

10. Traffic and transport

This chapter summarises the *Traffic and Transport Impact Assessment: Sydney Light Rail Extension — Stage 1* prepared by Parson Brinckerhoff, which is contained as Technical Paper 1 in Volume 2 of this environmental assessment (EA).

It outlines the potential traffic and transport impacts associated with the project, including during the project's construction and operation phases. It also sets out mitigation and management measures to minimise impacts during construction and operation.

DGRs	Where addressed in the EA
Land Use and Transport Integration — including but not limited to:	
<ul style="list-style-type: none"> ▪ the integration of light rail stops and the GreenWay with surrounding land uses and transport infrastructure and networks including: <ul style="list-style-type: none"> ▸ urban connectivity, stop accessibility and impacts on adjoining land use access ▸ pedestrian and cycle networks and infrastructure ▸ interchange with CityRail and bus services. ▪ road network interactions including: <ul style="list-style-type: none"> ▸ kiss-and-ride and parking, including demand and allocation for commuter and surrounding land uses ▸ service vehicular access to the corridor ▸ network changes, including bridges, clearances, intersections and pedestrian crossings, and the modelling of key changes such as the signalised pedestrian crossing at Marion Street, Leichhardt. ▪ Construction traffic and access, including a considered approach to minimising construction traffic impacts on public and private access, with consideration given to: <ul style="list-style-type: none"> ▸ construction traffic impacts, including potential disruption to the local and regional road network and the identification construction vehicle movements and access arrangements; and ▸ a strategy for managing traffic impacts, with a particular focus placed on those activities identified as having the greatest potential for adverse traffic flow, access or safety implications, and a broader, more generic approach developed for day-to-day traffic management. 	<p>Chapter 6 and Section 9.3</p> <p>Chapter 10</p> <p>Chapter 10</p> <p>Section 10.2.3 Section 10.7.1</p> <p>Section 10.5.1 and Chapter 19</p> <p>Section 10.5.2</p> <p>Section 10.4 Technical Paper 1</p> <p>Section 10.6 Technical Paper 1</p>

10.1 Assessment approach

The following tasks were part of the traffic and transport impact assessment:

- review the existing (2010) transport and traffic conditions on the transport networks surrounding the project
- review the future traffic and transport conditions, including:
 - forecast future light rail patronage (2016 and 2026) and stop access mode use

- ▶ forecast construction vehicle trips
- ▶ review light rail stop public transport interchange requirements
- ▶ forecast light rail parking requirements
- describe the traffic and transport impacts of the project
- make recommendations to mitigate impacts, including strategies for parking at each stop and an outline of the construction traffic management plan (CTMP).

10.2 Existing environment

10.2.1 Public transport and cycling

The area near the project is generally well served by public transport, particularly on radial routes towards the Sydney CBD. There are numerous bus routes that provide a mix of frequent services from inner-west suburbs to Sydney CBD and feeders to local railway stations, including Dulwich Hill and Lewisham stations. The local rail stations in the area are on the CityRail Inner West and Bankstown Lines that provide regular train services to the CBD, as well as west towards Burwood and Strathfield, or Bankstown. The existing light rail runs from Lilyfield to Central station via Pyrmont.

There is an extensive existing cycle network that surrounds the project and includes regional and local on- and off-street cycleways. In addition to the GreenWay shared path proposed for this project, there are several proposed cycleways within the local area.

Section 3.1 of the Technical Paper 1 in Volume 2 provides a summary of the existing public transport cycle facilities at each proposed light rail stop locations.

10.2.2 Traffic and parking

The road network surrounding the project is mostly local streets set out in an informal grid pattern largely orientated north-south and east-west. The existing local road network is shown in Figure 10.1 below.

The annual average daily traffic (AADT) volume on the local streets is low, with between 300 and 600 vehicles a day. Parramatta Road, however, which passes the Taverners Hill stop, has an AADT of approximately 70,000, while the City West Link carries 50,000 vehicles a day. Traffic volumes on the distributor and arterial road network are high, with many of these roads approaching capacity. The local road network by contrast has some capacity.

Parking on the arterial road network is generally highly regulated and controlled, with kerbside space provided for a variety of users; and limited spare capacity. The parking on local roads is varied and depends on the demographics and land use of each area. As a general observation, local roads alongside the project have some available parking spaces during the day. The existing parking situation at each stop is further described in the parking strategy, which is included as an attachment to Technical Paper 1 in Volume 2.

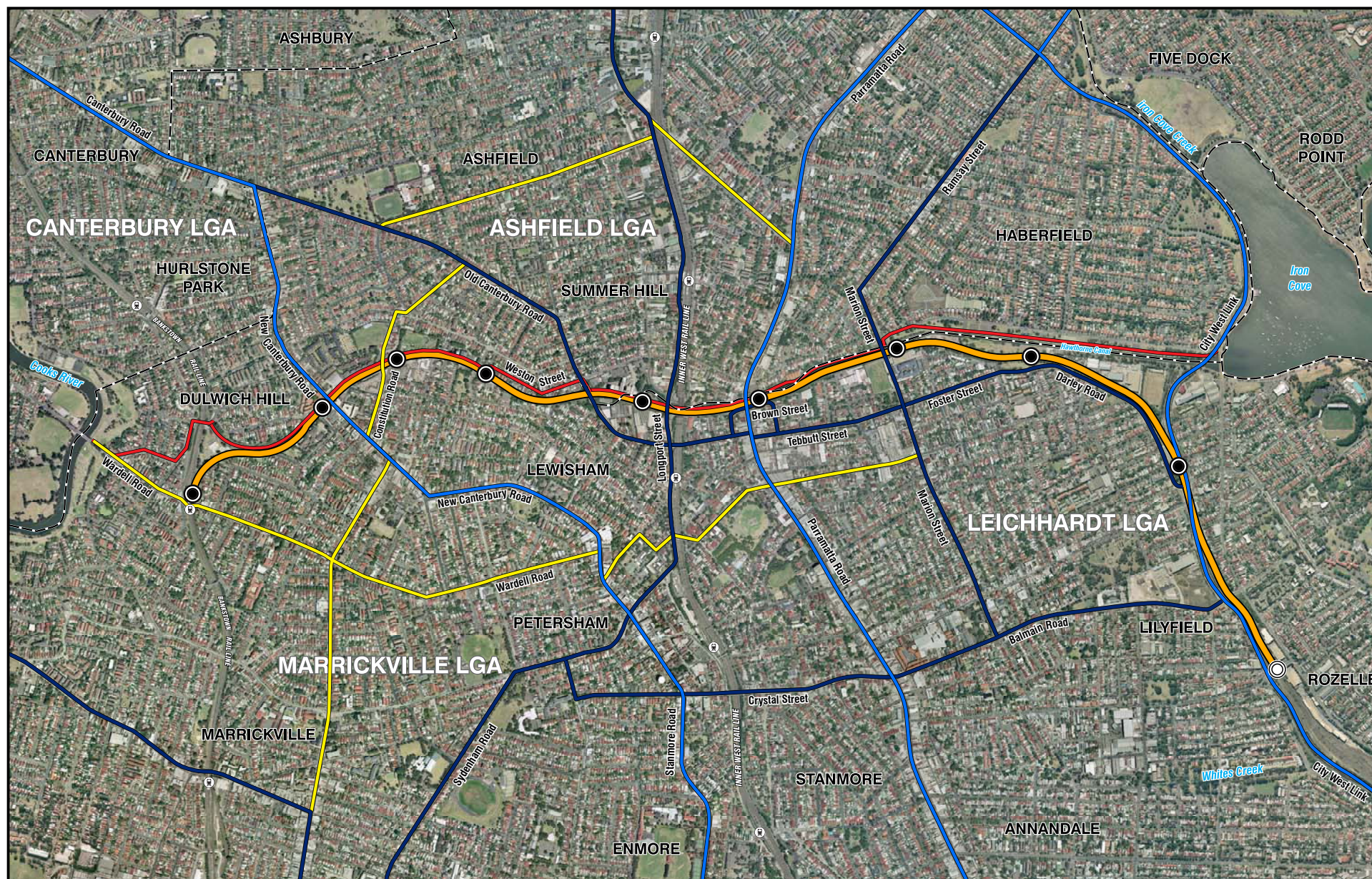


Figure 10.1 Road Network
Note: Indicative only, subject to detail design.

10.3 Patronage forecasts

The project would provide a high quality, reliable and comfortable public transport connection between Dulwich Hill and Central Station via Pyrmont, generally serving the areas of Dulwich Hill, Lewisham, Summer Hill, Haberfield and Leichhardt.

For local residents bound for the CBD, the project would perform much the same function as existing bus and train services. However, the light rail would greatly improve access between Dulwich Hill, Lewisham, Leichhardt, Lilyfield and Pyrmont.

The extension of the light rail would increase journey opportunities and serve recent and proposed developments near Dulwich Grove, Arlington, Waratah Mills, Lewisham West and Marion stops, thereby generating new public transport trips.

10.3.1 Light rail annual patronage forecasts 2016 and 2026

The preliminary environmental assessment (PEA) (Transport NSW 2010) included a preliminary forecast of the annual patronage for the light rail system, both with and without the proposed extension. This showed that with the project the annual patronage could be expected to be approximately 7.2 million passengers by 2016, and 9.6 million passengers by 2026.

These forecasts are made up of the existing patronage of the light rail plus a modest annual patronage growth (base), an increase in patronage associated with trips diverted from existing modes due to relative costs between existing modes and the light rail (diverted trips), and the trips generated from proposed developments next to the project corridor (new trips).

10.3.2 Light rail weekday boarding forecast 2016

Preliminary patronage forecasting for 2016 was provided by Transport NSW. The forecasting used the Sydney strategic travel model (STM). The modelling has produced the following indicative estimates of passengers boarding at each of the proposed stops. These forecasts include estimates of the total number of passengers boarding at each of the proposed stops and the transport mode used to access the stop. Table 10.1 shows the 2016 estimated daily passengers boarding light rail, by access mode.

As Table 10.1 indicates, the project is estimated to generate approximately 3,105 passengers boarding a day. Overall, the majority of passengers would get to proposed stops on foot (65%), while some 15% of daily passengers would arrive by bus and 13% by train. Cars would be a minor mode of access to the proposed stops, with an indicative 4% of passengers being dropped off by car (kiss-and-ride) and 3% parking a car near stops (park-and-ride).

Table 10.1 Estimated light rail weekday passengers boarding by mode of access 2016

Light rail stop	Total passengers boarding	Mode of access to the proposed stops				
		Walk*	Bus	Car (kiss-and-ride)	Car (park-and-ride)	Rail
Leichhardt North	415	375	10	15	15	-
Hawthorne	375	360	-	5	10	-
Marion	390	160	180	35	15	-
Taverners Hill	255	150	95	5	5	-
Lewisham West	275	140	5	10	5	115
Waratah Mills	225	215	-	5	5	-
Arlington	185	170	-	10	5	-
Dulwich Grove	445	275	140	20	10	-
Dulwich Hill interchange	540	160	30	20	30	300
Total	3105	2005	460	125	100	415
Percentage	100%	65%	15%	4%	3%	13%

Source: Transport NSW 2010 * Includes cycle

The proportion of passengers accessing the light rail by each mode would vary from stop to stop, depending on the availability of other modes, such as bus and rail, the nature of the stop catchment, and the location relative to the arterial road network. It is also likely to vary day-to-day and in the longer term. Demand for parking and kiss-and-ride (drop off/pick up) would be higher at those stops where the road network is more conducive to accessing the stop, either to drop off/pick up passengers, or to park-and-ride. Similarly, trains as an access mode would only be relevant at proposed stops close to railway stations (Dulwich Hill and Lewisham stations).

10.4 Construction impacts

Construction activity would be mostly focused around the stops and the GreenWay shared path. Most of the materials needed to construct the stops and the GreenWay shared path would be transported by road.

10.4.1 Construction worker vehicle trips and parking

The project is expected to require up to 350 workers with 50% of these workers expected to be working from the main site compound at the Rozelle Goods Yard, 30% based at stops and 20% at the Dulwich Hill Interchange. It is estimated that 65% of staff would be arriving by car with an average occupancy rate of 1.2.

The use of public transport, shared journeys and use of contractors' mini buses would be promoted and encouraged for staff trips to work.

Construction staff vehicle trips to construction compounds are unlikely to significantly influence the existing traffic performance, as the overall staff traffic volume is low and would be distributed between stops and various access routes.

Where practical, construction workers would be expected to park within construction compounds so the current demand for on-street parking spaces is not increased and the construction impact on parking is minimised.

10.4.2 Construction heavy vehicle trips

Table 10.2 identifies the proposed construction heavy vehicle trips for the project. Leichhardt and Marrickville Councils recognise the main roads within the their local government areas already have higher than usual heavy vehicle usage, so the additional construction traffic generated by this project would represent a small proportional increase and is therefore unlikely to have a significant impact on the road network.

On average, an estimated 4.9 truck trips a day could be added to the road network along the project during the construction period. This increase in truck traffic is unlikely to have a significant effect on traffic performance.

Table 10.2 Construction heavy vehicle trips for project

Component/activity	Tonnes of material ¹	Truck trips (includes an inbound and outbound trip)	Duration of activity in days	Average daily truck trips
Stops	5,451	548	300	1.8
Bridges and underpasses	1,820	182	300	0.6
GreenWay shared path	5,161	518	225	2.3
OHW	625	64	300	0.2
Total	13,057¹	1,312	-	4.9

Note: ¹ Volumes rounded up to even number of trips

² Indicative volumes only. Subject to detailed design

10.4.3 Construction compounds and access

Construction compounds and preferred access routes have been identified for the project (refer to Figures 10.2a to 10.2g). None of the construction accesses would remove parking, with the exception of the Dulwich Hill Interchange stop where some parking would be removed on Bedford Crescent. All construction compounds and access routes would be designed to minimise the use of local roads and maintain good levels of amenity and road safety.

Section 5.3.5.4 of Technical Paper 1 in Volume 2 provides a more detailed response for each stop.

Pymont stabling and maintenance facility

Access to the Pymont stabling and maintenance facility has not been identified in Figure 10.2g; however, it would be via the existing gates under the Pier Street overpass bridge at the southern end of Pymont Street. Vertical clearance of loads would require further investigation during detailed design. The existing gates are on a section of road with a no stopping parking restriction so using this gate would not impinge on parking.

The preferred heavy vehicle access route for inbound vehicles would be via Harris Street, Allen Street and Pymont Street and for outbound vehicles Pymont Street, Quarry Street onto Harris Street. Both these routes are suitable for occasional use by heavy vehicles.

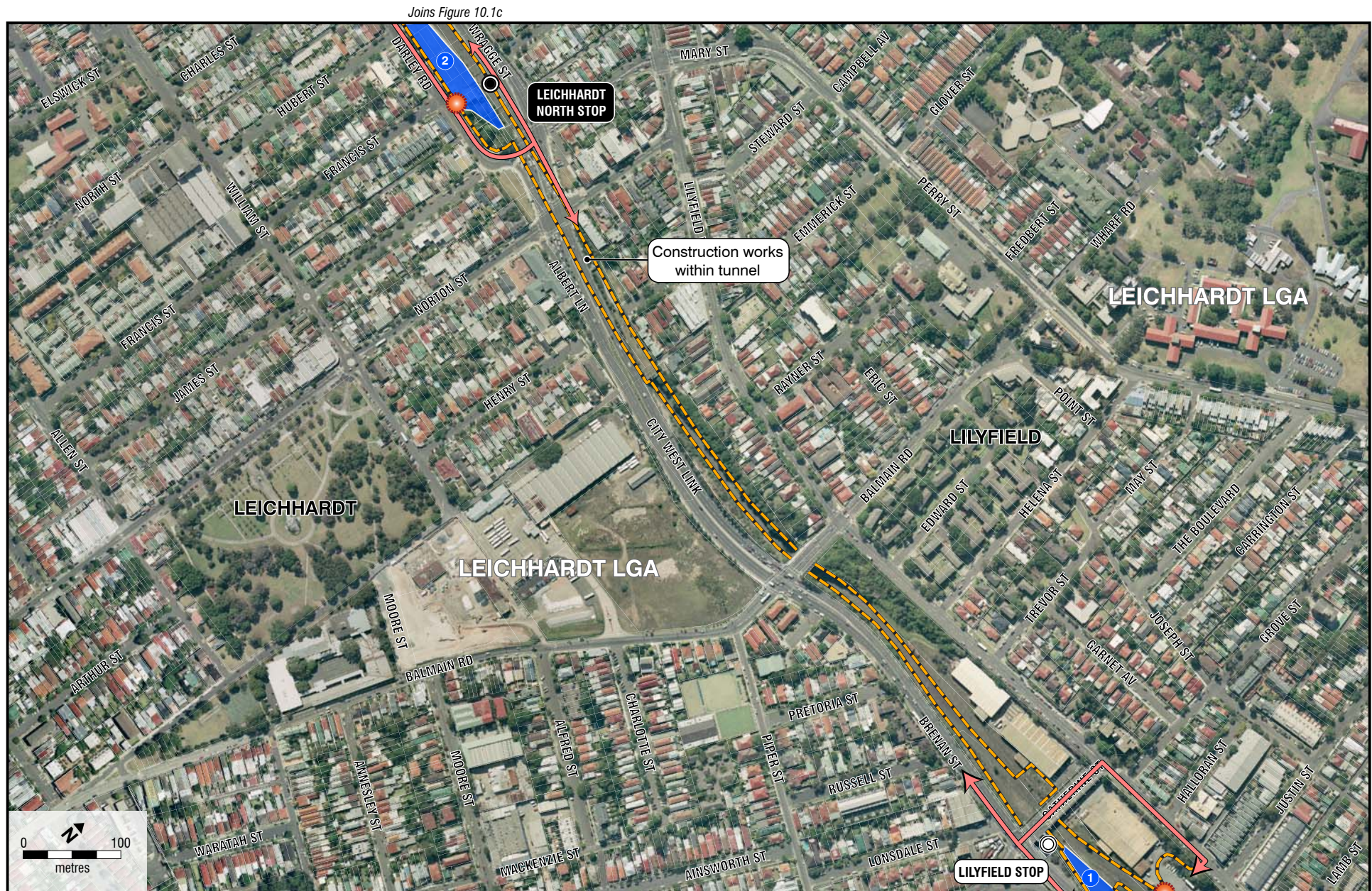
Joins Figure 10.1b



- ⊙ Existing light rail stop
- Watercourse
- Local government area boundary
- Construction compound area
- Construction footprint
- ★ Vehicle access point
- Construction vehicle access route

Figure 10.2a Construction access routes

Note: Indicative only, subject to detail design.



- ⊙ Existing light rail stop
- ⦿ Proposed light rail stops
- Local government area boundary
- Construction compound area
- Construction footprint
- Construction vehicle access route
- ⚙ Vehicle access point

Joins Figure 10.1a

Figure 10.2b Construction access routes

Note: Indicative only, subject to detail design.





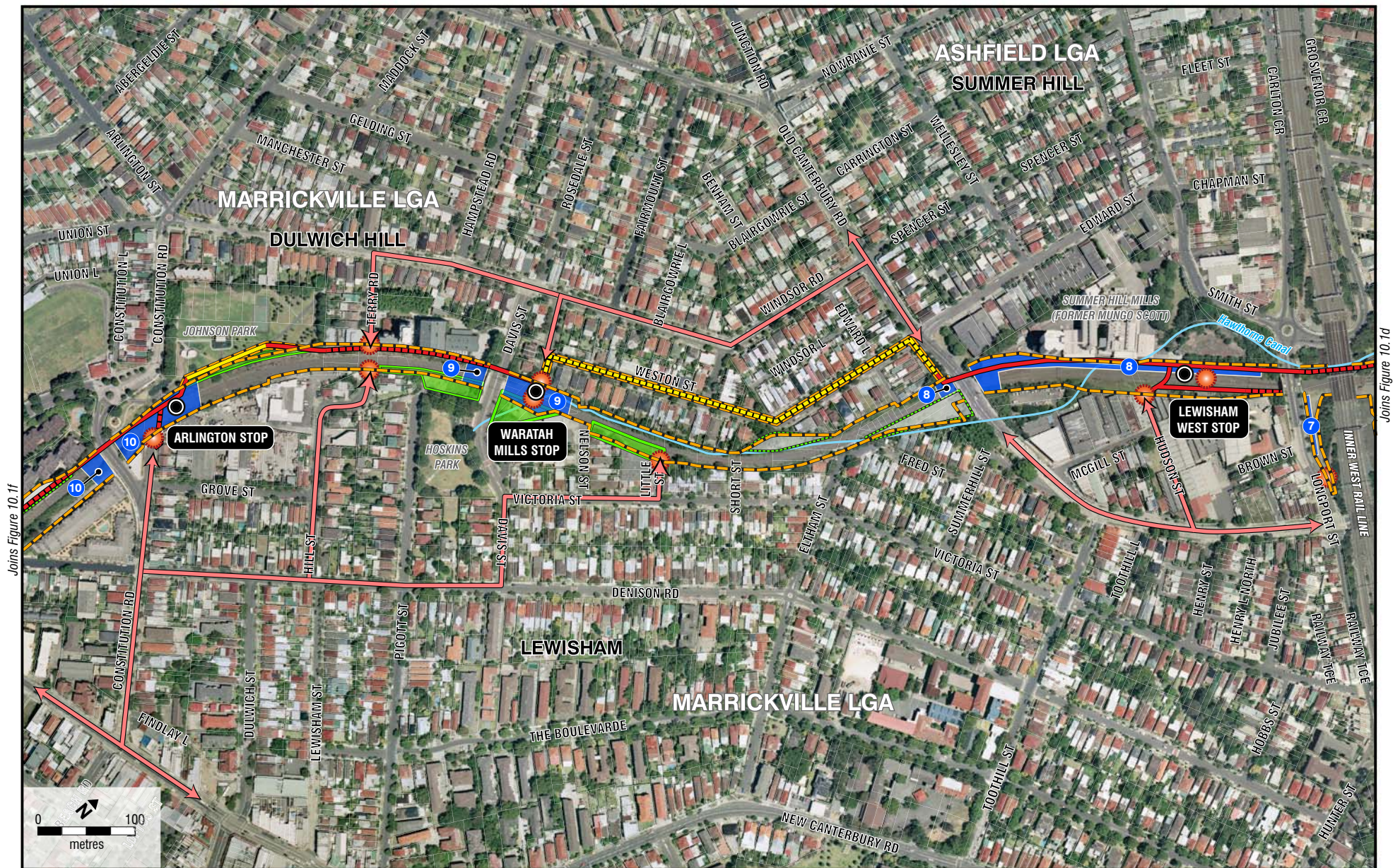


Figure 10.2e Construction access routes
 Note: Indicative only, subject to detail design.



- Proposed light rail stops
- Watercourse
- Local government area boundary
- Existing shared path (upgraded)
- New GreenWay shared path (at-grade)
- New GreenWay shared path (elevated)
- New GreenWay on-street cycle path
- Existing bushcare site
- Potential bushcare/landscaping
- Construction vehicle access route
- Construction compound area
- Construction footprint
- Vehicle access point

Figure 10.2f Construction access routes

Note: Indicative only, subject to detail design.

10.4.4 Temporary lane and road closures

The project's construction may require some temporary lane or road closures, which would need to be managed and coordinated so that accessibility on local roads is maintained. In addition, the contractor would need to coordinate any lane or road closures with the relevant council and the Roads and Traffic Authority (RTA) so the cumulative impact of any road works within the area can be managed. The proposed construction method could require:

- closure of Parramatta Road to accommodate bridge raising and upgrade works of the Parramatta Road underbridge
- closure of Parramatta Road during lifting the GreenWay shared path bridge span
- road closures to construct the underpasses to accommodate the GreenWay shared path at Longport Street, Old Canterbury Road, Davis Street, Constitution Road and Hercules Street
- closure of a lane in Marion Street to facilitate the construction of the proposed signalised crossing
- closure of a lane on the southern side of Bedford Crescent to allow for the construction of the light rail stop.

10.4.5 Potential cumulative construction impacts

The project delivery will need to be coordinated with other major construction projects within the local area. A CTMP would need to be prepared, once a detailed construction methodology is confirmed. The CTMP would need to consider the timing of works so that cumulative impacts are avoided.

10.5 Operational impacts on transport, traffic and access

The majority of people using the project would walk or cycle to stops and car use to get to stops is expected to be modest (less than one in ten passengers is predicted to use a car to get to stops). There is some potential for car parking and kiss-and-ride traffic associated with the project to affect communities that already have high demand for parking and restricted supplies of on-street parking, but the demand for kiss-and-ride and park-and-ride would be low. A specific parking strategy for the project is included as an appendix to Technical Paper 1 in Volume 2.

10.5.1 Transport integration

The operation of the light rail would see a substantial proportion (almost one-third) of passengers arrive at stops by bus and train. Trains as an access mode would only be relevant at Lewisham West and Dulwich Hill Interchange stops and the location of the proposed stops relative to Lewisham and Dulwich Hill railway stations would allow for interchange between train and light rail.

However, some 460 passengers a day may use a bus to get to the proposed stops, mostly at Marion, Taverners Hill and Dulwich Grove stops. At the Marion stop, this represents almost four busloads of people transferring from bus to light rail each day. In peak times this represents around 20 passengers an hour (or approximately five per bus during this period). This indicates that bus is an important access mode, however, the scale of bus to light rail transfer is not considered great enough to warrant relocating existing bus stops closer to the light rail stops as part of the project.

The project is not expected to have a significant impact on bus patronage. It is considered unlikely that current bus passengers would change from bus to use light rail for journeys to the Sydney CBD, as the light rail would not offer a more attractive alternative to staying on the bus for directness and CBD penetration. It is more likely that projected passengers transferring from bus to light rail are new users for whom the combination of bus and light rail offers better access to destinations such as Pyrmont.

10.5.2 Operational traffic

The traffic generation that could result from the project is likely to be modest. By 2016, approximately 583 vehicle trips a day are forecast to be generated across the stops. This is based on the assumption that each park-and-ride boarding passenger would generate two vehicle trips and a passenger using kiss-and-ride would generate four trips. Typical car occupancy for inner Sydney of 1.2 people a vehicle has been used. The Marion stop and Dulwich Hill Interchange stop, with daily traffic generation of approximately 142 and 117 vehicles respectively, are forecast to have the highest traffic generation. This is because these stops are next to through traffic routes and there are a number of routes by which vehicles could travel to, or past, the stop. This daily demand is likely to be shared across the local road network and the impact would be minimal.

The arterial road network currently provides for up to 70,000 vehicles a day on Parramatta Road and 50,000 vehicles on City West Link, so 580 additional or redistributed vehicles spread across the alignment are unlikely to have any discernable traffic impact.

The GreenWay shared path is not expected to be a generator of vehicle trips in its own right and is unlikely to have an impact on traffic during operation.

Locations of service vehicular access points would be determined at the detailed design phase. Access points proposed for construction works may also be appropriate for use during operation. These access points would be used infrequently and are unlikely to significantly impact the surrounding road network.

10.5.3 Marion Street pedestrian crossing

A pedestrian refuge island is provided in Marion Street near Hawthorne Parade to assist pedestrians crossing the road and to reach the existing Hawthorne canal shared path. Because of the increased pedestrian and cycle activity that is expected as a result of the project, a new signalised pedestrian crossing just west of the rail underbridge is proposed to replace the existing pedestrian refuge island.

A SIDRA analysis of the proposed Marion Street signalised pedestrian crossing was made for the future year 2016 for scenarios both with and without the project. Historical AADT traffic volumes of Marion Street (at the Goods railway line) for the years 2002 and 2005 show a 1.8% growth.

Modelling for the Technical Paper 1 (in Volume 2) demonstrates there would be modest increases in pedestrian and vehicle movements through the crossing with the introduction of the project.

The SIDRA analysis demonstrated that, with a signalised pedestrian crossing, Marion Street could function up to 2016 with a level of service for vehicle traffic of 'good with acceptable delays and spare capacity' or better, and that the additional traffic and pedestrians generated by the project would not have a noticeable impact on traffic performance.

10.5.4 Parking

Demand for parking on the road network surrounding each of the stops has been assessed based on the weekday passenger boarding forecast for 2016, comments from the relevant local councils, and observations on site. The requirement for commuter parking is based on the 2008 travel behaviour survey of the existing light rail, which suggested 54% of commuters travelled for work and a typical car occupancy for Sydney's inner west of 1.2.

The daily passengers boarding forecast for 2016 has been used to estimate the number of kiss-and-ride and park-and-ride spaces that may be needed to serve project demand in 2016.

Table 10.3 summarises the estimated parking space demand at each stop for kiss-and-ride and park-and-ride. The AM peak hour demand for kiss-and-ride parking spaces is likely to be minimal due to the short drop-off time (typically, PM kiss-and-ride is spread over a longer peak so has a lower demand rate). From one to three kiss-and-ride spaces at stops would be adequate up to 2016 and could be accommodated in the form of kerbside short stay parking spaces at peak times.

Table 10.3 Parking space demand

Light rail stop	Kiss-and-ride daily vehicle trips	Park-and-ride daily vehicle trips	Demand for commuter park-and-ride parking spaces*	AM peak hour demand for kiss-and-ride parking spaces
Leichhardt North	50	25	10	2
Hawthorne	17	17	7	1
Marion	117	25	10	3
Taverners Hill	17	8	3	1
Lewisham West	33	8	3	1
Waratah Mills	17	8	3	1
Arlington	33	8	3	1
Dulwich Grove	67	17	7	2
Dulwich Hill Interchange	67	50	20	2
Total	418	166	66	14

*assumes a car occupancy of 1.2 and 54% of park-and-ride all day commuter trips

The main parking impact is likely to be from all-day commuter parking, as summarised in Table 10.4 below. This is discussed in more detail in Technical Paper 1 in Volume 2 which includes a *Draft Commuter Parking Strategy*. Importantly, no dedicated (i.e. physically delineated) commuter parking would be provided as part of the project due to the low numbers of vehicles involved, and the existing availability of on-street parking.

Those passengers using park-and-ride would therefore be assumed to park in local streets within the vicinity of the light rail stop. The provision of formal commuter parking is counter to the light rail principles and other state government policies.

Furthermore, kiss-and-ride is as important as park-and-ride as an access mode to light rail stops, with the advantage of requiring fewer parking spaces to accommodate it. At Leichhardt North, Marion, Dulwich Grove and Dulwich Hill Interchange stops two to three kiss-and-ride spaces may be required, with no more than one kerbside kiss-and-ride parking space required at the remaining stops, for the forecast level of kiss-and-ride demand.

Measures to mitigate identified potential impacts at each proposed stop (Table 10.4) are provided in Table 10.6

Table 10.4 Potential parking impacts at each stop

Stop	Potential parking impact
Leichhardt North	<ul style="list-style-type: none"> Forecast 10 passengers accessing the stop by park-and-ride by 2016, of which seven would be commuters needing to park all day. Up to two kiss-and-ride spaces will be required. Darley Road, which passes this stop, has unrestricted kerbside parking on both sides and in excess of 60 spaces were observed to be available. The impact of forecast commuter parking is likely to be minimal.
Hawthorne	<ul style="list-style-type: none"> Forecast seven passengers accessing the stop by park-and-ride by 2016, of which five would be for commuters needing to park all day Some commuter parking on the Haberfield side of the project may occur, although Marion and Leichhardt North may be more attractive stops for commuter parking due to the ability to park closer to the stops. One kiss-and-ride space will be required. Hawthorne Parade has relatively unrestricted parking available so the impact of any commuter parking that does occur close to this stop (due to the new share path crossing over Hawthorne Canal) is likely to be minimal.
Marion	<ul style="list-style-type: none"> Forecast 10 passengers accessing the stop by park-and-ride by 2016, of which seven would be for commuters needing to park all day. Up to three kiss-and-ride spaces will be required. The additional demand generated by the project could lead to reduced availability within Hawthorne Parade.
Taverners Hill	<ul style="list-style-type: none"> Forecast three passengers accessing the stop by park-and-ride by 2016, of which two would be for commuters needing to park all day. Restricted parking close to stop accesses. One kiss-and-ride space will be required. Lack of unrestricted car parking spaces close to this stop could lead commuters to parking within the local roads, leading to a small reduction in unrestricted parking spaces available for local residents and businesses.
Lewisham West	<ul style="list-style-type: none"> Time restricted and no stopping parking restrictions on roads close to the stop access. Forecast three passengers accessing the stop by park-and-ride by 2016, of which two would be for commuters needing to park all day. One kiss-and-ride space will be required. The additional demand on parking generated by the project could have a minor impact on parking within the local road network.

Stop	Potential parking impact
Waratah Mills	<ul style="list-style-type: none"> Forecast three passengers accessing the stop by park-and-ride by 2016, of which two would be for commuters needing to park all day. One kiss-and-ride space will be required. The lack of unrestricted car parking spaces close to the stop could lead to commuters parking in local roads, leading to a small reduction in unrestricted parking spaces available for local residents and businesses.
Arlington	<ul style="list-style-type: none"> Forecast three passengers accessing the stop by park-and-ride by 2016, of which two would be for commuters needing to park all day. One kiss-and-ride space will be required. The lack of unrestricted car parking spaces close to the stop could lead to commuters parking in local roads, leading to a small reduction in unrestricted parking spaces available for local residents and businesses.
Dulwich Grove	<ul style="list-style-type: none"> Forecast seven passengers accessing the stop by park-and-ride by 2016, of which five would be for commuters needing to park all day. Up to two kiss-and-ride spaces will be required. Few unrestricted parking spaces are currently available within Hercules Street and New Canterbury Road. Estimated that approximately 20 parking spaces would be available on New Canterbury Road and Hercules Street so impact on residential streets would be low.
Dulwich Hill Interchange	<ul style="list-style-type: none"> Approximately 10 parking spaces are proposed to be removed from Bedford Crescent. The existing off-street commuter car park to the south of Dulwich Hill Railway station (off Ewart Street) is currently underused (extra capacity of approximately 30 spaces). Forecast 20 passengers accessing the stop by park-and-ride by 2016, of which 14 would be for commuters needing to park all day. Up to two kiss-and-ride spaces will be required. Park-and-ride demand for this stop can be accommodated within the existing parking supply.

10.6 Management of construction impacts

A detailed CTMP would need to be prepared for the project during the detailed design stage. The CTMP would identify measures and controls that would need to be put in place to minimise the impacts of construction traffic on the communities along the project alignment. Further detail on the content of the proposed CTMP is provided in Section 19.2.

The main construction traffic impacts and the strategies for managing construction traffic impact are summarised in Table 10.5.

Table 10.5 Construction traffic management issues and strategy

Construction traffic impact	Traffic management strategy
Heavy vehicle traffic	<ul style="list-style-type: none"> Minimise the number of heavy vehicle trips on road by using the rail corridor to transport materials where feasible. Minimise the vehicle kilometres travelled by heavy vehicle by encouraging multi-drop delivery trips. Minimise disruption on the local road network by using preferred truck access routes (described in Section 5 of this paper). If feasible, avoid running empty trucks.
Construction staff traffic	<ul style="list-style-type: none"> Encourage use of alternative travel modes to work site. Encourage car sharing where alternative travel modes not practical. Locate main site compound at Rozelle off City West Link.
Construction staff parking	<ul style="list-style-type: none"> Provide staff parking at the Rozelle site compound. Provide some car parking at other compounds. Minimise staff car parking on-street, particularly in locations where parking supply is lacking. Provide emergency vehicle parking in worksites.
Temporary worksite access	<ul style="list-style-type: none"> Use existing accesses where possible. Use traffic controller personnel to manage worksite access gates. Close and lock gates after construction hours. Minimise construction traffic during school start and end times at the Dulwich Grove stop construction compound and worksite access.
Oversized/over mass deliveries	<ul style="list-style-type: none"> Coordinate all oversized/over mass deliveries with the RTA traffic management unit and the police. Where practical divide loads onto smaller vehicles.
Emergency works	<ul style="list-style-type: none"> Prepare an emergency works response traffic management plan. Provide an emergency works coordinator.
Raising of the Parramatta Road underbridge and installation of the GreenWay shared path bridge over Parramatta Road	<ul style="list-style-type: none"> Develop construction methodology that minimises duration of works. Work on Parramatta Road at night when traffic volumes are lowest. Stage work so that two-way traffic flow can be maintained where practicable. Prepare traffic management plan (as part of the overall CTMP) in consultation with council, police and the RTA.
Construction of the GreenWay shared path underpasses	<ul style="list-style-type: none"> Develop construction methodology that minimises duration of works. Stage work so that a lane can remain open to traffic. Prepare traffic management plan (as part of the overall CTMP) in consultation with councils, police and the RTA. This would be completed as part of the detailed design.

Construction traffic impact	Traffic management strategy
Construction of the GreenWay shared path on street sections (this is expected to be mostly installation of road markings)	<ul style="list-style-type: none"> ▪ Develop construction methodology that minimises duration of works. ▪ Carry out works outside of the peak hours. ▪ Prepare traffic management plan (as part of the overall CTMP) in consultation with councils, police and the RTA. This would be completed as part of the detailed design.
Construction of the Marion Street signalised mid block pedestrian crossing	<ul style="list-style-type: none"> ▪ Develop construction methodology that minimises duration of works. ▪ Stage work so that two way traffic flow can be maintained. ▪ Use construction methods that do not require road work within the traffic lanes (e.g. micro-bore tunnelling for duct crossings). ▪ Prepare traffic management plan (as part of the overall CTMP) in consultation with councils, police and the RTA. This would be completed as part of the detailed design.

10.7 Management of operational impacts

As no significant impact on operational traffic is expected to result from the project, road upgrades are not proposed. Some parking impacts could occur due to kiss-and-ride and park-and-ride activity at stops. This impact on parking would be managed by monitoring parking demand and, if necessary, using parking strategies aimed at discouraging car use, particularly park-and-ride; and encouraging walking, cycling, and using bus and train to access light rail stops.

To improve accessibility by mobility-impaired travellers, parking spaces for people with a disability would be provided at all light rail stops, in consultation with relevant councils.

10.7.1 Commuter parking strategy

A draft parking strategy has been developed as part of Technical Paper 1 in Volume 2 to guide providing and managing car parking and accessibility at proposed stops, consistent with state and local government policies, principles and plans.

The draft parking strategy aims to:

- provide and promote more sustainable access modes, such as walking, cycling, bus and train; and kiss-and-ride as an alternative to park-and-ride if a car journey is necessary
- support interchange function at each of the stops
- minimise the parking impact on residential streets attributable to the project
- recognise that parking at each of the project stops has a local context and differing priorities.

The parking strategies for each of the project stops are summarised in Table 10.6.

Table 10.6 Summary of parking strategies for each stop

Stop name	Parking strategy/control measures
Leichhardt North	<p>Formal park-and-ride spaces should not be provided to discourage commuter parking trips and favour more sustainable travel modes.</p> <p>Up to two time-restricted parking spaces for kiss-and-ride could be installed close to the stop on Darley Road. Providing formal signed spaces would ensure kiss-and-ride occurs close to the best stop for interchange between the modes.</p> <p>The parking in the area should be monitored and if commuter parking does migrate from the Lilyfield stop then a resident parking scheme may need to be considered in consultation with Leichhardt Council.</p> <p>Use of the land next to the Leichhardt North stop (disused building on Darley Road) for an off-road car park would not be consistent with State Government or local council policy objectives, which aim to deter car use and support public transport.</p>

Stop name	Parking strategy/control measures
Hawthorne	<p>Formal park-and-ride spaces should not be provided to discourage commuter parking trips and favour more sustainable travel modes.</p> <p>The parking within residential streets and, in particular, Hawthorne Parade, should be monitored and, if necessary, a residential parking scheme with time restrictions for non-residents could be introduced close to the stop.</p> <p>A single vehicle time-restricted parking space for kiss-and-ride could be installed close to the stop on Darley Road. Providing a formal signed space would ensure kiss-and-ride occurs close to the best stop for interchange between the modes. A single designated kiss-and-ride space would be sufficient to meet the likely peak hour demand and would encourage kiss-and-ride as an alternative to park-and-ride.</p>
Marion	<p>Formal park-and-ride spaces should not be provided to discourage commuter parking trips and favour more sustainable travel modes.</p> <p>The parking within residential streets and, in particular, Hawthorne Parade, should be monitored and if necessary, a residential parking scheme with time restrictions for non-residents could be introduced close to the stop.</p> <p>Three time-restricted parking spaces for kiss-and-ride should be installed close to the stop on Marion Street. Providing designated spaces would ensure that kiss-and-ride occurs close to the best stop for interchange between the modes.</p> <p>The project could provide an alternative to driving to events at Lambert Park. Information, signs and promotional material to support sustainable travel to these events via the light rail would be encouraged.</p>
Taverners Hill	<p>Formal park-and-ride spaces would not be provided to discourage commuter parking trips and favour more sustainable travel modes.</p> <p>The parking within residential streets surrounding the stops would be monitored and if necessary, a residential parking scheme with time restrictions for non-residents could be introduced close to the stop.</p> <p>A single vehicle time-restricted parking space for kiss-and-ride could be installed close to the stop on Hathern Street. Providing a formal signed space would ensure that kiss-and-ride occurs close to the best stop for interchange between the modes. A single signed kiss-and-ride space would be sufficient to meet the likely peak hour demand and would encourage kiss-and-ride as an alternative to park-and-ride.</p>
Lewisham West	<p>No formal commuter parking spaces should be provided at this stop.</p> <p>A single vehicle time restricted parking space for kiss-and-ride could be installed close to the stop on Hudson Street. Providing a formal signed space would ensure that kiss-and-ride occurs close to the best stop for interchange between the modes. A single signed kiss-and-ride space would be sufficient to meet the likely peak hour demand and would serve to encourage kiss-and-ride as an alternative to park-and-ride.</p> <p>The land redevelopment should adopt a minimal parking supply approach in accordance with the principles of sustainable land use and the principles of transit orientated design (TOD).</p>
Waratah Mills	<p>No formal commuter parking spaces should be provided at this stop.</p> <p>A single vehicle time-restricted parking space for kiss-and-ride could be installed close to the stop on Weston Street. Providing a formal signed space would ensure kiss-and-ride occurs close to the best stop for interchange between the modes. A single designated kiss-and-ride space would be sufficient to meet the likely peak hour demand and would encourage kiss-and-ride as an alternative to park-and-ride.</p>

Stop name	Parking strategy/control measures
Arlington	<p>No formal commuter parking spaces should be provided at this stop.</p> <p>A single vehicle time-restricted parking space for kiss-and-ride could be installed close to the stop on Davis Street. Providing a formal signed space would ensure that kiss-and-ride occurs close to the best stop for interchange between the modes. A single designated kiss-and-ride space would be sufficient to meet the likely peak hour demand and would encourage kiss-and-ride as an alternative to park-and-ride.</p> <p>The project could provide an alternative to driving to events at Arlington Memorial Park. Information, signs and promotional material to support sustainable travel to these events via the light rail would be encouraged.</p>
Dulwich Grove	<p>Formal park-and-ride spaces would not be provided at this stop to discourage commuter parking trips and favour more sustainable travel modes. Commuter parking would need to be monitored and a residents' parking scheme implemented if required in consultation with Marrickville Council.</p> <p>Two time-restricted parking spaces for kiss-and-ride could be installed close to the stop on New Canterbury Road. Providing formal signed spaces would ensure kiss-and-ride occurs close to the best stop for interchange between the modes.</p>
Dulwich Hill interchange	<p>The current parking supply in Bedford Crescent would decrease as part of the works for the light rail stop. No additional commuter park-and-ride spaces would be provided, and projected demand would be satisfied by the under-used commuter car park at the station.</p> <p>Two time-restricted parking spaces for kiss-and-ride could be installed close to the stop on Bedford Crescent or the existing kiss-and-ride space on Wardell Road, by the railway station, could be extended. Both would provide formal signed parking spaces that would ensure kiss-and-ride occurs close to the stop.</p>