corridor. Additionally, a flat percentage of 5% was assumed for heavy vehicles.

4. EXISTING TRAFFIC NETWORK

GROWTH IN THE AREA

LOCAL GROWTH

The subject site is zoned for commercial/business park, as shown in **Figure 9**. Business Park zones provide for a variety of industrial uses including neighbourhood shops, office premises, and light industries.

The Leppington Town Centre has been earmarked as a future strategic centre by Liverpool Council. Along with Australia as a whole, population growth for Greater Sydney was affected by the COVID-19 pandemic. However, outer greenfield areas such as Camden have been capturing a larger share of Sydney's growth both before and after the pandemic. **Table 6** illustrates the expected population growth patterns for the Leppington Town Centre and its primary catchment.

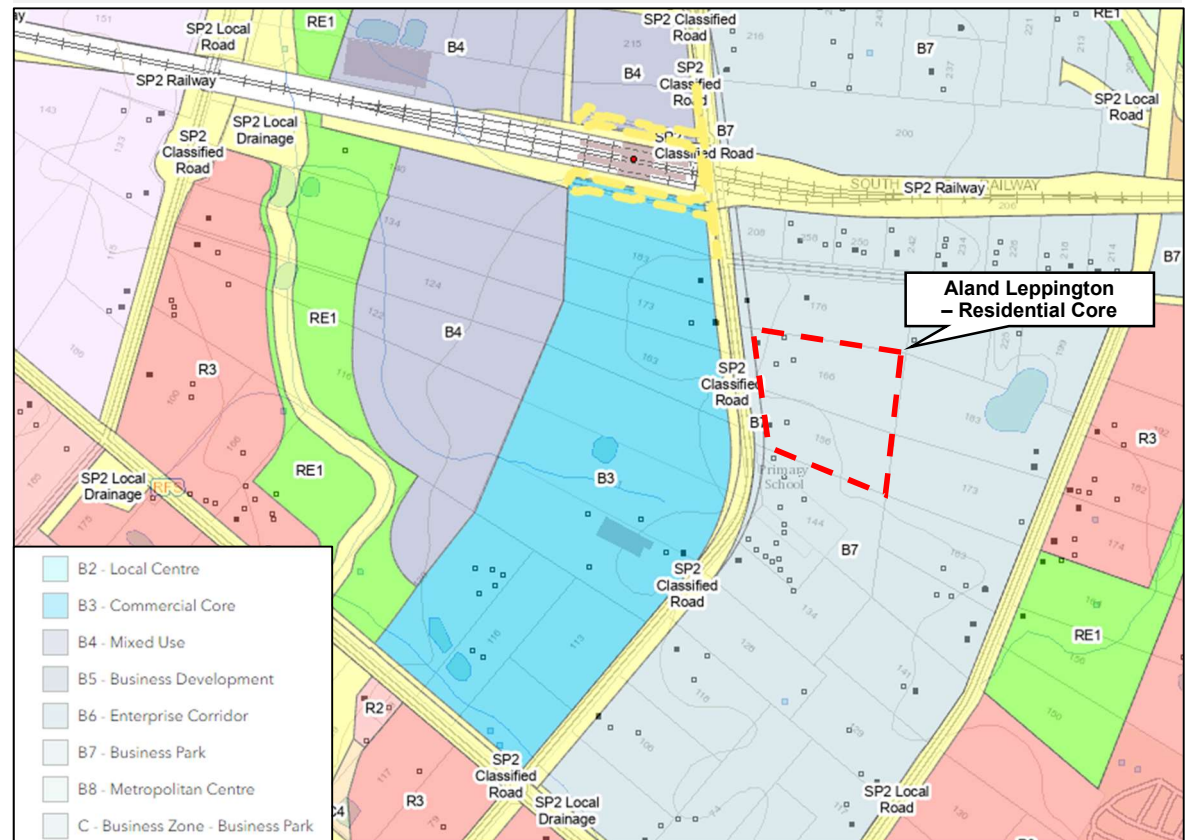
TABLE 6 FORECAST GROWTH (PRIMARY CATCHMENT / LEPPINGTON TOWN CENTRE)

	2021	2031	2041	2051
Population (PC)	11,704	32,901	87,904	124,988
Dwellings	4,680	13,273	35,013	49,726
Population (LTC)	522	4,200	18,185	32,761
Dwellings	251	1,801	7,601	13,701

Note: The primary catchment area includes the LTC and the suburbs of Leppington, Rossmore, Austral, and part of West Hoxton.

Source – Draft Leppington Site A and B Summary Report, Macroplan, July 2023

FIGURE 9 COUNCIL ZONING



Source: NSW planning portal spatial viewer modified by Urbis



5. STAKEHOLDER CONSULTATION

5. STAKEHOLDER CONSULTATION

STAKEHOLDER CONSULTATION

TFNSW CONSULTATION

As a part of this assessment the project team has consulted with Transport for New South Wales (TfNSW). Two key items were identified in regard to the Leppington Town Centre.

1. The future character and function of Rickard Road
2. Pedestrian permeability and access to the train station

Rickard Road is envisioned as a transit boulevard that provides for buses travelling every 10-15 minutes. It will facilitate quick and easy transport opportunities for people living in the town centre and prioritise public transport opportunities instead of private vehicle dominance.

Pedestrian permeability is a key aspect of the project, unlocking active transport accessibility and increasing amenity values for residents and visitors. Providing pedestrian access to the Leppington Train Station is integral to the project.

The connection will help facilitate public transport patronage for the new development by instilling an expectation in new residents that public transport is readily available and often the best option for daily trips.



Source – Aland Leppington Civic Centre Masterplan Report



6. DEVELOPMENT PROPOSAL

THE PROPOSAL – LEPPINGTON TOWN CENTRE MASTERPLAN

OVERVIEW

The Leppington Town Centre Residential Core Masterplan proposal will provide a mixed-use precinct that builds upon the newly opened Leppington Station. It will involve the following

- The provision of 3,016 sqm of retail space.
- A total of 1,305 dwellings on site.

Figure 10 shows the subject site along Rickard Road, Leppington and the surrounding context.

The proposal is built around the public transport node, enabling the strategic centre to grow with additional residential and retail uses and diversifying employment opportunities to attract new residents in the region. The proposal also seeks to address the shortage of residential options in the region through the introduction of high-quality residences and diverse housing typologies, making Leppington an attractive home to a more diverse range of people with easier access to services and employment hubs

The proposal aims to contribute positively to the Leppington Strategic Centre. Improved streetscapes are integral to the project, enabling walkability, places for pedestrians to dwell, and ease of access. The proposal also seeks to provide new public open space that is integrated with an improved pedestrian network. This will increase the accessibility and permeability of the Leppington transport network.

FIGURE 10 PROPOSED ALAND MASTERPLAN



Source – Aland Leppington Residential Core Masterplan Report

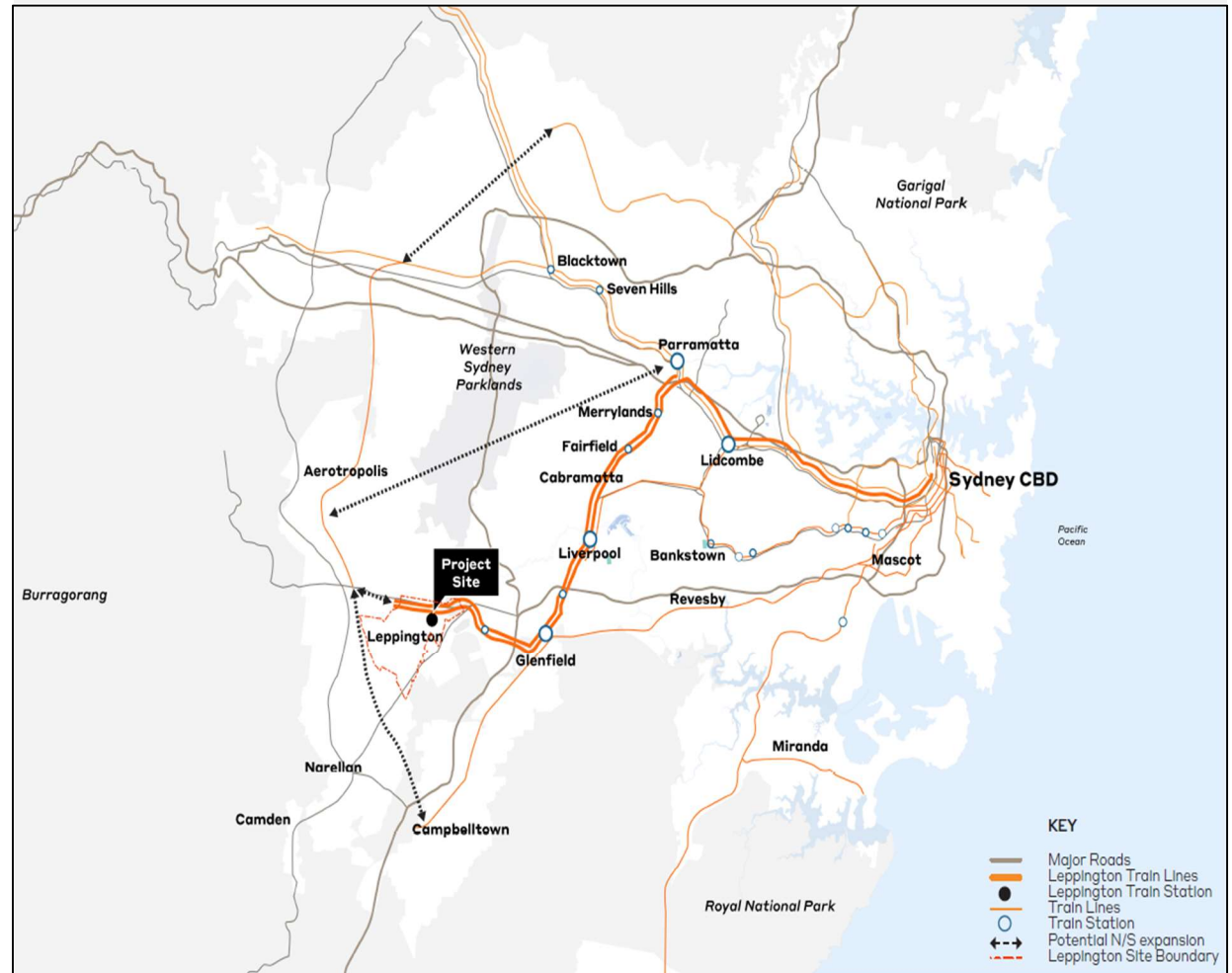
STRATEGIC TRANSPORT CONTEXT

TRANSPORT CONTEXT

The suburb of Leppington forms part of the City of Camden with a minor portion located within the Liverpool Council and sits approximately 40 km southwest of central Sydney. The Western Sydney Airport is about 12 km to the north, with Bringelly Road and Camden Valley Way serving as the main road connections to the Western Motorway and the rest of the region.

Leppington has an opportunity to develop into a thriving transport hub. Several infrastructure prospects will help facilitate this. These include a link south to Macarthur, a Southwest Rail Link to the airport, and a future rail connection providing rapid services between the airport, Aerotropolis, and the Parramatta CBD.

FIGURE 11 SITE MAP IN CONTEXT OF BROADER TRANSPORT CORRIDOR



Source – Aland Leppington Residential Core Masterplan Report



7. DEVELOPMENT STAGING

PROPOSED ROAD NETWORK

PROPOSED ROAD NETWORK OVERVIEW

Figure 12 shows an indicative road layout for the Leppington Town Centre.

The road network will prioritise trips where Leppington is the destination over trips that are not destined for the town centre. Aiming to prioritise local movement and trips that benefit Leppington over trips that only use Leppington as a faster travel route to a different destination.

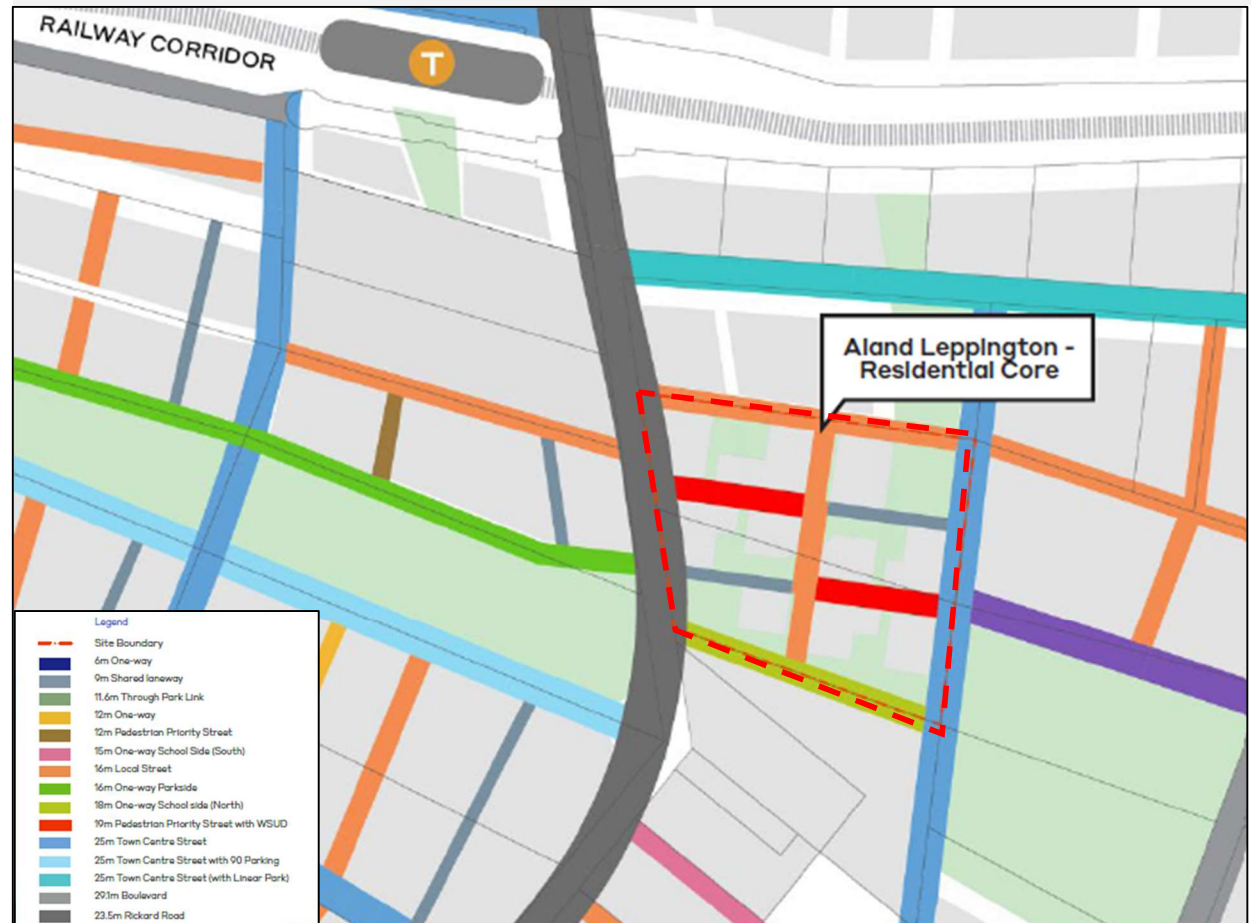
The following points are of note

- Footpaths are provided on both sides of all streets.
- Through site links are provided for large blocks on key desire lines.
- Off-road cycling access is provided through green links along the southern side of the rail corridor.
- East-west cross links are provided through open space areas, as well as longer north-south district level connections.
- Rickard Road is a transit boulevard that connects the suburb to the town centre via Bringelly Road, as well as Leppington to the south and Austral to the north.

Additionally, adjustments have been made to the road network proposed within the Council's planning proposal, in consideration of the following

- Create a better pedestrian-friendly town centre in line with TfNSW comments
- Align roads with cadastral lot boundaries

FIGURE 12 LEPPINGTON TOWN CENTRE PROPOSED ROAD NETWORK



Source – Aland Leppington Residential Core Masterplan Report modified by Urbis

MOVEMENT AND PLACE ASSESSMENT

MOVEMENT & PLACE OVERVIEW

Figure 13 illustrates the movement and place classifications for the road network surrounding the subject site. The majority of roads in the local area are classified as local streets. The connector avenues and transit boulevards are the exception. Rickard Road itself is a transit boulevard shown as the centre spine of this map.



Yield Street Example

Source – NSW Government



Connector Street Example

Source – NSW Government

FIGURE 13 MOVEMENT & PLACE CONTEXT



Source – Aland Leppington Residential Core Masterplan Report modified by Urbis

7. DEVELOPMENT STAGING

MOVEMENT AND PLACE ASSESSMENT

MOVEMENT & PLACE OVERVIEW

Figure 14 illustrates movement and place classifications as provided by the New South Wales government.

The Residential Core site will have 19 m Pedestrian Priority Streets and 9 m Shared Laneways running through it from east to west, with 16 m Local Streets running from north to south. The Pedestrian Priority Streets are classified as Residential Ways in the Movement and Place Framework.

In the urban context, these streets typically consist of

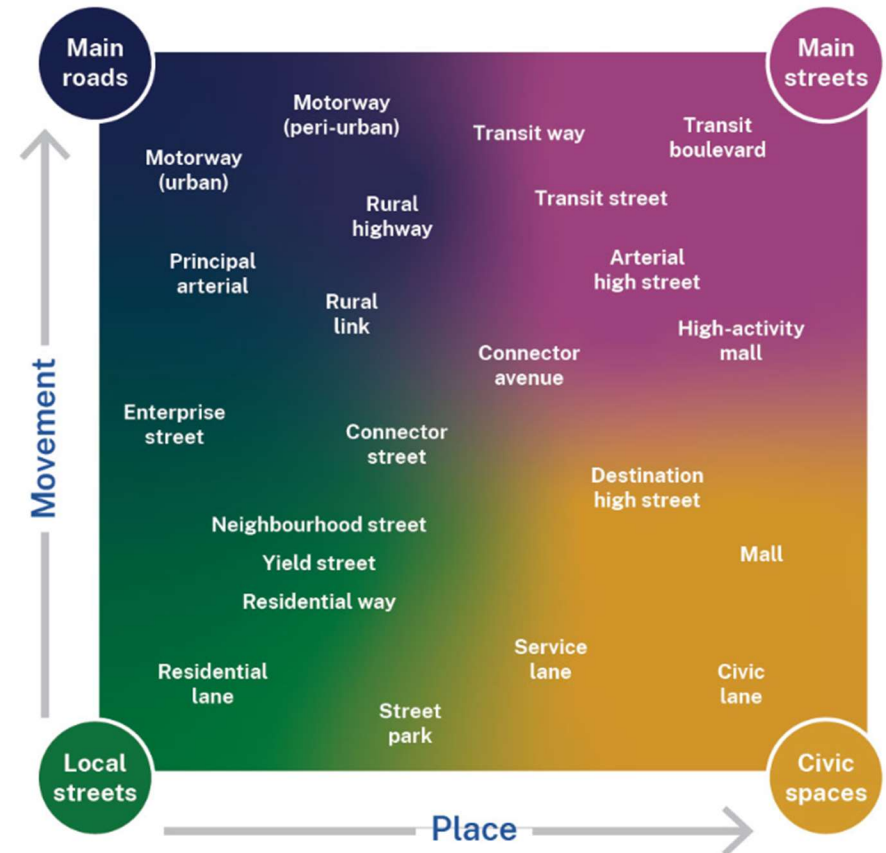
- A 9-10 m street reserve
- Front access to rear-accessed lots
- Occasional parking gaps allow for passing opportunities

A Residential Way example is below



Source – Google Maps Streetview

FIGURE 14 MOVEMENT & PLACE CONTEXT



Source – Movement and Place Framework, NSW Government website

PUBLIC TRANSPORT

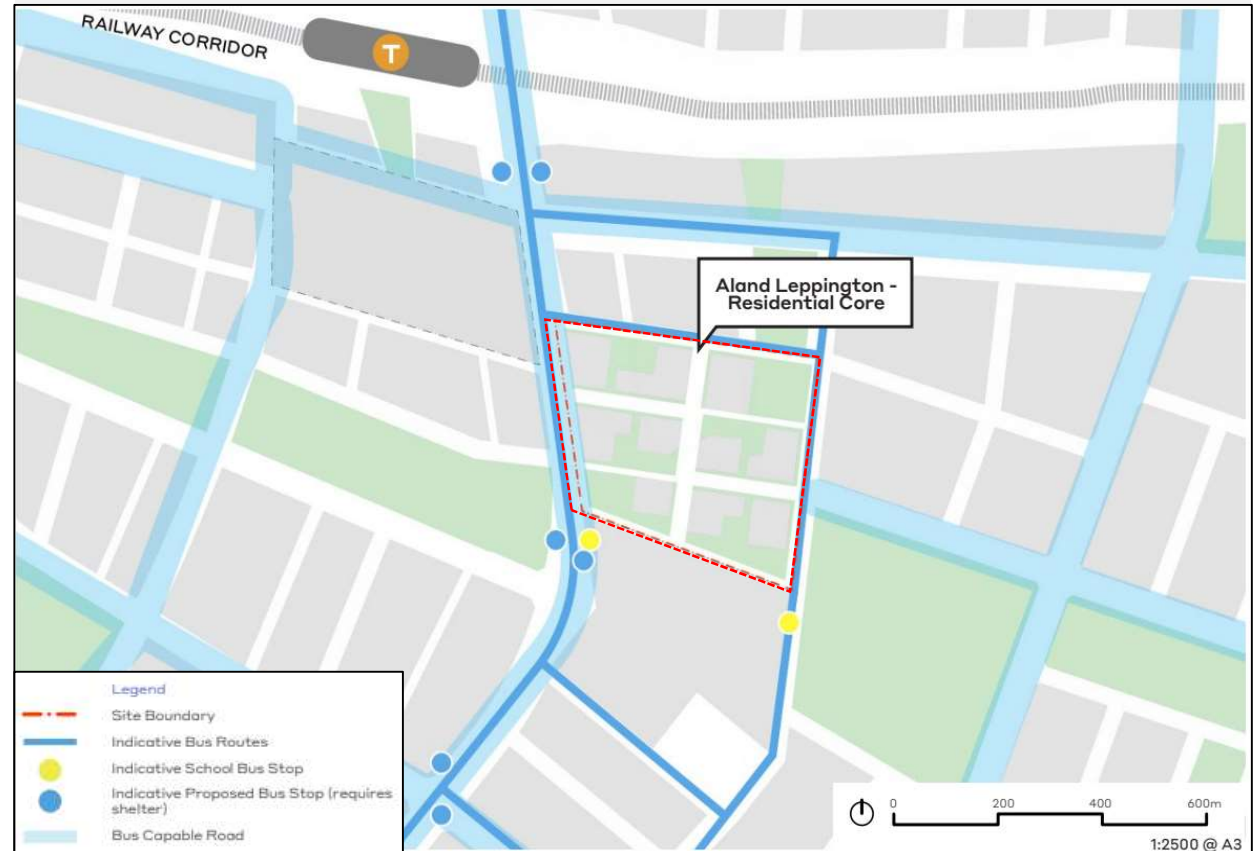
PUBLIC TRANSPORT DELIVERY OVERVIEW

Figure 15 shows the proposed public transport network for the Leppington Town Centre, including bus-capable roads, indicative bus routes and proposed bus stops.

A bus interchange is located directly south of Leppington Train Station which allows buses to complete full turning movements by using a roundabout. The interchange will not be required over the long term as this land is expected to be redeveloped. Buses will switch to through-routing once this interchange is no longer available.

The site is in proximity to the school bus stop and 2 proposed public bus stops. Residents and visitors will have robust and accessible connections to public transport facilities including Leppington Train Station. Students and caregivers will have reliable public transport access to the Leppington Public School located to the south of the site.

FIGURE 15 PUBLIC TRANSPORT

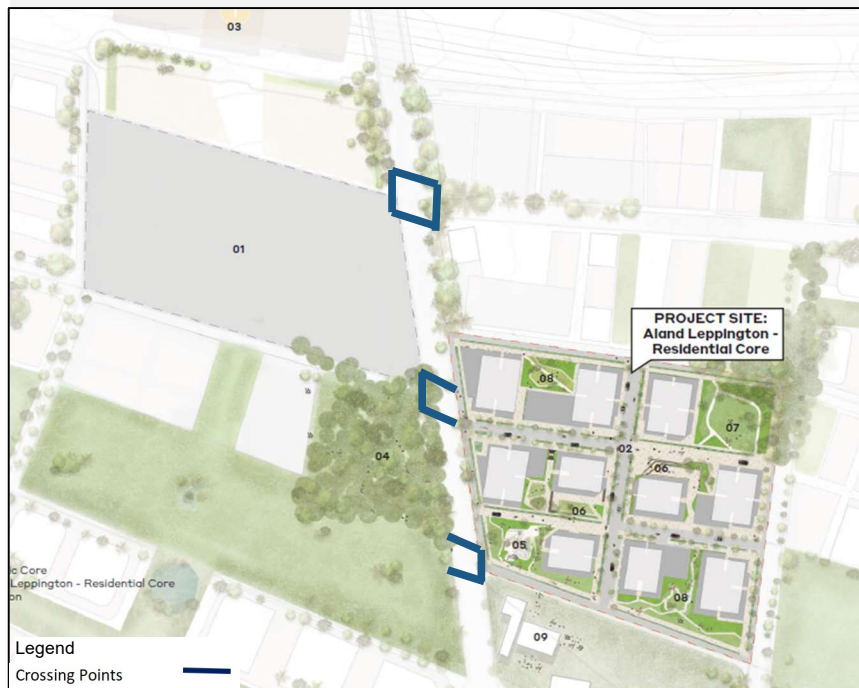


Source – Aland Leppington Residential Core Masterplan Report modified by Urbis

ACTIVE TRANSPORT (WALKING)

Figure 16 illustrates the locations of the signalised foot crossings the subject site will have access to. These crossing points sit on Rickard Road and provide permeability for residents who need to travel to Leppington Train Station. All intersections on Rickard Road shown in the figure below will be signalised (3 in total) and therefore provide safe pedestrian access across all legs.

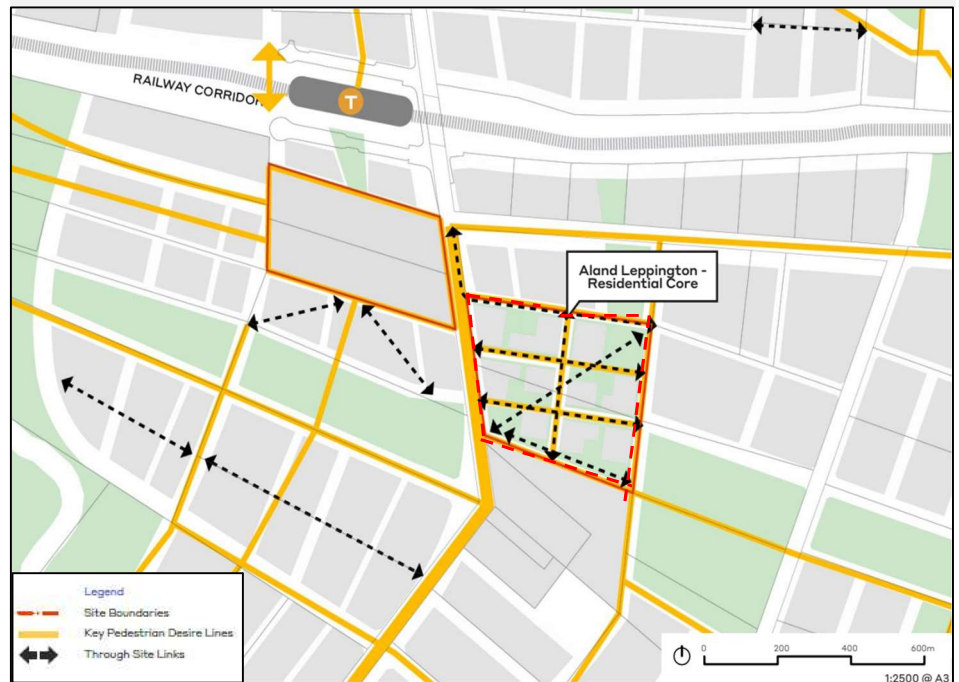
FIGURE 16 SIGNALISED PEDESTRIAN CROSSING POINTS



Source – Aland Leppington Residential Core Masterplan Report modified by Urbis
Leppington Residential Core Masterplan – Strategic
Transport Assessment

Figure 17 shows the pedestrian desire lines within and around the subject site. The site layouts aim to maximise pedestrian flows between north and south, facilitating reliable and safe access to the train station. The site includes pedestrian through site links across the middle of the block, minimising walking distances and setting a strong expectation around robust walking opportunities for a variety of trip types. Provisions have been made to accommodate school children and ensure safe walking options are available. The intersection closest to the Leppington Public School on Rickard Road will be signalised to provide safe accessibility for students and their caregivers.

FIGURE 17 PEDESTRIAN DESIRE LINES



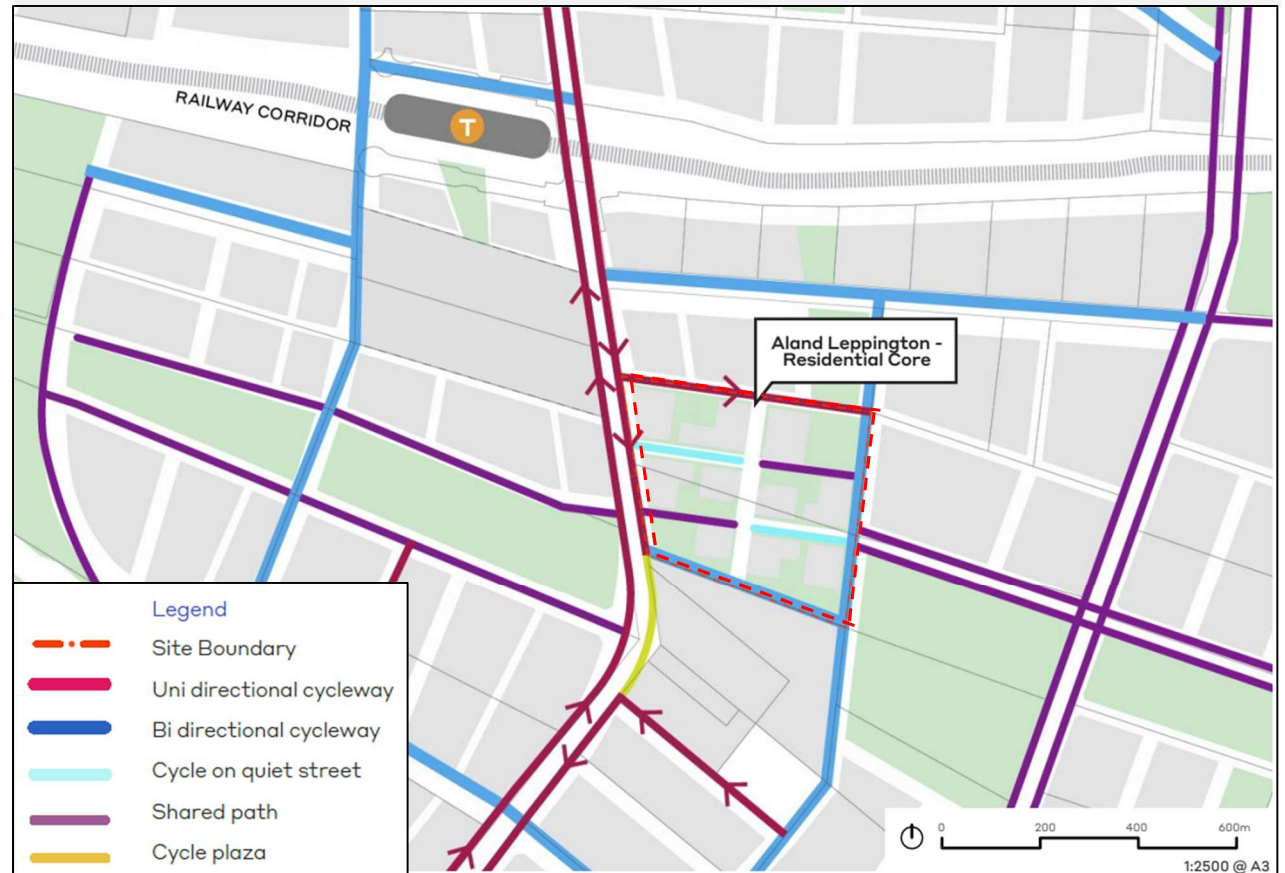
Source – Aland Leppington Residential Core Masterplan Report modified by Urbis

ACTIVE TRANSPORT (CYCLING)

CYCLING OVERVIEW

Figure 18 shows cycling provisions in and around the subject site. Internal shared paths are provided within the site boundary, with bi-directional cycleways bordering the south and east of the site. Uni-directional cycleways border the site on its northern side and run along the length of Rickard Road until the cycle plaza provision along the border of the Leppington Public School site.

FIGURE 18 CYCLING NETWORK



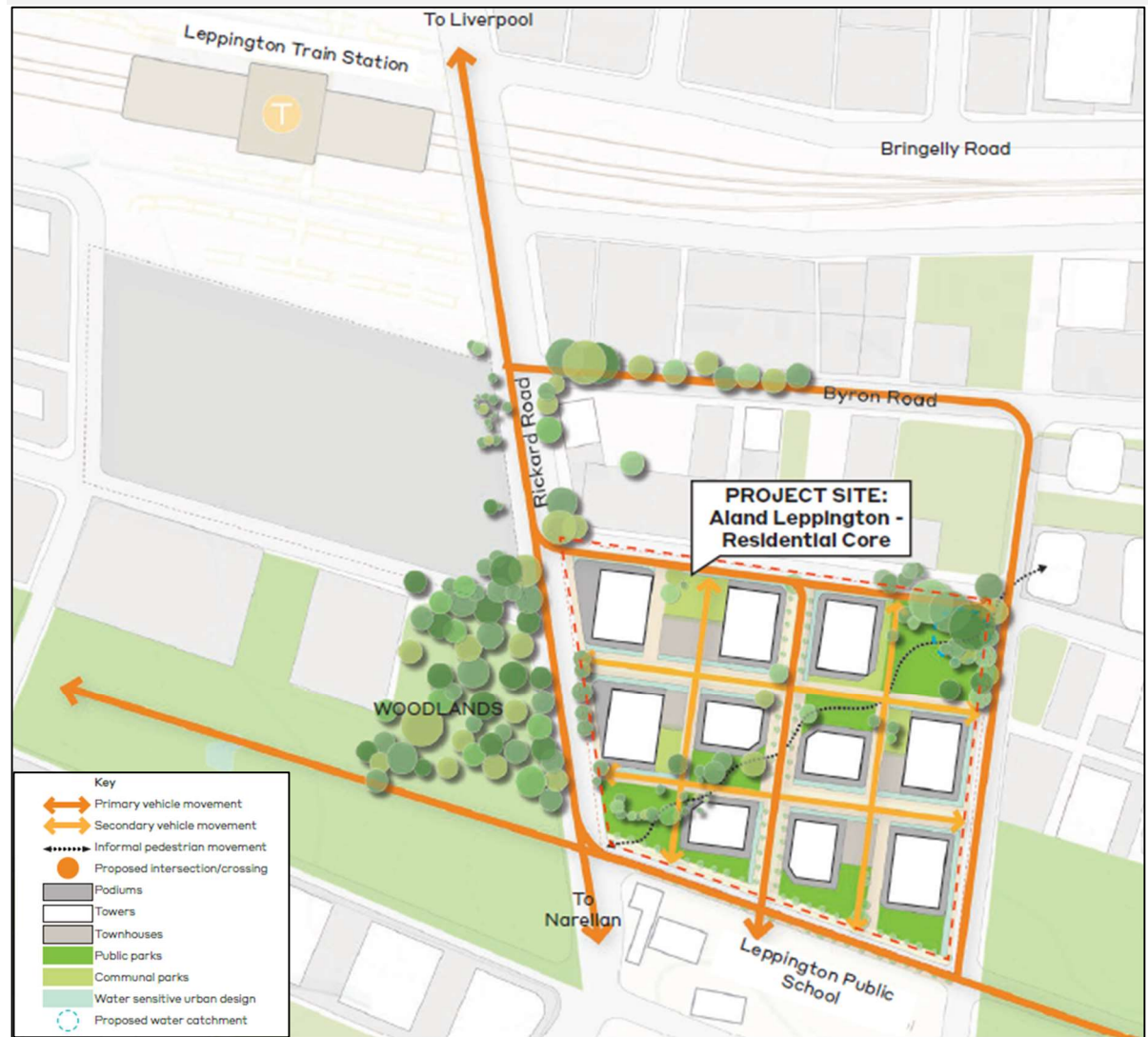
Source: Aland Leppington Residential Core Masterplan Report modified by Urbis

FREIGHT AND ACCESSIBILITY

FREIGHT AND ACCESSIBILITY OVERVIEW

Figure 19 shows accessibility movements for the subject site. The project aims to facilitate vehicle and freight movements where required while preserving the ability for pedestrians to move freely in and around the site, with particular emphasis on the connection between the subject site and Leppington Train Station, and the site and the Leppington Public School.

FIGURE 19 ACCESSIBILITY



Source – Aland Leppington Residential Core Masterplan Report



8. TRAFFIC GENERATION AND DISTRIBUTION

8. TRAFFIC GENERATION AND DISTRIBUTION

TRAFFIC GENERATED BY THE DEVELOPMENT IN 2031 & 2041

TRAFFIC GENERATION

The traffic generation rates for the proposed land uses were sourced from the *TfNSW guidelines to Traffic Generating Developments Technical Direction 2013/04a*. The specific traffic generation rates and the percentage split between AM and PM hours are provided in detail within **Table 7**. The subject site precinct is proposed to comprise 1,305 residential units and 3,016 sqm GFA of retail developments.

External trips generated will flow onto Rickard Road northbound towards Sydney or southbound towards Gregory Hills, Mount Annan and Campbelltown.

TABLE 7 TRAFFIC GENERATION RATES AND ASSUMED PERCENTAGE SPLIT DURING AM AND PM

Components	Daily Trips	Traffic Generation Rates		AM (% split)		PM (% split)	
		AM	PM	In	Out	In	Out
Residential	1.52 trips per units	0.19 trips per unit	0.15 trips per unit	20%	80%	80%	20%
Retail	5.6 trips per 100sqm	2.8 trips per 100 sqm *	5.6 trips per 100sqm	80%	20%	50%	50%

**The Guide to Traffic Generation Developments (TfNSW, 2002), provides a PM peak hour rate of 5.6 trips per 100sqm for supermarkets . We have adopted this rate for the PM peak hour and have assumed 50 per cent of this rate for the AM peak hour.*

TRAFFIC GENERATED BY THE DEVELOPMENT IN 2031 & 2041

ASSUMPTIONS

1. For 2031 and 2041 base case scenarios, traffic volumes were adopted from the Transport for New South Wales' (TfNSW) EMME Strategic Traffic Forecasting Model (STFM) data, noting that the overall development at the subject site is envisaged to be completed by the end of 2031. The STFM models are modelled for two-hour peak to captures the midblock volume, in this instance the AM and PM peak hours are between 7 AM - 9 AM and 4 PM – 6 PM. For this assessment, the model volumes were multiplied by a conservative factor of 0.55 to identify an hour-long single peak.
2. These base traffic volumes were subject to an additional reduction since the travel zone within which the subject site is situated in already encompasses the traffic generated by the proposed development. Therefore, the development traffic generation level for each peak hour period, as determined through the TfNSW Guide trip rates, was deducted from the base link volumes.
3. For the residential component of the development, the TfNSW guide recommends adopting 25% of trips to be internal trips. Based on the Human Movement Data study undertaken by Urbis average of 37 per cent of residents in Edmonson Park access the train station and bus precinct. Assuming that a similar 37 per cent of the trips generated within the development precinct will be the captured trips towards Leppington Train Station and Bus Precinct. Accordingly, there is a 12% reduction applied to residential trips (Total trips + 25% - 37%) and a 37 per cent reduction for commercial and retail trips.
4. The vehicle distribution percentage for Leppington Town Centre along Rickard Road and Byron Road was adopted based on the STFM model travel zone nodes (i.e. 3655 and 3658).
5. The development traffic is distributed based on the assumption that traffic from buildings 1, 2, 3,4 ,6, 7 & 8 will be utilising Rickard Road with some proportion utilising Byron Road and buildings 5, 7, 8, 9 & 10 will be using West Connector / Rickard Road with some proportion utilising Byron Road. It is assumed that the site-specific traffic will be utilising the shortest routes to their destinations. As such the following directional split is assumed:

Residential

- Inbound: 70 per cent from North (along Rickard Road) and 30 per cent from South (along Rickard Road)
- Outbound: 70 per cent to North (along Rickard Road) and 30 per cent to South (along Rickard Road)

Retail

- Inbound: 33 per cent from North (along Rickard Road), 33 per cent from South (along Rickard Road) and 33 per cent from East (along Byron Road) trips.
- Outbound: 33 per cent to North (along Rickard Road), 33 per cent to South (along Rickard Road) and 33 per cent to East (along Byron Road) trips.

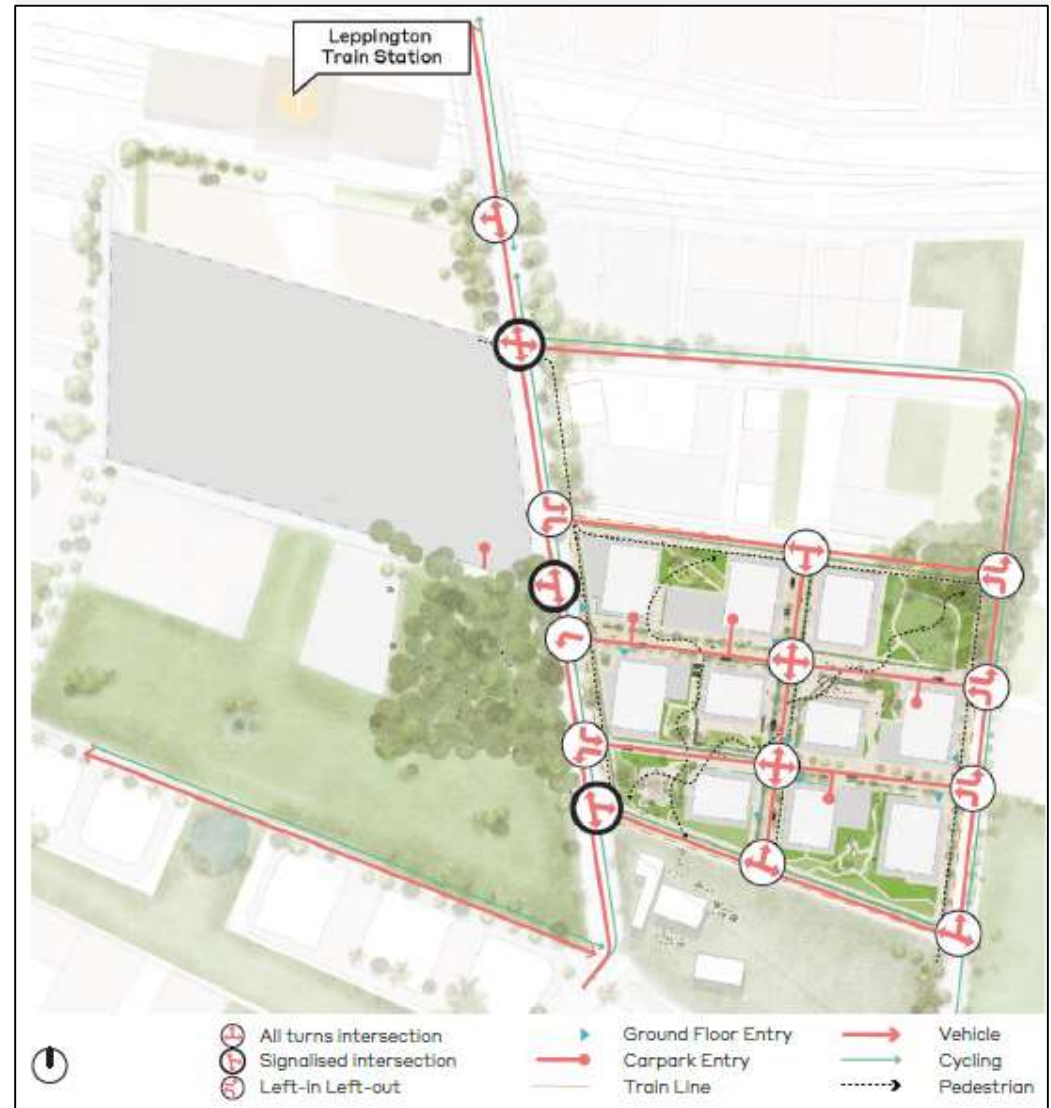
TRAFFIC ANALYSIS OF KEY INTERSECTIONS

KEY INTERSECTIONS

The three key intersections on Rickard Road that are proposed to be signalised are identified with circle outlines in **Figure 20**.

The aim of the proposed transport network is to impose a minimal impact on the existing arterial road network. Signalised intersections will permit all turning movements. However, all other intersections will only permit left-in and left-out turning movements which will not adversely impact the surrounding road network.

FIGURE 20 OVERVIEW OF MOVEMENT & ACCESS FOR RESIDENTIAL CORE PRECINCT

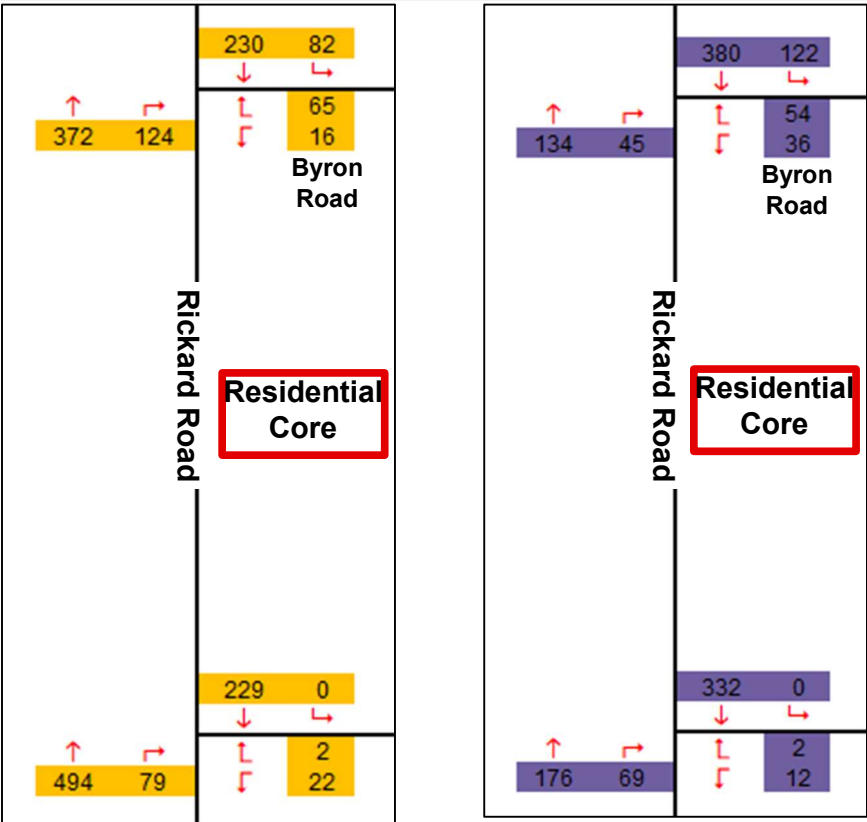


Source: Aland Leppington Residential Core Masterplan Report modified by Urbis
15/09/2023

KEY INTERNAL INTERSECTION VOLUMES 2031 & 2041

AM and PM peak hour external and internal vehicle movements for a weekday are summarised for each of the key intersections below. Refer to Appendix A for detailed lane configurations.

FIGURE 21 2031 BASE + DEVELOPMENT VOLUMES



Source – Urbis

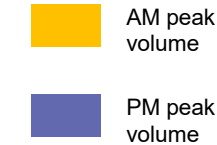
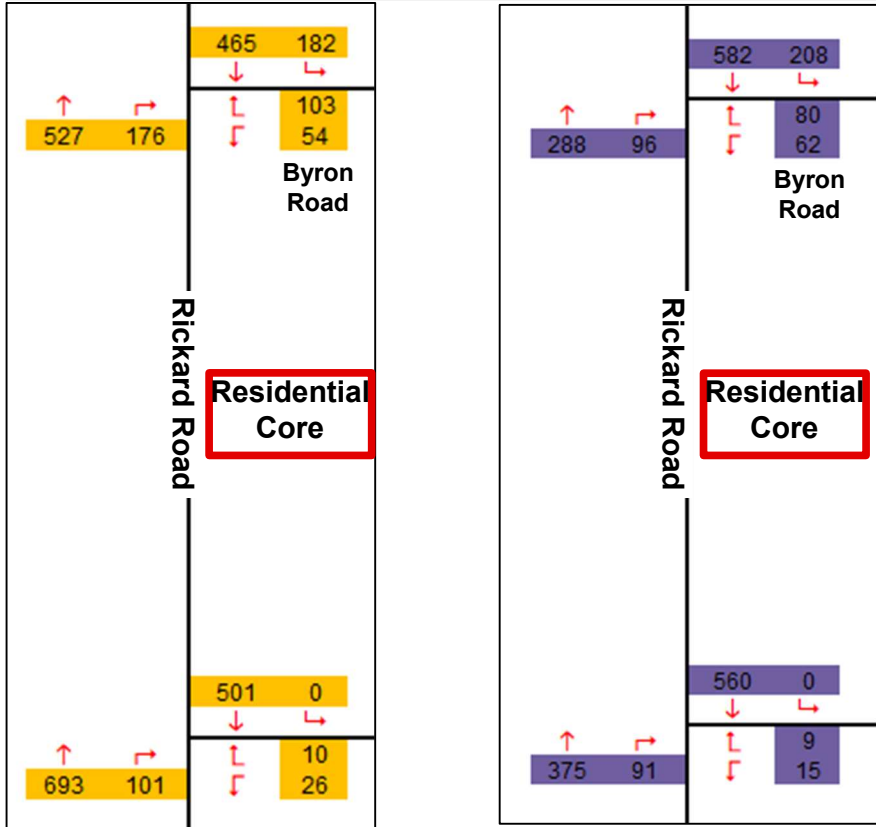


FIGURE 22 2041 BASE + DEVELOPMENT VOLUMES





9. INTERSECTION ANALYSIS

9. INTERSECTION ANALYSIS

EXTERNAL INTERSECTION OPERATION

INTERSECTION OPERATION

SIDRA Network results for two main signalised intersections to the site are shown in **Table 8**, which provides a summary of the operation of the intersections post development. Based on the results shown below, these intersections can sufficiently cater for the additional traffic demand generated by the proposal, without any significant delays or queuing.

TABLE 8 EXTERNAL INTERSECTION OPERATION 2031

Intersection ID	Location (ID)	Time	Level of Service	Degree of Saturation	Average Delay (s)	Average Queue Length (m)
2031 Base + Residential Core						
1	RR / BR	AM Network	B	0.272	22 s	32 m
2	RR/ EC	Peak	A	0.337	3 s	21 m
1	RR / BR	PM Network	C	0.447	33 s	66 m
2	RR/ EC	Peak	A	0.254	4 s	14 m
2041 Base + Residential Core						
1	RR / BR	AM Network	C	0.664	32 s	90 m
2	RR/ EC	Peak	A	0.531	4 s	44 m
1	RR / BR	PM Network	C	0.616	32 s	98 m
2	RR/ EC	Peak	A	0.429	4 s	30 m
RR – Rickard Road, BR – Byron Road, EC- East Connector						

Note – For this modelling exercise, it was assumed that during the peak hour, 20 buses will operate along the Rickard Road Corridor. Additionally, a flat percentage of 5% was assumed for heavy vehicles.

The background of the slide is a close-up, slightly blurred photograph of a document. It features a line graph with a jagged, upward-trending line. A silver pen is positioned in the upper right corner, pointing towards the graph. The document has a light blue grid. Faint numbers like '2,5' and '2,4' are visible on the left and right sides of the graph. The overall color palette is cool, with blues and greys.

10. LANE CAPACITY ANALYSIS

10. LANE CAPACITY ANALYSIS

NUMBER OF MIDBLOCK LANES REQUIRED FOR RICKARD ROAD

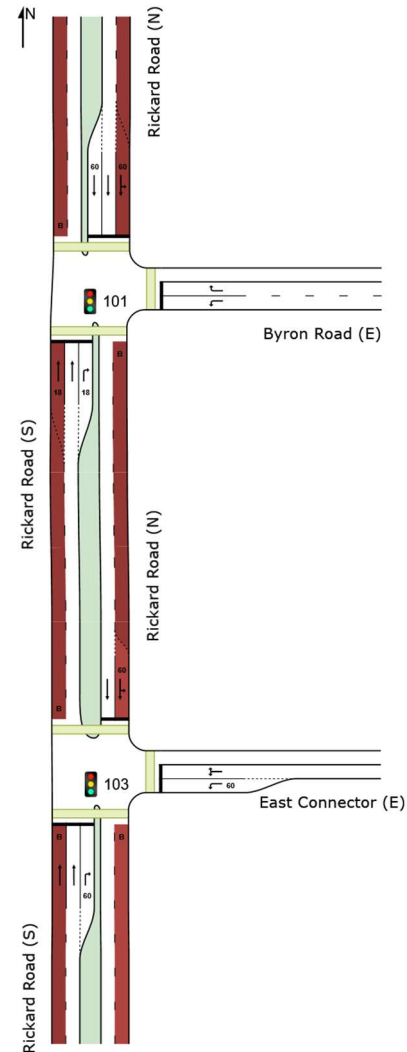
MIDBLOCK LANE ASSUMPTIONS

The number of midblock lanes required to serve the Residential Core of Aland Leppington precinct traffic was determined for the major collector road located along the proposal site. Rickard Road requires one lane for vehicles and a separate bus lane in each direction to function effectively, however short turning lanes will be provided to minimise any delays that can be caused by inbound traffic to the precinct. The configuration of Byron Road would consist of two traffic lanes on the eastern approach and one lane from the west approach along with a short right turn lane.

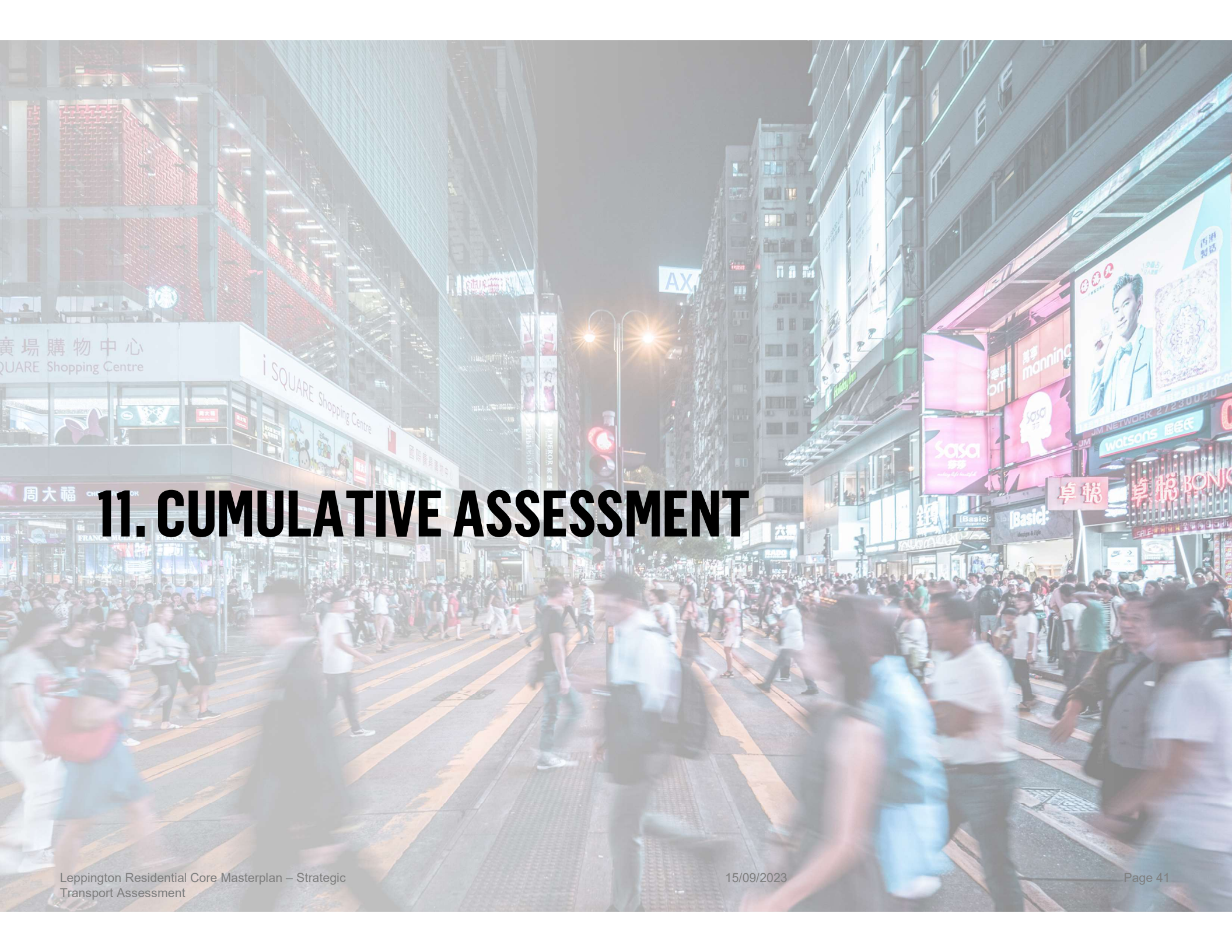
The East Connector will comprise of three vehicle lanes. One left turn lane and one right turn lane onto Rickard Road, with a single lane providing access from Rickard Road onto the East Connector.

Based on a lane capacity of 900 vehicles per lane per direction, the midblock lane requirements have been specified in **Figure 23**.

FIGURE 23 MIDBLOCK LANE REQUIREMENTS



Source – SIDRA Network, Urbis



11. CUMULATIVE ASSESSMENT

LEPPINGTON TOWN CENTRE – OVERALL MASTERPLAN ASSESSMENT

OVERVIEW

The Leppington Town Centre Masterplan proposal will provide a mixed-use precinct that builds upon the newly opened Leppington Station. It will involve the following

- The provision of 13,367 sqm GFA of commercial space and 12,785 sqm GFA of retail space at the Civic Centre Site.
- A total of 1,554 on-site dwellings at the Civic Centre Site.
- The provision of 3,016 sqm of retail space at the Residential Core Site.
- A total of 1,305 on-site dwellings at the Residential Core Site.

Whilst this report is for the Residential Core Planning Proposal, it also has considered the cumulative impact of Aland's other Planning Proposal site, the Civic Centre, that's being lodged simultaneously.

Figure 24 shows the subject sites along Rickard Road, Leppington.

This report has assessed transport impacts associated with the Residential Core site, which operates satisfactorily. The following section provides a cumulative assessment that examines impacts associated with the simultaneous provision of the Residential Core and Civic Centre sites.

The following slides detail traffic volumes, intersection volumes and the number of midblock lanes required on Rickard Road.

FIGURE 24 SITE CONTEXT



Source: Nearmap modified by Urbis

BASE TRAFFIC VOLUMES

FIGURE 25 2031 AM & PM PEAK HOUR BASE TRAFFIC VOLUMES

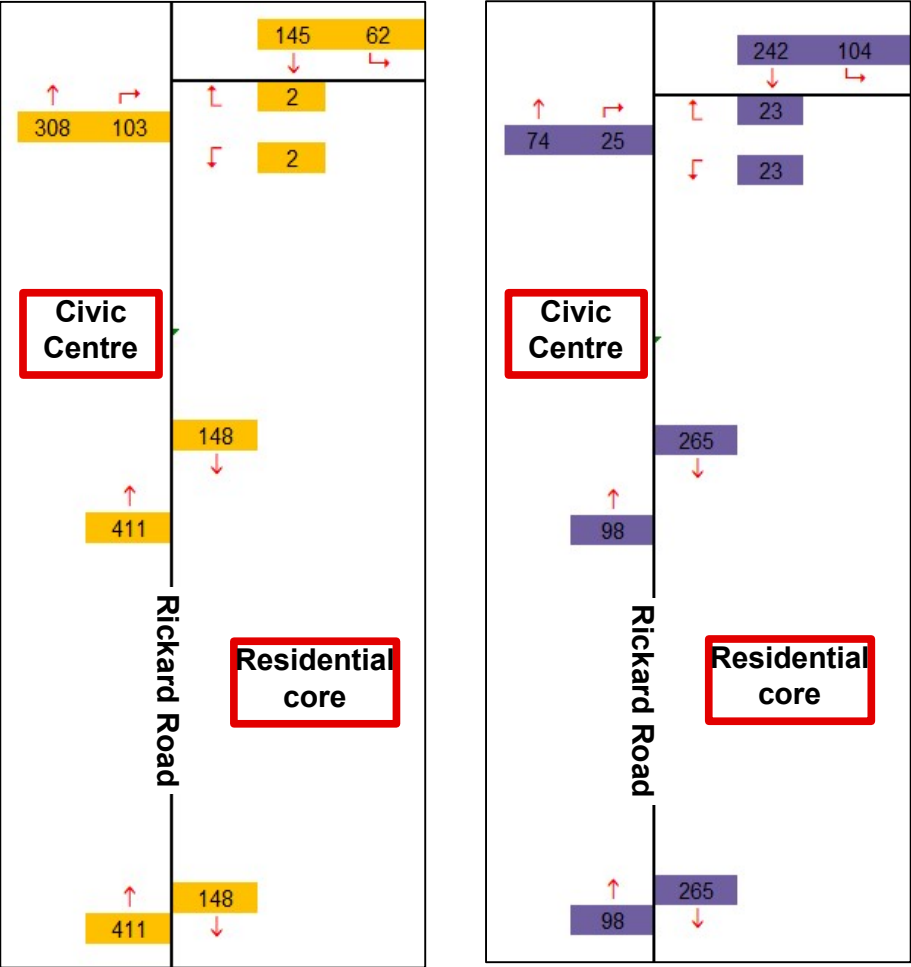
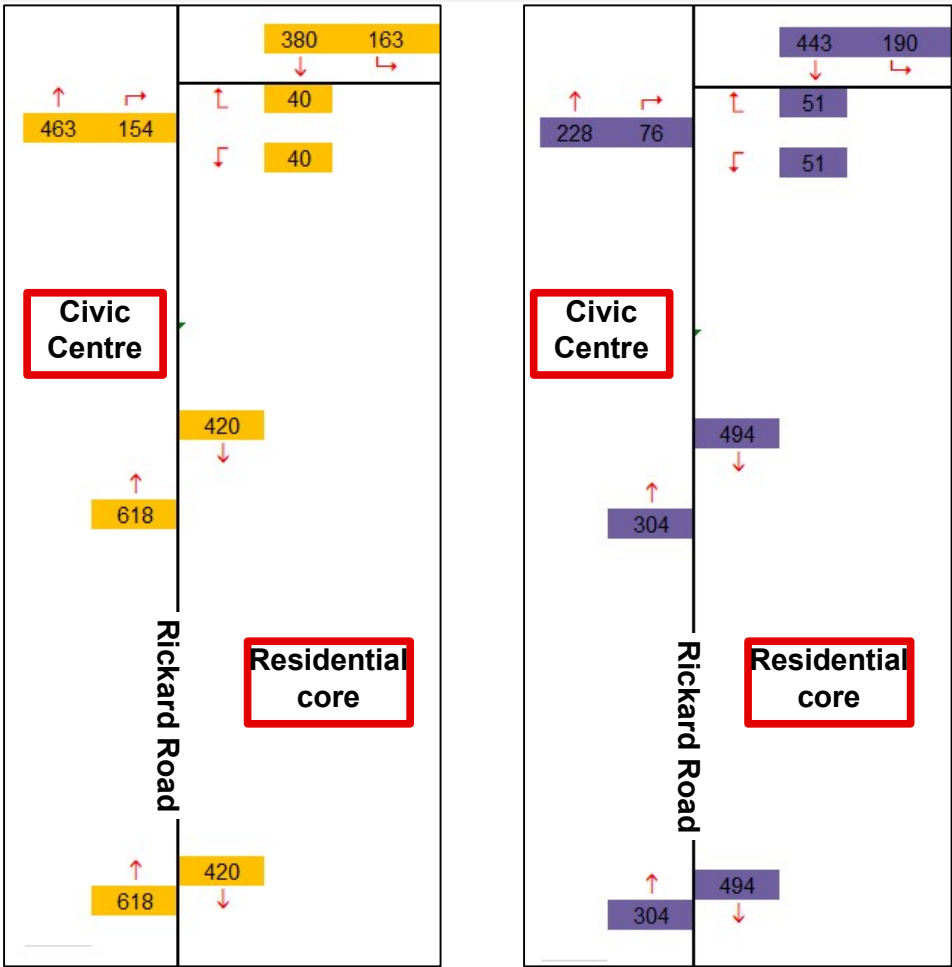


FIGURE 26 2041 AM & PM PEAK HOUR BASE TRAFFIC VOLUMES



Source –Transport for New South Wales (TfNSW) EMME Strategic Traffic Forecasting Model (STFM) data modified by Urbis

AM peak volume PM peak volume

KEY INTERNAL INTERSECTION VOLUMES 2031 & 2041

FIGURE 25 2031 BASE + DEVELOPMENT VOLUMES

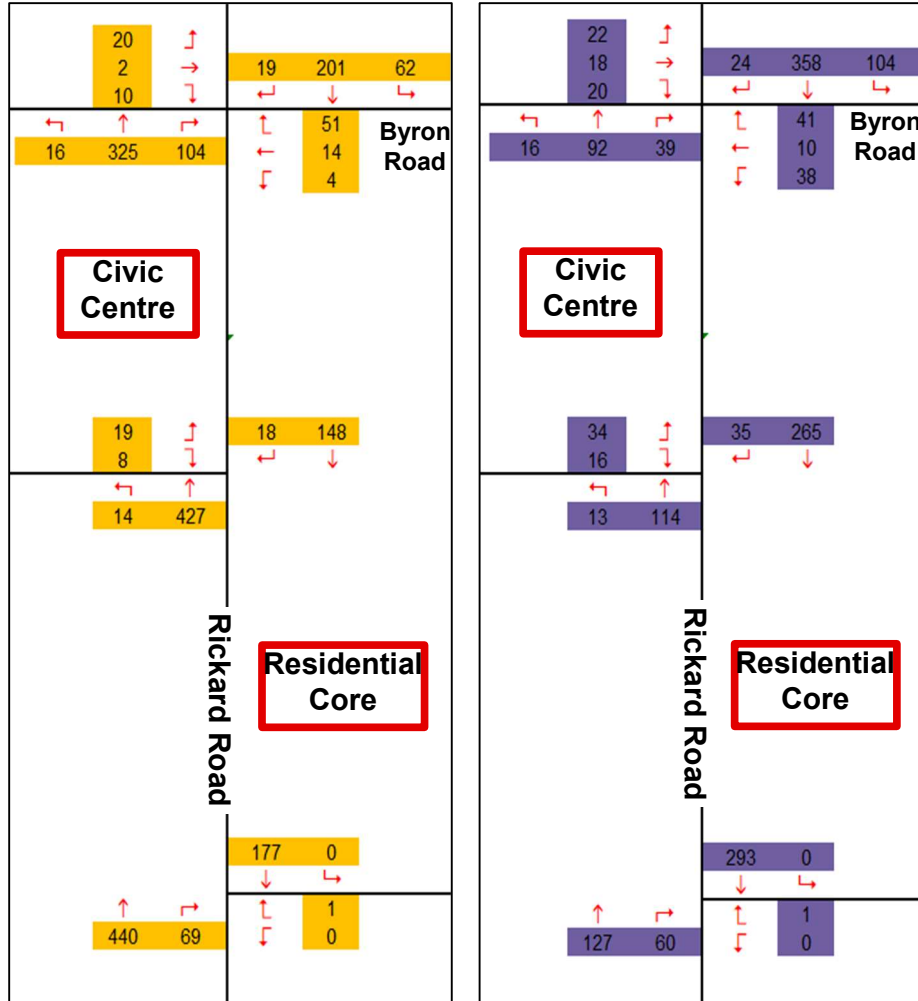
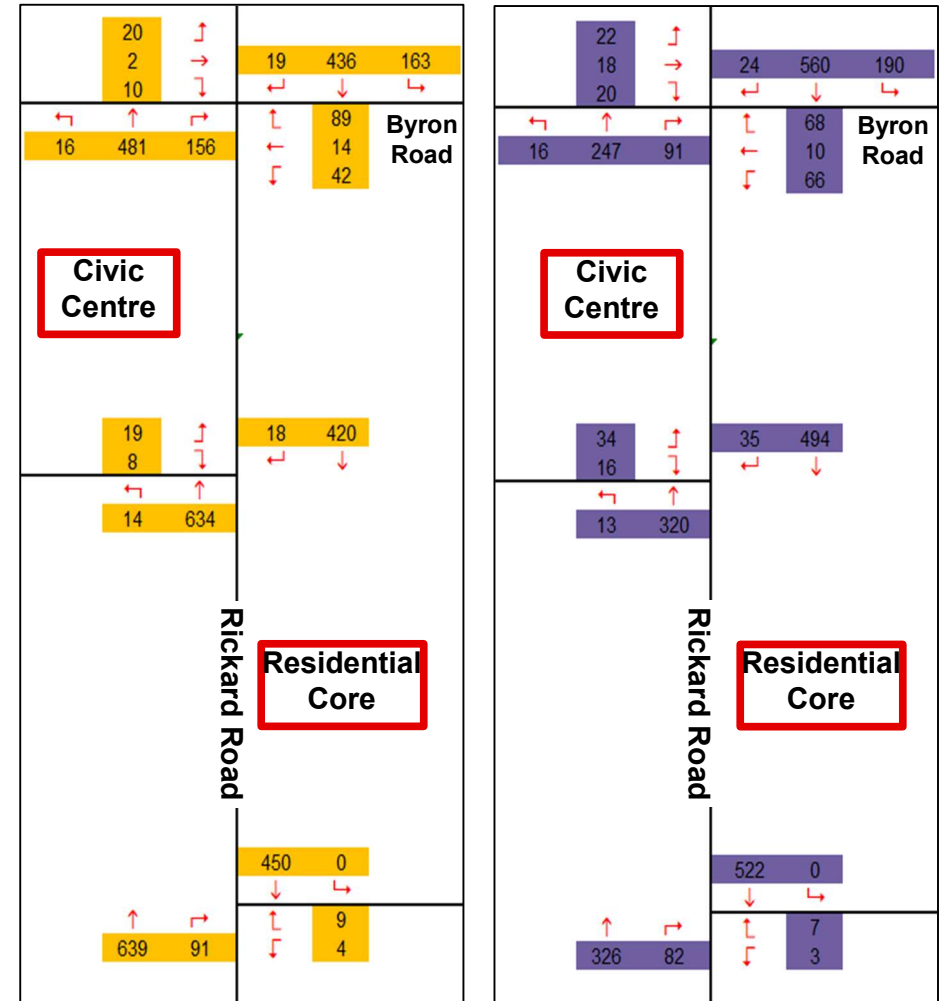


FIGURE 26 2041 BASE + DEVELOPMENT VOLUMES



20 AM peak volume
22 PM peak volume

EXTERNAL INTERSECTION OPERATION

INTERSECTION OPERATION

SIDRA Network results for the signalised intersections along the Rickard Road corridor for the Leppington Town Centre as a whole (Civic Centre and Residential Core) are shown in **Table 9**. Based on the results shown below, these intersections can sufficiently cater for the additional traffic demand generated by Leppington Centre as a whole, without any significant delays or queuing.

TABLE 9 EXTERNAL INTERSECTION OPERATION 2031

Intersection ID	Location (ID)	Time	Level of Service	Degree of Saturation	Average Delay (s)	Average Queue Length (m)
2031 Base + Residential Core + Civic Centre						
1	RR / BR	AM Network	C	0.421	32 s	81 m
2	RR/ WC	Peak	A	0.327	4 s	20 m
3	RR / EC		A	0.337	3 s	21 m
1	RR / BR	PM Network	C	0.457	30 s	86 m
2	RR/ WC	Peak	A	0.203	5 s	11 m
3	RR / EC		A	0.224	3 s	12 m
2041 Base + Residential Core + Civic Centre						
1	RR / BR	AM Network	C	0.696	32 s	135 m
2	RR/ WC	Peak	A	0.485	3 s	38 m
3	RR / EC		A	0.489	3 s	38 m
1	RR / BR	PM Network	C	0.808	37 s	188 m
2	RR/ WC	Peak	A	0.378	4 s	25 m
3	RR / EC		A	0.400	3 s	27 m
RR – Rickard Road, BR – Byron Road, WC – West Connector, EC- East Connector						

Note – For this modelling exercise, it was assumed that during the peak hour, 20 buses will operate along the Rickard Road Corridor. Additionally, a flat percentage of 5% was assumed for heavy vehicles.

11. CUMULATIVE ASSESSMENT

NUMBER OF MIDBLOCK LANES REQUIRED FOR RICKARD ROAD

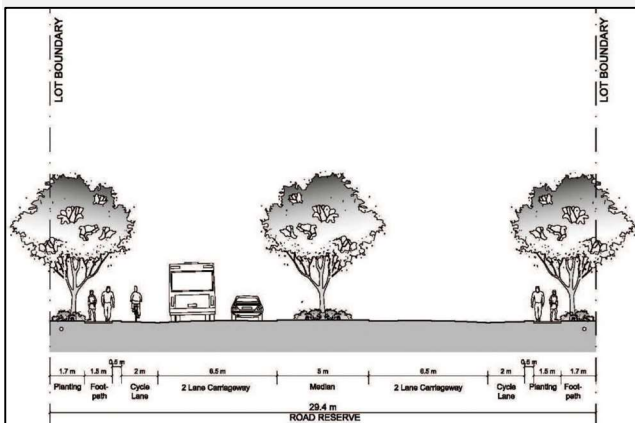
MIDBLOCK LANE ASSUMPTIONS

Based on the traffic generated from both the Residential Core site as well as the Civic Centre site, Rickard Road requires a lane for vehicles and a separate bus lane in each direction to function effectively. However short turning lanes will be provided to minimise any delays to through movements that can be caused by inbound traffic to each precinct. The configuration of Byron Road would consist of two traffic lanes on the eastern approach and one lane from the west approach along with a short right turn lane.

The East Connector will comprise of three vehicle lanes. One left turn lane and one right turn lane onto Rickard Road, with a single lane providing access from Rickard Road onto the East Connector.

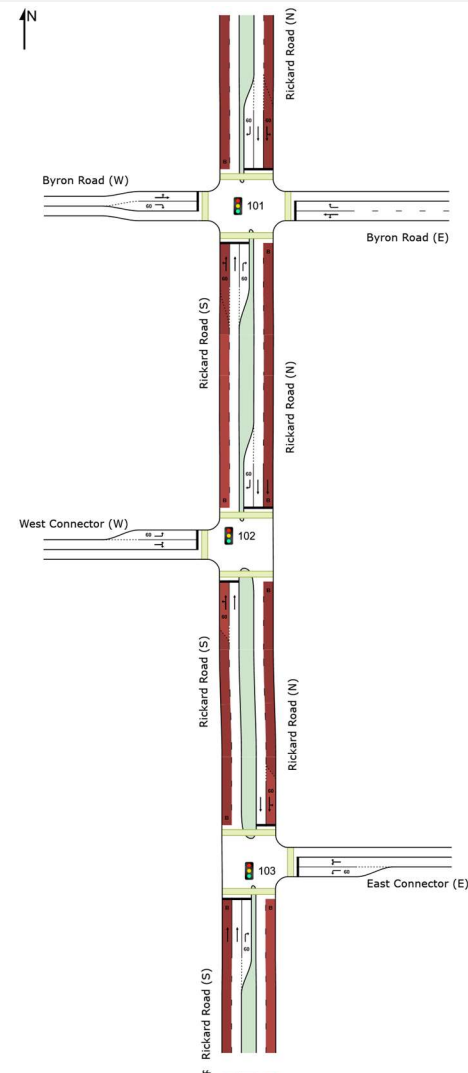
Based on a lane capacity of 900 vehicles per lane per direction, the midblock lane requirements have been specified in **Figure 28**.

FIGURE 27 TYPICAL TRANSIT BOULEVARD CROSS SECTION



Source – Camden Growth Centre Precincts DCP

FIGURE 28 MIDBLOCK LANE REQUIREMENTS



Source – SIDRA Network, Urbis



12. GREEN TRAVEL PLAN LITE

SUSTAINABLE TRANSPORT GOALS

A Green Travel Plan identifies key measures to promote sustainable travel behaviour and address transport issues. This Green Travel Plan Lite provides an overview of travel options available in proximity to the Residential Core site. The local network aims to facilitate walking, cycling and public transport trips wherever possible.

Vision and Objectives

Encouraging / Informing

Encouraging increased walking and cycling mode share options, supporting the walkable residential catchment as retail establishments such as supermarkets are located within the site.



Abundant public transport options are available reducing car demand and encouraging the focus on sustainable living within the precinct.



Improved street amenity and safety through passive surveillance to encourage walking.



The site includes pedestrian pathways across the middle of the block, minimising walking distances and setting a strong expectation around robust walking opportunities for a variety of trip types.



Signalised pedestrian crossings are available across all signalised intersections on Rickard Road and provide permeability for residents who need to travel to Leppington Train Station.



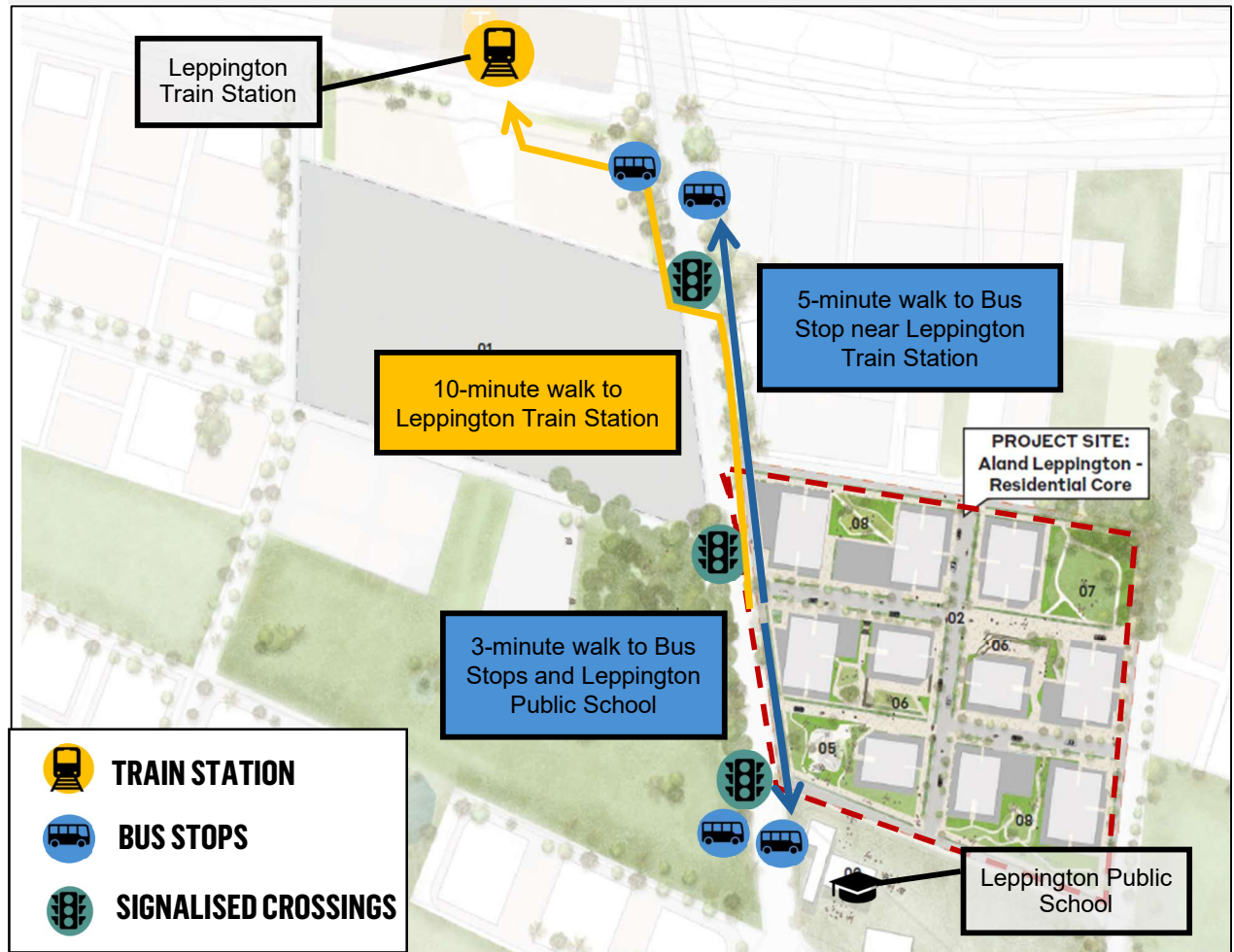
Direct travel paths are available through to Leppington Train Station and Bus Interchanges.



Parking rates adopted for the developments are to reduce the car usage and encourage active transport for local commute.



FIGURE 29 GREEN TRAVEL OPTIONS



Source – Aland Leppington Residential Core Masterplan modified by Urbis

*Walking times are approximate.

A blue pencil is positioned diagonally across the frame, resting on the pages of an open book. The book's pages are filled with faint, detailed architectural drawings, including floor plans and structural diagrams. The lighting is soft and warm, creating a professional and academic atmosphere. The pencil's tip is sharp and points towards the bottom right of the page.

13. SUMMARY AND CONCLUSIONS

CONCLUSION

- The site and its surroundings are generally made up of large rural residential landholdings.
- The Leppington Town Centre has been earmarked as a future strategic centre by Camden Council.
- Rickard Road is a transit boulevard that connects the suburb to the town centre via Bringelly Road, as well as Leppington to the south and Austral to the north.
- Proposed Leppington Town Centre has good public transport availability as it stands with the nearest train station and bus interchange located approximately 140 m from the site.
- The Leppington Town Centre Residential Core Masterplan proposal will provide a mixed-use precinct comprising of 2,873 sqm of retail space and 1,305 dwellings on site.
- Movement and Place assessments were undertaken to establish the road hierarchy for the Leppington Town Centre.
- Both signalised intersections proposed at the Rickard Road will provide for safe pedestrian access across all legs.
- The Residential Core generates a requirement of one lane for traffic and a separate lane for buses in either direction of the Rickard Road corridor.
- Traffic generated by the proposed development during the AM peak is 269 trips and PM peak 274 trips.
- The traffic generated by the proposed development will have minimal impact on Rickard Road.
- The proposed development has no material impact on the operations of the signalised intersections on Rickard Road.
- Cumulative assessment reveals that both the Residential Core and Civic Centre have no materialistic impact on the road network.
- Masterplan transport network providing safe and secure access to public transport through extensive active transport routes in and around the subject site. This complies with the draft DCP objectives.
- A movement and place framework has been implemented for the proposed road network, considering the key user groups.
- The Green Travel Plan Lite provides an overview of travel options available in proximity to the Residential Core site and demonstrates that sustainable transport options are integral to the proposed development.

APPENDIX A – ALIGNMENT WITH DRAFT DCP OBJECTIVES

ALIGNMENT WITH DRAFT DCP OBJECTIVES

2.3 Design Strategy Objectives

Item	Urbis Commentary
Leppington Town Centre will be focused on Leppington Station connected via an attractive public domain comprising a network of parks, plazas and active tree lined streets	The Residential Core is located on the Southeast side of the new station, creating unique opportunities for a north-facing public realm and pedestrian connections to public transport. The Residential Core has the potential to be used as a main pedestrian spine for soft transportation (bicycles and pedestrians) through the new neighbourhood.
Development will activate and enliven the public domain by encouraging the use of outdoor space for movement, recreation and socialisation	The north-south pedestrian through-site links invite pedestrian connections from the station to the southern neighbourhood, they further enhance the accessibility and connectivity of the site, and provide access to amenities (Site A – A2 sub precinct)
Leppington Station will provide access to the centre connected by an integrated road network that builds on existing roads, respects historic road alignments and considers all road users such as pedestrians, cyclists, buses and cars.	The Residential Core is located to the southeast side of the station. Most streets are flatter than 1:30, making it ideal for pedestrian accessibility. A large proportion of streets are flatter than 1:100.
Streets within the town centre will focus on public transport, active transport and pedestrian amenity. Rickard Road and Edmondson Avenue will be a key public transport, pedestrian and cyclist route.	Rickard Road is a transit boulevard, connecting the suburb to the centre via the Bringelly Road to Austral to the north and Leppington to the south. The masterplan aims to ease connections between the Leppington Station and the public school, providing safe and accessible pathways for all residents
Market Lane will be the key north south retail spine linking pedestrians from Leppington Station to the civic precinct to the north and the retail core to the south. Market Lane will be activated by a high-quality public domain and development that provides active frontages to encourage cafes, small bars, boutique shopping and the like.	Not applicable to Residential Core.
Perimeter roads (Eastwood Road, Dickson Road, Ingleburn Road, Byron Road, Camden Valley Way, Fourth Avenue, Bringelly Road and Cowpasture Road) will be the main vehicular access routes to ensure streets within the town centre remain focused on public transport, active transport and pedestrian amenity. Despite being main vehicular access routes, perimeter roads must also accommodate public transport, active transport and pedestrian amenity with appropriate planting and material treatments.	The area is largely serviced by Camden Valley Way and Bringelly Road, both of which connect the suburb to the Sydney CBD via the Western Motorway. While travel via car to the city is an approximate 60-min journey, transport via Leppington Train Station takes a slightly longer 75-mins. The Main Street connects the main attractors within the Major Centre - the retail core, mixed use areas, civic centre, commuter car parks, the bus interchange and rail station. It is a 'collector' road with public transport. Whilst this is the case, the street will be focused on public transport, and like the item/design objective, perimeter roads will be main vehicular access routes

ALIGNMENT WITH DRAFT DCP OBJECTIVES

2.4 Planning and Design Objectives

Item	Urbis Commentary
Related land uses take advantage of opportunities to locate near each other to maximise access to services, economies of agglomeration and the efficient provision and use of ancillary functions such as car parking.	For Residential Core the Rickard Road Transit Boulevard, Leppington Station, and prominent street corners provide the majority of building height and built form. Taller buildings are concentrated along other major roads and adjacent to public open spaces, plazas and squares to emphasise and assist in way-finding to these public spaces. The new design (of Rickard Road) allows for ample parking and safer pedestrian / bicycle connections.

2.5 Transport and Access Planning Objectives

Item	Urbis Commentary
A hierarchy of streets creates clearly legible routes for pedestrians, cyclists, public transport, cars and service vehicles to access and circulate Leppington Station and the town centre.	The proposed street layout clearly delineates a hierarchy of street types and route options. The bus lanes and bicycle lanes and shared lanes will be provided.
The function of each street type is clearly defined.	Proposed road network shows a variety of street types including local streets, pedestrian priority streets, one-way parkside streets, shared laneways
Streets are designed and constructed to standards that will facilitate the establishment of a high-quality tree lined streetscape and provide sufficient capacity for pedestrians, cyclists and vehicles to move throughout the centre.	Standards are in line with industry standards. High-quality tree-lined streetscape are provided. All streets have footpaths in addition to shared paths. Well-lit connections and passive surveillance will be established. Masterplans aim to create a safe and attractive environment. Masterplans aim to create a safe and attractive environment
Streets are safe, attractive and interesting elements of the public domain that contribute to civic life.	
Leppington Station is a key transport connection to metropolitan Sydney, particularly for workers in the centre. Permeability and access to and from Leppington Station, particularly for pedestrians, cyclists and buses is a critical element of the town centre road network.	Leppington and Edmondson Park Railway Stations are both closely located to the main areas of the suburb, with access to several different bus routes also available from there. Leppington station has connected the area to the rest of Greater Sydney with the aim to boost the region's accessibility and economy. Leppington Station is a strategic centre for surrounding business, residential, and retail industries, thus the station is a major transport hub and public transport interchange.

13. SUMMARY AND CONCLUSIONS

ALIGNMENT WITH DRAFT DCP OBJECTIVES

2.5 Transport and Access Planning Objectives

Item	Urbis Commentary
All streets within the centre have low traffic speeds for pedestrian amenity and safety.	The main street that runs through the centre is Rickard Road – the number of traffic lanes on this road has been minimised in consideration of pedestrian permeability while at the same time effectively catering for vehicular traffic. All signalised intersections on Rickard Road provide signalised foot crossings across all legs.
Rickard Road and Edmondson Avenue are a low speed traffic environment that gives priority to buses, pedestrians and cyclists. It is the primary access route from suburban areas into the transport interchange and Leppington Station.	Rickard Road is an activity centre corridor with a low-speed environment and provides priority buses, pedestrians and cyclists. It will be one of the connector used by the suburbs to access the interchange located to the north.
Market Lane is the focus of activity in the retail core of the centre. Retail, commercial and residential development activate the street, along with pedestrians and cyclists.	Not applicable to Residential Core report.
Perimeter roads (Eastwood Road, Dickson Road, Ingleburn Road, Byron Road, Camden Valley Way, Bringelly Road, Fourth Avenue and Cowpasture Road) are the main vehicular routes to ensure Rickard Road, Edmondson Avenue and the centre of Leppington Town Centre are focused on public transport, active transport and pedestrians.	Rickard Road will be the main transit boulevard for public transport and will be prioritising public and active transport over other modes.
Town Centre Streets are active and pedestrian friendly, with capacity for buses to circulate on bus capable streets. Town Centre Streets have active ground floor frontages.	Well-serviced footpaths and shared spaces will be provided to cater for pedestrians. Bus lanes are proposed along the Rickard Road corridor, prioritising bus routes.
Shared Lanes cater for pedestrians, support compatible secondary active frontages for safety and amenity (e.g. small laneway shops and secondary building entries) and provide direct vehicle access to internal car parks and loading bays.	Pedestrian links have been provided; the proposed layout clearly has pedestrians in mind. Within the Residential Core one shared lane is provided for vehicles to access drop-offs.

ALIGNMENT WITH DRAFT DCP OBJECTIVES

2.6 Public Domain Planning Objectives

Item	Urbis Commentary
The design of streets reinforces their role in the road hierarchy and provides a safe, attractive and legible network for pedestrians, cyclists, public transport and cars. Street designs reinforce walkability and maximum block dimensions.	Walkability and safety are key aspects of the proposed road network. A well-connected pedestrian and cyclist network is established within the precincts. Bus lanes are provided to allow for buses to run without any delays. Activity centres are generally low-speed in nature and add more safety to other users aside from private vehicles.
Green links along Kemps Creek, Scalabrini Creek and Bonds Creek create a positive interface between the urban, built up parts of the centre and natural features.	Green links provide off-road cycle access along the southern side of the rail corridor linking the Scalabrini Creek Corridor to the Rail Station
Streets, and green streets connect or terminate at parks and plazas within Leppington Town Centre as well as regional open space outside of the centre.	Open Space areas provide important cross links (connecting east and west) and much longer north-south links that provide district level connections.
The orientation of streets, parks and plazas takes advantage of and emphasises local views to Kemps Creek, Scalabrini Creek, Bonds Creek as well as distant views to the Blue Mountains and the Sydney skyline.	The only major road affected by the proposal is Rickard Road, which exists. All other proposed roads are local roads that provide access to the proposal.

2.7 Built Form Planning

Item	Urbis Commentary
The bulk of buildings is minimised by a fine grained road network and by limiting the floorplate of taller building elements.	Road network will achieve the intent of the DCP
Mid-block links are encouraged to improve pedestrian circulation and reduce the horizontal bulk of buildings.	Through site links are provided for large blocks on key desire lines and to create finer grained pedestrian networks in core areas of the town centre
Buildings always have Active Commercial Frontages and Active Residential Frontages onto streets, parks and plazas to facilitate activity.	Active frontages are prominent throughout proposed layout

ALIGNMENT WITH DRAFT DCP OBJECTIVES

2.7 Built Form Planning

Item	Urbis Commentary
Ancillary activities such as parking, loading and service areas are visually screened from the public domain by either sleeving parking with buildings, creating underground parking or creating above ground parking that sits above active ground floor uses, such as Active Commercial Frontages, and is sleeved by apartments and façade treatments.	Ancillary activities are managed as much as possible in the proposed layout. 90 Street frontage parking spaces are indicatively shown on the Master plans. More details of the parking spaces and service areas will be indicated in the detailed planning stage.
Driveways take up as little space as possible and loading docks are internal and or sleeved by buildings with active frontages to the street to improve pedestrian amenity on the street.	Driveways are designed to latest industry standards, not expected to be a dominant aspect of proposed layout

3.3 Road Hierarchy and Circulation (Leppington Town Centre DCP) – Objectives

Item	Urbis Commentary
To ensure that the development of Leppington Town Centre is based on a coordinated, integrated hierarchy of streets that connect people and places within the centre to people and places beyond the centre.	The proposal is centred around a coordinated, integrated land-use approach, street network supports this. The proposed street hierarchy includes Rickard Road as the main north-south movement spine. Streets with the site are residential streets and cater towards place function.
To ensure walking, cycling and public transport are the dominant transport modes within the centre, while recognising the importance of other vehicles (especially point to point vehicles, driverless vehicles, share and hire car vehicles and service vehicles) to the viability and functionality of the centre.	Rickard Road is an activity centre corridor with a low-speed environment and provides priority buses, pedestrians and cyclists. Active and public transport are key aspects of proposal
To ensure that streets provide for all modes of transport and that conflicts between modes are appropriately managed based on user hierarchy and the place/movement function of each street.	The proposed road network is designed for cyclists, pedestrians, public transport and private modes of transport. The road hierarchy is shown in the movement and place diagrams
To ensure a cohesive, safe and well-designed town centre street network that achieves the above objectives through the use of design elements within streets and the public domain.	Safety and a robust network are key aspects of proposal

ALIGNMENT WITH DRAFT DCP OBJECTIVES

3.3 Road Hierarchy and Circulation (Leppington Town Centre DCP) - Controls

Item	Urbis Commentary
The locations of streets must be consistent with the indicative layout plan (Figure 3 in LTC DCP)	Location of streets is generally consistent with the DCP, achieves the intent of the plan
The street type must be consistent with the Street Typology Map (Figure 4)	
<p>The design, construction and layout of streets must be consistent with the relevant schedules of this DCP:</p> <ol style="list-style-type: none"> 1. Material Treatment Masterplan provided in 3.4 Street Material Treatments 2. Street Designs provided in 3.5 Street Designs 3. Intersection Designs provided in 3.6 Intersection Designs 4. Street Tree Masterplan provided in 3.7 Street Tree Masterplan 5. Street Interface Controls provided in 3.9 Street Interface Controls 6. Cycle Strategy provided in Figure 26 Cycle Route Map. 7. Pedestrian Strategy provided in Figure 27 Pedestrian Desire Lines <p>Any variation to the street typologies as per controls 1-3 above must be generally consistent with the principal design elements of those controls, and the Western Sydney Design Guide.</p>	Design and layout of streets is generally consistent with the DCP and its relevant schedules, achieves the intent of the plan
A Local Area Traffic Management (LATM) plan shall be submitted with any development which involves the opening of a new road(s), or modifications to existing roads. Design solutions shall conform to Austroads Guide to Traffic Management Part 8 (Local Area Traffic).	Any variation of the street typologies will be generally consistent with the relevant principal design elements and the Western Sydney Design Guide
	A LATM plan will be provided in a timely manner as required

13. SUMMARY AND CONCLUSIONS

ALIGNMENT WITH DRAFT DCP OBJECTIVES

3.3 Road Hierarchy and Circulation (Leppington Town Centre DCP) - Controls

Item	Urbis Commentary
<p>For a modifications to the street network (layout and typology) to be considered by Council, the proposed street must:</p> <ul style="list-style-type: none">a) Achieve the same outcomes in terms of circulation, especially pedestrian circulation.b) Maintain the hierarchy of streets within the centre.c) Prioritise pedestrians and cyclists.d) Be consistent with requirements for bus access in and around the centre, including Leppington Public School and the Leppington Transport Interchange.e) Enable the management of stormwater including connections to trunk stormwater basins.f) Not unreasonably impact on the ability of adjoining land owners to develop their land in accordance with the Indicative Layout Plan.g) Be consistent with the Desired Future Character and Planning Principles in Section 2 of this DCP schedule.h) Be consistent with the above controls 4 to 8.	<p>Proposed streets will comply with the relevant requirements and achieve the intent of the DCP</p>

