
7.3.8. Chinatown Precinct Access Plan

Access Improvements

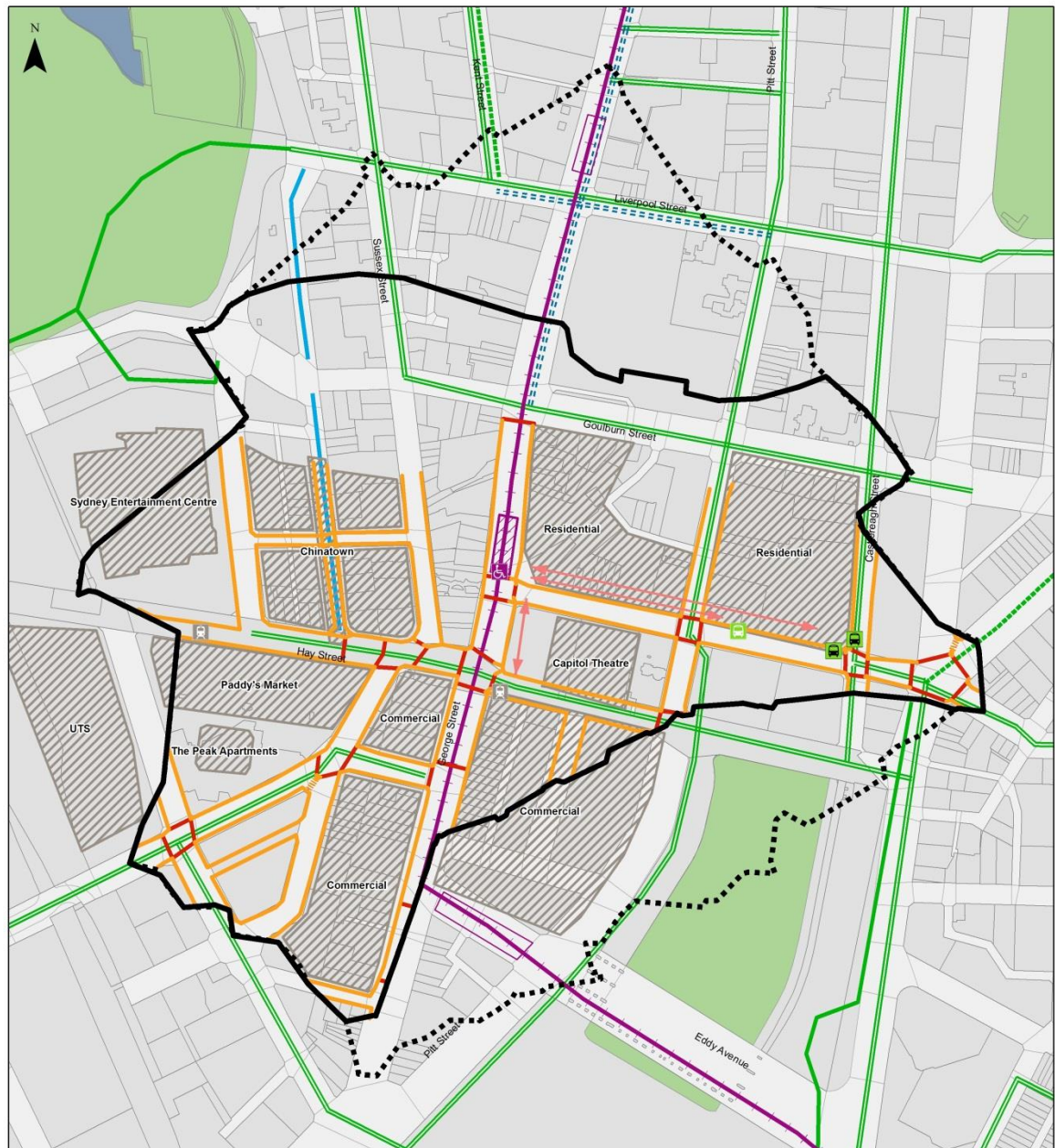
The key actions to resolve multimodal access issues in Chinatown stop precinct are;

- Implement pedestrian priority improvements at key intersections. This will reduce pedestrian walking times for passengers interchanging from bus to light rail at intersections such as;
 - Goulburn Street and George Street
 - Campbell Street and Castlereagh Street
 - Campbell Street and Pitt Street
 - Campbell Street and George Street (the George Street signals will provide customers with safe, direct access to light rail platforms).
- Implement pedestrian priority improvements at the intersection of George Street and Hay Street to reduce pedestrian wait times for passengers interchanging between the Inner West light rail and CSELR.
- Introduce integrated customer information and wayfinding for interchange and connections between light rail and all other modes to make the quickest route more legible.
- Coordination of bus and light rail timetables to be investigated, particularly during off peak periods when the frequency of light rail services will be reduced.

Table 7-9: Chinatown Precinct Access Plan

Stop Name
Chinatown
Land Uses
<ul style="list-style-type: none"> – Residential – Commercial – Tourist accommodation – Cultural – Retail / food & beverage
Major Trip Generators
<ul style="list-style-type: none"> – Capitol Theatre. – Paddy's Markets and Market City. – Dixon Street Mall. – Residential (The Peak, Inmark Tower, Meriton Capitol and buildings bound by Goulburn, Castlereagh, Campbell and Pitt Streets). – Commercial buildings bound by Hay Street, Belmore Park, Rawson Place and George Street.
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 1,149 boardings and 1,116 alightings forecast for 2021. – 1,461 boardings and 1,309 alightings forecast for 2036.
Heavy Rail
<ul style="list-style-type: none"> – Chinatown is not forecast as a major interchange for passengers from heavy to light rail. – 500m north-west of Central Station. – 750m south-west of Museum Station.
Light Rail
<ul style="list-style-type: none"> – Estimated AM peak hour interchange patronage from Inner West light rail to CSELR is 109 (10%) in 2021. 100m north-west of existing Capitol Square stop on Inner West line. – 250m north-west of proposed Rawson Place interchange on CSELR line. – 270m south of proposed World Square stop on CSELR line.
Bus
<ul style="list-style-type: none"> – Estimated AM peak hour interchange patronage from bus to light rail is 464 (40%) in 2021. – 200m north of proposed bus stops on George Street (southbound stop only). – 300m north of proposed Rawson Place interchange (both directions). – 300m west of proposed bus stops on Campbell Street & Castlereagh Street (both directions). – 400m north-west of existing and proposed bus stops on Pitt Street (northbound stop only).
Pedestrian
<ul style="list-style-type: none"> – Estimated AM peak hour walk up passengers of 576 (50%) in 2021.
Bicycle
<ul style="list-style-type: none"> – On-road routes: <ul style="list-style-type: none"> ▪ Two way; Goulburn Street (east-west), Hay Street (east-west). ▪ One way; Pitt Street (northbound), Castlereagh Street (southbound), Kent Street (northbound), Sussex Street (southbound).

Figure 7-7: Chinatown Precinct Access Plan



Legend

Other CSELR Stops	Pedestrian Links	Car Share Location	Public Transport
Chinatown Stop	Signalised Crossing	Cycle Parking	Bus Stop (Existing - retained)
Disabled Access	Unsignalised Crossing	Cycle Network	Bus Stop (Proposed - new)
Alignment	Pedestrian Enhancements	Existing - off road	Rail
400m Exclusive Catchment	Existing Pedestrian Only Areas	Existing - on road	Light Rail
400m Catchment	Proposed Pedestrian Only Areas	Planned - off road	Interchange Movements
Major Trip Generators	Proposed Priority Improvements	Potential - on road	
		Potential - off road	

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7.3.9. Rawson Place Precinct Access Plan

Access Improvements

The key actions to resolve the multimodal access issues in the Rawson Place stop precinct are;

- Create a new dedicated pedestrianised transit mall with bus and light rail access only on Rawson Place.
- Position new bus stops for 'round the corner' and cross platform interchanges between bus and light rail as shown in Figure 7-8. This will reduce interaction between cars and pedestrians, improving walk time and amenity.
- Implement pedestrian priority improvements to reduce pedestrian wait times at key intersections including;
 - Eddy Avenue, Pitt Street and Rawson Place
 - George Street and Rawson Place
 - George Street and Ultimo Road.
- Introduce integrated customer information and wayfinding for interchange and connections between light rail and all other modes to make the quickest route more legible.
- Coordination of bus and light rail timetables to be investigated, particularly during off peak periods when the frequency of light rail services will be reduced.

Table 7-10: Rawson Place Precinct Access Plan

Stop Name
Rawson Place
Land Uses
<ul style="list-style-type: none"> – Residential – Commercial – Tourist accommodation – Transport (Central Station and bus interchange) – Retail / food & beverage – Open space (Belmore Park) – Educational
Major Trip Generators
<ul style="list-style-type: none"> – Transport interchange (bus to light rail). – Commercial buildings bound by Hay Street, Belmore Park. – University of Technology Sydney. – Commercial buildings on Lee Street. – Tourist accommodation at Railway Square (Adina, Mercure, Rendezvous). – Tourist accommodation around George Street (Great Southern Hotel, Wake Up, Sydney Central YHA).
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 1,222 boardings and 1,817 alightings forecast for 2021. – 1,450 boardings and 2,063 alightings forecast for 2036.
Heavy Rail
<ul style="list-style-type: none"> – Rawson Place is not forecast as a major interchange for passengers from heavy to light rail. – 100m north-west of Central Station.
Light Rail
<ul style="list-style-type: none"> – 100m south of Capitol Square stop on Inner West line. – 150m north-west of Central Station stop on Inner West line. – 350m south of proposed Chinatown stop on CSELR line. – 500m north-west of proposed Central Station stop on CSELR line.
Bus
<ul style="list-style-type: none"> – The city centre bus network redesign will result in forced transfers from bus to light rail for some users – efficient and effective transfer arrangements will be required to mitigate any negative impacts. – Estimated AM peak hour interchange patronage from bus to light rail is 635 (52%) in 2021. – 100m north of proposed George Street bus stop (southbound stop only). – 150m from existing and proposed bus stops on Pitt Street (northbound stop only). – 200m west of existing bus stop on Eddy Avenue. – 300m north of Railway Square interchange.
Pedestrian
<ul style="list-style-type: none"> – Estimated AM peak hour walk up patronage of 587 (48%) in 2021.
Bicycle
<ul style="list-style-type: none"> – On-road routes: <ul style="list-style-type: none"> ▪ Two way; Quay Street (north-south), Hay Street (east-west), Ultimo Road (east-west). ▪ One way; Pitt Street (northbound), Castlereagh Street (southbound).

Figure 7-8: Rawson Place Interchange Design

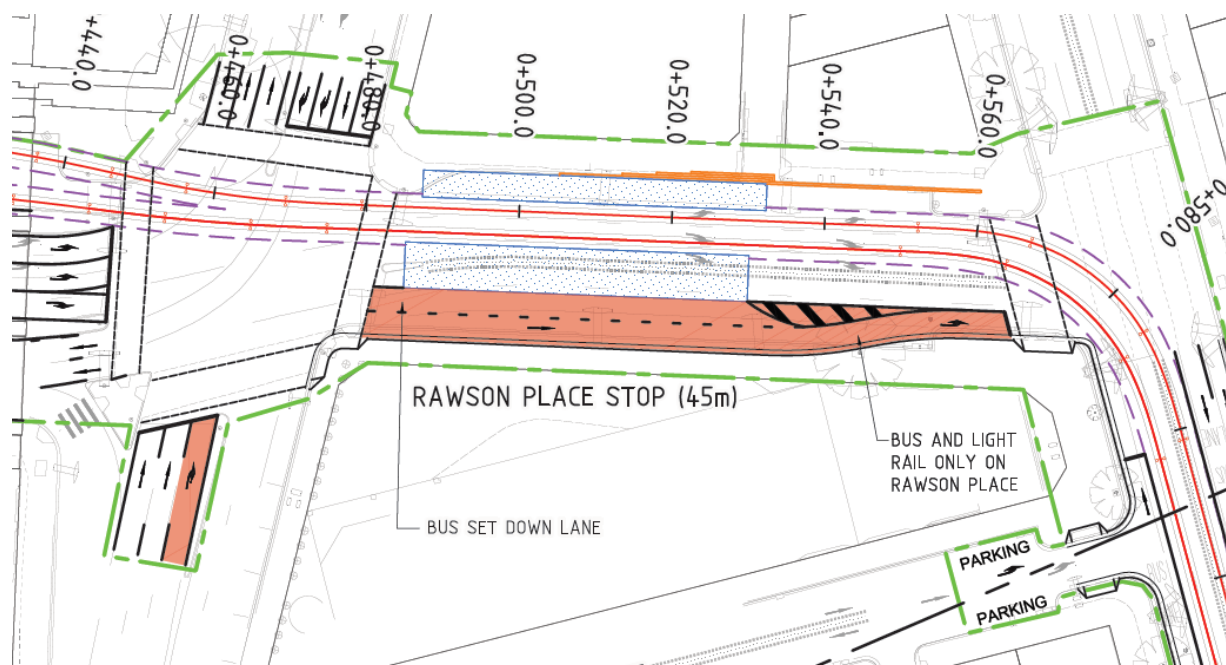
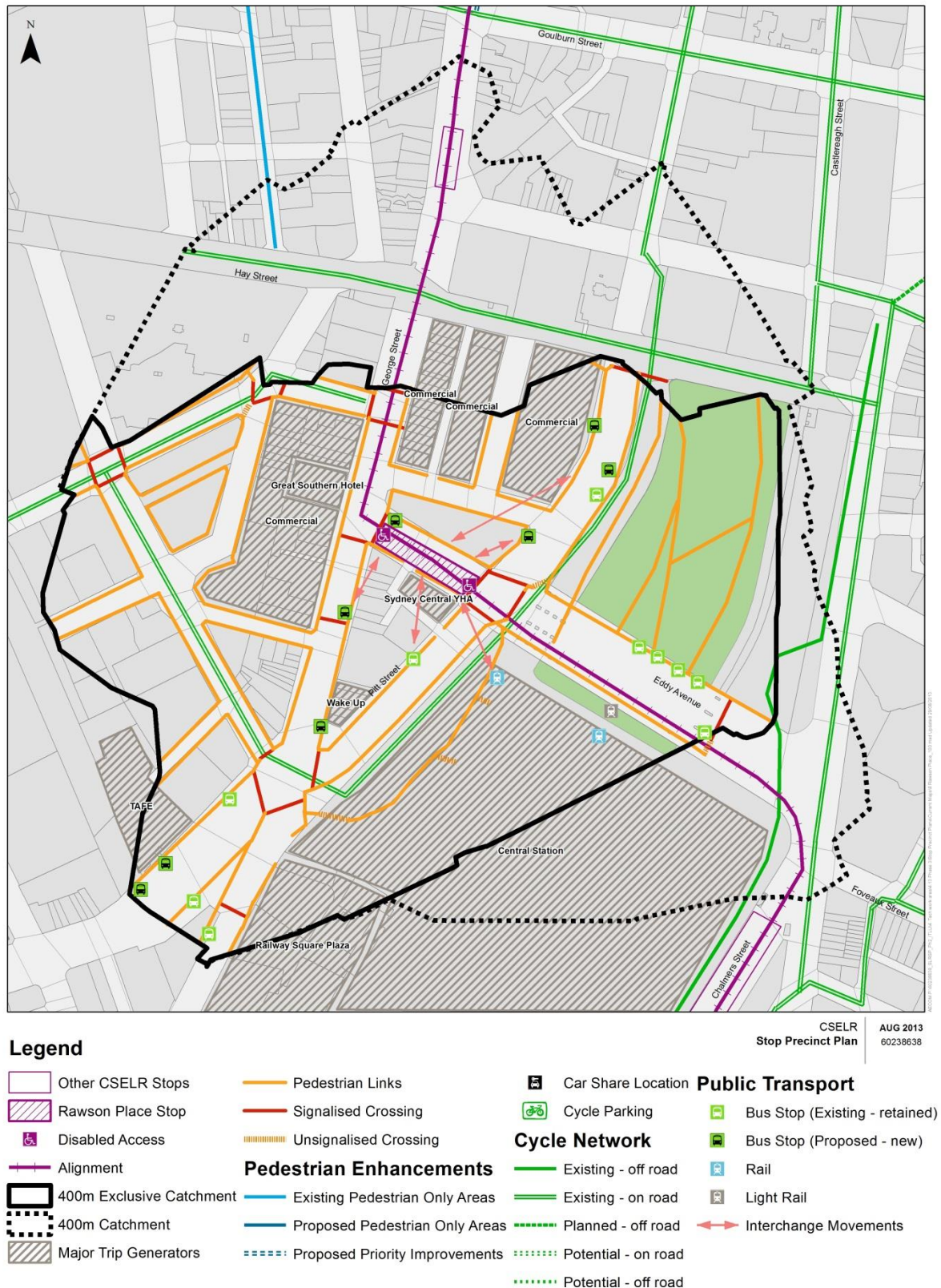


Figure 7-9 Rawson Place Precinct Access Plan



7.3.10. Central Station Precinct Access Plan

Access Improvements

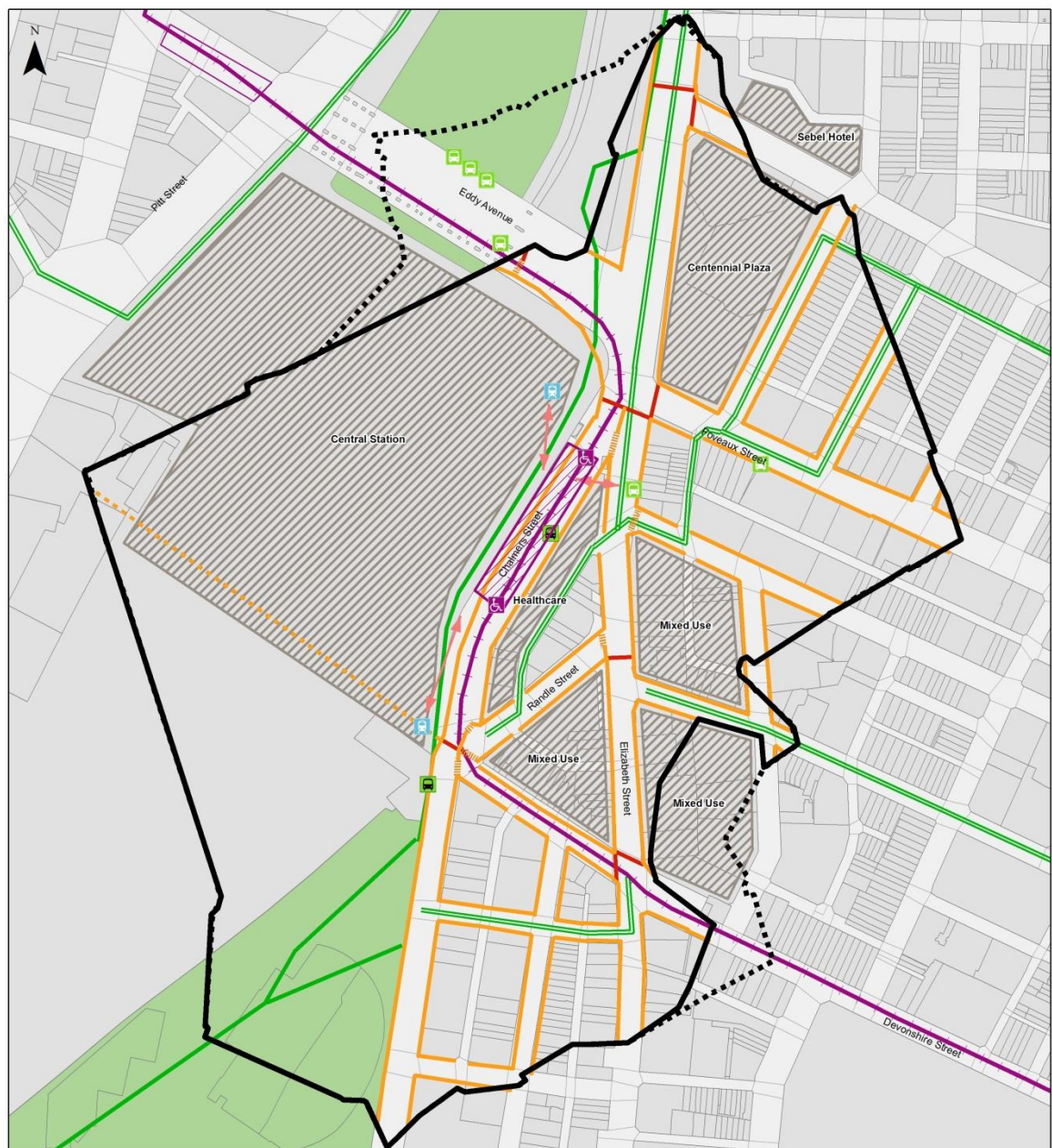
The key actions to resolve the multimodal access issues in the Central Station stop precinct are;

- Balanced interchange to the two entrances to Central Station from Chalmers Street, limiting delays for customers accessing and egressing the precinct. There is potential for a new Central Station concourse running east-west beneath the station in the long term, establishing a direct pedestrian link from all existing heavy rail platforms to the light rail stop on Chalmers Street.
- Integrate platforms with the footpath to enable seamless intermodal transition for passengers.
- Implement pedestrian priority improvements along Chalmers Street to reduce pedestrian wait times at the following key intersections;
 - Chalmers Street, Eddy Avenue, Elizabeth Street and Foveaux Street
 - Chalmers Street and Devonshire Street
- Management of rail replacement bus services.
- Access for coaches and relocation of the current coach terminal.
- Introduce integrated customer information and wayfinding for interchange and connections between light rail and all other modes to make the quickest route more legible.
- Coordination of heavy rail, bus and light rail timetables to be investigated, particularly during off peak periods when the frequency of light rail services will be reduced.

Table 7-11: Central Station Precinct Access Plan

Stop Name
Central Station
Land Uses
<ul style="list-style-type: none"> – Residential – Commercial – Tourist accommodation – Transport (Central Station) – Open space (Prince Alfred Park) – Retail / food & beverage (Surry Hills)
Major Trip Generators
<ul style="list-style-type: none"> – Transport interchange (heavy rail to light rail) – Commercial buildings (such as Centennial Plaza) – Tourist accommodation (The Sebel Surry Hills)
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 2,863 boardings and 2,072 alightings forecast for 2021. – 3,830 boardings and 2,835 alightings forecast for 2036.
Heavy Rail
<ul style="list-style-type: none"> – Estimated AM peak hour interchange patronage from heavy to light rail is 2,387 (83%) in 2021. – Directly adjacent to east of Central Station.
Light Rail
<ul style="list-style-type: none"> – 350m north-west of Central Station stop on Inner West line. – 500m south-east of proposed Rawson Place interchange on CSELR line. – 700m north-west of proposed Surry Hills stop on CSELR line.
Bus
<ul style="list-style-type: none"> – Estimated AM peak hour interchange patronage from bus to light rail is 409 (14%) in 2021. – 100m south of existing bus stop on Chalmers Street. – 150m south-west of existing bus stop on Elizabeth Street. – 250m south-west of existing bus stop on Foveaux Street.
Pedestrian
<ul style="list-style-type: none"> – Estimated AM peak hour walk up patronage of 68 (2%) in 2021.
Bicycle
<ul style="list-style-type: none"> – Off-road cycle path: <ul style="list-style-type: none"> ▪ Prince Alfred Park and Chalmers Street (north-south). – On-road routes: <ul style="list-style-type: none"> ▪ Two way; Elizabeth Street (north of Foveaux Street, north-south), Mary Street and Commonwealth Street (north-south), Albion Way (east-west), Rutland Street (east-west). ▪ One way; Pitt Street (southbound), Elizabeth Street, Randle Street and Randle Lane (southbound), Terry Street (southbound).

Figure 7-10: Central Station Precinct Access Plan



Legend

Other CSELR Stops	Pedestrian Links	Car Share Location	Public Transport
Central Station Stop	Devonshire Street Tunnel	Cycle Parking	Bus Stop (Existing - retained)
Disabled Access	Signalised Crossing	Cycle Network	Bus Stop (Proposed - new)
Alignment	Unsignalised Crossing	Existing - off road	Rail
400m Exclusive Catchment	Pedestrian Enhancements	Existing - on road	Interchange Movements
400m Catchment	Existing Pedestrian Only Areas	Planned - off road	
Major Trip Generators	Proposed Pedestrian Only Areas	Potential - on road	
	Proposed Priority Improvements	Potential - off road	

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7.3.11. Surry Hills Precinct Access Plan

Access Improvements

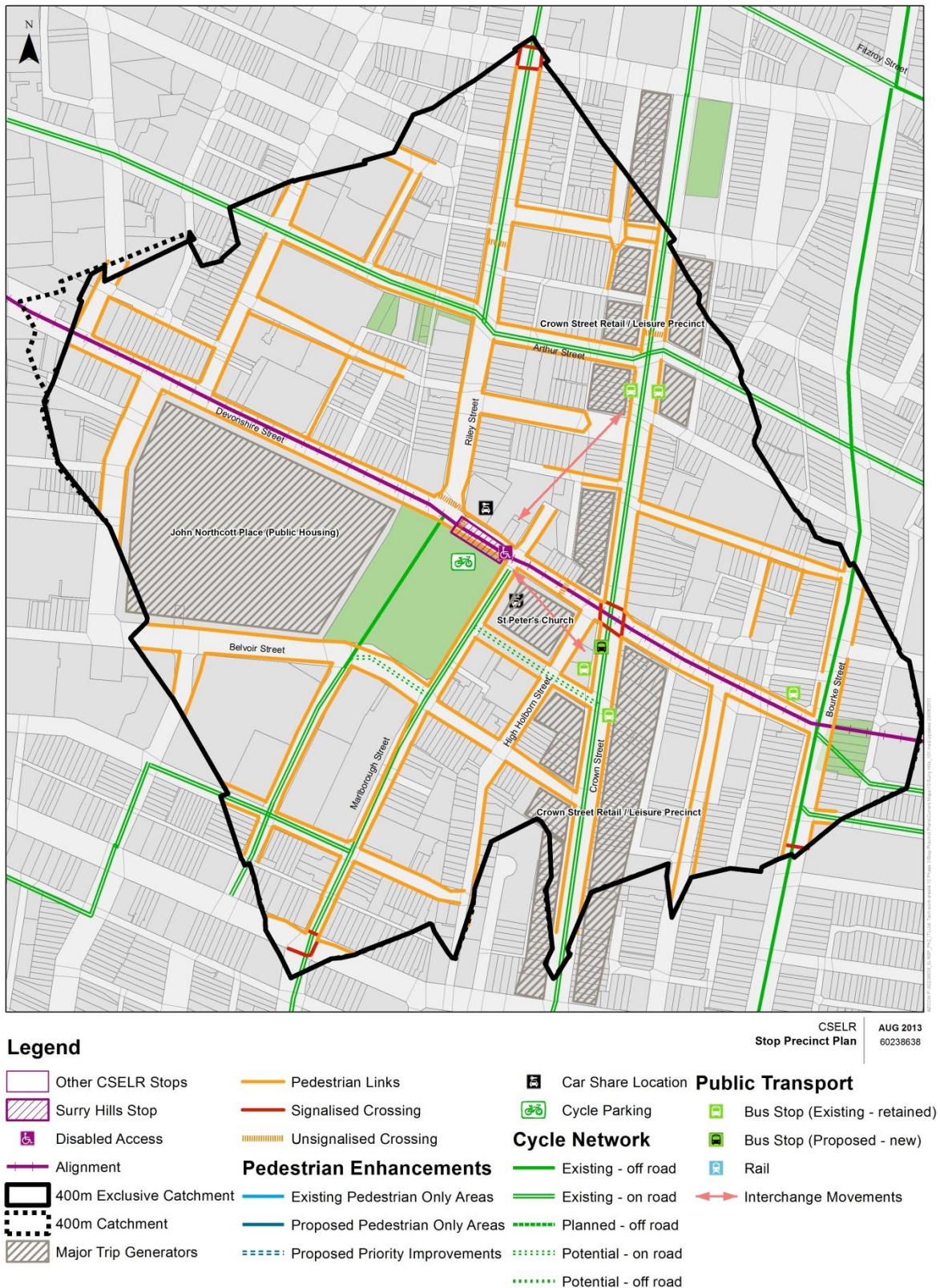
The key actions to resolve the multimodal access issues in the Surry Hills stop precinct are;

- Implement pedestrian priority improvements to reduce pedestrian wait times at key signalised intersections such as;
 - Devonshire Street and Crown Street
- Reduce capacity of Devonshire Street for vehicular traffic and give priority to east-west movements of light rail and pedestrians. The cycle route along Devonshire Street will be relocated to Cooper/Arthur Street, with cyclists not encouraged to continue using Devonshire Street once the construction of light rail begins. Investigate the need for a surface treatment to discourage cyclists.
- Signalise Devonshire Street and Marlborough Street to provide customers with safe, direct access to light rail platforms.
- It is proposed that the provision of additional car share in this location, to strengthen the existing car share offer, would provide onward connectivity options for passengers.
- A dedicated u-rail cycle parking facility with approximately five spaces at or adjacent to the light rail stop.
- Introduce integrated customer information and wayfinding for interchange and connections between light rail and all other modes to make the quickest route more legible.
- Consider potential improvements to lighting near Ward Park in detailed stop design.
- Coordination of bus and light rail timetables to be investigated, particularly during off peak periods when the frequency of light rail services will be reduced.

Table 7-12: Surry Hills Precinct Access Plan

Stop Name
Surry Hills
Land Uses
<ul style="list-style-type: none"> – Residential – Retail / food & beverage – Open space (Ward Park) – Church (St Peters)
Major Trip Generators
<ul style="list-style-type: none"> – Crown Street – bars, cafes, restaurants, retail and residential. – Bourke Street – bars, cafes, restaurants, retail and residential. – Residential apartments within walking distance of stop. – St Peters Church.
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 889 boardings and 852 alightings forecast for 2021. – 1,292 boardings and 1,035 alightings forecast for 2036.
Heavy Rail
<ul style="list-style-type: none"> – Surry Hills is not forecast to be a major interchange for passengers from heavy to light rail. – ~700m east of Central Station.
Light Rail
<ul style="list-style-type: none"> – 700m south-east of proposed Central Station stop on CSELR line. – 1.4km north-west of proposed Moore Park stop on CSELR line.
Bus
<ul style="list-style-type: none"> – Estimated AM peak hour interchange patronage from bus to light rail is 505 (57%) in 2021. – 200m north-west of Crown Street stop (south of Devonshire Street). – 300m south-west of Crown Street stop (north of Devonshire Street). – 350m north of Cleveland Street stop (near Marlborough Street).
Pedestrian
<ul style="list-style-type: none"> – Estimated AM peak hour walk up patronage of 384 (43%) in 2021.
Bicycle
<ul style="list-style-type: none"> – Off-road cycle path: <ul style="list-style-type: none"> ▪ Bourke Street (north-south), South Dowling Street (north-south) and Ward Park (north-south). – On-road routes: <ul style="list-style-type: none"> ▪ Two way; Elizabeth Street (north of Foveaux Street, north-south), Mary Street and Commonwealth Street (north-south), Albion Way (east-west), Rutland Street (east-west). Crown Street (north-south), Marlborough Street (north-south between Devonshire Street and Landsdowne Street), Riley Street (north-south north of Arthur Street), Arthur Street (east-west). ▪ One way; Parkham Lane (westbound), Parkham Street (eastbound), Goodlet Street (eastbound). – Potential to reinstate Cooper Street as an on-road route. – Proposed u-rail cycle parking facility with approximately five spaces at or adjacent to the light rail stop.

Figure 7-11: Surry Hills Precinct Access Plan



7.3.12. Moore Park Precinct Access Plan

Access Improvements

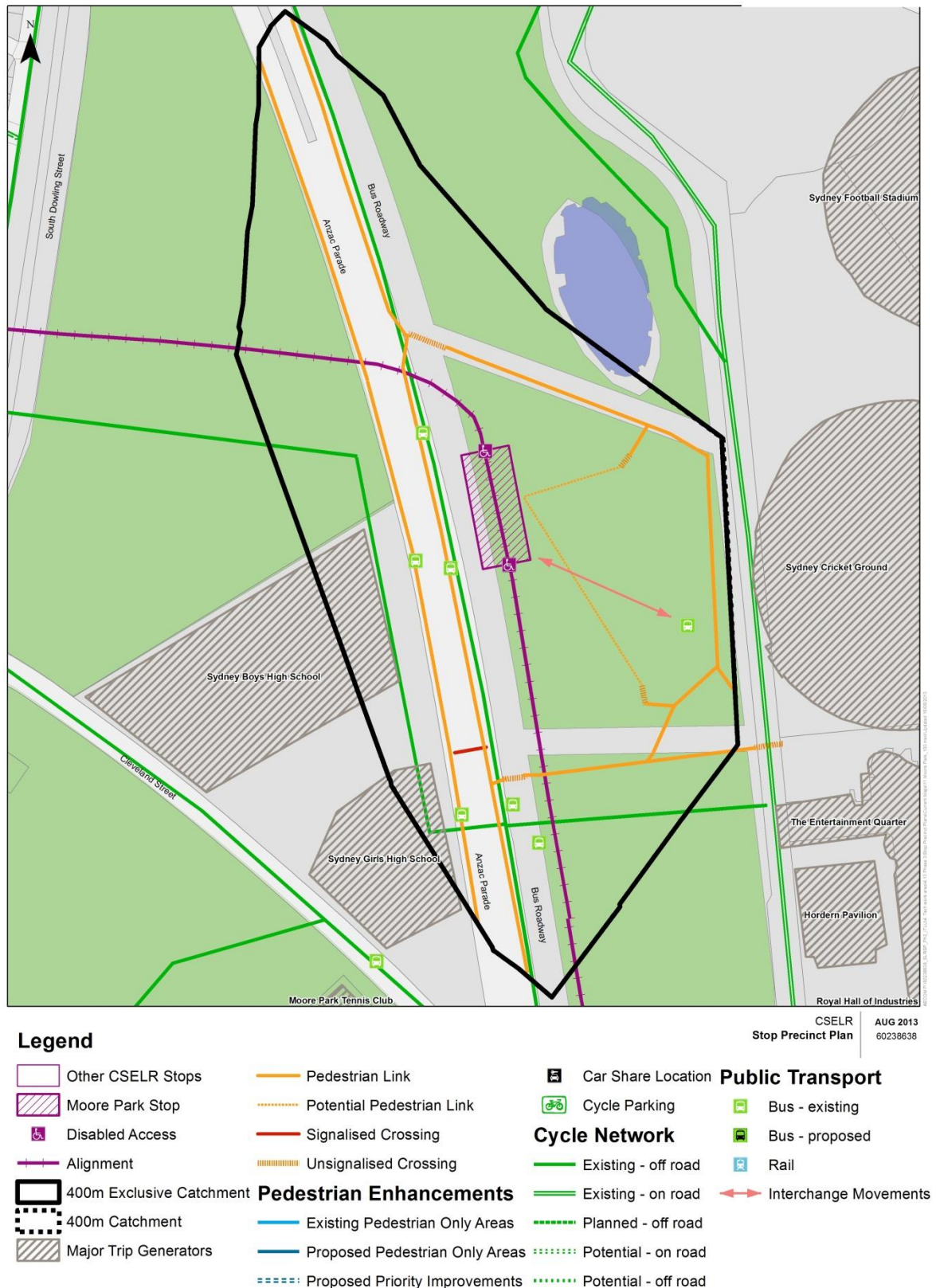
The key actions to resolve the multimodal access issues in the Moore Park stop precinct are;

- Implement pedestrian access improvements locally to the Moore Park Precinct, especially to service sports / entertainment events, and strategic connections to Surry Hills to west (through collaboration with other agencies and stakeholders)
- The Moore Park stop is proposed in an offline location, located outside the existing roadway, which will minimise interaction between cars and pedestrians on the eastern side of Anzac Parade.
- Position bus stops to enable safe and quick transfers to light rail.
- Consider potential improvements to lighting in detailed stop design.
- Introduce integrated customer information and wayfinding for interchange and connections between light rail and all other modes to make the quickest route more legible.
- Potential for a shared pedestrian and cycle bridge over Anzac Parade (between Fitzroy Street in the north and Cleveland Street in the south). A bridge is currently under investigation as part of RMS' Central Railway Station to Moore Park Pedestrian Access Study

Table 7-13: Moore Park Precinct Access Plan

Stop Name
Moore Park
Land Uses
<ul style="list-style-type: none"> – Open and recreational space – Sport – Entertainment – Educational – Residential
Major Trip Generators
<ul style="list-style-type: none"> – Open and recreational space (Moore Park, Centennial Park) – Sport (SCG, Allianz Stadium) – Entertainment (Hordern Pavilion, Royal Hall of Industries, Cinema Paris, Hoyts, Fox Studios) – Educational (Sydney Boys High School) – Residential (south-east of stop)
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 115 boardings and 477 alightings forecast for 2021. – 134 boardings and 571 alightings forecast for 2036.
Light Rail
<ul style="list-style-type: none"> – 1.4 km south-east of proposed Surry Hills stop on CSELRL line. – 1.6 km north of proposed Carlton Street stop on Kingsford branch of CSELRL line. – 1.9 km north-west of proposed Royal Randwick Racecourse stop on Randwick branch of CSELRL line.
Bus
<ul style="list-style-type: none"> – Estimated AM peak hour interchange patronage from bus to light rail is 31 (27%) in 2021. – 50m south of existing Anzac Parade stop. – 250m north and south of existing Anzac Parade stops (on both sides of Cleveland Street). – 250m north of existing Cleveland Street stops (on both sides of Anzac Parade).
Pedestrian
<ul style="list-style-type: none"> – Estimated AM peak hour walk up patronage of 85 (73%) in 2021.
Bicycle
<ul style="list-style-type: none"> – Off-road cycle path: <ul style="list-style-type: none"> ▪ South Dowling Street (north-south), Anzac Parade (north-south), Cleveland Street (east-west) and Moore Park (east-west). – On-road routes: <ul style="list-style-type: none"> • Two way; Driver Avenue (north-south), Robertson Road (north-south). – Proposed u-rail cycle parking facility with approximately five spaces at or adjacent to the light rail stop.

Figure 7-12: Moore Park Precinct Access Plan



7.3.13. Carlton Street Precinct Access Plan

Access Improvements

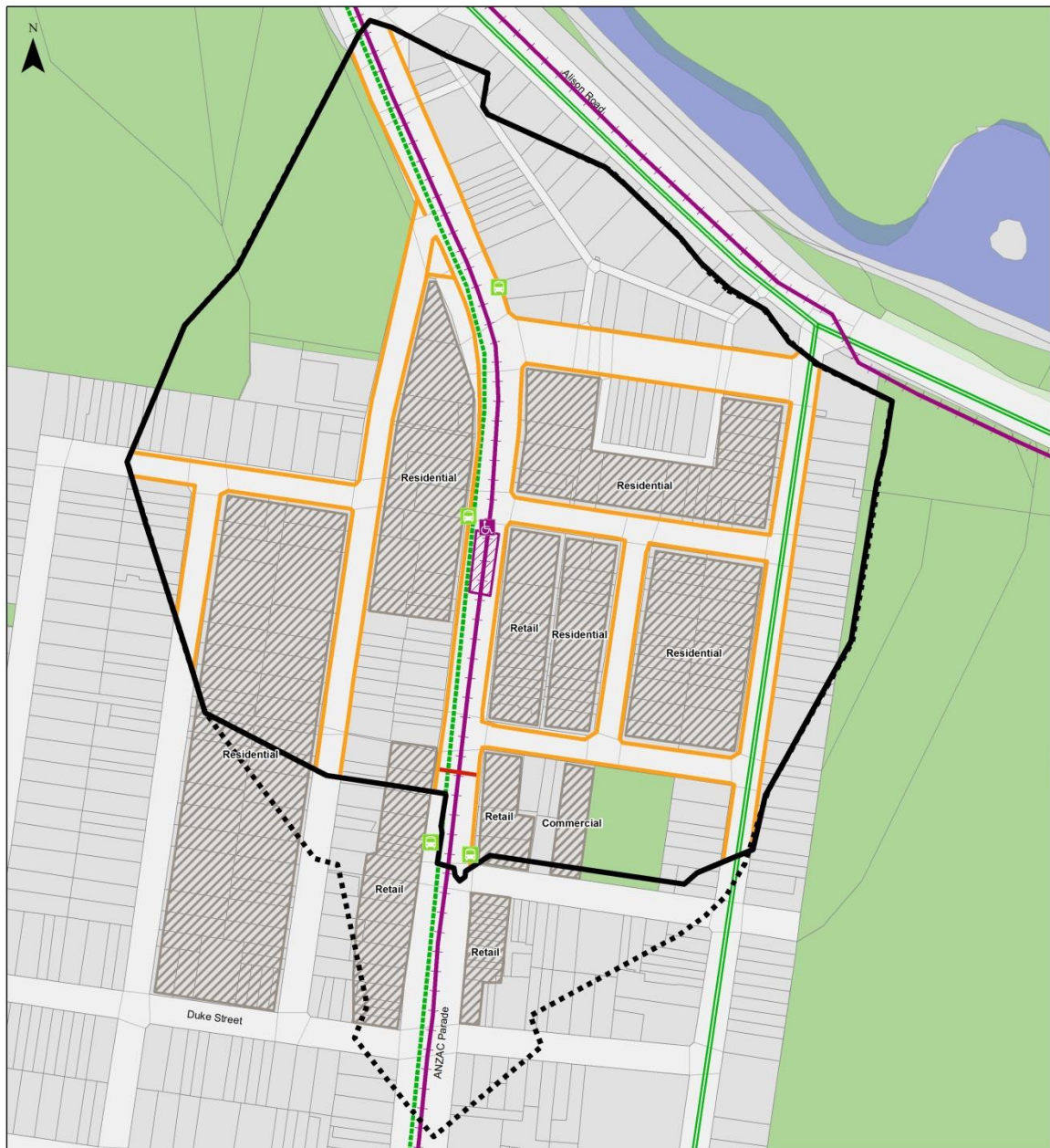
The key actions to resolve the multimodal access issues in the Carlton Street stop precinct are;

- Implement pedestrian priority improvements to facilitate pedestrian access to the Carlton Street stop at the key intersection of Anzac Parade and Carlton Street. Anzac Parade signals provide customers with safe, direct access to light rail platforms.
- Position bus stops to enable safe and quick transfers to light rail.
- Introduce integrated customer information and wayfinding for interchange and connections between light rail and all other modes to make the quickest route more legible.
- Consider potential improvements to lighting in detailed stop design.
- Coordination of bus and light rail timetables to be investigated, particularly during off peak periods when the frequency of light rail services will be reduced.

Table 7-14: Carlton Street Precinct Access Plan

Stop Name
Carlton Street
Land Uses
<ul style="list-style-type: none"> – Residential – Retail – Recreational / Sport
Major Trip Generators
<ul style="list-style-type: none"> – Residential (medium density dwellings on Anzac Parade, low density detached dwellings to east and west of Anzac Parade). – Retail / F&B (along Anzac Parade). – Recreational / Sport (Centennial Park, Moore Park Golf Course, ES Marks Athletics Field).
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 213 boardings and 9 alightings forecast for 2021. – 241 boardings and 10 alightings forecast for 2036.
Light Rail
<ul style="list-style-type: none"> – ~450m north of proposed Todman Avenue stop on Kingsford branch of CSELRL line. – ~1.6 km south of proposed Moore Park stop on Kingsford branch of CSELRL line.
Bus
<ul style="list-style-type: none"> – Carlton Street is not forecast to be a major interchange for passengers from bus to light rail.
Pedestrian
<ul style="list-style-type: none"> – Estimated AM peak hour walk up patronage of 213 (100%) in 2021.
Bicycle
<ul style="list-style-type: none"> – On-road routes: <ul style="list-style-type: none"> ■ Two way; Doncaster Avenue (north-south), Boronia Street (north-south), Duke Street (east-west), Todman Avenue (east-west), Addison Street (east-west). – Planned off-road cycle path: <ul style="list-style-type: none"> ■ Two way; Anzac Parade (north-south). – Proposed u-rail cycle parking facility with approximately five spaces at or adjacent to the light rail stop.

Figure 7-13: Carlton Street Precinct Access Plan



Legend

- | | | | |
|---|--|--|---|
| <ul style="list-style-type: none"> Other CSELR Stops Carlton Street Stop Disabled Access Alignment 400m Catchment 400m Catchment Major Trip Generators | <ul style="list-style-type: none"> Pedestrian Links Signalised Crossing Unsignalised Crossing | <ul style="list-style-type: none"> Car Share Location Cycle Parking | <p>Public Transport</p> <ul style="list-style-type: none"> Bus Stop (Existing - retained) Bus Stop (Proposed - new) Rail Interchange Movements |
| <p>Pedestrian Enhancements</p> <ul style="list-style-type: none"> Existing Pedestrian Only Areas Proposed Pedestrian Only Areas Proposed Priority Improvements | | <p>Cycle Network</p> <ul style="list-style-type: none"> Existing - off road Existing - on road Planned - off road Potential - on road Potential - off road | |

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7.3.14. Todman Avenue Precinct Access Plan

Access Improvements

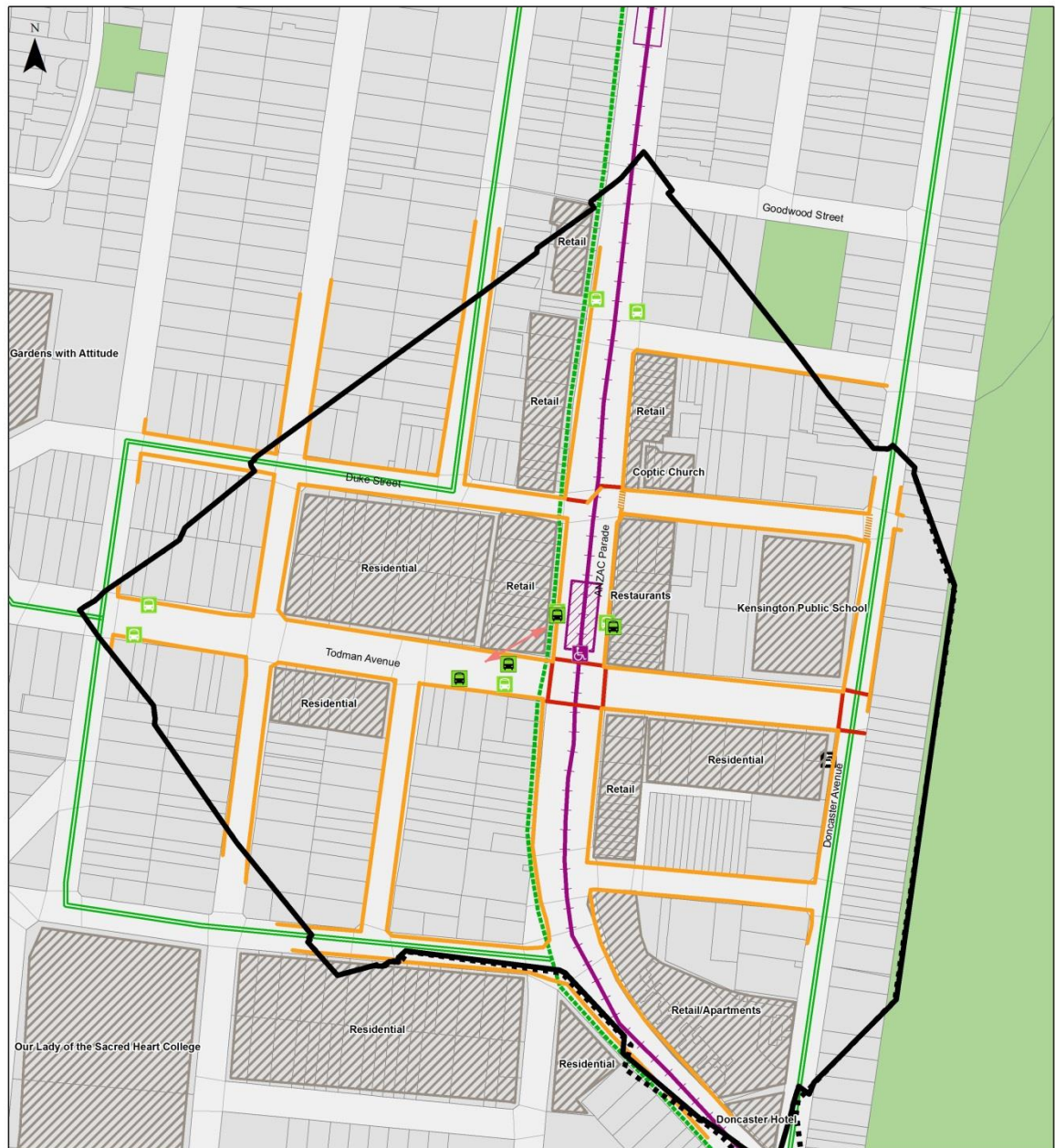
The key actions to resolve the multimodal access issues in the Todman Avenue stop precinct are;

- Implement pedestrian priority improvements to facilitate pedestrian access to the Todman Avenue stop at the key intersection of Anzac Parade and Todman Avenue. Anzac Parade signals provide customers with safe, direct access to light rail platforms.
- Position bus stops to enable safe and quick transfers to light rail.
- Enhance existing car share with additional spaces to provide for onward journey (for example to Green Square).
- Introduce integrated customer information and wayfinding for interchange and connections between light rail and all other modes to make the quickest route more legible.
- Consider potential improvements to lighting in detailed stop design.
- Coordination of bus and light rail timetables to be investigated, particularly during off peak periods when the frequency of light rail services will be reduced.

Table 7-15: Todman Avenue Precinct Access Plan

Stop Name
Todman Avenue
Land Uses
<ul style="list-style-type: none"> – Residential – Student accommodation – Retail / F&B – Educational – Civic
Major Trip Generators
<ul style="list-style-type: none"> – Residential (medium density dwellings on Anzac Parade, low density detached dwellings to east and west of Anzac Parade. – Student accommodation. – Retail / F&B (along Anzac Parade). – Educational (Kensington Public School). – Civic (Coptic Orthodox Church of St George, Kensington RSL).
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 531 boardings and 296 alightings forecast for 2021. – 637 boardings and 421 alightings forecast for 2036.
Light Rail
<ul style="list-style-type: none"> – 450m south of proposed Carlton Street stop on Kingsford branch of CSELR line. – 800m north of proposed UNSW Anzac Parade stop on Kingsford branch of CSELR line.
Bus
<ul style="list-style-type: none"> – Estimated AM peak hour interchange patronage from bus to light rail is 83 (18%) in 2021. – 100m north-east of existing Todman Avenue stop. – 200m north and south of existing Anzac Parade stops (on both sides of Todman Avenue).
Pedestrian
<ul style="list-style-type: none"> – Estimated AM peak hour walk up patronage of 389 (82%) in 2021.
Bicycle
<ul style="list-style-type: none"> – On-road routes: <ul style="list-style-type: none"> ▪ Two way; Doncaster Avenue (north-south), Boronia Street (north-south), Duke Street (east-west), Todman Avenue (east-west), Addison Street (east-west). – Planned off-road cycle path: <ul style="list-style-type: none"> ▪ Two way; Anzac Parade (north-south). – Proposed u-rail cycle parking facility with approximately five spaces at or adjacent to the light rail stop.

Figure 7-14: Todman Avenue Precinct Access Plan



Legend

			Public Transport
	Pedestrian Enhancements		

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7.3.15. UNSW Anzac Parade Precinct Access Plan

Access Improvements

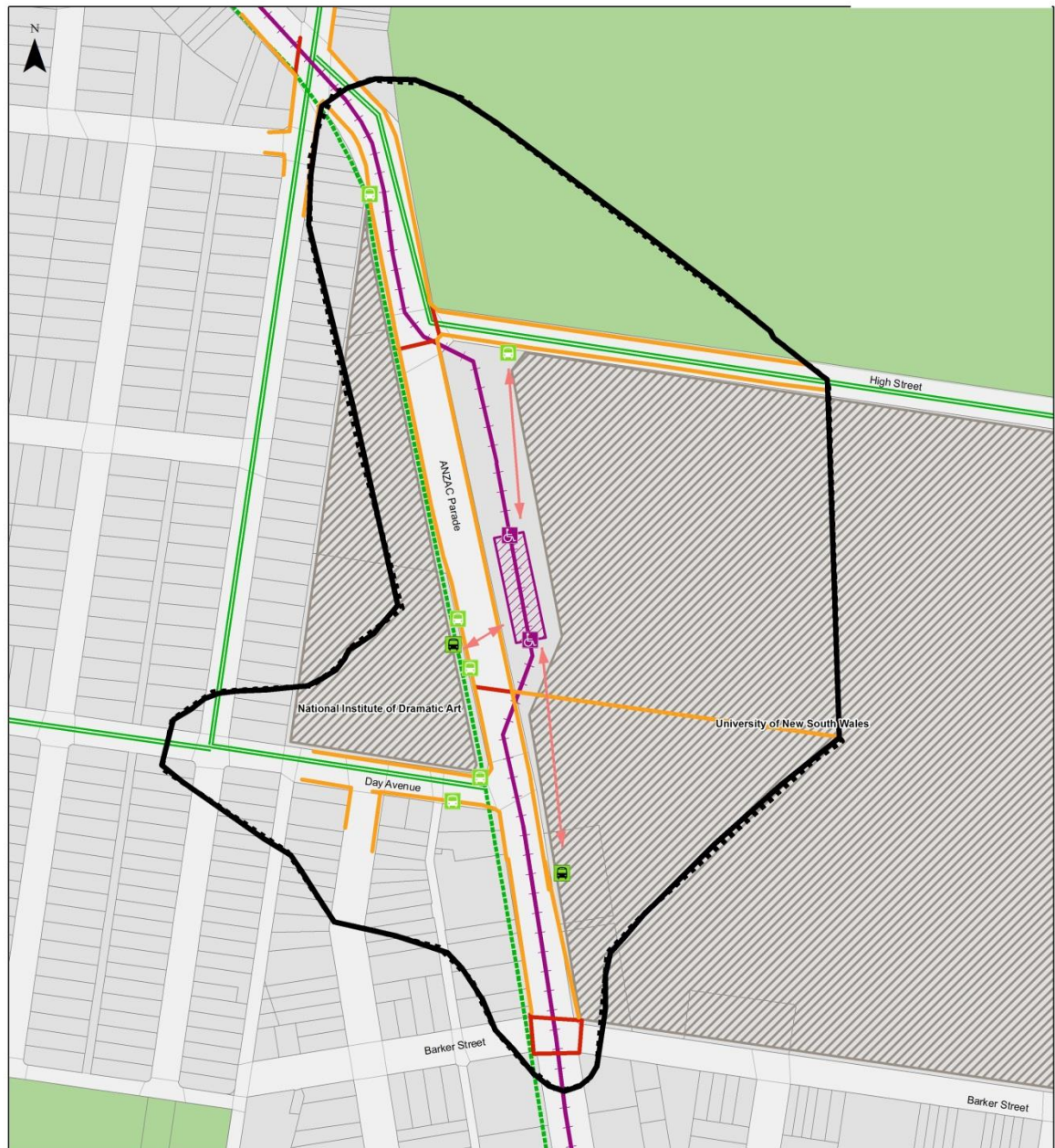
The key actions to resolve the multimodal access issues in the UNSW Anzac Parade stop precinct are;

- The UNSW Anzac Parade stop is proposed in an offline location which will minimise interaction between cars and pedestrians on the eastern side of Anzac Parade. This enables customers alighting at the stop to directly access the University Mall without having to cross Anzac Parade.
- Implement pedestrian priority improvements to reduce pedestrian wait times at the key signalised crossing on Anzac Parade. This will ensure a safe pedestrian connection between the light rail stop and the western side of Anzac Parade.
- Also provide priority for north-south pedestrian movements at the following intersections;
 - Anzac Parade and High Street
 - Anzac Parade and Day Avenue
- Introduce integrated customer information (including for UNSW) and wayfinding for interchange and connections between light rail and all other modes to make the quickest route more legible.
- Consider potential improvements to lighting in detailed stop design.

Table 7-16: UNSW Anzac Parade Precinct Access Plan

Stop Name
UNSW Anzac Parade
Land Uses
<ul style="list-style-type: none"> – Educational – Residential – Student accommodation – Retail / F&B
Major Trip Generators
<ul style="list-style-type: none"> – Educational (University of New South Wales, National Institute of Dramatic Art). – Residential (medium density dwellings on Anzac Parade, low density detached dwellings to east and west of Anzac Parade). – Student accommodation. – Retail / F&B (along Anzac Parade).
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 626 boardings and 1,291 alightings forecast for 2021. – 708 boardings and 1,673 alightings forecast for 2036.
Light Rail
<ul style="list-style-type: none"> – 400m north of proposed Strachan Street stop on Kingsford branch of CSELRL line. – ~800m south of proposed Todman Avenue stop on Kingsford branch of CSELRL line.
Bus
<ul style="list-style-type: none"> – Estimated AM peak hour interchange patronage from bus to light rail is 146 (35%) in 2021. – Adjacent to existing Anzac Parade northbound stop. – 150m south-west of existing High Street northbound stop. – 200m north of existing Anzac Parade stop (both directions).
Pedestrian
<ul style="list-style-type: none"> – Estimated AM peak hour walk up patronage of 281 in 2021.
Bicycle
<ul style="list-style-type: none"> – On-road routes: <ul style="list-style-type: none"> ▪ Two way; Doncaster Avenue (north-south), Houston Road (north-south), Day Avenue / UNSW (east-west), High Street (east-west). – Planned off-road cycle path: <ul style="list-style-type: none"> ▪ Two way; Anzac Parade (north-south). – Proposed u-rail cycle parking facility with approximately five spaces at or adjacent to the light rail stop.

Figure 7-15: UNSW Anzac Parade Precinct Access Plan



Legend

Other CSELR Stops	Pedestrian Links	Car Share Location	Public Transport
UNSW Anzac Parade Stop	Signalised Crossing	Cycle Parking	Bus Stop (Existing - retained)
Disabled Access	Unsignalised Crossing	Cycle Network	Bus Stop (Proposed - new)
Alignment	Pedestrian Enhancements	Existing - off road	Rail
400m Exclusive Catchment	Existing Pedestrian Only Areas	Existing - on road	Interchange Movements
400m Catchment	Proposed Pedestrian Only Areas	Planned - off road	
Major Trip Generators	Proposed Priority Improvements	Potential - on road	
		Potential - off road	

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7.3.16. Strachan Street Precinct Access Plan

Access Improvements

The key actions to resolve the multimodal access issues in the Strachan Street stop precinct are;

- Implement pedestrian priority improvements to reduce pedestrian wait times at the key signalised intersections of Anzac Parade, Strachan Street and Middle Street. Anzac Parade signals provide customers with safe, direct access to light rail platforms.
- Consider potential improvements to lighting in detailed stop design.

Table 7-17: Strachan Street Precinct Access Plan

Stop Name
Strachan Street
Land Uses
<ul style="list-style-type: none"> – Residential – Retail / F&B – Sport
Major Trip Generators
<ul style="list-style-type: none"> – Residential (medium density dwellings on Anzac Parade, low density detached dwellings to east and west of Anzac Parade). – Retail / F&B (along Anzac Parade). – Sport (Kensington Park, Kensington Bowls Club, Eastcourts Tennis).
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 802 boardings and 84 alightings forecast for 2021. – 1,024 boardings and 99 alightings forecast for 2036.
Light Rail
<ul style="list-style-type: none"> – 400m south of proposed UNSW Anzac Parade stop on Kingsford branch of CSELRL line. – 450m north of proposed Kingsford stop on Kingsford branch of CSELRL line.
Bus
<ul style="list-style-type: none"> – Estimated AM peak hour interchange patronage from bus to light rail is 6 (2%) in 2021. – 60m north of Anzac Parade stop. – 160m south of Anzac Parade stop. – 250m north of Meeks Avenue stop. – 400m north-east of Houston Road stop.
Pedestrian
<ul style="list-style-type: none"> – Estimated AM peak hour walk up patronage of 316 (98%) in 2021.
Bicycle
<ul style="list-style-type: none"> – On-road routes: <ul style="list-style-type: none"> ■ Two way; Houston Road (north-south), Day Avenue / UNSW (east-west). – Planned off-road cycle path: <ul style="list-style-type: none"> ■ Two way; Anzac Parade (north-south). – Proposed u-rail cycle parking facility with approximately five spaces at or adjacent to the light rail stop.

Figure 7-16: Strachan Street Precinct Access Plan



Legend

Other CSELR Stops	Pedestrian Links	Car Share Location	Public Transport
Strachan Street Stop	Signalised Crossing	Cycle Parking	Bus Stop (Existing - retained)
Disabled Access	Unsignalised Crossing	Cycle Network	Bus Stop (Proposed - new)
Alignment	Pedestrian Enhancements	Existing - off road	Rail
400m Exclusive Catchment	Existing Pedestrian Only Areas	Existing - on road	Interchange Movements
400m Catchment	Proposed Pedestrian Only Areas	Planned - off road	
Major Trip Generators	Proposed Priority Improvements	Potential - on road	
		Potential - off road	

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7.3.17. Kingsford Precinct Access Plan

Access Improvements

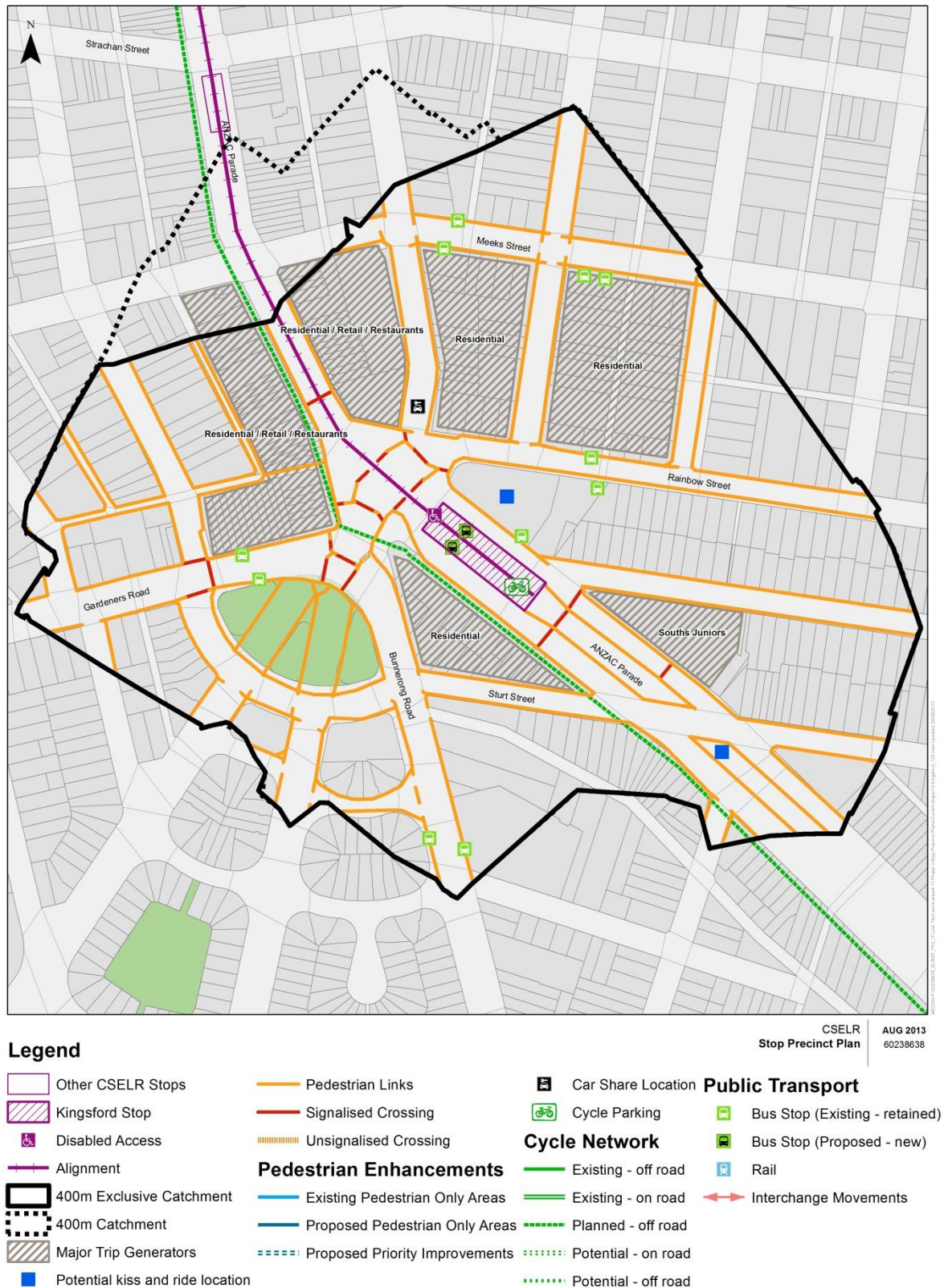
The key actions to resolve the multimodal access issues in the Kingsford stop precinct are;

- Position bus stops to enable safe and quick transfers to light rail. For buses intended to act as interchange services, this includes establishing a cross-platform transfer to / from light rail.
- Coordination of bus and light rail timetables to be investigated, particularly during off peak periods when the frequency of light rail services will be reduced.
- Potential kiss and ride locations identified, which will be subject to further consultation with stakeholders.
- Implement upgrade of Nineways intersection to provide improved pedestrian crossing to / from the Kingsford Centre and light rail
- Position new signalised crossings adjacent to the light rail stop for direct pedestrian access to either side of Anzac Parade (south of Nineways).
- Preliminary analysis suggests additional car share located close to the Kingsford stop would be attractive to current and potential car share members. A car share location would help offset the loss of parking once CSELR is implemented in the Anzac Parade corridor.
- Consider potential improvements to lighting in detailed stop design.

Table 7-18: Kingsford Precinct Access Plan

Stop Name
Kingsford
Land Uses
<ul style="list-style-type: none"> – Residential – Retail / F&B
Major Trip Generators
<ul style="list-style-type: none"> – Residential (medium density dwellings on Anzac Parade, low density detached dwellings to east and west of Anzac Parade. – Retail / F&B (along Anzac Parade).
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 1,454 boardings and 515 alightings forecast for 2021. – 1,851 boardings and 615 alightings forecast for 2036.
Light Rail
<ul style="list-style-type: none"> – 450m south of proposed Strachan Street stop on Kingsford branch of CSELR line.
Bus
<ul style="list-style-type: none"> – This stop is proposed as the terminus of the Kingsford branch of the CSELR line. As such, Kingsford is envisaged as a major bus / light rail interchange for passengers travelling between the city and south-eastern suburbs such as Maroubra, Malabar and Little Bay. To aid transfers between bus and light rail, a cross platform interchange is proposed. – Estimated AM peak hour interchange patronage from bus to light rail is 2,021 (92%) in 2021. – During off peak periods users will be forced to transfer from bus to light rail at Kingsford – efficient and effective transfer arrangements will be required to mitigate any negative impacts. – 150m south of existing Anzac Parade stop. – 150m west of existing Rainbow Street stop. – 250m east of existing Gardeners Road stop.
Pedestrian
<ul style="list-style-type: none"> – In order for Kingsford to operate as a successful interchange, pedestrian priority improvements are required. – Estimated AM peak hour walk up passengers of 177 (8%) in 2021.
Bicycle
<ul style="list-style-type: none"> – On-road routes: <ul style="list-style-type: none"> ▪ Two way; Houston Road (north-south), Sturt Street (east-west). – Planned off-road cycle path: <ul style="list-style-type: none"> ▪ Two way; Anzac Parade (north-south). – Proposed cycle parking facility with approximately five bicycle locker spaces, supplemented with approximately 10 u-rail spaces at or adjacent to the light rail stop.

Figure 7-17: Kingsford Precinct Access Plan



7.3.18. Royal Randwick Racecourse Precinct Access Plan

Access Improvements

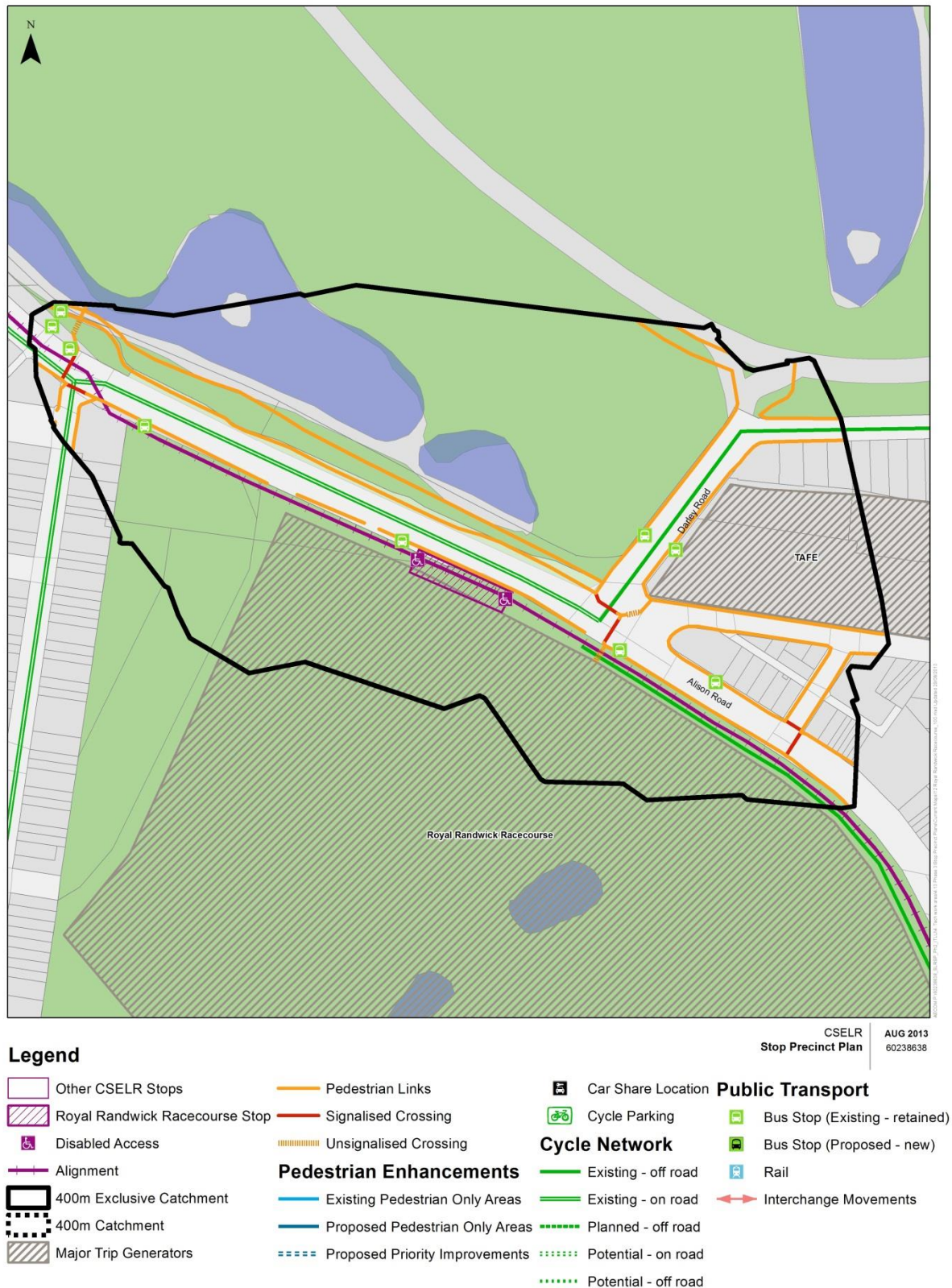
The key actions to resolve the multimodal access issues in the Royal Randwick Racecourse stop precinct are;

- Introduce integrated customer information and wayfinding for interchange and connections between light rail and all other modes to make the quickest route more legible.
- Implement pedestrian priority improvements to reduce wait times at existing signalised intersections such as;
 - Alison Road and Darley Road, to service the TAFE
 - Alison Road and Doncaster Avenue
- Locate the Royal Randwick Racecourse stop offline to reduce interaction between cars and pedestrians and enable direct connections for high pedestrian flows to / from Royal Randwick Racecourse.
- The Royal Randwick Racecourse stop is proposed in an offline location which will minimise interaction between cars and pedestrians on the southern side of Alison Road.
- Introduce integrated customer information and wayfinding for interchange and connections between light rail and all other modes to make the quickest route more legible.
- Consider potential improvements to lighting in detailed stop design.
- The off-road cycle path and footpath on the west side of Wansey Road and south side of Alison Road will be retained, but relocated within the same corridor.

Table 7-19: Royal Randwick Racecourse Precinct Access Plan

Stop Name
<ul style="list-style-type: none"> – Royal Randwick Racecourse
Land Uses
<ul style="list-style-type: none"> – Sport – Residential – Recreational – Educational
Major Trip Generators
<ul style="list-style-type: none"> – Sport (Royal Randwick Racecourse). – Residential (medium density dwellings on Alison Road, low density detached dwellings to east and west of Alison Road). – Recreational (Centennial Park). – Educational (TAFE NSW, UNSW Institute of Languages).
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 691 boardings and 187 alightings forecast for 2021. – 802 boardings and 213 alightings forecast for 2036.
Light Rail
<ul style="list-style-type: none"> – 1.9km south-east of proposed Moore Park stop on CSELR line. – 900m north-west of proposed Wansey Road stop on Randwick branch of CSELR line.
Bus
<ul style="list-style-type: none"> – Estimated AM peak hour interchange patronage from bus to light rail is 455 (96%) in 2021. – 200m west of existing Darley Road stop. – 200m west of existing Alison Road stop (west of Darley Road). – 300m east of existing Alison Road stops (on busway and Alison Road).
Pedestrian
<ul style="list-style-type: none"> – Estimated AM peak hour walk up patronage of 18 (4%) in 2021.
Bicycle
<ul style="list-style-type: none"> – Off-road cycle path: <ul style="list-style-type: none"> ▪ Two way; Alison Road (west of Darley Road, east-west), Darley Road (east-west). – On-road routes: <ul style="list-style-type: none"> ▪ Two way; Doncaster Avenue (north-south), Alison Road (east-west). – Proposed u-rail cycle parking facility with approximately five spaces at or adjacent to the light rail stop.

Figure 7-18: Royal Randwick Racecourse Precinct Access Plan



7.3.19. Wansey Road Precinct Access Plan

Access Improvements

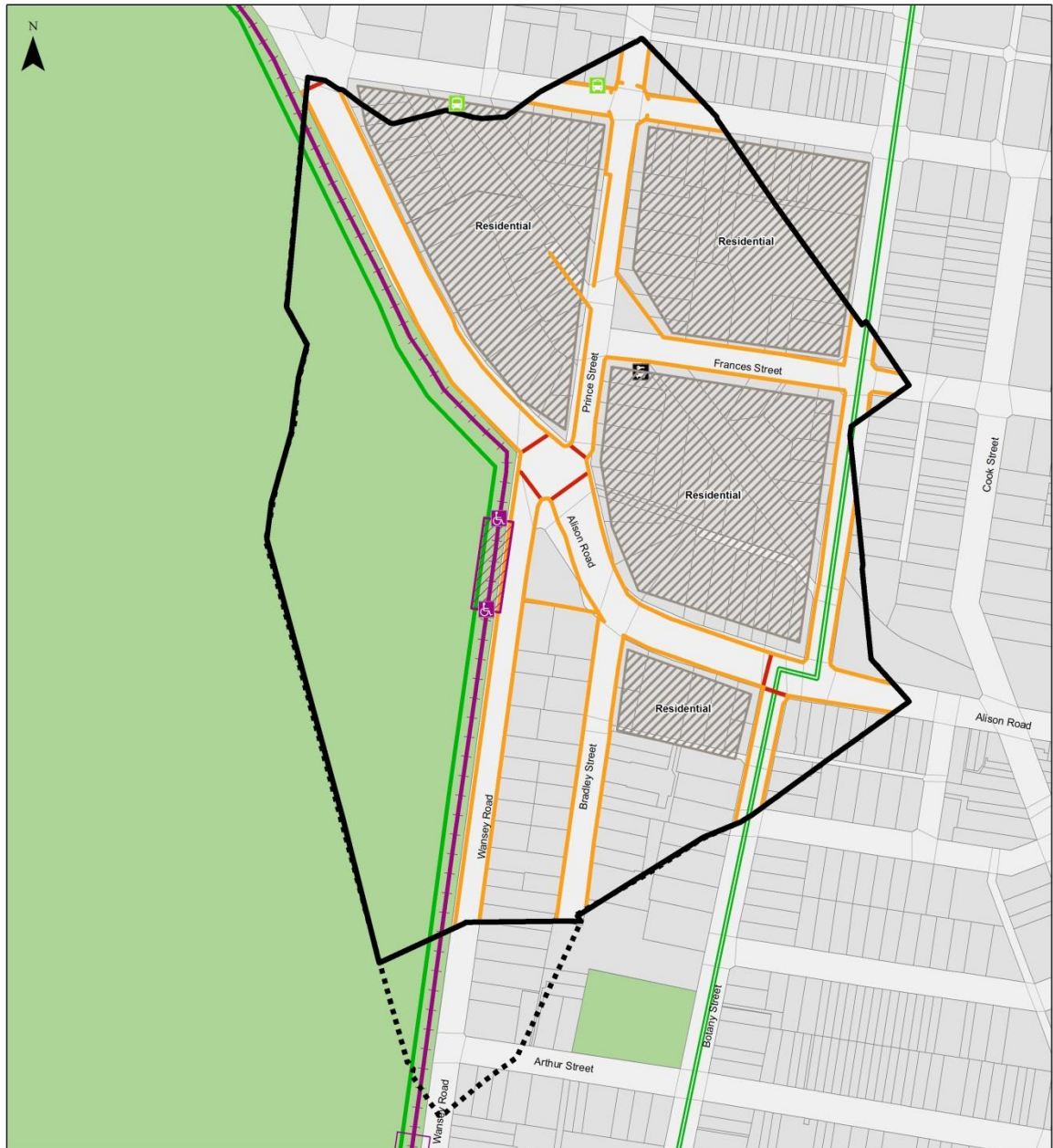
The key actions to resolve the multimodal access issues in the Wansey Road stop precinct are;

- Signalise the intersection of Alison Road and Wansey Road to improve pedestrian access to the light rail stop, to serve the majority of the pedestrian catchment of 700 people per AM peak hour to the north, east and across Alison Road.
- Preliminary analysis suggests a car share location in close proximity to the Wansey Road stop would be attractive to current and potential car share members. A car share location would help offset loss of parking following the implementation of the Alison and Wansey Road corridors. This would provide for onward journeys to the east in Randwick and Waverley.
- Locate the Wansey Road stop offline to reduce interaction between cars and pedestrians trying to access the light rail platforms.
- Consider potential improvements to lighting in detailed stop design.
- The off-road cycle path and footpath on the west side of Wansey Road and south side of Alison Road will be retained, but relocated within the same corridor.

Table 7-20: Wansey Road Precinct Access Plan

Stop Name
Wansey Road
Land Uses
– Residential
Major Trip Generators
– Residential (medium density dwellings on Alison Road, low density detached dwellings to east and west of Alison Road)
Multi-Modal Stop Access
Patronage
– 921 boardings and 316 alightings forecast for 2021.
– 1,029 boardings and 358 alightings forecast for 2036.
Light Rail
– 900m south-east of proposed Royal Randwick Racecourse stop on Randwick branch of CSELR line.
– 450m north of proposed UNSW High Street stop on Randwick branch of CSELR line.
Bus
– Estimated AM peak hour interchange patronage from bus to light rail is 30 (6%) in 2021.
– 400m south of existing Cowper Road stop.
– 500m south-west of Cook Street stop.
Pedestrian
– Estimated AM peak hour walk up passengers of 475 (94%) in 2021.
Bicycle
– Off-road cycle path: <ul style="list-style-type: none"> ■ Two way; Wansey Road (north-south), Alison Road (east-west).
– On-road route: <ul style="list-style-type: none"> ■ Two way; Botany Street / Church Street (north-south).
– Proposed u-rail cycle parking facility with approximately five spaces at or adjacent to the light rail stop.

Figure 7-19: Wansey Road Precinct Access Plan



Legend

Other CSELR Stops	Pedestrian Links	Car Share Location	Public Transport
Wansey Road Stop	Signalised Crossing	Cycle Parking	Bus Stop (Existing - retained)
Disabled Access	Unsignalised Crossing	Cycle Network	Bus Stop (Proposed - new)
Alignment	Pedestrian Enhancements	Existing - off road	Rail
400m Exclusive Catchment	Existing Pedestrian Only Areas	Existing - on road	Interchange Movements
400m Catchment	Proposed Pedestrian Only Areas	Planned - off road	
Major Trip Generators	Proposed Priority Improvements	Potential - on road	
		Potential - off road	

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7.3.20. UNSW High Street Precinct Access Plan

Access Improvements

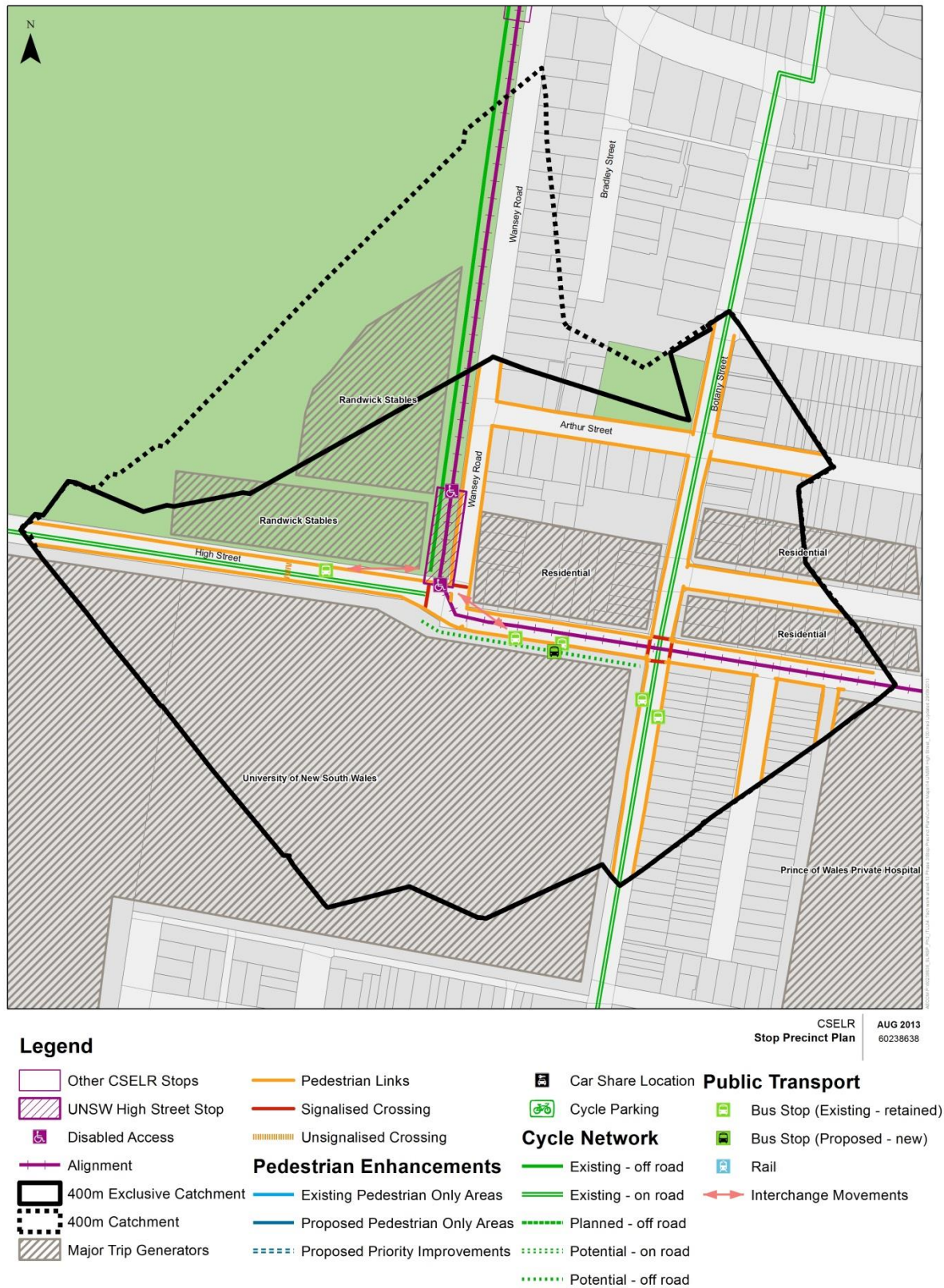
The key actions to resolve the multimodal access issues in the UNSW High Street stop precinct are;

- Replace the existing marked crossing on High Street east of Wansey Road with signalised crossings as part of the signalisation of the intersection of High Street and Wansey Road. This will strengthen pedestrian connections between the light rail stop and UNSW and the remainder of the local catchment.
- Position bus stops to enable safe and efficient transfers to light rail.
- Locate the UNSW High Street stop offline to reduce interaction between cars and pedestrians and enable signalised connections for high pedestrian flows to / from UNSW.
- Introduce integrated customer information and wayfinding for interchange and connections between light rail and all other modes to make the quickest route more legible.
- Consider potential improvements to lighting in detailed stop design.

Table 7-21: UNSW High Street Precinct Access Plan

Stop Name
UNSW High Street
Land Uses
<ul style="list-style-type: none"> – Educational – Residential – Sport
Major Trip Generators
<ul style="list-style-type: none"> – Educational (UNSW). – Residential (housing along Wansey Road and High Street). – Sport (stables for Royal Randwick Racecourse).
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 749 boardings and 2,188 alightings forecast for 2021. – 842 boardings and 2,803 alightings forecast for 2036.
Light Rail
<ul style="list-style-type: none"> – 450m south of proposed Wansey Road stop on Randwick branch of CSELR line. – 650m west of proposed Randwick stop on Randwick branch of CSELR line.
Bus
<ul style="list-style-type: none"> – Estimated AM peak hour interchange patronage from bus to light rail is 260 (54%) in 2021. – 70-100m east and west of existing High Street stop.
Pedestrian
<ul style="list-style-type: none"> – Considering the high number of passengers that will alight at UNSW High Street, pedestrian priority improvements are required. – Estimated AM peak hour walk up patronage of 218 (46%) in 2021.
Bicycle
<ul style="list-style-type: none"> – Off-road cycle path: <ul style="list-style-type: none"> ■ Two way; Wansey Road (north-south). – On-road routes: <ul style="list-style-type: none"> ■ Two way; High Street (west of Wansey Road, east-west), UNSW (east-west), Botany Road (north-south). – Proposed u-rail cycle parking facility with approximately five spaces at or adjacent to the light rail stop.

Figure 7-20: UNSW High Street Precinct Access Plan



7.3.21. Randwick Precinct Access Plan

Access Improvements

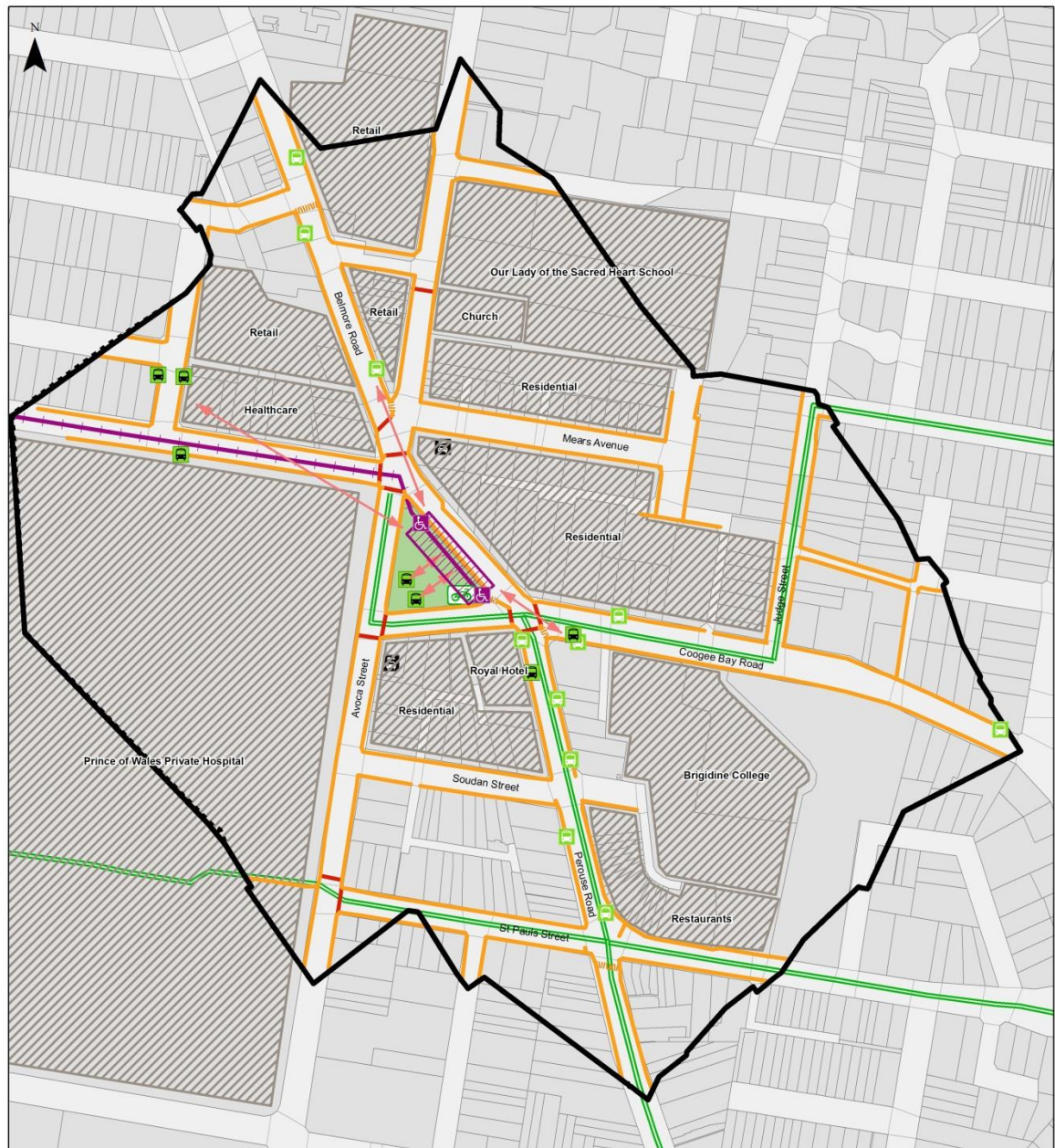
The key actions to resolve the multimodal access issues in the Randwick stop precinct are;

- Maximise opportunities for cross platform and 'round the corner' transfers for passengers interchanging between bus and light rail. This will minimise interaction between cars and pedestrians to enable safe, efficient transfers between modes.
- Coordination of bus and light rail timetables to be investigated, particularly during off peak periods when the frequency of light rail services will be reduced.
- Implement pedestrian priority improvements to reduce wait times at key intersections such as;
 - Belmore Road, Coogee Bay Road, Cuthill Street and Perouse Road
 - Avoca Street and Cuthill Street
 - Avoca Street, Belmore Road and High Street
- Preliminary analysis suggests additional car share located close to the Randwick stop would be attractive to current and potential car share members. A car share location would help offset the loss of parking once CSELR is implemented in the Randwick corridor.
- Proposed dedicated cycle parking facility at light rail stop.
- Consider potential improvements to lighting in detailed stop design.

Table 7-22: Randwick Precinct Access Plan

Stop Name
Randwick
Land Uses
<ul style="list-style-type: none"> – Medical – Commercial – Retail – Residential – Educational
Major Trip Generators
<ul style="list-style-type: none"> – Medical (Prince of Wales Hospital). – Retail (Royal Randwick Shopping Centre, Avoca Street and Belmore Road). – Commercial (Randwick Town Centre). – Residential (North of High Street, east of Avoca Street). – Educational (Brigidine College, Randwick Girls High School, Randwick Boys High School, Rainbow Street Public School).
Multi-Modal Stop Access
Patronage
<ul style="list-style-type: none"> – 826 boardings and 361 alightings forecast for 2021. – 1,008 boardings and 401 alightings forecast for 2036.
Light Rail
<ul style="list-style-type: none"> – 650m west of proposed Randwick stop on Randwick branch of CSELR line.
Bus
<ul style="list-style-type: none"> – This stop is proposed as the terminus of the Randwick branch of the CSELR line. As such, Randwick is envisaged as a major bus / light rail interchange for passengers travelling between the city and eastern suburbs such as Coogee and South Coogee. To aid transfers between bus and light rail, the Randwick terminus will operate with “cross platform” and “round the corner” transfers. – During off peak periods users will be forced to transfer from bus to light rail at Randwick – efficient and effective transfer arrangements will be required to mitigate any negative impacts – Estimated AM peak hour interchange patronage from bus to light rail is 1,607 (93%) in 2021.
Pedestrians
<ul style="list-style-type: none"> – Estimated AM peak hour walk up patronage of 124 (7%) in 2021.
Bicycle
<ul style="list-style-type: none"> – On-road routes: <ul style="list-style-type: none"> ▪ Two way; Coogee Bay Road / Judge Street / Dolphin Street (east-west), Prince of Wales Hospital / St Pauls Street (east-west), Perouse Road (north-south). – Proposed cycle parking facility with approximately five bicycle locker spaces, supplemented by approximately 10 u-rail spaces at or adjacent to the light rail stop.

Figure 7-21: Randwick Precinct Access Plan



Legend

Other CSELR Stops	Pedestrian Links	Car Share Location	Public Transport
Randwick Stop	Signalised Crossing	Cycle Parking	Bus Stop (Existing - retained)
Disabled Access	Unsignalised Crossing	Cycle Network	Bus Stop (Proposed - new)
Alignment	Pedestrian Enhancements	Existing - off road	Rail
400m Exclusive Catchment	Existing Pedestrian Only Areas	Existing - on road	Interchange Movements
400m Catchment	Proposed Pedestrian Only Areas	Planned - off road	
Major Trip Generators	Proposed Priority Improvements	Potential - on road	
		Potential - off road	

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8. Conclusion

8.1. Purpose of the Report

This report identifies the considerable transport capacity, sustainability and reliability benefits that will be derived from the CSELR project, and proposes suitable responses to recognised project effects on the surface traffic and transport network.

The CSELR project contains two of the policy responses outlined in the CCAS - a key guiding document developed under the NSW Long Term Transport Master Plan. The CSELR will transform Sydney's transport network by providing additional capacity and service reliability to address current challenges and adequately cater for future growth in demand for services. Light rail offers an opportunity to redesign the current 'direct' approach to transport service provision to a 'connected' approach, maximising the effectiveness of public transport by introducing a high-capacity, high-frequency transport option integrated within a multi-modal network.

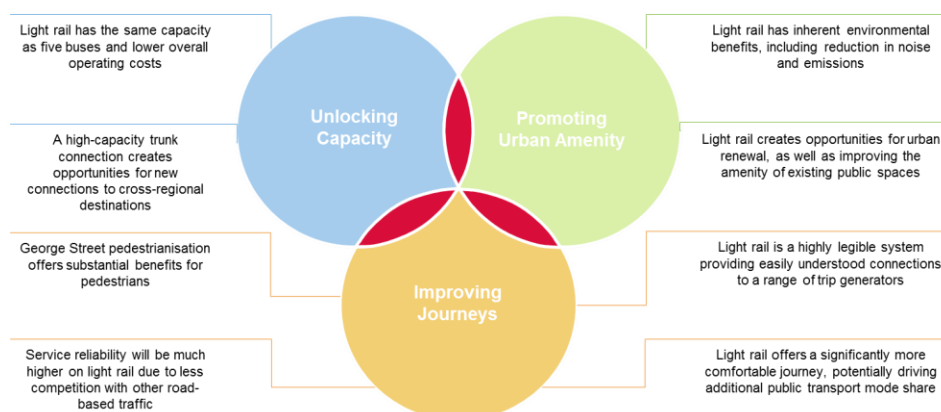
The light rail project comprises of following key characteristics:

- The light rail route will extend from Circular Quay to Kingsford and Randwick with 20 stops in total through the CBD, Surry Hills and South East;
- Integration with other transport modes at interchanges including Circular Quay, Wynyard, Town Hall, and Central Station as well as bus interchanges at Rawson Place, Randwick and Kingsford;
- Each light rail vehicle has the capacity to move 300 commuters, equivalent of five standard buses;
- Integrated customer information and wayfinding between multi-modal connections, at all stops;
- 'Turn up and go' services run every three minutes during peak periods; and
- Complemented by a pedestrianised zone on George Street between Hunter and Bathurst Streets.

8.2. Benefits of the Project

Introducing light rail to the CBD and South Eastern suburbs will provide substantial benefits to address current transport challenges as summarised in Figure 8-1.

Figure 8-1: Potential Benefits from the Introduction of the CSELR¹²⁹



¹²⁹ Booz & Company analysis

Promoting Urban Amenity

Sydney has the highest level of congestion in Australia currently costing the economy \$5.1 billion annually, expected to increase to \$7.8 billion by 2020¹³⁰. This puts great strain on the national economy, and stifles productivity growth in the city.

The CSELR project will introduce high-capacity and high-frequency transport improving urban amenity at a relative low operating and maintenance cost, by:

- Introducing a pedestrianised zone in one of the retail hearts of the Sydney CBD;
- Providing a high-capacity transport mode that meets existing and future travel demand;
- Providing a financially sustainable and environmentally friendly transport option;
- Maintaining low emission and pollution levels; and
- Offering further environmental benefits by seeking to increase public transport mode share.

Unlocking Capacity

Buses currently cater for significant transport demand, and the need for capacity has caused significant growth in the number of buses accessing the CBD cordon which deteriorates the reliability of bus services and negatively impacts the amenity of the CBD. George Street in particular carries up to 290 buses in the peak direction during the AM peak (7am – 9am) and this is expected to increase to over 310 by 2015. The congested bus network combined with the demands of other road users' impacts on customer service and delays essential business functions. The bus network cannot continue to grow to meet demand for capacity without increasing congestion levels.

Light rail offers a high-capacity transport option that:

- Carries up to 300 commuters, the equivalent of around five regular buses on the road space of only three buses resulting in total capacity on the line for 9,000 passengers per hour;
- Reduces the number of bus routes required to access the City Centre while providing an improved level of service;
- Accommodates future growth by providing additional capacity that is able to scale to meet future challenges; and
- Provides opportunities to connect to cross-regional destinations at major interchanges, growing the capacity of the broader transport system.

Improving Journeys

Customers currently receive transport services that don't meet community expectations, with only 50 per cent of commuters satisfied with service timeliness¹³¹. Transport for NSW analysis suggests only 19-24 per cent of buses arrive within two minutes of scheduled time during the AM peak due to the substantial congestion they experience when accessing CBD gateways.

Light rail offers a comfortable, reliable transport option that meets customer expectations by:

- Delivering service reliability of 97% resulting in an improved experience for commuters;
- Partial pedestrianisation of George Street which improves pedestrian journeys and amenity;

¹³⁰ Bureau of Infrastructure Transport and Regional Economics, *Estimating urban traffic and congestion cost trends for Australian cities Working Paper No. 71*, 2007

¹³¹ Bureau of Transport Statistics, *Transport Customer Survey*, 2012

- Integrated customer information and wayfinding between multi-modal connections, at all stops; and
- Offering multi-modal access at interchanges along the route.

8.3. Managing the Effects of the Project

Whilst recognising the benefits of the CSELR Project, a key aim of this report has been to highlight any effects of the Project on traffic and transport operations. An infrastructure change of this magnitude in a highly congested city such as Sydney introduces a variety of challenges. The significant impacts that CSELR will have on the current operations of the city's traffic and transport network have been recognised, and proposed mitigation strategies have been developed to manage these impacts as best possible. The impacts examined in detail within the report are summarised in Table 8-1, and in the section below. These effects have been mitigated through treatment under the Traffic and Transport Impact Management Framework.

Table 8-1: CSELR Traffic and Transport Constraints

Category	Operational Constraints
<i>Network operations</i>	<ul style="list-style-type: none"> ■ General traffic lanes occupied by light rail ■ Potential for increased competition for road space between private vehicles and public transport in some locations ■ Capacity of alternate streets to absorb displaced traffic ■ Continued operation of bus priority with changes to bus lanes ■ Light rail might impact east-west traffic flow
<i>Access</i>	<ul style="list-style-type: none"> ■ Road operations changed which may limit access to some destinations ■ Potential for bus diversions that limit convenient and direct access to CBD rail stations for interchanging customers ■ Ability of local residents to access bus stops and local facilities ■ Footpath width and layout may constrain access to light rail stops
<i>Amenity</i>	<ul style="list-style-type: none"> ■ Noise generated by light rail operations and passengers accessing light rail ■ Noise generated through diversion of traffic onto secondary streets
<i>Customer Experience</i>	<ul style="list-style-type: none"> ■ Slower journey times for some customers ■ General traffic lanes occupied by light rail ■ Some customers might have to change a current one seat journey to a two seat journey due to changes in bus services
<i>Kerbside Uses</i>	<ul style="list-style-type: none"> ■ Loss of parking in some areas ■ Limitations on kerbside uses (taxi ranks, service deliveries etc.)
<i>Supporting Infrastructure</i>	<ul style="list-style-type: none"> ■ Footpath capacity in some locations ■ Ability to provide cycling infrastructure

Network Operations

The Project will significantly alter current traffic network operations once regular operations of light rail commence. In particular, substantial volumes of vehicular traffic will be displaced from a once-significant north-south corridor in the City, George Street, onto alternative routes. To manage these impacts:

- A revised road hierarchy for the CBD has been developed as part of the CCAS to reclassify George Street for primarily pedestrian and light rail use and to identify complementary priority routes for traffic, buses and bicycles on alternative corridors;
- Retention of general traffic lanes outside the pedestrianised zone northbound and southbound where corridor widths permit to facilitate traffic circulation;
- Retention of east-west connections through the CBD (including the pedestrianised zone) to ensure cross-regional vehicular traffic is not unnecessarily impinged;
- Optimisation of light rail integration with existing intersections to ensure levels of service are not degraded where possible; and
- Retention of as many general traffic lanes and bus priority measures as can be accommodated on the strategic road corridors of Anzac Parade and Alison Road.

A key finding of road network modelling undertaken to support the Project has been that by the year 2021 traffic volumes in the CBD and South East are forecast to grow by 7% without the implementation of light rail. As a result of this growth, average vehicle speeds are likely to reduce by approximately 10% from current levels. Implementation of light rail is expected to ameliorate this level of traffic growth as a result of the positive effect the Project has on public transport mode share. Indeed, this analysis has shown that the benefits of light rail for public transport users and pedestrians can be achieved without unacceptable detriment to road traffic.

Broadly speaking the traffic analysis demonstrates that the CSELR project can be introduced into the road network without significant detrimental impact to general traffic and buses. A number of key intersections have been identified where further design and optimisation work is underway, to provide increased capacity.

To address the effects of the identified future traffic patterns, TfNSW and RMS are working together to develop an appropriate Network Management Plan (NMP). This includes intersection modifications, traffic signal changes and traffic management measures that integrate to deliver the overall strategy for network operations with CSELR in place. This work is ongoing and the modelling assessment undertaken to date represents the first stage in the development of this wider NMP. As this plan is refined further improvement to the operation of the network is likely to be achieved.

This report outlines a number of demand management and network improvement strategies available to the Project team and road authority to maintain acceptable levels of network performance following introduction of the Project. These management strategies, documented in Chapter 5, would be developed and deployed at various stages of the Project from planning through to construction and operation.

Access

The changes to current road operations also impact on access through and to some destinations. Ensuring multi-modal access to light rail stops, CBD rail stations and network-critical bus and ferry interchanges was a key area of investigation during the development of this report. In particular;

- Multi-modal access strategies were developed for each light rail stop to maximise the opportunities for the community to access light rail services;

- Stop positioning and interchange passenger flows were examined for key interchange stops such as Town Hall, Circular Quay, as well as Kingsford and Randwick termini; and
- Local access to light rail, residences and commercial precincts were considered and managed – particularly adjacent to Devonshire Street in Surry Hills.

Amenity

Longer-term amenity impacts were considered in the CBD and Surry Hills precincts, where noise and accessibility issues were most pronounced. To ensure amenity was maintained or improved for the community wherever possible, the Project includes:

- A pedestrianised zone between Bathurst and Hunter Streets in the CBD;
- If feasible, inclusion of wire-free operations capability to preserve heritage and environmental icons; and
- Detailed investigation of suitable designs along Devonshire Street in Surry Hills to minimise light rail conflicts with pedestrian and local vehicle traffic.

User Experience

Light rail will facilitate significant improvements to the quality of service many customers experience when using the public transport system. Additional capacity, improved reliability and greater comfort are some of the features inherent in the delivery of many light rail systems, but the CSELR also includes:

- Specific design consideration for major events at Moore Park and Royal Randwick Racecourse to improve the quality of transport service provided to these events;
- A high-capacity, high-frequency contra-peak service along Anzac Parade to provide additional capacity for students and staff seeking to access the University of NSW and nearby commercial, education and health precincts;
- Proposed retention of express bus services to the northern CBD to provide transport options for customers travelling to this precinct, subject to ongoing study;
- Design of bus services to deliver passengers to within walking distance of their destination or in cases where duplication with light rail is not justified ensure quality interchange between bus and the CSELR; and
- Placement of the light rail line in the median or in a segregated zone where possible to both improve the reliability and operating speed of light rail, but also to minimise the need to reduce the number of traffic lanes available to the general public.

Kerbside Uses

Due to the nature of light rail, current kerbside uses will be affected by the requirement to re-allocate road space for the benefit of the majority of users. Kerbside uses including taxi zones, parking, loading zones, car-share and property access along the alignment were examined and appropriate management strategies developed to ensure the needs of kerbside and road transport system users were balanced. This included:

- Retaining all existing parking and loading provisions where feasible on the alignment;
- Considering options to replace impacted parking and loading on the alignment or in adjacent streets within the same precinct;
- Considering consolidation of parking and loading to ensure efficiency of road space allocation; and
- Developing a hierarchy of kerbside access to determine retention of the most critical uses.

Supporting Infrastructure

With the introduction of light rail to the CBD and South East and the pedestrianisation of George Street additional pedestrian flows around the stops will be generated. To ensure the supporting infrastructure, such as footpath and platform widths and road corridors was suitable, investigations were undertaken to determine the effect CSELR would have on existing pedestrian and cycling infrastructure. It was determined that:

- The pedestrianisation of Alfred and George Street between Hunter and Bathurst Streets will provide safe pedestrian access;
- Priority improvements, by way of signalised pedestrian crossing facilities, will be provided on all arms of existing signalised intersections to provide controlled crossing points of the light rail alignment; and
- Realignment of the strategic cycle network in the City Centre to support the redeveloped road hierarchy.

8.4. Ready to proceed

Significant investigations have been undertaken to determine how the CBD & South East Light Rail could be delivered into a complex, congested and critical part of Sydney's transport network. These investigations have been undertaken to support the development of an Environmental Impact Statement and inform the Department of Planning & Infrastructure of the opportunities and challenges presented by the Project. This report confirms the understanding that, while the Project will substantially change the surface transport system in Inner Sydney, there are no traffic and transport impacts to prevent the Project from proceeding through planning approval.

It has been determined that the identified effects of the Project can be appropriately managed through the application of design and/or best practice environmental management measures. Refinement of these measures, in parallel with ongoing design work will further enhance the Project and manage the identified impacts. If, through further project development work additional impacts to the surface transport system are discovered these will be quantified and assessed through the Traffic and Transport Management Framework used herein.

This report also outlines the substantial opportunity presented by the Project. The CSELR will transform the transport network in Sydney, through introducing a high-capacity, sustainable transport mode, resulting in significant long-term benefits for the community. Though recognising that a project of this magnitude will impact the wider traffic and transport network significantly, several management strategies have been proposed to mitigate these impacts as best possible. The management strategies will continue to be refined as the Project is developed, in consultation with stakeholders and the community to ensure the net positive impact of the Project is achieved.

9. Glossary

AFL	Australian Football League
ATC	Australian Transport Council
ATC	Australian Turf Club
BDA	Barangaroo Delivery Authority
BTS	Bureau of Transport Statistics
CBD	Central Business District
CCAS	City Centre Access Strategy
CSE Corridor	CBD and South East Corridor
CSELR	CBD and South East Light Rail
DoS	Degree of Saturation
DSAPT	Disability Standards for Accessible Public Transport
EIS	Environmental Impact Statement
GDP	Gross Domestic Product
GCT	Generalised Cost of Travel
ICC Sydney	International Convention Centre Sydney
IDM Data	Integrated Diagnostic Monitor Data
LGA	Local Government Area
LoS	Level of Service
LRVs	Light Rail Vehicles
MBSC	Metropolitan Bus System Contract
MS&EB	Materials Science and Engineering Building
NRL	National Rugby League
PTPM	Public Transport Project Model
SCATS	Sydney Co-ordinated Adaptive Traffic System
SCCBP	Sydney City Centre Bus Plan
SCG	Sydney Cricket Ground
SFS	Sydney Football Stadium
SICEEP	Sydney International Convention Exhibition and Entertainment Precinct
SIDRA	Signalised Intersection Design and Research Aid
SLRSP	Sydney Light Rail Strategic Plan
STM	Strategic Travel Model
TAFE	Technical and Further Education
TfNSW	Transport for New South Wales
UNSW	University of New South Wales
BITRE	The Bureau of Infrastructure, Transport and Regional Economics