Parramatta Road Corridor

Traffic and Transport Strategy

Strathfield, Burwood and Canada Bay Councils

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EXECUTIVE SUMMARY

Background

The Parramatta Road Corridor Urban Transportation Strategy (PRCUTS) was released in 2016. Its vision was to capitalise on the capacity-relief expected to be provided by WestConnex M4 for Parramatta Road in order to 'localise' Parramatta Road and commit two of its lanes for usage by public transport. More local access points, better crossing opportunities and an improved streetscape were all part of the vision, as well the opportunity for densification of some key areas.

A key action out of the PRCUTS was a Precinct-wide traffic study to identify 'necessary road improvements and upgrades' for the Kings Bay, Burwood-Concord and Homebush precincts.

City of Canada Bay, with Burwood Council and Strathfield Council commissioned Bitzios Consulting to prepare this Traffic and Transport Strategy for the Parramatta Road corridor area including these precincts. The study was halted in 2018 to allow the Department of Planning, Industry and Environment (DPIE) and Transport for NSW (TfNSW) to harmonise the transport modelling assumptions and strategic model inputs to be used by this study and other parallel studies. This study re-commenced in mid-2021 on the basis of the data provided by TfNSW and the traffic models it approved for use.

This report provides an integrated traffic and transport strategy to support the land use densification proposed for the Kings Bay, Burwood-Concord and Homebush precincts.

It is important to highlight that between 2018 and 2021, traffic levels on Parramatta Road have increased, somewhat diminishing the expectation that the WestConnex M4 would relieve congestion on Parramatta Road significantly enough to convert two of its lanes exclusively to public transport. Furthermore, TfNSW advised this study to not model Parramatta Road as four lanes but to retain its (generally) six lanes for traffic capacity purposes in 2036.

Key Challenges

Since the opening of WestConnex M4 East in 2020 and now, traffic has rapidly returned to Parramatta Road and strategic modelling to 2036 by TfNSW has identified that this trend will continue, with 2036 traffic demands exceeding 2019 levels. The study area will see a 35% to 39% increase in traffic from 2019 levels to 2036 with the four precinct development uplift areas included. Importantly, in 2036, about 75% of this traffic is traffic passing through the study area whilst some of it will be on the WestConnex M4, a significant proportion will still be using surface roads, including Parramatta Road.

The Aimsun microsimulation modelling completed for this study highlighted the issues with the growth. It showed that even with Parramatta Road retained as a six-lane corridor, its congestion would be significantly worse than in 2018 - 2019 this 'wall of congestion' in peak periods propagates queues back into local roads to the north and south, generating traffic re-routing through local east-west streets as a consequence. Without a substantial relief in this congestion on Parramatta Road, there are no reasonable major upgrade works that can provide congestion relief in the new uplift precincts as they redevelop.

Accordingly, the traffic capacity-related measures in this report have centred on relieving pinch points and on more efficient queue storage to minimise the extent to which queue affect local road intersections while at the same time better catering for pedestrians and cyclists as precincts redevelop. Early intentions in this study to provide more opportunities for turning and cross-movements at Parramatta Road, to the benefit of local traffic, have not been able to be progressed because of the severity of the congestion they have presented in the modelling relied upon by TfNSW to review the scheme being proposed. That is, the vision for the study area is misaligned with the 'predict and provide' approach that has been required to be used for this study, and the direction that Parramatta Road is to be retained as a six lane traffic corridor.

The development precincts and redevelopment within them offers opportunities however to improve permeability and accessibility within and through the precincts for walking, cycling and local traffic and these opportunities have been identified, as have opportunities for new bus service areas and stops, car share locations, parking management measures and other travel demand management schemes.

Homebush North and South Precincts

With significant growth in Parramatta Road traffic volumes and growth in traffic to the north of Parramatta Road (partly from the Homebush North precinct) and to the south of Parramatta Road (partly from the Homebush South precinct), significant congestion is seen in 2036 at:

- Parramatta Road / Concord Road / Leicester Avenue
- Parramatta Road / George Street
- Underwood Road / Pomeroy Street
- George Street / Pomeroy Street.

This congestion is extensive with queues extending well into the restricted areas either side of Parramatta Road. Without clearing out east-west congestion on Parramatta Road, there are no benefits in undertaking major road upgrades in / near the Homebush precincts.

The initiatives proposed in the **Homebush North** precinct are:

- Traffic signals adjustments at:
  - George Street / Pomeroy Street
  - Underwood Road / Pomeroy Street.
- A new bus route via George Street to a bus / rail interchange facility at Concord West station
- A number of walking and cycling connections and a fine grained street system as redevelopment allows.

The initiatives proposed in the **Homebush South** precinct are:

- Line marking changes and clearways - Parramatta Road / Bridge Road
- Upgrades to Parramatta Road / Knight Street and limiting Station Street / Parramatta Road to left in / left out movements
- New extended bus services and stops in the eastern part of the precinct, as redevelopment occurs and in consultation with TfNSW
- Additional pedestrian and cycleway connections and ensuring pedestrian links are provided between Loftus Lane and Parramatta Road with redevelopment.

Burwood-Concord Precinct

The key traffic issues in the precinct by 2036 are related to significant congestion on Parramatta Road. This generates queues back down Burwood Road, exacerbated by more traffic generated by the precinct. Burwood Road traffic then attempts to divert to other local street east-west routes and those turning movements further congest Burwood Road. Key issues were seen in the 2036 models at:

- Burwood Road / Park Avenue / Wilga Street (staggered, signalised intersections)
- Burwood Road / Burton Street.

The initiatives proposed in the Burwood- Concord precinct are:

- Burwood Road peak period, peak direct clearways, in the longer term as redevelopment occurs
- Signal phase changes at Burwood Road / Park Avenue / Wilga Street and Gipps Street / Boughton Street
- New traffic signals at Burwood Road / Burton Street
- A traffic management scheme to limit ‘rat running’ via Loftus Street
- Additional pedestrian links to improve the permeability of the redevelopment area and new cycle links to connect existing facilities to, from and within the precinct.

Kings Bay Precinct

As with other precincts, traffic congestion in the Kings Bay precinct is expected by 2036 because of Parramatta Road. Queues in the AM peak in particular propagate from Parramatta Road back into Harris Road as well as east of the precinct into Arlington Street, Great North Road, and streets in between, also affecting Queens Road.

The initiatives proposed in the Kings Bay precinct are:

- Additional peak period clearways along Harris Road and Great North Road
- Queens Road / Harris Road minor intersection upgrade
- Great North Road / Parramatta Road lane marking changes
- Bus service extensions and stops along Queens Road as redevelopment occurs, and in consultation with TfNSW
- Additional mid-block pedestrian links and a short section of connecting cycleway
- Breaking up existing street blocks with 1-2 additional north-south streets or lanes per block.

Conclusions

This study was initiated to fulfill the vision of the PRCUTS on the presumption that two lanes of Parramatta Road could be used exclusively for public transport. The opportunity for this to happen appears to have passed given that the M4 East has been open for some time and Parramatta Road traffic volumes are steadily increasing again. Year 2036 modelling shows that Parramatta Road and its east-west capacity is the limiting capacity constraint in the future and that any major upgrade works in the streets either side of the corridor will be ineffective in resolving these issues, and probably exacerbate them. The PRCUTS vision for Parramatta Road either needs to be re-affirmed or a new vision established.

A suite of local congestion management upgrades have been recommended along with active transport, public transport, care parking and travel demand management initiatives to support traffic growth in the study area and specifically the development uplift proposed in the four precincts the subject of this report. The development uplift will need to more heavily rely on public transport, walking and cycling than on traffic capacity given the identified constraints.

Until such time that a rapid bus system or similar is introduced in Parramatta Road, the following development uplift conclusions can be drawn:

- **Homebush North:** Uplift levels should be supportable due to the presence of Concord West Station
- **Homebush South:** Uplift levels should be reconsidered with greater densities towards Knight Street (and the rail station) and reducing levels towards Bridge Road further away from public transport
- **Burwood – Concord**: Shift the uplift emphasis and footprint closer to the proposed Burwood Station, and consider a 'gap' between the existing Town Centre south of Park Avenue and the proposed northern uplift area
- **Kings Bay:** Completely reconsider this area as it has limited public transport accessibly, especially the area proposed north of Queens Road.

Recommended Action Plan

Table 10.1 provides a consolidated action plan for the study area on the basis of the development uplift proposals in each of the four precincts is carried forward.

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Common Terms and Acronyms

Term / Acronym	Description
Aimsun	The software used for the traffic simulation modelling
Benchmark	Growth scenarios under current planning control
CBD	Central Business District
DPIE	Department of Planning, Industry and Environment
TfNSW	Transport for New South Wales (formerly Roads and Maritime Services).
Future Transport 2056	The NSW Government's vision for provision of transport over the next 40 years.
PRCUTS	Parramatta Road Corridor Urban Transformation Strategy
PTPM	Public Transport Project Model
STFM	Strategic Traffic Forecasting Model.
STM	Strategic Travel Model
Uplift	Growth scenarios with redevelopment of the four redevelopment precincts
Vph	Vehicles per hour

1. INTRODUCTION

1.1 Background

In November 2016, Urban Growth NSW issued the final *Parramatta Road Corridor Urban Transformation Strategy (PRCUTS),* together with a package of documents within an Implementation Tool Kit. Since then a number of other relevant reports have also been released including the *Precinct Transport Report* and the *Sydney CBD to Parramatta Strategic Transport Plan*.

A Section 117 Ministerial Direction, issued on 19 December 2016, gives the Strategy and the Implementation Tool Kit statutory weight.

The completion of WestConnex M4 was forecast to attract longer distance traffic off Parramatta Road, providing an opportunity to reconsider the role of the corridor. Additional public transport capacity was considered to facilitate the intensification of key centres whilst also encouraging more active transport and local accessibility to, from and across Parramatta Road. The PRCUTS aimed to capitalise on the traffic relocation expected due to the WestConnex M4 as a catalyst to renew Parramatta Road and adjacent communities through investments in homes, jobs, transport, open spaces and public amenity.

In evaluating the impacts and needs of increasing the density of development in the corridor, there is need to assess the cumulative impact of traffic generated by this redevelopment on Parramatta Road and on the surrounding road network and to develop recommendations for infrastructure requirements to address these impacts. The following key action is included in the PRCUTS for the Kings Bay, Burwood–Concord and Homebush precincts:

"Prior to any rezoning commencing, a Precinct-wide traffic study and supporting modelling is required to be completed which considers the recommended land uses and densities, as well as future WestConnex conditions, and identifies the necessary road improvements and upgrades required to be delivered as part of any proposed renewal in the Precinct."

City of Canada Bay in partnership with Burwood Council and Strathfield Council commissioned Bitzios Consulting to undertake the Kings Bay, Burwood-Concord and Homebush Traffic and Transport Strategy (referred to herein as the Parramatta Road Corridor Traffic and Transport Strategy).

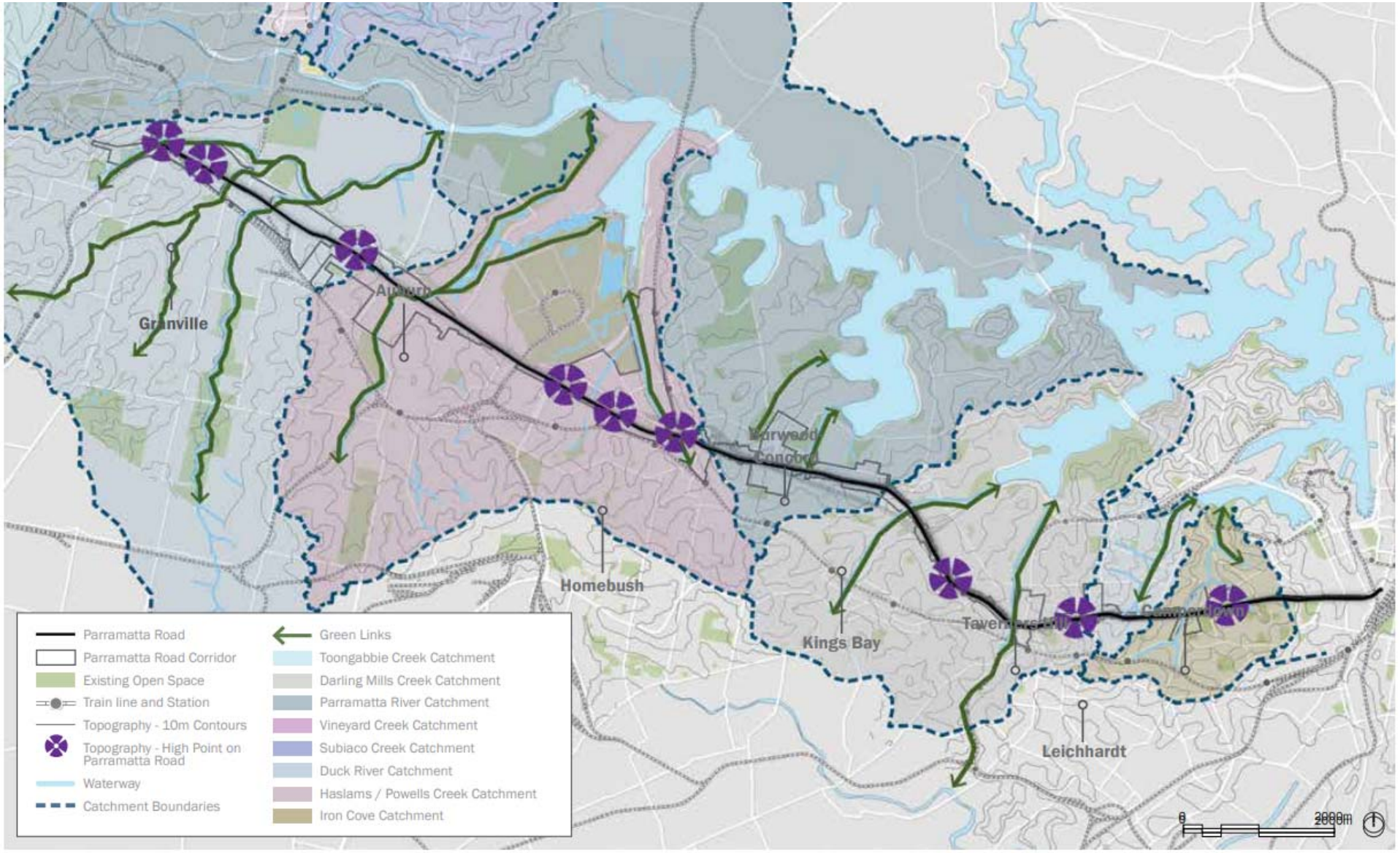
This study draws from, compliments and supplements the urban design and land use planning work completed by RobertsDay for the three Councils.

It is important to highlight this study commenced prior to the WestConnex M4 opening. The PRCUTS was also written pre-WestConnex M4 and intended to capitalise on the (then) expected relocation of some Parramatta Road traffic underground, with a key proposal to use two of its six lanes exclusively for public transport. Since then however, WestConnex has opened and Parramatta Road traffic congestion has generally returned to pre-WestConnex levels. The potential to convert two of the six lanes on Parramatta Road exclusively to public transport, or for wider footpaths, has since diminished because of this. For these reasons, this strategy has been required to take a pragmatic approach to Parramatta Road corridor opportunities for 'localisation' rather than the highly aspirational view being contemplated pre-WestConnex by PRCTUS.

1.2 Parramatta Road Corridor

The Parramatta Road Corridor spans 20 kilometres from Granville in the west to Camperdown in the east (see Figure 1-1).

Within the PRCUTS, the corridor is separated into two distinct sections - Corridor West and Corridor East. Corridor East includes the land within the Strathfield, Burwood and Canada Bay Local Government Areas (LGAs) and is the subject of this study. Four renewal precincts have been identified within these LGAs: Homebush North, Homebush South, Burwood-Concord and Kings Bay.

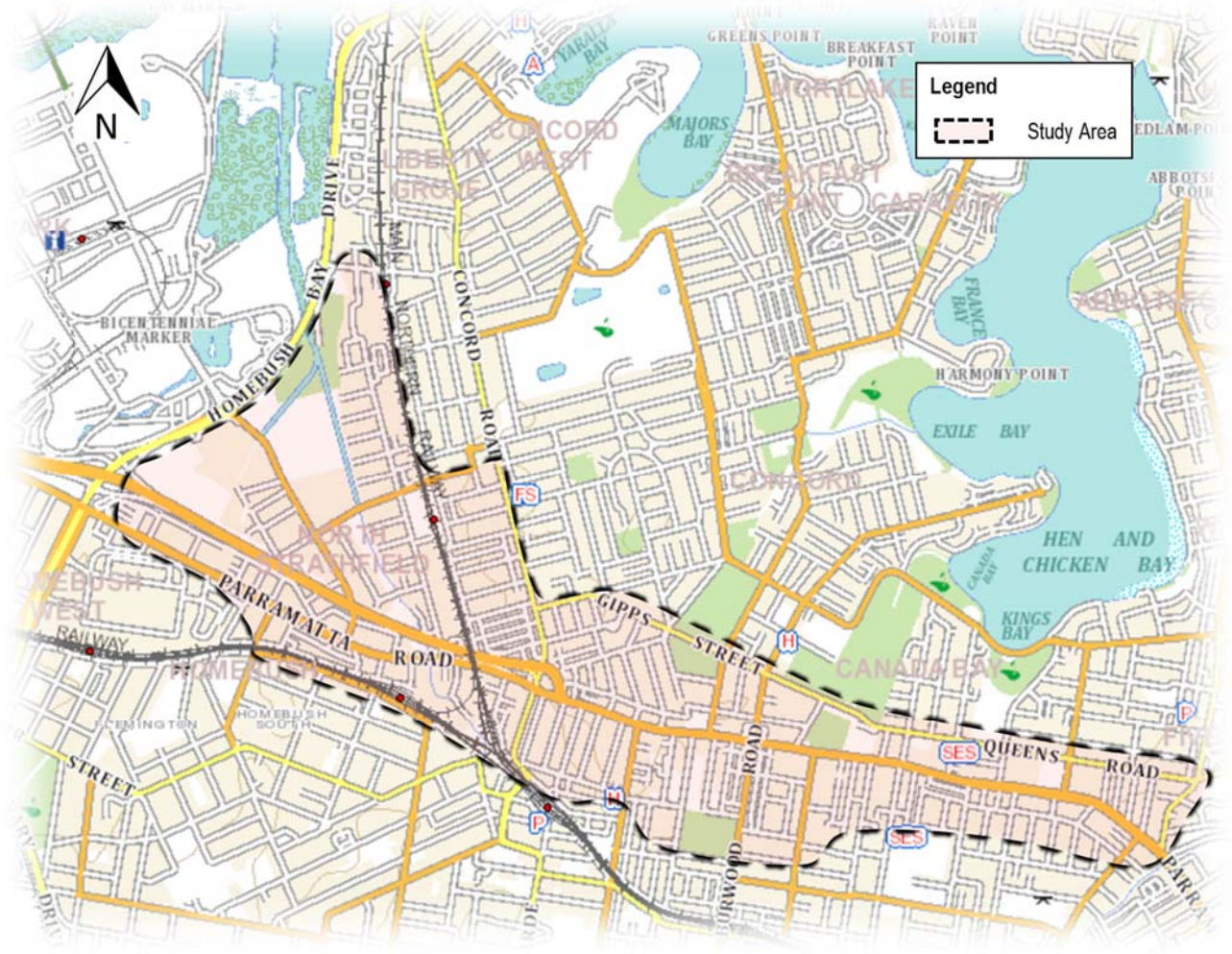


Source: Parramatta Road Implementation Tool Kit Planning and Design Guidelines

Figure 1-1: Parramatta Road Corridor

1.3 Study Area

For the purposes of the traffic and transport assessments, the study area includes Parramatta Road between Homebush Bay Drive in the west and Wattle Street in the east, extending north of Parramatta Road towards North Strathfield, Concord West and Kings Bay, and south towards Homebush, Strathfield and Burwood. The study area is shown in Figure 1-2.



Source: https://maps.six.nsw.gov.au/

Figure 1-2: Study Area

1.4 Strategy Development Process

The development of this strategy commenced in 2018 at a similar time to other council-led strategies along adjacent sections of Parramatta Road. Through the course of this study, it was revealed that greater consistency of traffic modelling and evaluation processes and would be required between the concurrent studies. This study was put 'on hold' and the Department of Planning, Industry and Environment (DPIE) and Transport for NSW (TfNSW) undertook an integrated study to harmonise modelling and evaluation methods. These integrated corridor-wide models have been used to calculate future traffic and transport demands, to, from, within and through the study area for this study.

The process to develop the Parramatta Road Corridor (Strathfield, Burwood, Canada Bay) Traffic and Transport Strategy involved:

- Reviewing the PRCUTS to provide the overall context in terms of key outcomes desired, corridor planning implications, proposed public and active transport infrastructure, and objectives specific to the Homebush, Burwood-Concord and Kings Bay precincts
- Reviewing the proposed on-road and off-road links, and land rezoning areas for each precinct, as detailed in the urban design frameworks prepared by Roberts Day, to determine whether any changes can be recommended to better integrate with overall Corridor planning
- Summarising other relevant transport infrastructure projects and implications for traffic on Parramatta Road and within each precinct, such as the WestConnex M4 East and the proposed Sydney Metro West project
- Identifying key traffic and transport challenges and opportunities for Parramatta Road and each precinct using available data with reference to a traffic model created for this project
- Identifying transport planning principles to guide the future development and assessment actions for the Corridor
- Assessing traffic infrastructure needs in the short and long term with the proposed redevelopment and accessibility changes
- Developing corridor-specific and precinct-specific traffic and transport strategies and a staged implementation plan aligned with the urban design strategy for the Corridor.

2. CONTEXT

2.1 Parramatta Road Corridor Urban Transportation Strategy

PRCUTS was published in 2016 and outlines a 30-year plan for 'growing the Parramatta Road Corridor and revitalising local communities living and working along the Corridor through investing in housing, jobs, transport, open spaces and public amenity. The Strategy will drive and inform land use planning and development decisions, long-term infrastructure delivery programs and provide an understanding of different aspects of the future of the Corridor'.

The PRCUTS's key road, public and active transport outcomes relevant to this study are summarised below, including those specific to the Homebush, Burwood - Concord and Kings Bay precincts.

Roads

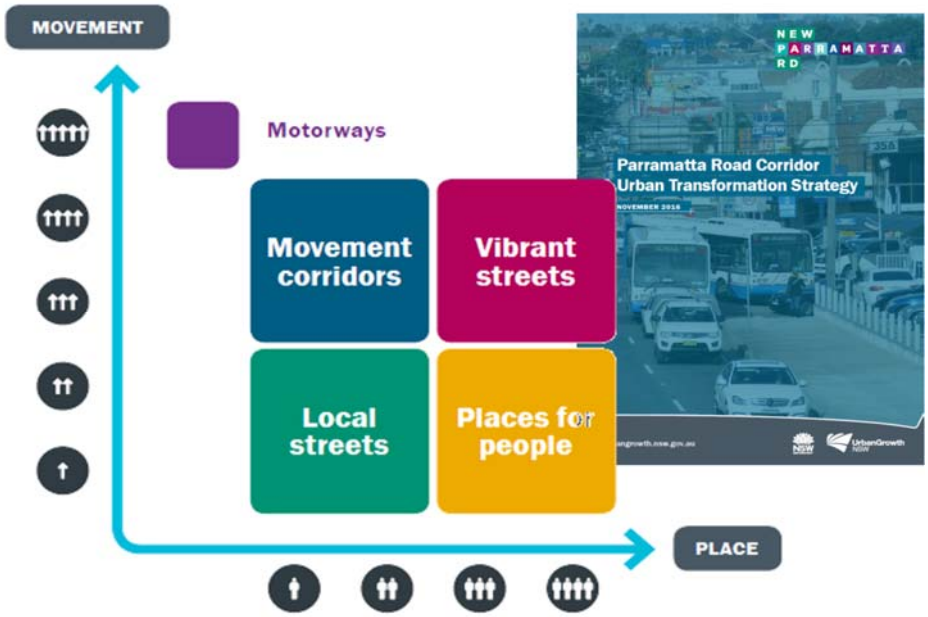
A planning framework for Parramatta Road was developed to define the future function of the road network and inform future planning decisions (see Figure 2-1 and Figure 2-2). This was based on land use and transport objectives, and desired outcomes for the four precincts. Roads in and around each precinct were stated to provide the following two primary functions for commuters:

- **Movement:** 'links' used by customers to travel between places
- **Place:** 'nodes' which represent the locations of travel origins and destinations that customers move between.

The specific 'movement–place' function of each road type informs the allocation of the level of access to each road transport mode during different times of the day and week, for example operating bus lanes during weekday peak hours only. This approach recognises that the movement network consists of different road and link types serving different functions within the wider transport network.

Parramatta Road will remain a State Arterial Road and continue to perform a through movement function along most of its length. PRCUTS envisaged that it would comprise at least one public transport lane (e.g. bus lane) and two general traffic lanes in each direction of travel along the entire Corridor.

A program of short, medium and long-term road upgrades was proposed to restructure Parramatta Road and the surrounding road network with the intention of supporting existing and emerging employment areas while protecting the amenity of residential areas and responding to urban development and travel demand growth. The introduction of 'Clearways' and 'No Stopping' zones as part of the NSW Government's Sydney Clearways Strategy was also identified as needing consideration. Extended weekday and weekend Clearways currently operate on Parramatta Road between Granville and Ashfield.



Source: Parramatta Road Urban Transformation Strategy

Figure 2-1: Parramatta Road Street Function Framework

Source: Parramatta Road Urban Transformation Strategy

Figure 2-2: Road Types and Functions

Public and Active Transport

The Integrated Land Use and Transport Concept map in PRCUTS proposes:

- A rapid or suburban bus route between Homebush and Parramatta with key stops aligned with nodes of densification along Parramatta Road
- A potential rapid transit route between Burwood and the Sydney CBD with key stops aligned with nodes of densification along Parramatta Road
- A future cycle route between Auburn and Kings Bay along various roads north of the M4.

In addition, the NSW Government has reinforced its position on the importance of Parramatta Road as one of Sydney's key growth corridors to investigate the development of rapid bus or light rail transit. As part of this position, a condition of consent for the WestConnex M4 East project requires *'at least two lanes of Parramatta Road, from Burwood Road to Haberfield, to be solely dedicated for the use of public transport unless an alternative public transport route that provides an improved public transport outcome is approved'*.

Since then, Parramatta Road traffic volumes have returned to near pre-WestConnex levels and the opportunity to have converted two traffic lanes for sole use by public transport appears to have been diminished. Furthermore, since PRCUTS was published, Sydney Metro West has been announced by the NSW Government and its alignment and stations are within the study area.

2.2 Future Transport 2056

Following the release of the PRCUTS, the NSW Government has also released Future Transport 2056 which provides an update of NSW's Long Term Transport Master Plan and *'sets the 40 year vision, directions and outcomes framework for customer mobility in NSW, which will guide transport investment over the longer term'.*

The 40-year vision is based on the following six outcomes:

- Customer Focused
- **Successful Places**
- A Strong Economy
- **Safety and Performance**
- **Accessible Services**
- Sustainability.

Of particular relevance to the PRCUTS are the desired outcomes of Successful Places, Safety and Performance (of the network) and Accessible Services. Re-interpreting these outcomes for the Parramatta Road Corridor through Strathfield, Burwood and Canada Bay means:

- Transport will need to reinforce the creation of **successful places** through improved **accessibility** by all modes to and from the corridor
- The **safety and efficiency** of movement through the corridor will be a key goal.

Two major projects within Future Transport 2056 which influence traffic and transport movements in the study area are:

- WestConnex M4 East
- The proposed Sydney Metro West.

WestConnex

The WestConnex M4 East extends the M4 Western Motorway at Homebush to a new interchange at Haberfield via new tunnels with three lanes in each direction. A new interchange has been constructed along Concord Road between Parramatta Road and Patterson Street at the western end of this strategy's boundary, as shown in Figure 2-3. It includes:

- On-ramps and off-ramps between Concord Road northbound and southbound and the M4 East tunnel
- An on-ramp from Concord Road southbound to the M4 Western Motorway.

Source: SIX Maps / Nearmap

Figure 2-3: Concord WestConnex Interchange

A signalised on-ramp from Parramatta Road to the M4 Western Motorway westbound has also been constructed in Homebush, located east of the Parramatta Road/Station Street intersection.

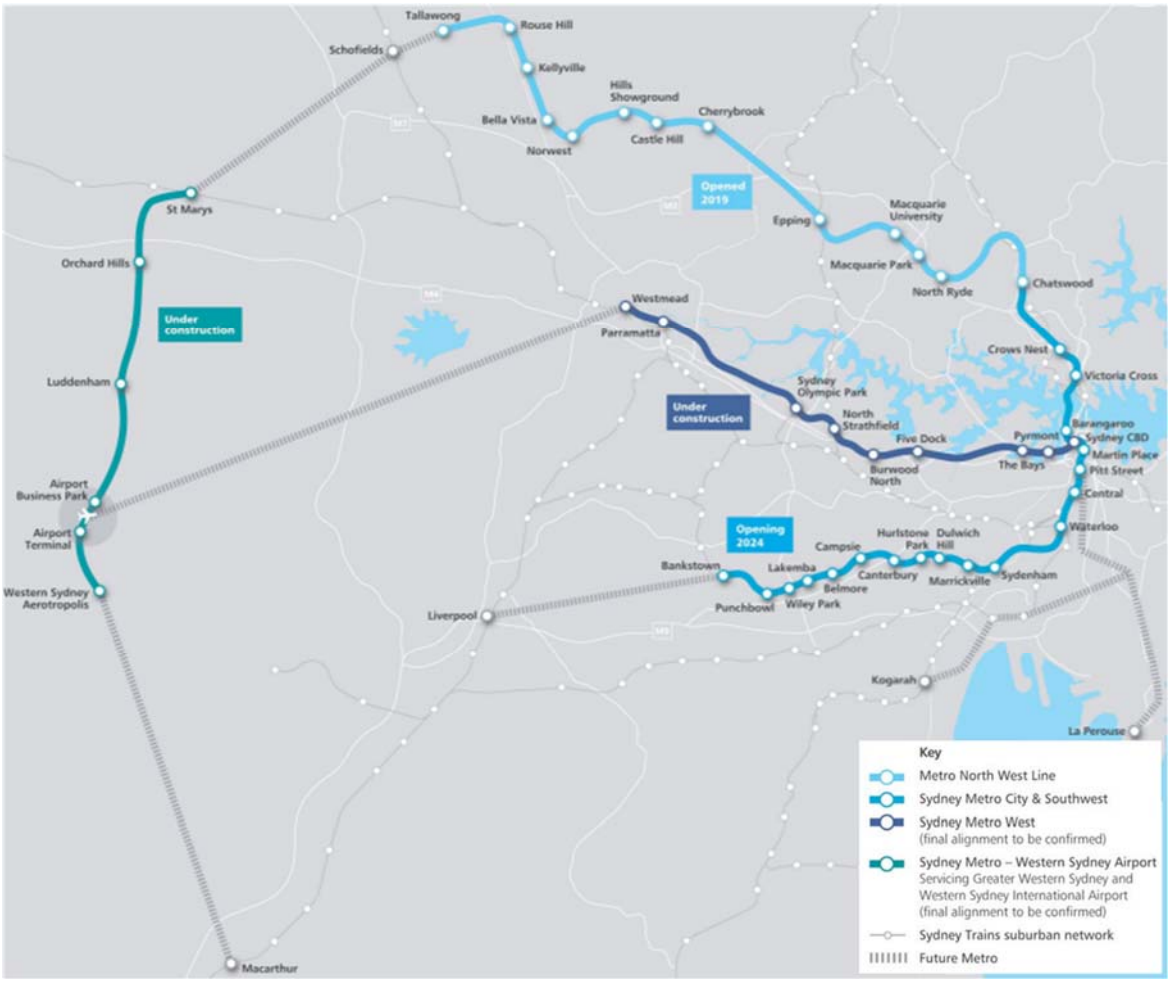
Sydney Metro West

As part of the NSW Government's Future Transport Strategy 2056, a proposed underground metro railway line between the Sydney CBD and Westmead has been approved, with a potential extension to the west towards Western Sydney Airport (see Figure 2-4). The metro line is expected to be completed by 2030. A connection with the T9 Northern Line at North Strathfield at the western edge of this strategy's study area is a key consideration for land use and transport. Intermediate stations will also be located at Burwood North and Five Dock. Burwood North station will be located within the Burwood-Concord precinct, shown in Figure 2-5.

While effectively doubling the rail capacity of the T1 Western Line, Sydney Metro West will provide faster connections between Sydney and Parramatta, linking key precincts which currently rely heavily on road use and do not have any rail services. When operating together, both lines would encourage more commuters to travel by rail between the two major CBDs and beyond.

Furthermore, the potential intermediate stations at Burwood North and Five Dock will introduce a mass transit option to growing residential and employment areas along the Parramatta Road Corridor, offer direct access to the Sydney and Parramatta CBDs, and provide more alternative transport options through integrating the metro with local bus services. These benefits, along with WestConnex and future rapid transit services, would be expected to deliver relieved capacity on Parramatta Road which could be repositioned to enhance local accessibility by a range of transport modes.

It is unclear whether Sydney Metro West (in isolation), satisfies the requirement of the WestConnex approval condition for 'an alternative public transport route that provides an improved public transport outcome'.



Source: https://www.sydneymetro.info/sites/default/files/document-library/SMW_Stage_2_Scoping_Report.pdf

Figure 2-4: Proposed Sydney Metro West Route

Adapted from Sydney Metro West EIS Chapter 9

Figure 2-5: Proposed Burwood North Metro Station Location

2.3 Challenges and Opportunities: Corridor Wide

Geometry

The Parramatta Road corridor within the study area typically includes three through traffic lanes in each direction with separate right turn pockets at all intersections where right turns are permitted. The kerbside lanes are either 'No Stopping', indicated by yellow lines adjacent to the gutter, and/or are signposted as 'Clearway' from 6:00am to 7:00pm on weekdays and from 8:00am to 8:00pm on Saturday and Sunday.

The speed limit is mostly 60 km/h with 40 km/h school zones located near Melbourne Street in Burwood and near Harris Road in Croydon.

Lane widths vary but are typically narrow and some less confident drivers are observed as being reluctant to drive parallel to trucks or buses in adjacent lanes, increasing headways and reducing mid-block capacity. Also, there are a number of property accesses directly off Parramatta Road and whilst their turning volumes are typically not high (except for service stations), there are multiple points of deceleration, turning and acceleration along the Corridor. The vertical alignment of the road corridor is best described as 'rolling' with grades on approach to Scott Street, on approach to Cheltenham Road and on approach to Grantham Street, having some effect on trucks, particularly in stop-start conditions.

Current Traffic Congestion and Pinch Points

Parramatta Road between Iron Cove Creek and the M4 intersection in Strathfield was heavily congested in 2018 not only during conventional commuter peak periods but also during much of the weekday as well as on weekends.

As shown in Figure 2-6 and Figure 2-7, 2018 intersection volumes were greatest between the M4 and Burwood Road, with a minor reduction further east in both peaks. Given that the Parramatta Road / M4 intersection was a 'T' intersection and that traffic arrivals from the M4 further west are not interrupted by intersections, this intersection was the key capacity constraint in the Corridor.

Prior to the opening of the WestConnex M4 East in 2020, there was a convergence of high volumes of through traffic eastbound from the M4 and from Parramatta Road in the west. Adding to these through movements, local traffic from Strathfield, Burwood and Canada Bay joined Parramatta Road, or crossed at key intersections. Parramatta Road was (and is) the primary east-west route between Parramatta River and the Hume Highway. The nature of eastbound traffic, particularly in the morning peak, was that the key pinch points vary but inevitably result in almost continual slow moving, congested conditions between the M4 intersection and the Iron Cove Creek crossing. Average morning peak speeds eastbound in 2018 were approximately 12 km/h to 15 km/h.

In the westbound direction similar to eastbound, there were continuous, slow moving, congested conditions from Great North Road all the way through to the M4 intersection. The M4 intersection was the clear source of congestion in the afternoon peak with queues often extending back past Shaftesbury Road. Average travel speeds between Iron Cove Creek in the evening peak and the M4 were often less than 10 km/h over the 4km length of Parramatta Road.

Adapted from Google Traffic Data

Figure 2-6: AM Peak Pinch Points (2018)

Adapted from Google Traffic Data

Figure 2-7: PM Peak Pinch Points (2018)

The Influence of WestConnex

The WestConnex Projects which directly influence traffic volumes on Parramatta Road between the previous M4 intersection and Iron Cove Creek include:

- **WestConnex M4 West:** the introduction of tolls in 2017 may have influenced route choice on the M4 west of its intersection with Parramatta Road and may have increased the rate of traffic arrivals to this intersection until WestConnex M4 East was completed
- **WestConnex M4 East:** which opened in July 2019 allows through traffic (paying the toll) to bypass Parramatta Road through the study section via a tunnel between Concord Road and Ashfield/Haberfield
- **M4-M5 Link:** proposed to open in 2023, will introduce further travel time savings for through traffic movements with an extension of tunnels to complete the WestConnex underground network and these additional travel time savings may attract additional traffic off Parramatta Road.

The publicly available WestConnex documentation expected that after the opening of WestConnex, traffic volumes on Parramatta Road would essentially be set back to 2012 volumes and would be maintained at these levels into the future. This has proven to not be the case. More detailed forecasts were provided in work completed by SGS Economics for City of Sydney in reviewing the EIS. This modelling, using the Zenith Transport model, identified that for Parramatta Road between Concord Road and Great North Road:

- Daily traffic volumes would reduce from 54,000 vpd (without WestConnex) to 39,000 vpd in 2021 (with WestConnex)
- Daily traffic volumes would be maintained at around 40,000 vpd until 2041.

This forecast reduction in traffic on Parramatta Road was approximately one-third of 2018 volumes and the reduction was expected to be disproportionately attributed to through traffic meaning a larger proportion of the traffic on Parramatta Road would be 'local' traffic movements.

In broad terms, these modelling outputs suggested that to match or even improve current levels of service, Parramatta Road could be limited to two through traffic lanes in each direction mid-block and at intersections but would possibly require additional turn pocket capacity to accommodate increasing local traffic movements. The PRCUTS suggested that WestConnex would 'release' road corridor space that could be used for a combination of alternative purposes, such as:

- Full bus lanes or bus 'jumps' at intersections
- Off-peak parking lanes via Clearways
- A separated cycleway corridor
- Wider footpaths.

The realisation of the vision for the Parramatta Road Corridor is now limited by a much smaller reduction in traffic volumes (post-WestConnex) than previously forecast. Parramatta Road still maintains a primary through movement function in the network. This has hampered its ability to provide greater accessibility for local movements and to reappropriate road space to public transport or active transport uses.

Source: Artist's Impression from Urban Growth NSW

Corridor Bus Services, Stops and Bus Priority Infrastructure

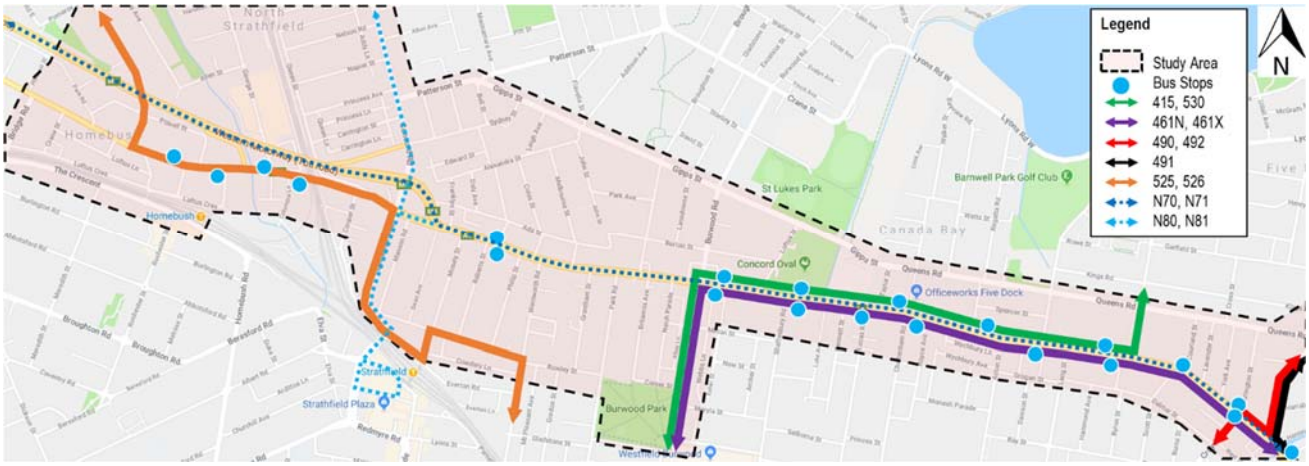
There are no bus routes running along the length of the Parramatta Road Corridor between Homebush Bay Drive and Iron Cove Creek. All existing bus routes enter Parramatta Road for short sections to typically move between suburbs north and south of Parramatta Road. The latest changes to the bus network along the Parramatta Road Corridor took effect in October 2020. Table 2-1 summarises the existing bus routes and frequencies using sections of Parramatta Road, with routes shown in Figure 2-8.

As part of the PRCUTS, 'rapid' or 'suburban' bus routes were proposed between Homebush and Parramatta, and between Burwood and the Sydney CBD.

Parramatta Road does not have any bus priority lanes between Homebush Bay Drive and Iron Cove Creek. Buses run with general traffic and typically use the kerbside or median lane due to the need to stop at kerbside bus stops. Buses stopping within kerbside lanes (as 'in-lane stops') do have the advantage of simply accelerating once they have dropped off/picked up passengers rather than having to merge back into traffic as would be the case if indented bus bays were provided.

Table 2-1: Existing Bus Routes using Parramatta Road

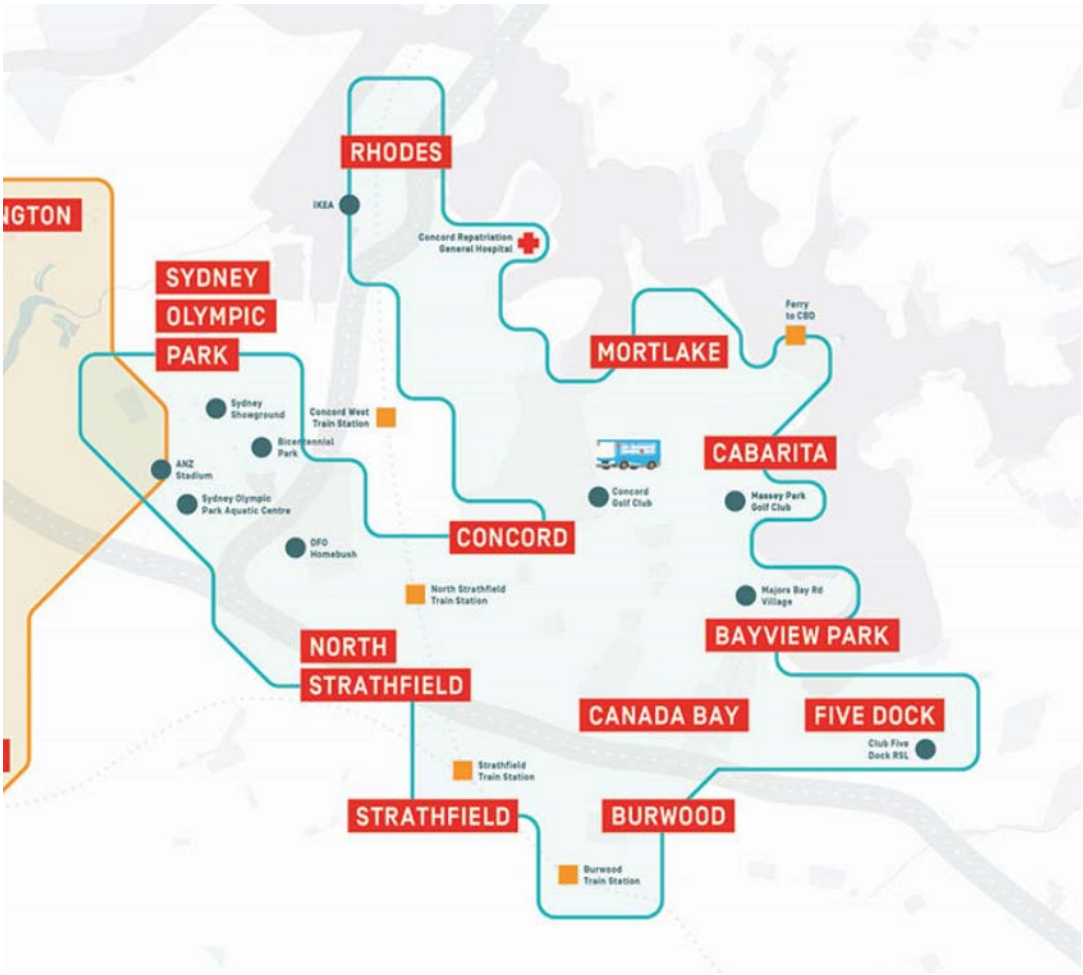
Route No.	Destination	Frequency
415	Campsie to Chiswick	15-20 mins (peak periods) 30 mins (off-peak periods and Saturday) 60 mins (Sunday)
461N	Burwood to City Hyde Park	30 mins (late night and early mornings daily)
461X	Burwood to City Domain	10-15 mins (peak periods) 15 mins (off-peak periods and weekends)
490	Drummoyne to Hurstville	30 mins (Monday to Saturday) 60 mins (Sunday)
491	Hurstville to Five Dock	30 mins (Monday to Saturday) 60 mins (Sunday)
492	Drummoyne to Rockdale	30 mins (daily)
525	Parramatta to Burwood via Sydney Olympic Park	20-25 mins (peak periods) 30 mins (off-peak periods)
526	Burwood to Rhodes Shopping Centre	15-25 mins (peak periods) 30 mins (off-peak periods)
530	Burwood to Chatswood	20-25 mins (peak periods) 30 mins (off-peak periods and weekends)
N70	Penrith to City Town Hall	60 mins (nightly)
N71	Richmond to City Town Hall	60 mins (nightly)
N80	Hornsby to City Town Hall via Strathfield	60 mins (nightly)
N81	Parramatta to City Town Hall via Sydney Olympic Park	60 mins (Monday to Saturday nights)



Adapted from Google Maps

Figure 2-8: Parramatta Bus Routes and Stops

In addition to public bus services, an Inner West 'on-demand' bus service operates across the study area. The on-demand bus service area is shown in Figure 2-9. The service does not have a fixed route or bus stops and allows buses to pick up and drop off at any safe location within the service area. The service operates every day, with the exception of Five Dock and Sydney Olympic Park which are not serviced on weekends.



Source: https://transportnsw.info/travel-info/ways-to-get-around/on-demand/inner-west

Figure 2-9: Inner West On-Demand Bus Service Area

Long Distance Cycling Routes

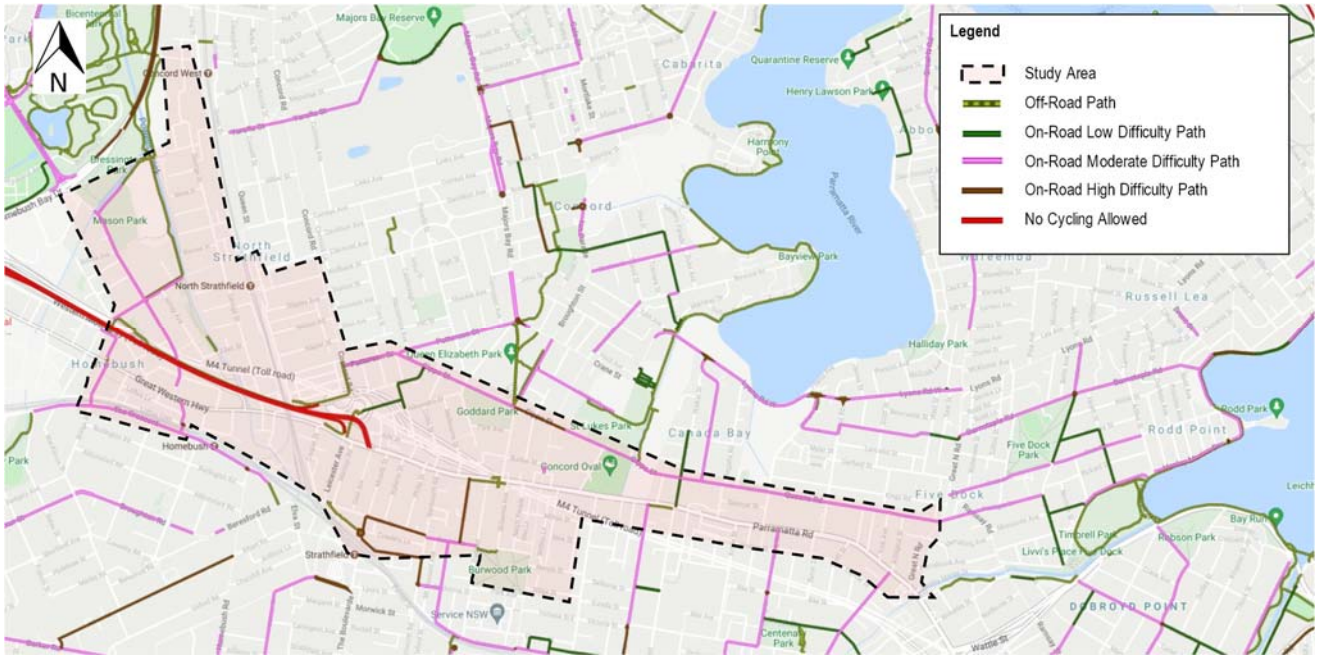
Currently there are limited to no designated east-west cycling connections through the Parramatta Road Corridor, as seen in Figure 2-10.

The only east-west route within the study area is an on-road 'moderate difficulty' route following Queens Road, Gipps Street, and Patterson Street. This route has connections for areas on the northern side of Parramatta Road. This route transitions into a short 'high difficulty' section between Burwood Road and Broughton Street, where it is shared with general traffic which has traffic flows in excess of 1,700vph and 1,800vph during the AM and PM peaks respectively. This parking lane/bicycle lane is not in operation between Broughton Street and Burwood Road. This shared facility continues along Queens Road; however, space is restricted to just the parking lane width leaving little to no room for cyclists without joining general traffic.

There are limited north-south connections across Parramatta Road within the study area with only three complete crossings shown at Lucas Road and Walker Street, a cyclist overpass bridge at Broughton Street, and using the pedestrian crossing at Bridge Road/Hillcrest Street. Additional routes lead to and from Parramatta Road on the southern side, however, these do not provide any cycling facilities to cross. These north-south routes provide access to the nearby Homebush Train Station on the southern side of Parramatta Road.

An east-west route is available south of the study area following the railway line, and north-south routes connect areas on the southern side of Parramatta Road to this east-west route.

As part of PRCUTS, improved cycling routes are proposed to allow for safer and more efficient connections between residential properties, commuter hubs, Parramatta, Homebush, and the Sydney CBD.



Adapted from: https://roads-waterways.transport.nsw.gov.au/maps/cycleway_finder

Figure 2-10: Regional Cycling Facilities

2.4 Challenges and Opportunities: Homebush North

Traffic Accessibility

The Homebush North Precinct primarily connects to Parramatta Road via George Street. The intersection of Parramatta Road / George Street is a signalised four-leg intersection which provides turning facilities in all directions. No restricted movements are present at this location. Direct traffic access routes between the Homebush North Precinct and Parramatta Road are limited due to the adjacent rail corridor and the road network in the area, resulting in an increase of traffic pressure along George Street.

Congestion

As the Homebush Bay North Precinct is located 1.6km north of Parramatta Road with only local traffic using the roads, the intersections operate under capacity during both the AM and PM peak periods.

Public Transport

Concord West Train Station is located on the eastern boundary of the precinct, providing train access along the T9 Northern Line. Trains from Concord West Station travel to Hornsby via Eastwood, and Hornsby via Central every 15 minutes in both directions during the AM and PM peaks.

No bus stops are located within the precinct. The closest bus stops, northbound and southbound, are located on Concord Road to the east, which is a 600m walk from the eastern end of Victoria Avenue. These bus stops are serviced by routes 458 Ryde to Burwood and 410 Hurstville to Macquarie Park.

Walkway and Cycleways

As shown in Figure 2-11 there are very limited cycleways within the Homebush North Precinct. There are a few cycleway connections into Bicentennial Park to the west, an off-road path from Victoria Avenue travelling south towards Powells Creek and a connection underneath the railway line on the western boundary at Station Avenue. The off-road cycleway towards Powells Creek provides a connection to Parramatta Road via Underwood Road.

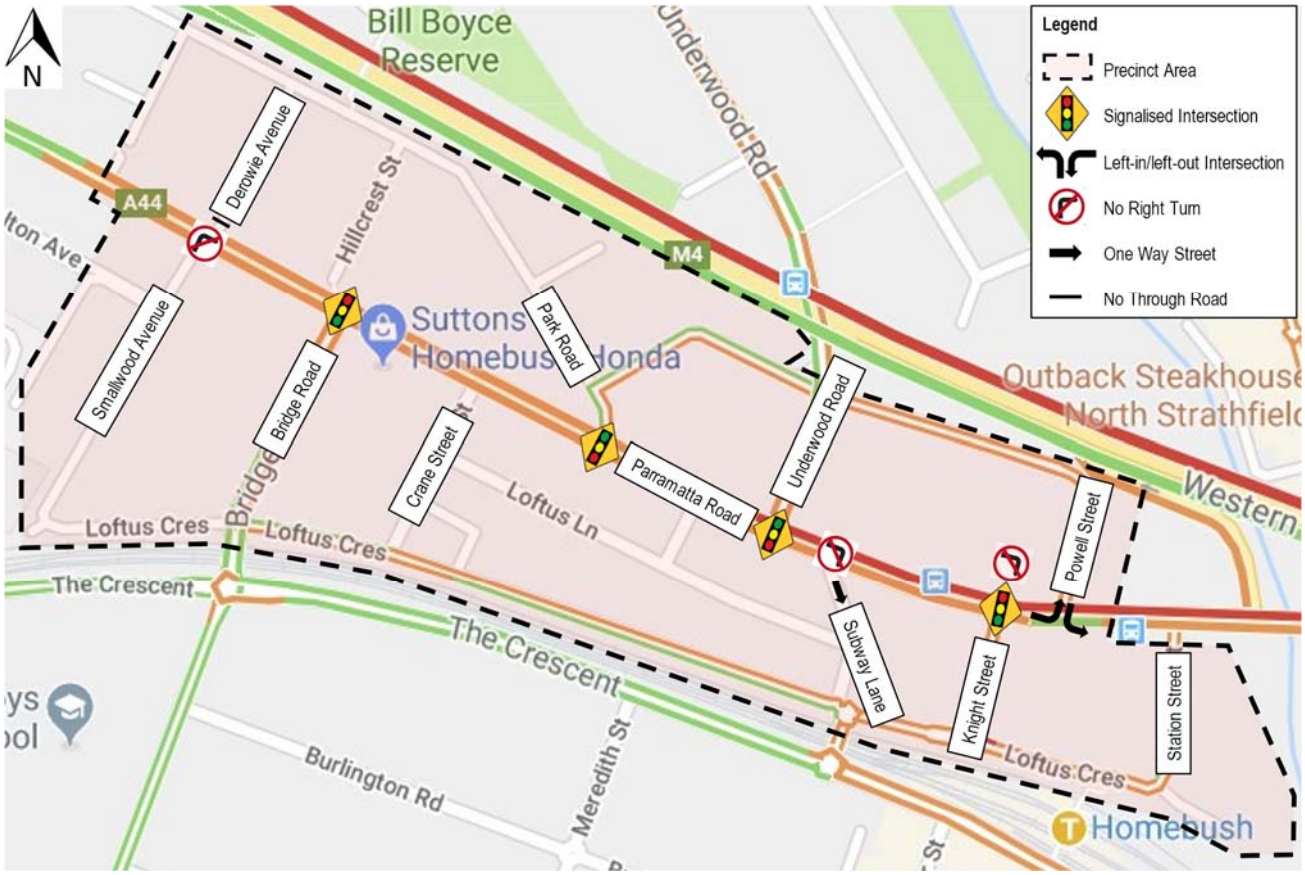
Adapted from: https://roads-waterways.transport.nsw.gov.au/maps/cycleway_finder

Figure 2-11: Existing Cycleways in the Homebush North Precinct

2.5 Challenges and Opportunities: Homebush South

Traffic Accessibility

Existing intersections and turning restrictions linking Parramatta Road with northern and southern areas of the Homebush South Precinct are shown in Figure 2-12.



Adapted from Google Traffic Data

Figure 2-12: Accessibility to / from Parramatta Road in the Homebush South Precinct

As shown in Figure 2-12, there are no 'cross-intersections' in the Homebush South Precinct. Drivers travelling northbound or southbound are required to enter from the local area, use short sections of Parramatta Road before turning again into the opposite local area. With a number of turn restrictions, this consolidates turning movements at a number of key intersections such as Bridge Road, Park Road, Underwood Road and Station Street. The Underwood Road intersection (for access to/from the north) and Bridge Road (for access for access to/from the south) are particularly heavily used as is the section between them along Parramatta Road. These arrangements also place pressure on local access streets such as Loftus Lane to provide a traffic circulation function in order to access intersections that can be used for turning onto Parramatta Road.

Previous planning has identified the potential for realigning the intersection of Bridge Road and Parramatta Road to provide a four-leg intersection with Hillcrest Street, enabling a direct north-south link across Parramatta Road and providing direct access to the west.

Congestion

In the AM peak, the intersections in the Homebush section of Parramatta Road generally operate under capacity, except in the case where queues from the Parramatta Road / M4 Motorway intersection spill all the way west back to Powell Street.

Similar conditions are also experienced in the PM peak with heavy volumes turning from Parramatta Road into the M4 Motorway demanding significant green signal time at this intersection and limiting the time available for eastbound through traffic. This can be seen in the traffic data in Figure 2-12. The ensuing queue propagates back along Parramatta Road to the west through to the Underwood Road intersection. In the westbound direction, a pinch point is formed at the George Street intersection, although queuing typically does not extend to Queen Street.

Public Transport

The Homebush South Precinct is connected to public transport by Homebush train station and two bus stops on Parramatta Road as seen in Figure 2-13. Homebush Train Station is part of the T2 Inner West & Leppington Line, with trains departing in each direction every 15 minutes during peak periods.

The two bus stops, eastbound and westbound, are serviced by routes 525 and 526. These bus routes travel along Underwood Road and then along Parramatta Road towards Concord Road, operating between Burwood and Parramatta, and Burwood and Rhodes.

With the proposed development in the precinct, there is an opportunity to increase public transport amenities with improved facilities and better connections for commuters.

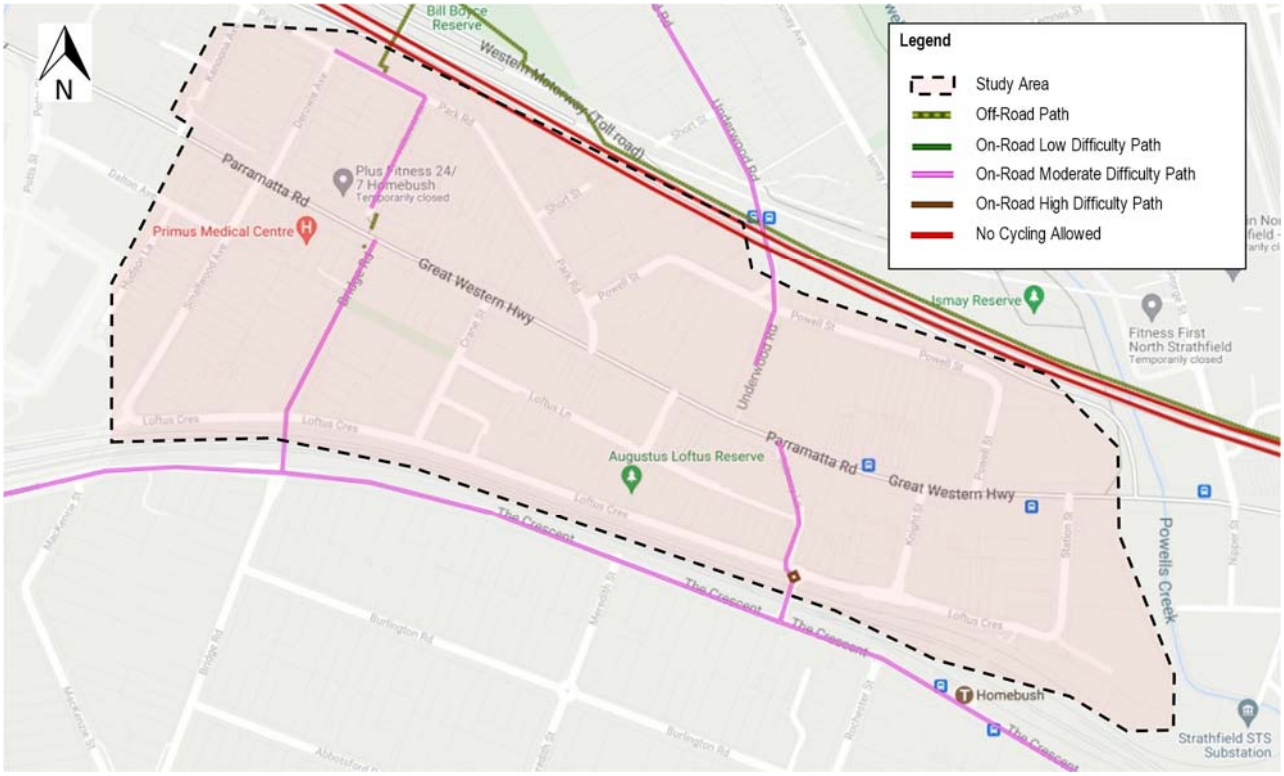
Adapted from Google Maps

Figure 2-13: Homebush South Precinct Public Transport

Walkway and Cycleways

As shown in Figure 2-14, many of the cycleways available within the Homebush South Precinct are on-road with 'moderate difficulty', including The Crescent, Bridge Road, Hillcrest Street, Subway Lane and Underwood Road. The only off-road cycleway is between Underwood Road and Parramatta Road via Ismay Reserve, opened after WestConnex M4 East completion in 2019.

There are limited off-road cycle paths and no cycleways suitable for inexperienced cyclists. The proposed B4 Mixed Use zoning in the precinct promotes an opportunity for shared paths around Parramatta Road and Homebush Train Station, and for cycleways beyond the M4 Motorway and railway line connecting the north and south.



Adapted from: https://roads-waterways.transport.nsw.gov.au/maps/cycleway_finder

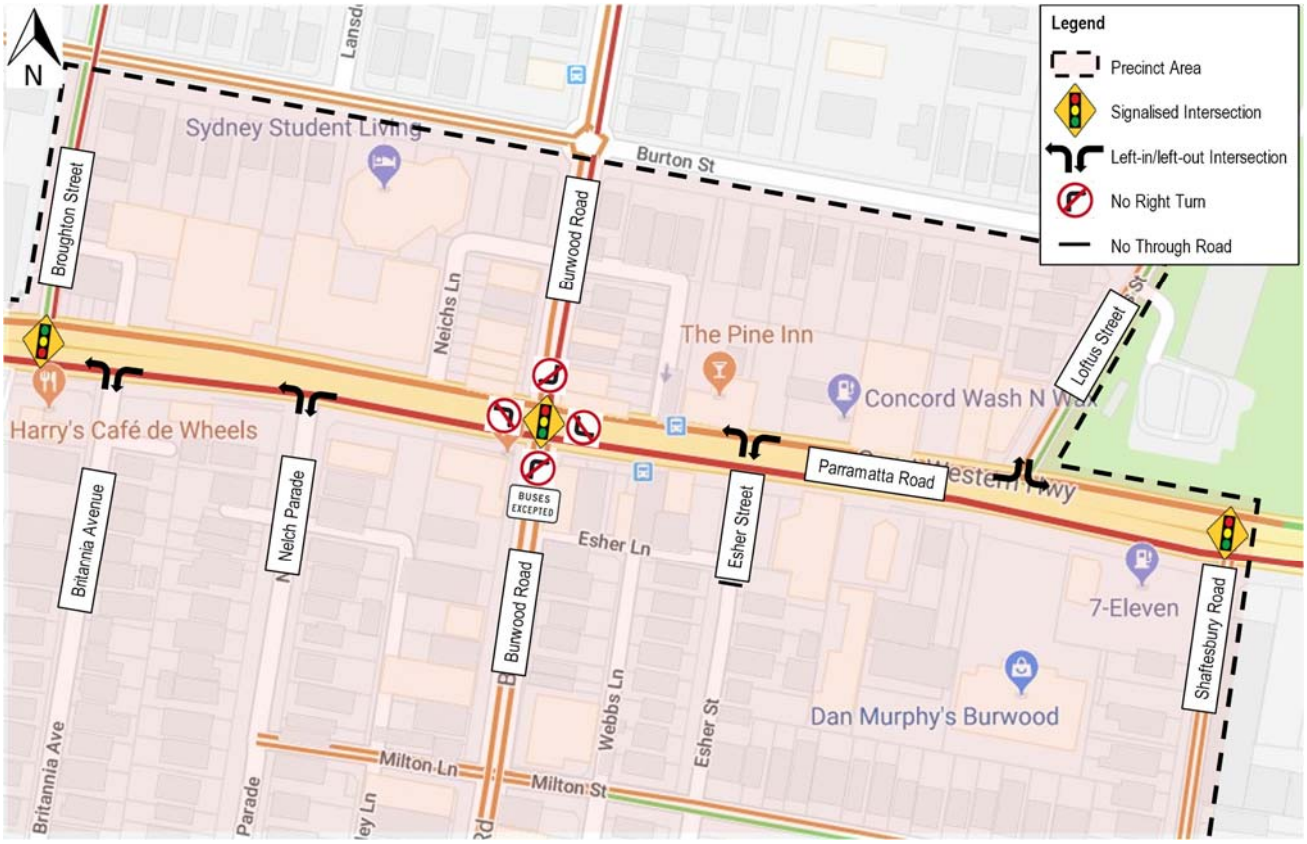
Figure 2-14: Homebush South Precinct Cycleways

2.6 Challenges and Opportunities: Burwood-Concord

Traffic Accessibility

Existing intersections and turning restrictions linking Parramatta Road with northern and southern areas of the Burwood Precinct are shown below in Figure 2-15. As illustrated in the figure, the busy Parramatta Road / Burwood Road signalised intersection provides the only direct north-south movements between the Burwood Town Centre and suburbs in the north. The intersection attracts over 5,000 vehicles during peak hours despite the right turn restrictions, acting as the main thoroughfare for the Burwood Town Centre.

The only opportunities for drivers travelling eastbound on Parramatta Road to turn right towards the Burwood Town Centre are the Wentworth Road or Shaftesbury Road intersections. The latter intersection was recently upgraded as a part of intersection works undertaken by TfNSW.



Adapted from Google Traffic Data

Figure 2-15: Accessibility to / from Parramatta Road in the Burwood Precinct

Congestion

Heavy congestion has been observed both eastbound and westbound on Parramatta Road in this section during both the AM and PM peak periods.

Queues in the eastbound direction are caused by through traffic turning right into Shaftesbury Road, with queues regularly spilling out of the turn pocket and into through traffic lanes. This occurs in both peak periods as it is one of the few right turn locations along Parramatta Road.

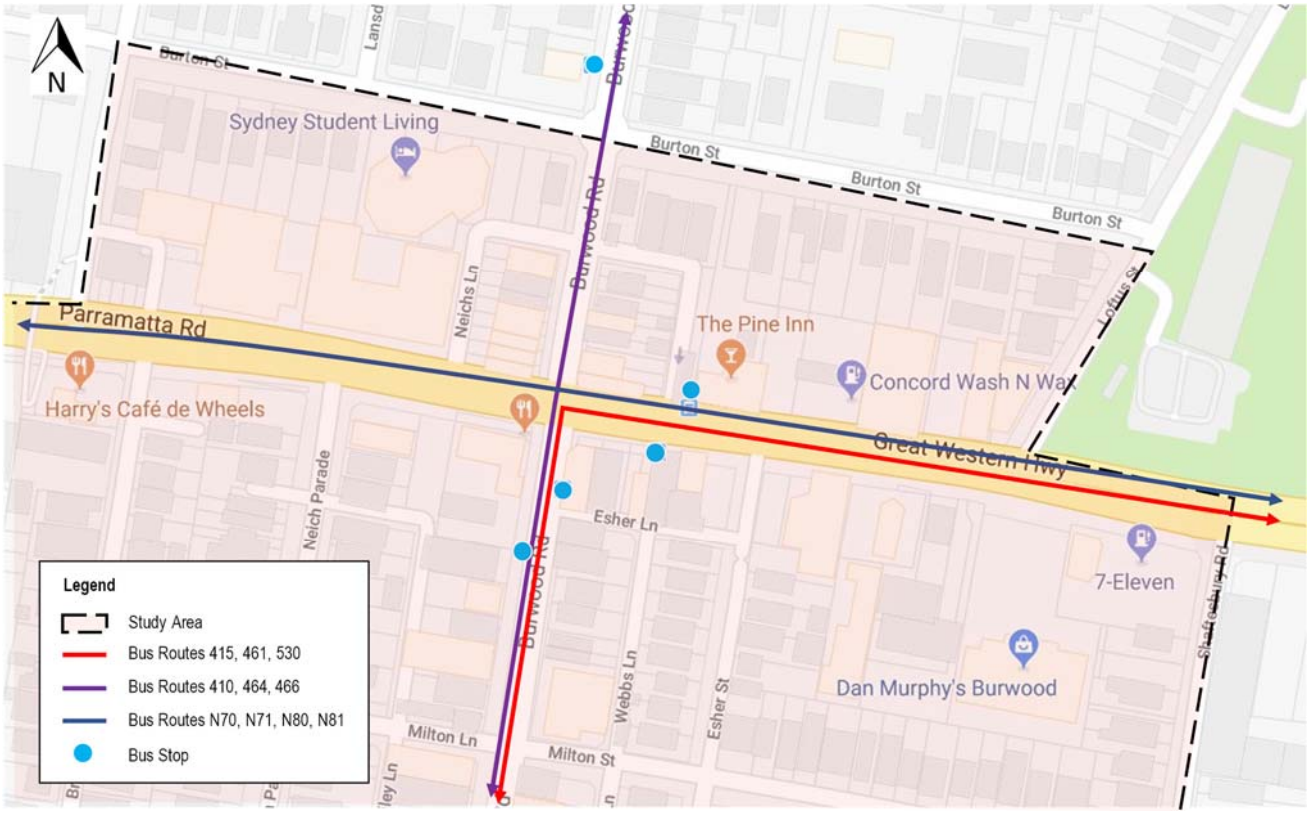
Public Transport

There are two bus stops on Parramatta Road within this precinct's boundaries. These two stops service the following routes, as shown in Figure 2-16:

- 415 – Campsie to Chiswick
- 461N – Burwood to City Hyde Park (late nights and early mornings only)
- 461X – Burwood to City Domain
- 530 – Burwood to Chatswood
- N70 – Penrith to City Town Hall (nightly only)
- N71 – Richmond to City Town Hall (nightly only)
- N80 – Hornsby to City Town Hall (nightly only)
- N81 – Parramatta to City Town Hall (Monday to Saturday nights only).

Excluding the NightRide bus services (N70, N71, N80 and N81), these services only travel along Parramatta Road for a brief period before continuing to other areas of the network away from the Parramatta Road Corridor.

Burwood Train station is located 300m south of the southern edge of the precinct.



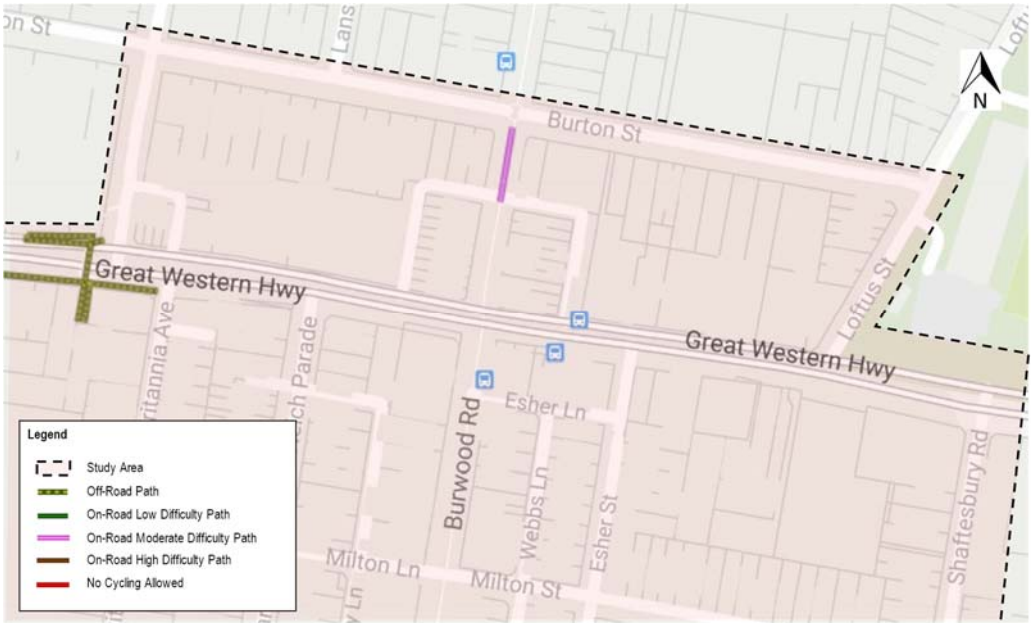
Adapted from Google Maps

Figure 2-16: Burwood-Concord Precinct Public Transport

Walkway and Cycleways

As shown in Figure 2-17, the only cycleway available within the Burwood Precinct is a short off-road shared path on the southern side of Parramatta Road, linking with a north-south footbridge near Broughton Street. There is an opportunity to extend this shared path north along Broughton Street, south along Nelch Parade towards the Burwood Town Centre, and east along Cromer Street and Meryla Street.

The existing network of narrow streets and footpaths throughout the Burwood Precinct presents a key challenge in retro fitting additional cycleways, particularly along Burwood Road which is a 40km/h high pedestrian activity zone. The 'People Street' and walking/through links along Burwood Road and surrounds proposed by RobertsDay identifies an opportunity to intensify and prioritise pedestrian use and amenity along this major thoroughfare to key attractors such as Westfield Burwood Shopping Centre and Burwood Train Station.



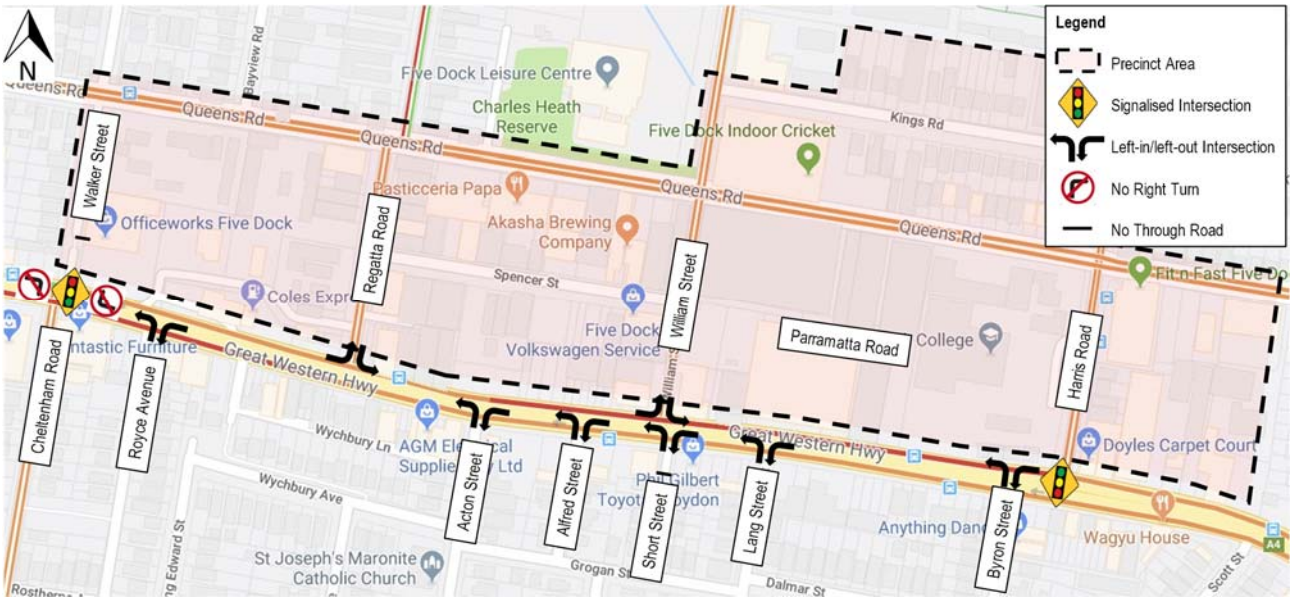
Adapted from https://roads-waterways.transport.nsw.gov.au/maps/cycleway_finder

Figure 2-17: Burwood-Concord Precinct Cycleways

2.7 Challenges and Opportunities: Kings Bay

Traffic Accessibility

Existing intersections and turning restrictions linking Parramatta Road with northern and southern areas of the Kings Bay Precinct are shown in Figure 2-18.



Adapted from Google Traffic Data Maps

Figure 2-18: Accessibility to / from Parramatta Road in the Kings Bay Precinct

As shown above, there is a four-leg signalised intersection at Parramatta Road / Walker Street / Cheltenham Road; however, Walker Street is a 'No Through Road'. Walker Street is only wide enough for one travel lane in each direction. There is an opportunity to widen Walker Street, as well as upgrade its intersections at Parramatta Road and Queens Road. Another option is to upgrade the Regatta Road intersections at Parramatta Road and Queens Road, given Regatta Road is already a wide road and borders the proposed (B4) Mixed Use zone.

Congestion

During the AM peak period, heavy congestion is observed on the eastbound approach to Harris Road. This is due to slow turning traffic into Harris Road restricting capacity on Parramatta Road eastbound, exacerbated by morning school pick-up and drop-off operations on Harris Road.

During both peak periods, westbound traffic queues downstream from the intersection of Parramatta Road / Burwood Road into the Kings Bay Precinct. There is slow moving traffic in both directions.

Queens Road serves as the parallel 'backbone' to the Kings Bay Precinct and operates at or near capacity with heavy traffic present in both the eastbound and westbound directions during both AM and PM peak periods. Queens Road has a narrow road reserve, with narrow traffic lanes and single-lane approaches to signals.

Public Transport

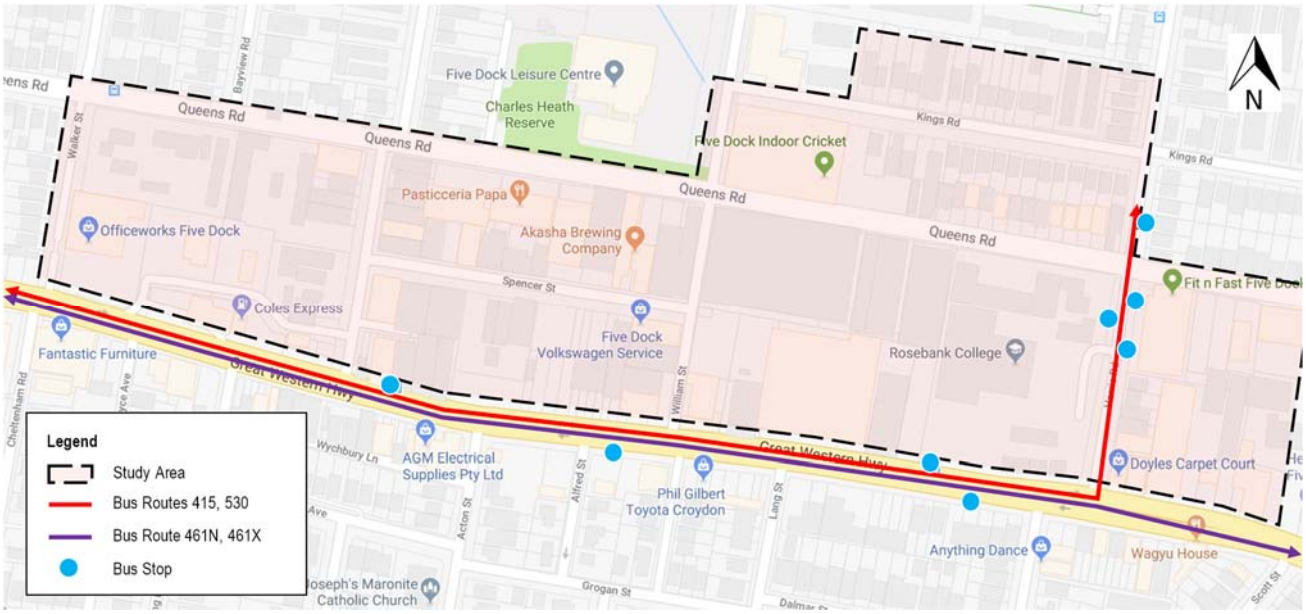
The Kings Bay Precinct does not currently have a train station and bus is the primary mode of public transport to the area. People travelling to Kings Bay have the following bus routes available, as shown in Figure 2-19.

- Route 415 - Chiswick to Campsie
- Route 461N - Burwood to City Hyde Park (late nights and early mornings only)
- Route 461X - Burwood to City Domain
- Route 530 - Burwood to Chatswood.

These services originate from Campsie, Chatswood, Burwood, the Sydney CBD, Mortlake and Five Dock. The spread of route origins means that most parts of the study area have convenient bus access to the Kings Bay Precinct.

Buses travelling to Kings Bay from southern and western areas will either use Parramatta Road or Burwood Road and these trips experience delays due to traffic congestion.

There is an opportunity to add new bus routes and/or update existing routes as the Kings Bay Precinct redevelops.



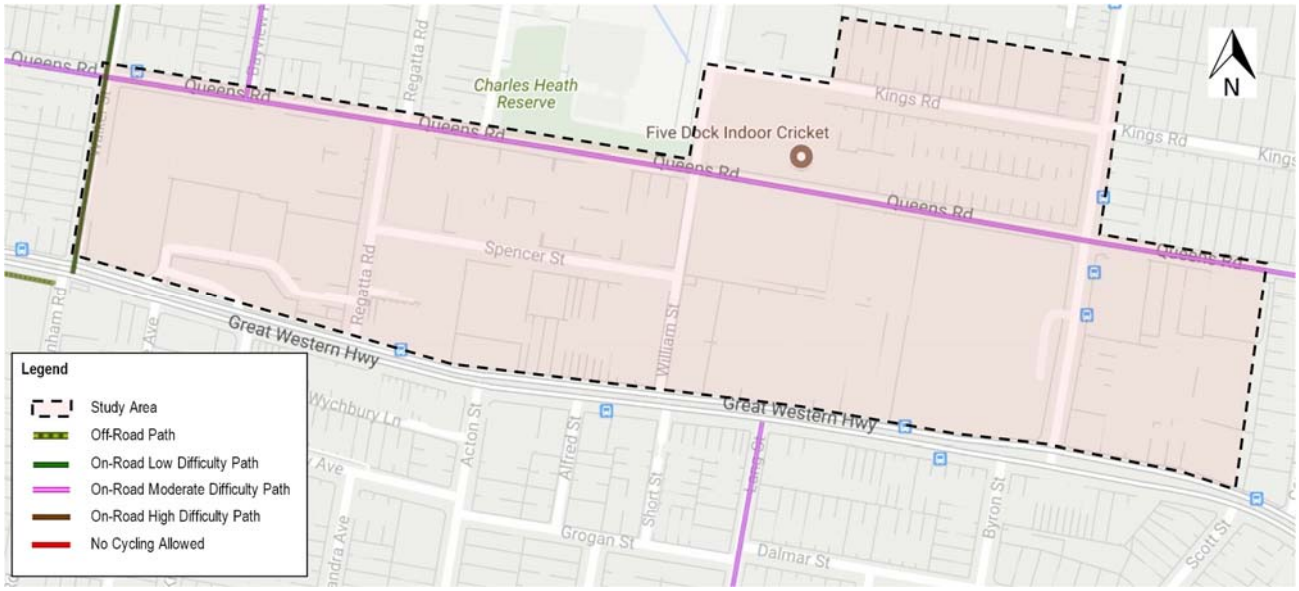
Adapted from Google Maps

Figure 2-19: Kings Bay Precinct Public Transport

Walkways and Cycleways

While footpaths are provided on both sides of Parramatta Road in the Kings Bay Precinct, there are no pedestrian crossings for almost 800 metres between the Walker Street and Harris Road intersections. The walking link on William Street proposed under the RobertsDay scheme could allow an opportunity for a signalised pedestrian crossing near the future rapid transit stop. Furthermore, the proposed upgraded intersections and walking/through links will improve accessibility between Kings Bay and Parramatta Road.

As shown in Figure 2-20, the only cycleways available within the Kings Bay Precinct are on-road with 'low difficulty' along Walker Street and with 'moderate difficulty' along Queens Road, meaning there are no off-road cycleways. A cycleway is proposed along William Street between Parramatta Road and Queens Road, linking up with the future rapid transit stop and across Parramatta Road. Adding new routes and/or upgrading existing routes could boost cycling rates in the study area, as well as trips to the Strathfield, Burwood and Canada Bay areas.



Adapted from https://roads-waterways.transport.nsw.gov.au/maps/cycleway_finder

Figure 2-20: Kings Bay Precinct Cycleways

3. VISION AND PLANNING PRINCIPLES

3.1 Integrated Vision

The PRCUTS set the vision for what the Parramatta Road Corridor is expected to look like and how it would function post-WestConnex. With two lanes' worth of through traffic relocating to the M4 East tunnel, an opportunity was identified to reclaim this road space for a rapid bus corridor, essentially using dedicated bus lanes for the entire length of Parramatta Road through the study area. The opportunity for this conversion of two traffic lanes to bus lanes may have passed as Parramatta Road traffic congestion reaches pre-WestConnex levels.

With redevelopment of local precincts adjacent to Parramatta Road, there will be more local movements by traffic, service vehicles, pedestrians and cyclists and placing a much greater importance on accessibility to, from and across Parramatta Road than is currently needed. There will essentially be a progressive shift in the function of Parramatta Road from primarily being a traffic movement corridor to achieving a more balanced role catering for turning movements, cross-movements and through movements as well for public transport, walking and cycling.

If the PRCUTS vision were able to be realised, bus lanes, more intersections, more crossing points and a reduced focus on through traffic efficiency would influence how Parramatta Road would look, feel and function. The key challenge however is that traffic modelling suggests that such a vision would introduce substantial traffic impacts in 2036, with much more traffic demand in the network than in 2019, That is, the vision is outside of the realm of the 'predict and provide' approach that has been adopted for this study.

The draft future transport links and land rezoning areas for each precinct are illustrated from Figure 3-2 to Figure 3-8. These draft links have been investigated as part of this report.

The following sections describe the key attributes of these draft precinct plans relevant to traffic and transport.

3.2 Urban Frameworks by Precinct (RobertsDay)

3.2.1 Overview

RobertsDay was commissioned in parallel with this Traffic and Transport Strategy to develop detailed plans for each precinct in the study area. This work was completed in 2019. Urban design frameworks for the Homebush North and Homebush South, Burwood and Kings Bay precincts were prepared. The precinct areas are shown in Figure 3-1. The work also included the creation of maps showing locations of existing land ownership and approvals, recommended on-road and off-road links, rezoning areas, building heights, floor space ratios and proposed character areas.

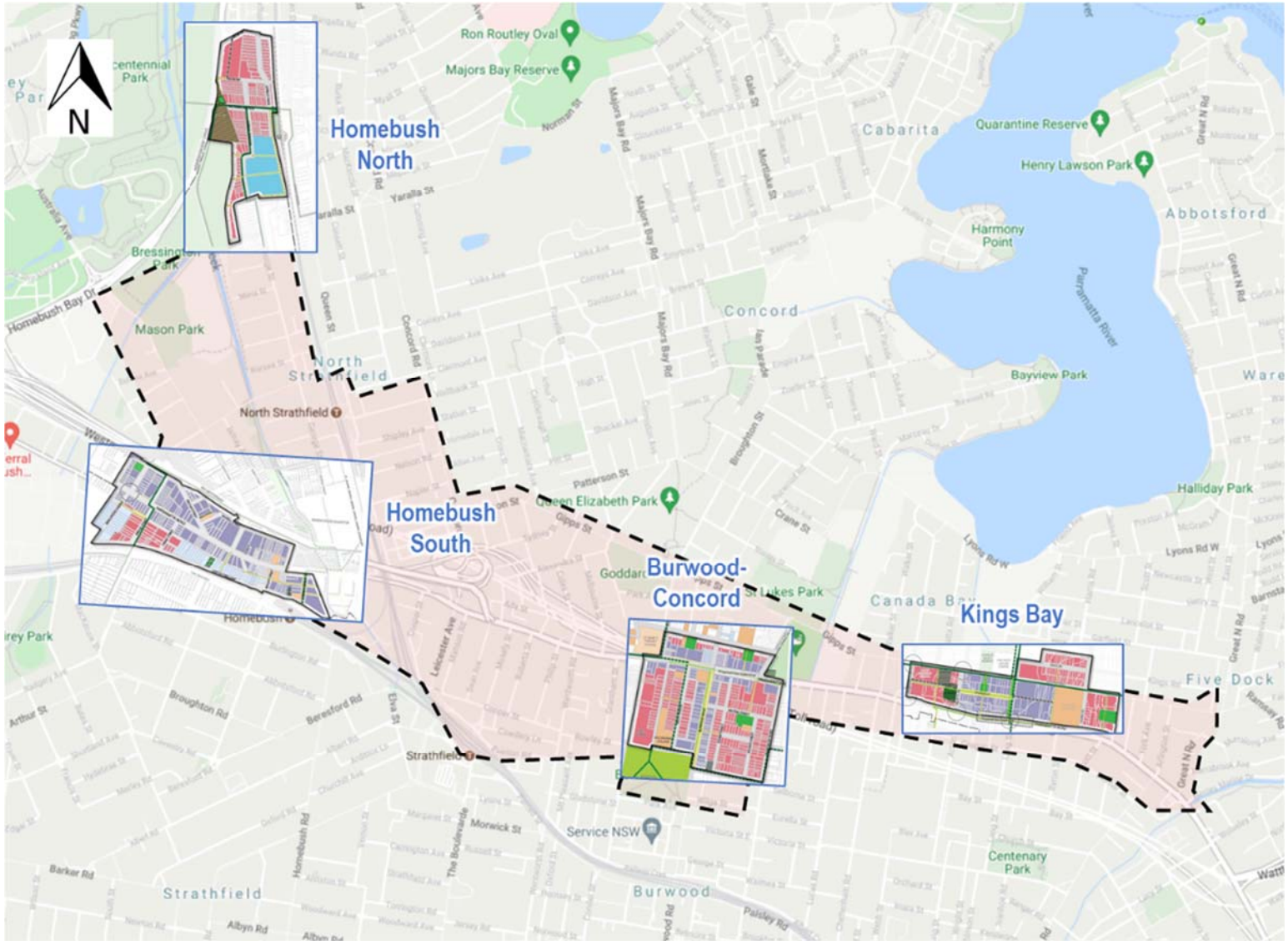
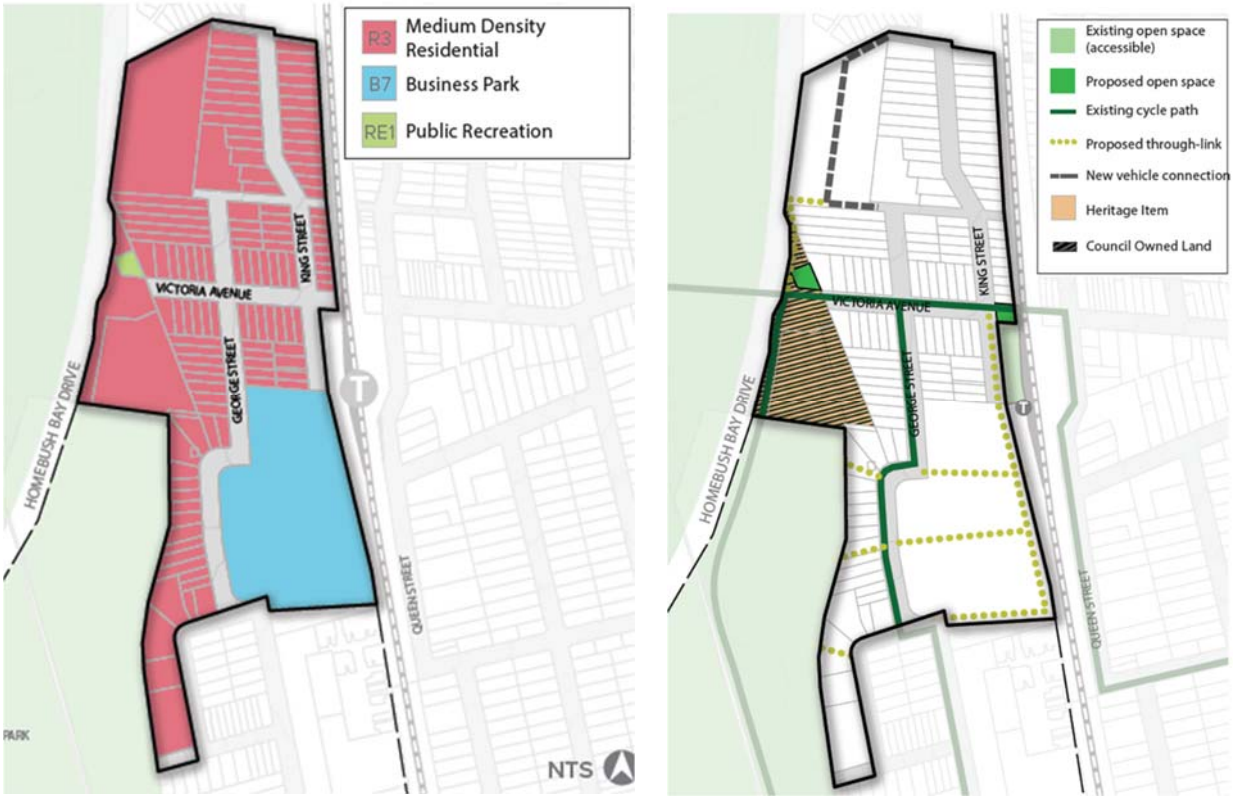


Figure 3-1: **Urban Framework Precincts by RobertsDay**

3.2.2 Homebush North Precinct

The Homebush North Precinct will remain predominately a residential area with a (B7) Business Park zone. New/additional through road links were proposed in proximity to Concord West Train Station to provide greater permeability for walking and cycling movements near the station whilst also improving traffic accessibility and circulation in the area.

Additional linkages were shown to also improve accessibility to Mason Park and the regional cycle path through it.



Source: Parramatta Road Precincts – A Transformation

Figure 3-2: Homebush North Precinct Rezoning Areas and Future Links

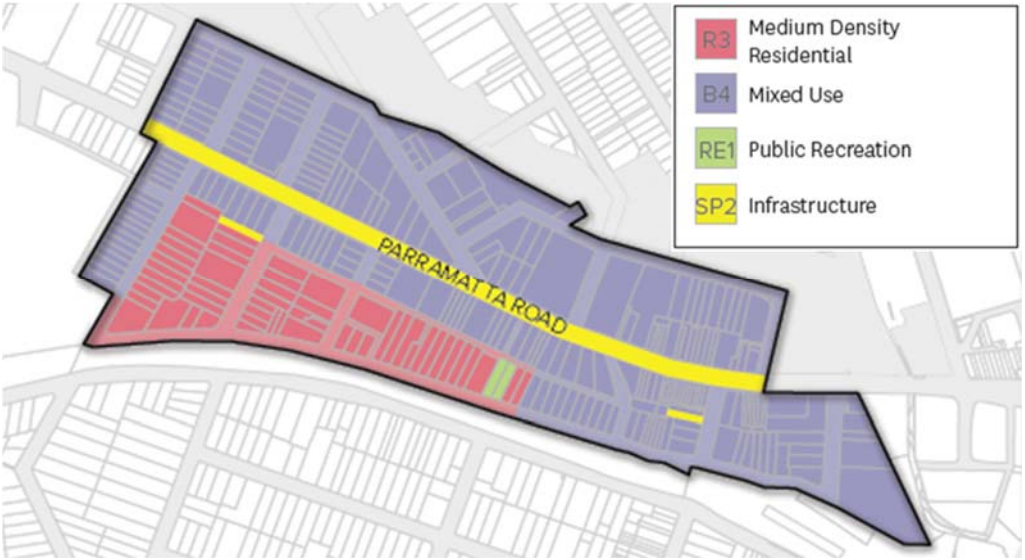
The additional through links proposed by RobertsDay are supported.

3.2.3 Homebush South Precinct

The proposed (B4) Mixed Use zoning within the Homebush South Precinct focuses strategically on the area around Parramatta Road and Homebush Train Station.

Loftus Lane is proposed to be extended to fulfil a 'rear access' function and provide a continuous walking and cycling route. A new four-leg intersection at Underwood Road and Parramatta Road could provide a new local north-south link to connect to Loftus Crescent and break up quite a large 'grid'.

RobertsDay identified there are a number of opportunities available to upgrade / realign intersections along Parramatta Road. The Smallwood Avenue and Derowie Avenue intersections with Parramatta Road were earmarked for this purpose as indicated in Figure 3-4. Furthermore, realigning the existing signalised T-intersection of Bridge Road and Parramatta Road to provide a four-leg intersection with Hillcrest Street was stated to improve connectivity across Parramatta Road for all transport modes. Whilst this may be the case, the 4-leg intersection would need to be large to cater for the turning movements at it, requiring a significant footprint.



Source: Parramatta Road Precincts – A Transformation

Figure 3-3: Homebush South Precinct Rezoning Areas

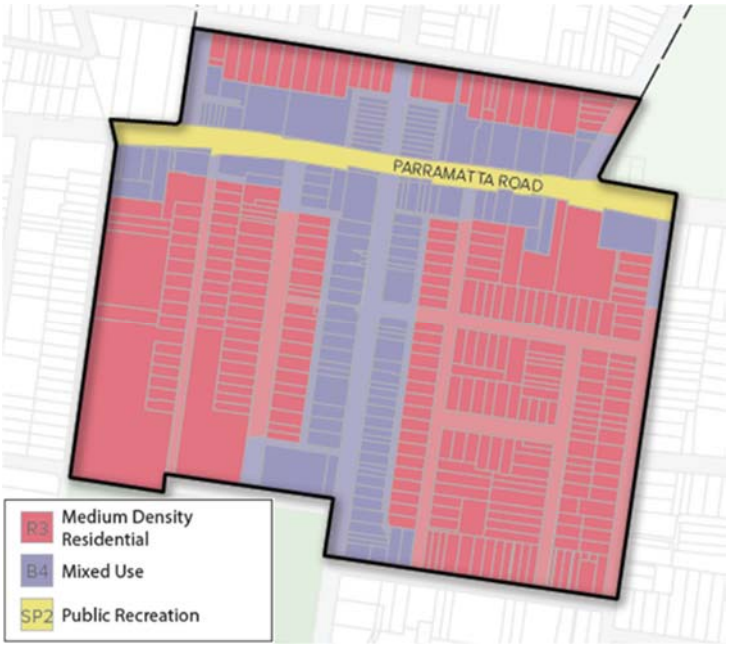
Source: Parramatta Road Precincts – A Transformation

Figure 3-4: Homebush South Precinct Future Links

3.2.4 Burwood Precinct

The proposed (B4) Mixed Use zoning within the Burwood Precinct focuses specifically around the key Parramatta Road / Burwood Road intersection and along Burwood Road to the south. This is highlighted by the proximity to Burwood Town Centre, Burwood Train Station and the potential rapid transit service along Parramatta Road. Notwithstanding the above, the future Burwood Metro station strategy was not included as a part of this land zoning.

A cycle path was proposed by RobertsDay along Broughton Street, Nelch Parade and the southern boundary of the Burwood Precinct, as well as through links providing greater permeability between existing roads. They identified a number of opportunities available to provide additional links, particularly west of Burwood Road, to improve connections to the future 'People' Street which aims to intensify and prioritise pedestrian use and amenity along Burwood Road. The local links proposed are supported.



Source: Parramatta Road Precincts – A Transformation

Figure 3-5: Burwood Precinct Rezoning Area

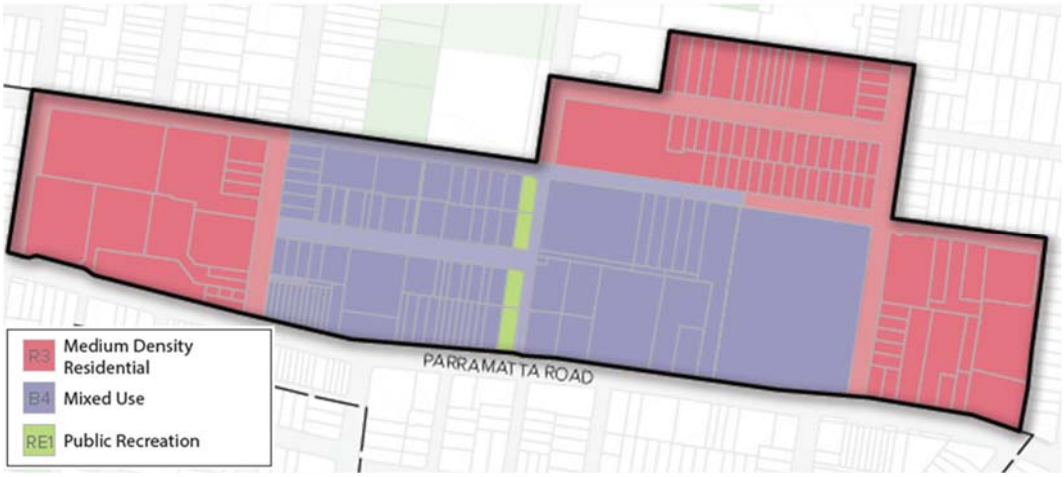
Source: Parramatta Road Precincts – A Transformation

Figure 3-6: Burwood Precinct Future Links

3.2.5 Kings Bay Precinct

The proposed B4 Mixed Use zoning around within the Kings Bay precinct focuses on William Street and Spencer Street. Spencer Street was proposed by RobertsDay to be a 'People's Street' with emphasis on active transport. The area is in proximity to the proposed location of the new (proposed) rapid transit service along Parramatta Road. This promotes the most intense travel activity in areas with the greatest transport accessibility to Parramatta Road and surrounding roads, and to amenities within the precinct.

The proposed walking and through links and the intersections earmarked for upgrades were claimed to provide additional and improved north-south and east-west connections in the Kings Bay Precinct and to Parramatta Road. The proposed north-south cycle path along William Street was stated to promote an opportunity for a signalised pedestrian crossing at Parramatta Road, which will also provide an additional crossing point and reduce the current 800-metre crossing gap between the Walker Street and Harris Road intersections. The permeability of the network as proposed by RobertsDay is supported.



Source: Parramatta Road Precincts – A Transformation

Figure 3-7: Kings Bay Precinct Rezoning Area

Source: Parramatta Road Precincts – A Transformation

Figure 3-8: Kings Bay Precinct Future Links

3.3 Key Transport Planning Principles

3.3.1 Principle 1 - Make the Most of WestConnex

WestConnex provides an alternative route for long-distance east-west traffic and is intended to take a reasonable proportion of these vehicles off Parramatta Road. Reducing through traffic and improving local accessibility are key facilitators of redevelopment in the precincts along Parramatta Road. Timely action is required to maximise the opportunities provided by WestConnex which include shifting the function of Parramatta Road towards local trips, upgrading intersections to improve local access and north-south access, providing bus lanes and improving active transport links to and from the Corridor. Bus lanes should be implemented as soon as possible to avoid the otherwise inevitable take-up of this relieved capacity by traffic from other origin-destination markets. Traffic congestion is rapidly returning to Parramatta Road and the practicality of this principle is diminishing.

Key outcome: *Don't let relieved capacity created by WestConnex be filled up with other through traffic trips. (This key outcome has since been circumvented through future year modelling results).*

3.3.2 Principle 2 - Localise Parramatta Road

The transfer of long-distance traffic from Parramatta Road onto WestConnex provides the opportunity to reconsider the role of the Corridor. While remaining a State Arterial Road and performing a movement function between centres, it is highly unlikely that Parramatta Road will 'de-congest', particularly if two of its lanes are dedicated to buses. Local traffic movements should be promoted and long distance through traffic usage should be discouraged to reinforce its local accessibility function. Methods of localising the role of Parramatta Road include upgrading existing intersections to cater for new development, providing more/new intersections to reduce traffic circulation distances, and improving and increasing north-south links across Parramatta Road for all modes.

Key outcome: *More signalised intersections, more side streets and more turning opportunities at intersections. (The potential to achieve this now is diminished and will diminish further over time as traffic continues to rapidly grow in the corridor).*

3.3.3 Principle 3 - Maximise Public Transport Efficiency

By removing over 20,000 vehicles per day from Parramatta Road, WestConnex will allow the introduction of dedicated (full-time) bus lanes on Parramatta Road. Dedicated bus lanes will allow rapid bus services to be introduced along with the potential for bus priority measures at intersections. Dedicated lanes will significantly improve bus travel times and reliability elevating the opportunity for buses to capture a larger proportion of more travel markets. Bus lanes on Parramatta Road will not only cater for new Rapid Bus Routes but will also incrementally reduce travel times and improve reliability for the myriad of services which weave their way from north-to-south (and vice versa) using sections of Parramatta Road. Even with Sydney Metro West, there would be a significant role for rapid buses on dedicated bus lanes to feed passengers from the Parramatta Road precincts to adjacent precincts, to Parramatta and to the Sydney CBD.

Key outcome: *Introduce kerbside bus lanes. (The opportunity to achieve this may now have passed).*

3.3.4 Principle 4 - Improve Walking and Cycling Connectivity

With long blocks fronting Parramatta Road, north-south permeability is currently restricted and there are long distances to walk between parking areas and local businesses in some places. Greater permeability through redevelopment, coupled with wider footpaths and more cross-Parramatta Road linkages will significantly improve the attractiveness of walking to/from precincts.

Cycling routes are disjointed and whilst long-distance cycling conditions along Parramatta Road may not be favourable, alternative parallel routes for casual/recreational cycling will be very important as will north-south linkages to train stations and bus stops.

Key outcome: *More signalised pedestrian crossing points at the additional signalised intersections and wider north-south paths along more street approaches to Paramatta Road. (Could be achieved to some extent with redevelopment).*

3.3.5 Principle 5 - Manage Long-stay Parking

Bus lanes will remove the possibility of reinstating on-street parking in Parramatta Road, however, more closely spaced side streets allow for access to more on-street parking space as well as better access to off-street parking areas. With short stay parking relocating to side streets, timing restrictions may be needed to ensure long-stay parking is discouraged in these areas to allow the short-stay parking to occur. With the rezoning of the four precincts and their proximity to rapid bus routes (and the existing train stations), increasing the modal shift away from cars will reduce the need for long-stay parking anyway. Societal trends in reduced car ownership along with increasing usage of rideshare and car-share means less long stay parking as well and this should be encouraged through policies to wind back the amount of all day parking required to be provided for residents in these highly accessible precincts.

Key outcome: *Lower multi-unit residential development parking rates in defined accessible precincts.*

3.4 Future Modal Share Targets

Table 3-1 shows the aspirational modal share targets for each precinct for the year 2023, which were accepted by the Project Working Group in 2018.

Table 3-1: Mode Share Targets

Precinct	Walk	Bicycle	Bus	Train	Car as Driver	Car as Passenger
Homebush	4%	2%	3%	40%	46%	5%
Canada Bay	4%	2%	20%	15%	54%	5%
Strathfield/Burwood	6%	2%	15%	45%	28%	4%

The reason Homebush bus shares are lower than the other precincts reflects current data which shows that most public transport trips to/from this precinct are by heavy rail. This is expected to continue to be the case as heavy rail would be far more competitive than bus even with bus lanes on Parramatta Road.

It is important to highlight that these targets were established in 2018 prior to confirmation of Sydney Metro West as an approved project and were not used further in the study.

3.5 Tempering of the Vision and Principles

The vision and key principles were established in mid-2018 before WestConnex M4 was open in the study area and the PRCUTS vision was of one lane each way on Parramatta Road being converted into exclusive use for public transport. Since then, the M4 has opened and Parramatta Road has maintained high traffic usage of its six-lane configuration. It is extremely unlikely that TfNSW will now reconsider the conversion of two of these lanes to bus lanes (or similar). Consequentially, some of the key principles agreed in mid-2018 have needed to be tempered in late-2021, as follows:

- **Principle 1:** Make the Most of WestConnex.

  Original Key outcome: Don't let relieved capacity created by WestConnex be filled up with other through traffic trips

  Change: *The opportunity time window for this outcome has passed. Modelling by TfNSW shows Parramatta Road carrying even higher traffic demands in 2036 than it did in 2018 (pre M4 East). The scope for changes along Parramatta Road limited to some potential increases in side street accessibility and turn restrictions to better manage localised congestion as side street demand increases.*

- **Principle 2:** Localise Parramatta Road.

  Key outcome: More signalised intersections, more side streets and more turning opportunities at intersections

  Change: *The opportunity time window for this outcome has passed with the scope for changes along Parramatta Road limited to some potential increases in side street accessibility at existing intersections, and turn restrictions to better manage localised congestion as side street demand increases*

- **Principle 3**: Maximise Public Transport Efficiency.

  Key outcome: Introduce kerbside bus lanes

  Change: *TfNSW has advised not to include kerbside bus lanes in the modelling for the Parramatta Road corridor. Also, since mid-2018, MetroWest has been confirmed with stations at Burwood North and Strathfield North.*

Bus service planning is likely to be modified significantly to anchor to with these new stations whilst also servicing the existing train stations and residential areas in the study area.

- **Principle 4:** Improve Walking and Cycling Connectivity.

  Key outcome: More signalised pedestrian crossing points at the additional signalised intersections and wider north-south paths along more street approaches to Paramatta Road.

  Change: *The role of Parramatta Road seems to have defaulted back from the PRCUTS vision to its existing role and any additional intersections are unlikely to be supported. Nevertheless, opportunities to increase the number of pedestrian crossing opportunities, particularly near uplift areas, have been pursued.*

- **Principle 5:** Manage Long-stay Parking

  Key outcome: Lower multi-unit residential development parking rates in defined accessible precincts.

  Change: *No change.*

4. CORRIDOR-WIDE STRATEGIES

4.1 Forecast Corridor Growth

4.1.1 STFM Travel Zones

The Strategic Traffic Forecasting Model (STFM) is a strategic transport model which covers metropolitan Sydney. TfNSW has updated this model and provided outputs from it to ensure consistency of growth assumptions for the length of PRCUTS being investigated. There are 26 STFM travel zones within the study area as shown in Figure 4-1. The zones, and part zones, which contain the redevelopment precincts (or 'uplift areas') are shown in a darker colour.

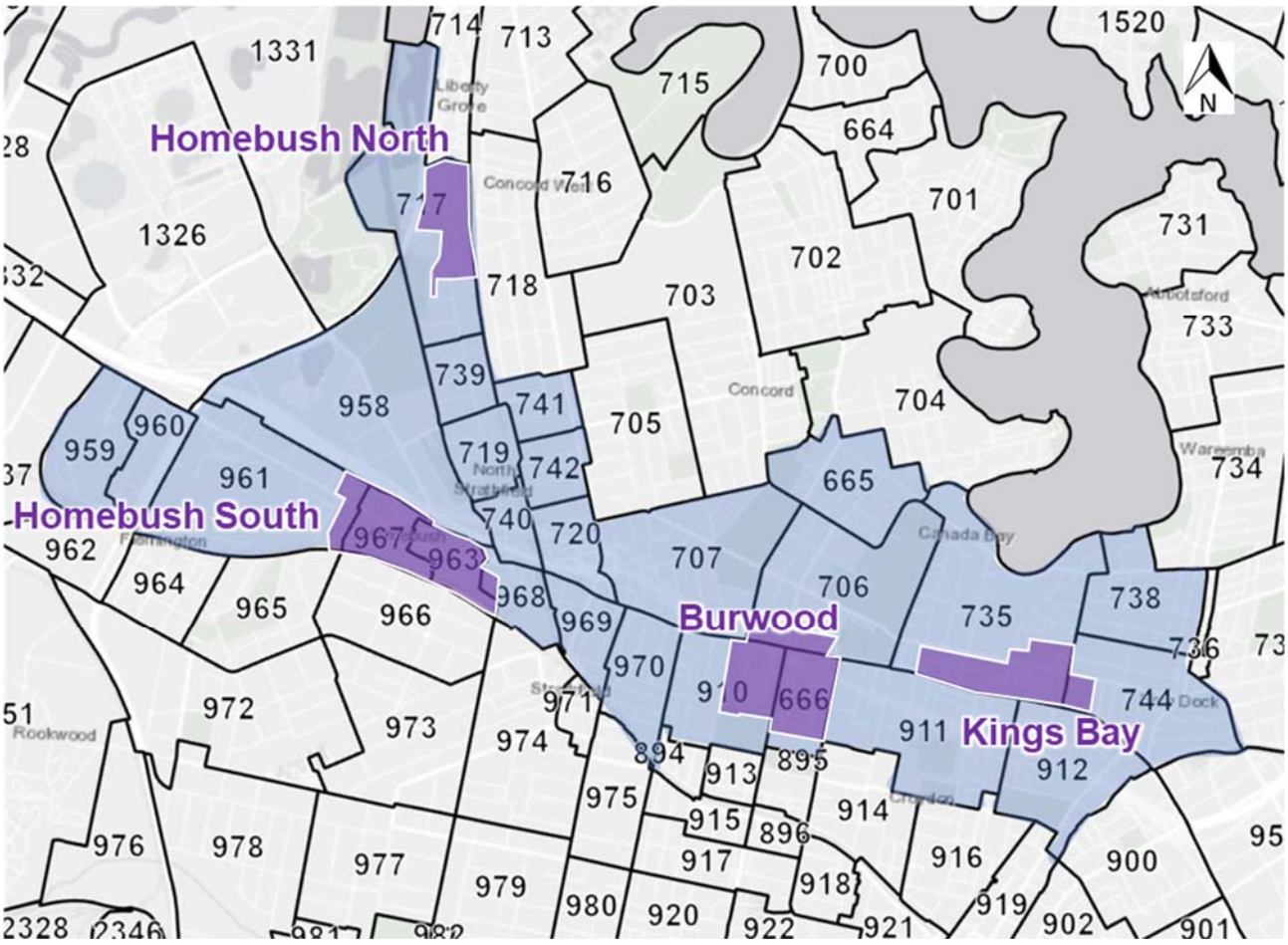


Figure 4-1: STFM Travel Zones in the Study Area (and uplift areas in purple)

4.1.2 Population Growth

For the study area zones, the background population growth and the additional population growth in the proposed uplift areas are shown in Table 4-1.

Table 4-1: Study Area Population Growth from 2016 by Travel Zone

STFM Zone	2016	2016 - 2026 Growth	2016 - 2036 Growth
665	1473	+821	+3263
666	1443	+3468	+3708
706	1380	+770	+3058
707	2056	0	+1697
717	1543	+979	+2677
719	590	0	+1280
720	583	0	+241
735	2690	+6122	+6531
738	1618	+415	+665
739	1355	0	+2935
740	0	0	0
741	538	0	+222
742	666	0	+276
744	2359	+606	+970
910	1343	+3229	+3453
911	1978	0	+1841
912	1531	0	+2205
958	1233	0	+7901
959	2245	0	+283
960	2086	0	+382
961	364	+2244	+4460
963	832	+2031	+2217
967	1167	+2847	+3108
968	895	+2186	+2386
969	2776	0	+1920
970	1626	0	+201
Total	**36369**	**+25,719**	**+57,881**

Accounting for development in the uplift areas, the study area's population will increase from 36,000 in 2016 to 94,000 in 2036. The distribution of this population is shown in Figure 4-2.

The highest population numbers in 2036 are located in the Homebush South (zone 958) and Kings Bay (zone 735) precincts. These areas are also the ones with the greatest population growth between 2016 and 2036 as shown in Figure 4-3.

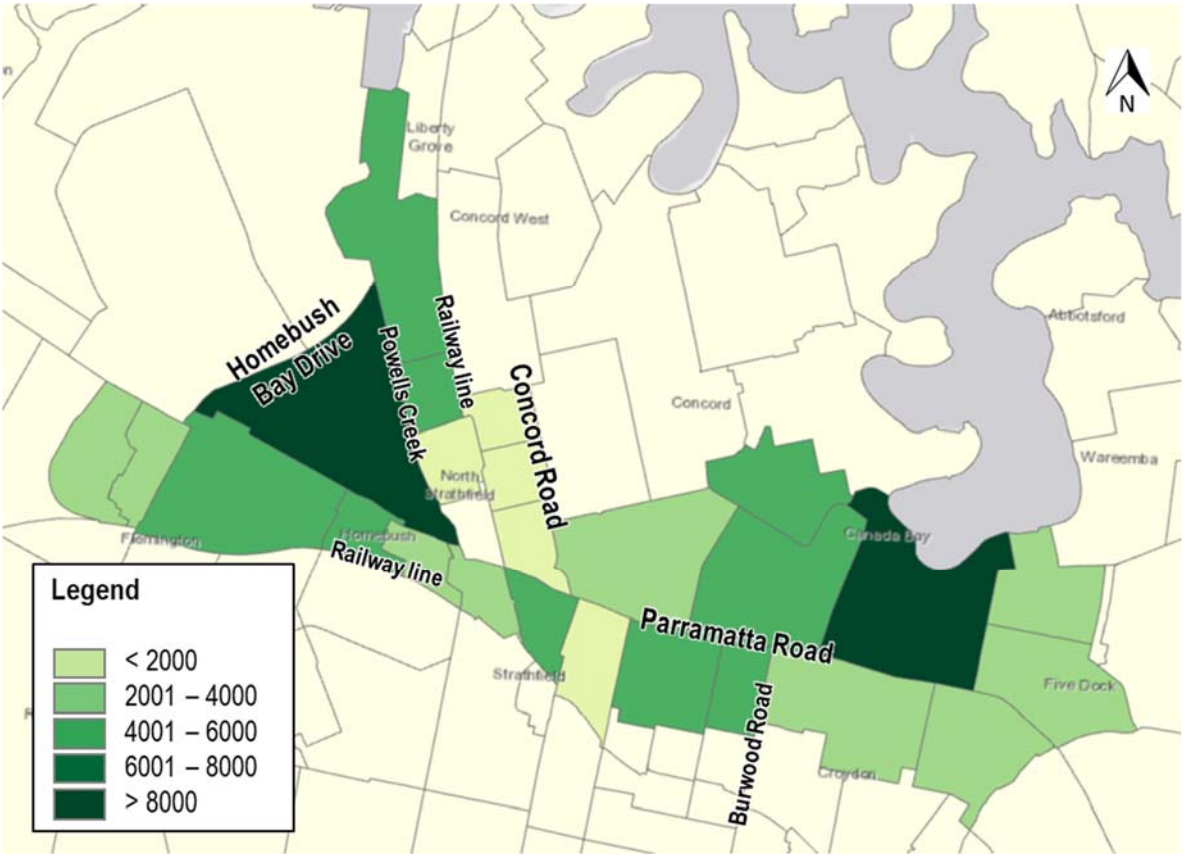


Figure 4-2: **Population in 2036 with Uplift**

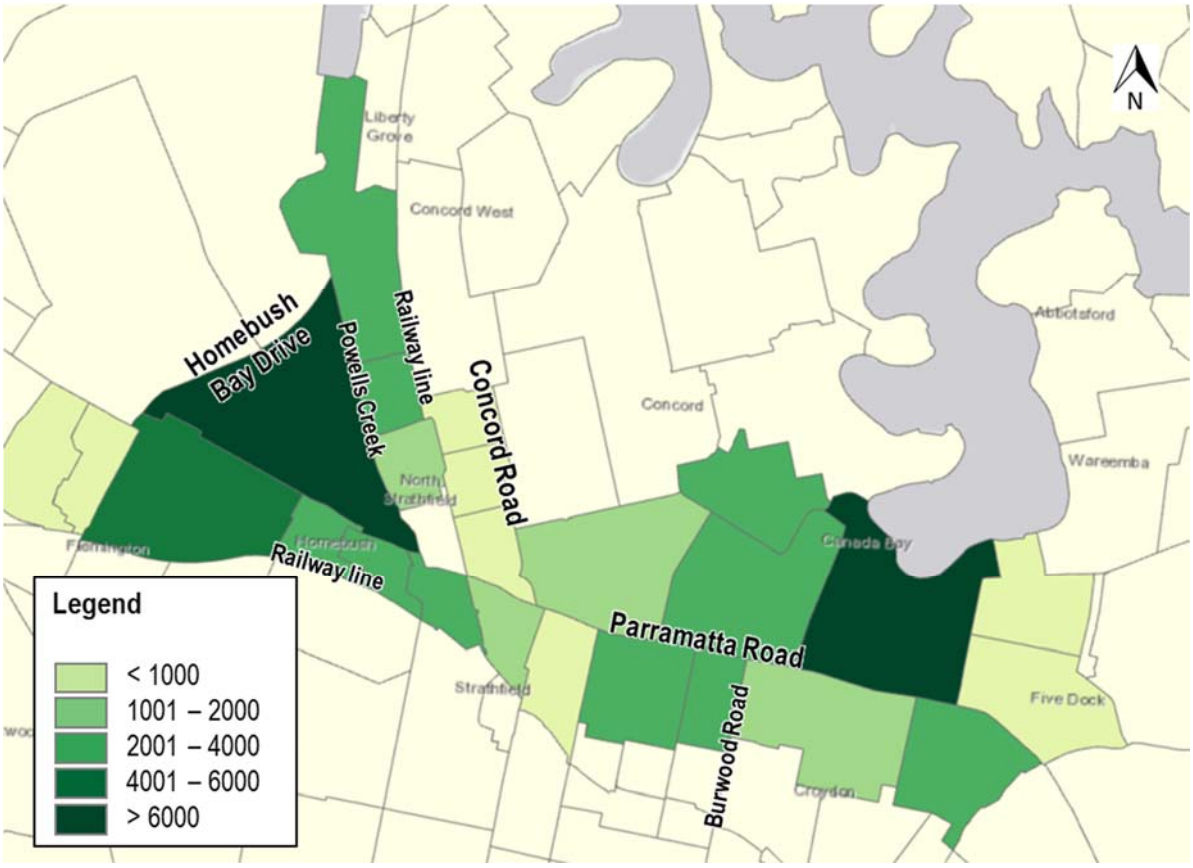


Figure 4-3: **Population Growth between 2016 and 2036 with Uplift**

4.1.3 Employment Growth

Local employment in the study area generates more incoming traffic in the AM peak and more outgoing traffic in the PM peak, to and from other parts of Sydney. The employment growth to 2036 is shown in Table 4-2.

Table 4-2: Study Area Employment Growth from 2016 by Travel Zone

STFM Zone	2016	2016 - 2026 Growth	2016 - 2036 Growth
665	7	+6	+18
666	645	+19	+41
706	800	+668	+1910
707	516	+0	+305
717	1787	+181	+641
719	708	+0	+138
720	195	+0	+59
735	1644	+152	+336
738	798	+3	+71
739	14	+0	+3
740	1302	+0	+252
741	308	+0	+93
742	139	+0	+42
744	1299	+4	+115
910	1604	+47	+101
911	873	+0	+514
912	379	+0	+773
958	2991	+0	+1386
959	1334	+0	-164
960	98	+0	+100
961	3535	+399	+741
963	602	+1012	+1091
967	372	+625	+674
968	340	+571	+615
969	178	+0	+559
970	1120	+0	+30
Total	**23588**	**+3686**	**+10444**

The number of jobs in the study area will increase from 23,588 in 2016 to 34,032 in 2036.

Figure 4-4 shows the distribution of jobs in 2036. The area with the most jobs are in the Homebush South precinct and surrounds (zones 958 and 961), bounded by Homebush Bay Drive, Powells Creek and the Main Suburban railway line. The greatest employment growth is in the Kings Bay precinct (zone 706), followed by the Homebush South precinct (zone 958), as shown in Figure 4-5.

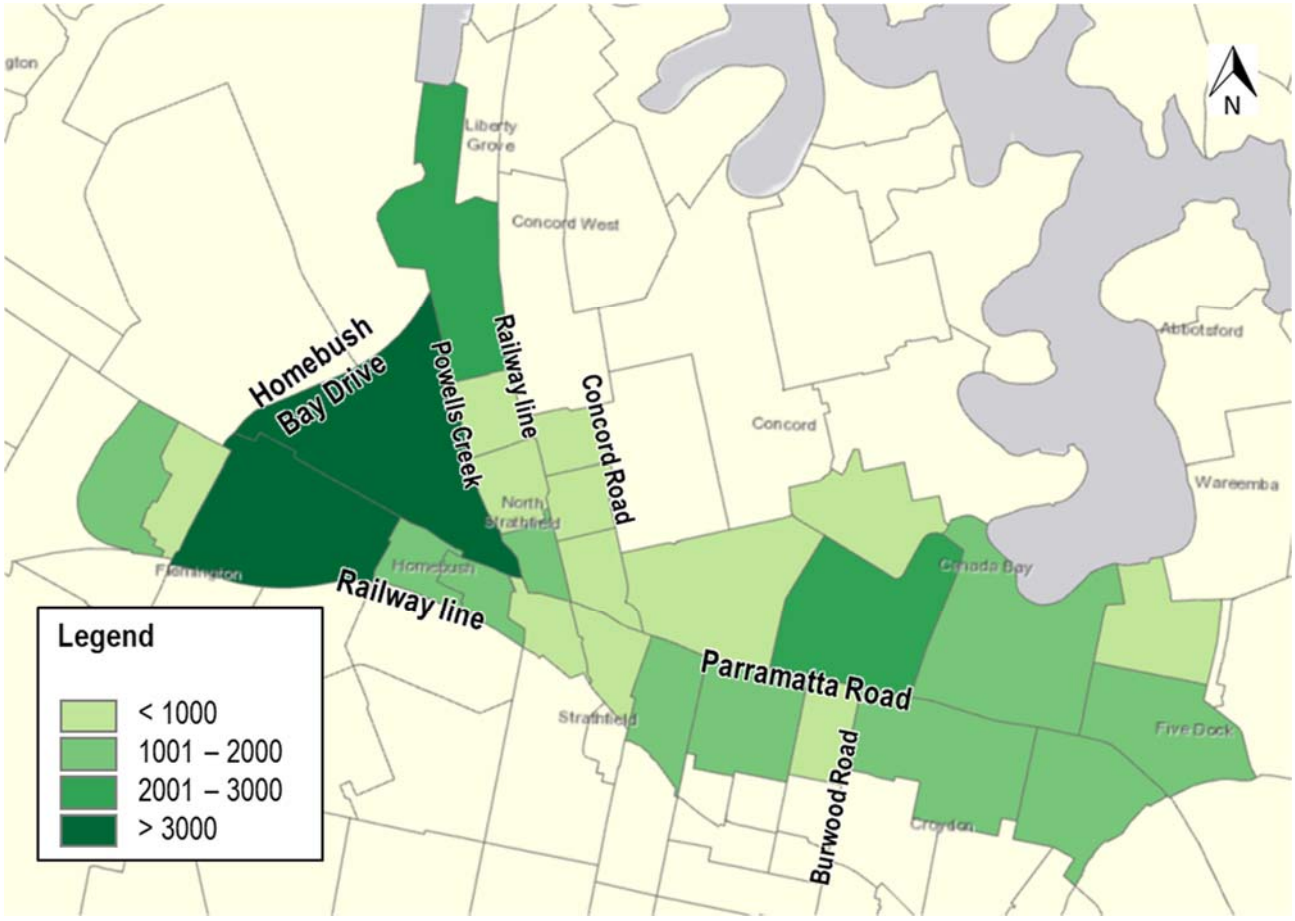


Figure 4-4: **Employment in 2036 with Uplift**

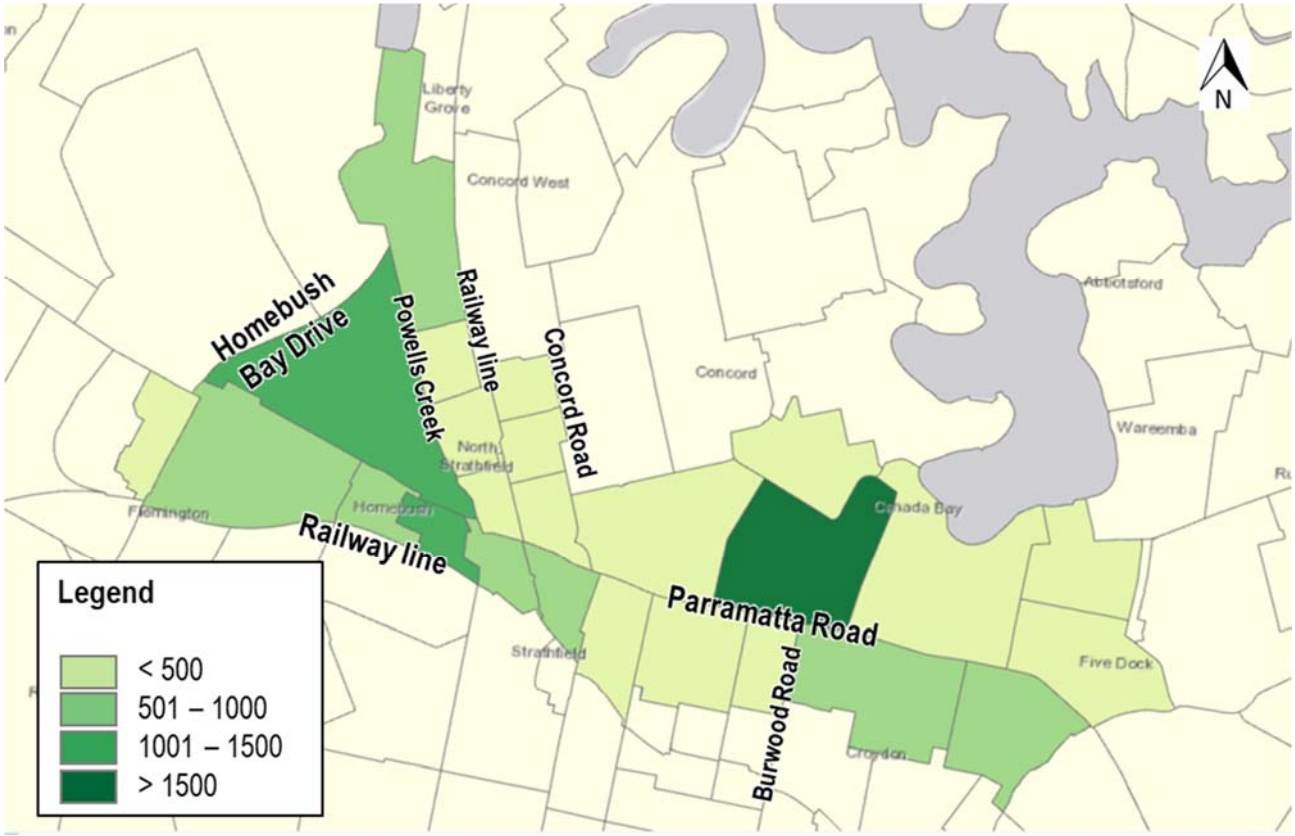


Figure 4-5: **Employment Growth between 2016 and 2036 with Uplift**

4.1.4 Traffic Growth

Table 4-3 shows the traffic growth from 2019 projected from the STFM for trips to, from, within and through the study area. The majority of the traffic growth in these scenarios is 'external to external'; that is traffic passing through the study area.

Table 4-3: Study Area Traffic Growth from 2019

Scenario	Ext to Ext	Int to Ext	Ext to Int	Int to Int	Total
AM Peak - 2 Hours					
2026 AM Benchmark	+3,826	-474	-719	-70	**+2,563**
2026 AM with Uplift	+5,485	+1,141	+118	+48	**+6,793**
2036 AM Benchmark	+7,223	-311	+167	+132	**+7,210**
2036 AM with Uplift	+10,979	+2,424	+2,150	+552	**+16,106**
PM Peak - 2 Hours					
2026 PM Benchmark	+4,613	-904	-567	-91	**+3,051**
2026 PM with Uplift	+6,707	+168	+1,400	+75	**+8,350**
2036 PM Benchmark	+8,008	+32	-358	+131	**+7,814**
2036 PM with Uplift	+12,267	+2,480	+2,914	+694	**+18,356**

Ext: Means external to the study area.
Int: Means internal to the study area.

The ultimate scenario (2036 with Uplift) shows a total growth in traffic of around 16,000 to 18,000 trips across the two hour peaks. It is important to note that the 'Ext to Ext' traffic includes WestConnex traffic passing through the study area and not using Parramatta Road.

4.1.5 Future Year Traffic Demands

Table 4-4 shows the total traffic demands from STFM within the study area.

Table 4-4: Study Area Traffic

Scenario	Ext to Ext	Int to Ext	Ext to Int	Int to Int	Total
AM Peak 2 Hours					
2019 AM	36,045	4342	5043	270	**45,701**
2026 AM Benchmark	39,871	3868	4324	200	**48,263**
2026 AM with Uplift	41,530	5484	5161	318	**52,493**
2036 AM Benchmark	43,606	4031	5192	402	**53,231**
2036 AM with Uplift	47,024	6767	7193	823	**61,806**
PM Peak 2 Hours					
2019 PM	37,218	6163	4554	339	**48,274**
2026 PM Benchmark	41,831	5258	3987	249	**51,325**
2026 PM with Uplift	43,925	6330	5954	414	**56,624**
2036 PM Benchmark	45,698	6195	4196	471	**56,560**
2036 PM with Uplift	49,832	8643	7469	1033	**66,977**

Ext: Means external to the study area.
Int: Means internal to the study area.

As shown above, within the study area, total traffic demand is expected to increase from 45,000 - 48,000 vehicles per two hours in 2019 to 61,000 - 66,000 vehicles per two hours in 2036 with Uplift. The data reflects 9% - 10% more traffic in the year 2026 peak two hours and 16% - 18% more traffic in the year 2036 peak two hours due to the uplift. With the uplift and in 2036, the network sees 35% to 39% increase from 2019.

4.2 Methodologies

4.2.1 Traffic Models Development and Approval Process

Base Model - 2018

A base year Aimsun microsimulation traffic model was prepared in 2018 for the study area. The model used starting traffic demands from a 'cordon' of the STFM and then calibrated and validated to traffic data. The 2018 base model was deemed fit-for-purpose and approved for use by TfNSW (then Roads and Maritime Services) in late 2018.

Updated Base Model – 2019

The WestConnex M4 tunnel was opened in July 2019 and the 2018 model was updated to create 2019 (post-WestConnex) base traffic demands to account for this major change in traffic patterns.

Cordon matrices were extracted from the STFM for 2019 (post-M4 tunnel) and compared to the 2018 STFM cordon matrices so that the traffic demands changes could be replicated in the study area Aimsun model. The process used is shown in Figure 4-6.

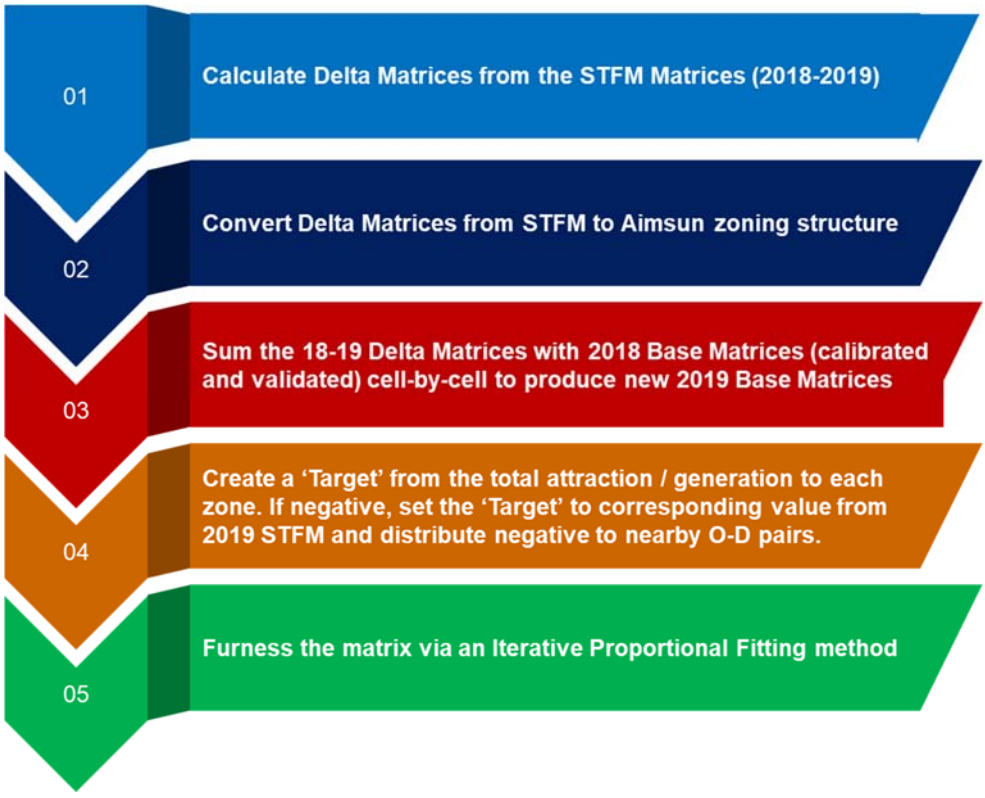


Figure 4-6: 2018 to 2019 Traffic Demand Development Process

These 2019 traffic demands were used only for the development of future year traffic demands (2026 and 2036) and were not modelled in Aimsun.

Future Year Models – 2026 and 2036

Cordon matrices were extracted from the TfNSW - provided STFM for 2026 and 2036 for two traffic demand scenarios: No Uplift and With Uplift.

The process for the development of the future year traffic demands is summarised in Figure 4-7.

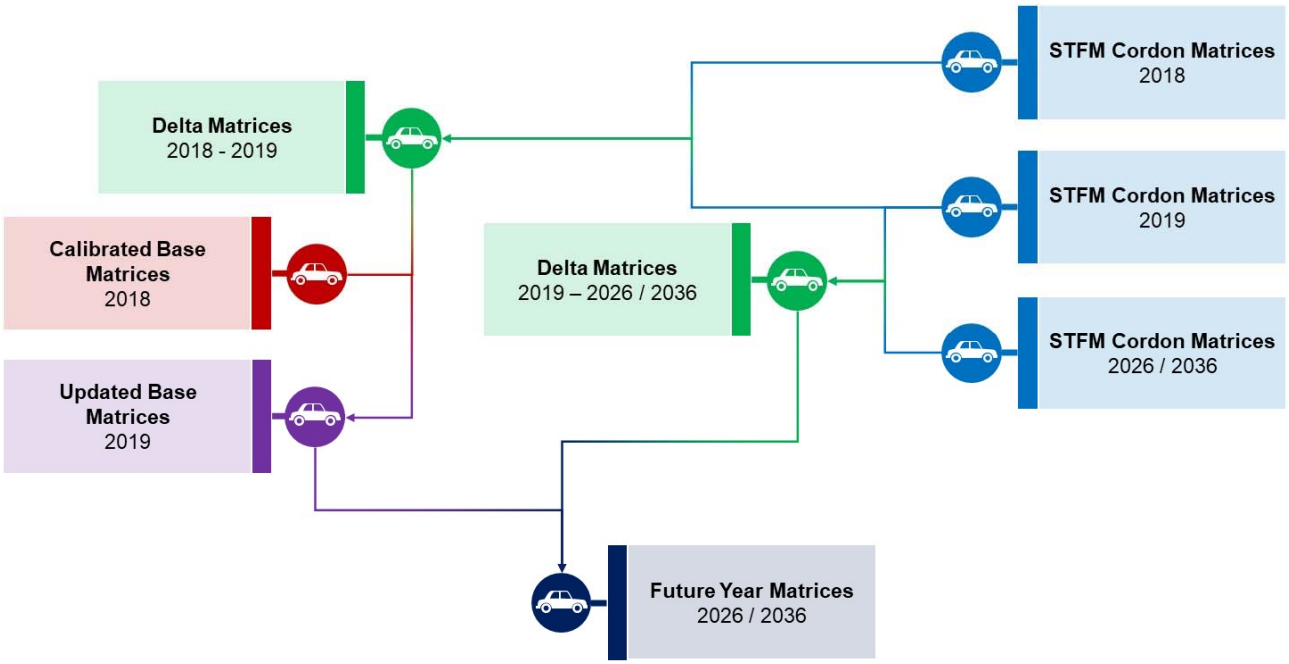


Figure 4-7: Future Year Traffic Demands Calculation Process

Stripping Back Future Year Growth

Preliminary outputs from the future year models (both with and without Uplift) found that forecast demand significant exceeded the capacity of the road network by 2036, with extensive delays and long queues causing instability in the convergence of the model, and circular congestion eventuating.

This is not an uncommon finding in urban networks where large strategic growth forecasts are added to heavy base traffic demands. In reality, the network would be upgraded as this growth occurs or the growth could be tempered. That is, substantial growth in demand and no network upgrades is a hypothetical case.

The non-convergence of the models led to unrealistic route choice and the future year growth was reduced to a level where the network was capable of accommodating the growth with realist route choice and model convergence. To achieve this, a reduction factor was applied to all external-to-external growth and the growth in the PRCUTS development precincts were unchanged.

Upon further advice from TfNSW in mid-August 2021, the reduction of external-to-external growth was changed from a global reduction to a more targeted approach. The growth reductions were applied to only those network entry points which were affected by capacity constraints. These were identified from preliminary microsimulation model runs and are highlighted in Figure 4-8.

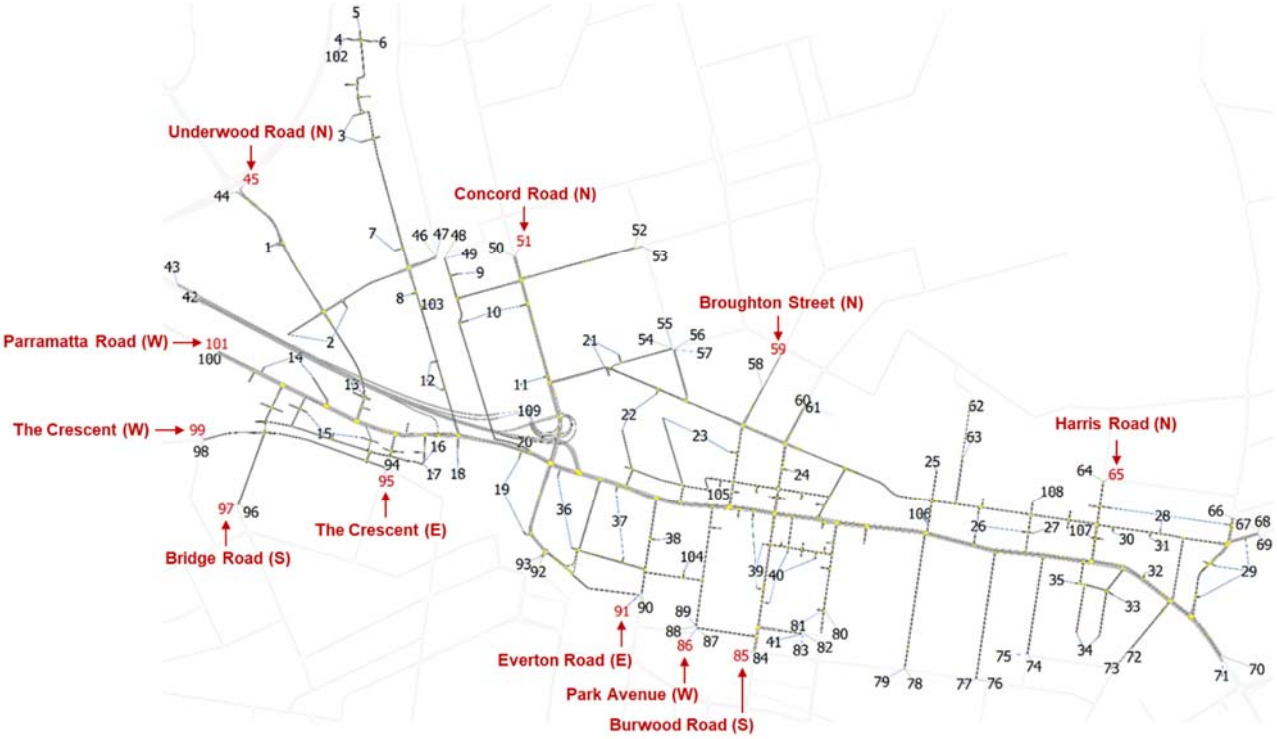


Figure 4-8: Constrained Network Entry Points with Reduced Traffic Growth

The applied factors are summarised in Table 4-5.

Table 4-5: Applied External-to-External Growth Factors

Peak	2026 Benchmark	2026 Uplift	2036 Benchmark	2036 Uplift
AM	1.0	1.0	0.7 (-320 trips)	1.0
PM	1.0	1.0	0.4 (-471 trips)	0.8 (-347 trips)

The lower reductions in the Uplift scenarios compared to the Benchmark scenarios are due to Do Minimum network improvements which were implemented in the Uplift Scenarios only to ensure the functional performance of the model in the Uplift scenarios (see Section 4.2.3).

Model Peer Review by PricewaterhouseCoopers (PwC)

In early August 2021, DPIE advised that TfNSW had raised a request for a peer review of the future year Aimsun traffic model to be undertaken by PwC. The peer review report was received mid-September 2021 and raised a number of comments and recommendations. These issues were addressed to the satisfaction of DPIE and TfNSW, allowing the impact assessment modelling to commence.

4.2.2 Traffic Modelling Scenarios

Three scenarios were prepared for comparison as summarised in Table 4-6.

Table 4-6: Modelling Scenarios

Scenario	Includes			
	Background Traffic Growth	PRCUTS Development	Do Minimum Upgrades	Upgrades Scheme
Benchmark	☑	☒	☒	☒
Uplift	☑	☑	☑	☒
Uplift (Upgraded)	☑	☑	☑	☑

4.2.3 Traffic Network Upgrades Development

Do Minimum

During the iterative testing for future year model convergence, it was necessary to implement 'Do Minimum' upgrades in the Uplift model. The substantial growth in traffic associated with background growth and PRCUTS development resulted in a series of localised, but significant pinch points in the model. Once the model 'grid-locked', the simulation scenario was no longer capable of providing meaningful outputs to enable identification of what other upgrade works would be needed.

To avoid this, some specific modifications to the road network were made prior to the detailed impact assessment and mitigation modelling. These primarily involved traffic management controls such as new turn restrictions and changes to lane allocations.

Modelling Targets: Uplift verses Benchmark

Following the approved model development methodology, an approach was developed to evaluate the Uplift scenarios and to understand what upgrades were needed to mitigate the impacts of their additional development levels.

A scenario aspirational target was to return the network to Benchmark performance levels with the Uplift Scenario development traffic levels. These targets as applied to specific network performance indicators are highlighted in Table 4-7.

Table 4-7: Network Performance Indicators

Indicator	Expected change due to Uplift	Desired Outcome Uplift v Benchmark
Total Vehicle Hours Travelled – VHT (hours)	Expected to increase due to more vehicles travelling through the network, and longer travel times due to increased congestion	**No target:** Increases will be inevitable due to higher traffic demands.
Total Vehicle Kilometres Travelled – VKT (kilometres)	Expected to increase due to more vehicles travelling through the network	**No target:** Changes will be inevitable due to higher traffic demands.
VKT/VHT Ratio (km/h)	Expected to decrease due to disproportionate vehicle travel time compared to increases in travelled distance.	**Target:** Uplift VKT/VHT Ratio to get as close to Benchmark values as possible.
Speed (km/h)	Expected to decrease due to increased congestion in the network.	**Target:** Uplift Speed get as close to Benchmark values as possible.
Completed Trips (veh)	Expected to increase due to higher total traffic demands due to development	**No target:** There will be an increase in completed trips in the Uplift scenario, unless the model gridlocks, as there is more demand.
Incomplete Trips (veh)	Expected to increase due to higher total traffic demands due to development and increased congestion.	**No target:** Changes will be inevitable due to higher traffic demands.
Waiting to Enter (veh)	Expected to increase due to higher total traffic demands due to development and increased congestion.	**Target:** Vehicles waiting to enter in Uplift scenario to get as close as possible to Benchmark values.
Average Delay Time (sec/km)	Expected to increase due to increased congestion in network.	**Target:** Average delay time in the Uplift scenario to get as close as possible to Benchmark values.

4.2.4 Public Transport and Active Transport Initiatives

Public transport and active transport initiatives have been primarily considered within and near the Uplift precincts. The process to develop these initiatives included:

- Identify current services levels and gaps
- Consider planned / proposed initiatives by each Council
- Understand desire lines, accessibility constraints and coverage ‘gaps’ using GIS techniques
- Identify new facilities, and facility upgrades in each area based on the above projects.

The considerations of public transport and active transport initiatives has necessarily been focussed at the local scale.

4.2.5 Parking Policies and Strategies

The nomination of parking policies has considered the identification of each uplift precinct’s proximity and quality of access to public transport and nominating development parking rates for inclusion in each LGA’s corresponding Development Control Plan’s (DCPs). Each precinct has been categorised with ‘P1’, ‘P2’ or ‘P3’ according to its proximity and quality of access to nearby public transport services. The nominated categories and rates should be considered preliminary and subject to more detailed investigations specific to each precinct as development details are better understood.

In addition, the future year traffic capacity analyses have revealed additional traffic demands along a number of side roads accessing Parramatta Road during the AM and PM peak hours.

Tidal peak period clearways have been proposed (both new clearways and extensions to existing clearways) to accommodate these demand changes. The proposed parking policies and strategies are further explained in Section 4.7.

4.2.6 Weekend Traffic Considerations and Modelling Limitations

In addition to the conventional weekday peak periods, the study area was also surveyed for intersection counts, travel times and SCATS signal data for a Saturday midday peak. The base model was also calibrated and validated for Saturday midday peak hours.

In the absence of STFM future growth data for Saturday peak hours, an 'artificial' weekend growth forecast has been created which takes the AM and PM weekday peak growth from the STFM and applies the average of it to the calibrated weekend base year model.

Saturday peak modelling of the draft upgrade items has not been undertaken as yet. It is intended that a Saturday peak sensitivity test will be run against the draft recommended network once there is some agreement on the included items.

In any case, it is unlikely that Saturday modelling results will lead to modified upgrades item recommendations. The models are being used as a relative guide rather than as an absolute reference for traffic upgrade needs.

That is, the weekday peak models are heavily congested and the development and evaluation of upgrades using these models needs to be done with experienced-based judgement of the issues and upgrade benefits revealed in the models. There is limited reliance that can be placed on absolute model outputs at the intersection levels in such a heavily congested network. Notwithstanding this, results have been presented at network, route and intersection levels for completeness and aligned with usual output conventions.

4.3 Traffic Congestion and Pinch Points

4.3.1 Overview

When developing future year traffic networks, two general approaches are available, namely:

- 'Precinct and provide'
- 'Vision and validate'.

This study commenced when 'predict and provide' was the conventional approach. More recently, 'vision and validate' has been an approach increasingly being adopted in congested urban areas like this study area.

The approach used in this study essentially commenced on a 'predict and provide' basis but has been tempered to considered 'vision and validate' principles. Specifically, this means that all of the traffic congestion issues identified in the future are not intended to be 'solved'. Rather, a balanced approach has been taken, blending model results interpretation with the achievement of broader objectives of more trips being made by walking, cycling and public transport in safer, 'people-friendly' street environments.

4.3.2 Issues Assessment

In the future year scenarios, the modelling revealed that most of the study area would be heavily congested. Due to the sheer volume of traffic, any minor disruptions to traffic flow rapidly generated queues which backed into each other and blocked carriageways. This is especially the case in the Uplift scenarios.

The traffic issues were classified as either 'Primary Issues' or 'Secondary Issues', with the distinction being:

- **Primary Issues:** Primary issues are typically the root instigator of congestion, often being a pinch point at a specific intersection. Their causes are directly related to road network capacity constraints
- **Secondary issues:** Secondary issues are caused by Primary Issues. For example, queues from a Primary pinch point might extend to block off a side road, causing Secondary queues into the local road network. The need to address these issues is dependent on the response of network to the downstream upgrades in the first instance.

Figure 4-9 provides an overview of the **main** traffic issues identified in the 2036 road network. More details are provided on precinct-by-precinct basis in the following sections.

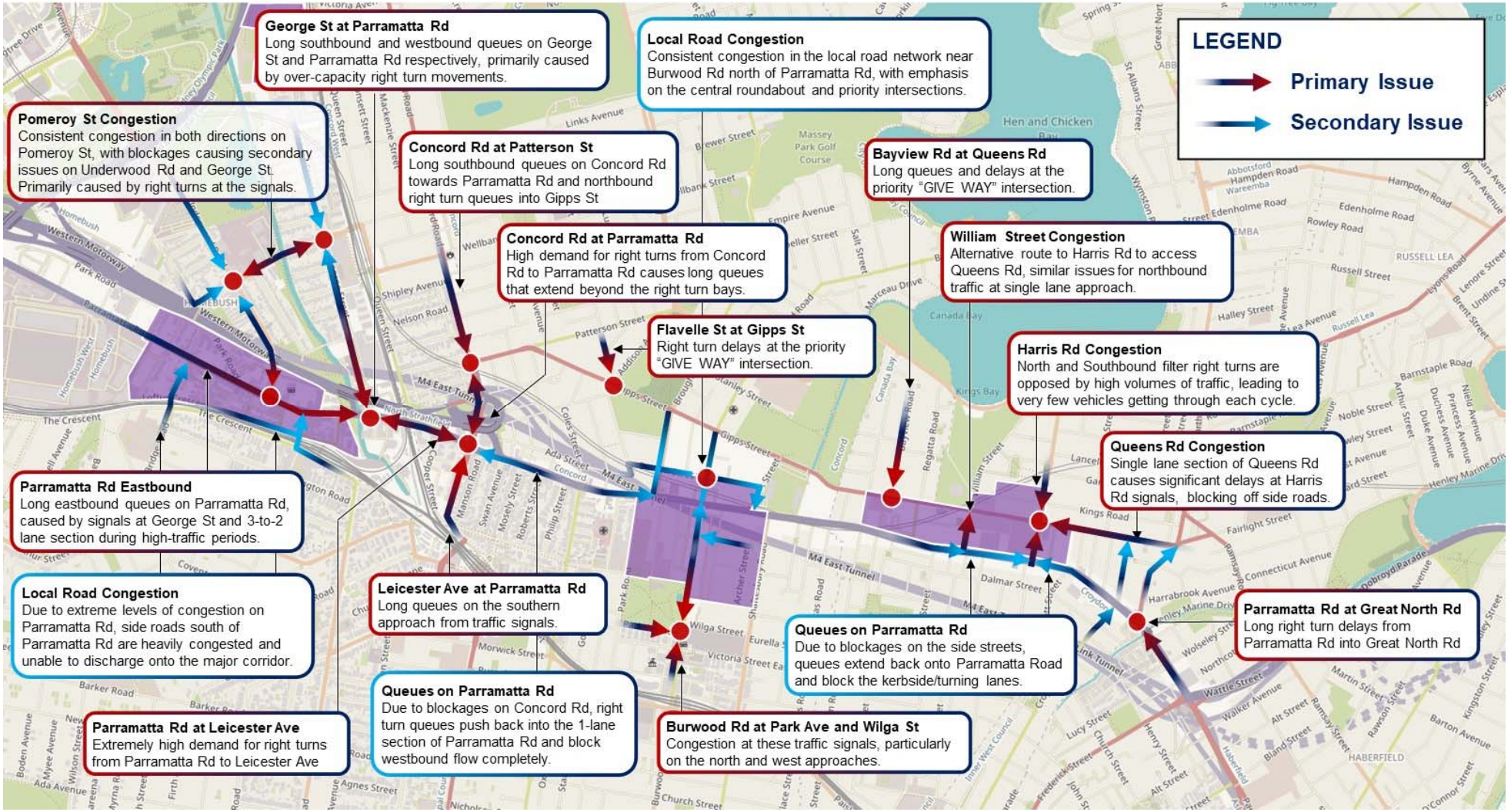


Figure 4-9:Traffic Congestion and Pinch Points Map

4.3.3 'Waiting to Enter' Map

Due to the congestion caused by the Primary and Secondary issues, there is a significant volume of traffic 'stuck' outside of the network, unable to enter in the peak periods due to downstream blockages. Without any pinch point release upgrades, this volume of unreleased traffic increases steadily up to the end of the simulation period.

Figure 4-10 and Figure 4-11 show the locations of vehicles waiting to enter the network at the end of the AM and PM two-hour peak periods.

Figure 4-10: Waiting to Enter Map – Vehicles Outside at 9:00 AM

At the end of the morning peak, there are locations with high volumes of unreleased vehicles on the western approaches to the network, and other congestion across the rest of the network, summarised as:

- **Homebush / Strathfield:** extremely high volumes of vehicles waiting outside of the network at key external zones like Parramatta Road, Underwood Road, Pomeroy Street and The Crescent.
- **Burwood:** blockages around Burwood, particularly on Burwood Road and Wentworth Road
- **Canada Bay**: queues outside of the model on Harris Road, Croydon Road and surrounds.

Figure 4-11: Waiting to Enter Map – Vehicles Outside at 6:00 PM

At the end of the afternoon peak, there are unreleased vehicles at the western entries to the model as well as within Burwood. These can be summarised as:

- **Homebush / Strathfield:** high volumes of vehicles waiting outside of the network at key external zones like Parramatta Road, Underwood Road, Pomeroy Street and The Crescent.
- **Burwood:** significant blockages along Burwood Road, including obstructions to local traffic releases near Burton Street and on Park Avenue.
- **Canada Bay**: minor to moderate volumes of vehicles waiting outside the network near Harris Road.

4.3.4 Homebush North and South

The major intersection pinch points near the Homebush precincts are:

- Parramatta Road / Concord Road / Leicester Avenue
- Parramatta Road / George Street
- Parramatta Road / Underwood Road
- Underwood Road / Pomeroy Street
- George Street / Pomeroy Street.

These pinch points are primarily concentrated near the Homebush South precinct. They are discussed in more detail below.

Parramatta Road / Concord Road / Leicester Avenue

The Parramatta Road / Concord Road / Leicester Avenue intersection is a key intersection for the road network, facilitating connections to the M4 Motorway and tunnel, Concord Town Centre to the north and Strathfield to the south.

Due to the heavy conflict for green time at the traffic signals, nearly all approaches show significant delays as follows:

- **From the west:** over 500vph turn right into Leicester Avenue in the PM peak towards Strathfield and Burwood. While there is a very long single lane turning bay for this movement (around 400m), the increase in this demand caused by future growth results in extremely long queues and vehicles blocking the through lane for long periods.
- **From the south:** heavy northbound traffic flows which queue all the way back to the rail crossing tunnel near Strathfield Train Station in the AM peak.
- **From the east:** due to the single lane approach caused by the M4 on-ramp lanes, queues exceeding the available right turn bays have highly detrimental effects on through traffic.
- **From the north:** heavy traffic flows from the northern approach during both peak periods, particularly for the right turn movement, occasionally blocking traffic at the M4 access intersection to the north.

Figure 4-12 shows an example of the queues at this pinch point.

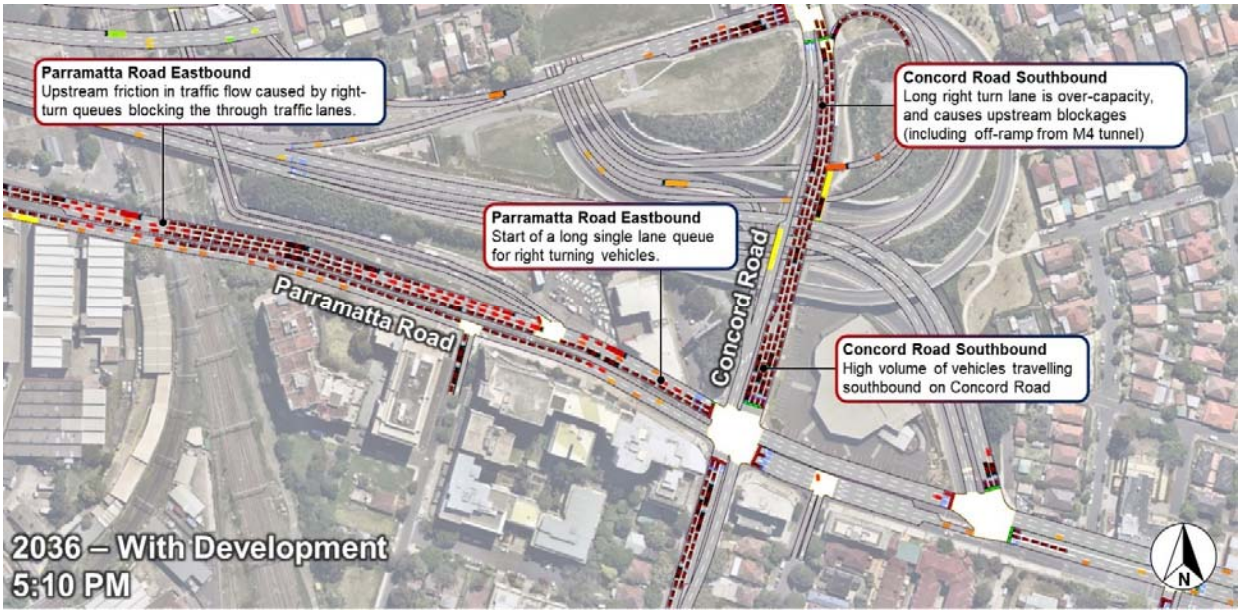


Figure 4-12: Parramatta Road / Concord Road / Leicester Avenue Pinch Point

Parramatta Road / George Street

The Parramatta Road / George Street intersection is another key intersection in the road network near the Homebush precincts. George Street is a vibrant street servicing North Strathfield, with a High Pedestrian Activity Area and cobbled streets passing through the Bakehouse Quarter shopping and dining precinct.

However, despite the elevated levels of 'Place-based' activity like al fresco dining and community spaces, George Street also serves as an important north-south traffic link on the western side of the railway line. George Street provides a critical link to the Homebush North precinct (near Concord West Station) to the north, passing by Pomeroy Street and Bridge Street. Due to this, traffic volumes both into and out of George Street are relatively high in 2036 and result in delays at the Parramatta Road traffic signals, particularly for the right turn movements.

Eastbound traffic on Parramatta Road is delayed by this intersection. Around 200m to the west of the traffic signals, Parramatta Road eastbound narrows from a 3-lane carriageway to a 2-lane carriageway. Queues from the signals extend back to this narrowing of Parramatta Road, creating a slow moving queue which extends to beyond Bridge Road.

Aside from the southern approach which has a fixed catchment, all approaches to the Parramatta Road / George Street intersection reveal poor performance in 2036:

- **From the north:** even with upstream blockages reducing the flow of traffic arriving at the intersection, there are occasionally queues that extend along George Street in the PM peak back into the pedestrian area near the Bakehouse Quarter
- **From the east:** due to the short right turn bay, right turning vehicles often queue over 200m beyond the turning lane into the through traffic lane, limiting Parramatta Road through traffic to a single lane
- **From the west:** due to the heavy eastbound traffic flows and the nearby 3-to-2 lane merge on Parramatta Road, there are extremely long queues back from the George Street signals which create secondary impacts on nearby side streets.

Figure 4-13 shows an example of the queues at this pinch point.

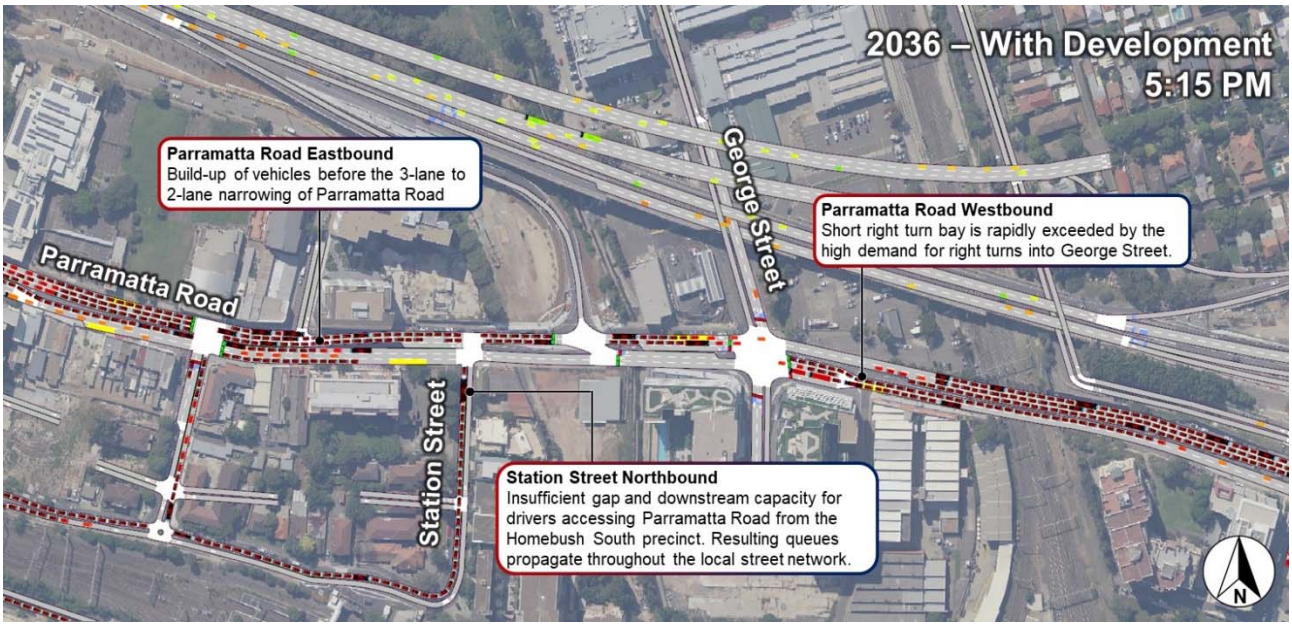


Figure 4-13: Parramatta Road / George Street Pinch Point

Parramatta Road / Underwood Road

The Parramatta Road / Underwood Road intersection is located around 500m west of the Parramatta Road / George Street intersection and serves the North Homebush catchment. Underwood Road and George Street are the only two opportunities to cross the M4 Motorway within the study area, with no other options to the west until Homebush Bay Drive and Birnie Avenue (1.5km and 2.3km away respectively).

At Underwood Road, Parramatta Road has three travel lanes in the eastbound direction, narrowing to two lanes around 250m downstream of the intersection. This, in combination with extensive queueing effects at George Street, results in congestion which impacts Underwood Road traffic, with vehicles unable to turn out as the eastern departure of the intersection is congested.

The fundamental congestion issue at this location is that traffic from catchments to the north of Parramatta Road must use either Underwood Road or George Street to access Parramatta Road.

At a local level it was observed in the models that there was an imbalance usage of the available lanes. Right-turning vehicles were sometimes preferring to use the kerbside left-right lane instead of the median-side dedicated right lane because much of this traffic then turned left at the next opportunity to access the Homebush South precinct. These issues highlight a need for improved connectivity across Parramatta Road to/from this catchment.

Figure 4-14 shows an example of the queues at this pinch point.

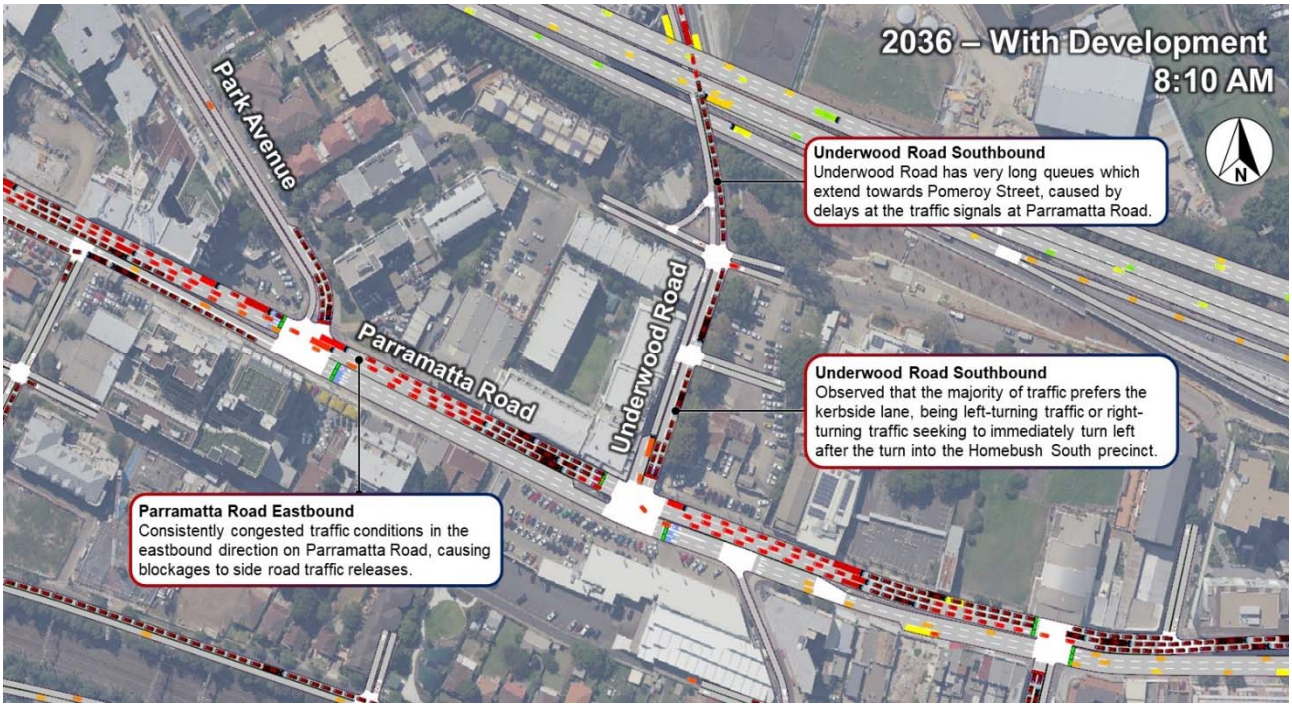


Figure 4-14: Parramatta Road / Underwood Road Pinch Point

Underwood Road / Pomeroy Street

The Underwood Road / Pomeroy Street intersection is around 500m north of Parramatta Road, and not on the main corridor. However, the strategic importance of this intersection should not be understated. Underwood Road joins Homebush Bay Drive and the Sydney Olympic Park precinct to Parramatta Road, with large-scale facilities like DFO Homebush near the Australia Avenue roundabout. As mentioned earlier, along with George Street, Underwood Road is one of the few major north-south roads servicing the Homebush area north of Parramatta Road. Pomeroy Street offers one of the only opportunities to cross Powells Creek and is frequently used as a link between Underwood Road and George Street.

All approaches to the intersection are over-capacity in 2036, with over 500m long queues propagating from this intersection. The volume of traffic passing through the intersection cannot be reasonably accommodated by the traffic signals. Filtering turning traffic has minimal gaps in opposing traffic, and congestion on the departure sides of the intersection due to downstream queues wastes signal green time.

Figure 4-15 shows an example of the queues at this pinch point.

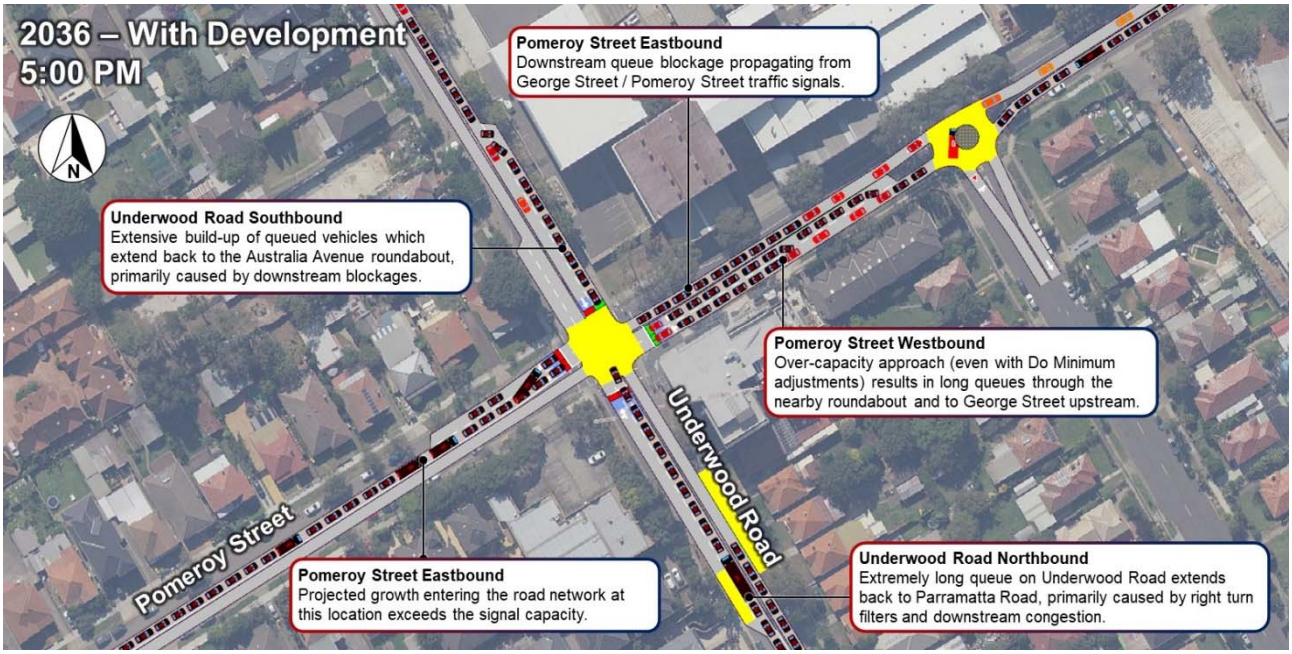


Figure 4-15: Underwood Road / Pomeroy Street Pinch Point

George Street / Pomeroy Street

George Street / Pomeroy Street is the network complement to Underwood Road / Pomeroy Street on the eastern side of Powells Creek. East of the traffic signals, Pomeroy Street offers the only bridge crossing of the railway line in the area, further elevating the importance of this intersection.

The discussion of this intersection is tied to that of Underwood Road / Pomeroy Street, with significant network implications caused by queues that extend between the two intersections. In 2036, long queues on the western departure on Pomeroy Street are caused by the Underwood Road traffic signals. Due to these, the other approaches waste a significant portion of their signal green time due to blocked downstream locations.

Furthermore, the intersection primarily operates with filtered right turn movements (except for a dedicated right turn phase for the eastern approach). This causes significant delays to the north and west approaches, with only a few right turning vehicles accommodated per cycle due to heavy opposing traffic flows. Furthermore, in the case of simultaneous opposing right turn movements, traffic tends to be slowed down by intersection size constraints.

Figure 4-16 shows an example of the queues at this pinch point.

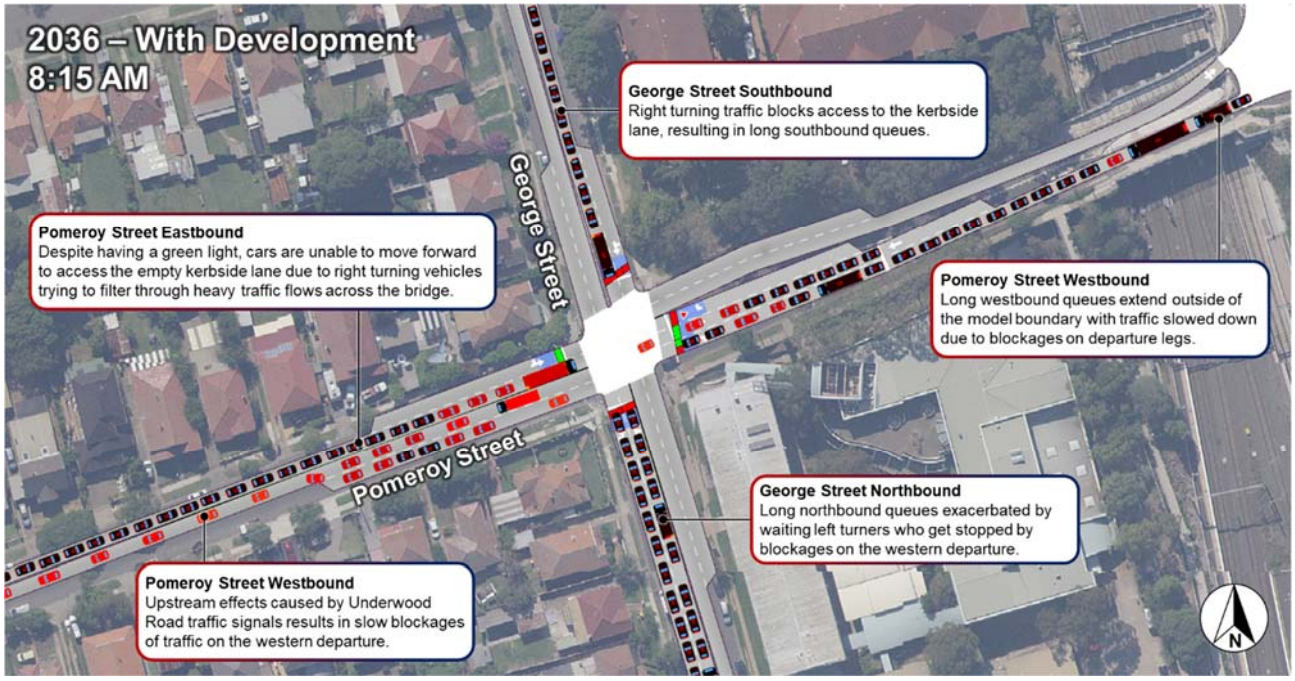


Figure 4-16: George Street / Pomeroy Street Pinch Point

4.3.5 Burwood-Concord

Burwood Road / Park Avenue / Wilga Street

Burwood Road is an important north-south movement corridor despite its Local Road classification south of Parramatta Road. Within the study area, Burwood Road connects Parramatta Road and Burwood Station, and also runs directly to the future Burwood Metro Station.

The intersection of Burwood Road / Park Avenue / Wilga Street is essentially a staggered cross intersection with queue storage within the intersection. Although Park Avenue and Wilga Street are considered the minor roads to the main Burwood Road corridor, both streets are forecast to experience bidirectional volumes of up to 1000vph in 2036 peak hours.

During the morning peak, there is a demand of around 300 vph for the southbound right turn from Burwood Road into Park Avenue. Due to the signal phasing at the intersection, the majority of traffic is held behind the northern STOP line during filter phases. With the projected increase in traffic by 2036, filter turns have very limited opportunity to safely cross Burwood Road. This results in a rapid build-up of right-turning queues which block access to the kerbside through lane due to short length of parking restrictions.

Figure 4-17 shows an example of the queues at this pinch point.

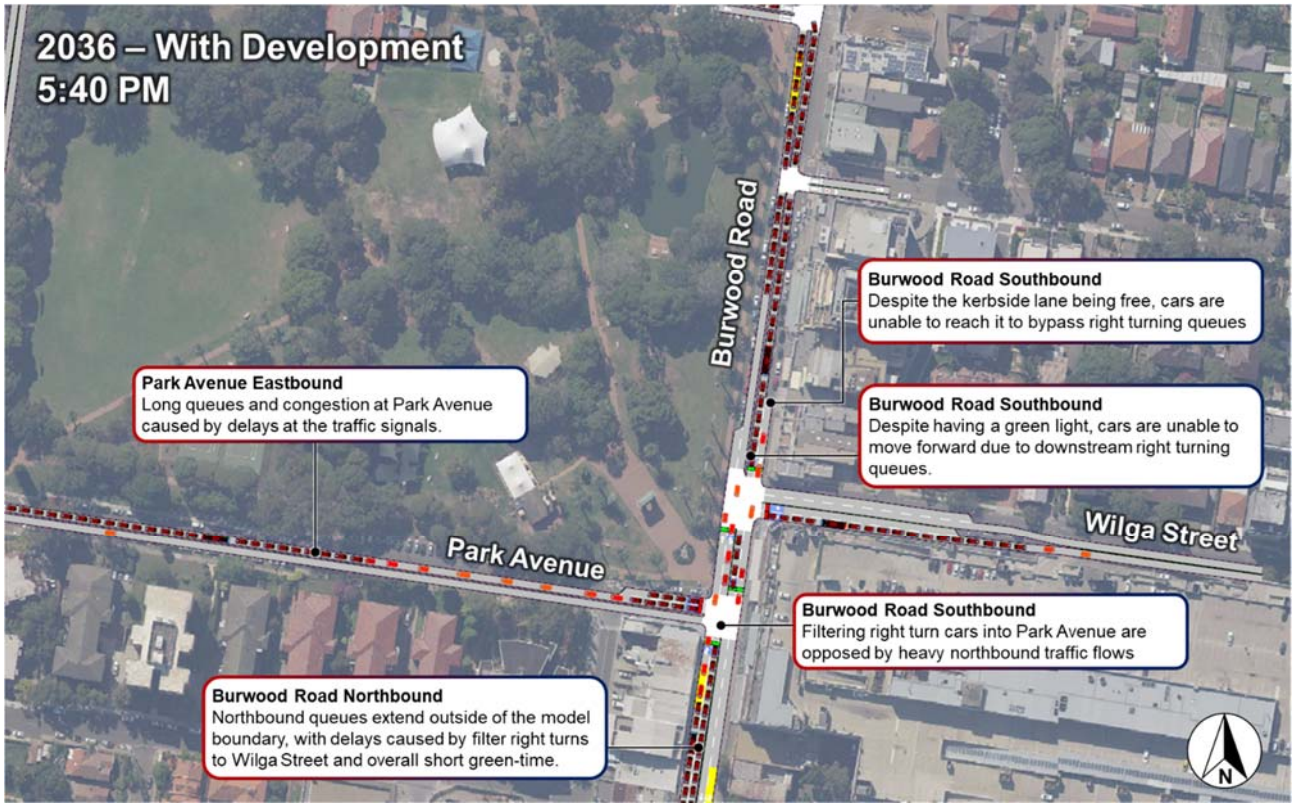


Figure 4-17: Burwood Road / Park Avenue / Wilga Street Pinch Point

Burwood Road / Burton Street

The intersection of Burwood Road / Burton Street is currently a single lane roundabout. The future traffic projections show approach volumes exceeding 300 vph, and up to 1000 vph on the Burwood Road approaches.

The roundabout is a key pinch point in the area and cannot reasonably accommodate the expected future levels of traffic. It also does not facilitate safe pedestrian crossing opportunities near the future Metro station.

There are a number of resulting effects caused by the delays at the roundabout, including diversions through the local road network via Broughton Street and Loftus Street, and consequential effects on both Parramatta Road to the south and Gipps Street to the north. Although there are sections of 2-lane traffic (due to peak hour parking restrictions), these are 'pinched' back into a single lane before the roundabout.

Figure 4-18 shows an example of the queues at this pinch point.

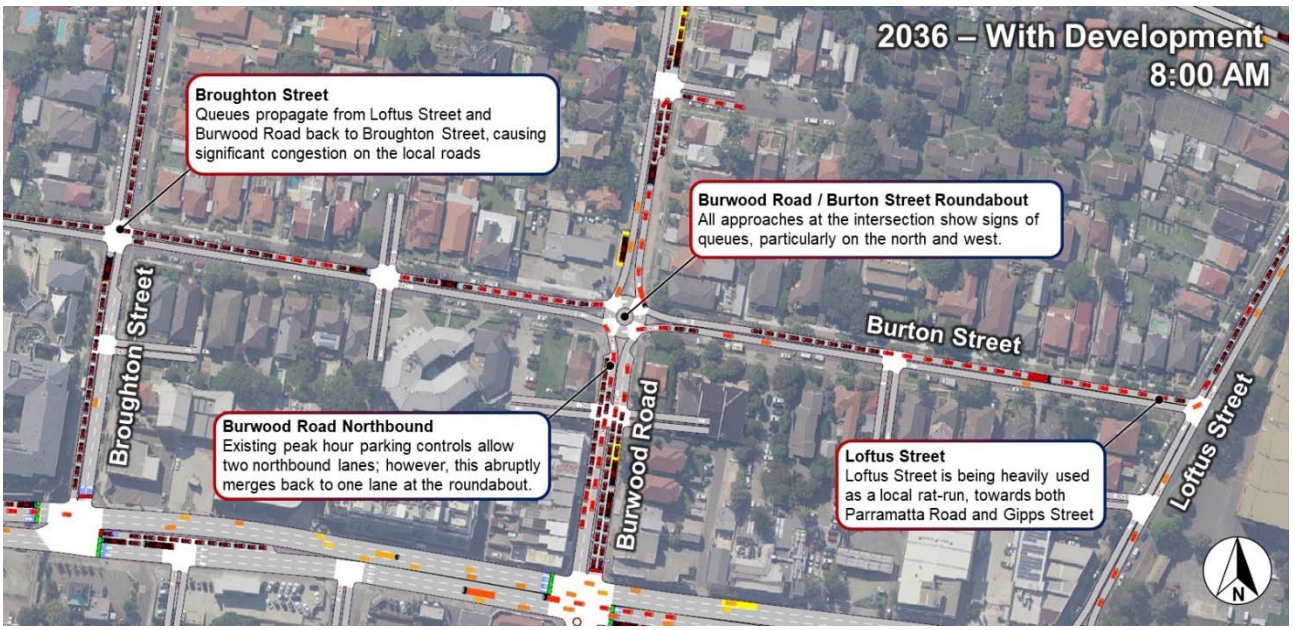


Figure 4-18: Burwood Road / Burton Street Roundabout Pinch Point

4.3.6 Kings Bay

Harris Road / Queens Road

The intersection of Harris Road / Queens Road is around 170m north of Parramatta Road and not located on the main corridor. However, Queens Road and Gipps Street are a part of a parallel corridor to Parramatta Road that provides a secondary route for traffic, particularly to and from Five Dock Town Centre.

The intersection with Harris Road is a key point along this route, with Harris Road being a north-south collector road between Parramatta Road and Lyons Road West. Harris Road is serviced by a number of bus routes and has a high school (Rosebank College) located on the corner with Parramatta Road. The pick-up and drop-off arrangements for Rosebank College are of particular importance, as it occurs on-street and occupies the northbound kerbside lane on Harris Road. There is subsequently a high degree of friction in the traffic stream along Harris Road, between cars moving in and out of the pick-up and drop-off parking spaces, in-lane bus stops, etc.

Figure 4-19 shows an example of the queues at this pinch point.

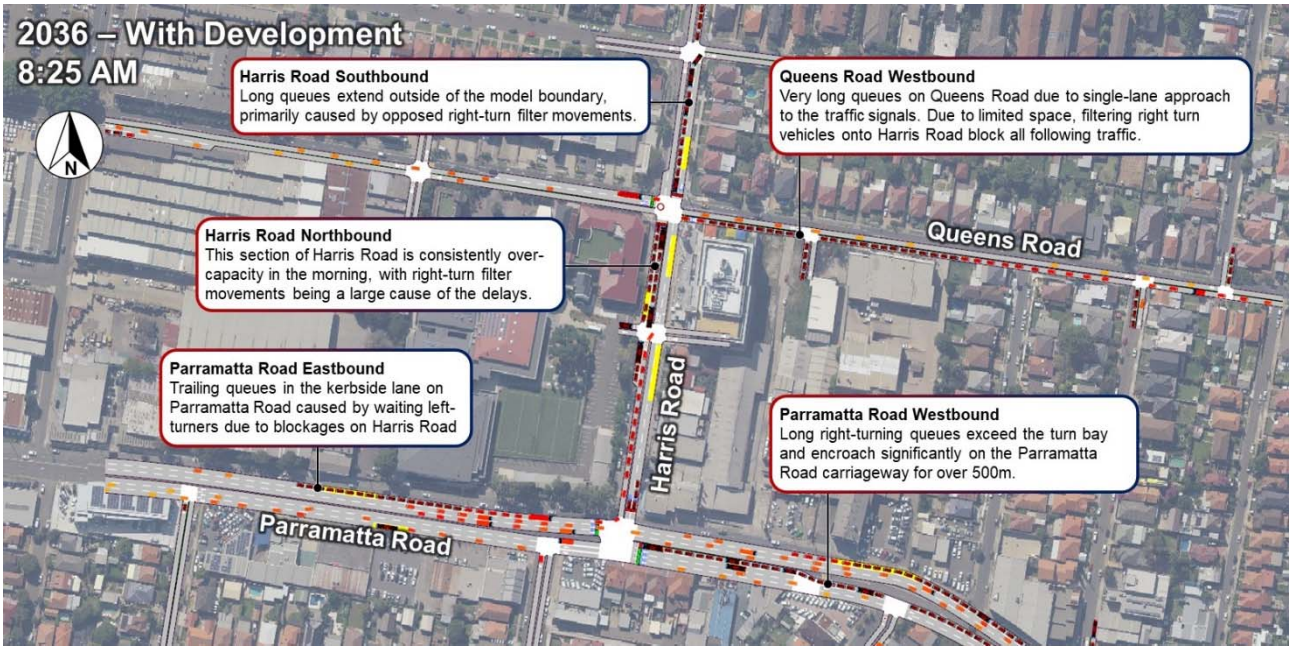


Figure 4-19: Harris Road / Queens Road Pinch Point

Parramatta Road / Great North Road

The intersection of Parramatta Road and Great North Road is affected by the congestion issues at Harris Road / Queens Road. The Great North Road joins Parramatta Road with Five Dock Town Centre, being the main boulevard servicing the lively commercial and retail area. In future, this road will also connect to the Five Dock Metro Station, around 800m north of Parramatta Road.

While Great North Road has a four-lane carriageway, the kerbside lanes are often dedicated to street parking, restricting traffic to a single travel lane. There are peak hour parking restrictions near the intersection with Parramatta Road, which increase the turn capacity at the traffic signals.

It was observed in the models that during the 2036 afternoon peak, delays to right-turning vehicles caused long queues, preventing left turning traffic from entering the kerbside lane. This results in a significant level of wasted intersection capacity, which contributes to the overall poor traffic performance in the Kings Bay area.

Figure 4-20 shows an example of the queues at this pinch point.

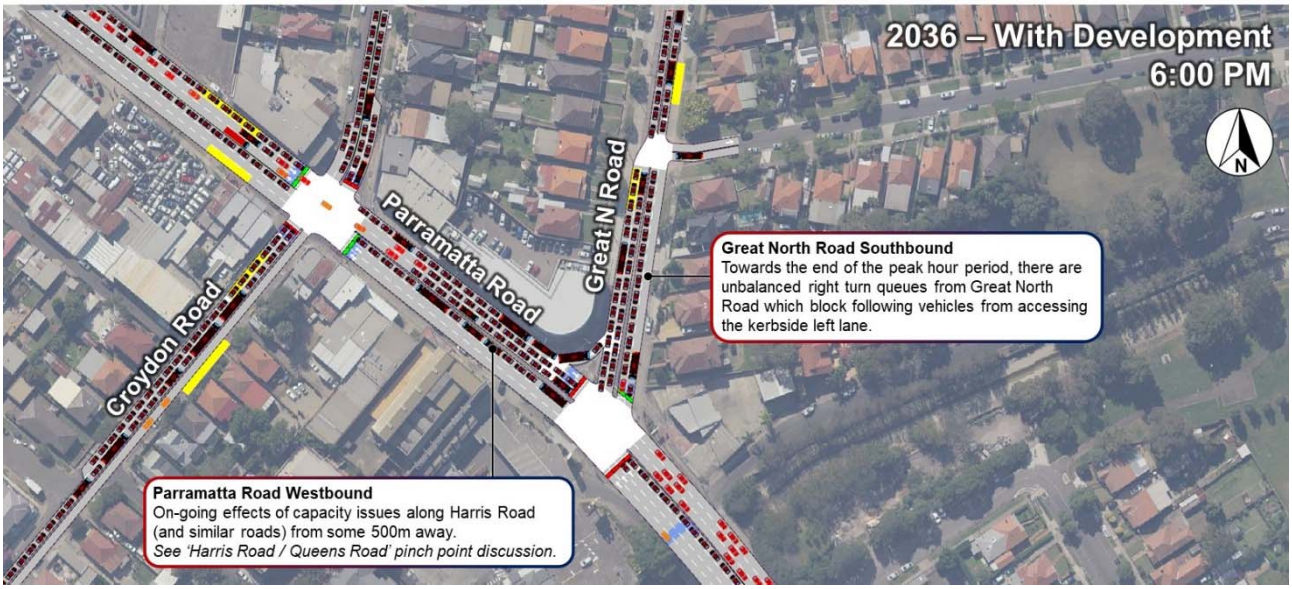


Figure 4-20: Parramatta Road / Great North Road Pinch Point

4.4 Traffic Network Upgrades and Rationale

4.4.1 Do Minimum Changes

The following changes were modelled in a Do Minimum network. These changes are included in all Uplift scenarios to ensure that a minimum baseline operational level of traffic performance was maintained in order to allow meaningful interpretation of the benefits and impacts of other traffic capacity changes:

- **Underwood Road / Pomeroy Street:** No Right Turn from Underwood Road to Pomeroy Street during the AM peak hour period.
- **Underwood Road / Pomeroy Street:** Changed lane allocations on the east approach to permit right turn movements from both lanes.

These are shown in Figure 4-21.

Figure 4-21: Do Minimum Changes – Underwood Road / Pomeroy Street

4.4.2 Proposed Traffic Network Upgrades Summary

The recommended traffic network upgrades can be divided into four main categories:

Road Upgrades

Road upgrades are mostly recommended to facilitate capacity increases, and will likely require some civil works (e.g. intersection upgrades, new turning lanes, etc).

Signal Changes

Signal changes are identified as being more significant than changes to phase timings, potentially requiring entirely different phase sequences and ancillary signal lantern infrastructure

Traffic Management

Traffic management policies imply modifications to the road network that do not constitute road upgrades. These include new turn restrictions and/or lane allocation linemarking at existing roads.

Parking Restrictions

Parking restrictions comprise the implementation of new parking plans at key locations to limit parking activity and provide additional road capacity during the key peak hour periods.

The proposed traffic network upgrades are shown in Figure 4-22.

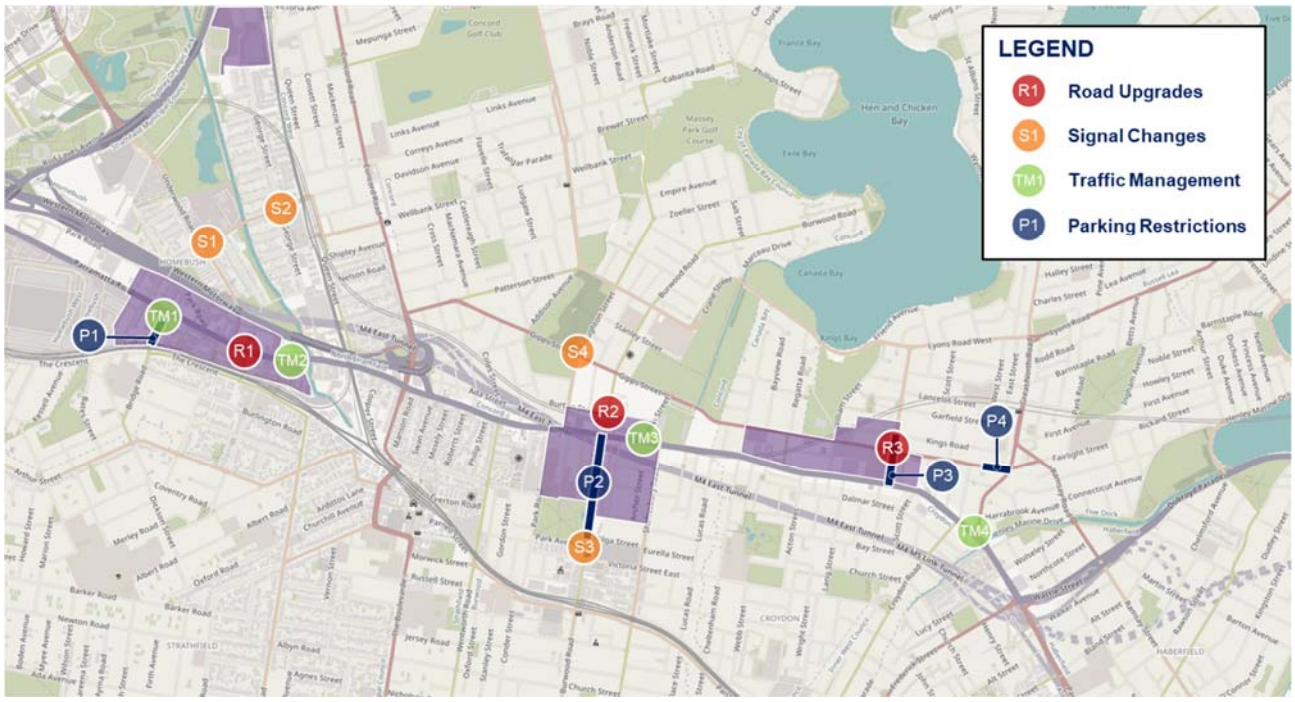


Figure 4-22: Proposed Traffic Network Upgrades - Summary

Each of these items are further described in Figure 4-23.

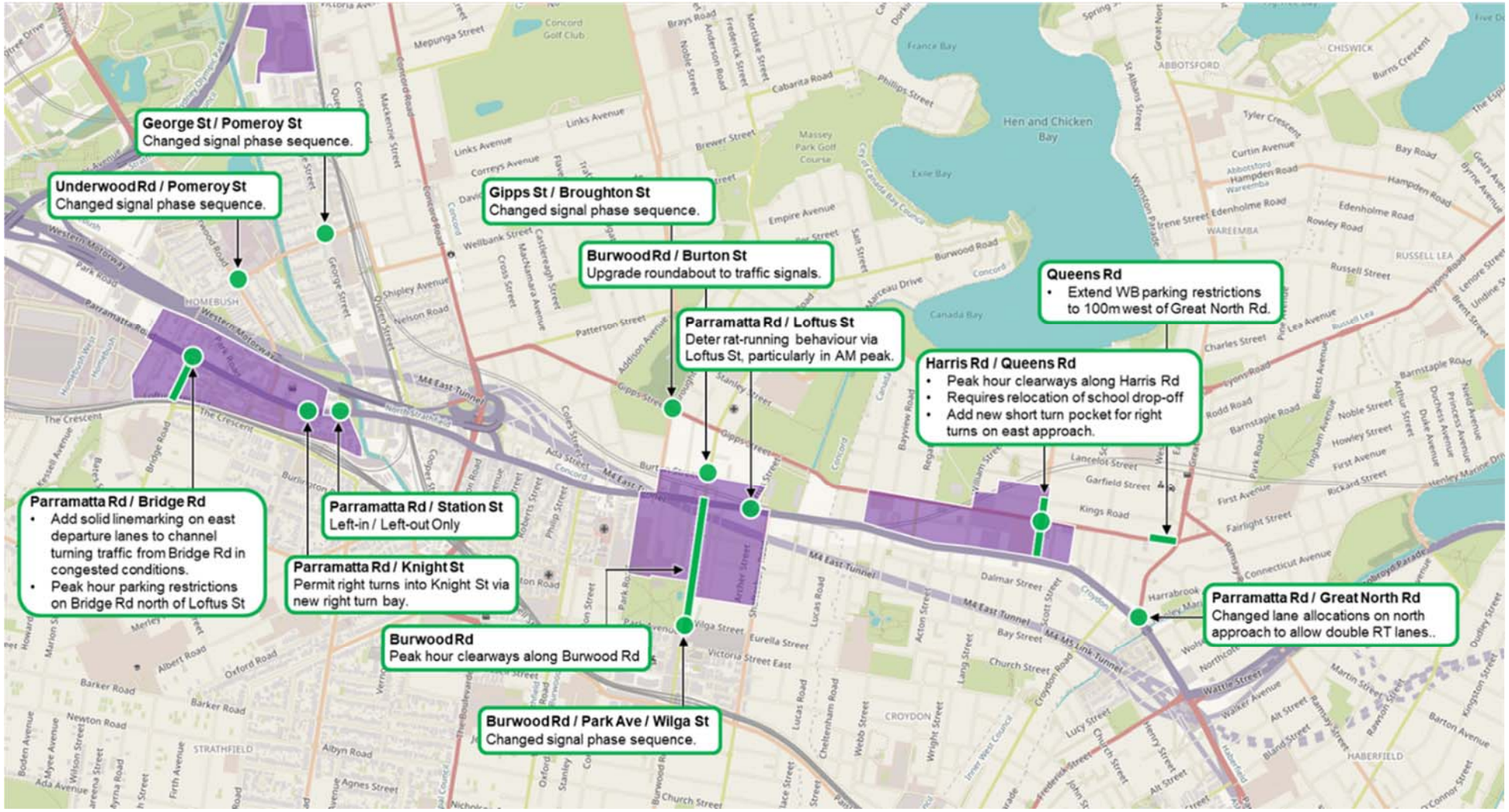


Figure 4-23: Proposed Traffic Network Upgrades - Breakdown

The details around these items are described in greater detail in the Precinct-specific sections in Chapter 5 to Chapter 8.

4.4.3 Traffic Performance Improvements – Network Benefits

Network-wide Performance Statistics Comparison

The following network performance measures were extracted from the model and used as a comparison between modelled scenarios:

- Vehicle Kilometres Travelled (VKT)
- Vehicle Hours Travelled (VHT)
- Ratio of VKT to VHT
- Average Network Speed (km/h)
- Completed Trips at the end of the peak period
- Incomplete Trips at the end of the peak period
- Waiting to Enter Trips at the end of the peak period
- Delay Time (sec/km).

At the end of each simulation, AIMSUN provides a summary of the above measures. Due to the high volumes of traffic in the model, particularly along Parramatta Road, there were usually vehicles left within the model network at the end of the simulation called (Incomplete Trips). Where this was the case, the VKT and VHT outputs were factored to also account for these partial trips.

AM Peak

Table 4-8 summarises the performance outcomes during the AM peak period.

Table 4-8: Traffic Performance Comparison – Network Statistics – AM Peak Period

Performance Indicator	2036 (Benchmark)	2036 (Uplift)	2036 (Uplift with Upgrades)
VHT (hours)	**5,901**	**9,622**	**7,107**
VKT (kilometres)	**96,353**	**94,482**	**101,263**
VKT/VHT Ratio	16.33	9.82	14.25
Speed (km/h)	32	30	30
Completed trips (veh)	45,318	43,323	49,396
Incomplete trips (veh)	3,853	6,821	4,007
Waiting to Enter (veh)	**2,164**	**10,065**	**6,814**
Delay Time (sec/km)	**140**	**219**	**158**

During the AM peak, the Uplift with Upgrades scenario shows:

- A similar VKT/VHT ratio to the benchmark scenario, with increases in both VKT and VHT due to the growth in traffic demand
- Around 15% increase in completed trips compared to the Uplift Scenario (no upgrades) and an increase by around 10% compared to the benchmark scenario
- A minor increase in delay time when compared to the Benchmark Scenario, but significantly improves upon the average delay time from the non-upgraded Uplift scenario.
- 'Waiting to Enter' volumes remain relatively high and are around the halfway mark between the two other scenarios.

Figure 4-24 shows the percentage difference from the Benchmark Scenario (No Uplift).

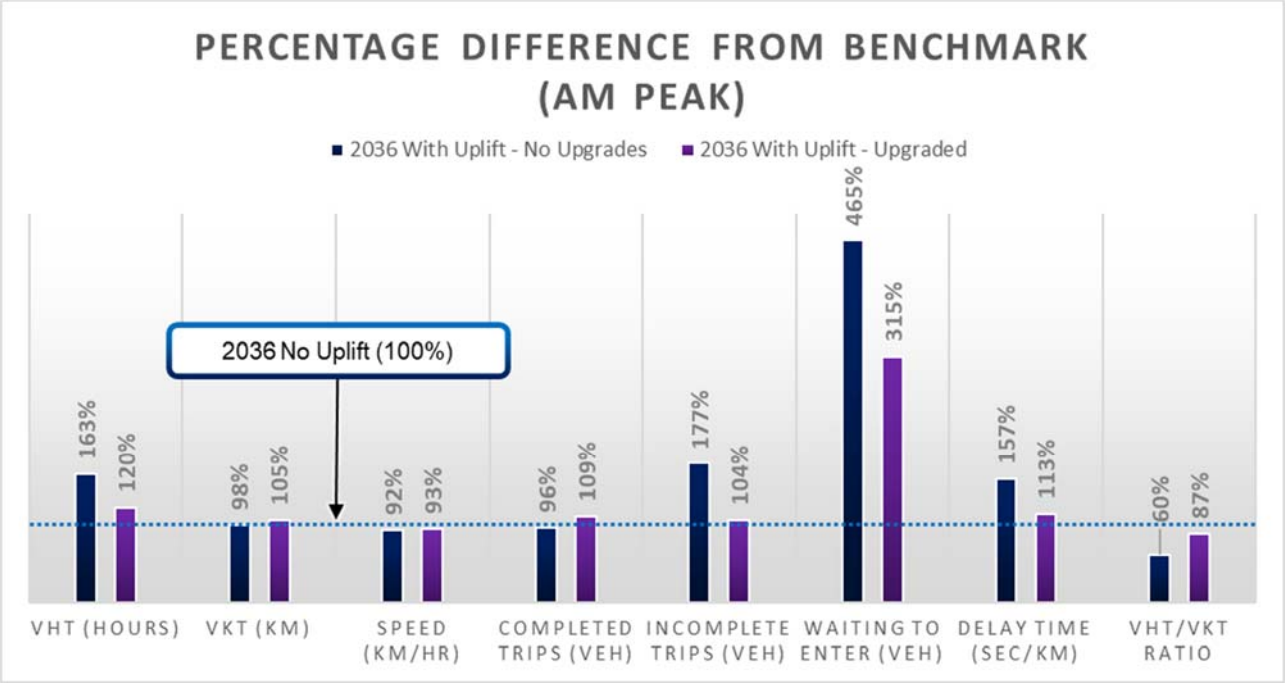


Figure 4-24: Network Statistics Percentage Difference from Benchmark – AM Peak

PM Peak

Table 4-9 summarises the performance outcomes during the PM peak period.

Table 4-9: Traffic Performance Comparison – Network Statistics – PM Peak Period

Performance Indicator	2036 (Benchmark)	2036 (Uplift)	2036 (Uplift with Upgrades)
VHT (hours)	4,763	8,255	6,341
VKT (kilometres)	92,102	95,616	100,877
VKT/VHT Ratio	**19.34**	**11.58**	**15.91**
Speed (km/h)	**36**	**32**	**33**
Completed trips (veh)	44,217	45,594	51,459
Incomplete trips (veh)	4,191	6,378	3,846
Waiting to Enter (veh)	**1,924**	**8,325**	**4,998**
Delay Time (sec/km)	**111**	**190**	**132**

During the PM peak, the Uplift with Upgrades scenario exhibits:

- A slightly lower VKT/VHT ratio when compared to the Benchmark Scenario, with disproportional increases to VKT and VHT due to the growth in traffic demand
- 13% increase in completed trips compared to the Uplift Scenario (no upgrades), and an increase of around 15% compared to the Benchmark Scenario
- A minor increase in delay time when compared to the Benchmark Scenario, but significantly reduces the average delay time from the Uplift Scenario (no upgrades)
- 'Waiting to Enter' volumes remain relatively high, at around halfway between the two other scenarios.

Figure 4-25 shows the percentage difference from the Benchmark Scenario (No Uplift).

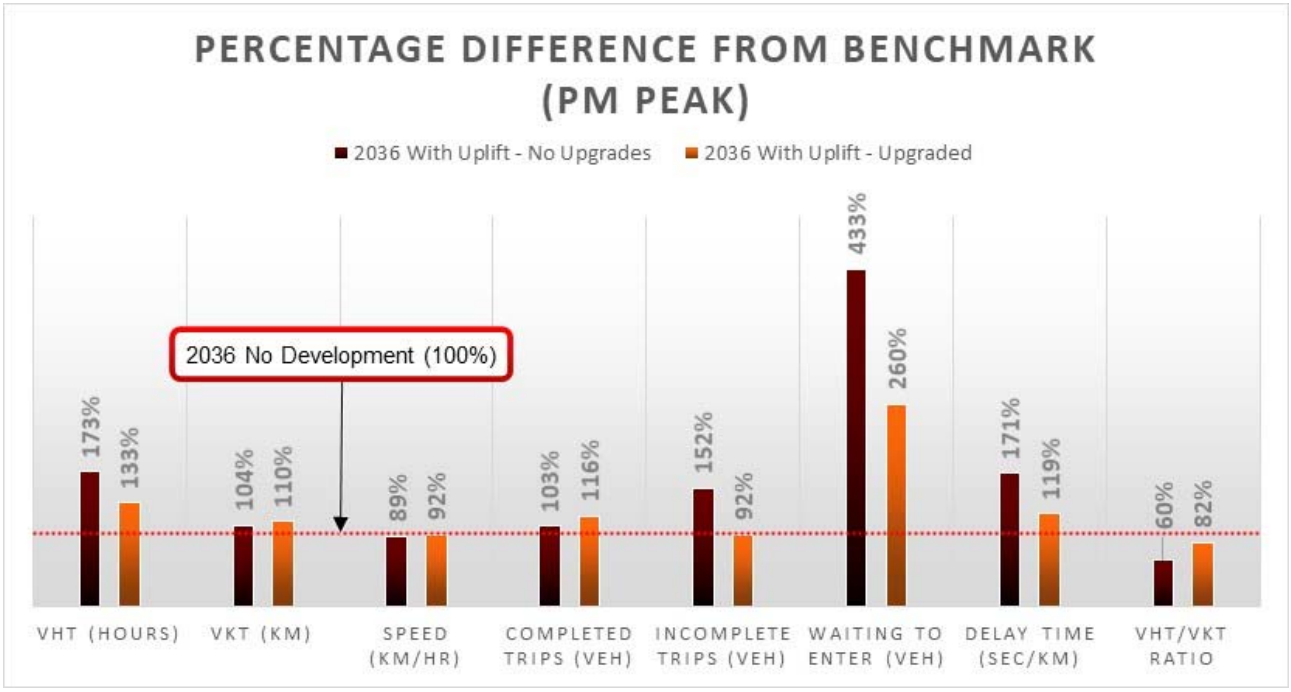


Figure 4-25: Network Statistics Percentage Difference from Benchmark – PM Peak

4.4.4 Traffic Performance Improvements – Route Travel Time

Travel times from the 2036 modelling were compared for the Parramatta Road route shown in Figure 4-26.

Figure 4-26: Travel Time Route – Parramatta Road

This route was selected given north-south routes through the study area are too short to draw any meaningful conclusions related to pinch point influences.

It is also important to highlight that the travel times are from when a vehicle enters the network, excluding the time it may be queued waiting to enter the network.

AM Peak

The AM peak travel time comparison between the Uplift (no Upgrades) and Upgrades Uplift Scenarios for the **eastbound** direction on Parramatta Road is shown in Figure 4-27.

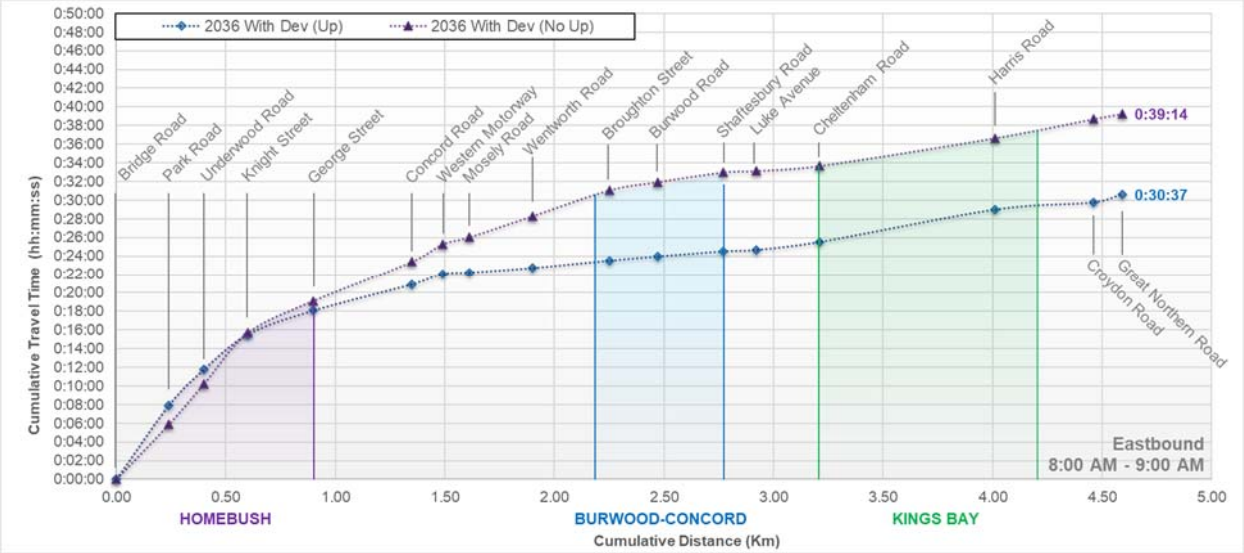


Figure 4-27: Travel Time Comparison – With and Without Upgrades – Eastbound AM Peak

The outcomes are:

- The Uplift with Upgrades scenario is around **9 minutes faster** than the Uplift (no upgrades) scenario
- There are clear travel time savings around Burwood, particularly at the intersections at Wentworth Road and Broughton Street before Burwood Road.

The benchmark comparison for the same peak period and direction is shown in Figure 4-28, highlighting the differences to the 2018 travel time surveys and the 2036 Benchmark Scenario.

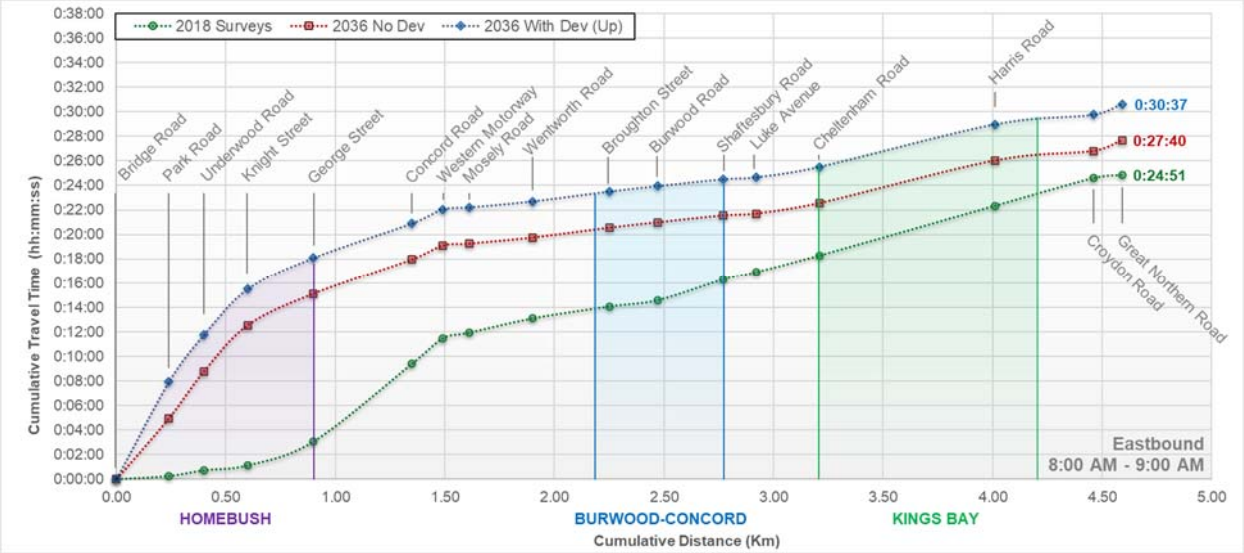


Figure 4-28: Travel Time Comparison to Benchmark Scenarios – Eastbound AM Peak

The outcomes are:

- The Uplift with Upgrades Scenario is around **3 minutes slower** than the Benchmark scenario
- The Uplift with Upgrades Scenario is around **6 minutes slower** than the 2018 traffic surveys.

The AM peak travel time comparison between the Uplift (no Upgrades) and Uplift with Upgrades Scenarios for the **westbound** direction on Parramatta Road is shown in Figure 4-29.

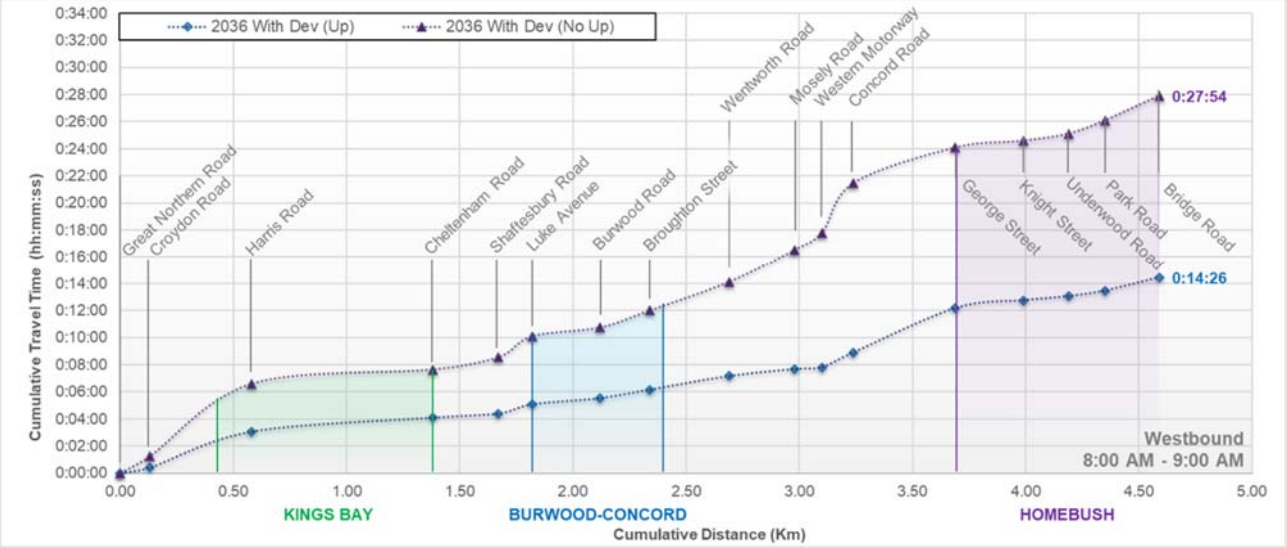


Figure 4-29: Travel Time Comparison – With and Without Upgrades – Westbound AM Peak

The outcomes are:

- The Uplift with Upgrades Scenario is around **13 minutes faster** than the Uplift (no Upgrades) scenario.
- Major travel time savings are at Harris Road adjacent to the Kings Bay Precinct and around the M4 and Concord Road, just before the Homebush South Precinct.

The benchmark comparison for the same peak period and direction is shown in Figure 4-30, highlighting the differences to the 2018 travel time surveys and the 2036 Benchmark Scenario without Uplift.

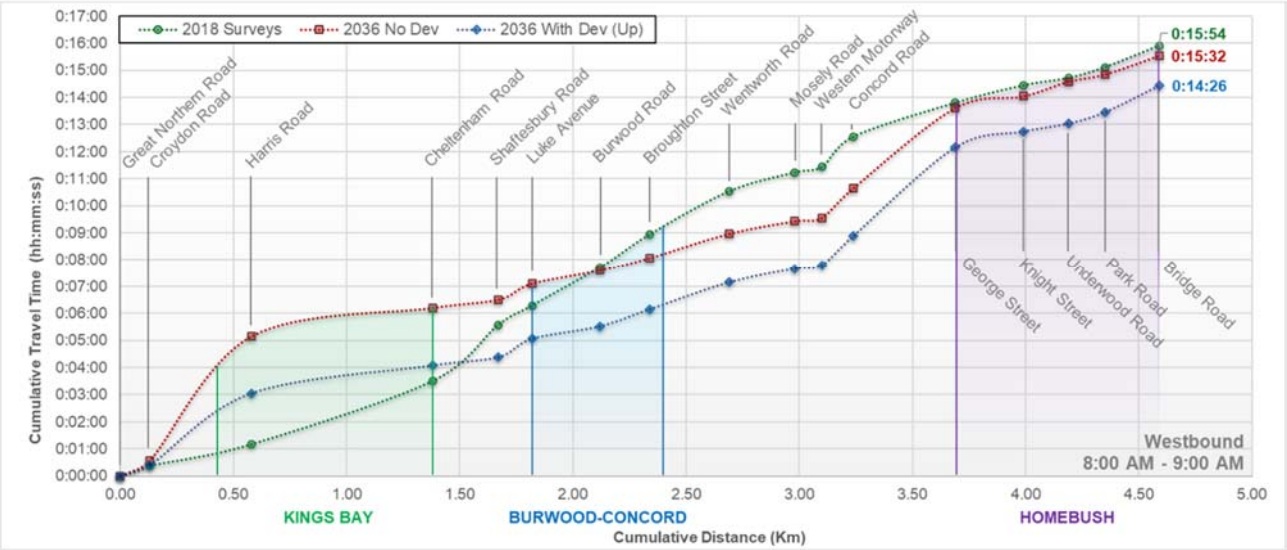


Figure 4-30: Travel Time Comparison to Benchmark Scenarios - Westbound AM Peak

The outcomes are:

- The Uplift with Upgrades Scenario is around **1 minute faster** than the Benchmark scenario
- The Uplift with Upgrades Scenario is around **1.5 minutes faster** than the 2018 traffic surveys.

PM Peak

The PM peak travel time comparison between the Uplift (no Upgrades) and Uplift with Upgrades Scenarios for the **eastbound** direction on Parramatta Road is shown in Figure 4-31.

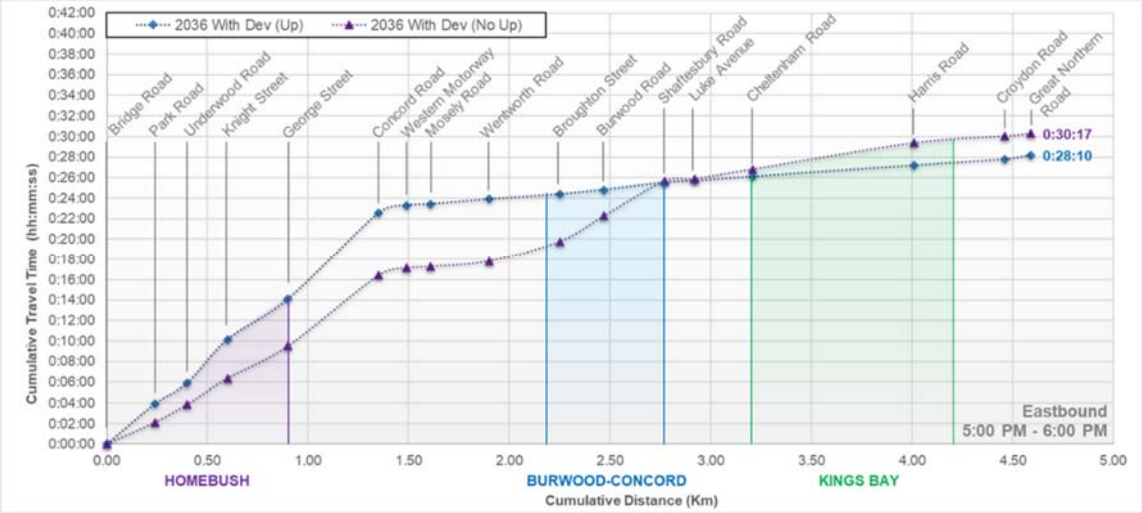


Figure 4-31: Travel Time Comparison – With and Without Upgrades – Eastbound PM Peak

The outcomes are:

- The Uplift with Upgrades Scenario is around **2 minutes faster** than the Uplift (no Upgrades) Scenario.
- The modelling shows slightly slower travel speeds through the Homebush South Precinct (primarily due to the upgrades at this location facilitating better release of traffic from side roads), but significantly faster travel times through the Burwood Precinct as well as slightly faster times through the Kings Bay Precinct.

The Benchmark Comparison for the same peak period and direction is shown in Figure 4-32, highlighting the differences to the 2018 travel time surveys and the 2036 Benchmark Scenario without Uplift.

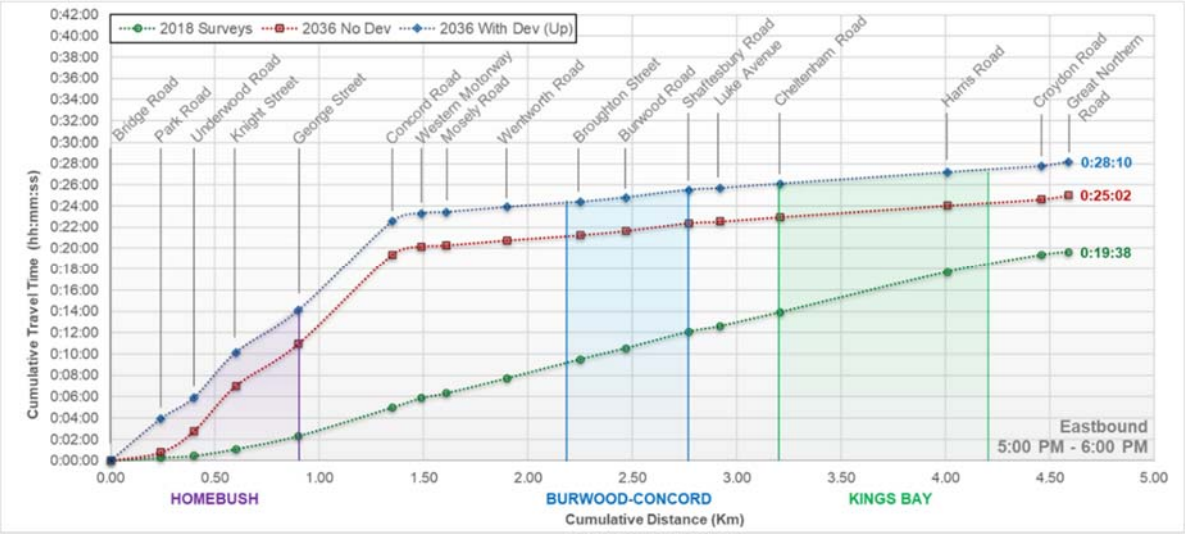


Figure 4-32: Travel Time Comparison to Benchmark Scenarios – Eastbound PM Peak

The outcomes are:

- The Uplift with Upgrades Scenario is around **3 minutes slower** than the Benchmark Scenario
- The Uplift with Upgrades Scenario is around **9 minutes slower** than the 2018 traffic surveys.

The PM peak travel time comparison between the Uplift (no Upgrades) and Uplift with Upgrades Scenarios for the **westbound** direction on Parramatta Road is shown in Figure 4-33.

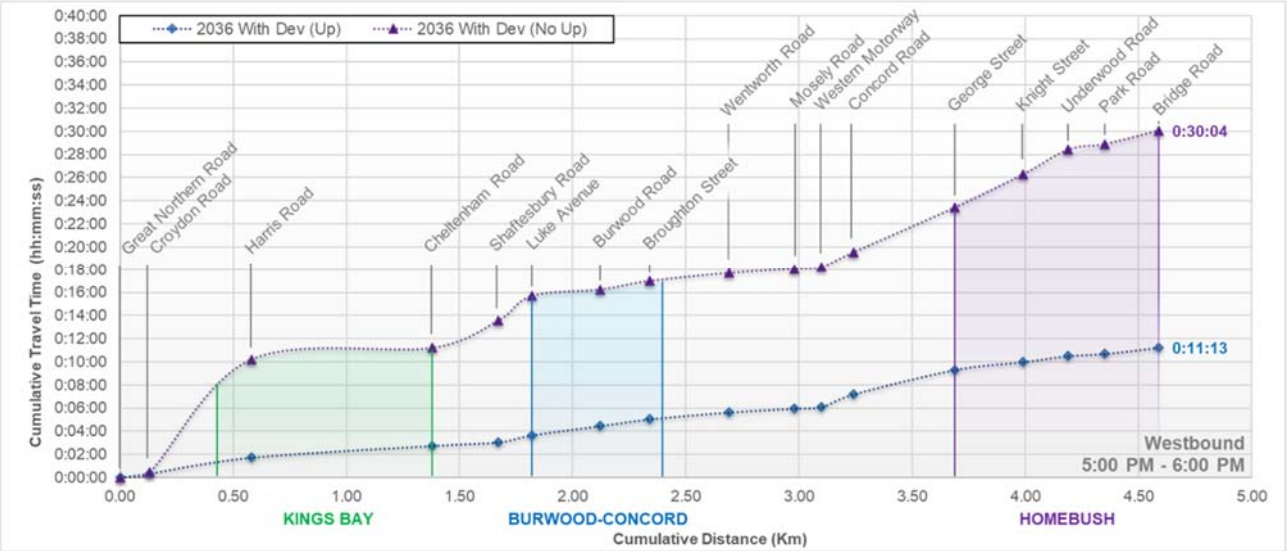


Figure 4-33: Travel Time Comparison – With and Without Upgrades – Westbound PM Peak

The outcomes are:

- The Uplift with Upgrades Scenario is around **19 minutes faster** than the Uplift (no Upgrades) Scenario.
- There are substantial travel time savings around Harris Road, as well as overall improvements through both the Burwood and Homebush South Precincts.

The benchmark comparison for the same peak period and direction is shown in Figure 4-34, highlighting the differences with the 2018 travel time surveys and the 2036 Benchmark Scenario (without Uplift).

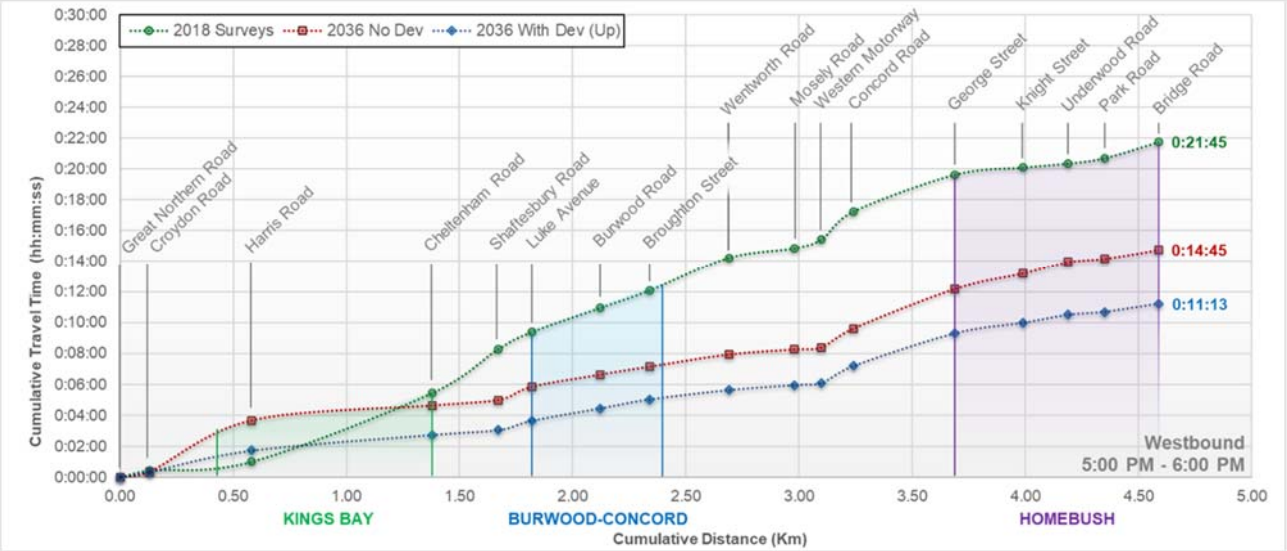


Figure 4-34: Travel Time Comparison to Benchmark Scenarios – Westbound PM Peak

The outcomes are:

- The Uplift with Upgrades Scenario is around **3 minutes faster** than the Benchmark scenario
- The Uplift with Upgrades Scenario is around **10 minutes faster** than the 2018 traffic surveys.

4.5 Public Transport

4.5.1 Changes to the Services

The most recent public transport network changes along the Parramatta Road corridor were implemented in October 2020. The changes were largely timetable improvements instead of changes in route alignment, stop locations or catchment coverage.

There are no daytime bus services between Burwood Road and Concord Road, though it is serviced by a recently implemented on-demand bus service. There are no bus stops along this section of Parramatta Road to allow for the safe pick up or drop off on-demand passengers, especially during Clearway hours. Also, limited turn movement access between the northern and southern sides of Parramatta Road would substantially increase travel times for the on-demand service.

Two separate maps have been prepared to identify public transport service coverage voids for buses and trains. The void areas outside of reasonable walking distance to access each mode are depicted in Figure 4-35 and Figure 4-36. Reasonable walking distances have been defined as 150m for bus services in moderately dense urban areas and 800m for train services. Figure 4-37 overlays the gaps in coverage considering buses and trains together.

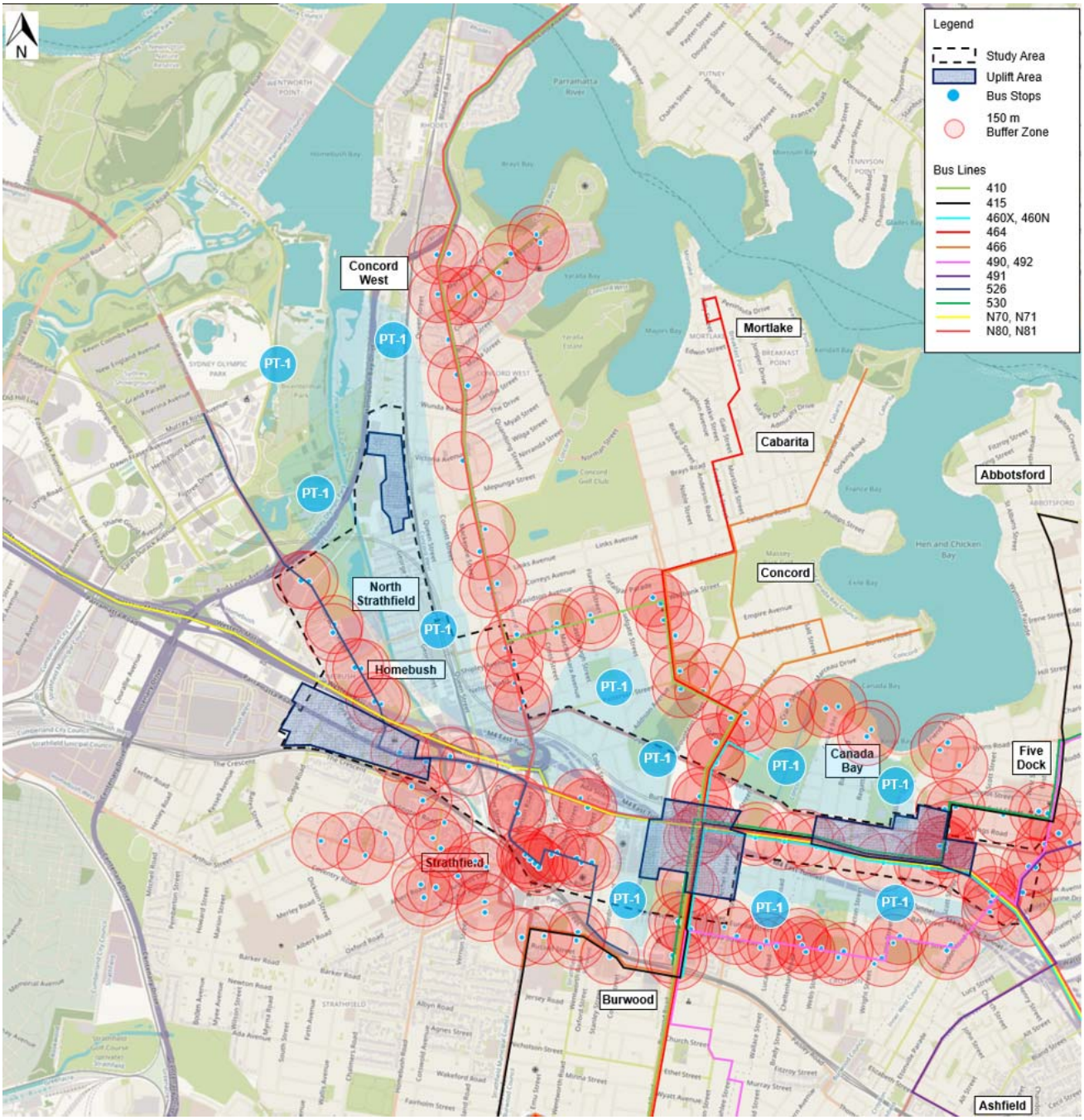


Figure 4-35: Bus Service Stop Coverage Gaps

Figure 4-35 reveals bus coverage void areas within Concord West, North Strathfield, Concord, Canada Bay and Croydon areas. These void clusters are highlighted in light blue in Figure 4-35. Parts of these void areas are within the defined Uplift precincts, particularly in North Strathfield.

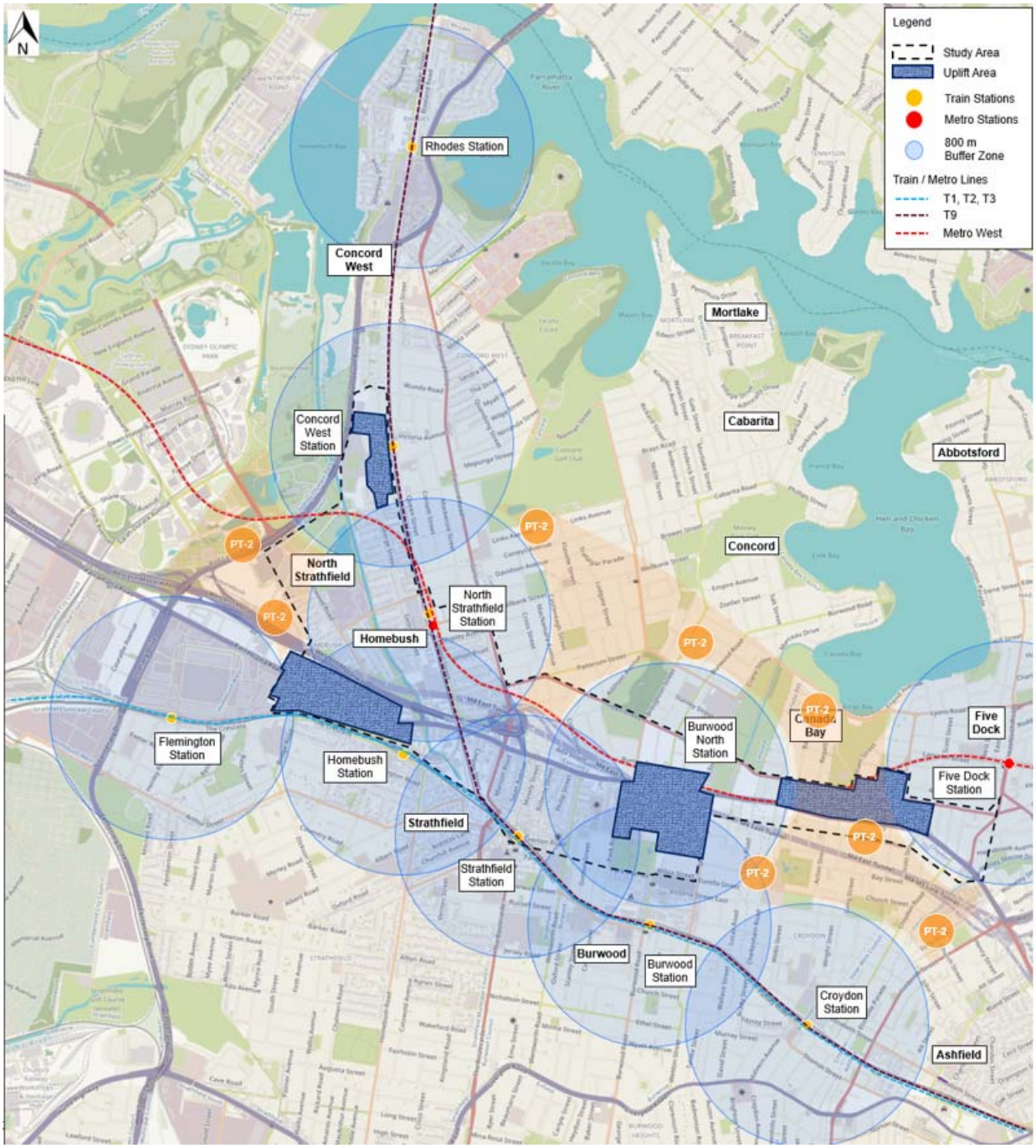


Figure 4-36: Train / Metro Stations Coverage Gaps within the Study Area

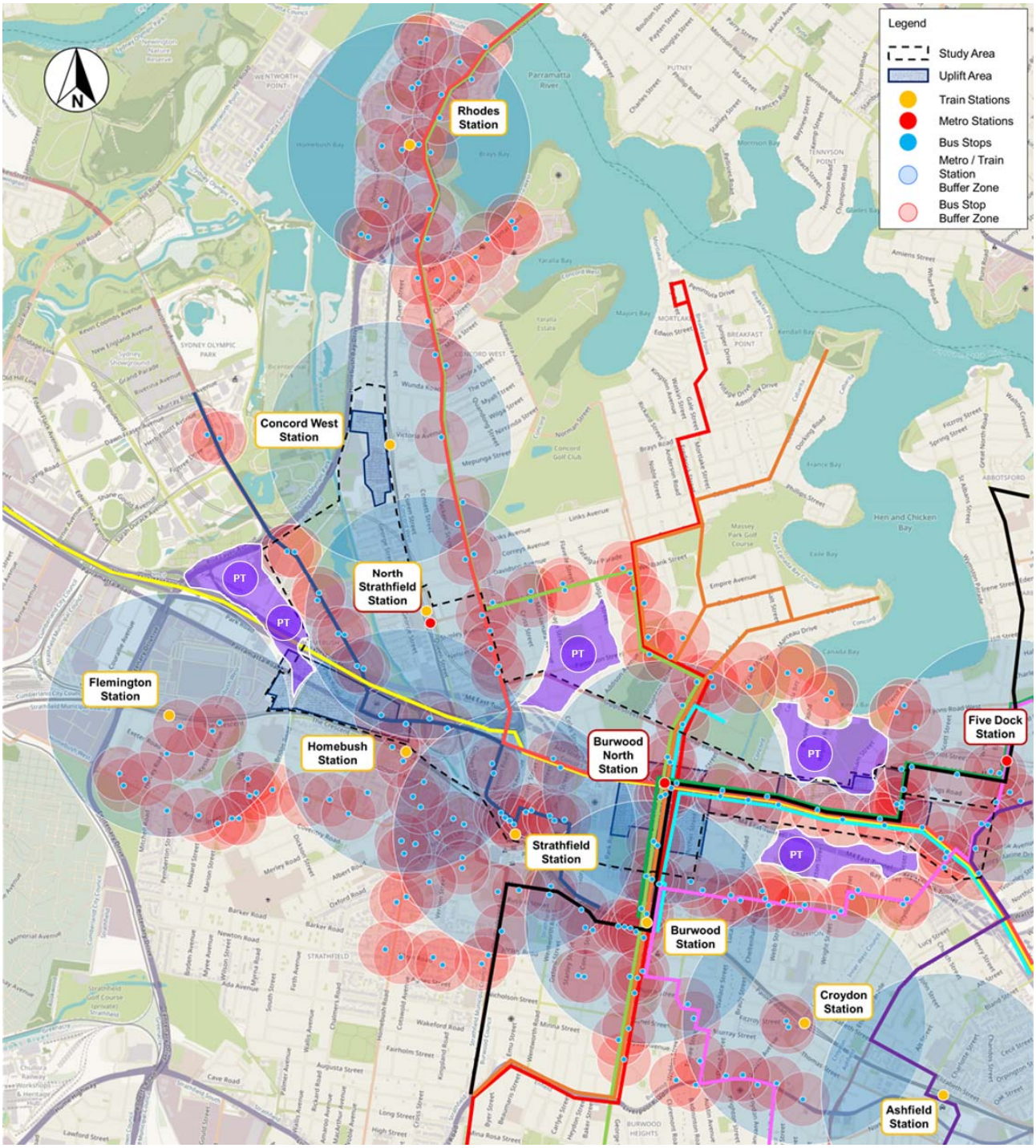


Figure 4-37: Bus and Train / Metro Stations Coverage Gaps

As shown in Figure 4-37, there is no public transport route between North Strathfield / Homebush West and Sydney CBD. These catchments are some of the most significant in terms of traffic demands onto the Parramatta Road corridor.

Sydney CBD bus routes have a reasonable coverage along Burwood Road and Parramatta Road.

Detailed Public Transport strategies for each precinct are provided in Chapters 5 and 8.

4.5.2 At-grade Rapid Transport Route on Parramatta Road

It is understood that the infrastructure approval for WestConnex conditioned that at least two lanes of Parramatta Road be dedicated for the use of public transport, unless an alternative option with better public transport outcomes is committed to.

The Sydney Metro West project has since been approved, which might be interpreted as meeting the intent of the condition.

However, the future year demand forecasting has demonstrated that this project alone is insufficient to deter traffic from using Parramatta Road and extensive congestion is expected by 2036. Further assessment of east-west surface-level rapid public transport options is seen to still have merit to service the proposed growth areas along the Parramatta Road growth corridor.

4.6 Active Transport

4.6.1 Walking Demand and New Links

Existing 'real-time' pedestrian activity have been sourced from Global Strava Heatmap, shown in Figure 4-38. In the Heatmap, dark areas are categorised as low or no pedestrian activity and lighter areas have high activity.

The lower levels of relative usage along Parramatta Road highlight the poor connectivity to, from and along this corridor and is a key consideration for improving connections. An overview of the new connections being proposed is also provided in Figure 4-39 with further details provided in Chapter 5 to 8.

4.6.2 Cycling

Figure 4-39 shows the current cycling network and shows how disjointed it is across the study area. An overview of new proposed cycling connections within the Uplift precincts is also shown in Figure 4-39 with further details provided in Chapters 5 to 8.

Figure 4-38 Potential Additional Links to the Footpath Network within Uplift Precincts*

**Source: https://www.strava.com/heatmap#12.62/-208.70684/-33.93341/hot/all*

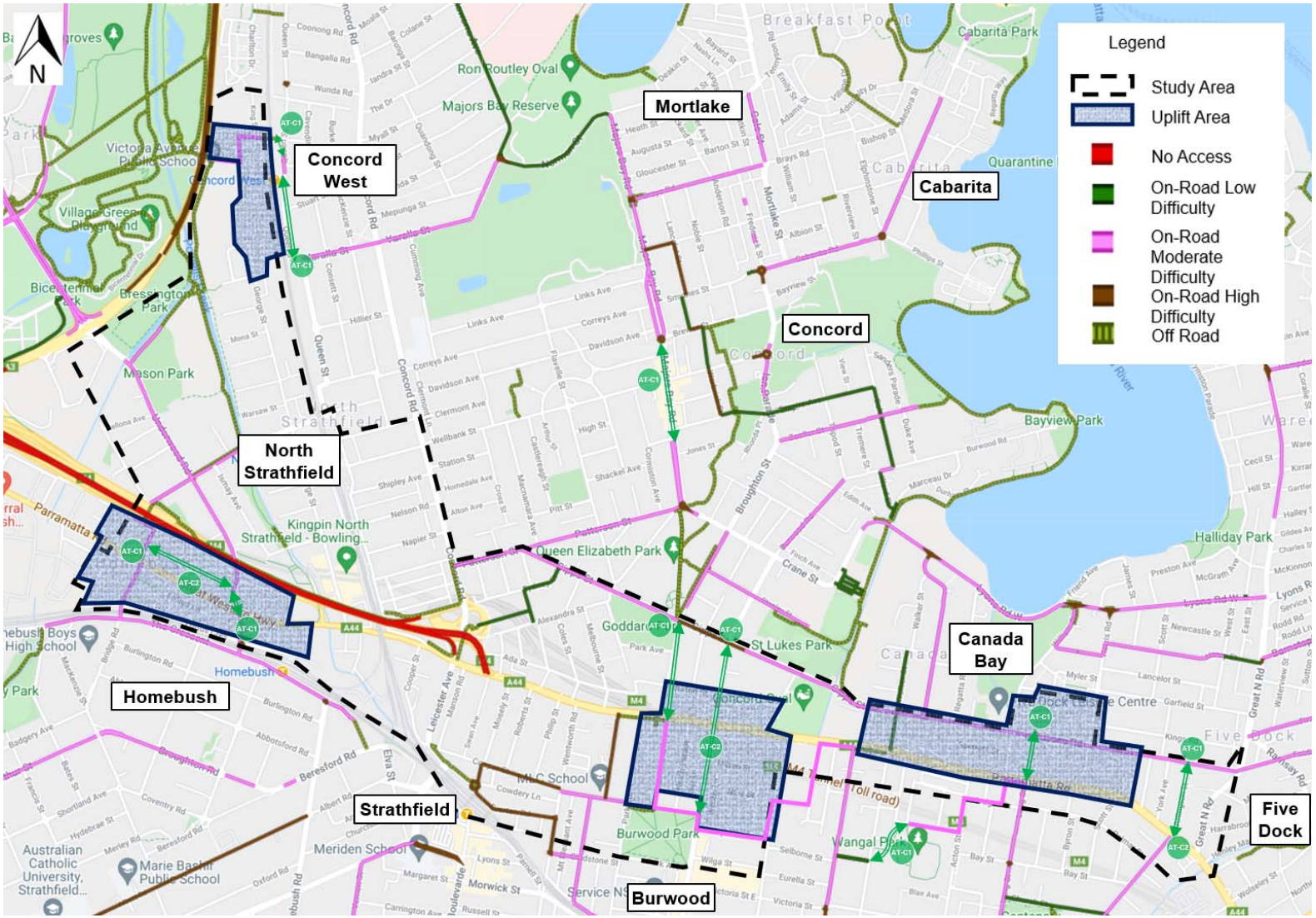


Figure 4-39 Potential Additional Links for the Cycleways Network within Uplift Precincts *

**Source: https://roads-waterways.transport.nsw.gov.au/maps/cycleway_finder & Canada Bay, Burwood and Strathfield Councils latest bike plans*

4.7 Parking Policies

4.7.1 General

In redevelopment areas such as the uplift precincts in this study, parking policy can have a significant influence on travel behaviours and traffic demands. For example:

- Lower development parking rates per unit may influence the car ownership characteristics of those who choose to move into the area (knowing there will be restrained on-site parking)
- Time restricted and / or metered on-street parking encourages employers of business to the area, and long-stay visitors, to seek alternative modes
- The management supply of off-street public parking acts as a detriment to arriving by private car in order to encourage the usage of alternative modes.

However, an integrated parking policy needs to finely balance the above considerations with what the consequences of restrained supply might be. This is particularly evident in transition areas, like the uplift areas, where the overflow of excess parking demand into adjacent residential areas can be problematic.

For these reasons, a broader parking strategy is preferred to the consideration of the Uplift areas in each LGA in isolation. Notwithstanding these limitations, the two key parking policy measures that have been identified for consideration within the study area are:

- Adjusting parking provision rates in each Councils' Development Control Plans (DCPs), primarily based on the proximity and levels of service of public transport
- Peak period clearways to better cater for future intersection pinch point needs.

Each strategy has been identified and explained in the following sections.

4.7.2 DCP Parking Rate Categories

The proposed uplift precincts have been assessed in terms of proximity and coverage of public transport as the basis for defining the levels of development parking that ought to be considered. The precincts have been categorised in to three 'parking transition' types:

- **P1 - Excellent Public Transport Provision:** Adjust parking provision rates to lowest level (e.g. near the proposed Burwood North Metro Station)
- **P2 - Good Public Transport Provisions:** Adjust parking provision rates down to moderately lower rates
- **P3 - Limited-to-or no reliable public transport provision:** Unchanged parking provision rates.

The parking areas were classified based on the density of nearby public transport facilities (and their areas of influence) as well as the hierarchy of services.

Proposed development parking provision rates have been annotated within each uplift precinct in Figure 4-40. The rates in Table 4-10 are proposed for the **P1** areas. **P3** areas are proposed to retain their current rates and **P2** areas are proposed to be the average of P1 and P3 rates.

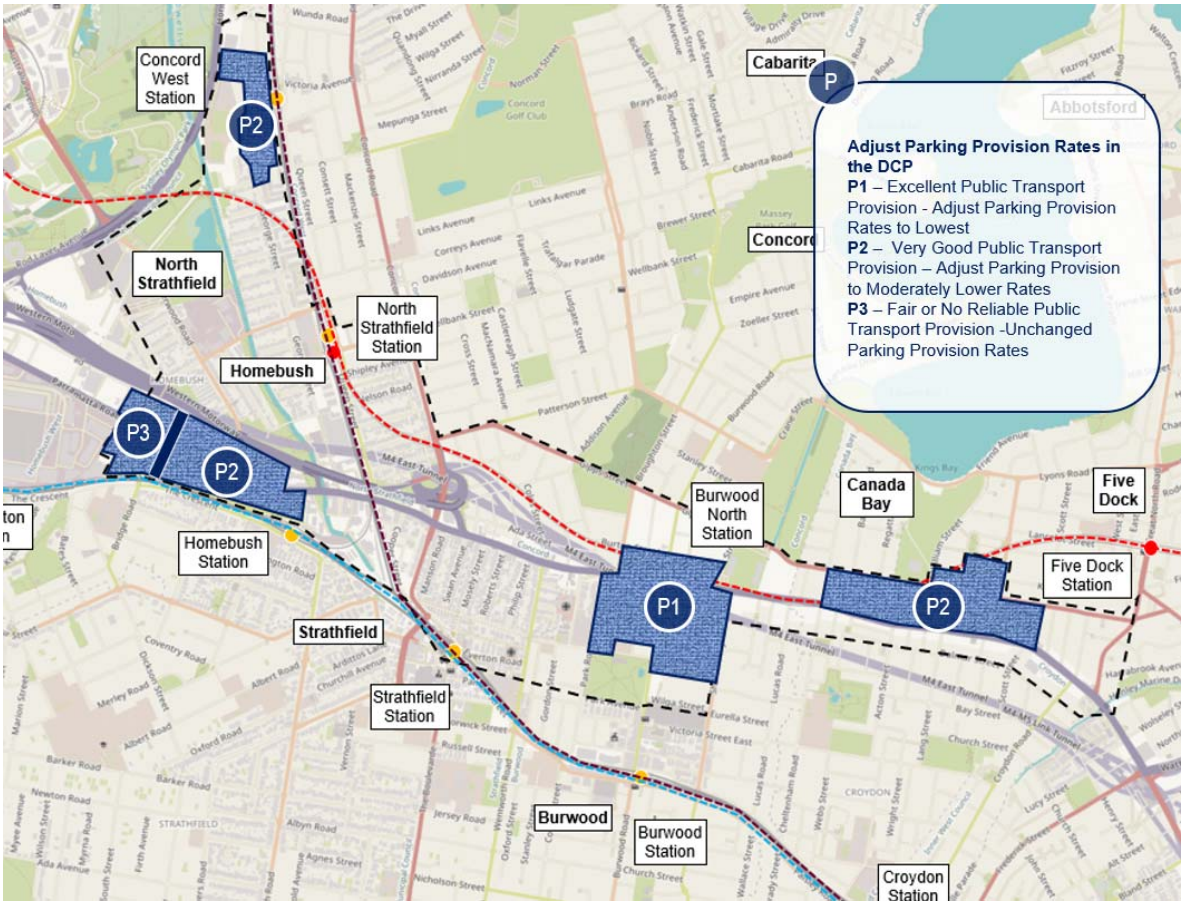


Figure 4-40 Proposed Parking Provision Transition Area

Table 4-10 Sample P1 Parking Rates for High Density Residential Dwellings *

Bedrooms	Maximum Number of parking Spaces
Studio	**0.3**
1	0.5
2	**0.9**
3	**1.2**
Visitor Parking	0.1 Space per 5 dwellings

**Adapted from Parramatta Council DCP for Epping Town Centre*

Furthermore, 'P1' areas should be defined with maximum parking rates whilst 'P2' and 'P3' should be retained as minimum rates, although Council's would ideally be more flexible to accepting parking relaxations in 'P2' areas.

4.7.3 Peak Period Clearways

The following local roads in the Uplift precincts are proposed for peak period parking restrictions (or 'clearways') to cater for additional 'inbound' traffic demand (towards Parramatta Road) in the AM peak and more 'outbound' demand in the PM peak. The locations are:

1. (P1) Bridge Road, Homebush between Parramatta Road and Loftus Crescent
2. (P2) Burwood Road, Burwood between Wilga Street to the south and Burton Street north of Parramatta Road
3. (P3) Harris Road, Five Dock between Parramatta Road and Kings Road
4. (P4) Queens Road, Five Dock between Arlington Street and Great North Road.

The proposed parking restrictions would take the form of peak period clearways and parking restrictions would defer to current restrictions during the day and on weekends. The need for the peak period clearways however is aligned with substantial completion of redevelopment of the area.

The proposed clearways are depicted in Figure 4-41.

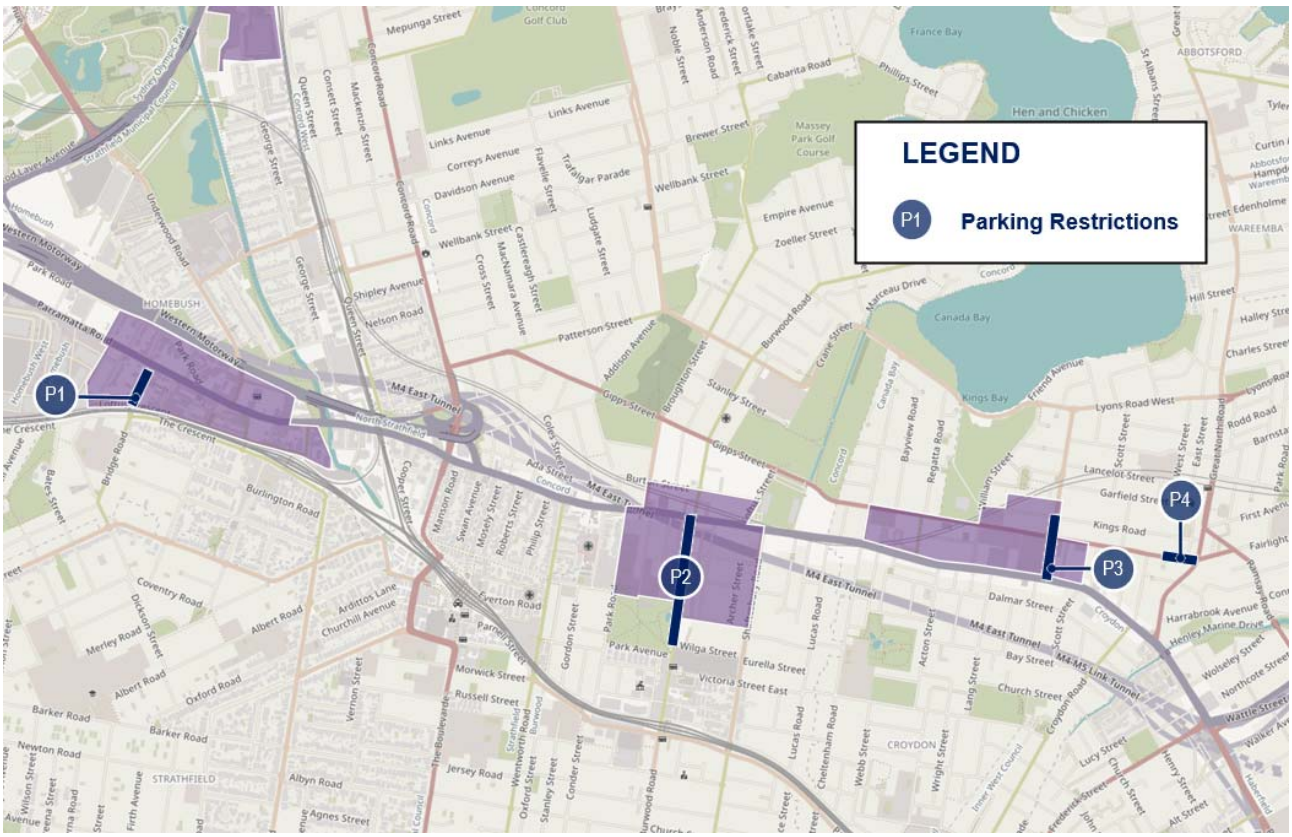


Figure 4-41 Proposed Peak Hour (Tidal) Clearways

4.8 Travel Demand Management Measures

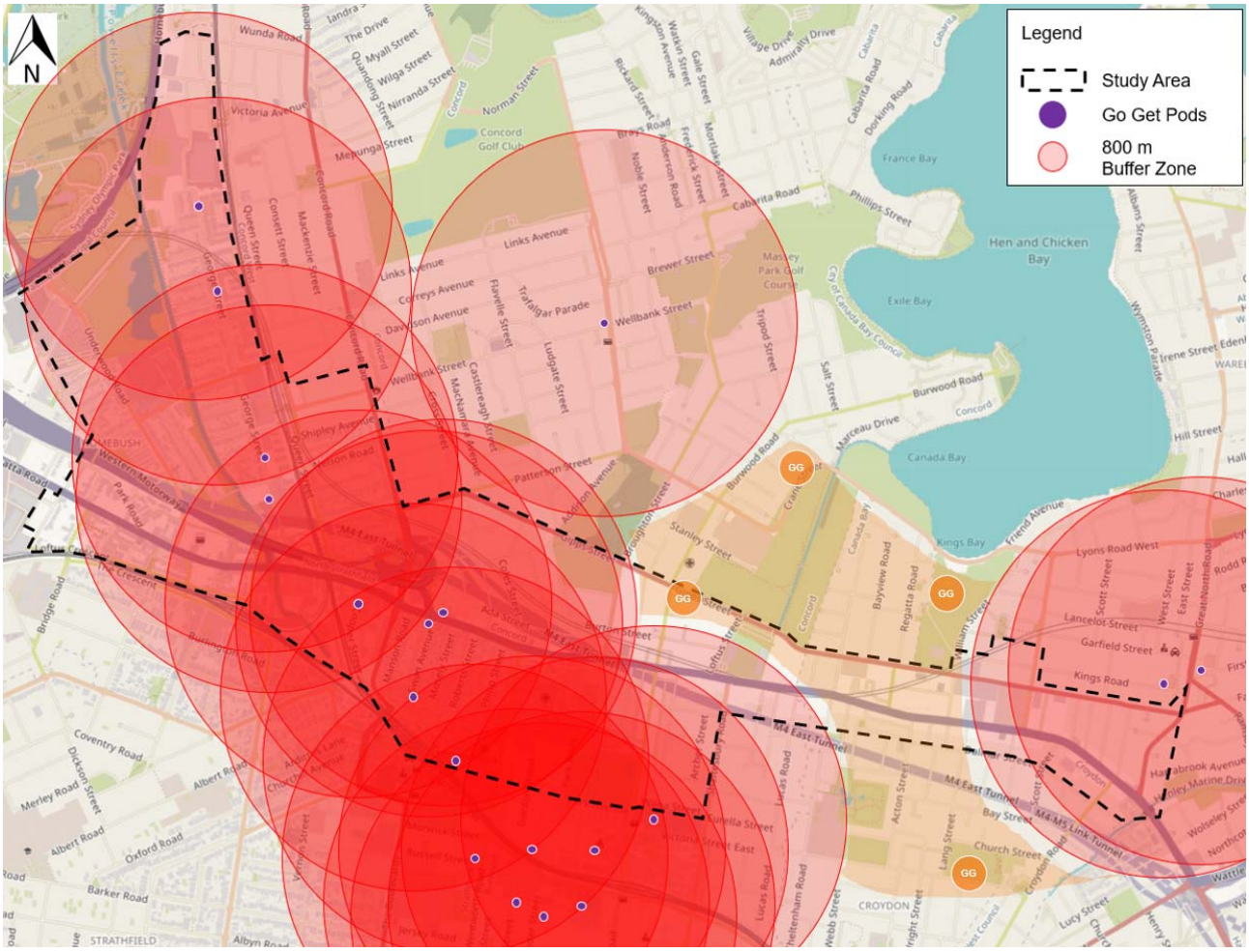
4.8.1 Car Share Strategies

Figure 4-42 shows a map of existing car share parking pods in the study area. 'Go Get' is the current provider in these locations. It can be seen that the GoGet parking pods are mostly near railway stations, and that they are not provided in the Burwood-Concord and Kings Bay precincts.

As the precincts redevelop, with expected increases in population and (potentially) more restrictive development parking rates, the demand for car share facilities will increase, and should be encouraged through development initiatives. The integration of car share as a part of major new developments in the study area could encourage reduced car ownership when moving into the area.

Additional to proposed car share in new developments, car share pods could be provided along:

- Queens Road and its side streets
- Concord Road and its side streets
- Burwood Road and its side streets.



Source: GoGet

Figure 4-42: GoGet Parking Pods in the Study Area with 800m Walking Radius

4.8.2 Green Travel Plans

The uplift precincts are located in areas of high public transport accessibility. Depending on the scale of each development in each of the precincts, a Green Travel Plan should be prepared to capitalise on walking, cycling and public transport facilities proposed to be introduced into these areas, supported by a finer grained road system. There would be merit in each Council preparing Green Travel Plan templates for major developments to use as a basis for their individual Green Travel Plans.

4.8.3 'Finer Grain' Local Street Networks

Whilst not strictly a TDM measure, there is merit in breaking up the Uplift precincts with laneways and roads to provide greater permeability to and from Parramatta Road for walking and cycling, and to improve traffic circulation opportunities and 'rear access' to developments.

The development layout and street structure principles included in the RobertsDay work show how these principles could work in each precinct area. This report supports the 'finer grained' road network principles in the RobertsDay work.

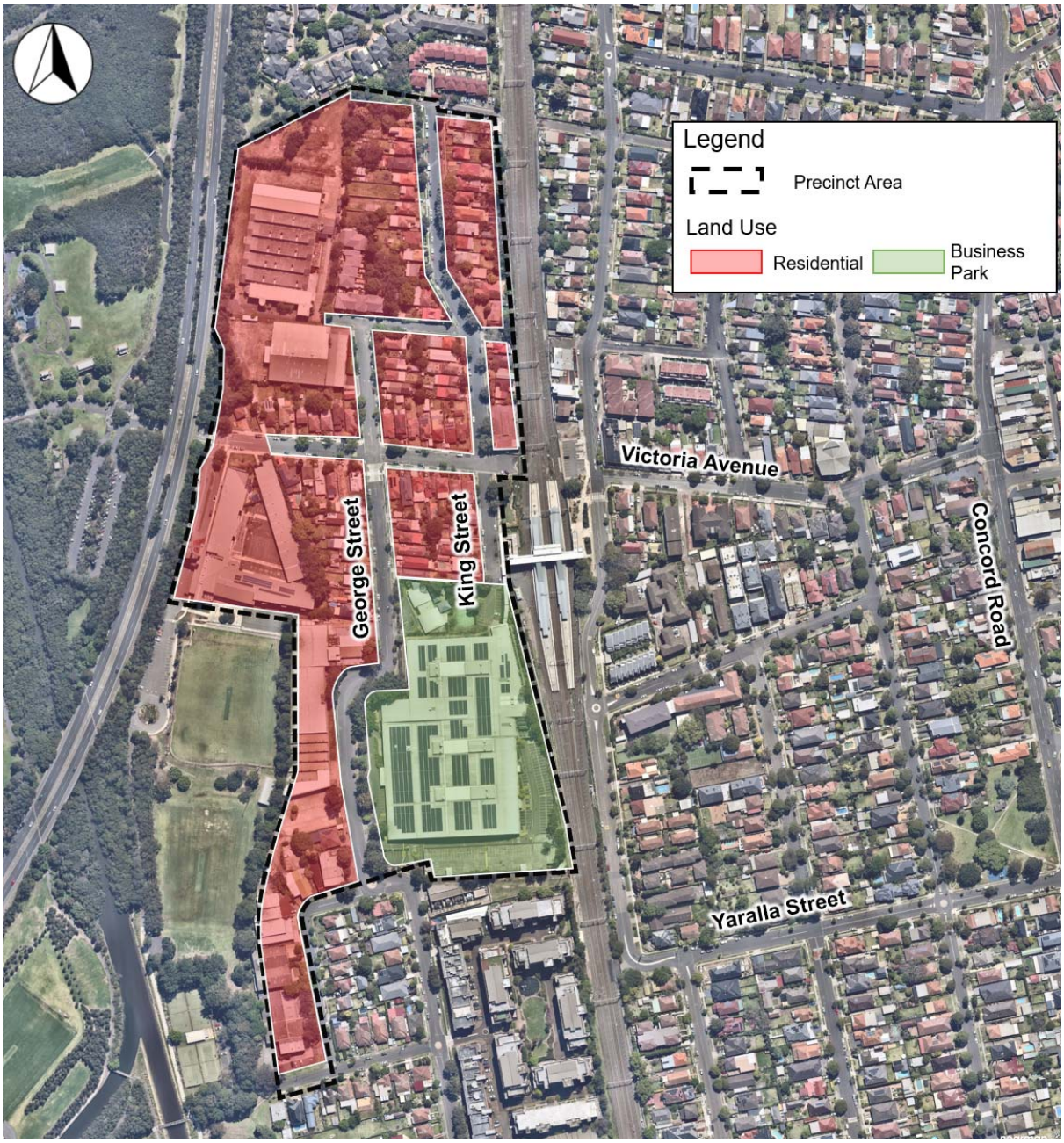
5. HOMEBUSH NORTH PRECINCT

5.1 Uplift Development Summary

The proposed redevelopment in Homebush North precinct would result in:

- 479 medium density residential dwellings
- 517m^2 GFA of retail development
- 30,763m^2 GFA of commercial development.

The Homebush North Precinct will retain its residential nature and a (B7) Business Park zone will be added to the precinct. Most residential developments are proposed near the train station and provide proximate pedestrian access to the station.

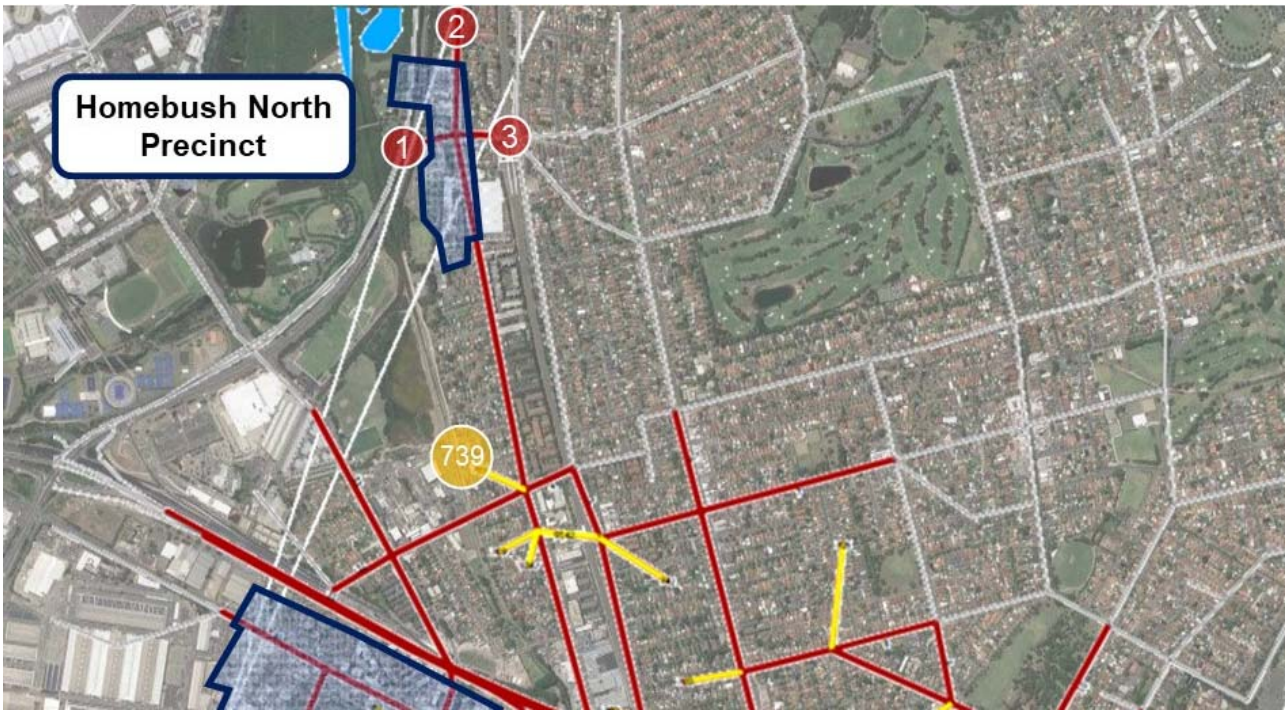


Source: Nearmap

Figure 5-1: Homebush North Precinct Proposed Rezoning Areas

5.2 Traffic Generation

Figure 5-2 shows the STFM zones which are associated with the Homebush North precinct's catchment. There are a total of three external zones (Zones 1, 2 and 3) and one internal zone (Zone 739).



Source: Google Maps

Figure 5-2: Homebush North Precinct - STFM Zones

The total traffic generation estimated in the STFM for the zones within the Homebush North catchment is summarised in Table 5-1. Due to the coarseness of the STFM zoning system, these numbers include additional catchments and their respective but relatively minor future growth from just outside of the precinct.

Table 5-1: Homebush North Traffic Generation and Growth from 2019

Scenario	Traffic OUT (veh)	Traffic IN (veh)	Total TWO-WAY (veh)
AM 2-Hour			
2019 AM	820	843	1,663
2026 AM No Dev	755	627	1,382 (-281)
2026 AM with Dev	938	719	1,657 (-6)
2036 AM No Dev	772	617	1,389 (-274)
2036 AM with Dev	1,542	979	2,521 (+858)
PM 2-Hour			
2019 PM	673	1,341	2,014
2026 PM No Dev	509	1,207	1,716 (-298)
2026 PM with Dev	591	1,498	2,089 (+75)
2036 PM No Dev	521	1,225	1,746 (-268)
2036 PM with Dev	868	2,294	3,162 (+1,148)

The STFM does show some reductions in traffic in the AM peak, presumably due to modal shift trips associated with existing development.

5.3 Integrated Strategy

An integrated local area strategy has been development for this precinct based on the traffic modelling and gaps and needs analysis detailed in Chapter 4. These integrated strategies have considered:

- Road network upgrades
- Public transport (Train/Metro/Bus) upgrades
- New pedestrian connections and footpaths
- New cycleway connections
- Parking provision strategies and restrictions
- Car share provisions
- Local street network changes.

The Homebush North integrated strategy is shown in Figure 5-3.

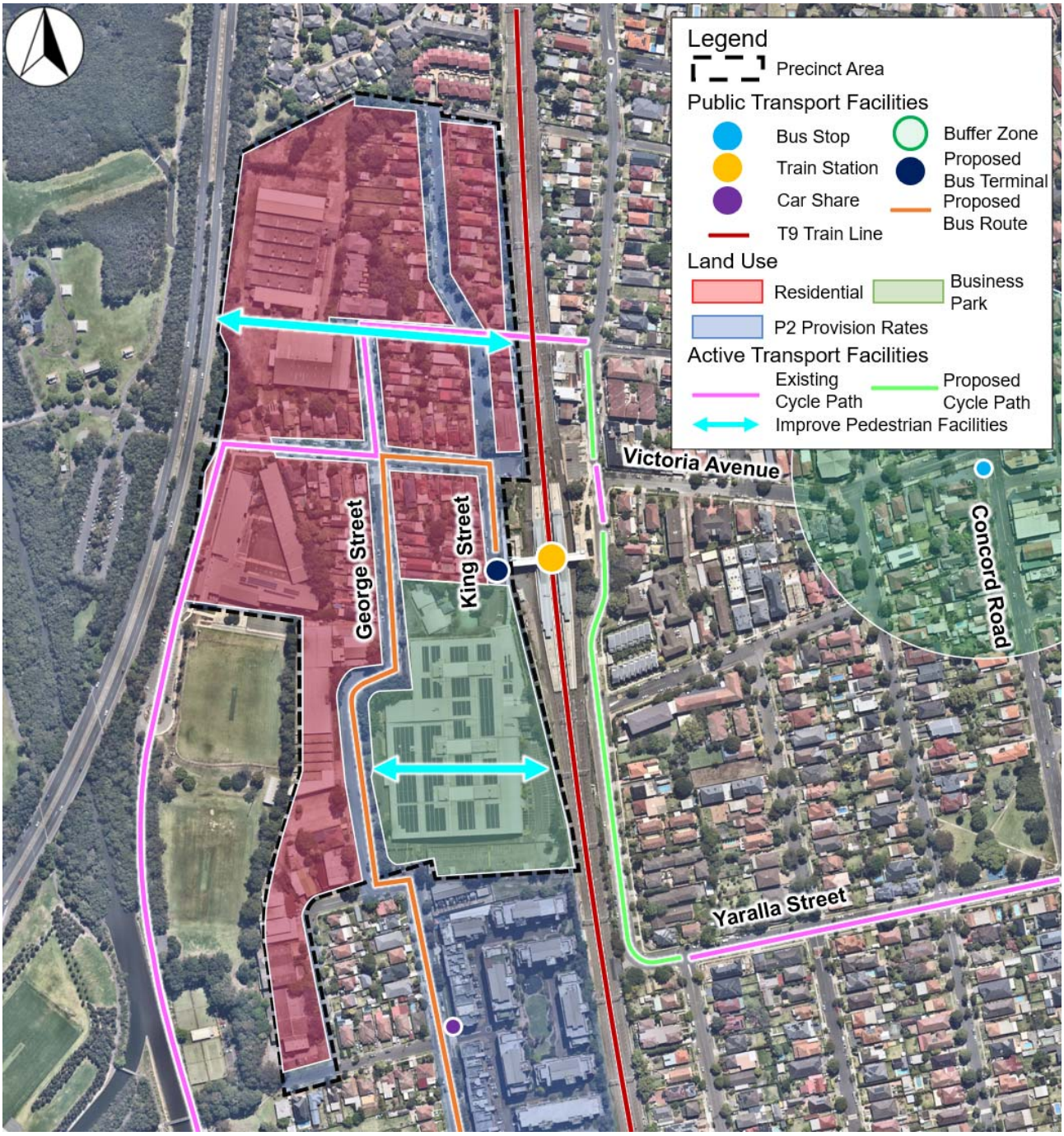


Figure 5-3: Homebush North Precinct - Integrated Transport Strategy

5.4 Road Network Upgrades

5.4.1 General

No major traffic upgrades are proposed in this precinct. The roads and intersections within the precinct operate satisfactorily in 2036 and most of the congestion issues that the development uplift influences to are to the south of the precinct. Major upgrades at those locations would not solve these issues because they would simply 'push traffic' to the already congested Parramatta Road. A more measured, locally sensitive approach to queue and movement management has been adopted.

5.4.2 George Street / Pomeroy Street

The intersection of George Street / Pomeroy Street is not located within the Homebush North precinct however it is directly impacted as a result of growth in both Homebush precincts due to its traffic travelling to and from Parramatta Road. The intersection is geometrically constrained, and has long queues and delays caused by the traffic signals. To address this, the following action is proposed.

Signal Phase Changes

Based on the SCATS data collected for this intersection, the signals currently operate with an A-B-C phase sequence (shown below in Figure 5-5). The intersection runs with filtered right turns on both George Street and Pomeroy Street, with a single dedicated trailing right turn phase from Pomeroy Street (eastern railway bridge).

Source: Nearmap

Figure 5-4: George Street / Pomeroy Street Current Phase Sequence

However, future year traffic congestion is generated by filtering right turning traffic. This applies to both Pomeroy Street and George Street traffic, with the growth in traffic from the precinct, plus additional traffic from major external roads like Homebush Bay Drive to the north-west. Filtering traffic rarely finds an opportunity to safely turn, particularly for the west-to-south turn against traffic coming across the railway bridge on Pomeroy Street.

To address this, the phase sequence is proposed to be changed to allow safer conditions and more opportunities for right turning traffic. The proposed changes are shown in Figure 5-5, not including conditional movements to allow pedestrian crossing actuations.

Source: Nearmap

Figure 5-5: George Street / Pomeroy Street Proposed Phase Sequence

The inclusion of Phase D in the sequence allows for a 'leading' right turn phase for west-to-south right turners. This enables a dedicated phase which allows greater clearance of these vehicles, which would otherwise cause significant upstream blockages.

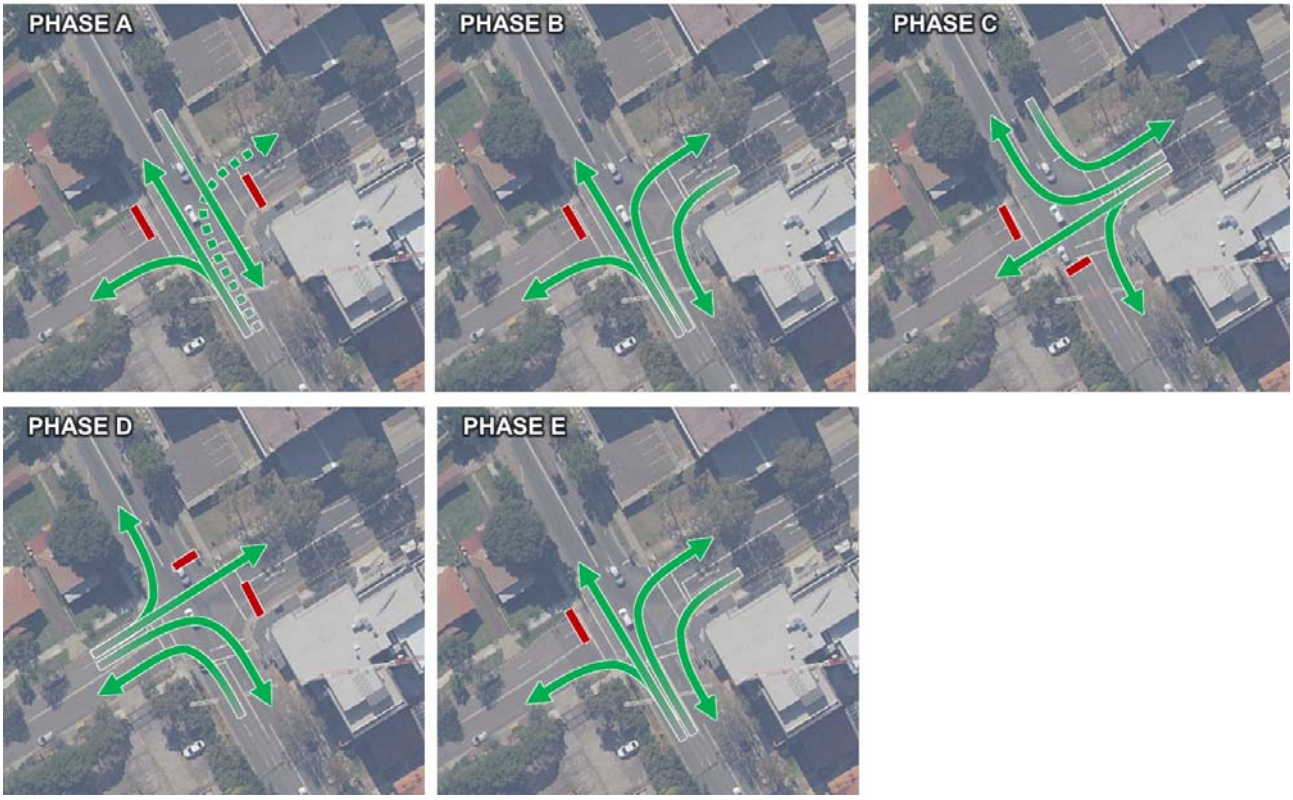
This phase sequence will require the existing signal lanterns for the western approach to facilitate a dedicated right turn movement and will need to be upgraded to 6-aspect lanterns.

5.4.3 Underwood Road / Pomeroy Street

The intersection of Underwood Road / Pomeroy Street experiences similar issues to that of George Street / Pomeroy Street, with long queues caught behind filtering right turning vehicles or on side roads with insufficient capacity to meet the demand. As part of the 'Do Minimum' upgrades (see Section 4.4.1), changes were made to this intersection to facilitate greater capacity for right turn movements. To address additional congestion issues at this intersection, the following action is proposed.

Signal Phase Changes

Based on the SCATS data collected for this intersection, the signals currently operate with an A-B-C-D phase sequence as shown below in Figure 5-6. Phase E does not run during peak hours. The intersection runs with a key filtered right turn from Underwood Road to Pomeroy Street. While there are dedicated Phases B and E to support this movement, their corresponding phase times are too short to cater for future year traffic growth.



Source: Nearmap

Figure 5-6: George Street / Pomeroy Street Current Phase Sequence

To reflect the increasing importance of turning movements and in this case the right turning movements in the future at this intersection, the following changes were made to the signal phasing:

- Reduction of cycle time from around 120 seconds to 80 seconds.
- Modified phase sequence from A-B-C-D to A-C-D-E (i.e. changing from a lagging right turn phase to a leading right turn phase).
- Increased relative phase time for Pomeroy Street (E) approach from George Street (Phase C) and the protected Underwood Road right turn phase (Phase E).

These changes were undertaken on the basis of SIDRA intersection modelling of the intersection to determine optimum phase timings. This sequence benefits heavy right turn flows like those on the east-to-north movement or north-to-east movement.

5.5 Public Transport Initiatives

The Homebush North precinct relies on the T9 Line and Concord West Train Station. This area is currently partly serviced by buses. The T9 Line provides excellent loop connection from Hornsby to Concord West and then Gordon via Central Station with the capability to change line at Strathfield Station for access to Parramatta, Central Coast, Blue Mountains and South West.

King Street is an appropriate location (subject to some geometry upgrades to provide bus turnaround area) for construction of a bus terminal immediately next to Concord West train station to provide bus connectivity to the surrounding residential and commercial neighbourhoods.

A new bus route could be provided from the south and along George Street and provide connections to east and west along Parramatta Road.

The existing and proposed public transport infrastructure in the Homebush North precinct is shown in Figure 5-7.

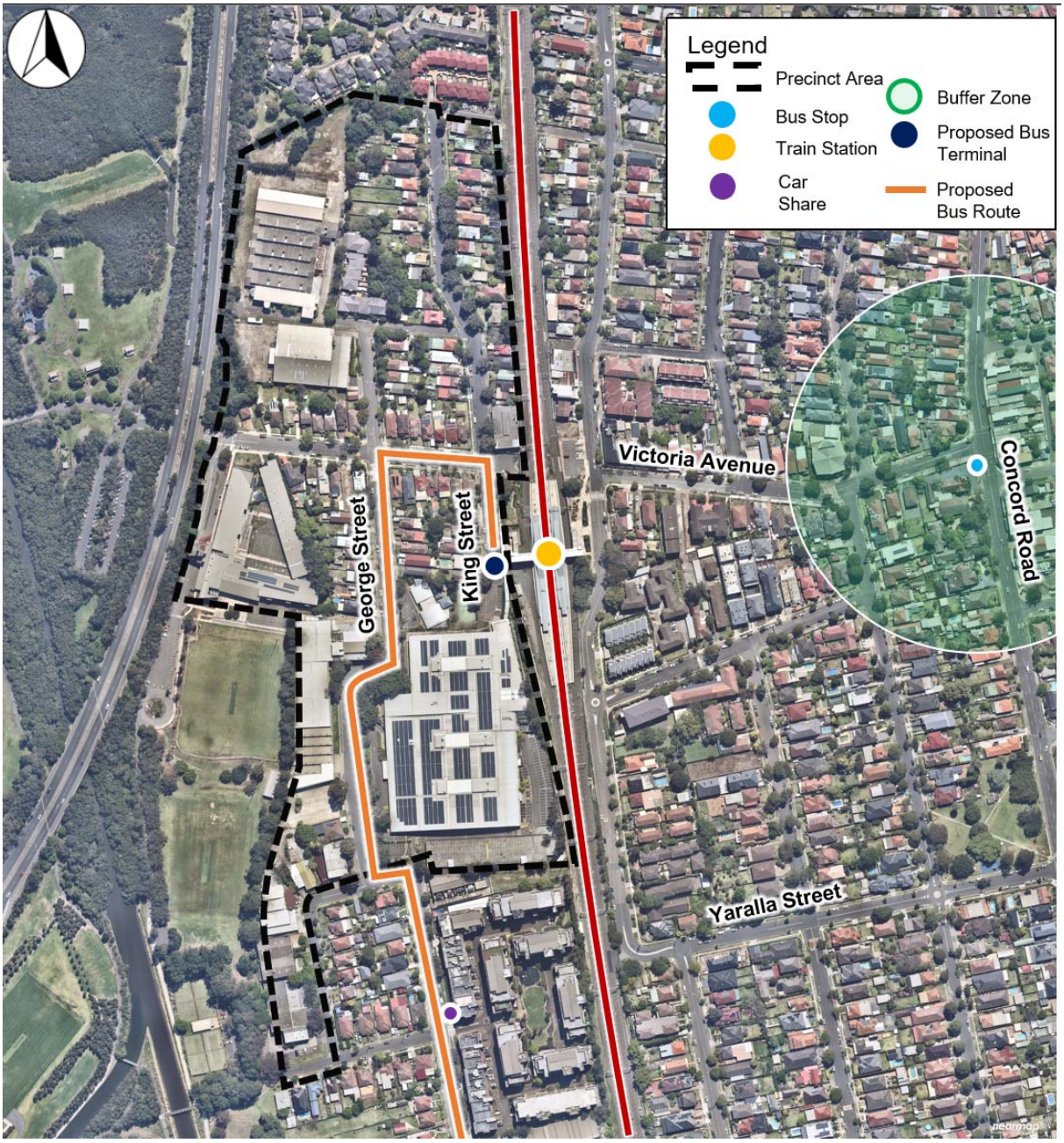


Figure 5-7: Proposed Public Transport Improvements

5.6 Active Transport Initiatives

Based on the Strava Heat Maps for the Homebush North precinct, pedestrian activity is relatively low. To encourage an increase in walking and cycling, east-west and south-north pedestrian links have been proposed for the residential area in the north of the precinct.

Also, an east-west and a south-north pedestrian connection has been recommended crossing the proposed Business Park to provide a safe and accessible connection for business park staff and visitors to / from Concord West Train Station.

Whilst not shown in Figure 5-8, there would also be some benefits in a pedestrian connection over the rail line from Yaralla Street into the southern end of the precinct, subject to further discussions with stakeholders.

In terms of cycleways, a good connection has already been provided along the western edge of the precinct which crosses the precinct and the railway line through Station Avenue and stops at Queen Street. Two additional connection along this cycle route have been proposed, as follows:

- Queen Street between Station Avenue and Victoria Avenue
- Queen Street between Victoria Avenue and Yaralla Street.

The existing and proposed active transport infrastructure in the Homebush North precinct is shown in Figure 5-8.

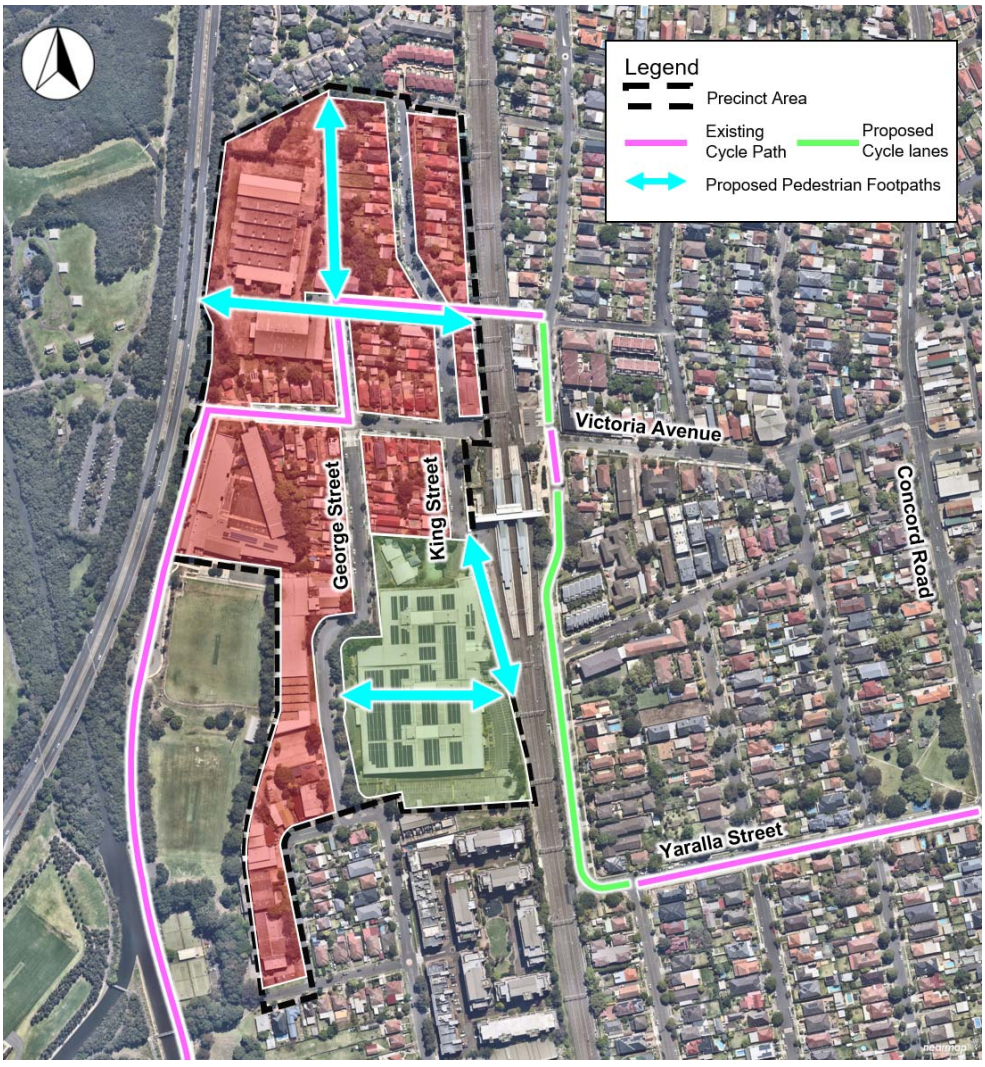


Figure 5-8: Proposed Active Transport Improvements

5.7 Parking Initiatives

5.7.1 Off Street Parking

The Homebush North precinct includes a train station and a proposed bus route but the number and scale of destinations that can be reached quickly is relatively small. Given this, the area would be suitable for a 'P2' parking supply categorisation as per Section 4.7.2, as shown in Figure 5-9.

Depending on the configuration of the developments within the business precinct, it may be that a single consolidated off-street parking area may be better than individual, development-specific provisions.

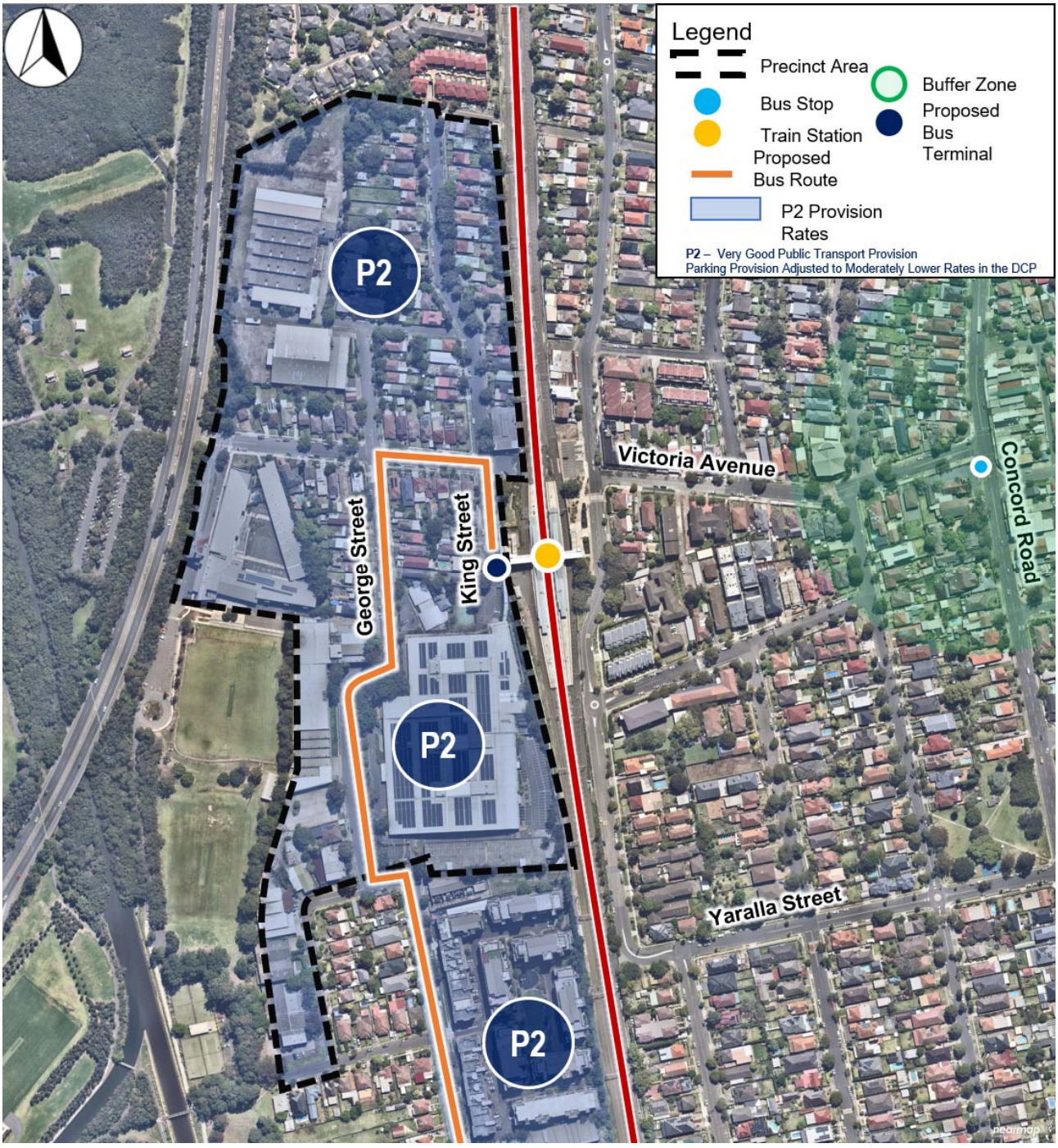


Figure 5-9: Proposed Development Parking Rates Category

5.7.2 On-Street Parking

With the Parramatta Road being a 24 hour Clearway near this precinct, the parking demand associated with Parramatta Road land uses would largely be on its side streets. However, the development of the Homebush North precinct is unlikely to impact this parking demand or supply given its distance away from Parramatta Road.

5.8 Car Share Initiatives

A car share pod (or pods) has been proposed to be located on George Street near Conway Street. The precinct could certainly benefit from additional car share pods given proposed commercial facilities and business park in the area.

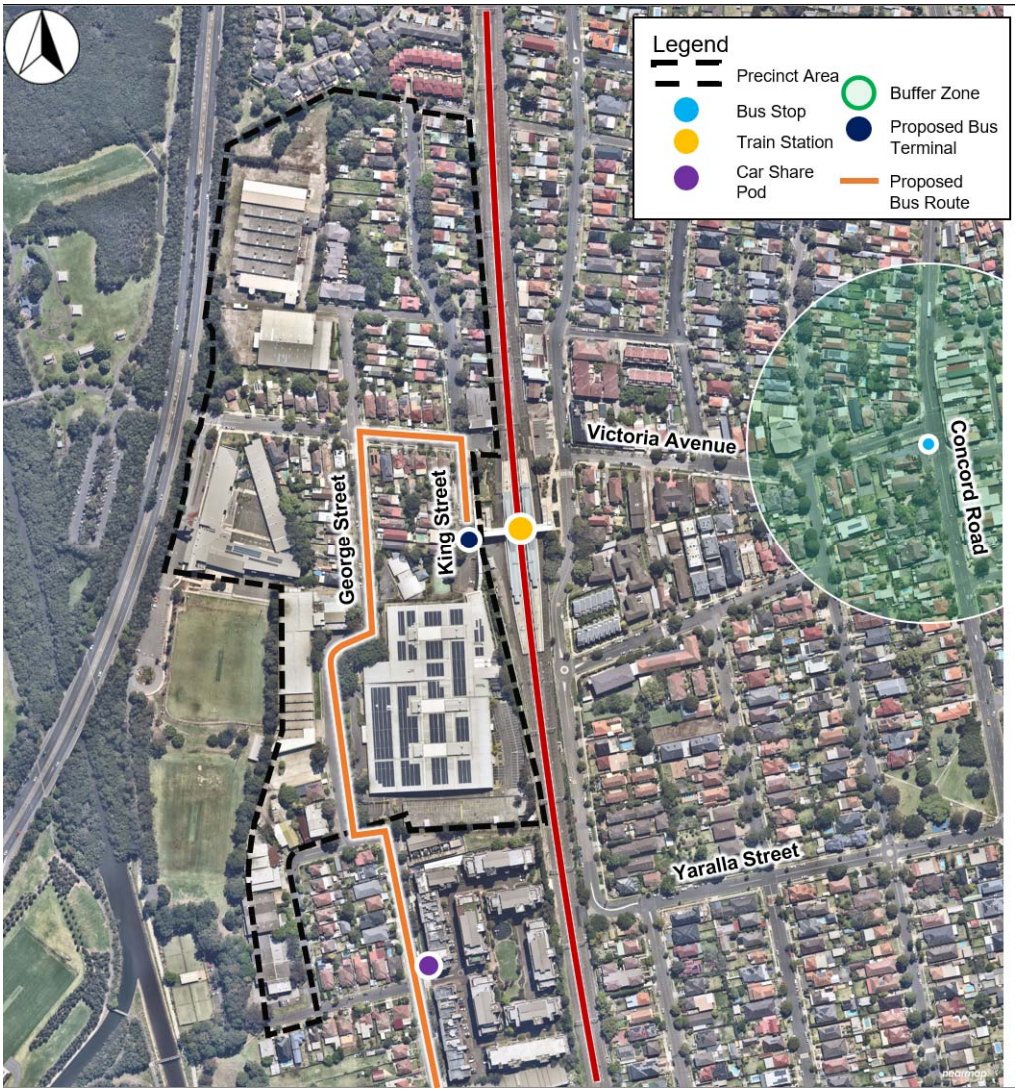


Figure 5-10: Existing Share Car Pods Coverage Area South of Homebush North Precinct

5.9 Local Street Considerations

The proposed area to the north of Station Avenue could be further divided, as development occurs, to provide a north-south an east-west laneway, reducing street block lengths to under 100m.

Similarly, a new road connection from Victoria Avenue public school to George Street and across to King Street, aligned with the Station overpass and the interface between the business park and residential area, would also be advantageous, if development staging permits.

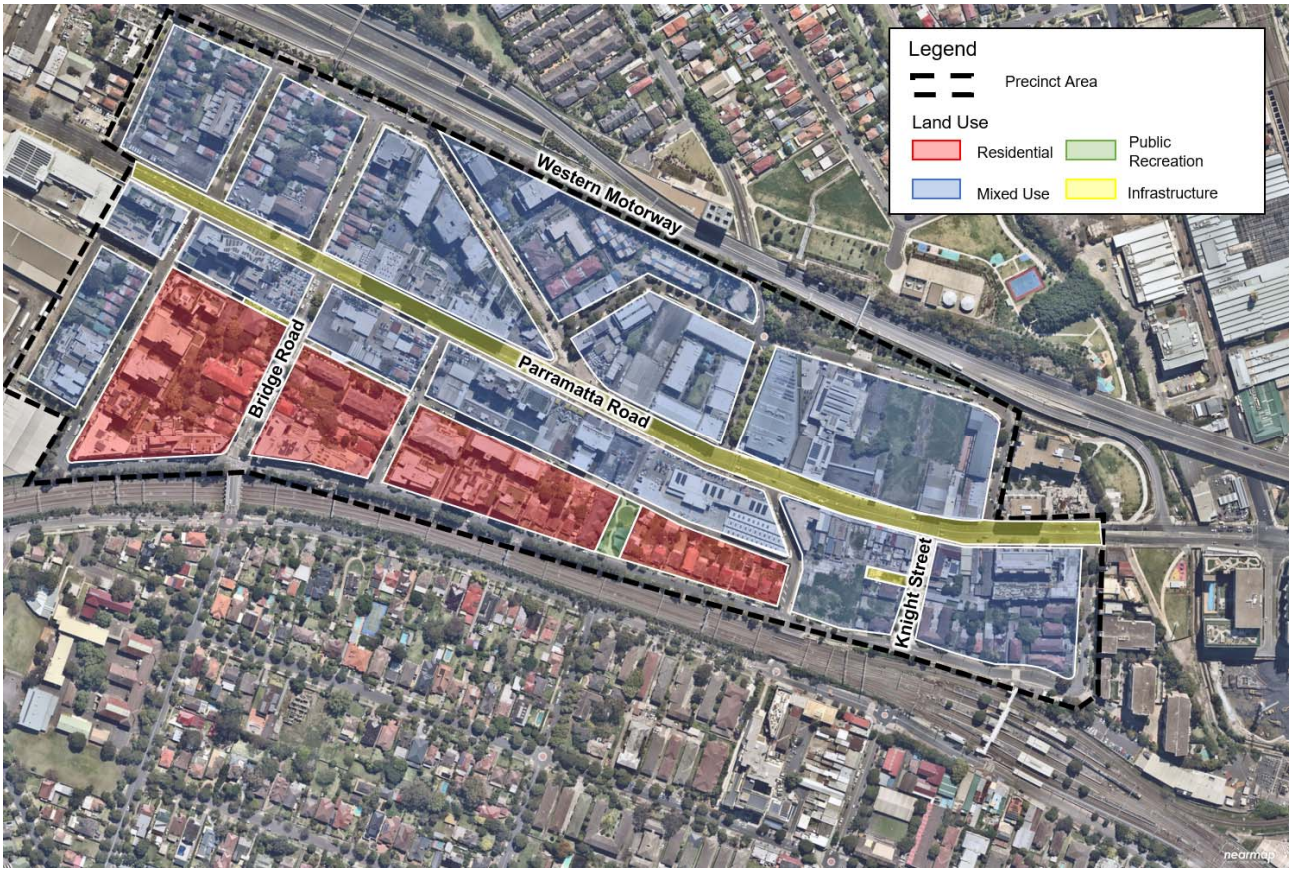
6. HOMEBUSH SOUTH PRECINCT

6.1 Uplift Development Summary

The proposed redevelopment in the Homebush South precinct would result in:

- 4,399 medium density residential dwellings
- 37,333m^2 GFA of retail
- 65,769m^2 GFA of commercial.

Most of the Homebush South Precinct will transition into (B4) Mixed Use premises with residential uses retained north of the rail line but as (R3) Medium Density residential. The proposed land rezoning is shown in Figure 6-1.

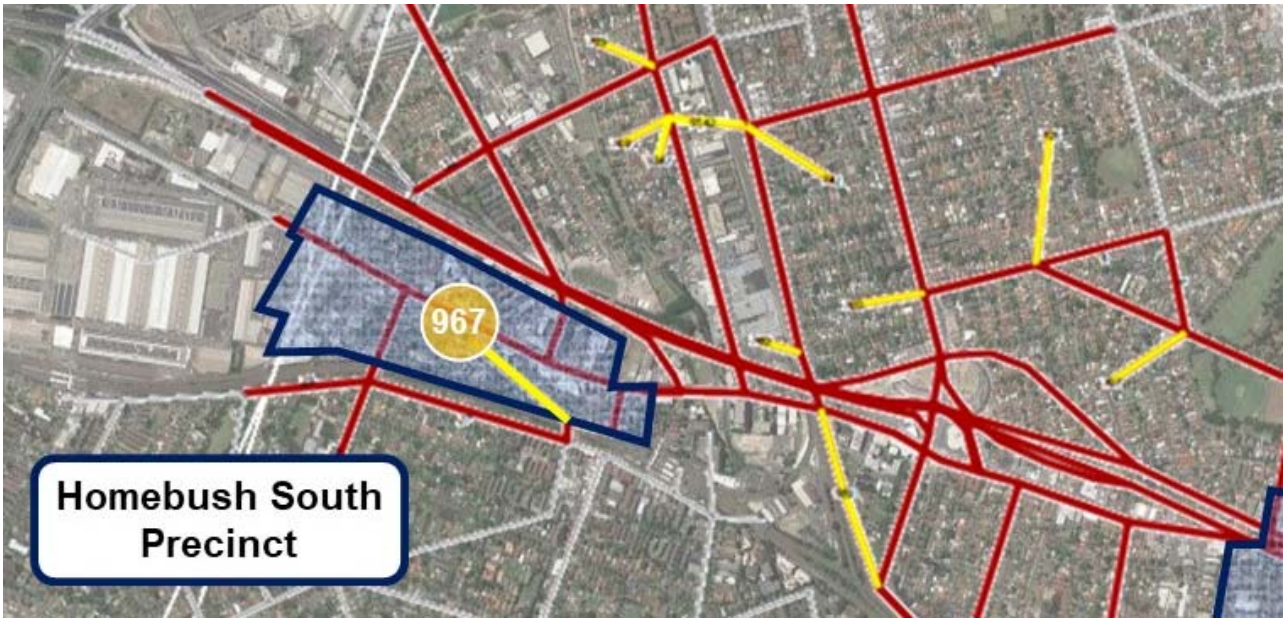


Source: Parramatta Road Transformation Homebush - RobertsDay

Figure 6-1 Homebush South Precinct Proposed Rezoning Areas

6.2 Traffic Generation

Figure 6-2 shows the STFM zone (967) which covers most of the Homebush South precinct.



Source: Google Maps

Figure 6-2: Homebush South Precinct - STFM Zones

The traffic generation forecast by the STFM for the Homebush South zone is shown in Table 6-1.

Table 6-1: Homebush South Traffic Generation and Growth from 2019

Scenario	Traffic OUT (veh)	Traffic IN (veh)	Total TWO-WAY (veh)
AM 2-Hour			
2019 AM	567	280	847
2026 AM No Dev	354	214	568 (-279)
2026 AM with Dev	993	564	1,557 (+710)
2036 AM No Dev	350	219	569 (-278)
2036 AM with Dev	1,015	605	1,620 (+773)
PM 2-Hour			
2019 PM	379	606	985
2026 PM No Dev	283	384	667 (-318)
2026 PM with Dev	732	1,079	1,811 (+826)
2036 PM No Dev	288	384	672 (-313)
2036 PM with Dev	777	1,110	1,887 (+902)

Similar to the Homebush North precinct, the STFM shows some decline in AM peak demand, presumably due to modal shift, but without a commensurate reduction in PM peak traffic growth.

6.3 Integrated Strategy

The proposed development uplift plus background traffic growth has triggered the need for a set of network road upgrades as well as active transport and public transport improvements to cater for future travel demands. These improvements have considered:

- New pedestrian connections and footpaths
- New cycleway connections
- Parking provision strategies and restrictions
- Car share provisions
- Local street network changes.

The Homebush South integrated strategy is shown in Figure 6-3.

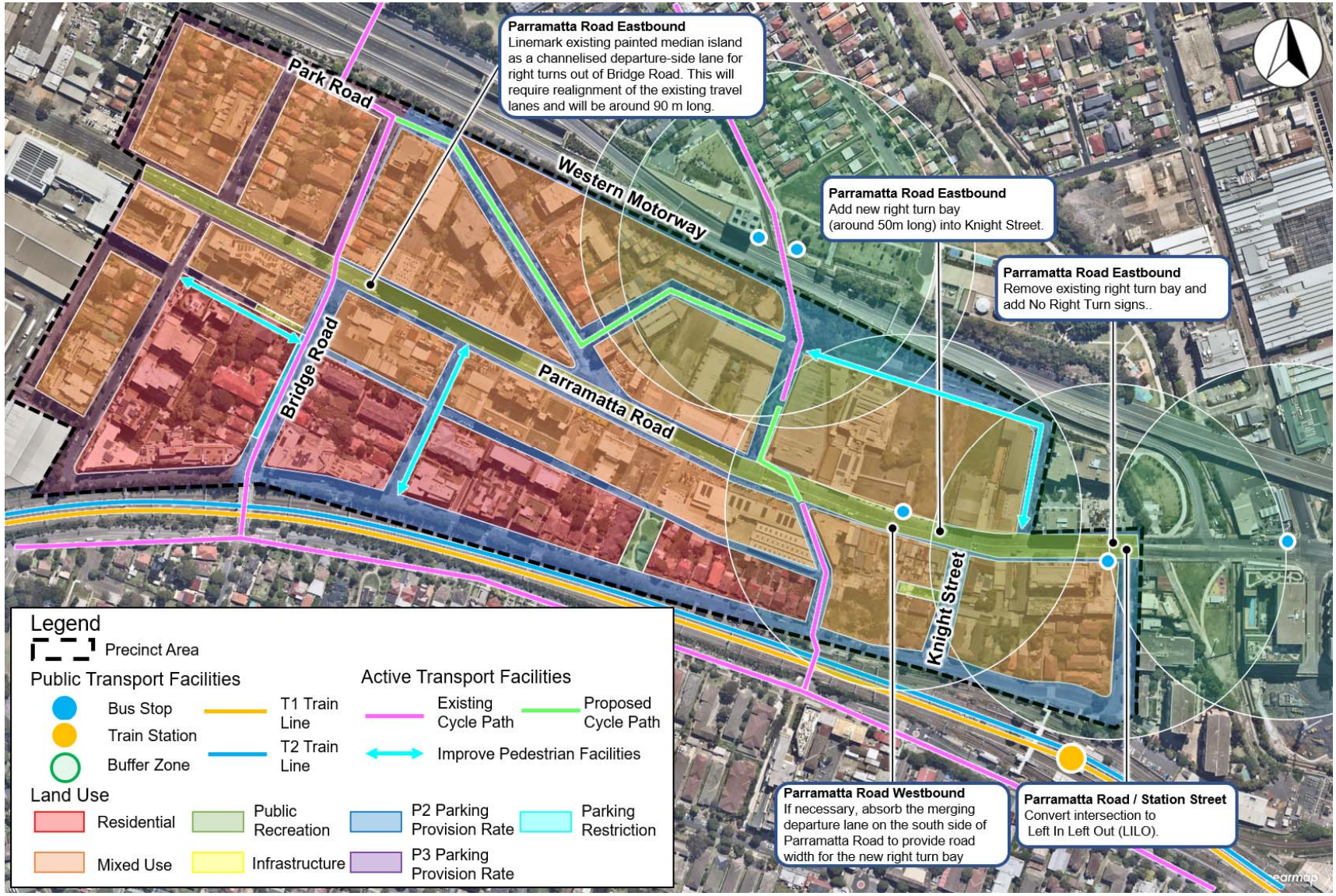


Figure 6-3: Homebush South Precinct – Integrated Transport Strategy

6.4 Road Network Upgrades

6.4.1 General

This section of Parramatta Road West of the M4 interchange is heavily constrained with the Motorway to the north and the rail line to the south. This means that north-south traffic heading towards or across Parramatta Road is funnelled into a few crossing points, generally high turning demands at a few key intersections, generating significant pinch points by 2036.

The fundamental issue with providing major intersection upgrades to 'release' these pinch points is that it will:

- Simply (attempt to) add more traffic to the queues already in Parramatta Road
- Encourage even more traffic to pass through the north-south streets in the area, contrary to their residential functions.

Instead, a series of pinch point management upgrades have been proposed.

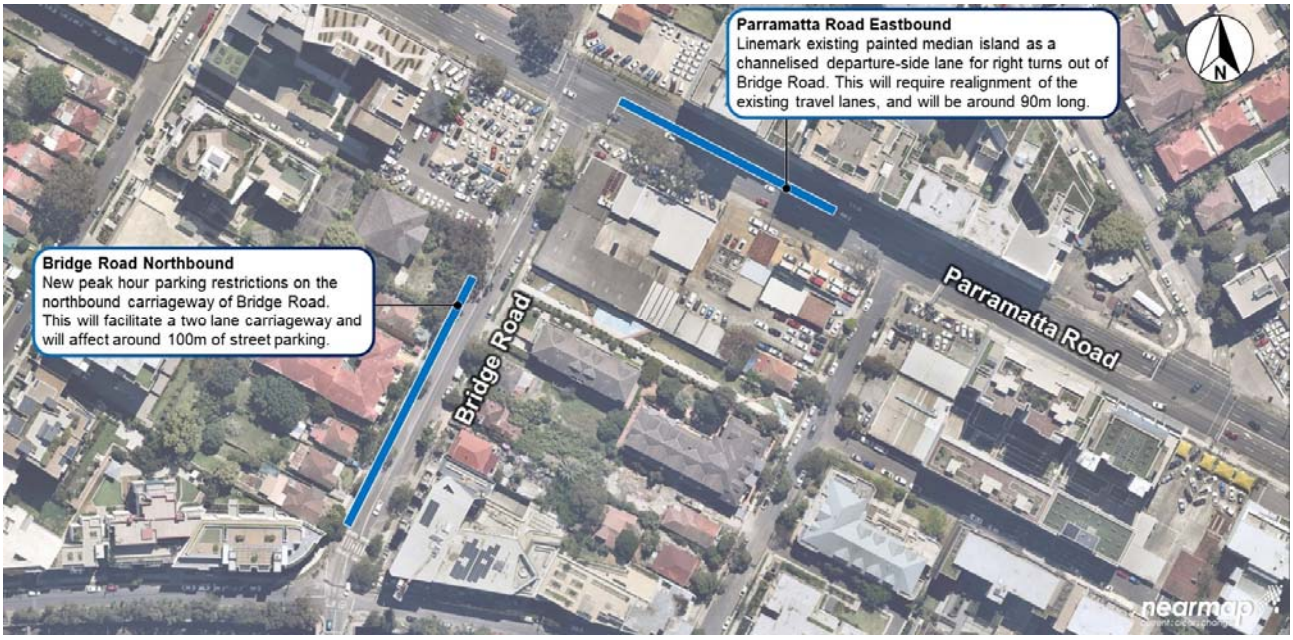
6.4.2 Parramatta Road / Bridge Road

The traffic issues at Bridge Road are heavily influenced by the performance of Parramatta Road. While the intersection does approach capacity due to the projected traffic growth in the precinct and surrounds, the delays are fundamentally linked to blockages on Parramatta Road.

To better manage this, the following actions are proposed:

- **Peak hour clearways:** To facilitate greater queueing capacity and better access to both lanes, it is proposed that AM peak hour clearways are extended along the northbound carriageway of Bridge Road north of Loftus Crescent for 100m beyond the existing No Stopping parking restrictions
- **Departure Channelisation:** To facilitate a minimum level of traffic release from Bridge Road onto Parramatta Road during each signal cycle, it is proposed that the existing painted median island be converted to a channelised departure lane. Under this scheme, Parramatta Road traffic would be re-aligned to the existing two traffic lanes to ensure that even in heavily congested conditions queues on Parramatta Road will not fully block right turns out from Bridge Road.

The location of these proposed changes are shown in Figure 6-4.



Source: Nearmap

Figure 6-4: Proposed Changes - Parramatta Road / Bridge Road

To understand the rationale behind the proposed actions, the traffic issue at this location must be considered at a fundamental level. Long queues and delays on Bridge Road insinuate that the capacity of Bridge Road is exceeded by future traffic demands. The proposed peak hour parking restrictions act to increase road capacity in response. However, the core problem originates further downstream, with severe densities of traffic congestion on Parramatta Road in the eastbound direction. Due to this, drivers on side streets cannot turn out onto the major corridor even when they have a green light. It is for this reason that the 'channelisation' is proposed – to ensure a minimum level of free lane on the departure side of the intersection.

Potential alternative options at this location would consider further increases in capacity on Bridge Road – for example, the widening of the road reserve and installation of an additional right turn bay from Bridge Road to Parramatta Road. While it is acknowledged that this will greatly improve delays for the associated turning movement at the traffic signals, this is only the case if the congestion on Parramatta Road is resolved – otherwise, there will just be two lanes of vehicles that can't turn out due to blockages. The upgrades at this location are therefore sensitive to the performance and operation of Parramatta Road downstream.

6.4.3 Parramatta Road / Knight Street

The intersection of Parramatta Road / Knight Street currently has a right turn restriction from Parramatta Road (west) into Knight Street (south). Access to the catchment south of Parramatta Road by eastbound traffic is via the nearby right turn into Station Street. However, this arrangement reaches saturation with the forecast increases in traffic on Parramatta Road. As the Station Street intersection is uncontrolled, drivers attempting to turn right turn both into and out of this side street are unable to find appropriate gaps in opposing traffic flows. This leads to extensive queuing and congestion.

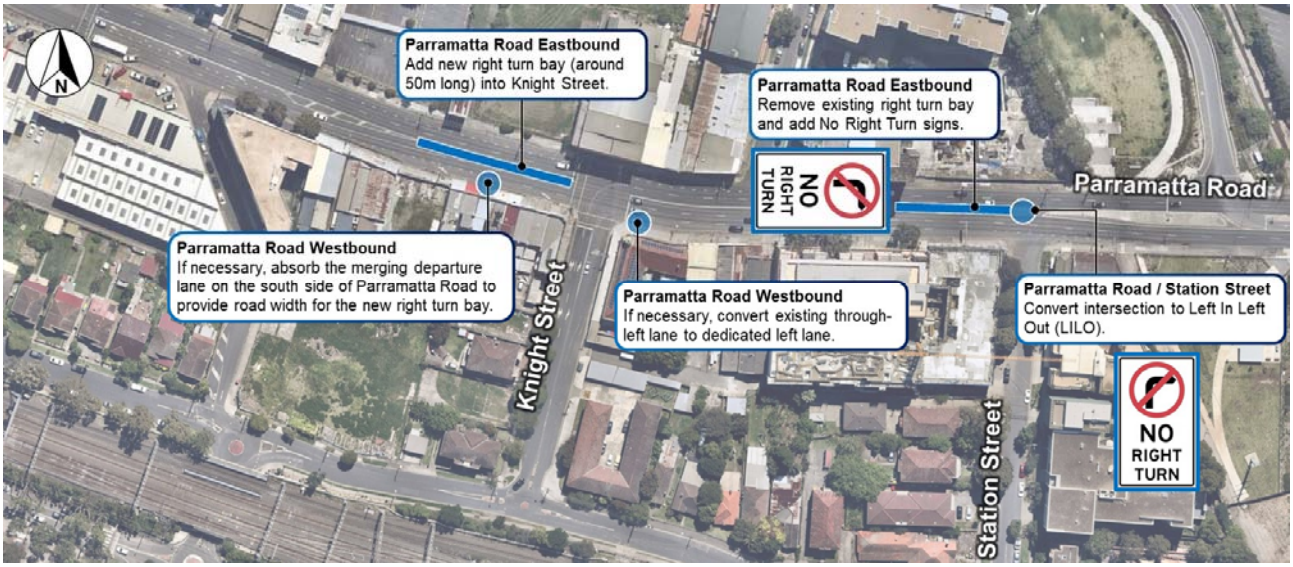
To address this, the following actions are proposed:

- **New Right Turn Bay:** Add a new 50m lane right turn bay from Parramatta Road to Knight Street. If existing road reserve and property boundary limitations prevent the widening of the road, the westbound merge departure lane could be used to provide sufficient road width. This proposed shifts the right turn access from the uncontrolled Station Street turn to the new signalised Knight Street turn

- **Signal Phasing Changes:** Adjust the signal phasing to allow a dedicated right turn phase for traffic turning from Parramatta Road to Knight Street.
- **Convert Station Street to Left-in, Left-out (LILO):** Add new 'No Right Turn' restrictions for the existing uncontrolled Parramatta Road / Station Street intersection. This measure also includes the removal of the existing right turn bay on Parramatta Road, and closure of the median break.

The demand for right turns out of the Homebush South catchment into Parramatta Road in the future is too high to be reasonably and safely supported by a priority intersection.

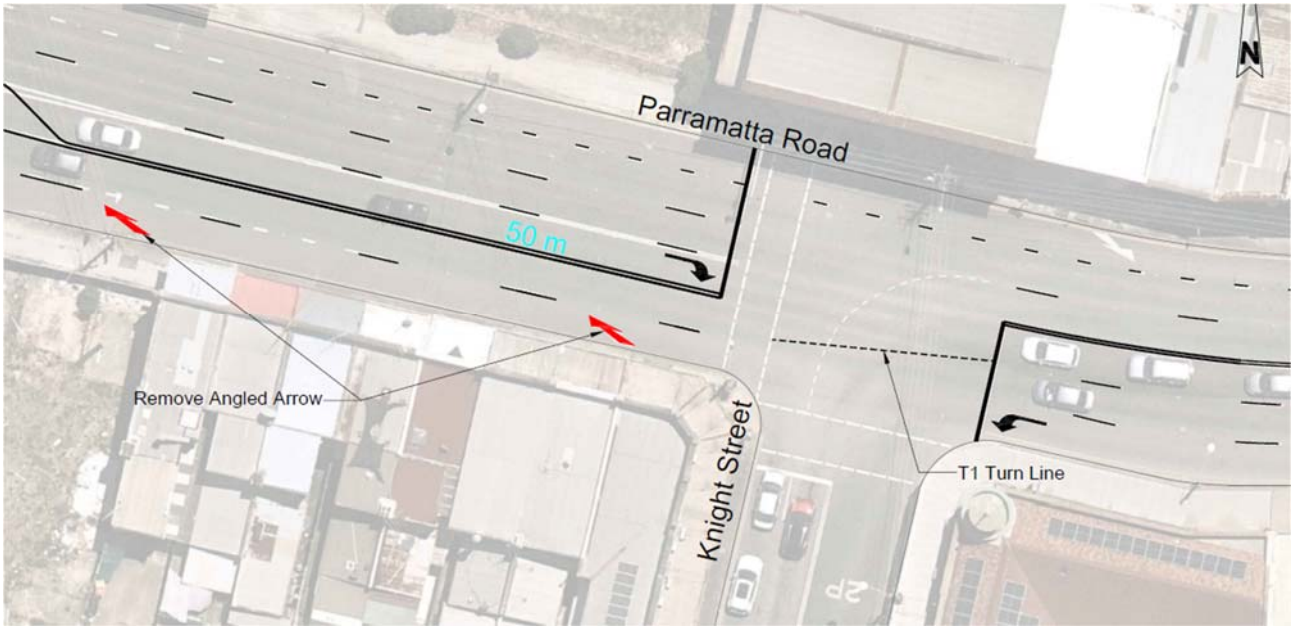
The proposed upgrades are shown in Figure 6-5.



Source: Nearmap

Figure 6-5: Proposed Road Network Upgrades – Parramatta Road / Knight Street

A concept of the Parramatta Road / Knight Street intersection is shown in Figure 6-6 with further detail provided in in **Appendix A**.



Source: Nearmap

Figure 6-6: Proposed Road Network Upgrades – Parramatta Road / Knight Street Concept

6.5 Public Transport Initiatives

The Homebush South precinct is serviced by the T1 and T2 train lines through Homebush Train Station. The eastern part of this precinct has good bus connections from Parramatta Road to the major transport hubs including Burwood, Parramatta and Strathfield. As shown in Figure 6-7 the western end of the Homebush South precinct would benefit from additional bus stops used by new or extended (existing) bus services as it redevelops. This area is poorly serviced with no existing stops. Given the mixed use and residential density uplift in this area, additional or extended bus routes, and additional stops should be introduced into the Underwood Road to Bridge Road section of Parramatta Road in consultation with TfNSW.

Figure 6-7: Homebush South Precinct, Public Coverage Map

6.6 Active Transport Initiatives

To encourage an increase in walking and cycling as the area redevelops, east-west and north-south pedestrian links have been proposed within the residential and mixed use redevelopment areas at the eastern and western ends of the precinct.

In terms of cycleways, a good connection has already been provided along the southern edge of the precinct south of railway line with two south-north connections crossing the railway line. Two additional links would improve connectivity between existing cycleways. These links are proposed for:

- Park Road and Powell Street to Underwood Road
- Underwood Road crossing Parramatta Road to Subway Lane.

The existing and proposed active transport infrastructure is shown in Figure 6-8.

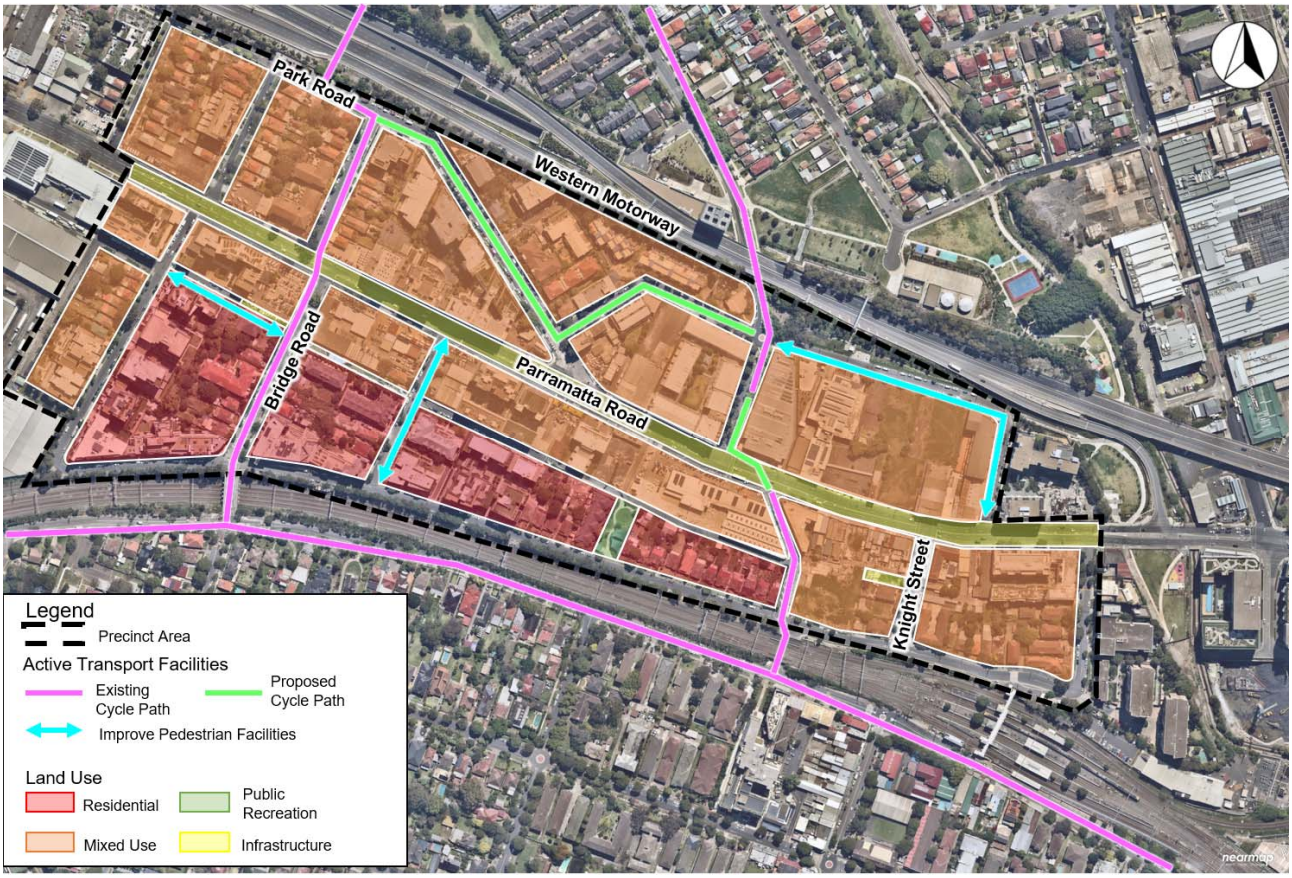


Figure 6-8: Proposed Active Transport Improvements

6.7 Parking Initiatives

6.7.1 Off-Street Parking

The Homebush South precinct has a very good coverage of public transport services at its eastern end in proximity to the T1 and T2 Train Line and Homebush Station. However, the number of destinations that can be reached from these services are limited and the 'P2' development parking rate category (see Section 4.7.2) has been recommended for the eastern area. The western area, however, has been categorised as 'P3' because it has relatively poor access to public transport, unless this can be addressed through TfNSW.

6.7.2 On-Street Parking

An AM peak hour clearway has been recommended northbound on Bridge Road as a road network improvement initiative.

The proposed parking changes for the Homebush South precinct are shown in Figure 5-9.

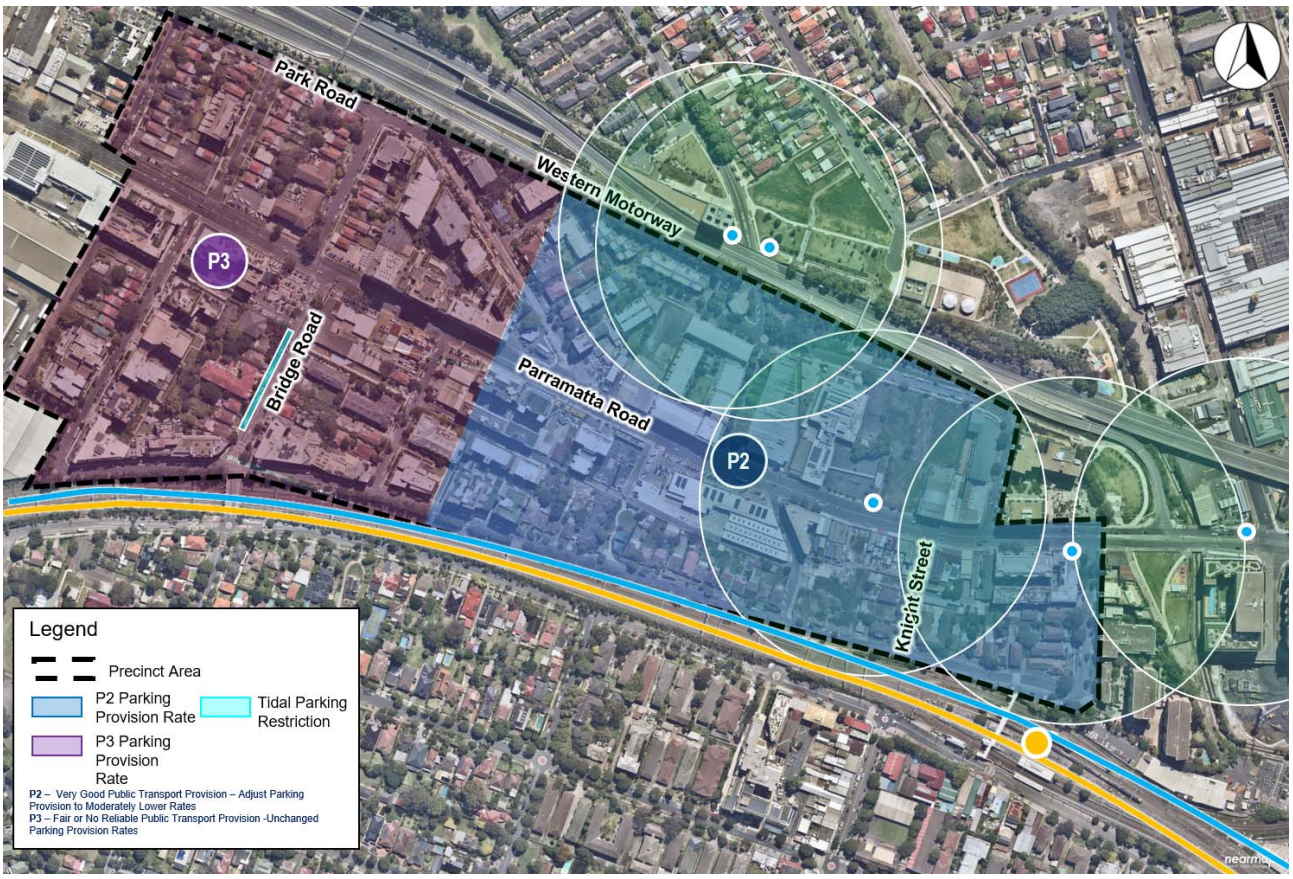


Figure 6-9: Proposed Parking Initiatives

6.7.3 On-Street Parking

Developments in the Homebush South precinct will result in an increased demand for on-street parking on side streets such as Bridge Road, Crane Street, Knight Street and Station Street etc. There is limited spare capacity for this parking demand and redevelopment will likely see the need for more on-street parking restrictions in the precinct.

6.8 Car Share Initiatives

Two car share pods have been located on Queen Street near north of M4. The precinct would benefit from additional car share pods given proposed commercial facilities and a business park in the area. More car share pods could be potentially be deployed in Knight Street or Park Road to cover both residential and commercial redevelopments in the precinct.

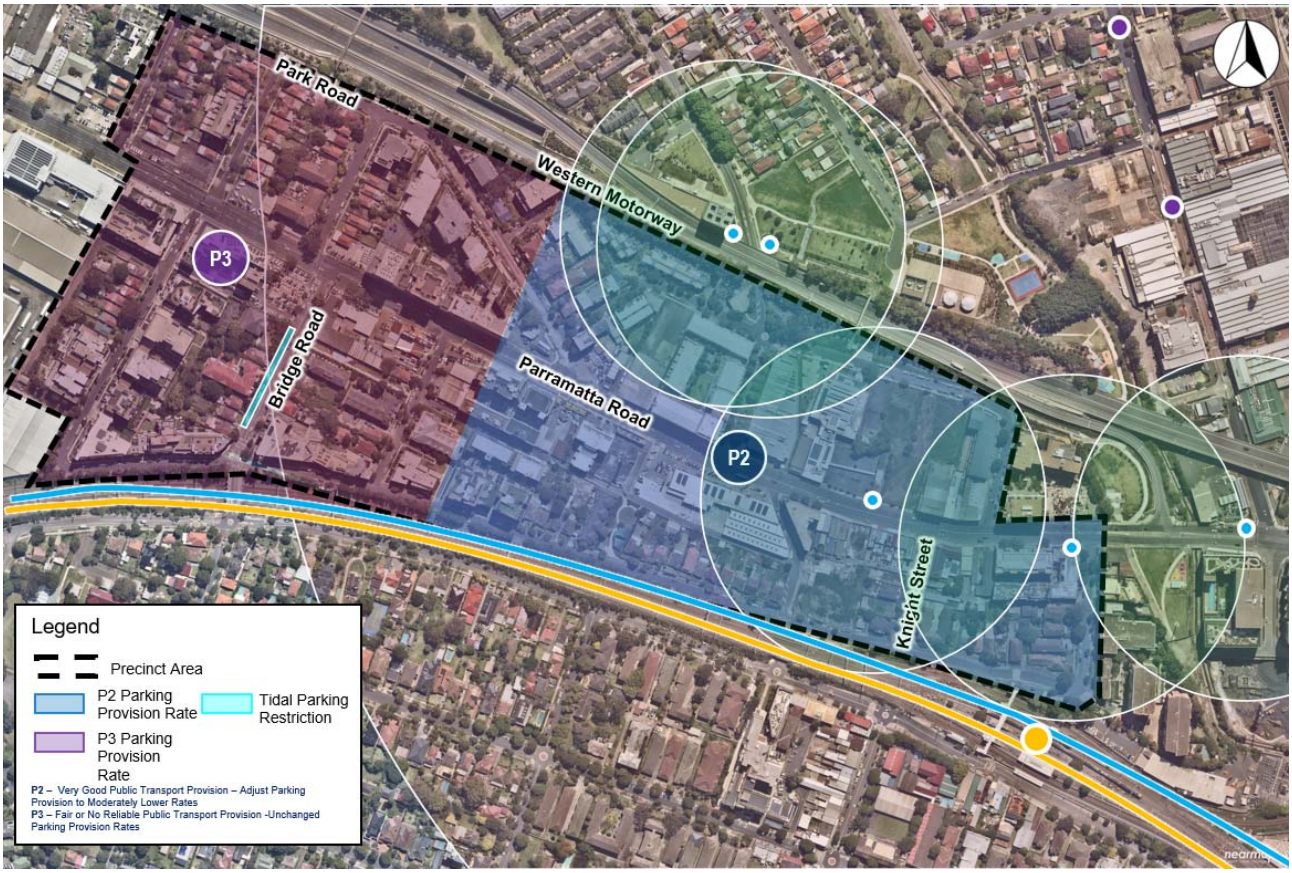


Figure 6-10: Existing Share Car Pods Coverage Area West of Homebush Precinct

6.9 Local Street Considerations

The street network to the south of Parramatta Road is affected by only two crossing of the rail line. Additional crossings would generate significant issues in streets south of the rail line though.

The lack of north-south permeability through the mixed use area south of Parramatta Road for pedestrians from the residential uplift area immediately south should however be rectified with the provision of a number of north-south pedestrian links between Loftus Lane and Parramatta Road as redevelopment occurs.

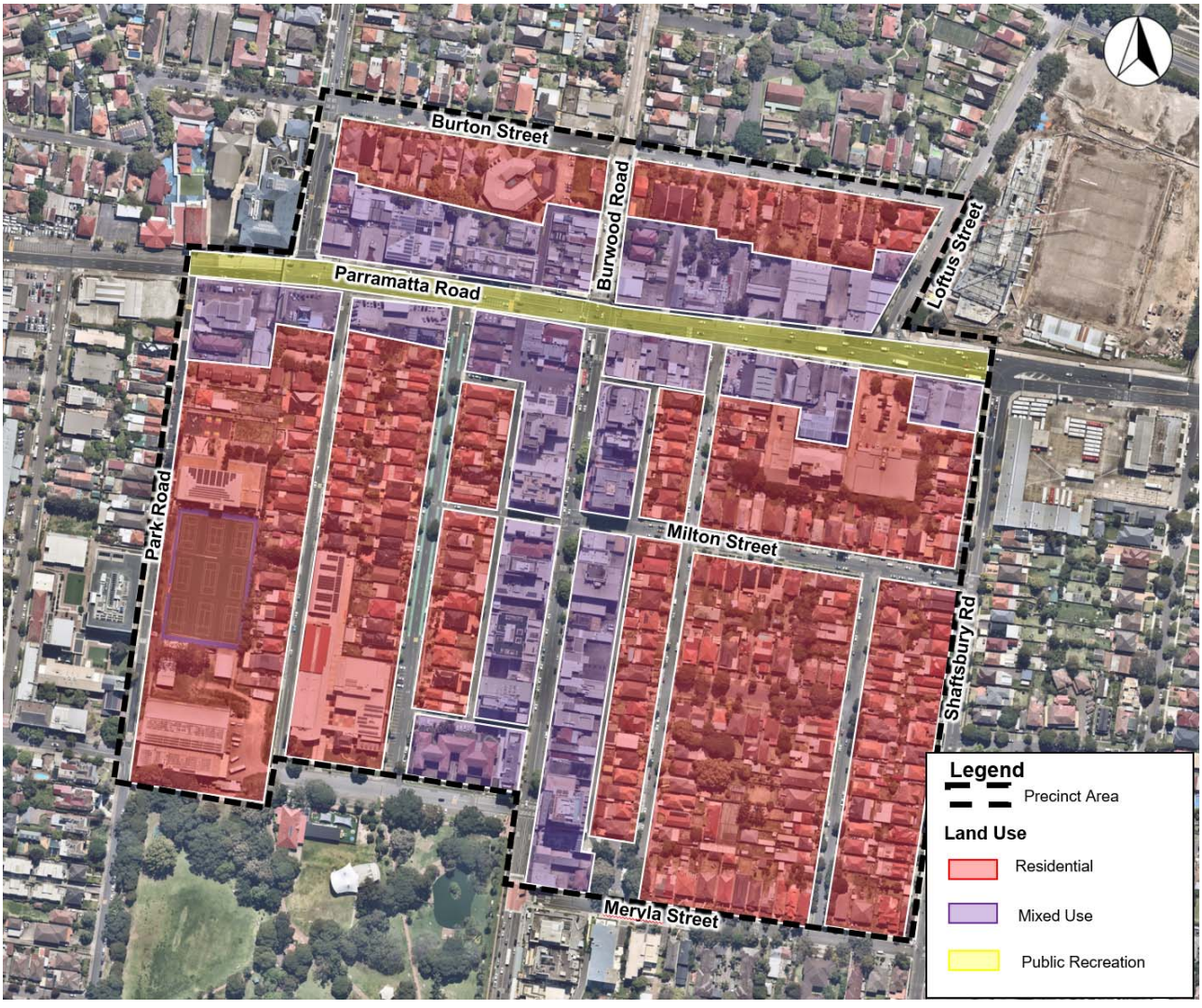
7. BURWOOD - CONCORD PRECINCT

7.1 Uplift Development Summary

The proposed redevelopment in the Burwood - Concord precinct would result in:

- 4,694 medium density residential dwellings
- 15,832m^2 GFA of retail
- 50,810m^2 GFA of commercial.

The Burwood - Concord Precinct is centred on Burwood Road from the northern edge of the existing Burwood Town Centre across Parramatta Road to the proposed Metro Station location. (B4) Mixed Use is proposed adjacent to Burwood Road and Parramatta Road, with the surrounding existing low density residential area converted into (R3) Medium Density Residential. Most residential and mixed use developments are located within convenient walking distance to the proposed Burwood Metro Station and bus stops. The proposed land uses are shown in Figure 7-1.

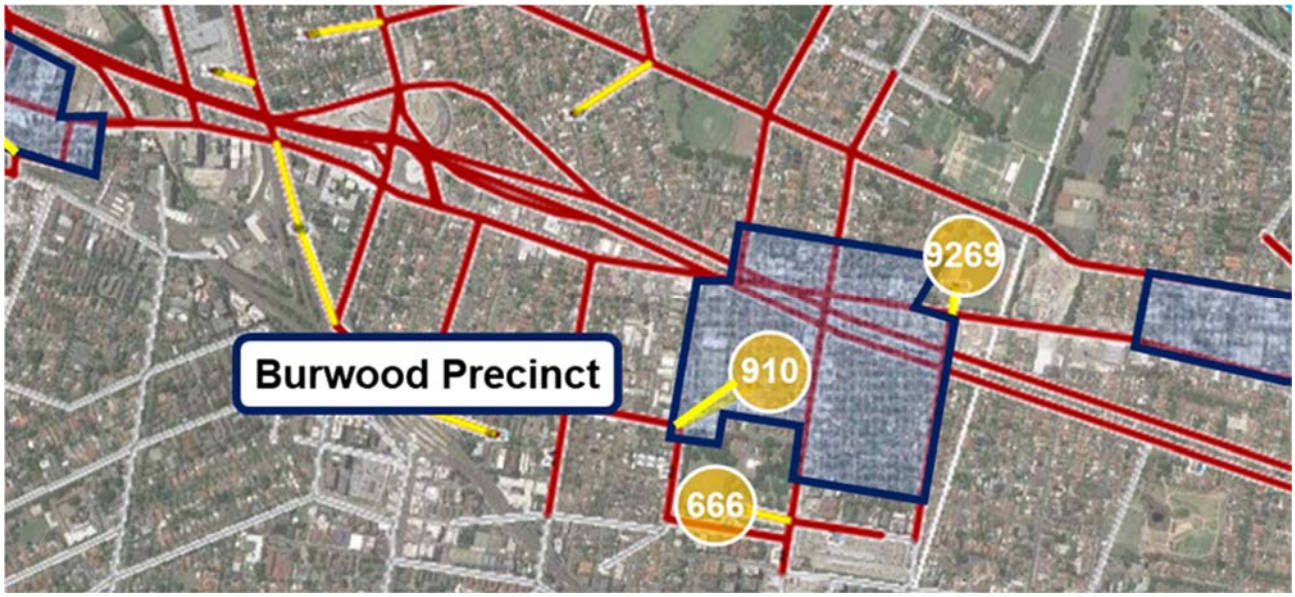


Source: Nearmap

Figure 7-1 Burwood – Concord Precinct Proposed Rezoning Areas

7.2 Traffic Generation

Figure 7-2 shows the STFM zones which are associated with the Burwood - Concord precinct (Zones 666, 910 and 9269).



Source: Google Maps

Figure 7-2: Burwood - Concord Precinct STFM Zones

The total traffic generation from the STFM for the zones within the Burwood - Concord precinct is summarised in Table 7-1. The coarseness of the STFM zoning system means that the zones include adjacent areas although the redevelopment potential of these areas is limited, and zone-based traffic growth is mostly associated with the precinct.

Table 7-1: Burwood Traffic Generation and Growth from 2019

Scenario	Traffic OUT (veh)	Traffic IN (veh)	Total TWO-WAY (veh)	
AM 2-Hour				
2019 AM	1,018	1,403	2,421	
2026 AM No Dev	836	1,114	1,950	(-471)
2026 AM with Dev	1,812	1,565	3,377	(+956)
2036 AM No Dev	986	1,655	2,641	(-220)
2036 AM with Dev	2,049	2,349	4,398	(+1,977)
PM 2-Hour				
2019 PM	1,676	1,363	3,039	
2026 PM No Dev	1,339	1,094	2,433	(-606)
2026 PM with Dev	1,947	2,379	4,326	(+1,287)
2036 PM No Dev	1,950	1,252	3,202	(+163)
2036 PM with Dev	2,834	2,642	5,476	(+2,437)

There are some reductions in locally genetated traffic in the AM peak to 2036 and in the 2026 PM peak, most likely assciated with modal shift from existing trips. The 2036 AM and PM peaks with the precintct development show an 80% increase in locally-generated traffic.

7.3 Integrated Strategy

The proposed land rezoning as well as background traffic growth have triggered the need for a set of road network upgrades as well as active transport and public transport improvements to cater for future travel demands within Burwood - Concord precinct. The following measures have been considered:

- Road network upgrades
- New pedestrian connections and footpaths
- New cycleway connections
- Parking provision strategies and restrictions
- Car share initiatives
- Local street network changes.

The Burwood - Concord integrated strategy is shown in Figure 7-3.

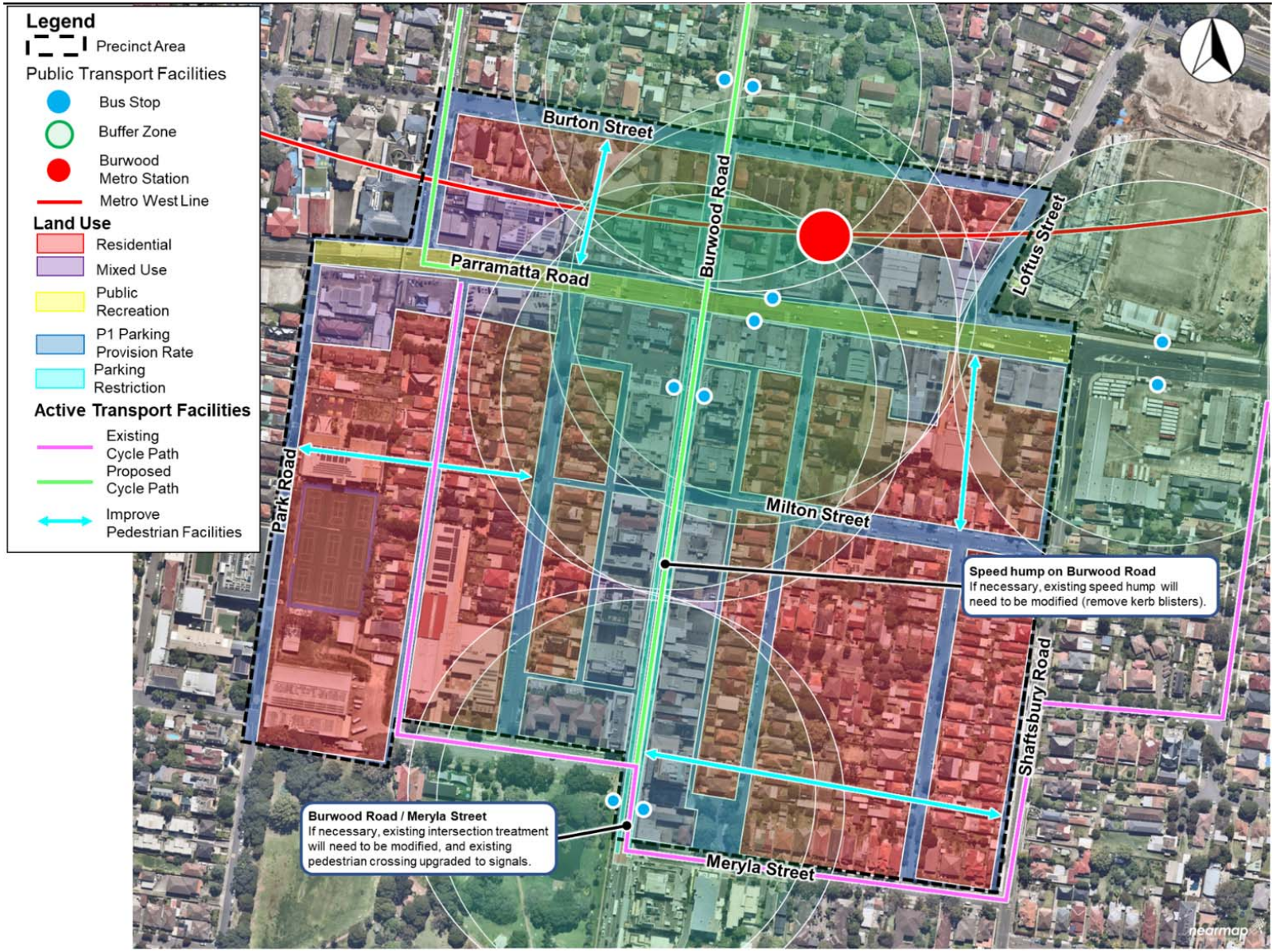


Figure 7-3: **Burwood - Concord Precinct – Integrated Transport Strategy**

7.4 Road Network Upgrades

7.4.1 General

Burwood Road is the primary traffic-carrying road in the precinct. It is a 'main street' where its 'place' function is dominant over its movement function in many parts. Notwithstanding this, Burwood Road carries heavy volumes of traffic and buses.

By 2036, and with reliance on the Burwood Road / Parramatta Road intersection for access into / out of the precinct, Burwood Road sees significant congestion with long queues to the north and the south. These queues, due to Parramatta Road capacity limitations, increasingly encourage traffic to use side streets to 'filter' towards Parramatta Road elsewhere. The consequences of this is more turning traffic at intersections with Burwood Road south of Parramatta Road, which also generate queues and congestion.

The inability to 'clear' blockages on Parramatta Road means that the best that can be achieved on approaching roads to it, is to better manage queues and to try and better allow for turning movements between Burwood Road and the redevelopment precinct either side.

The following initiatives have been proposed on this basis.

7.4.2 Burwood Road between Park Avenue and Parramatta Road

The capacity of Burwood Road and its intersection with Parramatta Road is a key contributor to congestion within the Burwood Precinct, with some sections of the road reaching up to 1,000 vph in each direction during the 2036 peak periods. Due to the unique interplay between Burwood Road and Shaftesbury Road (because of the right turn restrictions at Parramatta Road / Burwood Road), traffic on side streets through the precinct are often blocked from turning out due to queues on Burwood Road.

To address this, the following actions are proposed:

- **Peak hour clearways:** Restricted parking during peak hour periods along Burwood Road between Park Avenue and Parramatta Road, which is a 500m long section northbound in the AM peak and southbound in the PM peak. This additional traffic capacity reduces queue lengths and minimises consequential impacts at side streets.

  This section of Burwood Road is characterised by independent commercial businesses, including medical, education, real estate agencies, accountants and laundromats. While there is some level of retail and cafes, these land uses are less prominent in the northern section of Burwood Road compared to Burwood Road south of Park Avenue.

  The introduction of clearways would inevitably have some impact on nearby businesses if implemented in the short term. However, the clearways would not be needed for many years and would be aligned with significant redevelopment of the precinct, which would be expected to completely change the shop types and their reliance on 'quick' drop in trade which relies on proximate street parking.
- **Modified Traffic Calming – Speed hump south of Milton Street:** A speed hump is located on Burwood Road south of Milton Street, with supporting kerb blisters. If clearways extend through the traffic calming device, then it would need to be modified. This could be achieved with speed cushions in each travel lane

- **Modified Traffic Calming – Meryla Street Pedestrian Crossing:** A pedestrian crossing was installed in 2019 at the intersection of Burwood Road and Meryla Street (relocated from the north of Meryla Street). At the same time, a raised threshold was added to the intersection of Burwood Road / Meryla Street for traffic calming purposes. If clearways extend through the intersection, then the zebra crossing would need to be removed. The crossing could be a signalised and would need to account for the new cycling route between Comer Street and Meryla Street
- **Other Considerations:** The peak period removal of parking on one side of the road and create a visually wider road environment along Burwood Road. Whilst the clearways would not be needed until substantial redevelopment has occurred, further investigations into signalised mid-block crossing opportunities would need to be undertaken in parallel with the implementation of clearway restrictions at that time, in order to maintain existing levels of cross-street pedestrian accessibility. One opportunity would be signalising the intersection of Burwood Road / Milton Street, which would service both pedestrians and vehicles in the precinct.

The proposed upgrades are shown in Figure 7-4.

Source: Sixmaps

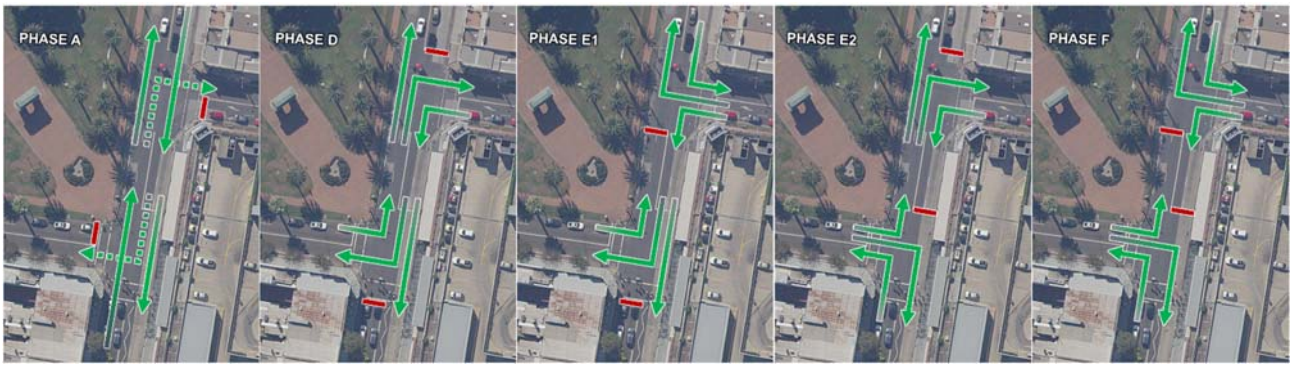
Figure 7-4: Proposed Upgrades along Burwood Road

7.4.3 Burwood Road / Park Avenue / Wilga Street

The intersection of Burwood Road / Park Avenue / Wilga Street is a critical pinch point in the Burwood precinct due its staggered signalised intersections. To address this, the following action is proposed.

Signal Phase Changes

Based on the SCATS data collected for this intersection, the signals currently operate with an A-D-E-F phase sequence (shown below in Figure 7-5). Phase E1 and Phase E2 are variable phases operating as the transition between Phase D and Phase F based on the demand for right turns on Burwood Road.



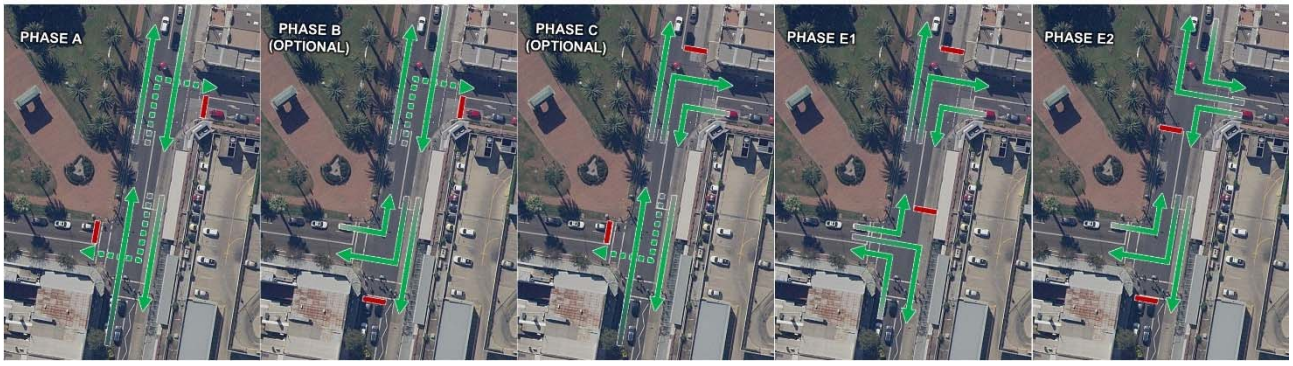
Source: Sixmaps

Figure 7-5: Burwood Road / Park Avenue / Wilga Street Current Phase Sequence

Traffic congestion issues arise by 2036 due to right turning traffic which filters during Phase A. With the growth in traffic along Burwood Road, filtering traffic rarely finds a gap to turn with three or four right turning vehicles on Burwood Road held at the internal stop lines between the two side roads.

Under the current phase sequence, the dedicated phase for right turning traffic (Phase D) only suffices to clear the 'trapped' vehicles which means that only up to four right turning vehicles are cleared every cycle. There are no phases which permit a continuous protected right turn movement (either northbound or southbound) through both sides of the intersection, forcing right turners to wait through multiple phases to complete the single movement. This issue is exacerbated by traffic turning out of Park Avenue or Wilga Street during Phase F. These vehicles will often fill up the internal storage area prior to Phase A, such that the right turning demand from Burwood Road is not cleared.

To address this, the phase sequence is proposed to be changed to allow additional and safer opportunities for right turning traffic on Burwood Road. The proposed changes are shown in Figure 7-6, not including the conditional movements to allow for pedestrian crossing actuations.



Source: Sixmaps

Figure 7-6: Burwood Road / Park Avenue / Wilga Street - Proposed Phase Sequence

The inclusion of optional Phases B and C facilitates a continuous right turn movement on Burwood Road without dependency on filtering.

This phase sequence will not require any additional signal infrastructure.

7.4.4 Burwood Road / Burton Street

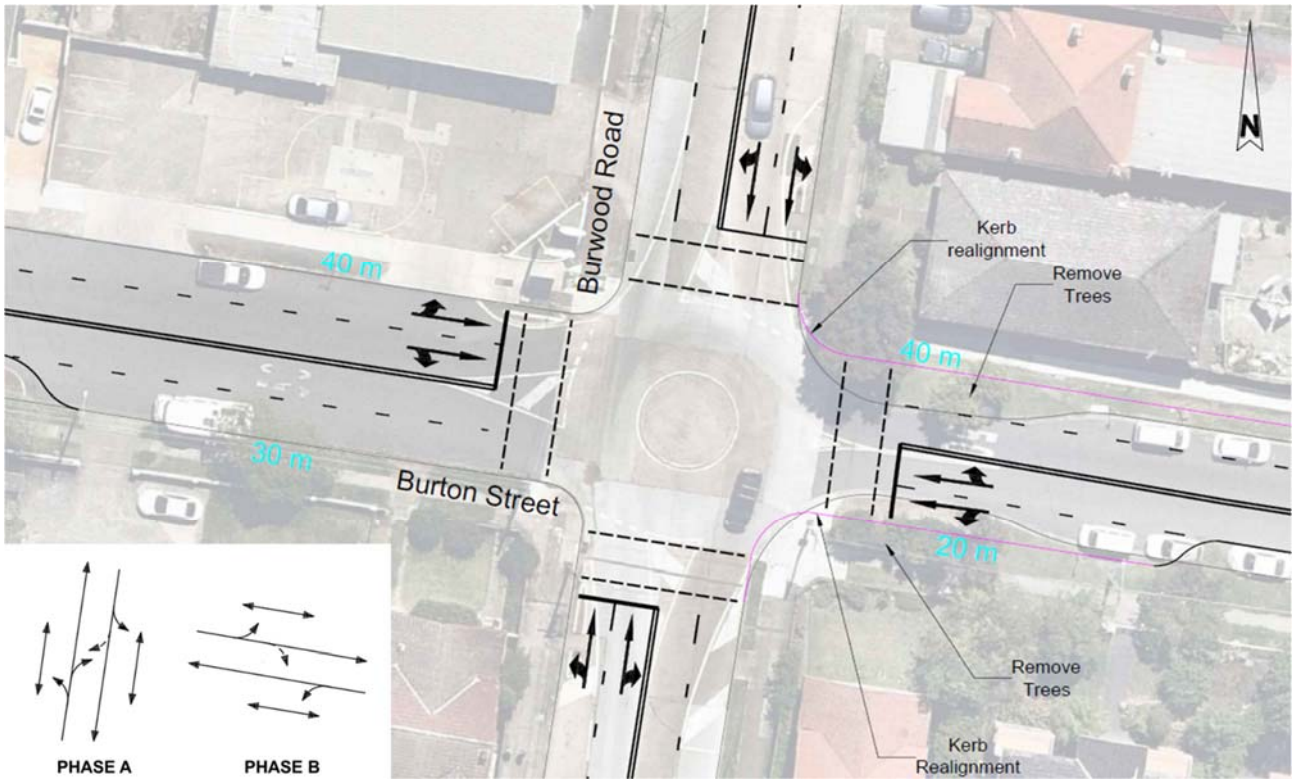
The roundabout of Burwood Road and Burton Street is seen as a key pinch point in 2036 modelling. This intersection controls queueing in the local network north of Parramatta Road. The proposed Metro station will be located near this intersection and is expected to greatly increase both vehicle and pedestrian movements nearby.

New Traffic Signals

The roundabout is proposed to be upgraded traffic signals, with pedestrian crossings on all approaches. Traffic signals will allow greater control over the traffic flow and queue management at the intersection and provide the opportunity for coordination with other signals at Parramatta Road and at Gipps Street for integrated queue management.

Concept is shown in Figure 7-7, reflecting the modelled arrangement. This upgrade can generally be achieved within the existing road reserve with some minor re-alignments to kerbs. There may be opportunity for further enhancements (e.g. dedicated turning bays) depending on the availability of the surrounding land as it develops, particularly at the Metro site.

The concept drawings can be found in **Appendix A.**



Source: Nearmap

Figure 7-7: Proposed Road Network Upgrades – Burwood Road / Burton Street Concept

7.4.5 Parramatta Road / Loftus Street

The intersection of Parramatta Road / Loftus Street is located on the corner of Concord Oval and is currently unsignalised. As a part of the recent intersection improvements at Parramatta Road and Shaftesbury Road (undertaken by TfNSW in March 2021), the Loftus Street approach was converted from a Give Way to a STOP priority.

However, Loftus Street also provides an alternative route through the area which bypasses the congestion on Burwood Road and particularly from the Burwood Road / Burton Street roundabout. The change to STOP control in combination with the heavy future traffic flows on Parramatta Road was shown in the year 2036 modelling to result in long delays for the left turn from Loftus Street onto Parramatta Road, with drivers waiting a long time before finding a gap in traffic. The proximity of this intersection to the frequently used Shaftesbury Road intersection also resulted in weaving movements across multiple lanes within a short distance, which is a safety concern.

Despite this, the modelling indicated that the attractiveness of Loftus Street was such that up to 1,000 vph were expected to use it. While this level of traffic may not be actually realised in reality it reflects that Loftus Street is a logical rat run to avoid Burwood Road congestion.

Potential measures to control this behaviour could include:

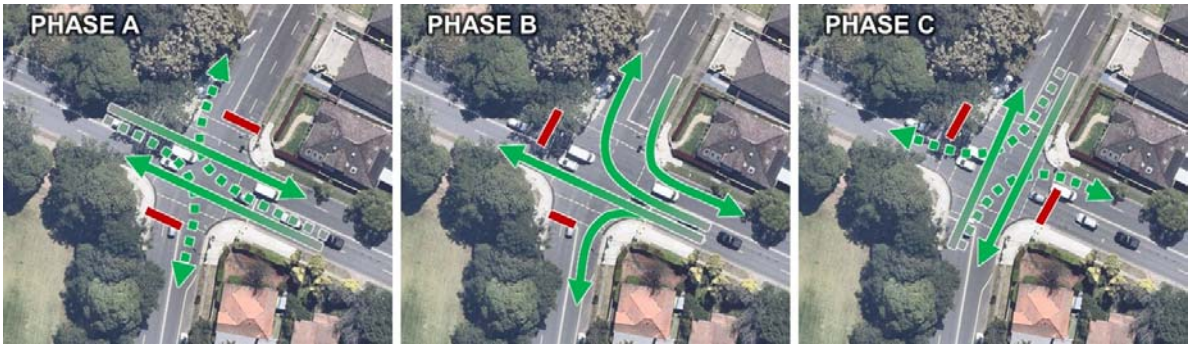
- **Traffic calming:** along Loftus Street to slow down traffic and discourage through traffic use in the form of speed humps or slow points
- **Threshold treatments:** at the entrances to Loftus Street to highlight a changed road environment, more orientated to local traffic and less to through trips. These could take the form of narrow flat-top road humps with landscaped kerb blisters
- **Turn restrictions:** banning the left turn movement will stop rat-running. This can be applied as a peak hour measure, or on a 24-hour basis. This may have implications on the routing of local residents and visitors to the nearby Oval
- **One-way Loftus Street:** another option which can be considered in parallel with turn restrictions would be the conversion of Loftus Street to one-way northbound between Burton Street and Parramatta Road.

7.4.6 Gipps Street / Broughton Street

The intersection of Gipps Street / Broughton Street is not directly located within or on the boundary of the Burwood – Concord Precinct. However, due to its proximity and congestion-related network re-routing, it is affected by the growth in traffic within the precinct.

Signal Phase Changes

Based on the SCATS data collected for this intersection, the signals currently operate with an A-B-C phase sequence (shown below in Figure 7-8). The intersection runs with filtered right turns on both Gipps Street and Broughton Street, with a single dedicated trailing right turn phase from Gipps Street (east).



Source: Nearmap

Figure 7-8: Gipps Street / Broughton Street Current Phase Sequence

Traffic queues are seen in the modelling to develop by 2036 due to filtering right turning traffic on both the Gipps Street and the Broughton Street approaches. While the volume of right turns is not extremely high, the filtering traffic rarely finds an opportunity to turn against the oncoming traffic flow, with long delays and queues. Due to the intersection configuration, the queues end up blocking off the heavier through and left turning traffic.

To address this, the phase sequence is proposed to be changed to allow more opportunities for right turning traffic. The proposed changes are shown in Figure 7-9, not including conditional movements to allow pedestrian crossing actuations.

Source: Nearmap

Figure 7-9: Gipps Street / Broughton Street Proposed Phase Sequence

The proposed sequence 'splits' the Broughton Street approaches into separate phases, allowing for safe and consistent clearance of right turns every signal cycle. This moves the intersection away from the current two-phase sequence which heavily preferences traffic on Gipps Street, aligned with the intensification of development to the south of the intersection.

This phase sequence will require amendments to the signal lantern infrastructure to facilitate split side road phases on Broughton Street.

7.5 Public Transport Initiatives

The Burwood – Concord precinct includes the Burwood North Metro Station. Both northern and southern parts of this precinct are well serviced by buses along Burwood Road and Parramatta Road which also route to the surrounding major transport hubs including Burwood, Parramatta, Strathfield and the Sydney CBD. The future Metro West line will provide the highest levels of public transport connectivity to Parramatta, Sydney CBD, Bankstown and Sydney northwest.

The existing public transport facilities in the Burwood – Concord precinct are shown in Figure 7-10.

It would be reasonable to expect that as the precinct redevelops and demand for public transport increases, that TfNSW would introduce new services and stops along Park Road and along Shaftsbury Road, potentially anchored by the proposed Metro Station.

Figure 7-10: **Burwood Precinct – Public Transport Coverage**

7.6 Active Transport Initiatives

To encourage increased walking and cycling to, from and within this precinct, east-west and north-south pedestrian links have been proposed for the residential and mixed use areas east and west of the precinct. The block between Milton Street and Meryla Street is still quite large and could be divided further by local laneways as redevelopment occurs.

Two key cycling connections have also been proposed:

- Between Broughton Street, crossing Parramatta Road and connecting to Britannia Avenue using the existing overpass
- A cycling corridor (with development) Burwood Road between Comer Street and Gipps Street across Paramatta Road.

The existing and proposed and active transport infrastructure is shown in Figure 7-11.

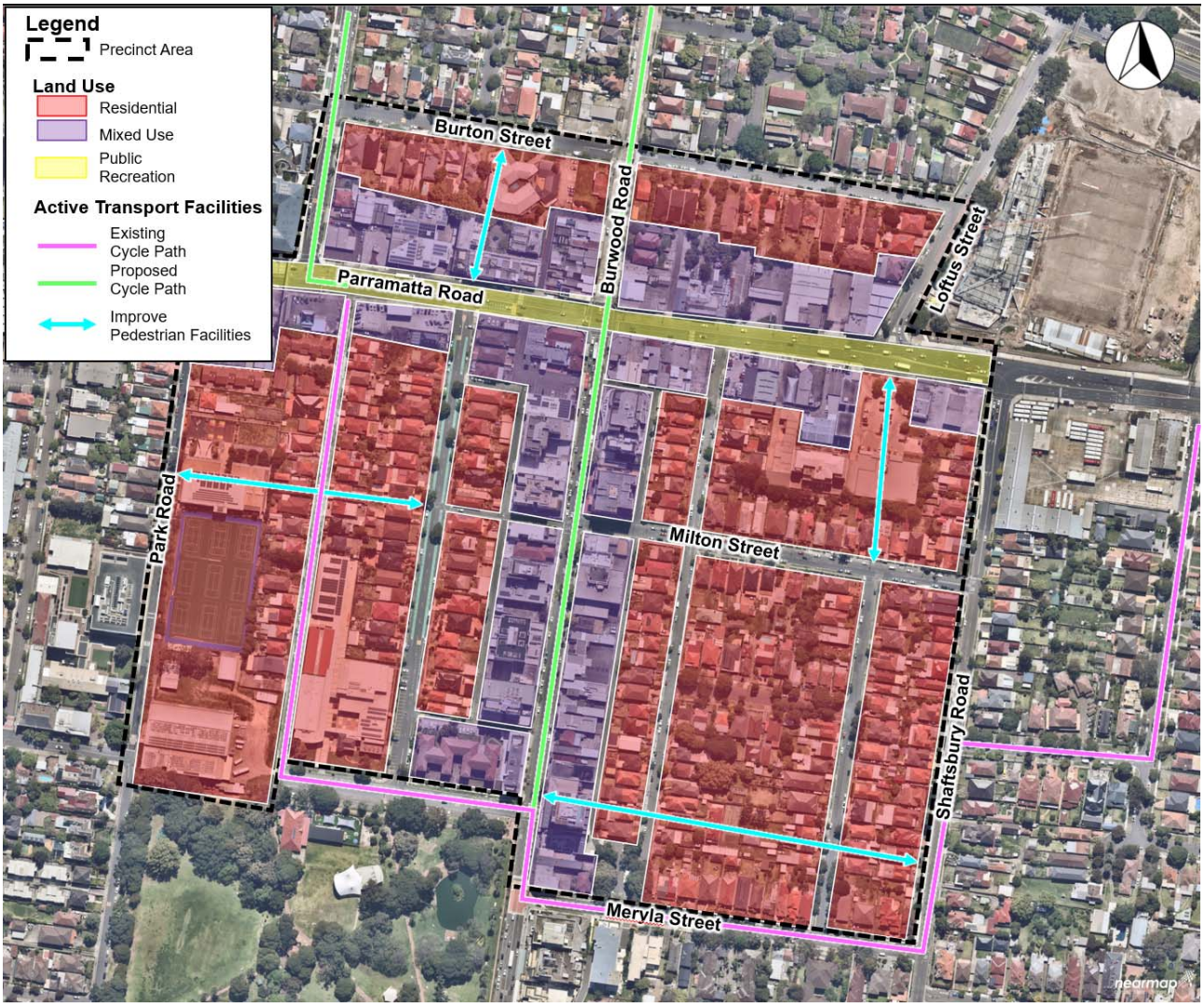


Figure 7-11: Active Transport Improvements

7.7 Parking Initiatives

7.7.1 Off-Street Development Parking Rates

The Burwood - Concord precinct has excellent public transport coverage. With the Metro, and due to its close proximity to high frequency bus routes, the entire precinct could be subject to the 'P1' parking category (see Section 4.7.2) with maximum parking rates used rather than minimum rates and including the potential for unbundled parking.

7.7.2 On-Street Parking

Clearways have been recommended along Burwood Road, northbound in the AM peak and southbound in the PM peak, as shown in Figure 7-12.

Developments in the Burwood - Concord precinct will result in an increased demand for on-street parking on side streets such as Shaftsburry Road, Meryla Street, and Park Road. Additionally, on-street restrictions are likely to be needed in these locations as development occurs.

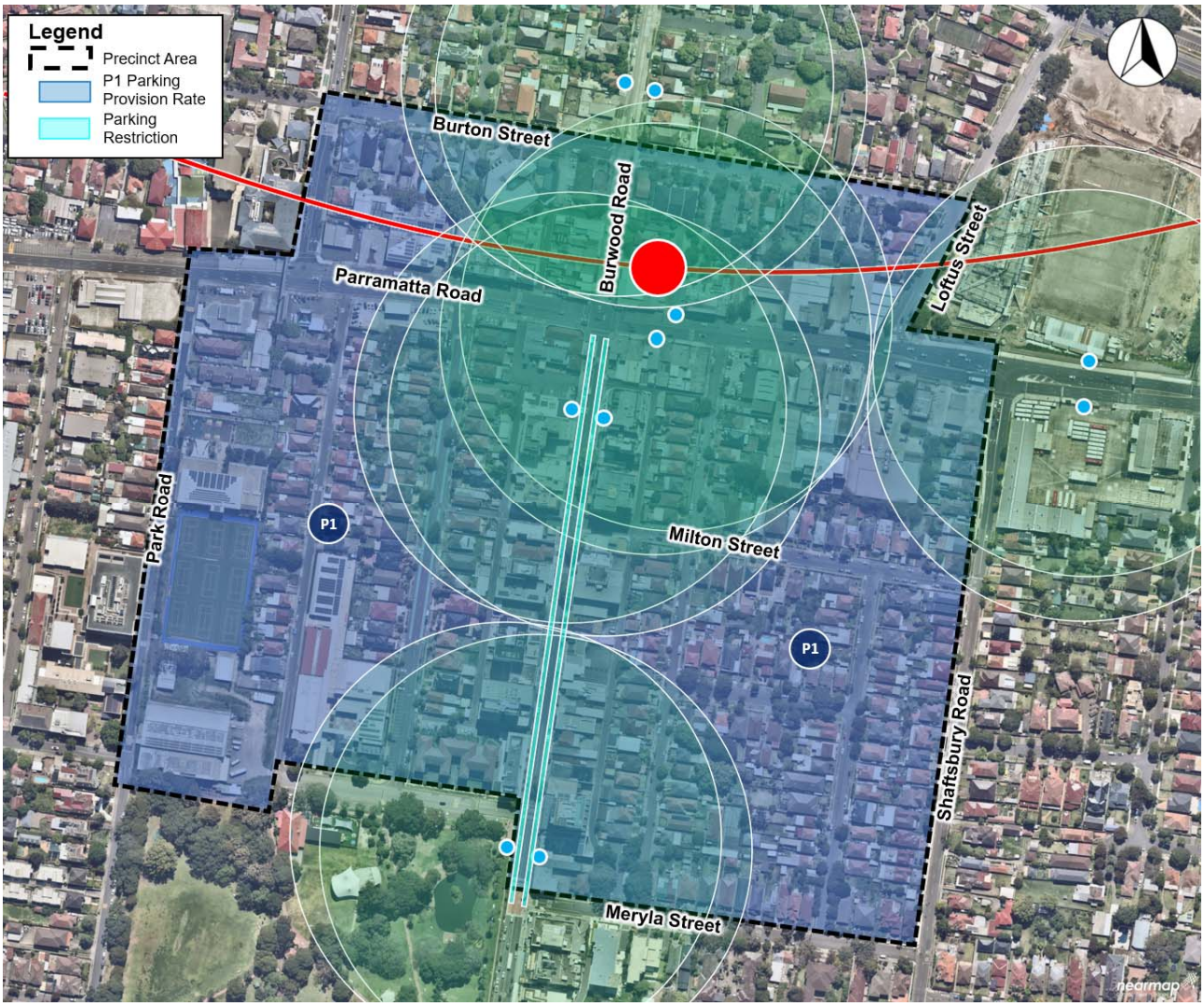


Figure 7-12: Proposed Parking Initiatives

7.8 Car Share Initiatives

Car Share pods have been proposed in the Westfield Shopping Centre carpark. The precinct would benefit in the future from additional car share pods elsewhere, as demand increases, given the proposed commercial facilities, the Metro Station and the proposed, lower development parking rates.

Additional car share pods should, at that time, also be considered along Burwood Road, closer to Parramatta Road and in Burwood North to cover both residential and commercial developments in the precinct.

The initially - proposed car share pod coverage in Westfield Shopping Centre is shown in Figure 7-13

Figure 7-13: Proposed Car Share Pod Coverage

7.9 Local Street Network Changes

The blocks south of Milton Street either side of Burwood Road have poor east-west traffic permeability. Opportunities exist to introduce a finer grained street network in these areas to improve traffic circulation and access as redevelopment occurs.

8. KINGS BAY PRECINCT

8.1 Uplift Development Summary

The proposed redevelopment in the Kings Bay precinct would result in:

- 3,293 medium density residential dwellings
- 20,450m^2 GFA of retail development
- 6,935m^2 GFA of commercial development.

The Kings Bay Precinct is proposed to form a new urban village between Parramatta Road and Queens Road, with a central core of (B4) Mixed Use around Spencer Street. The scheme comprises a shopping precinct with grocery stores and destination retail. The surrounding residential land use is retained but with higher densities than the existing development. Most of the proposed residential and mixed use land is located within walkable distances to bus routes. The proposed land use map for the Kings Bay precinct is shown in Figure 8-1.

Source: Nearmap

Figure 8-1: Kings Bay Precinct Proposed Rezoning Areas

8.2 Traffic Generation

Figure 8-2 shows the STFM zones which are associated with the Kings Bay precinct (Zones 12, 13 and 744).

Source: Google Maps

Figure 8-2: Kings Bay Precinct – Associated STFM Zones

The total traffic generation from the STFM for the zones within the Kings Bay precinct and its growth from 2019 is summarised in Table 8-1.

Table 8-1: Kings Bay Traffic Generation and Growth from 2019

Scenario	Traffic OUT (veh)	Traffic IN (veh)	Total TWO-WAY (veh)
AM 2-Hour			
2019 AM	2,118	2,585	4,703
2026 AM No Dev	2,090	2,362	4,452 (-251)
2026 AM with Dev	2,986	2,833	5,819 (+1,116)
2036 AM No Dev	2,104	2,435	4,539 (-164)
2036 AM with Dev	3,263	3,183	6,446 (+1,743)
PM 2-Hour			
2019 PM	2,590	2,155	4,745
2026 PM No Dev	2,357	2,114	4,471 (-274)
2026 PM with Dev	2,854	3,086	5,940 (+1,195)
2036 PM No Dev	2,475	2,292	4,767 (+22)
2036 PM with Dev	3,205	3,458	6,663 (+1,918)

The STFM shows about a 37% increase in the AM peak traffic and a 40% increase in PM peak traffic between 2019 and 2036 with the development of the precinct.

8.3 Integrated Strategy

The combination of local development traffic and through traffic growth to 2036 has triggered the need for a set of road network upgrades and integrated transport strategies to cater for the future travel demands within Kings Bay precinct. The integrated network strategies consider:

- New pedestrian connections and footpaths
- New cycleway connections
- Parking provision strategies and restrictions
- Car share pods initiatives
- Local street network changes.

The Kings Bay precinct integrated transport strategy is shown Figure 8-3.

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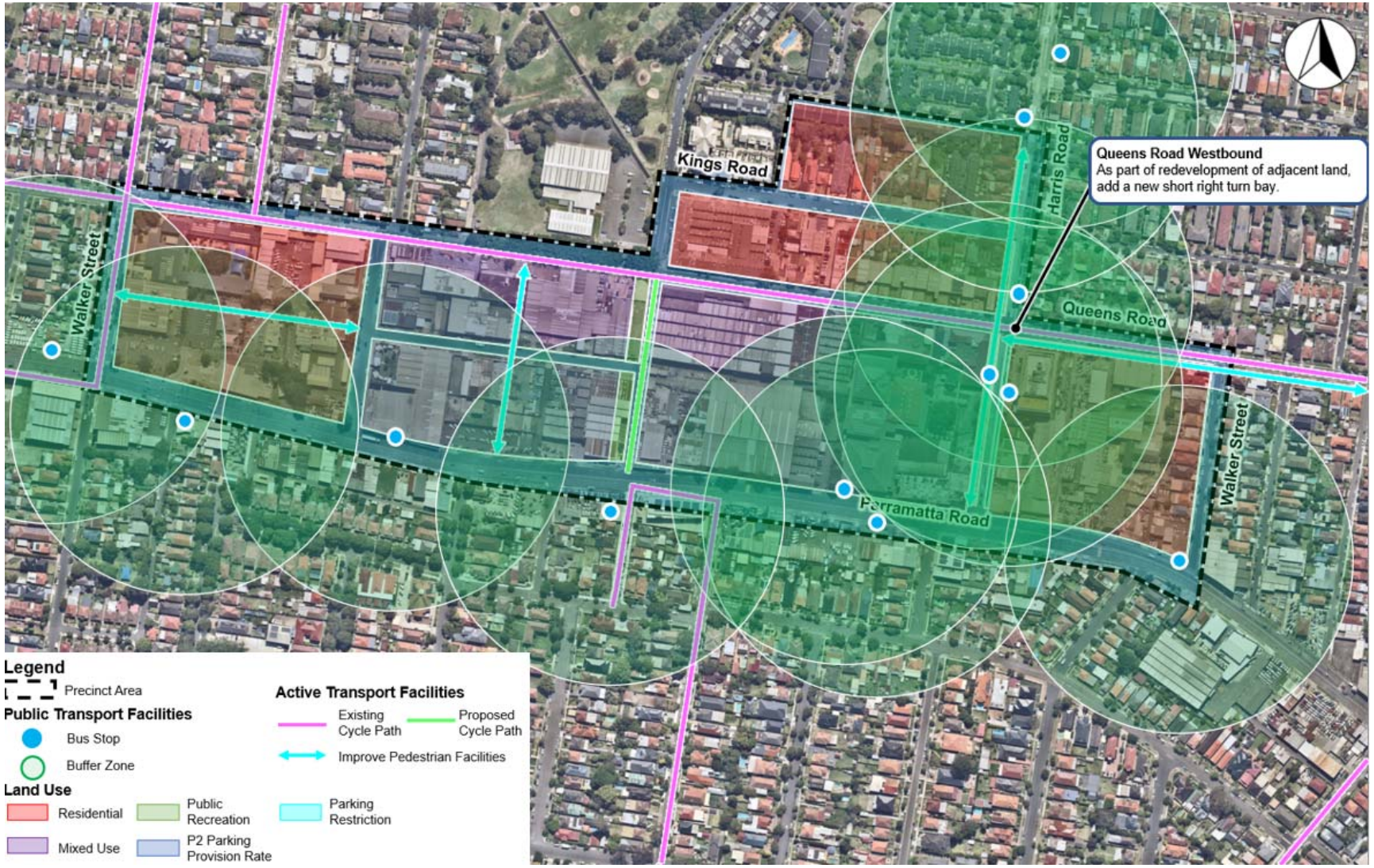


Figure 8-3: Kings Bay Precinct – Integrated Transport Strategy

8.4 Road Network Upgrades

8.4.1 Harris Road

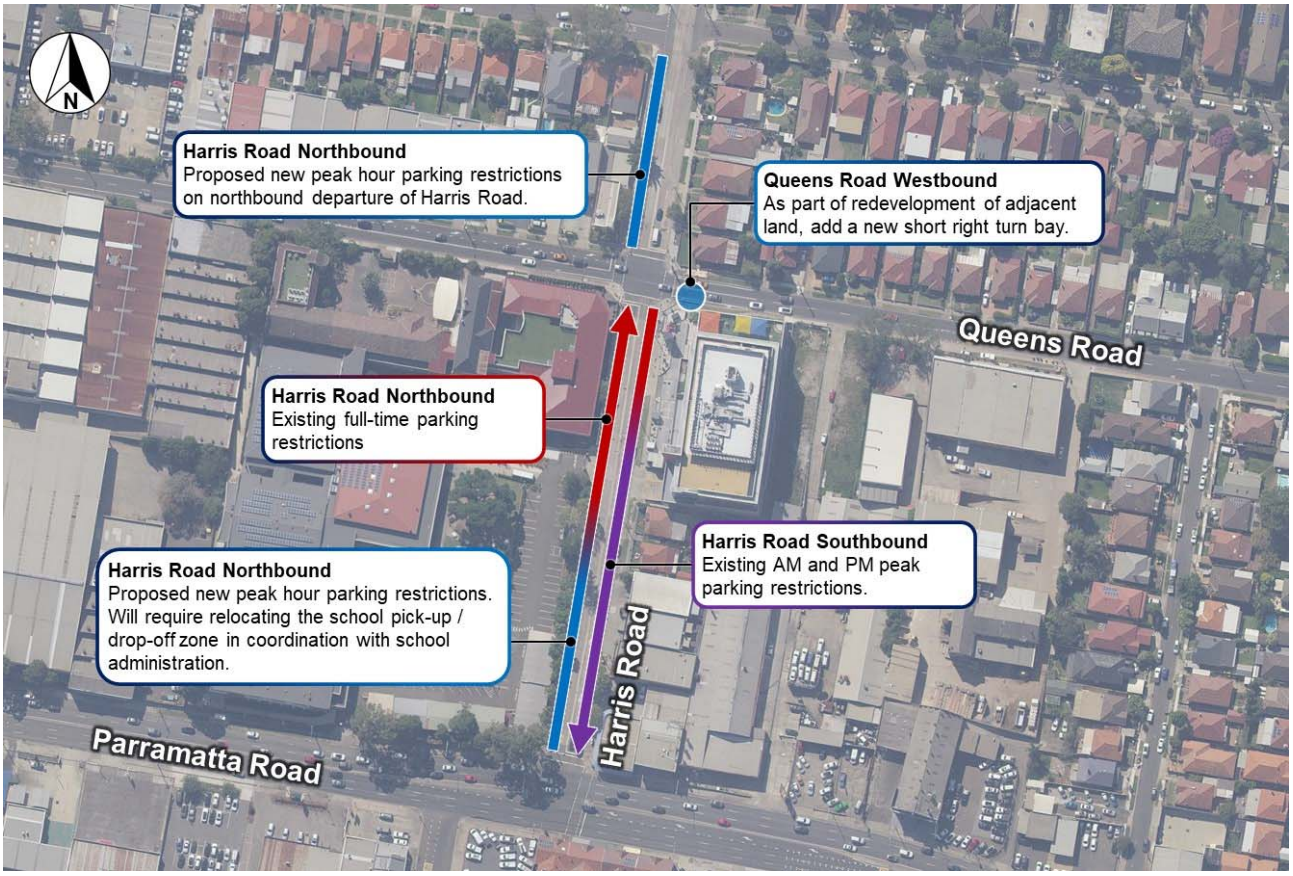
Harris Road is a key link in the road network, servicing a large residential catchment and multiple schools between Lyons Road and Parramatta Road. The road is also used by a number of bus services travelling to Five Dock and beyond.

Harris Road is the main north-south road passing through the Kings Bay redevelopment precinct. Due to increased traffic by 2036, delays and queues along Harris Road (due to Parramatta Road) cause significant impacts to its intersecting east-west road such as Queens Road.

To address this, the following actions are proposed:

- **New peak hour clearways:** Sections of Harris Road already feature peak hour parking restrictions. It is proposed that these clearway conditions be extended to entire length of Harris Road between Queens Road and Parramatta Road, a section which with carries over 1,000 vph in 2036. This initiative will affect the existing timed No Parking zone on the northbound kerbside which supports Rosebank College as a pick-up and drop-off zone. While this is an important facility for the school, the friction of high-frequency kerbside parking manoeuvres causes severe disruptions to traffic flows. The pick-up and drop-off facility should be relocated in coordination with the College administration (potentially within the school on-site car park, or alternative locations on the school frontage). This would only be required once substantial redevelopment has occurred, closer to 2036
- **Short turning bay on Queens Road:** The Queens Road westbound approach at the Harris Road / Queens Road intersection consistently experiences flows and exceeding 1,000 vehicles, per hour by 2036, with long queues and delays caused by the single-lane approach to the signals (due to the narrow carriageway), and the filtering of right turning vehicles at the intersection. As part of the redevelopment of the surrounding properties, the roadway at this location could be widened to allow for a short turning bay for right turning vehicles to allow them to store clear of the heavier through traffic flows.

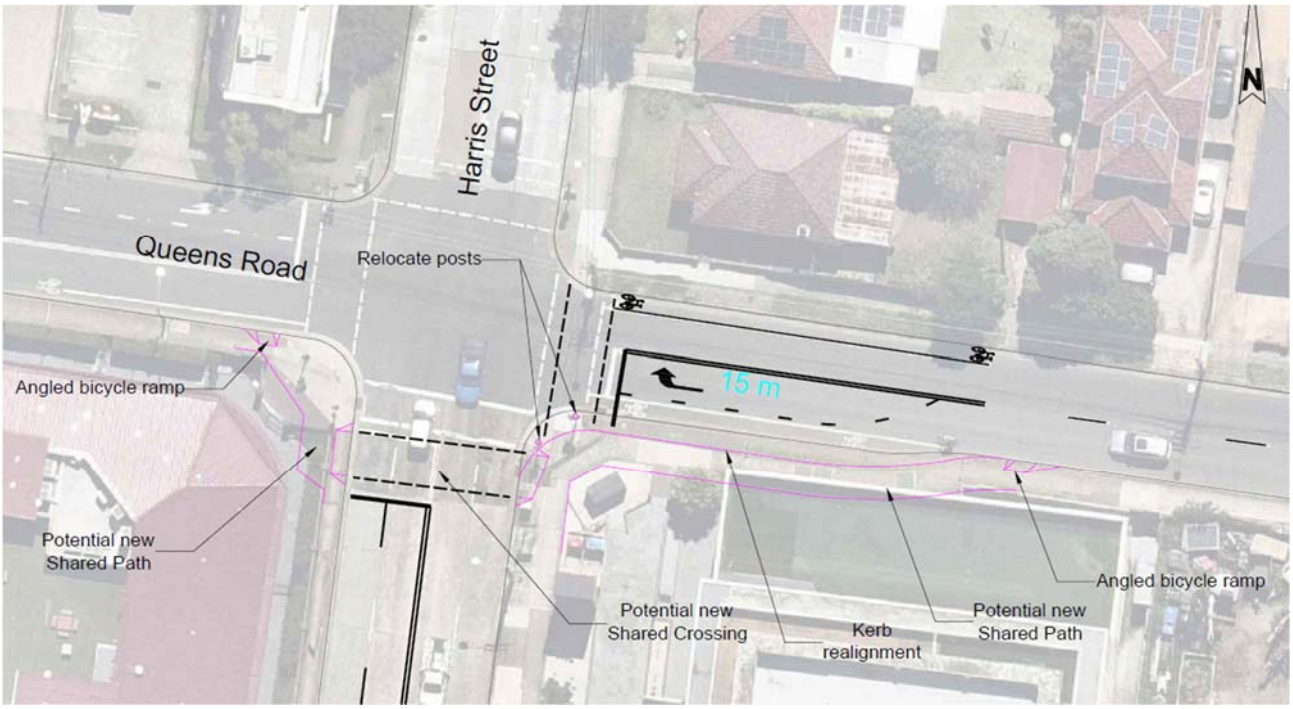
The proposed upgrades are shown in Figure 8-4.



Source: Sixmaps

Figure 8-4: Proposed Road Network Upgrades – Harris Road

A concept of the Harris Road / Queens Road intersection is shown in Figure 8-5. More detailed concept full drawings can be found in **Appendix A**.



Source: Nearmap

Figure 8-5: Proposed Road Network Upgrades – Harris Road / Queens Road Concept

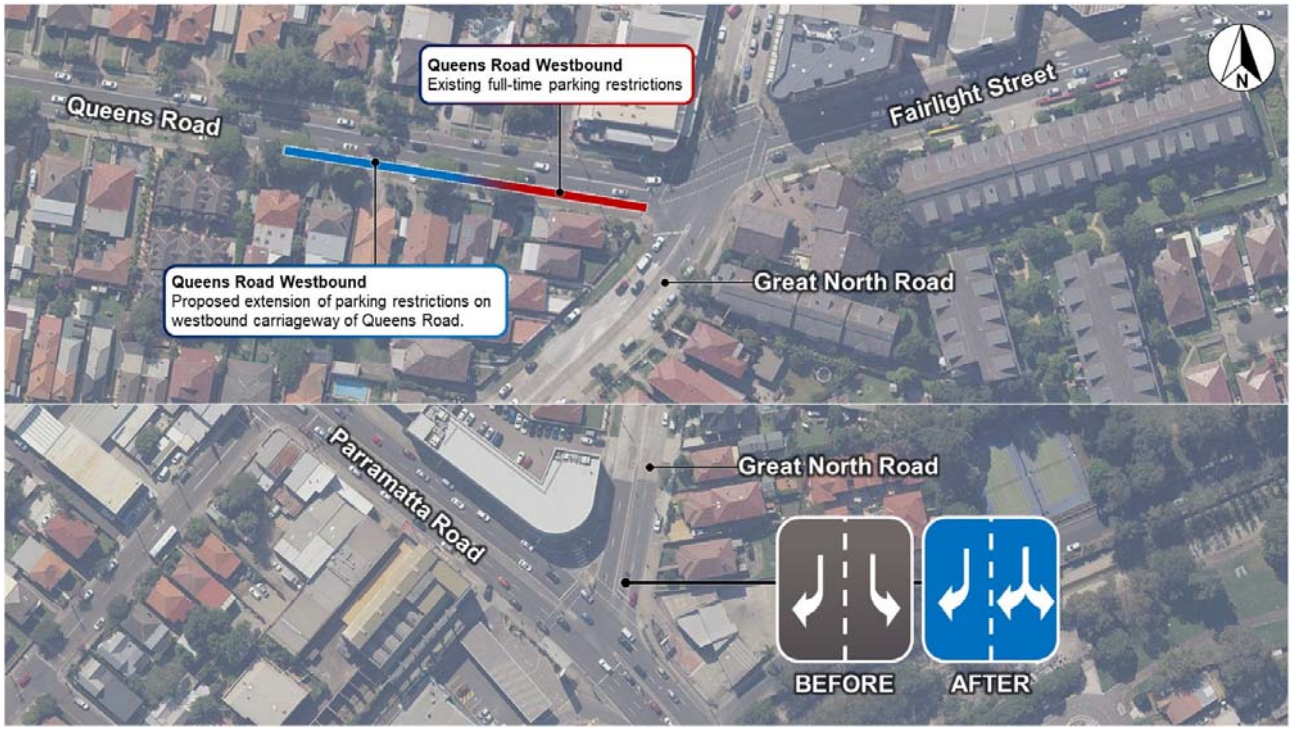
8.4.2 Great North Road and Surrounds

The Great North Road connects between Parramatta Road and Five Dock Town Centre and is impacted by the congestion issues around Harris Road and Queens Road. Downstream blockages often push back to Great North Road (e.g. westbound queues on Queens Road), affecting the traffic performance at key intersections such as Great North Road / Queens Road / Fairlight Street and Great North Road / Parramatta Road.

To address these issues the following actions are proposed in addition to the works near Harris Road:

- **New peak hour clearways:** new clearway restrictions along the Queens Road westbound carriageway near Great North Road, extending the existing section of two-lane westbound carriageway from 50m to 100m. This will minimise congestion caused by merging traffic near the traffic signals, particularly for through traffic from Fairlight Street
- **Changed lane designations:** adjustments to the lane designations at Parramatta Road / Great North Road to allow a double right turn movement. While Great North Road to Parramatta Road is not a key route for westbound traffic due to its road alignment, this upgrade relieves pressure off Harris Road and Queens Road. The proposed change will allow greater usage of the available road capacity without compromising the adjacent left turn movements.

The proposed upgrades are shown Figure 8-6.



Source: Sixmaps

Figure 8-6: Proposed Road Network Upgrades – Harris Road / Queens Road Concept

8.5 Public Transport Initiatives

The Kings Bay precinct has a good coverage of bus services generally along Parramatta Road and Harris Road connecting to major transport hubs including Burwood, Parramatta and Strathfield.

The existing public transport infrastructure of Kings Bay precinct is shown in Figure 8-7.

The northern parts of Kings Bay precinct, along Queens Road, would benefit from additional bus services and stops possibly as an extension of the existing bus services. The provision of additional / extended bus services at the northern end of the precinct should be considered further in consultation with TfNSW, including new bus stops along Queens Road.

Figure 8-7: Public Transport Coverage

8.6 Active Transport Initiatives

To encourage increased walking and cycling to, from and within the redevelopment area, a number of east-west and north-south pedestrian links have been proposed for the precinct.

In terms of cycleways, a good connection has already been provided along the northern edge of the precinct at Queens Road which crosses the precinct parallel to Parramatta Road. A new north-south connection has been proposed to provide access to the existing cycle route south of Parramatta Road as follows:

- William Street between Queens Road and Parramatta Road

The existing and proposed active transport infrastructure for this precinct is shown in Figure 8-8.

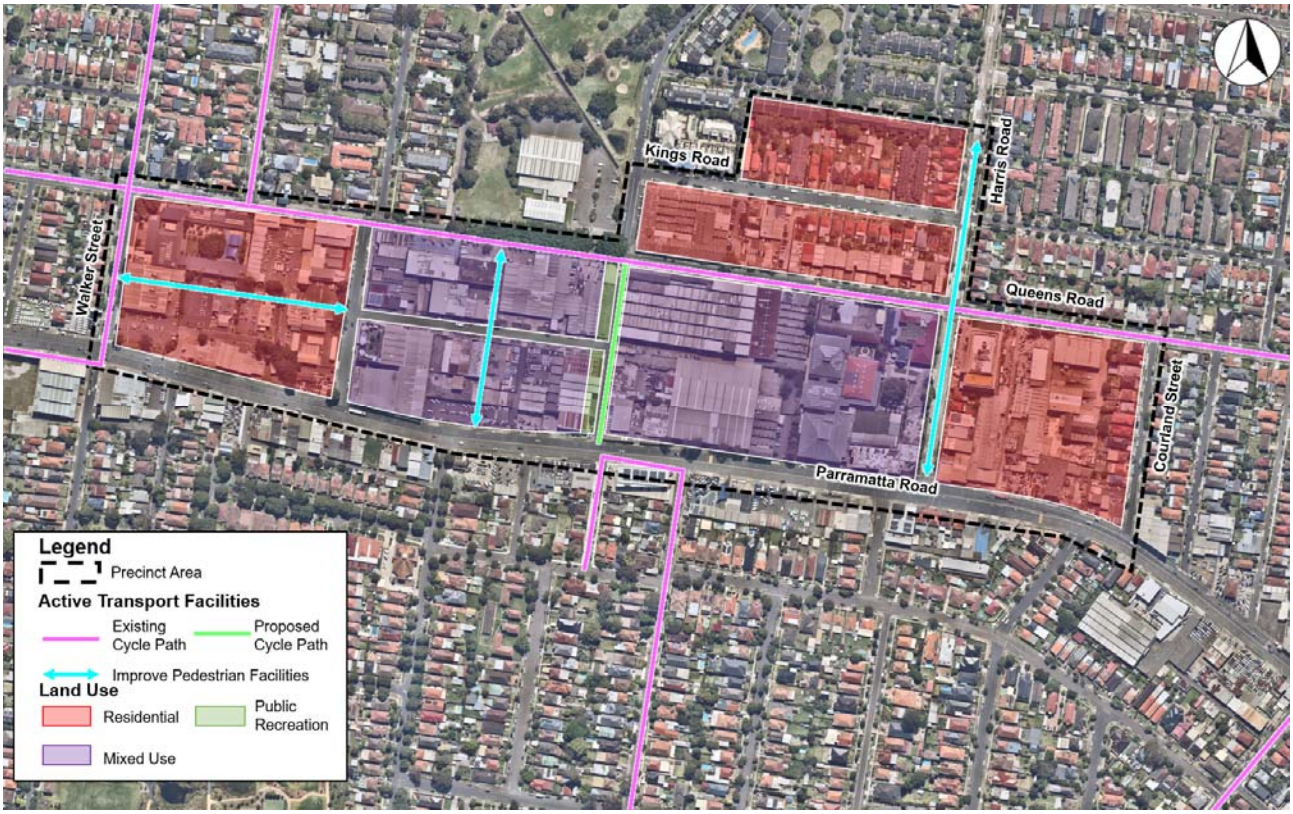


Figure 8-8: Active Transport Initiatives

8.7 Parking Initiatives

8.7.1 Off-Street Development Parking

The Kings Bay precinct has reasonably good coverage of bus-based public transport services, however the frequency and destinations of these services are insufficient to justify highly restrictive development parking rates. The 'P2' category (see Section 4.7.2) has been nominated near the bus routes servicing Parramatta Road and Harris Road and the 'P3' category has been nominated for most of Queens Road given its limited services.

8.7.2 On-Street Parking

Peak period clearways have been proposed along Harris Road within the precinct.

Development in the Kings Bay precinct will result in an increased demand of parking on side streets such as Harris Road, Walker Street and residential streets north of Queens Road. It is likely that greater restrictions would evolve in these areas as this development occurred.

Figure 8-9: **Proposed Parking Initiatives**

8.8 Car Share Initiatives

Two car share pods are located north of Queens Road but east of the precinct. The precinct could benefit from additional car share pods given proposed commercial and residential facilities and the proposed development parking policies particularly south and east of the precinct. Additional car share pods should be considered along Kings Road and Queens Road, west of Kings Road, to cover both the residential and commercial development areas in the precinct.

Figure 8-10: **Existing Share Car Pods Coverage Area East of Kings Bay Precinct**

8.9 Local Street Network Changes

East-west permeability in the precinct is reasonable however there is a lack of permeability north-south. Opportunities to break up the existing blocks with 1-2 additional north-south streets or lanes per block should be explored as redevelopment occurs.

9. STAGING AND IMPLEMENTATION

9.1 2026 Modelling and Staging

9.1.1 Approach

To determine the staging of proposed road upgrade works as a part of this corridor study, the ultimate year model network was run with 2026 traffic demands including uplift precinct traffic demands and other traffic growth by that year (see Section 4.1). The modelled upgrades were then progressively 'stripped back' from the network and then re-evaluated based on the levels of congestion revealed.

Due to the subjectivity in evaluating traffic performance across the entire network and the necessity of early upgrades, the performance target used was to achieve similar levels of traffic performance when compared to the '2036 Uplift with Upgrades' scenario.

9.1.2 Project Staging Modelling Outcomes

Figure 9-1 shows the recommended staging of the proposed road network upgrades.

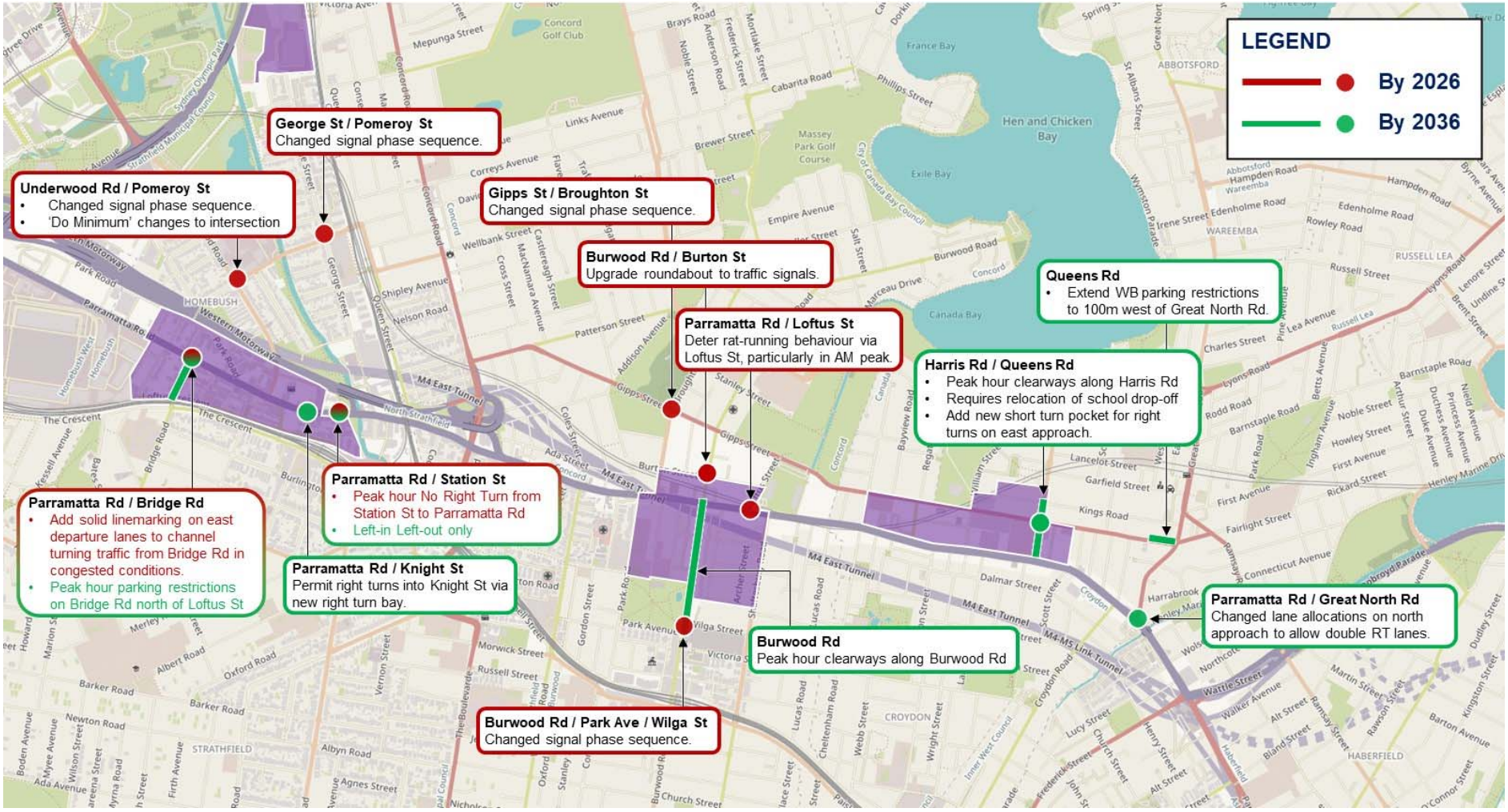


Figure 9-1: Proposed Upgrades and Staging

The projects needed by 2026 are concentrated in the Strathfield and Burwood LGAs largely as a consequence of needing to address existing issues that are exacerbated with some precinct redevelopment. This is reflective of the concentration of traffic congestion towards the western end of the network. The Kings Bay precinct projects are all recommended to be delivered between 2026 and 2036.

Some works can be linked directly to nearby triggers. For example, the timing of the Burwood Road / Burton Street signals can be aligned with the Burwood Metro Station works. The majority of actions related to parking restrictions can be initiated towards 2036 which is when the aggregate influence of redevelopment impacts are realised.

9.1.3 Network Statistics Comparison

Figure 9-2 compares the AM peak network-wide statistics for the '2026 Staged Upgrades' scenario and the '2036 Uplift scenario with Upgrades' scenario.

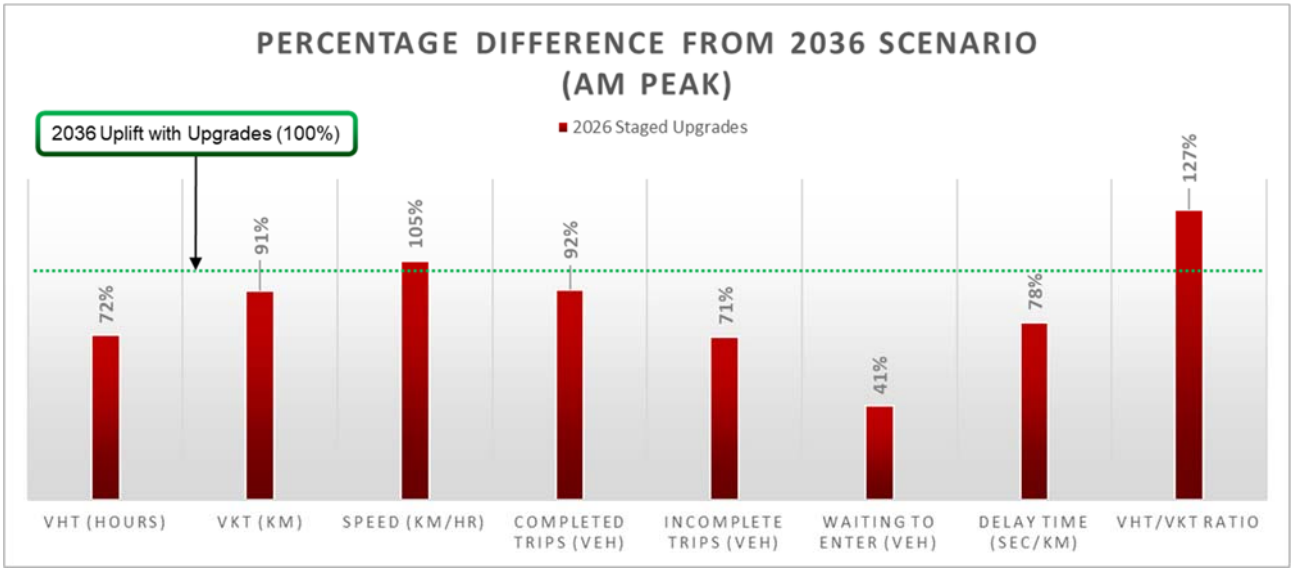


Figure 9-2: 2026 vs 2036 Network Statistics Comparison– AM Peak

Figure 9-3 shows the comparison between PM peak comparison between network-wide statistics for the '2026 Staged Upgrades' against the '2036 Uplift with Upgrades' scenario.

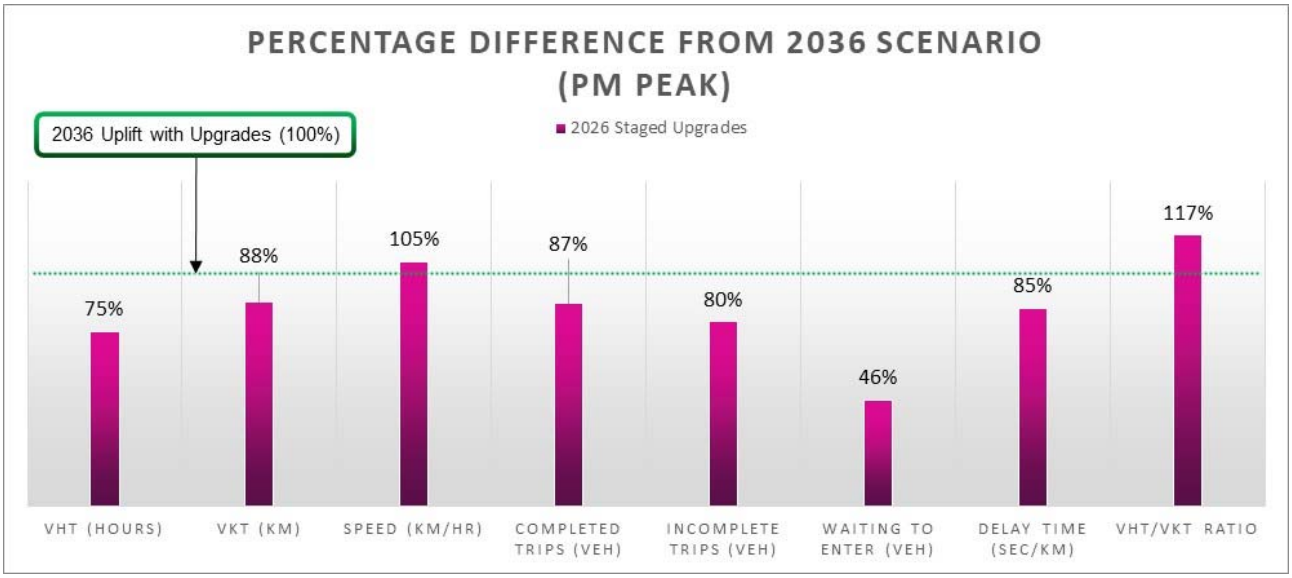


Figure 9-3: 2026 vs 2036 Network Statistics Comparison – PM Peak

The results show that in both the peak periods, the 2026 scenario exhibits:

- Lower VHT and VKT outputs, but a higher VHT/VKT ratio, meaning that average travel speeds travelled through the network are faster in 2026 than 2036 which is indicative of lower traffic congestion
- A lower number of trips overall, including completed, incomplete and waiting to enter (this is expected due to the reduced traffic demands compared to 2036)
- Lower average delay times across the network.

Overall, these outcomes demonstrate that the '2026 Staged Upgrades' network has acceptable performance levels relative to the '2036 Uplift with Upgrades' scenario.

The modelling outputs are compared in Table 9-1.

Table 9-1: 2026 vs 2036 Network Statistics Comparison Table

Parameter	2026 (Staged Upgrades)	2036 (Uplift with Upgrades)	Difference (2026) – (2036)
AM PEAK			
VHT (hours)	5,147	7,107	-1,960
VKT (kilometres)	92,022	101,263	-9,241
VKT/VHT Ratio	17.88	14.25	+3.63
Speed (km/h)	31	30	+1
Completed trips (veh)	45,125	49,396	-4,271
Incomplete trips (veh)	3,075	4,007	-932
Waiting to Enter (veh)	2,751	6,814	-4,063
Delay Time (sec/km)	122	158	-36
PM PEAK			
VHT (hours)	4,768	6,341	-1,573
VKT (kilometres)	88,645	100,877	-12,232
VKT/VHT Ratio	18.59	15.91	+2.68
Speed (km/h)	35	33	+2
Completed trips (veh)	45,014	51,459	-6,445
Incomplete trips (veh)	3,062	3,846	-784
Waiting to Enter (veh)	2,282	4,998	-2,716
Delay Time (sec/km)	113	132	-20

9.2 Road Network Upgrade Staging Summary

Table 9-2 summarises the proposed road network upgrades across the study area and nominates the recommended staging of works. The signal phasing changes have all been assumed to be implemented by 2026 due to the minimal works required and the benefits that would be accrued immediately.

Table 9-2: Proposed Road Network Upgrades – Details by Precinct and Stage

Location	Upgrade	Relevant Precinct	By 2026	By 2036
Parramatta Road / Bridge Road	Modify departure lane on eastern side of intersection to provide channelised right turn from Bridge Road	Homebush South	☑	☑
	Install peak hour parking restrictions on Bridge Road between Loftus Street and Parramatta Road	Homebush South	☒	☑
Parramatta Road / Station Street	Install peak hour No Right Turn restriction from Station Street to Parramatta Road (interim)	Homebush South	☑	☑
	Install left-in left-out configuration change to Parramatta Road / Station Street intersection	Homebush South	☒	☑
Parramatta Road / Knight Street	Install new right turn bay into Knight Street at the traffic signals	Homebush South	☒	☑
Underwood Road / Pomeroy Street	Implement changes to the signal phase sequence / timing	Homebush North	☑	☑
	'Do Minimum' changes	Homebush North	☑	☑
George Street / Pomeroy Street	Implement changes to the signal phase sequence / timing	Homebush North	☑	☑
Burwood Road	Install peak hour clearways along Burwood Road	Burwood	☒	☑
Burwood Road / Park Avenue / Wilga Street	Implement changes to the signal phase sequence / timing	Burwood	☑	☑
Gipps Road / Broughton Street	Implement changes to the signal phase sequence / timing	Burwood	☑	☑
Burwood Road / Burton Street	Upgrade the existing roundabout to a new set of traffic signals	Burwood	☑	☑
Parramatta Road / Loftus Street	Implement measures to deter rat-running behaviour through Loftus Street	Burwood	☑	☑
Harris Road / Queens Road	Install peak hour clearways along Harris Road	Kings Bay	☒	☑
	Install new short right turn bay on the east approach	Kings Bay	☒	☑
Queens Road at Great North Road	Extend existing westbound parking restrictions to 100m west of the traffic signals	Kings Bay	☒	☑
Parramatta Road / Great North Road	Adjust lane allocations on north approach to permit double right turn lanes.	Kings Bay	☒	☑

9.3 Concepts and 'High Level' Cost Estimates

Preliminary concept drawings were prepared for the key upgrade projects, being:

- Intersection works near Parramatta Road / Knight Street
- New traffic signals at Burwood Road / Burton Street
- Modifications to the Meryla Street pedestrian crossing to facilitate clearways
- Intersection works near Harris Road / Queens Road.

These concepts are attached in **Appendix A**.

Estimates have also been included for each of the minor works items being recommend in this study. No cost estimates have been prepared for the public and active transport initiatives and they are likely to occur as part of specific development in each precinct.

Indicative cost estimates were prepared for these works based on the Independent Pricing and Regulatory Tribunal (IPART) NSW's Local Infrastructure Benchmark Costs and previous experience with similar projects. Table 9.3 presents the costs by item.

Table 9.3: Indicative Upgrades Cost Estimates

Location	Upgrade	Quantity	Rate	$ Total
Parramatta Road / Bridge Road	Linemarking (departure lane channelisation)	90m	$6/m	$540
	Install peak hour parking restrictions (including coordination)	1	$5,000*	$5,000
Parramatta Road / Station Street	(Interim) Install NRT sign for Station Street traffic	1	$1,000	$1,000
	Install left-in left-out configuration	1	$5000*	$5,000
Parramatta Road / Knight Street	Install new right turn bay into Knight Street at the traffic signals	50	$4,200	$210,000
	Install new 6-aspect signal lanterns	2	$10,000	$20,000
Underwood Road / Pomeroy Street	Signal phase changes	1	$5,000*	$5,000
George Street / Pomeroy Street	Signal phase changes	1	$5,000*	$5,000
	Install new 6-aspect signal lanterns	2	$10,000	$20,000
Burwood Road	Install peak hour clearways along Burwood Road	1	$5,000*	$5,000
Burwood Road / Park Avenue	Signal phase changes	1	$5,000*	$5,000
Burwood Road / Meryla Street	(Option) Mid-block pedestrian crossing signalisation	1	$120,000	$120,000
Gipps Road / Broughton Street	Signal phase changes	1	$5,000*	$5,000
	Install new 6-aspect signal lanterns	4	$10,000	$40,000
Burwood Road / Burton Street	New traffic signals	1	$220,000	$220,000
Loftus Street	Local Area Traffic Management	1	$50,000	$50,000
Harris Road / Queens Road	Install peak hour clearways along Harris Road	1	$5,000*	$5,000
	Install new short right turn bay	25m	$3,000 / m	$75,000
Queens Road at Great North Road	Install peak hour parking restrictions (including coordination)	1	$5,000*	$5,000
Parramatta Road / Great North Road	Adjust lane allocations on north approach to permit double right turn lanes.	1	$5,000*	$5,000
			Total	**$806,540**
			Total (50% Contingency)	**$1,209,810**

** Estimated $5,000 cost for general Traffic Engineering works*

10. Conclusions and Recommendations

10.1 Challenges in Fulfilling the Vision

The PRCUTS was published in 2016 had a clear vision for revitalising the Parramatta Road corridor associated with the WestConnex M4 project. PRCUTS envisaged that at least two lanes-worth of traffic would be removed from Parramatta Road, allowing for two of its current six lanes to be re-purposed for exclusive use by public transport. The relocation of some through traffic off Parramatta Road and into the M4 tunnel was also seen as an opportunity to 'Uplift' key locations along the corridor and to shift Parramatta Road towards more people-friendly, place-based and local access roles. These development uplift locations included Homebush (North and South), Burwood-Concord and Kings Bay precincts, which were the focus areas for this Traffic and Transport Strategy.

Consistent with the PRCUTS vision and towards the start of this project, around mid-2018, the following five principles were established and agreed to guide this strategy:

- Make the most of WestConnex
- Localise Parramatta Road
- Maximise public transport efficiency
- Improve walking and cycling connectivity
- Manage long-stay parking.

In 2018, the study sought clarification of whether to model Parramatta Road as four or six lanes in the future, informed by future year modelling based on STFM traffic forecast. The study was advised by TfNSW to model Parramatta Road as a six lane traffic corridor. The study was then paused between 2018 and 2021 to allow TfNSW to develop its future year forecasts for consistency across the entire Parramatta Road corridor.

The 'predict and provide' approach adopted when the study recommenced and Aimsun modelling was advanced, identified excessive congestion of the six lane Parramatta Road corridor by 2036, diminishing the ability to align the subsequent investigations with the strategy principles established in 2018.

Ideally, the two lanes of Parramatta Road should have been 'quarantined' for public transport when the WestConnex M4 East opened to traffic in 2020. This would have allowed a 'vision and validate' approach to be meaningfully pursued when this study recommenced in 2021.

10.2 Forecast Growth in Population, Employment and Traffic

The TfNSW STFM shows that the study area's population is forecast to increase from around 36,000 in 2016 to over 94,000 in 2036, with the majority of growth around Strathfield and Five Dock. Similarly, the STFM shows employment increasing from around 23,000 jobs in 2016 to 34,000 jobs in 2036. The majority of this growth around Canada Bay and Strathfield.

Compared with significant through traffic growth, local populations and employment growth sees an increase in traffic by up to 18,000 vehicle-trips by 2036 in each of the morning and afternoon 2-hour peak periods. 11,000 more vehicle trips then the 'no Uplift' scenario. In both scenarios the majority of traffic in the study area in 2036 are eternal-to-external trips (i.e. trips that originate outside of the study area and pass through the study area).

10.3 Traffic Modelling Outcomes

TfNSW and DPIE requested and completed a review of base year and future year Aimsun traffic models and future year modelling processes for the heavily over-saturated traffic networks. The agreed approaches were implemented.

In both scenarios the key outcomes form the future year traffic modelling were:

- The 2036 demonstrated significant levels of congestion in the network fundamentally related to excessive congestion on Parramatta Road which led to extensive queuing into local road networks, long delays and breakdown of traffic flow. the most of WestConnex
- The inability of Parramatta Road to clear its east-west queues created secondary issues at upstream locations, often with vehicles on side streets to Parramatta Road being unable to discharge due to the lack of capacity on the primary corridors
- A significant volume of the forecast demand was not able to enter the network by the end of the simulation period, particularly at key locations like the Australia Avenue roundabout, Parramatta Road to the west, The Crescent near Homebush Station and Burwood Road
- The worst traffic issues were observed to be concentrated at the western end of the study area with some near Concord Road, George Street and Underwood Road, this level of congestion in Strathfield somewhat 'buffered' Parramatta Road congestion at Burwood and Kings Bay further east. In these locations, additional traffic generate by the Uplift areas also creates queues in this area back from Parramatta Road also affecting local east-west roads both north and south of Parramatta Road.

10.4 Improvement Measures Development

The fundament issues generating 2036 congestion issues cannot be solved in local areas networks. That is, there are no reasonable major road projects in or near the precincts which will solve the forecast congestion issues.

Parramatta Road and its congestion in 2036 is the key constraint.

Any project at nearby intersections to relieve capacity pinch points will simply get traffic to this queued corridor faster. Incremental minor upgrades to Parramatta Road would also be ineffective in solving congestion and a more strategic approach to the consideration of Parramatta Road's future congestion and role, beyond the scope and considerations in this study, is needed.

On this basis, a balanced approach to traffic congestion management (rather than mitigation) has been used in this study, focussed on improving local access where possible and with a commensurate emphasis in improving walking, cycling and public transport infrastructure whilst implementing appropriate parking policies.

10.5 Uplift Area Findings

Part of the scope of this study was to identify if the Uplift areas (redevelopment precincts) were being proposed with too much development, or not enough development. The 'predict and provide' analysis clearly shows heavy congestion either without or with the uplift areas.

However, traffic congestion forecasts should not be the primary determinant of the levels of development in these precincts because the models will show that excessive congestion will exist regardless, the specific degrees to which the models are unable to predict with a high confidence levels. Rather, due consideration should be given to public transport accessibility as the primary determinant.

On this basis, and until such time that a rapid bus system or similar is introduced in Parramatta Road, the following development uplift conclusions can be drawn:

- **Homebush North:** Uplift levels should be supportable due to the presence of Concord West Station
- **Homebush South:** Uplift levels should be reconsidered with greater densities towards Knight Street (and the rail station) and reducing levels towards Bridge Road further away from public transport
- **Burwood – Concord**: Shift the uplift emphasis and footprint closer to the proposed Burwood Station, and consider a 'gap' between the existing Town Centre south of Park Avenue and the proposed northern uplift area
- **Kings Bay:** Completely reconsider this area as it has limited public transport accessibly, especially the area proposed north of Queens Road.

10.6 Action Plan

The consolidated action plan incorporates the road network upgrades, the public transport improvements, the active transport upgrades, the parking policy, TDM and local street network measures within a consolidated action table, by precinct. The actions are summarised in Table 10.1.

Table 10.1: Consolidated Actions Table

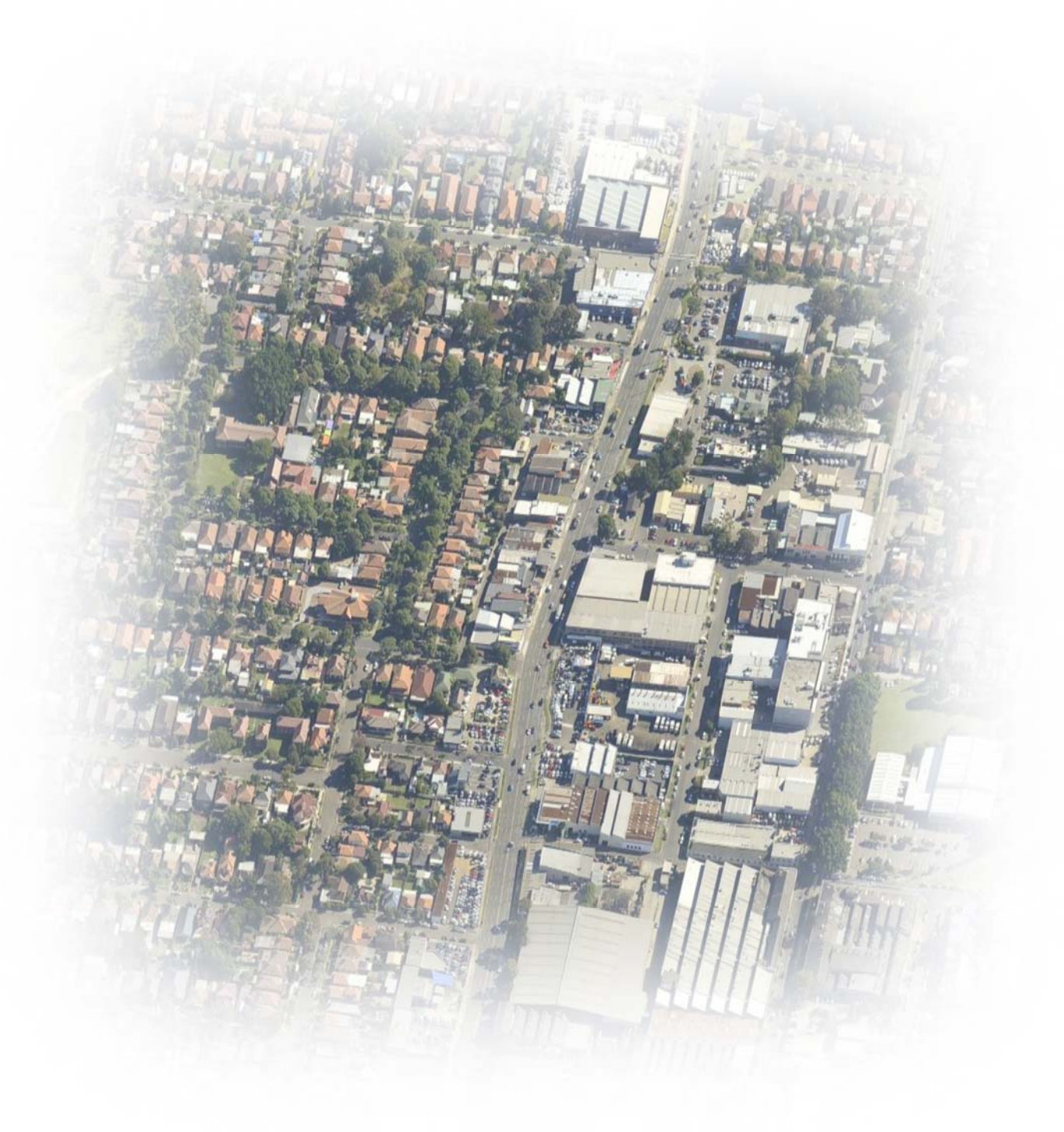
Type/ID	Location	Description	Responsibility	Cost	Timing
Homebush North Precinct					
RN-1	Underwood Road / Pomeroy Street	Implement changes to the signal phase sequence / timing	TfNSW	$5,000	By 2026
RN-2		'Do Minimum' changes	TfNSW	$5,000	By 2026
RN-3	George Street / Pomeroy Street	Implement changes to the signal phase sequence / timing	TfNSW	$5,000	By 2026
PT-1	King Street at Concord West Station	Investigate a new bus terminal / interchange	Canada Bay Council / TfNSW	TBC	TBC
PT-2	From King Street Terminal	Improve bus connectivity to Homebush North via a new bus route on George Street	TfNSW	TBC	TBC
AT-1	Near Station Street, Concord West	Additional pedestrian links through the redevelopment areas for more permeable networks and for better connectivity to public transport	Canada Bay Council	TBC	TBC
AT-2	Future Business Park (currently Westpac) at 1 King Street, Concord West	Include pedestrian links as part of redevelopment for improved pedestrian permeability near the station	Developer / Canada Bay Council	TBC	TBC
AT-3	Queen Street, Concord West	Design and construct new cycle route connections on Victoria Avenue to facilitate a cycling connection to the existing on-road cycle route on Yaralla Street	Canada Bay Council	TBC	TBC
TDM1	Homebush North Precinct	Implement 'P2' parking provision rates in Development Control Plan	Canada Bay Council	TBC	TBC
TDM2	Victoria Avenue (W), Concord West	Provide new dedicated car share pod(s) on Victoria Avenue west of the railway line with redevelopment.	Canada Bay Council	TBC	TBC
Homebush South Precinct					
RN-4	Parramatta Road / Bridge Road	Modify the departure lane on the eastern side of the intersection to provide a channelised right turn from Bridge Road	Strathfield Council	Minimal	By 2026
TDM-3		Install peak period clearways on Bridge Road between Loftus Street and Parramatta Road	Strathfield Council	$5,000	By 2036
RN-5	Parramatta Road / Station Street	Install peak hour No Right Turn restriction from Station Street to Parramatta Road (interim)	TfNSW	$1,000	By 2026

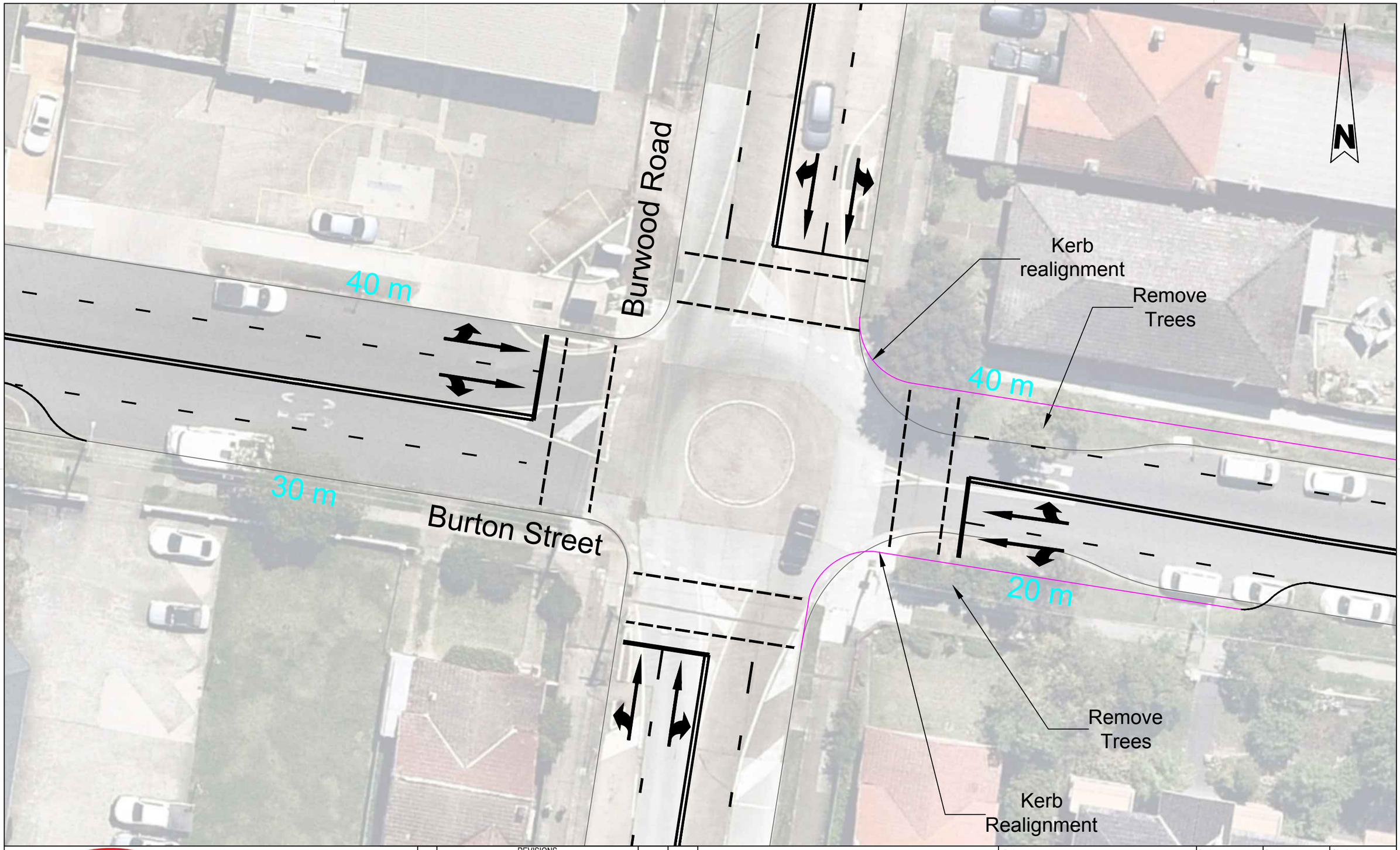
Type/ID	Location	Description	Responsibility	Cost	Timing
RN-6		Install left-in left-out configuration change to Parramatta Road / Station Street intersection	TfNSW	$5,000	By 2036
RN-7	Parramatta Road / Knight Street	Install new right turn bay into Knight Street at the traffic signals	TfNSW	$230,000	By 2036
PT-3	Homebush South Precinct – Western Side	Explore option of new bus stops and bus routes to improve public transport access for the western catchment.	TfNSW	TBC	TBC
TDM-4		Implement 'P3' parking provision rates in Development Control Plan	Strathfield Council	TBC	TBC
TDM-5	Homebush South Precinct – Eastern Side	Implement 'P2' parking provision rates in Development Control Plan	Strathfield Council	TBC	TBC
AT-4	Park Road and Powell Road to Underwood Road	Design and install new cycle route connections via Park Road and Powell Street to facilitate a cycling connection to the existing on-road cycle route on Underwood Road	Strathfield Council	TBC	TBC
AT-5	Parramatta Road at Underwood Road	Design and install a new cycle route connection between Underwood Road and Subway Lane, spanning Parramatta Road.	Strathfield Council / TfNSW	TBC	TBC
TDM-6	Homebush South Precinct	Provide new dedicated car share pod(s) within the Homebush South Precinct, located centrally on key roads like Knight Street or Park Road as redevelopment occurs	Strathfield Council	TBC	TBC
Burwood-Concord Precinct					
TDM-7	Burwood Road	Install peak hour clearways along Burwood Road between Wilga Street and Parramatta Road	Burwood Council / TfNSW	$5,000	By 2036
RN-9	Burwood Road / Park Avenue / Wilga Street	Implement changes to the signal phase sequence / timing	TfNSW	$5,000	By 2026
RN-10	Gipps Road / Broughton Street	Implement changes to the signal phase sequence / timing	TfNSW	$5,000	By 2026
RN-11	Burwood Road / Burton Street	Upgrade the existing roundabout to a new set of traffic signals	Canada Bay Council / TfNSW	$220,000	By 2026
RN-12	Parramatta Road / Loftus Street	Implement measures to deter rat-running behaviour through Loftus Street	Canada Bay Council	$50,000	By 2026
AT-6	Broughton Street	Design and install a new cycle route connection on Broughton Street to connect the existing on-road cycle lanes on Neich Parade to the wider Concord bike network.	Canada Bay Council / TfNSW	TBC	TBC

Type/ID	Location	Description	Responsibility	Cost	Timing
AT-7	Burwood Road	Design and install a new cycle route connection on Burwood Road between Comer Street and Gipps Street to improve cycling connectivity between Burwood and Concord areas.	Burwood Council	TBC	TBC
TDM-8	Burwood-Concord Precinct	Implement 'P1' parking provision rates in the Development Control Plan	Burwood Council	TBC	TBC
TDM-9	Burwood-Concord Precinct – Northern side	Provide new dedicated car share pod(s) within the Burwood-Concord Precinct, located towards the northern side of the catchment near Parramatta Road on key roads like Burwood Road.	Burwood Council	TBC	TBC
Kings Bay Precinct					
TDM-10	Harris Road / Queens Road	Install peak hour clearways along Harris Road, including relocation of school pick-up and drop-off zone.	Canada Bay Council / TfNSW	$5,000	By 2036
RN-13		Install new short right turn bay on the east approach	TfNSW	$75,000	By 2036
TDM-11	Queens Road at Great North Road	Extend existing westbound parking restrictions to 100m west of the traffic signals	TfNSW	$5,000	By 2036
RN-14	Parramatta Road / Great North Road	Adjust lane allocations on the northern approach to permit double right turn lanes.	TfNSW	$5,000	By 2036
PT-4	Queens Road	Explore option of new bus stops and bus routes to improve public transport access for the northern side of the precinct.	TfNSW	TBC	TBC
AT-8	William Street	Design and install a new cycle route connection on William Street Parramatta Road and Queens Road to improve cycling connectivity from the Queens Road route.	Canada Bay Council	TBC	TBC
AT-9	Between Regatta Street and William Street	Improve pedestrian facilities through the future Kings Bay urban village to facilitate better connection between the major movement corridors.	Canada Bay Council	TBC	TBC
AT-10	Through existing lot bounded by Walker Street and Regatta Street	Improve pedestrian facilities through the site to improve pedestrian permeability near the future Kings Bay urban village.	Canada Bay Council	TBC	TBC
AT-11	Harris Road	Improve pedestrian facilities along Harris Road, which is a key future corridor for movement through the precinct.	Canada Bay Council	TBC	TBC
TDM-12	Kings Bay Precinct (south and east sides)	Implement 'P2' parking provision rates in Development Control Plan	Canada Bay Council	TBC	TBC

Type/ID	Location	Description	Responsibility	Cost	Timing
TDM-13	Kings Bay Precinct (north-west corner)	Implement 'P3' parking provision rates in Development Control Plan	City of Canada Bay	TBC	TBC
TDM-14	Queens Road, west of Harris Road	Provide new dedicated car share pod(s) within the Kings Bay Precinct, located on key roads like Queens Road.	City of Canada Bay	TBC	TBC

Appendix A: Concept Design Drawings





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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Parramatta Road Corridor - Concept	A.L	18.11.2021

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: Parramatta Road Corridor Study

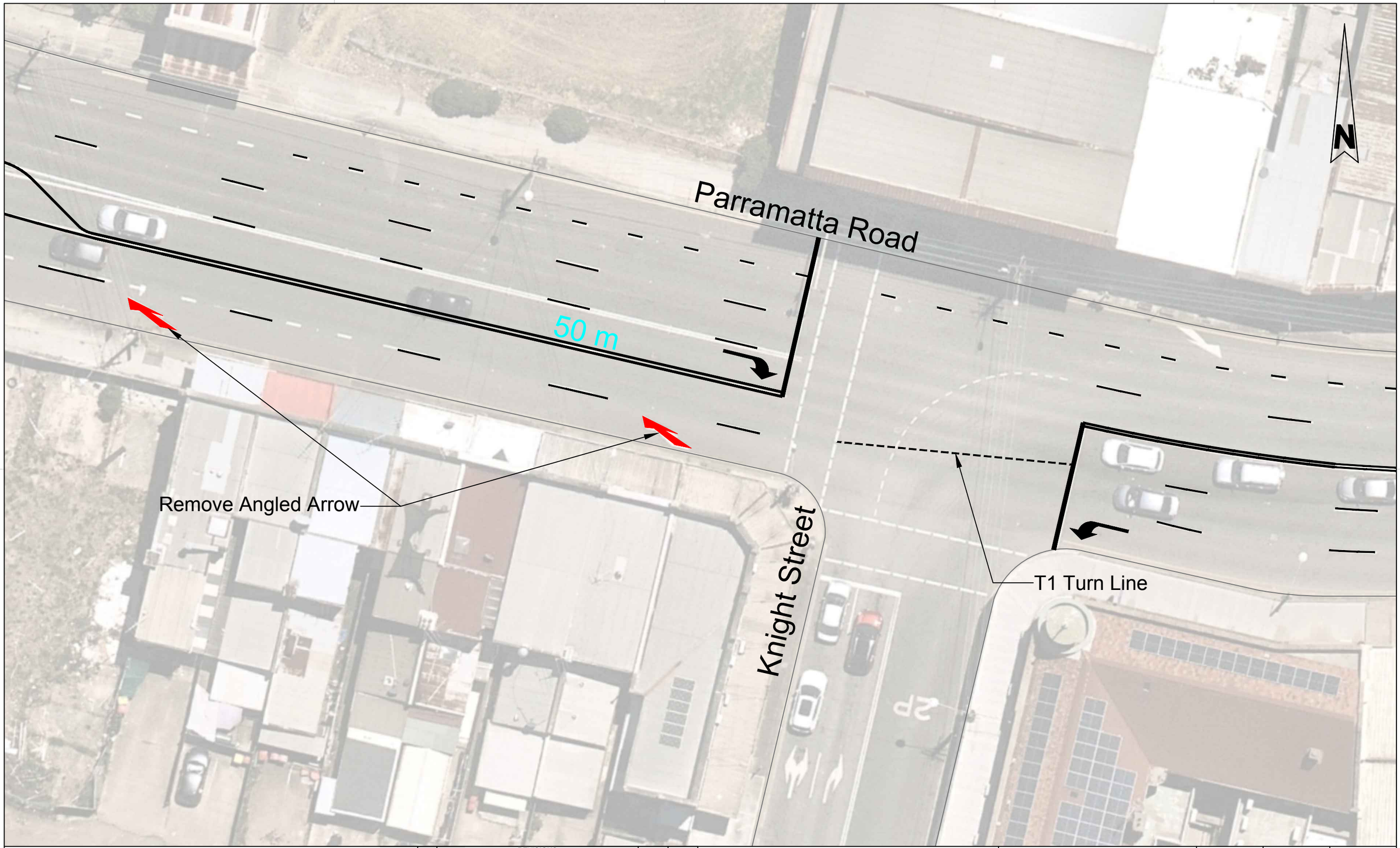
Title: Burwood Road & Burton Street Intersection Signalised Intersection

Design	Drawn	Checked
A.L	A.L	A.G

CONCEPT ONLY

Date: 18.11.2021

Project Number	Sheet Number	Issue
P3179	1	001



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Parramatta Road Corridor - Concept	A.L	18.11.2021

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: Parramatta Road Corridor Study

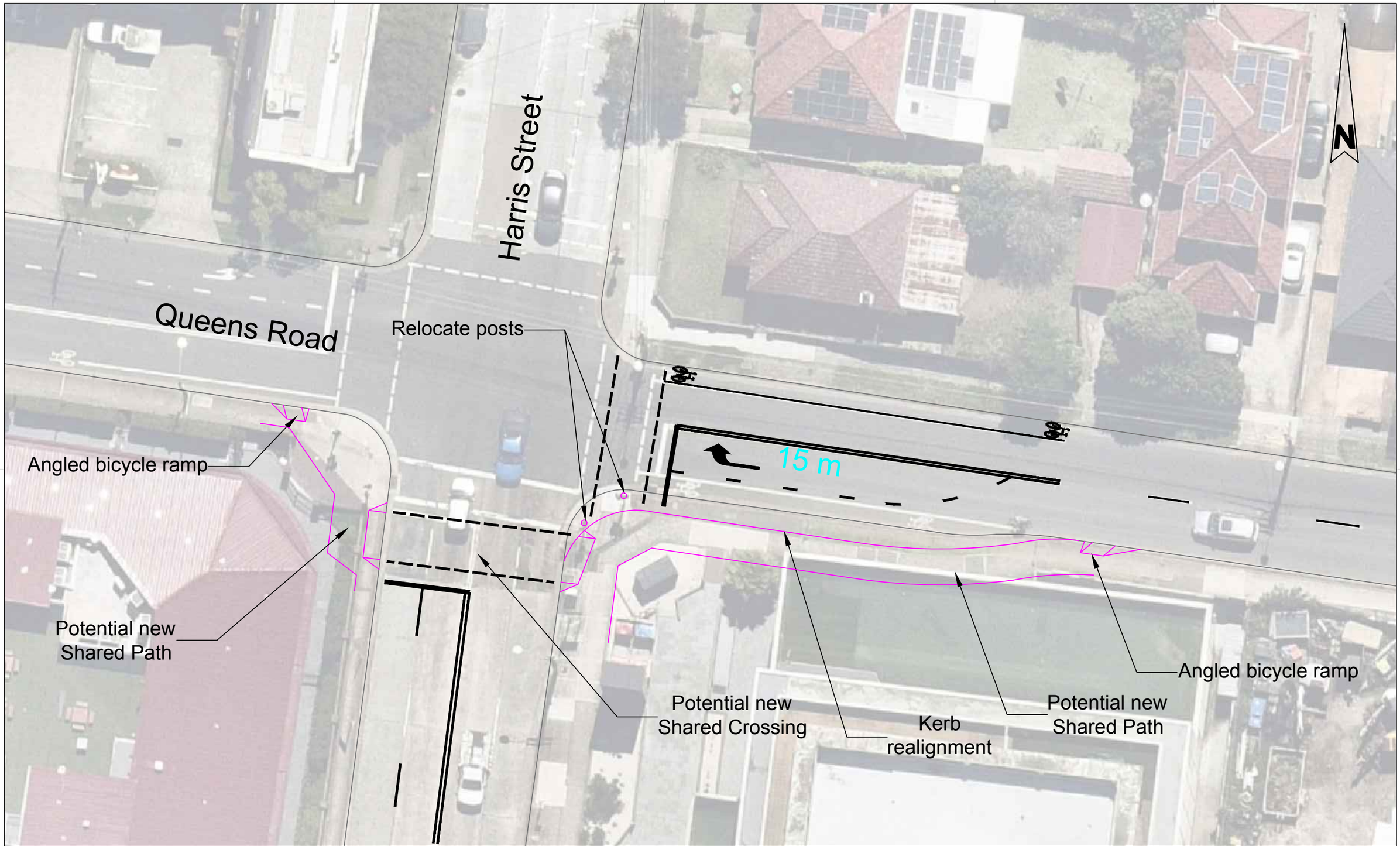
Title: Parramatta Road & Knight Street Right Turn Bay

Design	Drawn	Checked
A.L	A.L	A.G

CONCEPT ONLY

Date: 18.11.2021

Project Number	Sheet Number	Issue
P3179	2	001



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Parramatta Road Corridor - Concept	A.L	18.11.2021

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: Parramatta Road Corridor Study

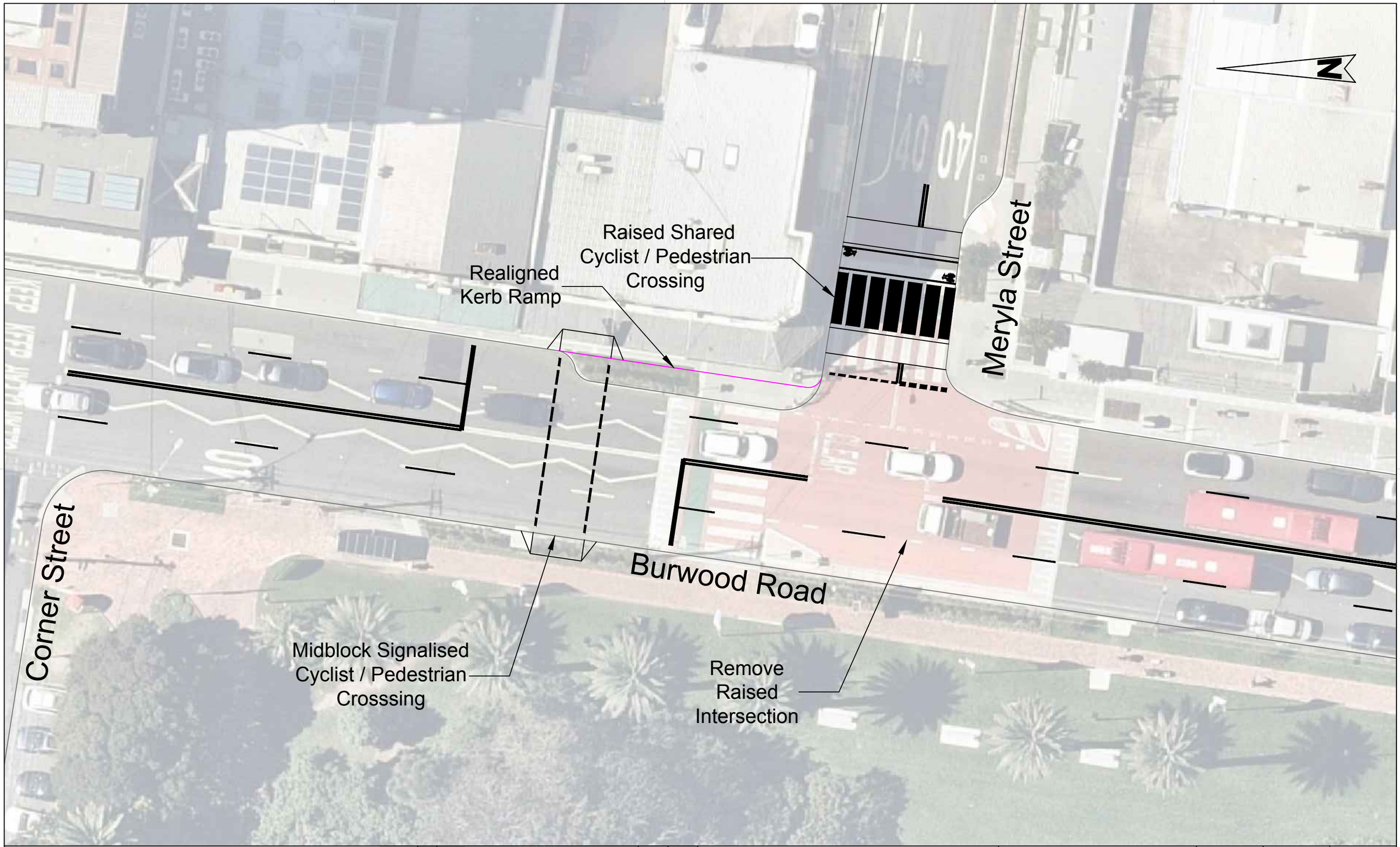
Title: Queens Road & Harris Street Right Turn Bay

Design	Drawn	Checked
A.L	A.L	A.G

CONCEPT ONLY

Date: 18.11.2021

Project Number	Sheet Number	Issue
P3179	3	001



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Parramatta Road Corridor - Concept	A.L	18.11.2021

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: Parramatta Road Corridor Study

Title: Burwood Road & Meryla Street 4 Lanes Roadway Upgrade

Design	Drawn	Checked
A.L	A.L	A.G

CONCEPT ONLY

Date: 18.11.2021

Project Number	Sheet Number	Issue
P3179	4	001