

Kleins Road Pedestrian and Cyclist Corridor

Corridor Study and Concept Design

Working Paper A – Alignment review

April 2024



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Kleins Road Pedestrian and Cyclist Corridor

Corridor Study and Concept Design

Working Paper A – Alignment review

City of Parramatta

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	Name	Date	Signature
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Review by:			
Approved by:			



WSP acknowledges that every project we work on takes place on First Peoples lands.

We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

NGALAYA / FRIEND AND ALLY *Dharug*

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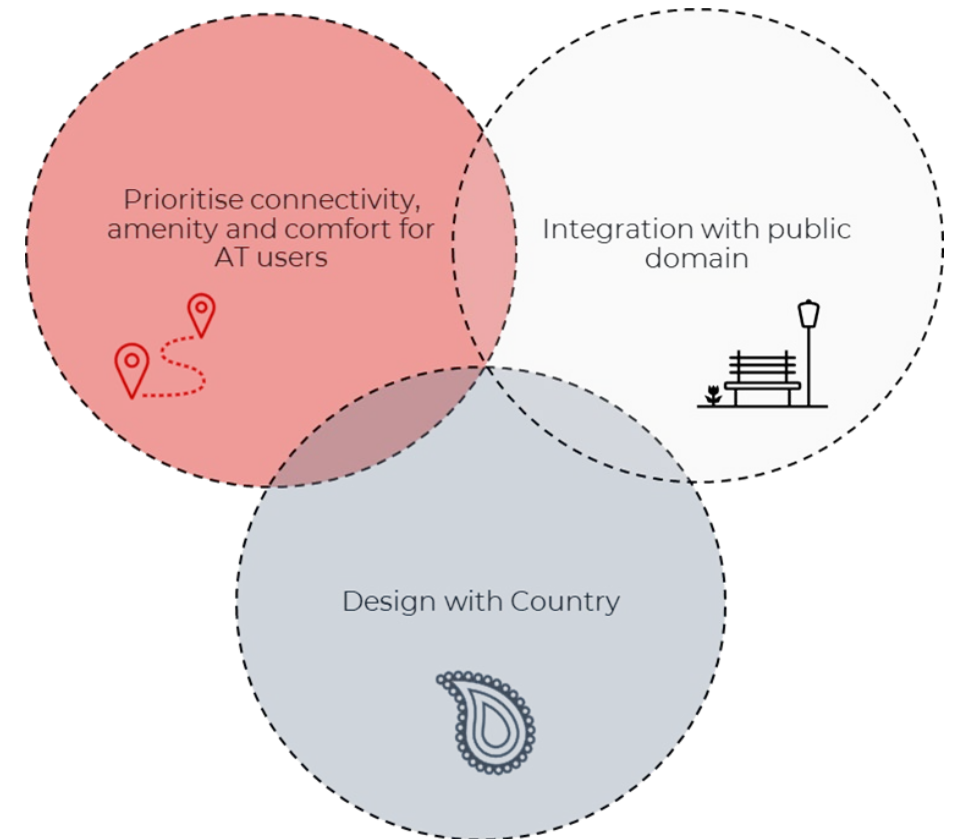
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1. Introduction

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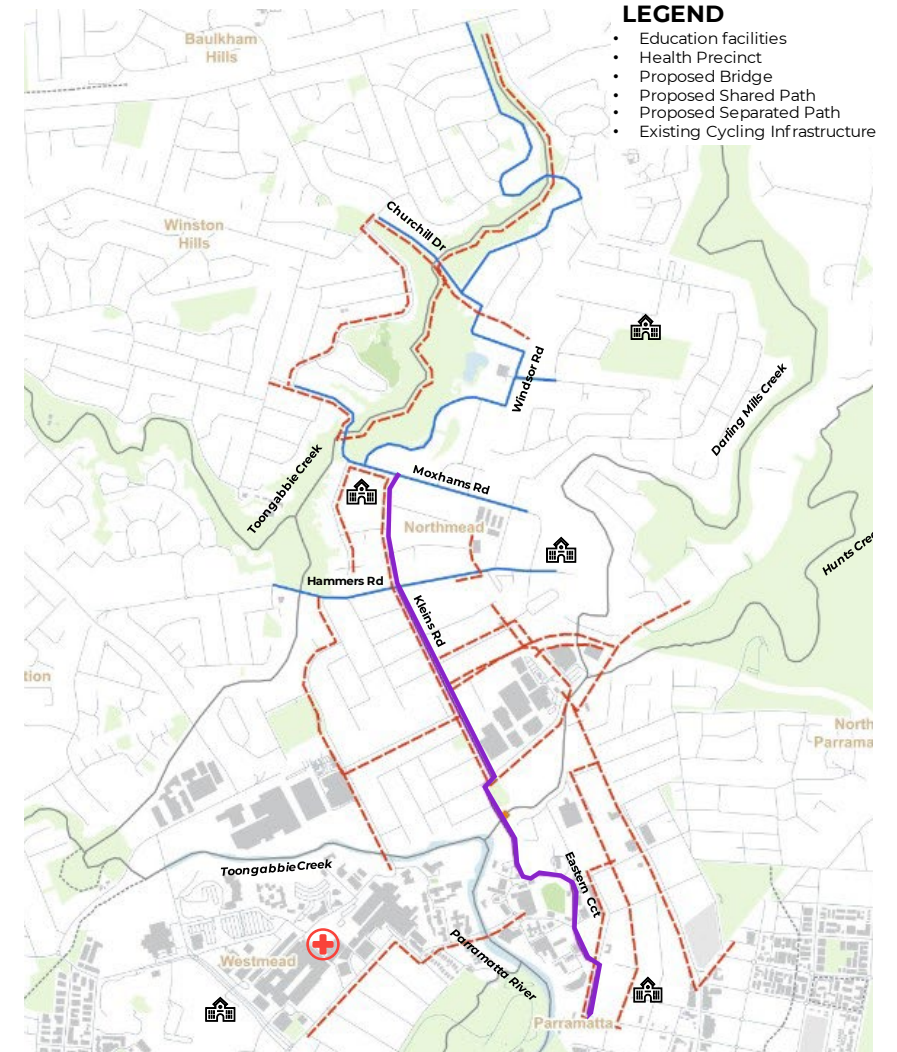


Project overview

The **Kleins Road Pedestrian and Cyclist Corridor** (funded as part of the Transport for NSW Get NSW Active program) will provide an integrated active transport route from Parramatta North to Northmead.

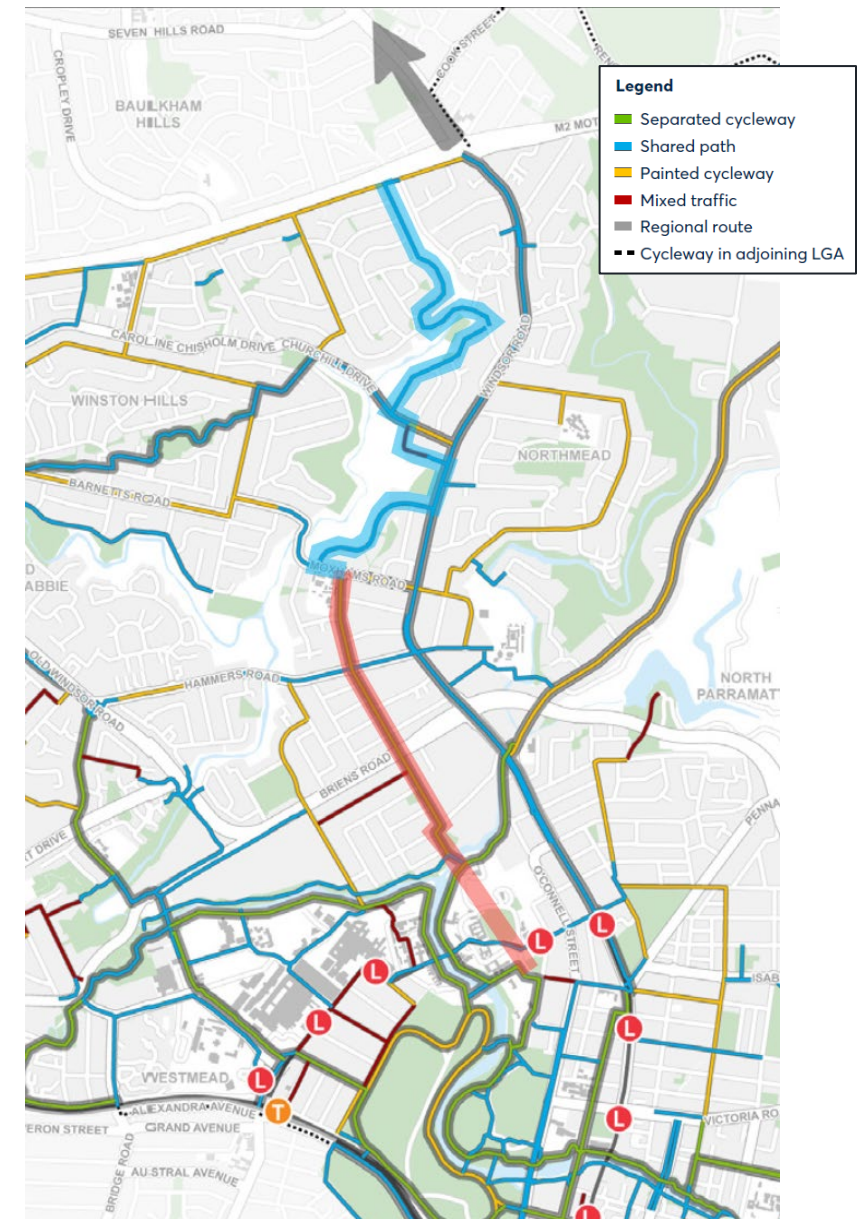
The document outlines the **Alignment Review** for both Kleins Road and the proposed connecting shared paths. This has been undertaken through an opportunities and constraints assessment of the kerbsides to establish the preferred side for the cycleway as well as identifying opportunities to improve pedestrian facilities. These are documented in example cross sections and noted schematics.

The accompanying **Working Paper B** documents the feasibility of the proposed bridge at Darling Mills Creek including an overview of its location and general arrangements and mitigations.



Project needs

1. **Deliver a key component of the City's Parramatta Bike Plan 2023 and Parramatta Ways** – Improving pedestrian and cycling connection to Northmead, Winston Hills and onward to Baulkham Hills.
2. **Improve pedestrian and cycling connections across Darling Mills Creek** – Provide an attractive alternative for users across Darling Mills Creek for commuting and recreation.
3. **Supporting access to the Parramatta North Urban Transformation and Westmead Hospital Precinct** – Together with PLR Active Transport Link, provide improved access to PNUT and Westmead.
4. **Create a new link to promote the Dharug Nation's Connection with Country** – Acknowledge and promote the importance of the corridor and Darling Mills Creek to the people of the Dharug nation through design and knowledge sharing

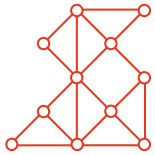


Proposed Kleins Road separated Corridor (shown in red) and shared path (shown in blue) as part of the Draft Parramatta Bike Plan 2023

Project objectives



Identify the **preferred kerbside alignment** for the separated cycleway along Kleins Road



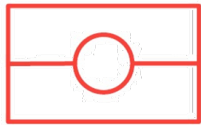
Confirm **routes and arrangement of shared paths** to connect to the Kleins Road Cycleway



Identify opportunities for **streetscape improvements** as part of design process



Undertake engineering and design **evaluation** of proposed Darling Mills Creek bridge which is functional, deliverable and in keeping with local area



Provide opportunity through design and knowledge sharing to demonstrate the **connection of Dharug people to the land** on which the project is sited.

2. Kleins Road Corridor Assessment

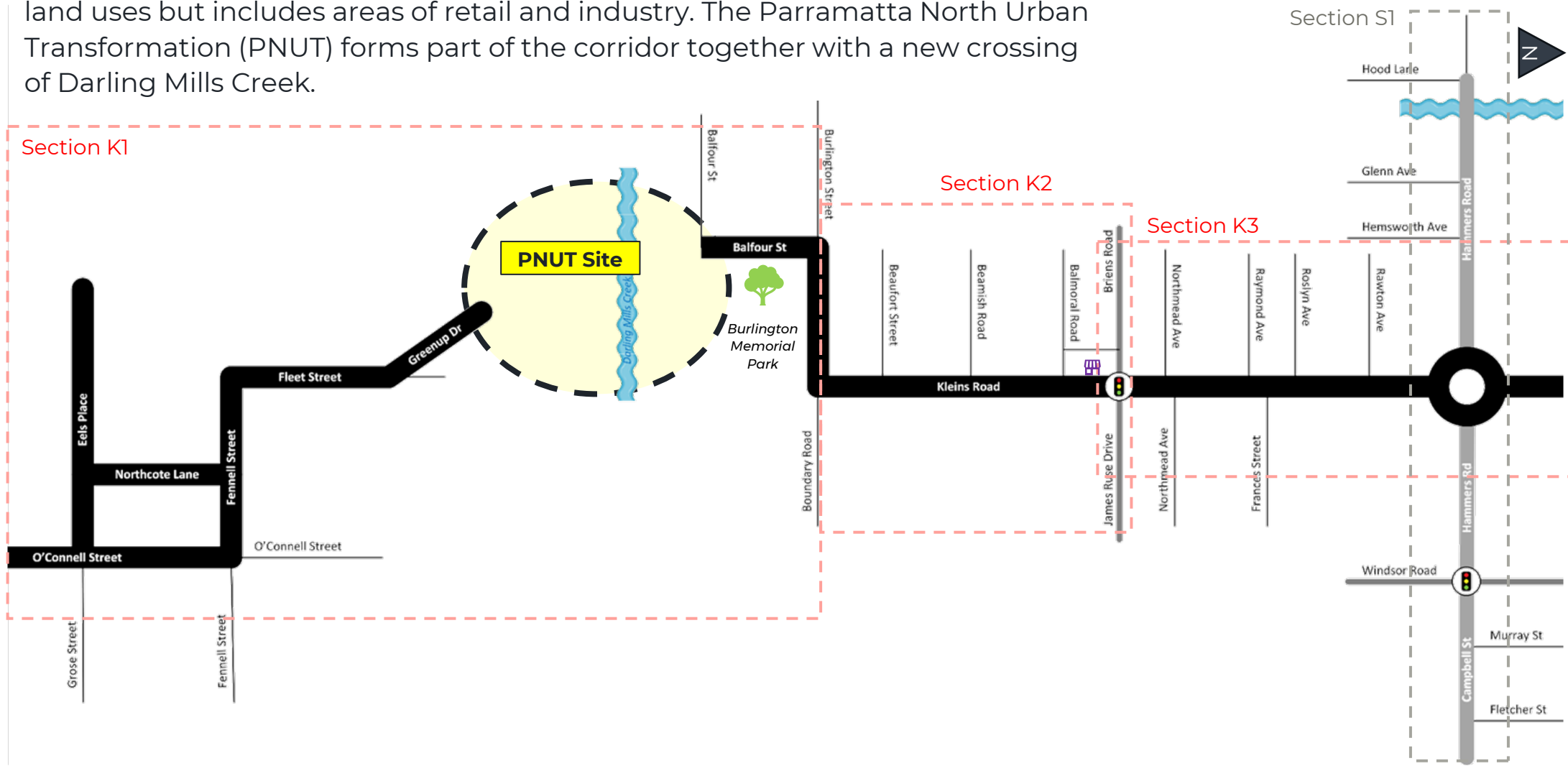
*Concept drawings are provided as **Appendix A***



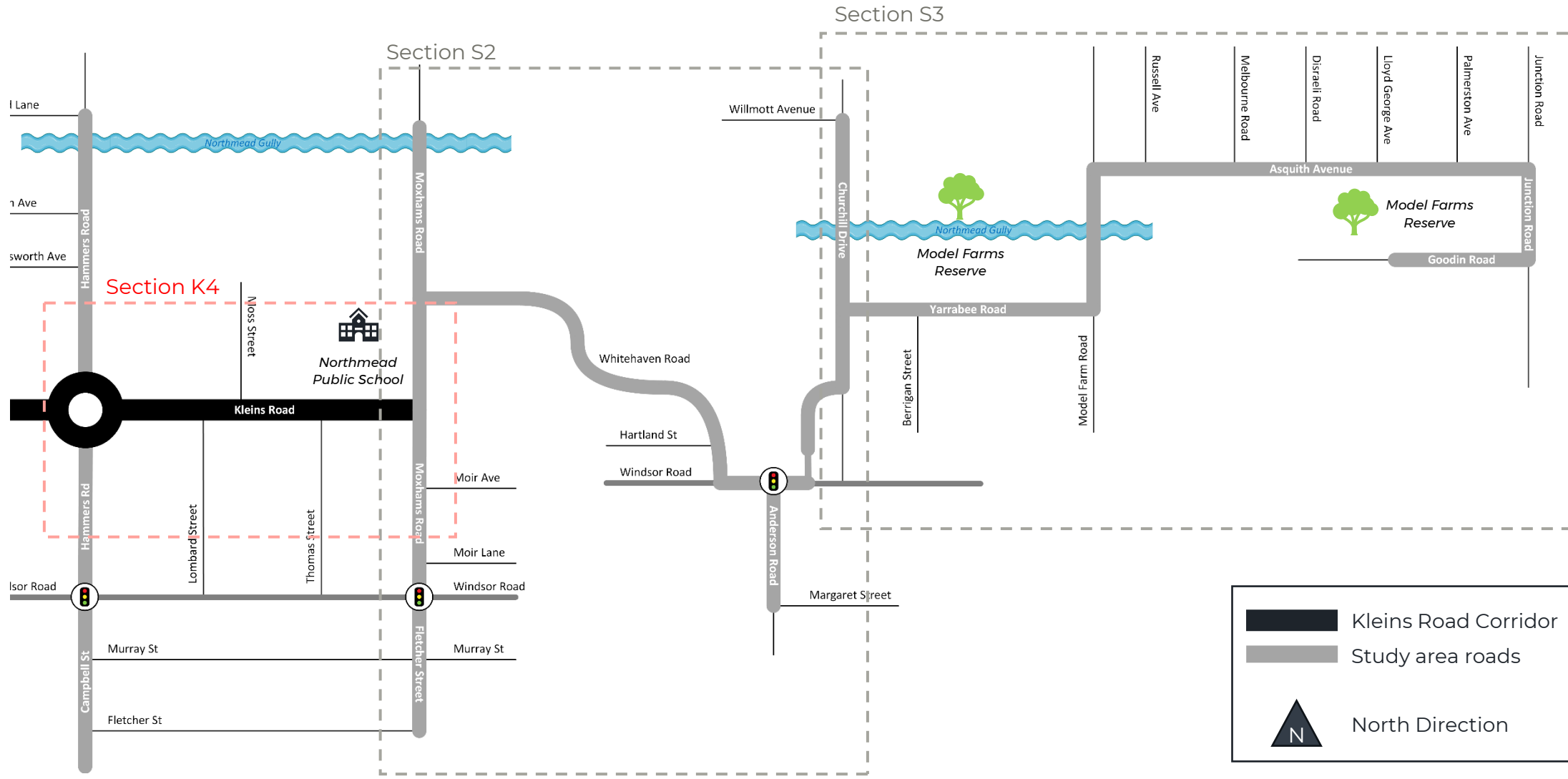
Study area overview

The **Kleins Road Study Corridor** extends from Eels Place in the south to Junction Road in the north. The corridor traverses predominantly residential land uses but includes areas of retail and industry. The Parramatta North Urban Transformation (PNUT) forms part of the corridor together with a new crossing of Darling Mills Creek.

- Kleins Road Corridor**
- Study area roads**
- North Direction**



Study area overview



- Kleins Road Corridor
- Study area roads
- North Direction

Project outcomes

New cycleways

Separated cycleways are proposed on the majority of Fleet Street and Kleins Road. This will provide a significant prioritised cycle connection from Parramatta Park and Stadium to Northmead Public School. Shared paths will link to the main Kleins Road corridor to nearby locations including large parts of Northmead, local schools and centres.

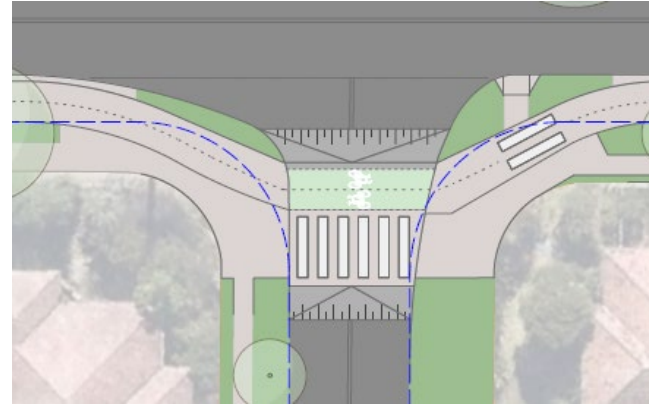
New footpaths

New footpaths are proposed on pedestrian desire lines not currently served. Existing footpaths throughout the study area will be reviewed and repaired.

Streetscape improvements

New trees and shrubs will be planted to provide shade and improve the general user experience. Where possible, existing utility poles will be removed, and wires put underground to improve visual amenity.

New Shared crossings

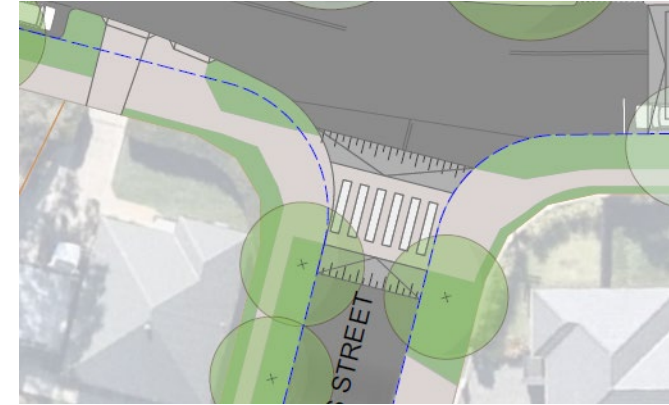


Where the proposed cycleway crosses side streets, new shared crossings will be provided. These raised crossings will provide priority crossing for those walking and on bikes.



Noller Parade, Parramatta

New Priority Pedestrian Crossings



On the opposite kerbside to the cycleway, crossing of side road with high pedestrian demand (warranted when greater than 20 per hour) will have priority pedestrian crossings installed. These are also provided mid-block at selected locations where warrants permit.



Hammers Road, Northmead

2. Kleins Road Corridor Assessment

Section K1 Eels Place to Darling Mills Creek



Section K1: Eels Place to Darling Mills Creek

Opportunity
Constraint

Opportunities and Constraints

Balfour St is ~8m wide with unrestricted parking adjacent to Burlington Memorial Park. The loss of parking on one side may still not be sufficient to provide an on-road separated two-way cycleway and 2-way traffic.

Direct connection to Darling Mills Creek via Balfour St which has high cultural significance

Investigate the feasibility of converting Fleet Street to a one-way northbound to facilitate a separated cycleway on the eastern side.

Heritage sandstone is visible on the road and would require indigenous design considerations prior to facility development

Alternative option: is to provide a 2.5m wide shared path on eastern side of Balfour Street



Opportunity to convert Eastern Cct and Fleet St to a quiet way

Eastern Cct is ~7m wide making the provision for a separated cycleway challenging

Parking is permitted on the western side of Fleet Street, although parking takes place on pavement that is unsealed where large mature trees exist. The sealed carriageway width of Fleet Street appears to be no more than 6m, making the provision for a separated cycleway and two-way traffic challenging

Section K1: Eels Place to Darling Mills Creek

The **Parramatta North Urban Transformation (PNUT)** site is currently being developed by the Department of Planning, Housing and Infrastructure (DPHI). The 26-hectare site will support residential, commercial and retail land uses and will be constructed in stages.

The site will provide a vital walking and cycling connection as part of the Kleins Road Corridor by linking the new Darling Mills Creek Bridge with Parramatta CBD. The corridor itself will also improve connections north of the creek for future occupants of the PNUT site.

Following discussion with DPHI, an interim route and future permanent route through the northern part of the site is proposed:

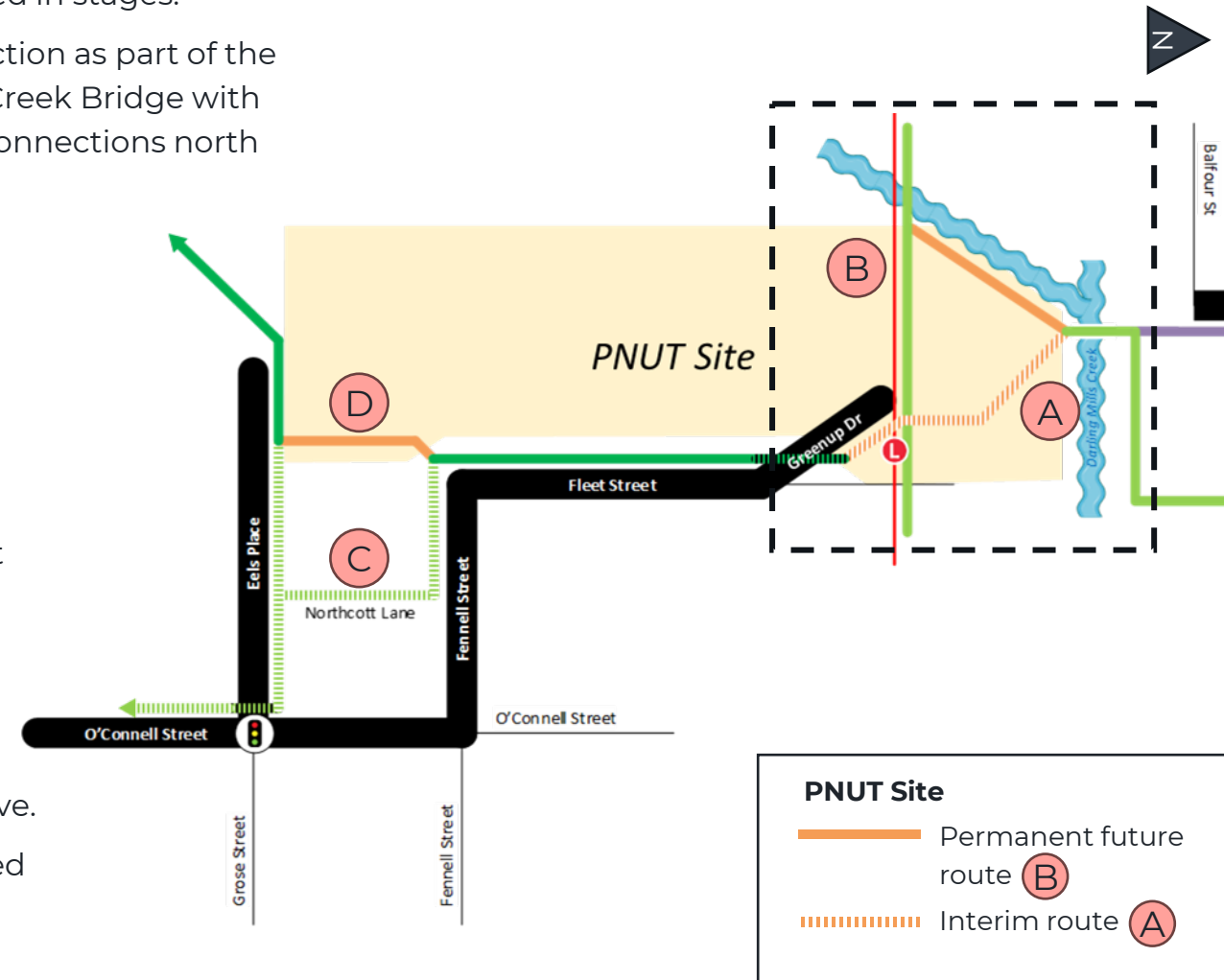
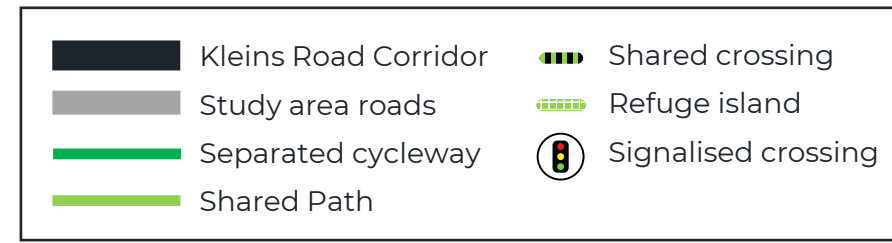
A Interim route

Using existing internal roads of Eastern Circuit and Greenup Drive. A new connection, east of the current SES site, will be constructed to connect Eastern Circuit with the new Darling Mills Creek bridge.

B Permanent route

Using a new separated route adjacent to the western riverfront and Parramatta Light Rail shared facility. Construction of new separated facility on Greenup Drive.

Both options are subject to confirmation and continued discussion with DPHI.



Section K1: Eels Place to Darling Mills Creek

South of the PNUT site a new separated path will be provided on the western side of Fleet Street.

To accommodate the cycleway, retain existing parking provision and avoid the heritage wall on the border of the PNUT site, Fleet Street will be converted to one-way operation for motor vehicles. A circulation plan is provided overleaf for vehicles accessing the PNUT site.

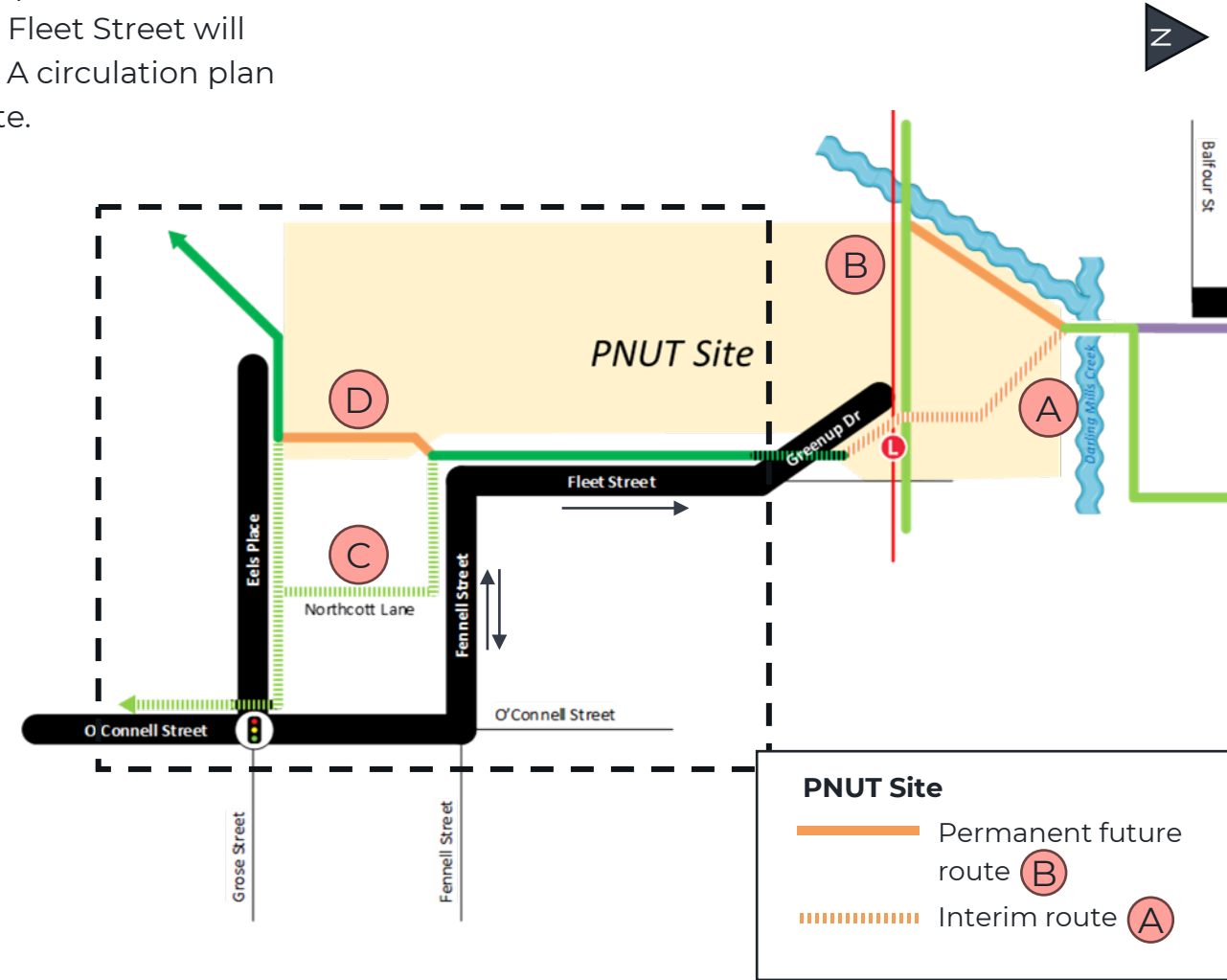
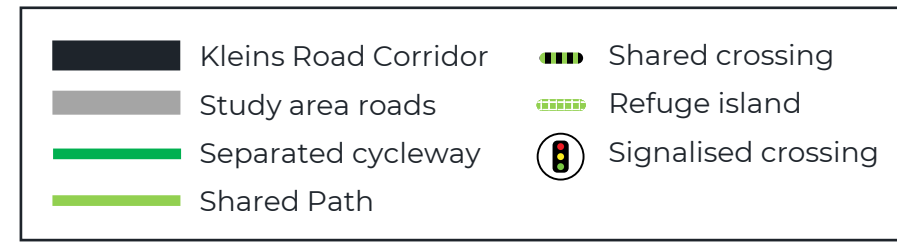
Whilst a permanent route within the southern section of the PNUT is currently being confirmed, an interim route via Northcott Lane is proposed.

C Interim route

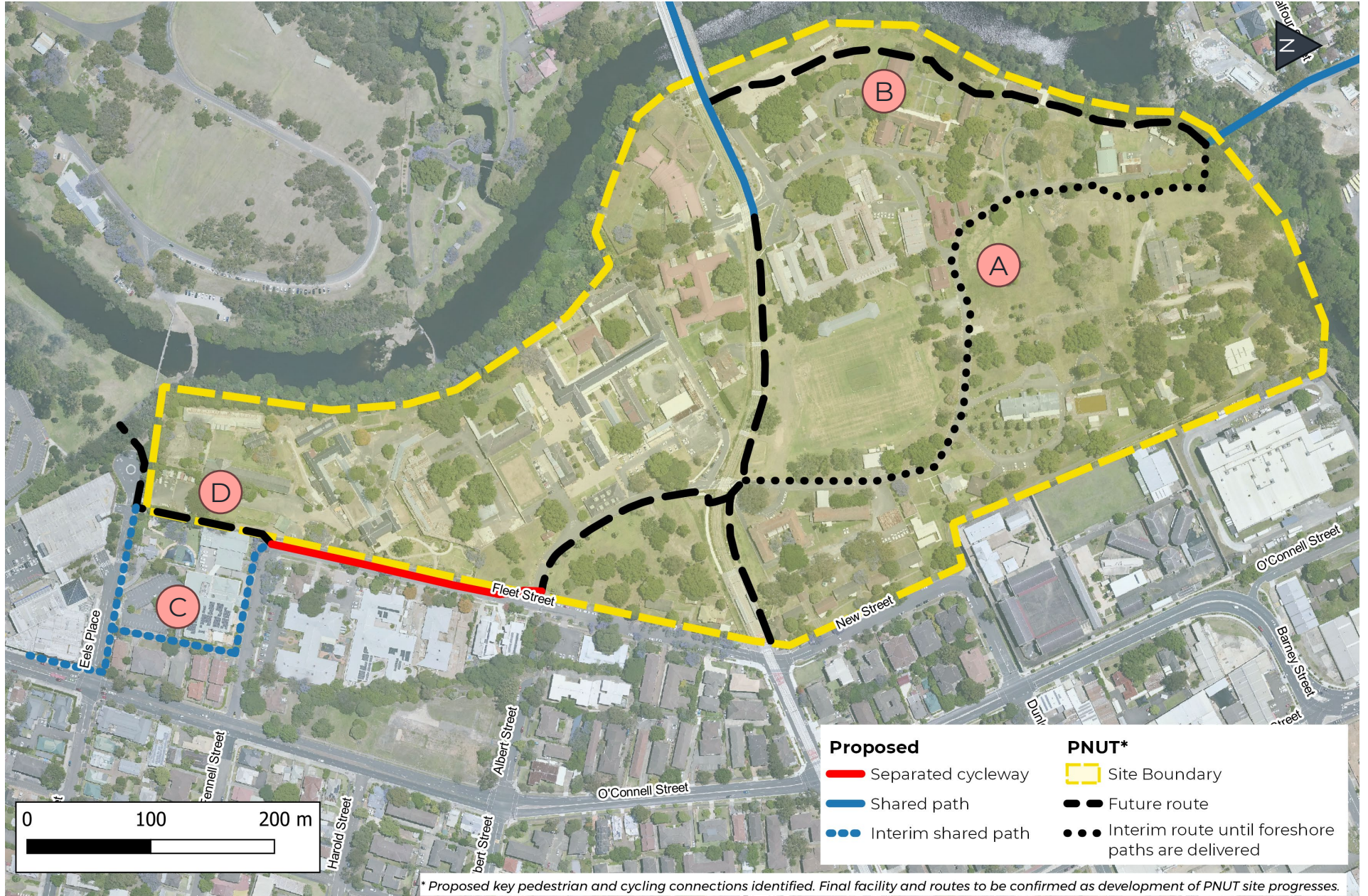
Creation of a shared path on southern side of Fennell Street. Conversion of Northcott Lane to a quietway with a contraflow in a southerly direction for cyclists. New shared path on northern side of Eels Place connecting with signalised intersection of O’Connell Street south towards Parramatta CBD.

D Permanent route

New separated route through PNUT site as part of redevelopment. New shared path connecting Eels Place with Parramatta Park and Stadium, The permanent route is subject to confirmation and continued discussion with DPHI.

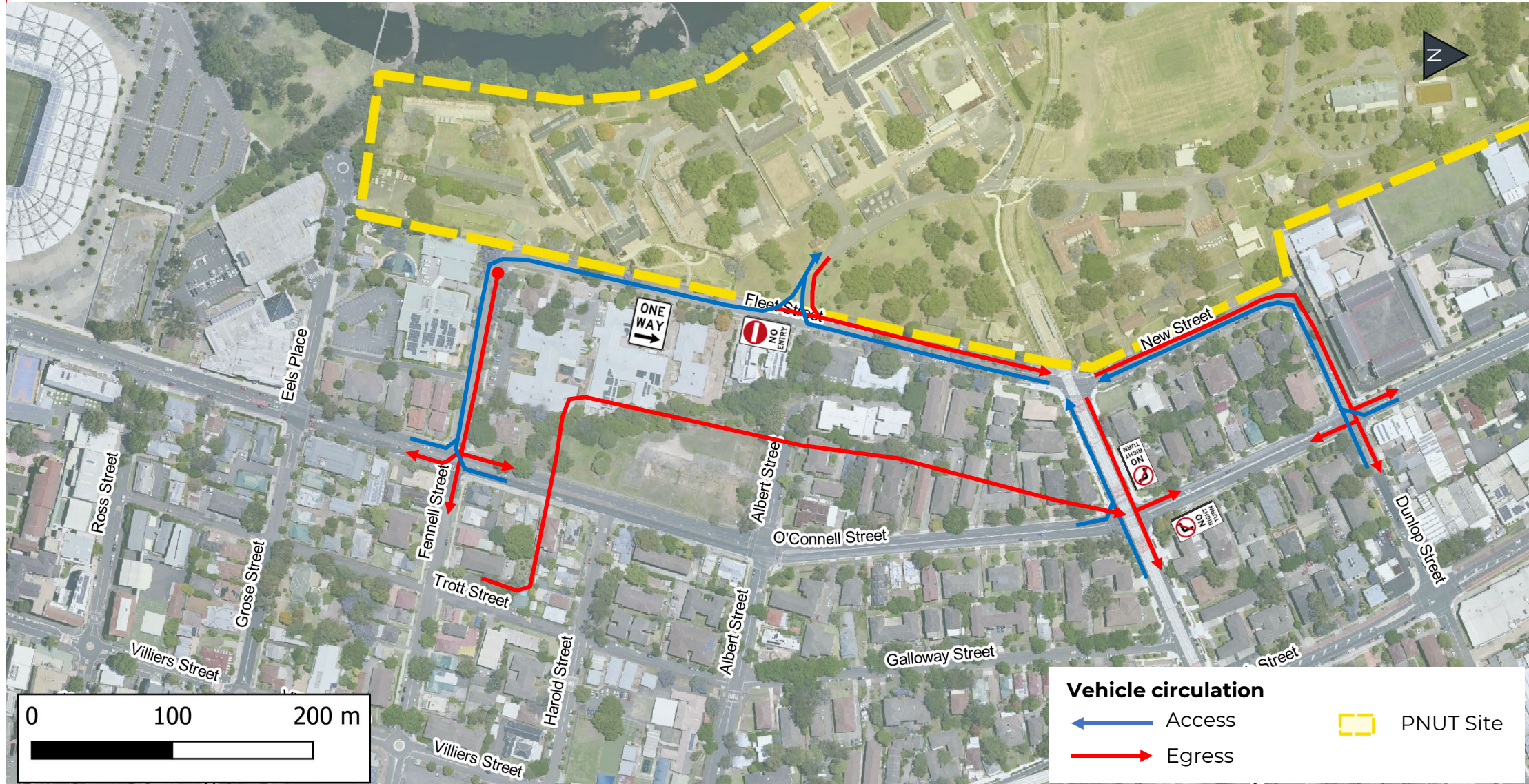


Section K1: Eels Place to Darling Mills Creek



Section K1: Eels Place to Darling Mills Creek

Vehicle circulation



2. Kleins Road Corridor Assessment

Section K2

Darling Mills Creek to Briens Road



Section K2: Darling Mills Creek to Briens Road

Opportunity
Constraint

Opportunities and Constraints

Balfour St is ~8m wide with unrestricted parking adjacent to Burlington Memorial Park. The loss of parking on one side may still not be sufficient to provide an on-road separated two-way cycleway and 2-way traffic.

Cyclists approaching Kleins Rd from the west, are more easily accommodated if Kleins Rd cycling facility is on the western side

West side has more street lighting, thereby improving access and movement for pedestrians and cyclists

Kleins Rd between Boundary Rd and Balmoral Rd is 12.8m wide, enabling a two-way cycleway, parking on both sides, and two-way traffic.

Potential for streetscape work on Balmoral Rd to Lizzie Lane, creating a safe movement for cyclists

Lizzie Lane can be used as an alternative route (potentially a quiet way) for cyclists from Kleins Rd to Briens Rd

Widen existing signalised pedestrian crossing, to 4.5m wide, which will function as a dual-end bicycle crossing, providing a co-existing environment for pedestrians and cyclists

Angled restricted parking on the West side for local commercial sites. A high level of design intervention is required to provide a facility in the area

Opportunity to create a shared path on the eastern side of Balfour Street using existing grass verge

Whilst no services operate on this section, Kleins Road is identified on the Strategic Bus Network for vehicles accessing the Northmead bus depot.

Commercial strip presents area of high pedestrian activity, and conflict between modes



Section K2: Darling Mills Creek to Briens Road

Traffic analysis

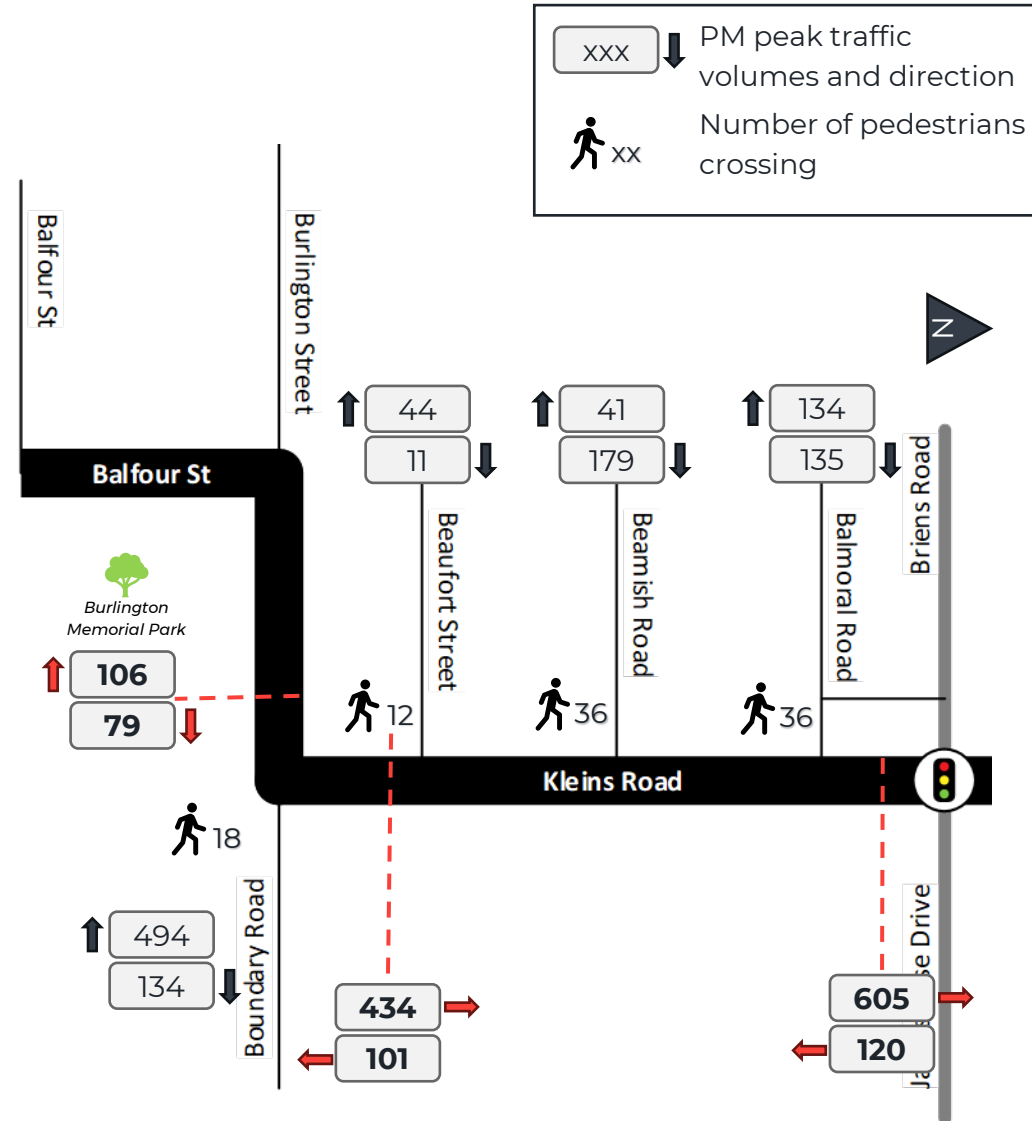
Section K2 extends from the landing of the Darling Mills Creek bridge south of Balfour Street to the Briens Road/James Ruse Drive interchange of Kleins Road. It consists of mixed land uses, residential on the west and industrial on the east.

Observation 1: Traffic counts indicate that Beamish Road and Balmoral Road have high traffic volumes which would cross any western kerbside cycleway and pedestrian crossing. This is likely due to these side streets being used to avoid Briens Road when exiting Westmead Hospital via Redbank Road.

Recommendation: Priority treatments, such as a bent-out intersection for the cycleway and pedestrian movements would support safe crossing of side streets.

Observation 2: The eastern kerbside has a higher number of driveways that directly service industrial units.

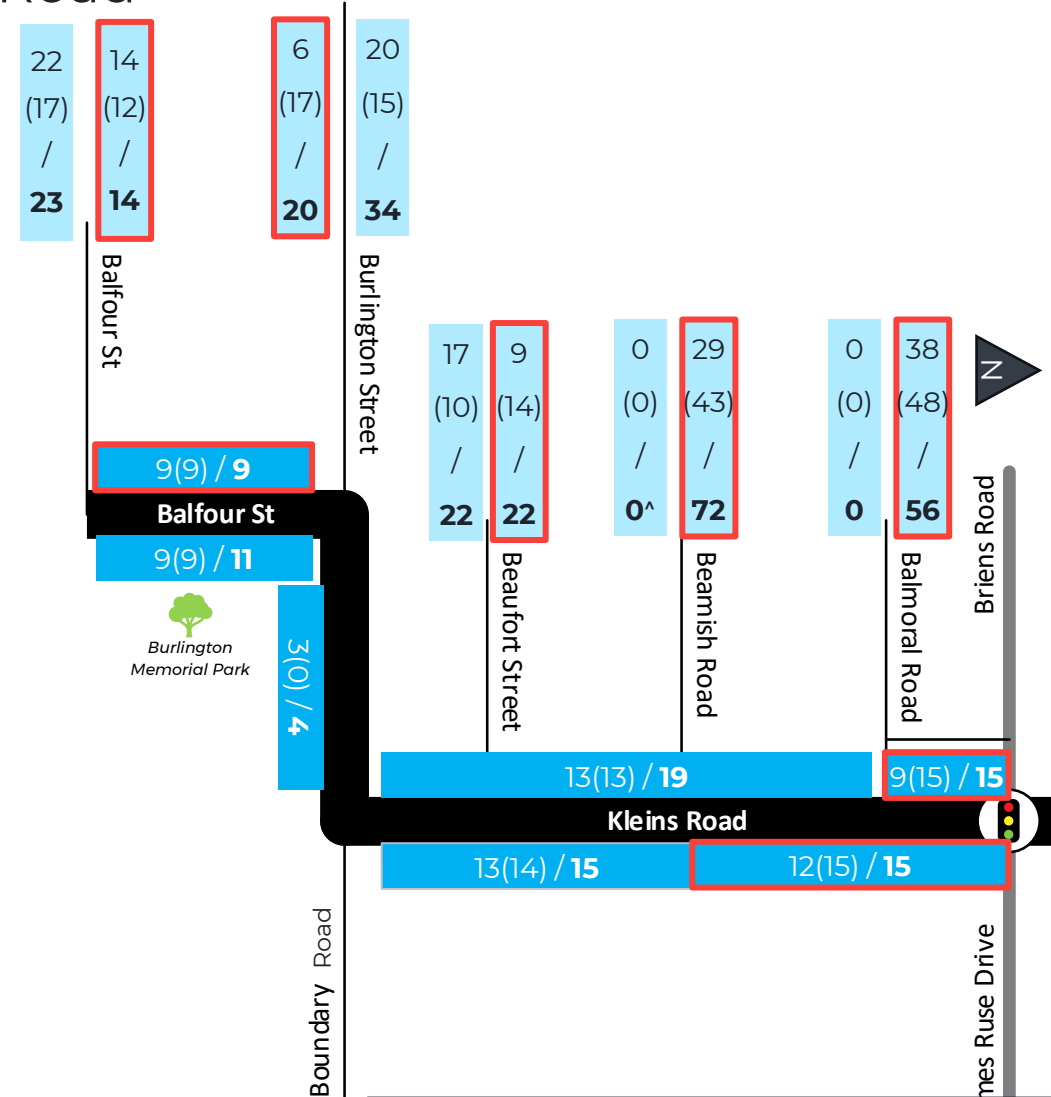
Recommendation: Conflicts between cyclists, pedestrians, council vehicles and heavy vehicles would need to be mitigated in design should an eastern kerbside option be considered.



Section K2: Darling Mills Creek to Briens Road

Parking analysis

- A small parade of shops is located between Briens Road and Balmoral Road which has *1P and ½P time restricted parking with a high turnover.*
- Additional restricted parking should be provided to offset any lost in front of shops. This can be accommodated by extending the existing restricted parking on the eastern side of Kleins Road.
- Parking survey data reveals medium to high parking occupancy across adjacent side streets along Kleins Road.
- As there may be a loss of parking spaces on Kleins Road, unrestricted parking capacity and availability exists on Burlington Street and Beaufort Street to mitigate this loss.
- Some parking offsets can be distributed to Beamish Road in limited capacity however this is mostly concentrated over 400m away from lost parking on Kleins Road.



Parking maximum hourly occupancy:

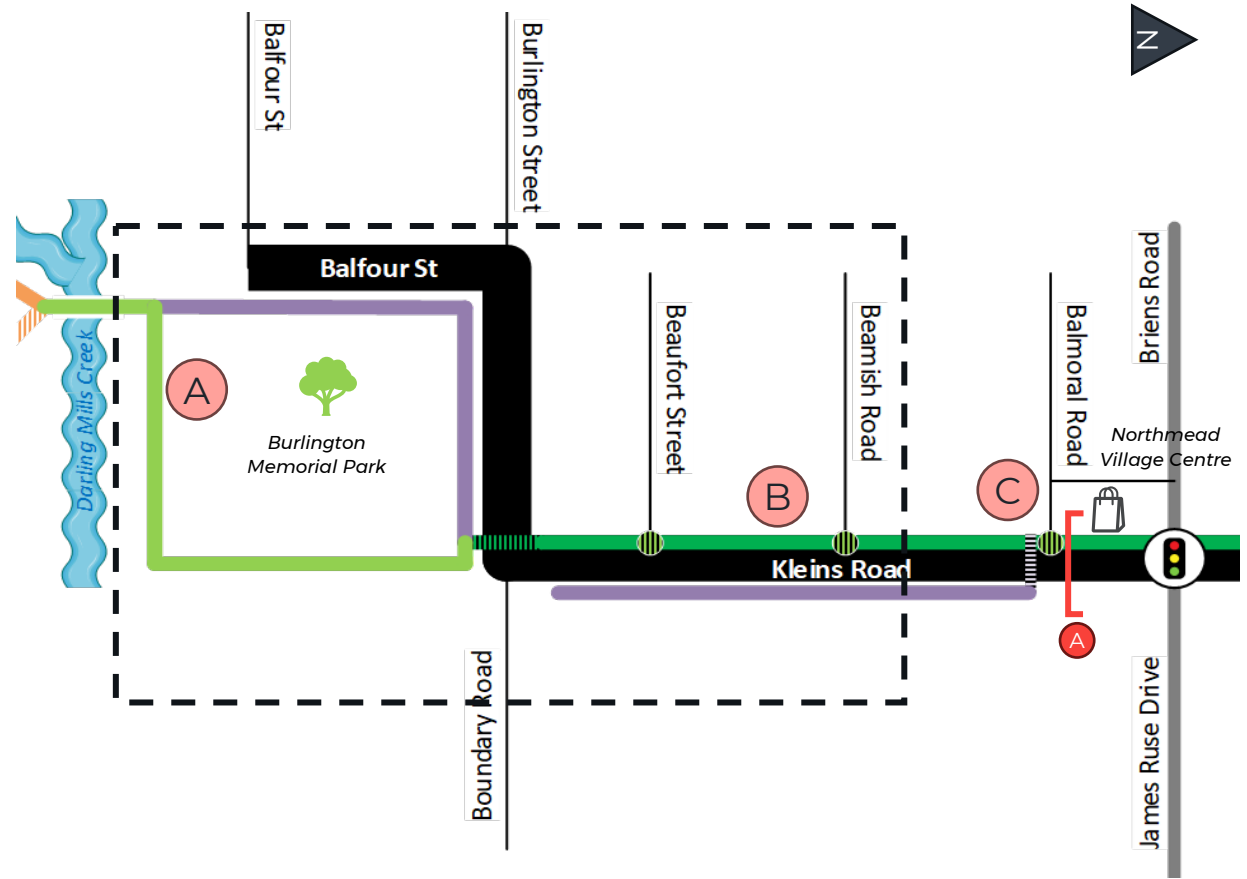
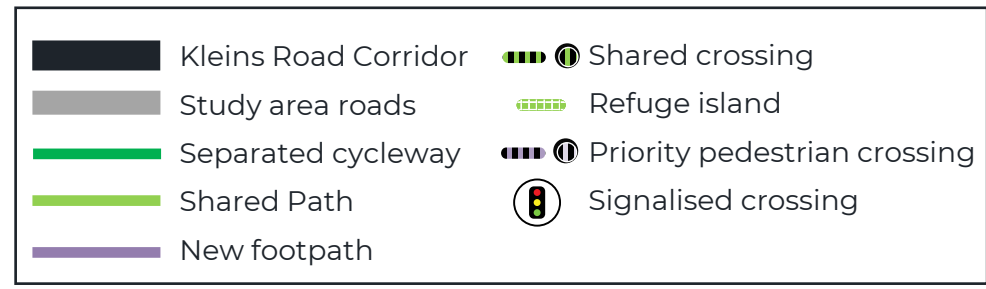
- x(x)/x On corridor - Weekday(weekend)/Capacity
- x(x)/x Off-corridor - Weekday(weekend)/Capacity
- Time-restricted

Section K2: Darling Mills Creek to Briens Road

Recommended option

Summary: A shared path on approach to a new crossing of Darling Mills Creek. A separated cycleway on western kerbside of Kleins Road with change to kerbside parking at shops to accommodate.

- A Approach to Darling Mills Crossing:** A new shared path will be created on the eastern side of Burlington Memorial Park. This will provide a lesser gradient than via Balfour Street and connects to Kleins Road at its intersection with Boundary Road. The existing fence adjacent to Balfour Street will be moved westwards to create space within the park lost through the proposed shared path.
 - A new footpath will be created adjacent to Balfour Road to connect Kleins Road to the new crossing of Darling Mills Creek.
- B Separated cycleway:** Provision of a 2.4m separated cycleway within the existing roadspace on the western side of Kleins Road. Parking would be retained, less some kerb buildouts to support new pedestrian crossings of Kleins Road.



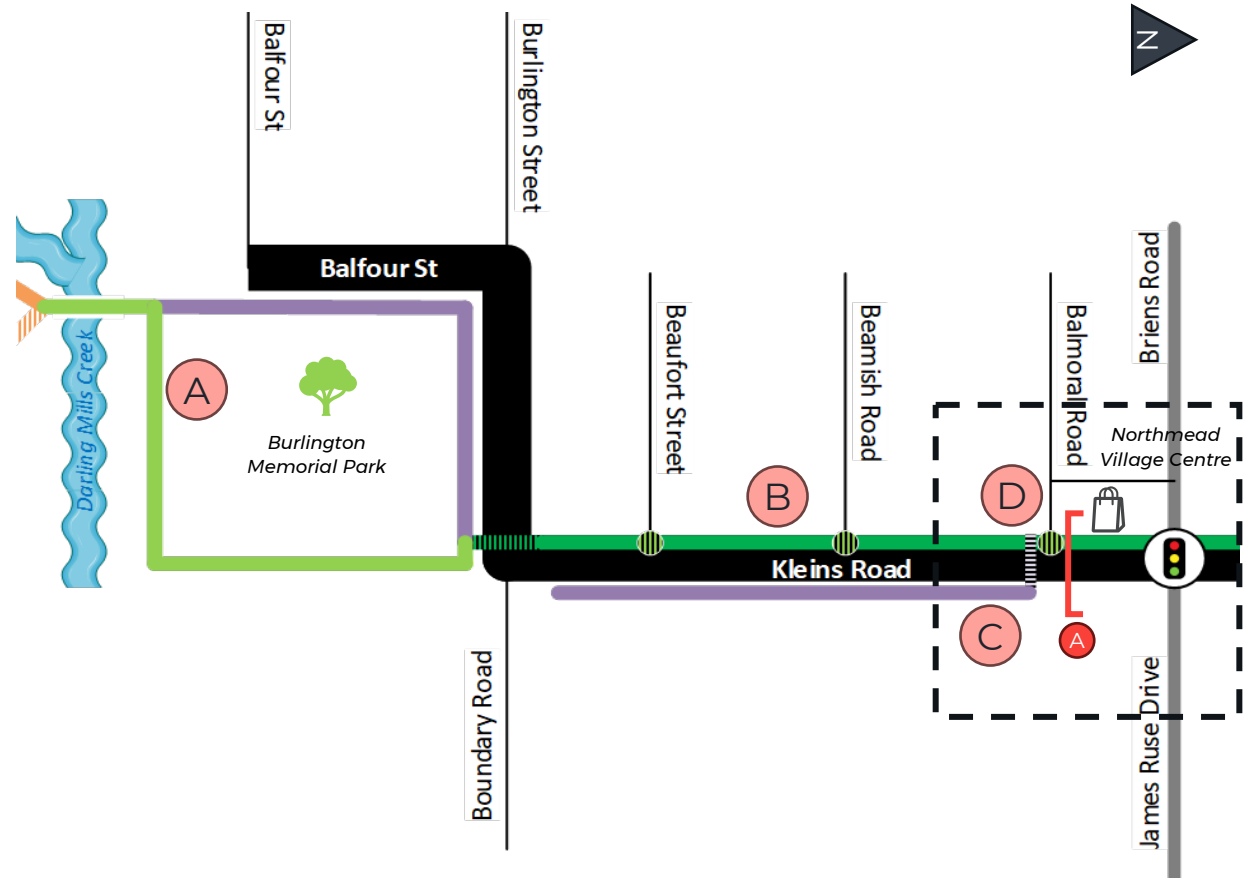
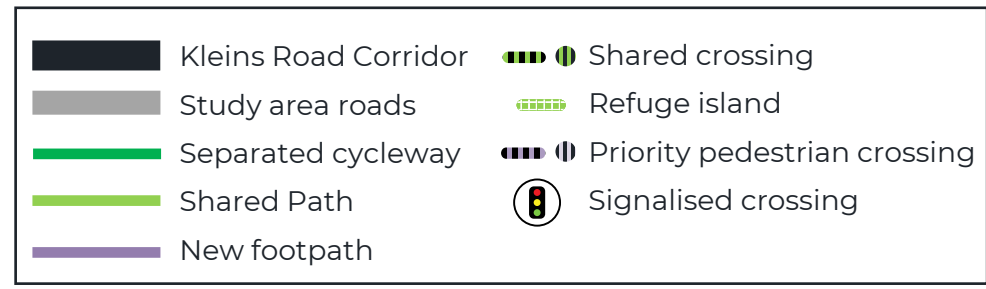
Section K2 - Recommended option to initial design

Section K2: Darling Mills Creek to Briens Road

Recommended option

Summary: A shared path on approach to a new crossing of Darling Mills Creek. A separated cycleway on western kerbside of Kleins Road with change to kerbside parking at shops to accommodate.

- C** **New pedestrian priority crossing of Kleins Road and extension of eastern footpath:** A new priority pedestrian crossing will be created on Kleins Road just south of Balmoral Road. This crossing will improve access to the Northmead Village Centre where shops are present on both sides.
 - The pedestrian desire line on the eastern side of Kleins Road will be formalised through an extension of the existing footpath. This will provide a continuous connection from James Ruse Drive, the new proposed priority crossing at the village centre and Boundary Road.
- D** **Modification to parking at Kleins Road shops:** Existing angled parking would be converted to kerbside. Streetscape improvements are proposed as part of these works including new tree planting and paving. Existing disabled parking space will be retained but relocated angled parking spaces on Balmoral Street.



Section K2 - Recommended option to initial design

Section A - Kleins Road Shops

To the south of the Briens Road intersection, parking spaces are provided for local shops on both sides of Kleins Road.

Currently, 15 angled spaces (including one disabled space) are provided on the western side with an additional 9 provided parallel on the eastern side.

The proposed option (see next page) would see the existing angled parking converted to parallel parking with a slight reduction in trafficable lane width. With an average space of 6m per vehicle, this would result in the retention of 9 spaces, and net loss of 6 spaces. This could be **fully offset** by providing additional angled short stay parking nearby on Balmoral Road and on Kleins Road with pedestrian access support by new shared crossing proposed on side streets.



2. Kleins Road Corridor Assessment

Section K3

Briens Road to Hammers Road



Section K3: Briens Road to Hammers Road

Opportunity
Constraint

Opportunities and Constraints



Section K3: Briens Road to Hammers Road

Traffic and parking observations

Section K3 extends from Briens Road to Hammers Road and consists of residential land uses on both sides.

Observation: The Hammers Road roundabout is large and acts as a major intersection on the corridor with significant vehicle movements in all directions. This creates a challenging crossing environment for cyclists and pedestrians with prioritisation limited to a western arm raised pedestrian crossing facility, a small refuge island provided on the northern arm and drop kerbs on others. Traffic count surveys indicate low traffic movements on other side streets.

Recommendation: Treatments should focus on providing continuous priority crossing for pedestrians and cycling users to improve access and safety along this section.

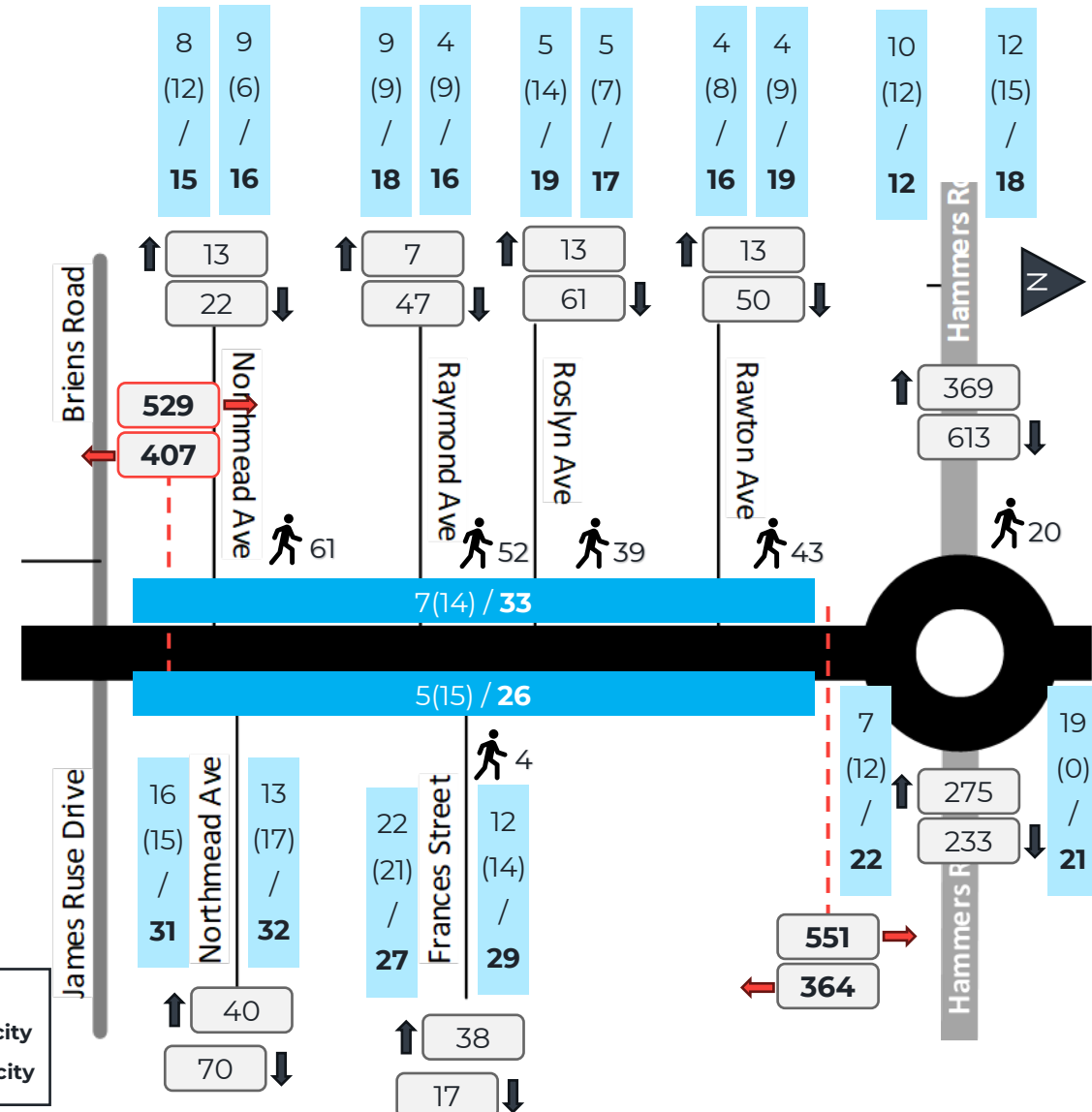
Parking analysis

- A total of 33 spaces will be lost on the western kerbside of this section.
- Parking counts indicates that the current occupancy numbers on the opposite kerb and nearby side street should offset this loss.

Parking maximum hourly occupancy:

x(x)/x	On corridor - Weekday(weekend)/Capacity
x(x)/x	Off-corridor - Weekday(weekend)/Capacity

xxx ↓	PM peak traffic volumes and direction
xx	Number of pedestrians crossing

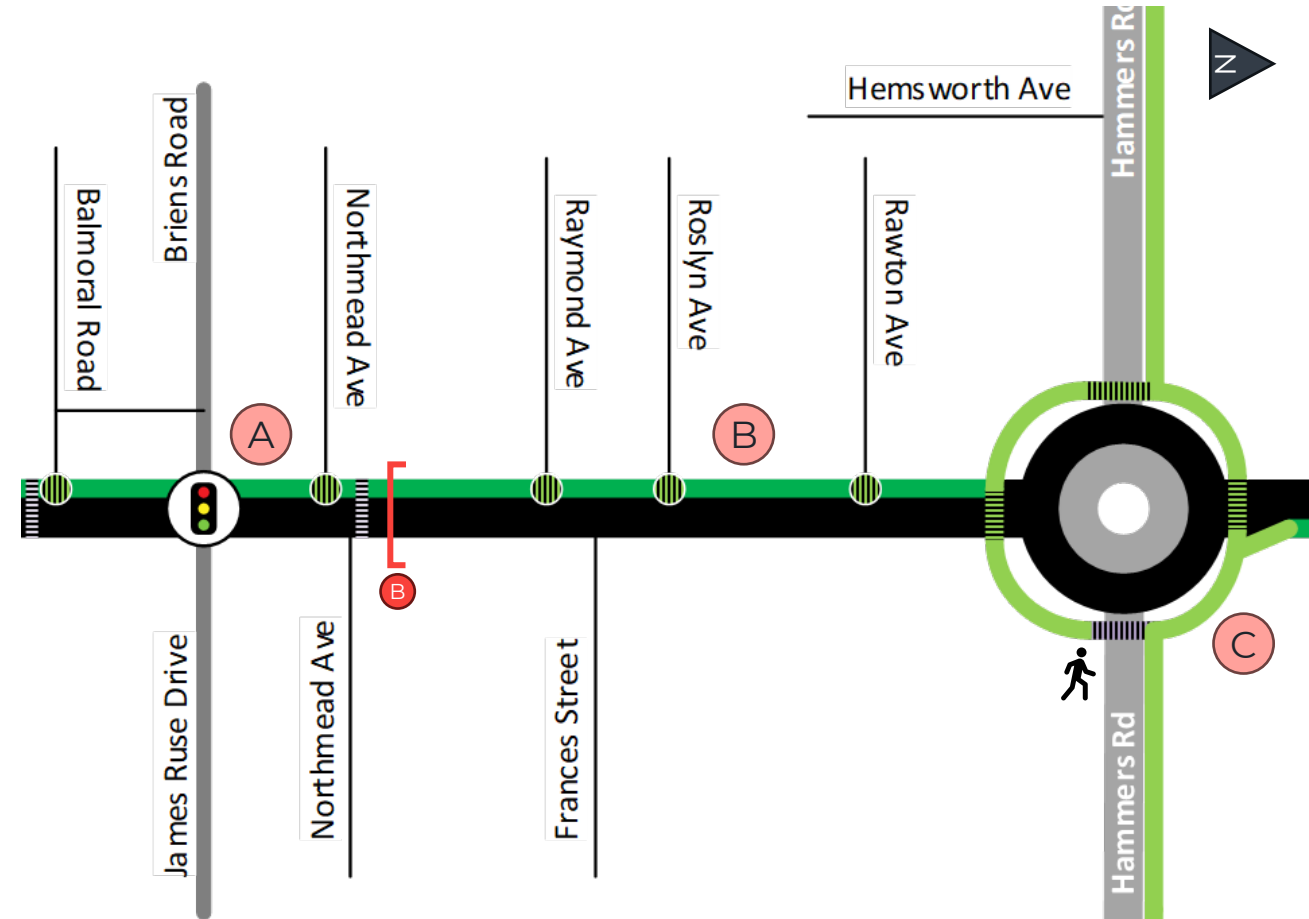
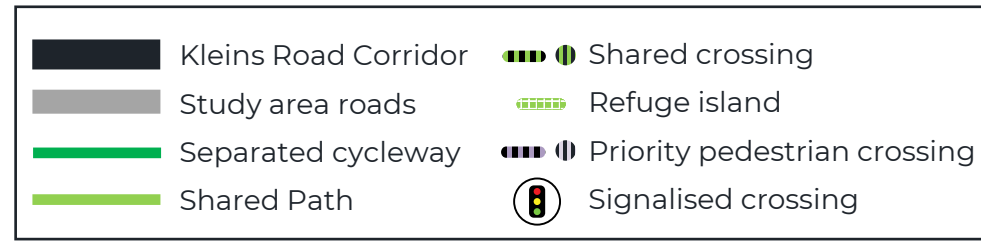


Section K3: Briens Road to Hammers Road

Recommended option

Summary: Provision of a separated cycleway on western kerb of Kleins Road. Modifications to Hammers Road roundabout to support cycling and pedestrian movements through intersection.

- A Briens Road intersection:** Existing pedestrian crossing on eastern arm of signalised intersection will allow for both cyclists and pedestrians to cross.
- B Separated cycleway:** Provision of 2.4m separated cycleway within existing road space on western side of Kleins Road. This will result in loss of parking on this kerbside.
- C Modifications to Hammers Road Roundabout:** To accommodate the proposed cycleway, the existing footprint would need to be marginally increased. Council's warrants are met so crossings would be permitted on all arms with the northern, western and southern constructed as shared crossings. Due to the proximity of driveways, the eastern crossing would be pedestrian-only with cyclists required to dismount.



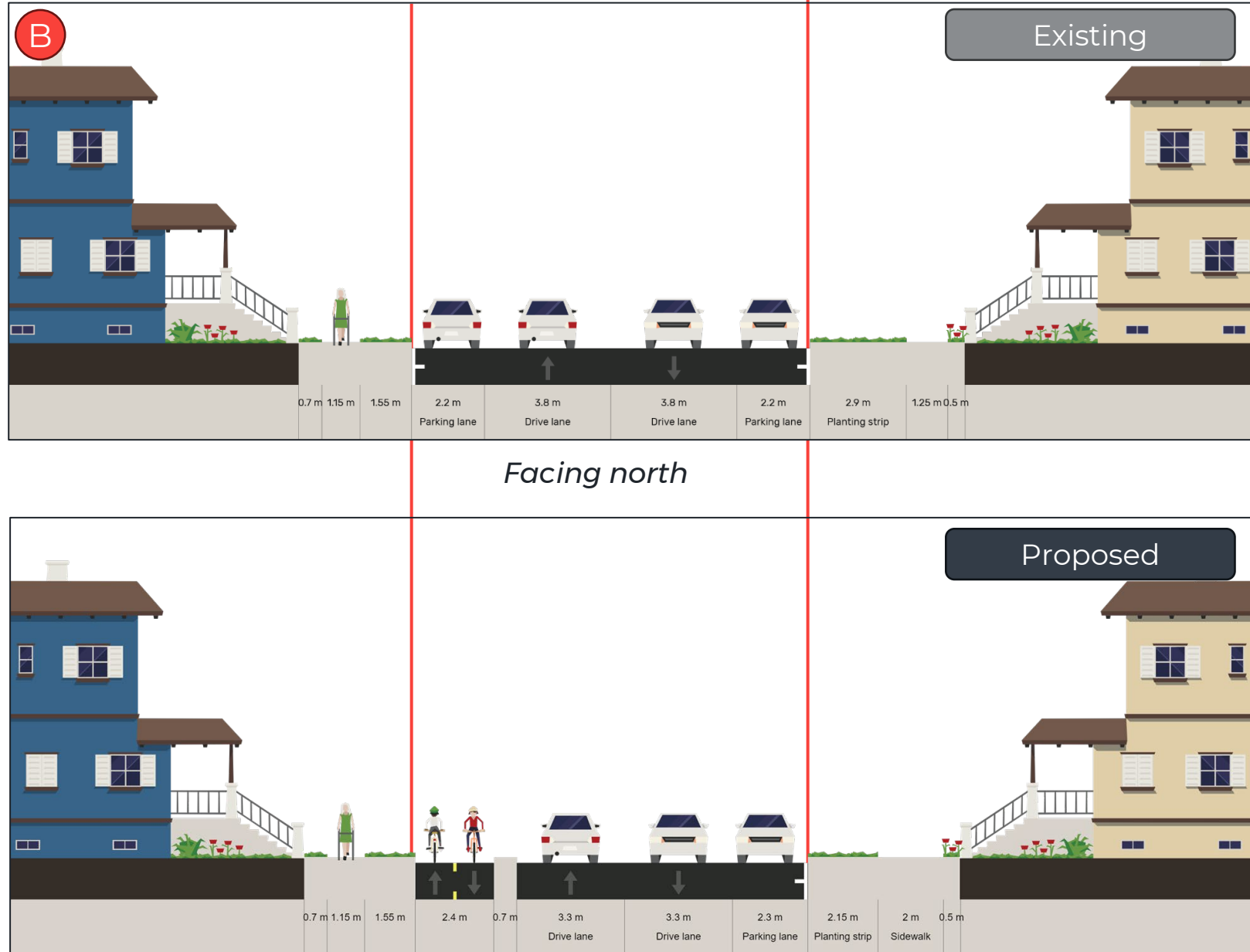
Section K3 - Recommended option to initial design

Section B - Kleins Road North

North of Briens Road, unrestricted kerbside parking is provided on both sides of the road.

A separated cycleway could be provided within the existing kerbline through reallocation of roadscape, against the western kerbside. Parking would be retained on the opposite kerb.

The existing footpath could be widened to 2m within the existing verge space.



2. Kleins Road Corridor Assessment

Section K4

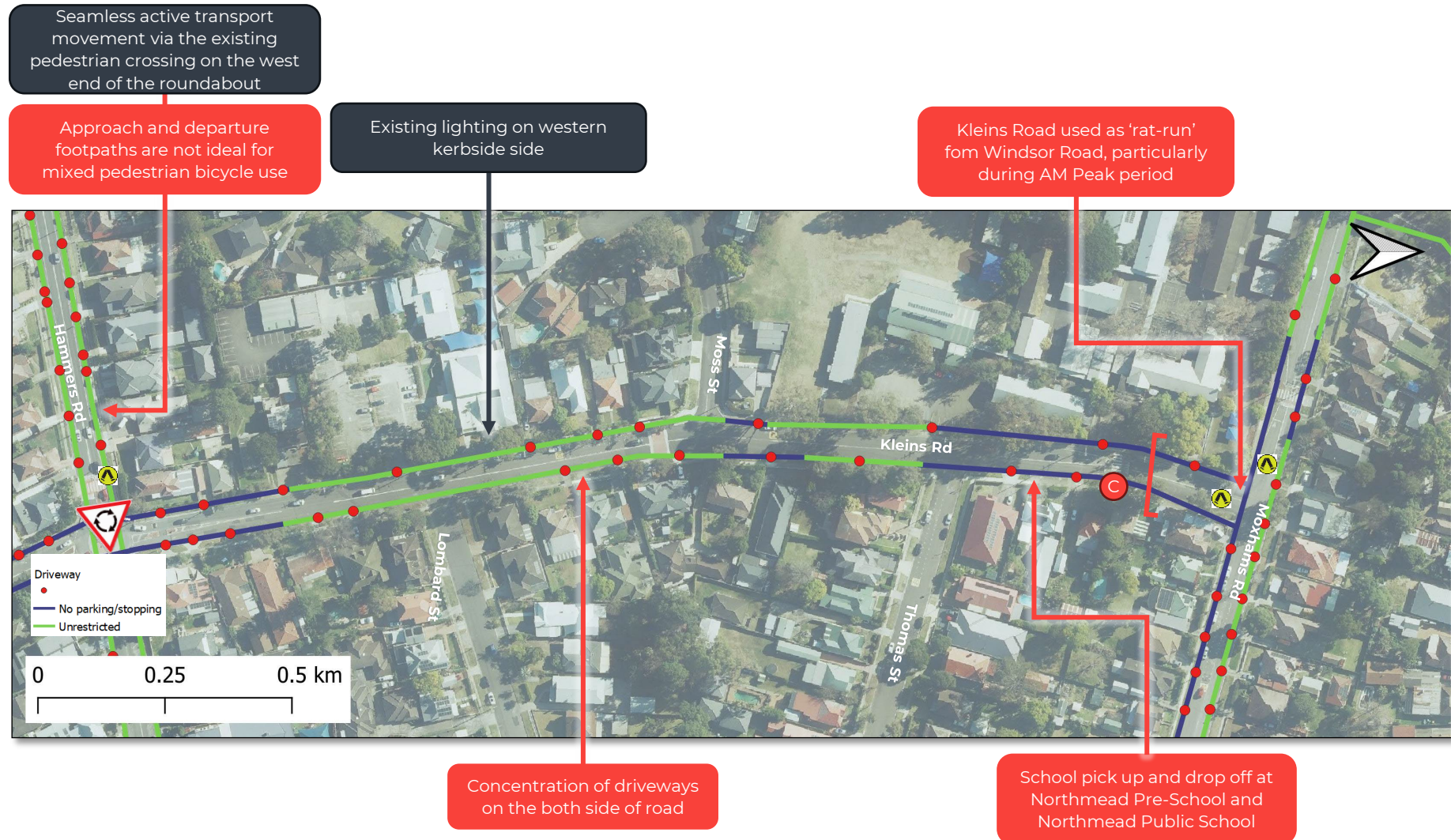
Hammers Road to Moxhams Road



Section K4: Hammers Road to Moxhams Road

Opportunity
Constraint

Opportunities and Constraints



Section K4: Hammers Road to Moxhams Road

Traffic and parking observations

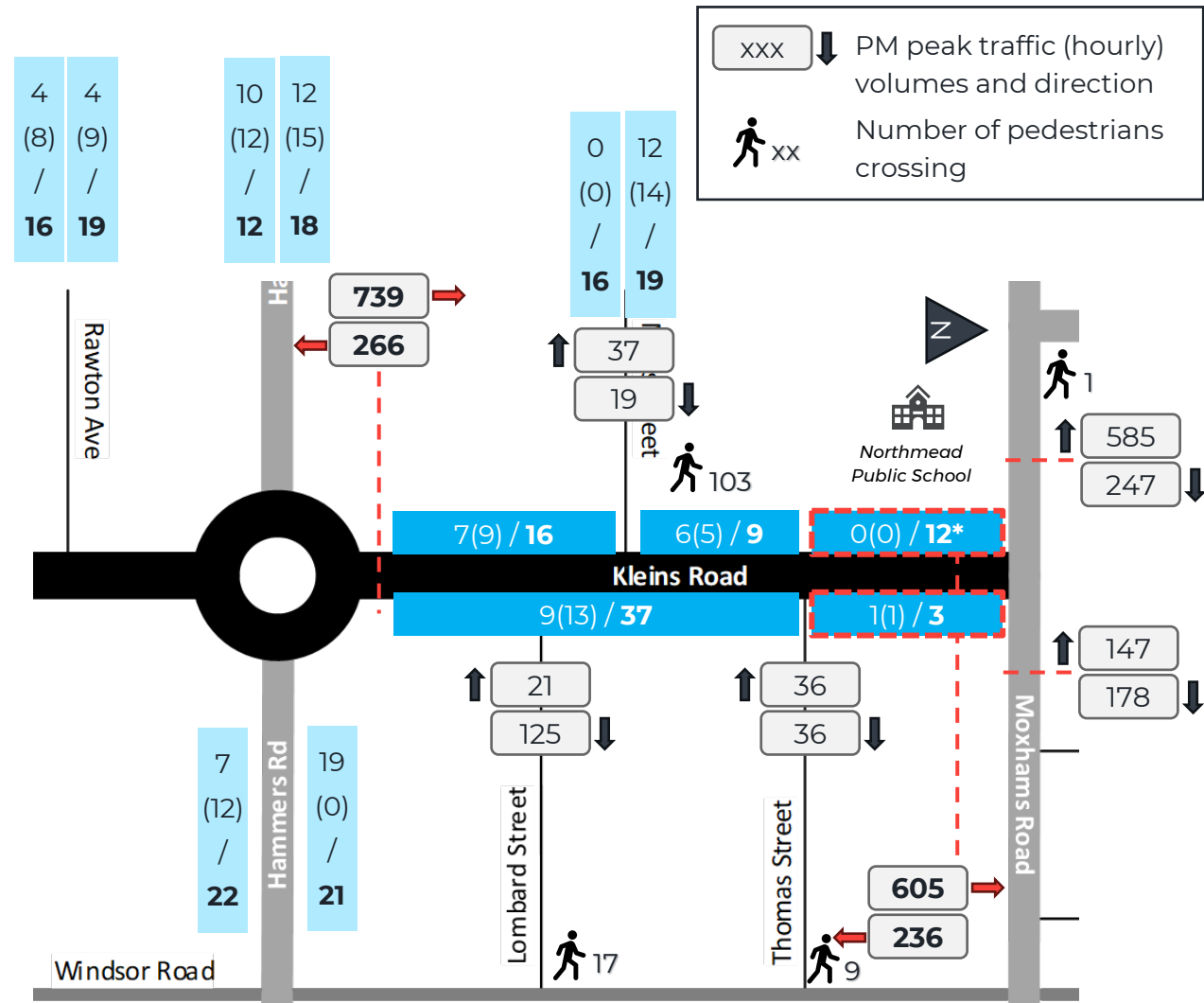
Section K4 extends from Hammers Road to Moxhams Road and consists of residential land uses on both sides. Northmead Public School is located at its northern end.

Observation: This section experiences some of the highest vehicle volumes (>750 vehicles northbound) on Kleins Road. Whilst most side roads in this section have relatively low movements (<100/hour), Lombard Street acts as a rat-run alternative between Kleins Road and Windsor Road.

Recommendation: The proposed cycleway design should consider possible conflicts between cycleway users and pedestrians, particularly during school drop-off and pick-up times.

Parking analysis

- Depending on the final alignment, up to 40 kerbside spaces may be lost, south of the school.
- Parking analysis indicates available parking spaces on opposite kerbs or on side streets.



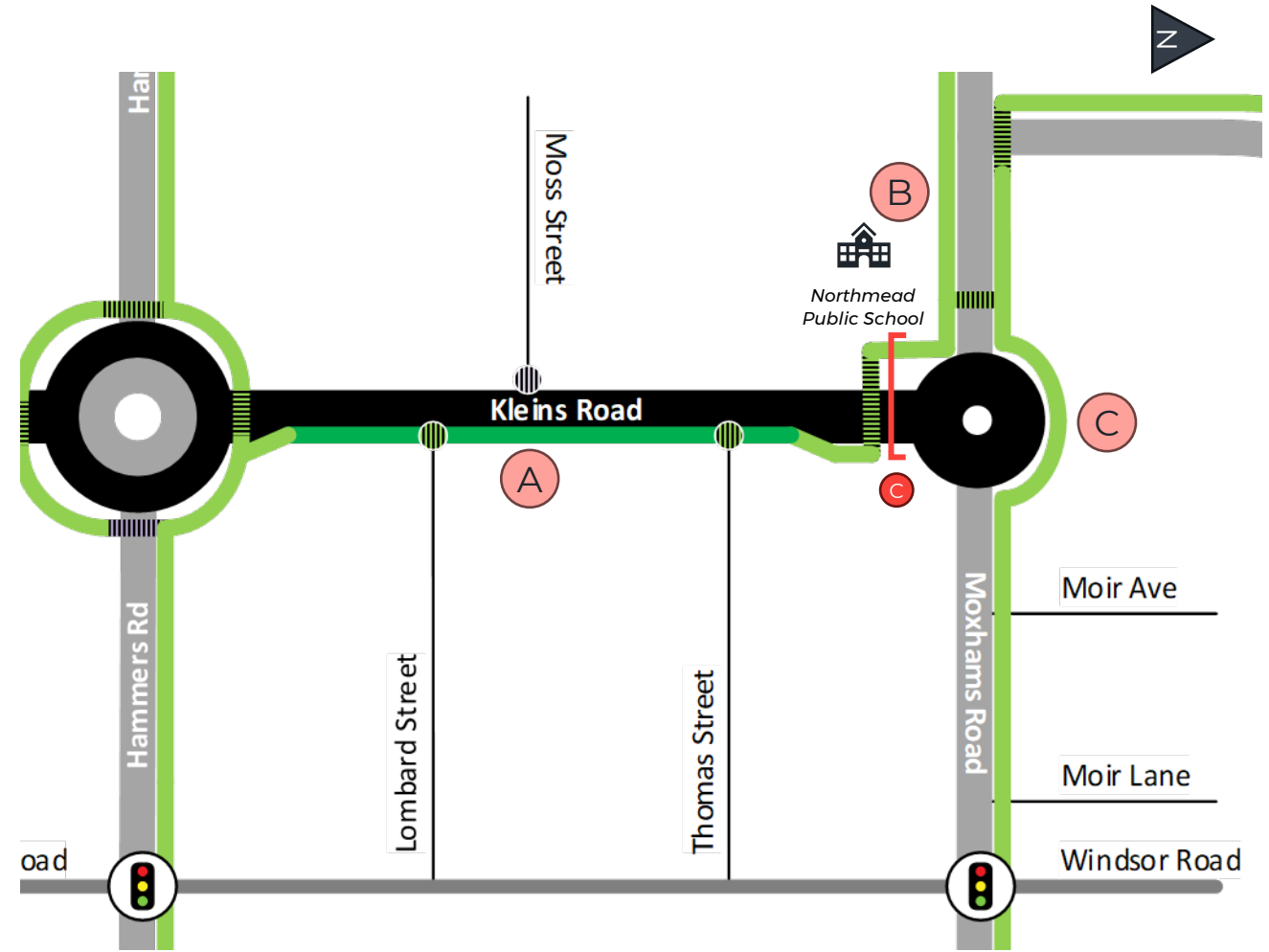
*Capacity includes sections with No Parking 8am-9:30am, 2pm:30pm-4pm School Days restrictions

Section K4: Hammers Road to Moxhams Road

Recommended option

Summary: Provision of a separated cycleway on the eastern kerb with conversion of a shared pedestrian/cycling crossing at the existing crossing site in front of Northmead Public School.

- A Separated cycleway:** Provision of a 2.6m separated cycleway within existing roadspace on the eastern side of Kleins Road. This will result in loss of parking on this kerbside.
- B Shared path around Northmead Public School:** Widen the existing path outside the school, requiring the school fence to be relocated approximately 1.5m into the school's ground. The existing crossings of Kleins Road and Moxhams Road will be converted to shared pedestrian and cycling crossings. The paths around the school between the crossings will be widened to up to 5m, minimising conflicts and providing additional path widths for students and waiting parents.
- C Creation on new roundabout at intersection of Moxhams Road:** To reduce traffic speeds and improve general circulation within the network, a roundabout is proposed at this intersection.



Section K4 - Recommended option to initial design

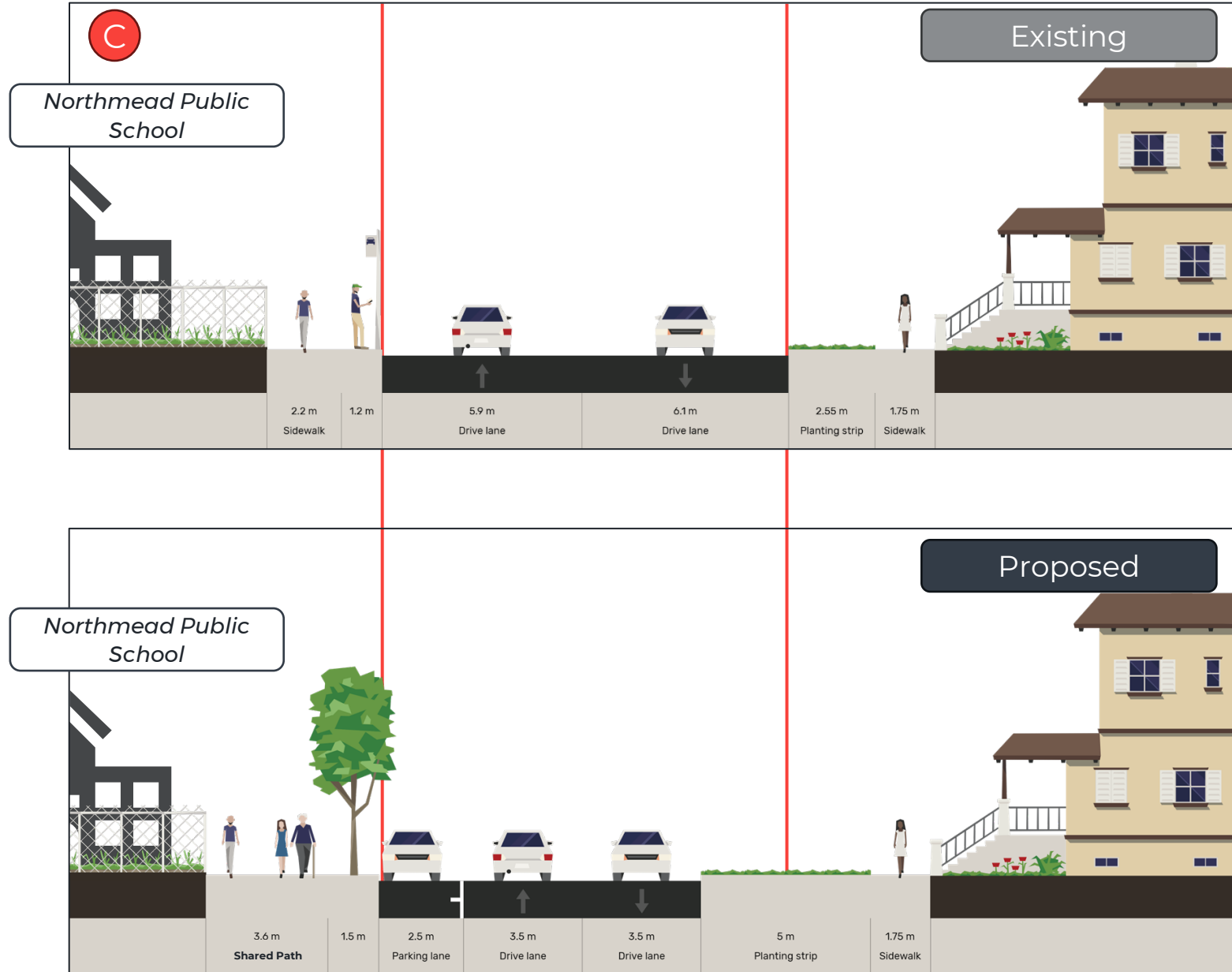
Section C - Northmead Public School

Several kerbside uses occur outside Northmead Public School including pick up and drop off by school buses. A pedestrian crossing (patrolled during the morning and afternoon) is provided just south of the intersection with Moxhams Road.

It is proposed that a shared path be provided on the western side adjacent to Northmead Public School between the two existing crossing points. Both crossings will be converted to shared use

The need to widen footpath into school grounds (up to 1.5m) should be included as part of detailed design and through assessment of future pedestrian/cyclists volumes.

The existing western kerbside space will be retained for parking and school bus services.



3. Shared Path Kerbside Assessment

*High-level CAD drawings are provided as **Appendix B***



Section S1: Hammers Road

Opportunities and Constraints

Opportunity
Constraint

The bridge crossing on Toongabbie Creek is only one lane in each direction, with very narrow footpaths. Opportunity to provide a shared path or unidirectional cycleway may be challenging.

Opportunity to add a unidirectional cycleway westbound and shared path eastbound or vice versa once determined

Wide parking on both sides of Hammers Road, specifically on the bike stamp lanes, posing a challenge to cyclists

Widen existing signalised pedestrian crossing, at Hammers Rd and Windsor Rd intersection to 4.5m wide, which will function as a dual-end bicycle crossing, providing a co-existing environment for pedestrians and cyclists



Cyclists may face challenges while riding past the roundabout or turning into Hammers Rd due to the width of the roundabout and the fenced footpath

Opportunity to reduce the size of the roundabout and transition to single directional kerbside lane on approach to Kleins Road

Hammers Rd has a good spread of street lighting, indicating better access and movement for pedestrians and cyclists

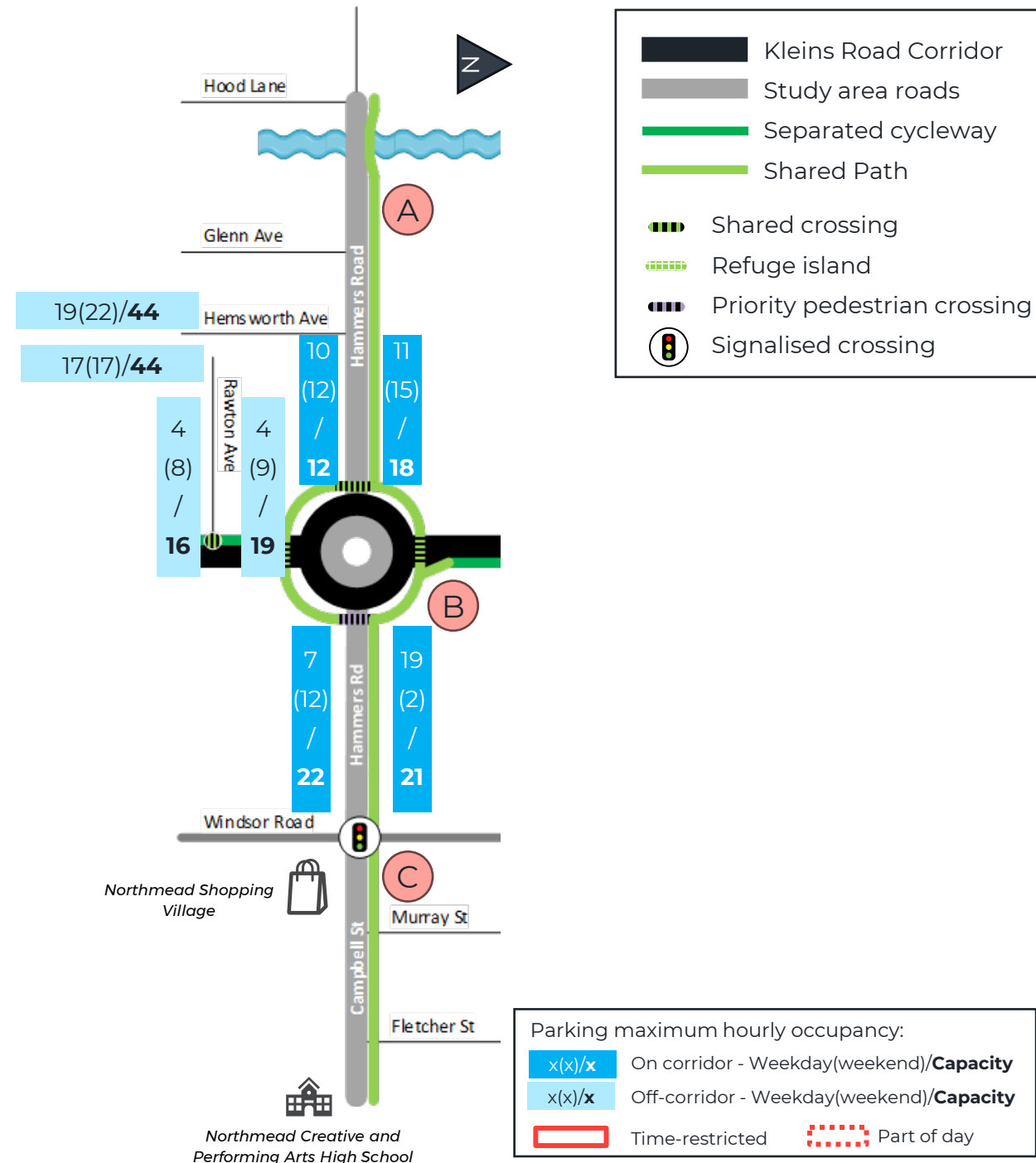
Section S1: Hammers Road

Observations and recommendations

- A** Shared path on the northern side of Hammers Road due to shared crossing connections around roundabout and availability of verge space.
- B** Reduction in size of the roundabout and transition to a single directional kerbside lane on approach to Kleins Road (see Section K3).
- C** Widen existing signalised pedestrian crossing points at Hammers Road and Windsor Road intersection to 4.5m wide. This will support the function as a shared pedestrian/ cyclist crossing.

Parking analysis

- Approximately half of spaces on Hammers Road were observed to be occupied during the survey period.
- High level design has indicated that a shared path could be accommodated in existing footpath and verge space. This is subject to further design and loss of parking may occur (such as avoiding high value trees or utilities).



Section S2: Moxhams Road to Anderson Road

Opportunity
Constraint

Opportunities and Constraints

A shared path on the west side of Whitehaven Road would require a high level of design intervention as the road is ~7m wide and would develop the proposed shared path, encroachment into the natural reserve may be required. It is a preferred option compared to the east side

Angled parking, no stopping zone and upcoming child education centre on Whitehaven Rd may require a high level of design intervention to provide a facility in the area

The two schools, Northmead Public School and Pre-School Kindergarten have high pedestrian and cycling activity. To provide safe movement and crossing opportunities, further analysis is required during AM and school zone pick-up/drop off times



To provide a shared path on the eastern/southern side of Whitehaven Rd is constrained by the crossfall. It is also constrained by stairs (6 Whitehaven Rd), and elevated footpaths

Providing a facility on the western/northern side is restricted by the angled parking in the vicinity of Moxhams Rd

Provision of a separated cycleway on the eastern side of Kleins Rd approaching Moxhams Rd requires a crossing facility across Moxham to provide a link to Whitehaven Rd on north side of Moxhams Rd

Higher traffic levels, and number of driveways, may require higher level of design interventions for a shared path

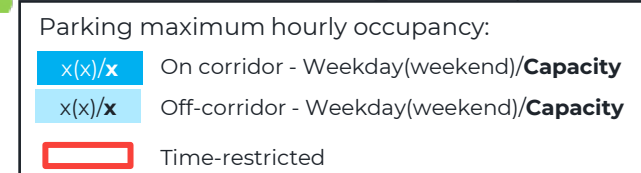
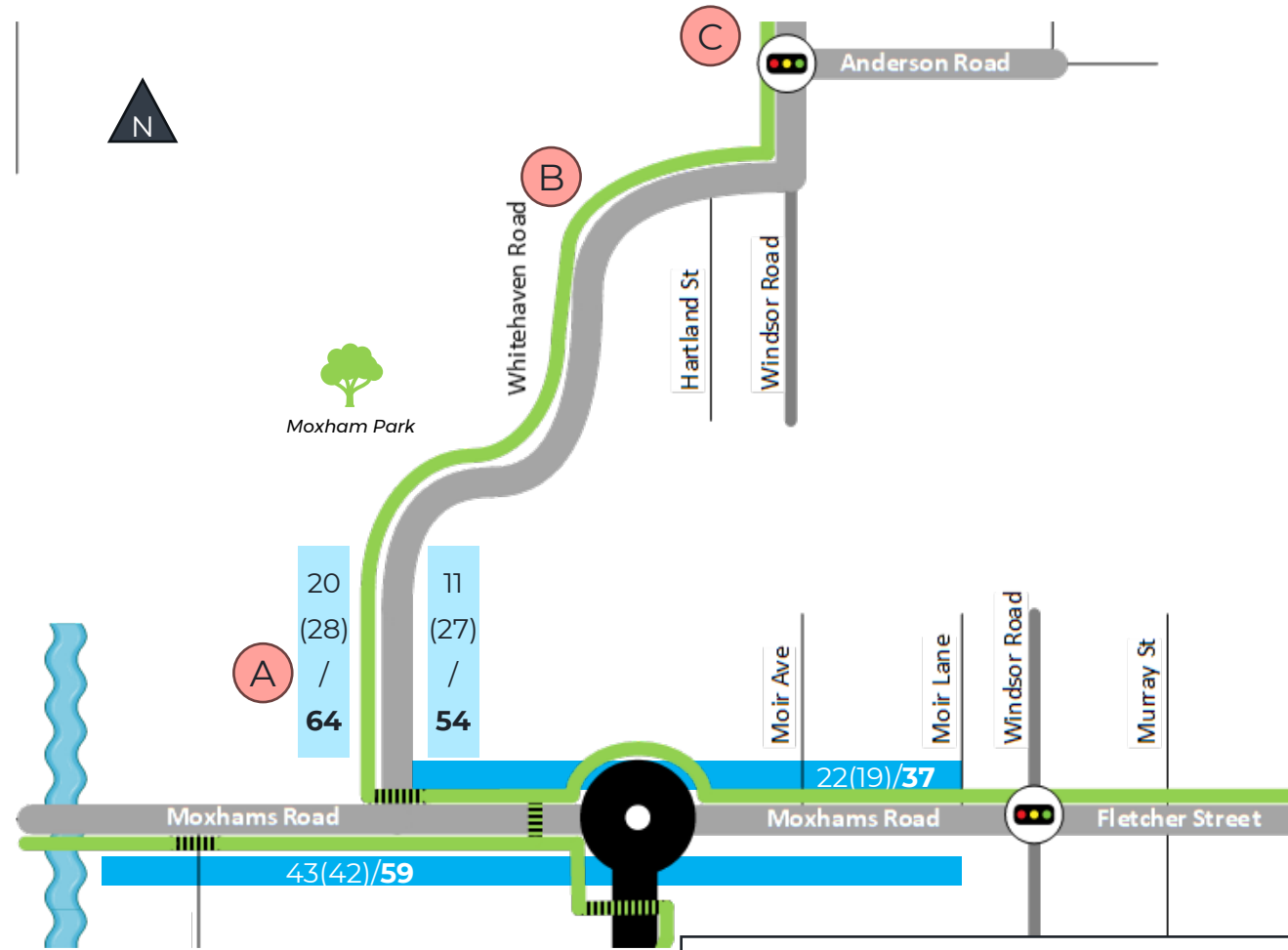
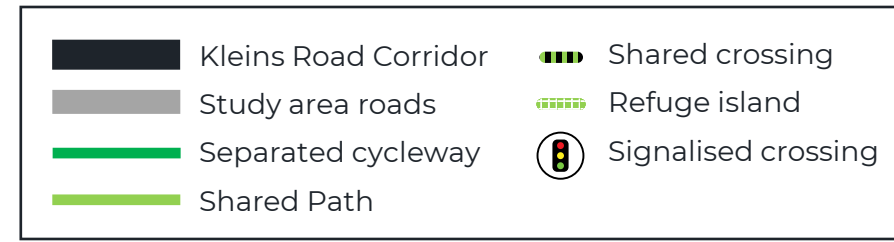
Section S2: Moxhams Road to Anderson Road

Observations and recommendations

- A** Provision of a new shared path on the western side of Whitehaven Road. This will be sited on existing verge and require existing parking to be converted to kerbside.
- B** Care should be taken to ensure encroachment into Moxham Park is minimal. Earthworks may be required in certain areas due to steep gradient drops.
- C** New combined bicycle and pedestrian crossing arm created on northern side of Windsor Road intersection with Fletcher Street and a new pedestrian crossing arm on northern side of Windsor Road intersection with Anderson Road.

Parking analysis

- Moxhams Road may experience an increase in parking occupancy due to parking loss along Kleins Road's separated cycleway.
- Marginal parking occupancy changes are expected along Whitehaven Road given the high availability of unrestricted parking along Moxhams Road.



Section S3: Windsor Road to Roger Gregory playground

Opportunity
Constraint

Opportunities and Constraints

Asquith Avenue is a bus route limiting on road running opportunities

Asquith Ave is ~11.2m wide and has the potential to accommodate a new shared path. There's an opportunity to extend the existing 1.7m wide footpath onto the grass verge and make a new shared path on the eastern side adjacent to the Northmead Gully

Southern/western side of Model Farms Rd for a shared path and northern/western side of Yarrabee for a shared path. Opportunities for bike crossing facilities at Yarrabee and Churchill intersection, and also at Model Farms and Asquith intersection



Street furniture including bus stop shelter on Windsor Rd are a potential constraint

Dual side street lighting on Churchill Dr, improving pedestrian and cyclist movement and access

Geometry at the roundabout at Willmot Ave will require further investigation

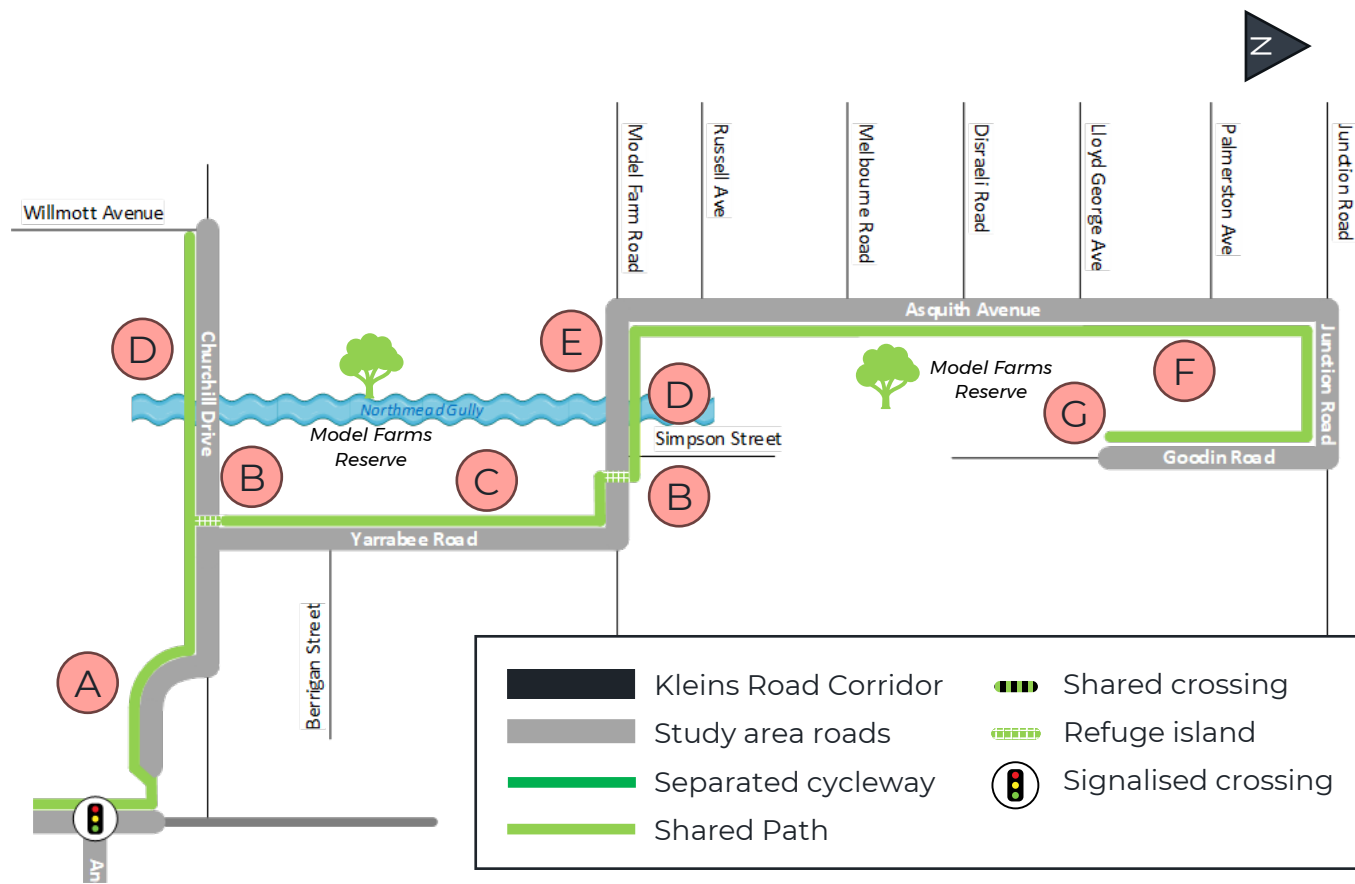
Shared path from Windsor Rd intersection up until Ulandi Pl and then convert to separated cycleway up until the roundabout

Section S3: Windsor Road to Roger Gregory playground

Observations and recommendations

- A** Whilst a shared path is shown on Ulandi Place, as a cul-de-sac opportunity to provide on-road quietway treatment instead.
- B** Refuge islands retained at Yarrabee Road/Churchill Drive and Model Farm Road/Simpson Street intersections.
- C** Provision of a shared path facility on the western side of Yarrabee Road. Whilst this can primarily be provided within the existing verge, certain sections may require small kerbside buildouts around mature trees.
- D** Existing crossings of Northmead Gully on both Churchill Drive and Model Farm Road would require cyclists to dismount due to width of path. No opportunity to widen path without significant structural upgrade.
- E** Shared path preferred on northern side of Model Farm Road due to existing verge width. Option on southern side would require realignment of kerb due to proximity of mature trees.

- F** Widening of existing footpath to shared path on the eastern side of Asquith Avenue.
- G** Shared path extended to recently upgraded Roger Gregory playground on Goodin Road.

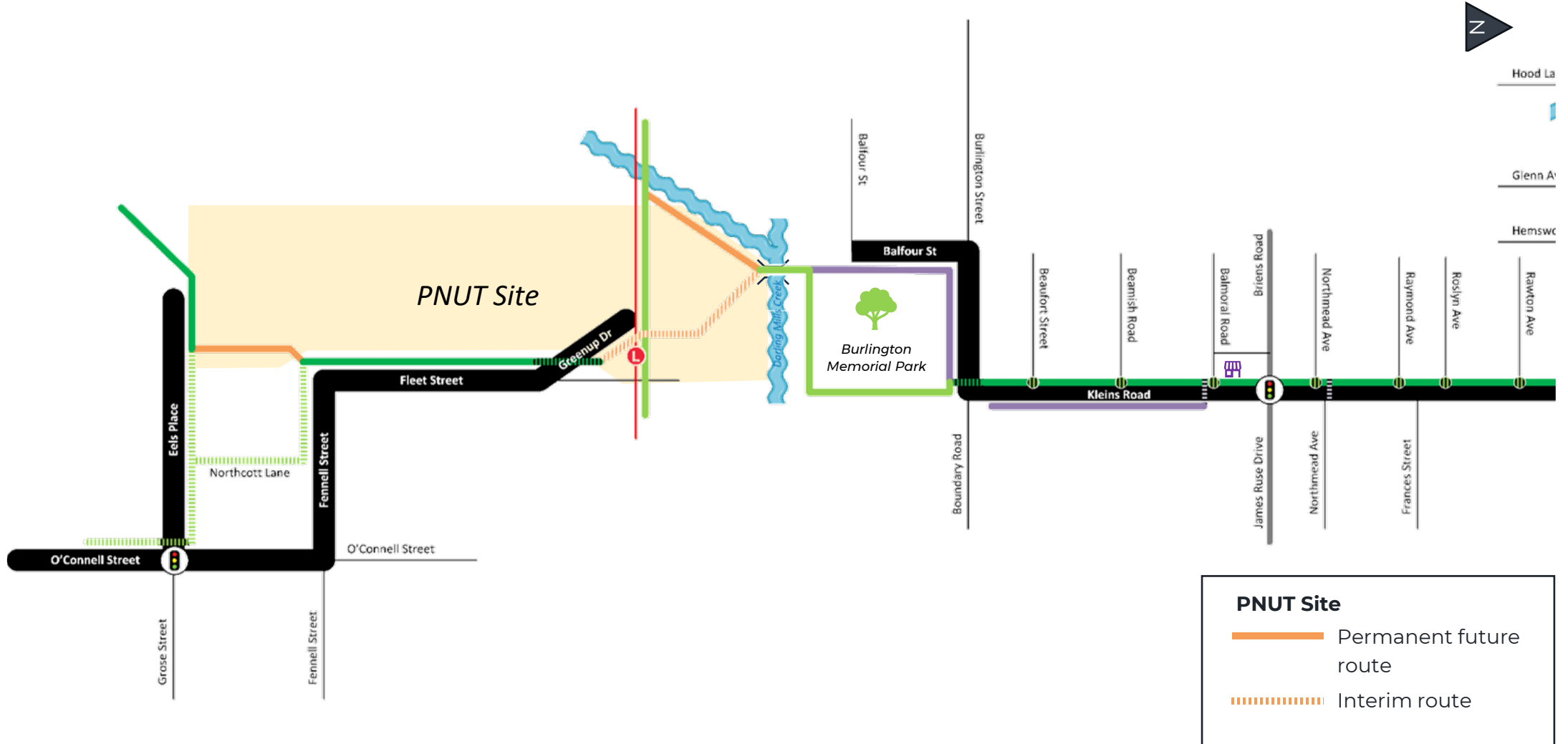


4. Proposed arrangement



Proposed arrangement

	Kleins Road Corridor		Shared crossing
	Study area roads		Refuge island
	Separated cycleway		Priority pedestrian crossing
	Shared Path		Signalised crossing



Proposed arrangement

