

### 5.3 Wattle Street interchange to Rozelle interchange corridor

The Wattle Street interchange to Rozelle interchange corridor connects the M4 Motorway east–west to the Sydney CBD and the north. As identified in **section 3.2**, east of the Wattle Street interchange, east–west traffic movement is focused on Dobroyd Parade/City West Link and Parramatta Road. City West Link then combines with Victoria Road and links to Anzac Bridge/Western Distributor to provide the main east–west movement to the east of the Rozelle interchange. Other routes from the Wattle Street interchange area to the Sydney CBD include along Great North Road/Lyons Road, Victoria Road and Anzac Bridge.

Parramatta Road, as part of the corridor between the proposed Wattle Street interchange and the Sydney CBD, forms part of the Parramatta to the CBD via Strathfield travel demand corridor. This corridor, as presented in **section 3.1.1**, is identified as being the main corridor connecting western Sydney to the Global Economic Corridor, and as being one of the most constrained corridors in Sydney. It also forms part of the principal east–west freight transport corridor along the M4 Motorway/Parramatta Road which connects the Sydney CBD and Inner West to Parramatta, as identified in **section 3.3.1**.

Automatic traffic count surveys presented in **section 5.2.4** included locations on Parramatta Road within the Wattle Street interchange to Rozelle interchange corridor. The Parramatta Road corridor accommodates consistently high volumes of travel demand, with volumes consistent through an average weekday, both during and between the more conventional AM and PM peak periods.

Victoria Road, in this area, also forms part of the Parramatta to the Sydney CBD via Ryde travel demand corridor. As identified in **section 3.1.2**, this corridor is one of the most congested road corridors, in Sydney. It is also one of Sydney's busiest bus corridors.

#### 5.3.1 Existing traffic volumes and patterns

**Table 5-4** provides the survey count data for the AM peak hour and the PM peak hour for the key roads within the Wattle Street interchange to Rozelle interchange corridor. Count data was taken from 2014 to 2016 surveys. At some locations, only peak hour volumes were available.

The table indicates clear changes in peak direction between the AM peak hour and the PM peak hour on Victoria Road and Parramatta Road, with more vehicles travelling towards the city in the AM peak hour, and more vehicles travelling away from the city in the PM peak hour. There is also a clear change in peak direction on Lyons Road. In the AM peak hour, peak direction of travel is towards Victoria Road, this reverses to a peak direction of travel away from Victoria Road in the PM peak hour. On City West Link, while the volume of vehicles travelling towards the city decreases and the volume of vehicles travelling away from the city increases in the PM peak hour, there is no change in peak direction, with more vehicles travelling eastbound in both the AM and PM peak hours.

**Table 5-4 Average peak mid-block traffic volumes at key locations within the Wattle Street interchange to Rozelle interchange corridor (2014 – 2016 count data)**

Location	Direction	AM peak hour		PM peak hour		AWT	
		veh/hr	HCV%	veh/hr	HCV%	veh/hr	HCV%
City West Link, west of The Crescent	Eastbound	2,470	8%	2,370	3%	36,000	6%
	Westbound	1,640	5%	1,930	3%	32,000	6%
Lyons Road, west of Victoria Road	Eastbound	390	12%	390	8%	–	–
	Westbound	200	12%	450	6%	–	–
Victoria Road, north of Wellington Street	Northbound	2,080	5%	3,230	3%	–	–
	Southbound	3,340	4%	2,440	3%	–	–
Parramatta Road, east of Mallet Street	Eastbound	2,320	7%	1,530	3%	25,500	7%
	Westbound	1,230	8%	1,920	5%	25,500	6%

Source: RMS traffic surveys (2014 – 2016)

## 5.4 Rozelle interchange and surrounds

The proposed Rozelle interchange would be located in the vicinity of the Rozelle Rail Yards to the north of City West Link. Details on land use in the vicinity of the proposed Rozelle interchange are provided in **Chapter 12** (Land use and property) of the EIS.

The key roads in the vicinity of the site are shown in **Figure 5-3** and include (but are not limited to):

- **City West Link (A4):** City West Link is a major arterial road connecting Sydney's western suburbs with the Sydney CBD and Sydney Harbour Bridge. It runs from Parramatta Road in Haberfield through Lilyfield before connecting with The Crescent and Victoria Road in Rozelle, which flow onto Anzac Bridge and Western Distributor. The road generally has two lanes in each direction, flaring to accommodate turning lanes around intersections
- **Victoria Road (A40):** Victoria Road is an arterial road between Sydney's western and north-western suburbs and the Sydney CBD. It runs from North Parramatta to Lilyfield via Rydalmere, Ryde, Gladesville, Drummoyne and Rozelle. Victoria Road is a major transit corridor, with frequent bus services and bus lanes in certain sections during peak periods. There are generally three lanes in each direction along the length of Victoria Road in the study area, with additional lane flares at some intersections to facilitate right turns
- **Western Distributor/Anzac Bridge:** The Western Distributor/Anzac Bridge is a major arterial road connecting City West Link and Victoria Road to the Sydney CBD, Cross City Tunnel and Sydney Harbour Bridge. Anzac Bridge provides a key transit link for bus services operating between Victoria Road and the CBD, as well as a pedestrian and cycle link across Rozelle Bay. Anzac Bridge has four lanes in each direction, while the Western Distributor generally has three lanes in each direction, with flyover lanes connecting to the Cross City Tunnel and various CBD roads
- **Lilyfield Road:** Lilyfield Road runs parallel to City West Link between the western edge of Lilyfield and Victoria Road. It is a regional collector road that provides access to the local road network, while also providing the function of a major cycle link, with marked cycle lanes on some sections. Lilyfield Road has one traffic lane and one parking lane in each direction
- **Catherine Street:** Catherine Street provides a connection between Lilyfield Road, City West Link and Parramatta Road through Lilyfield and Leichhardt. It is a collector road with one traffic lane and one parking lane in each direction
- **The Crescent/Minogue Crescent/Ross Street:** This route comprises state classified roads between City West Link and Parramatta Road through Annandale and Forest Lodge. It provides access to local roads within these residential areas, in addition to providing a connection between City West Link and Parramatta Road. There is generally one traffic lane in each direction, with the exception of The Crescent between Nelson Street and Wigram Road, and intersection flaring at City West Link, Bridge Road, St Johns Road, Arundel Street and Parramatta Road. Between Johnston Street and City West Link, it is two traffic lanes in each direction, flaring to three lanes and a slip lane northbound at its intersection with City West Link
- **Johnston Street:** Johnston Street is a state classified road providing a connection between The Crescent (and City West Link) and Parramatta Road through Annandale. It is a collector road with generally two traffic lanes and one parking lane in each direction, with a particularly wide cross-section
- **James Craig Road:** James Craig Road provides access from The Crescent to the Glebe Island port, the Sydney Superyacht Marina, to private Port Authority controlled access roads and through to the White Bay Cruise Terminal. James Craig Road has one traffic lane in each direction, flaring to two lanes eastbound and three lanes westbound at its intersection with The Crescent
- **Robert Street:** Robert Street is a collector road that facilitates access into Rozelle from Victoria Road, north of The Crescent. East of Mullens Street, Robert Street connects to Port Authority-controlled roads in White Bay. Robert Street has one traffic lane in each direction which flares to two traffic lanes in each direction at Victoria Road, one traffic lane with one lane of parking in the AM peak period and two traffic lanes in the PM peak period. East of Mullens Street, there are parking lanes on both sides of Robert Street

- **Terry Street:** Terry Street is a local road that provides access into Rozelle from both eastbound and westbound traffic on Victoria Road. It connects to Darling Street (a collector road) via Wise Street. Traffic exiting Terry Street onto Victoria Road can only turn left. There is one traffic lane in each direction and generally either a kerbside parking lane or sufficient space for kerbside parking on at least one side of the street.

#### 5.4.1 Modes of travel

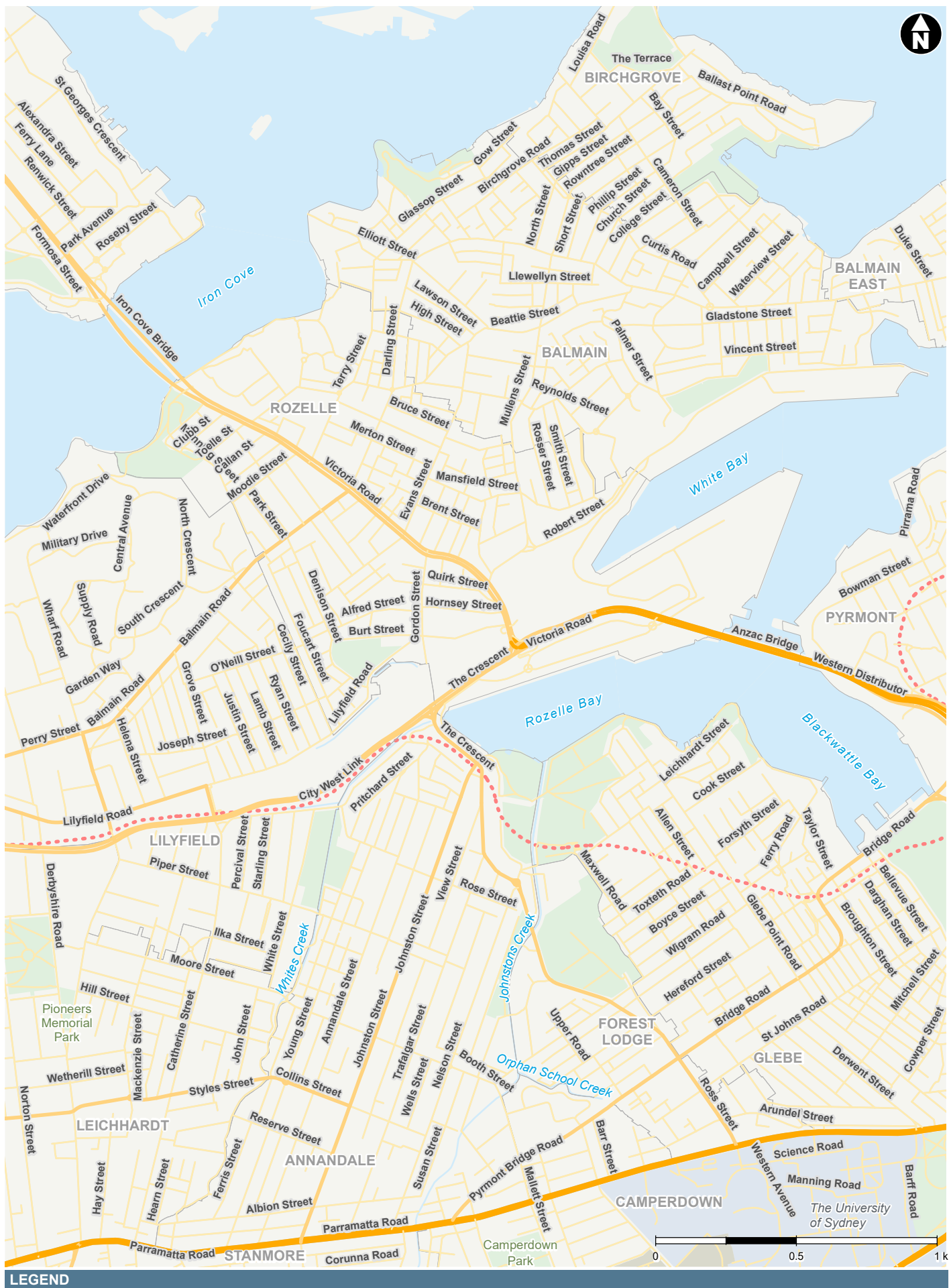
The Rozelle interchange site is located within the Inner West Local Government Area (LGA), with the City of Sydney also located nearby on the eastern side of The Crescent. Travel mode share for the Inner West LGA in comparison with the Sydney GMA is shown in **Table 5-5**.

The Inner West LGA has a higher share of public transport due to the area's proximity to the Sydney CBD and frequent bus services. The largest difference to the Sydney GMA data is in 'walk only' trips, which account for 32 per cent of all trips in the Inner West LGA compared to 18 per cent in the Sydney GMA. This could be attributed to factors including the walkability of many neighbourhoods in the area.

**Table 5-5 Average weekday travel mode share for Inner West Local Government Area**

Area	Private vehicles			Rail	Bus	Walk only	Other modes
	Driver	Passenger	Total				
Inner West LGA	36%	13%	49%	7%	8%	32%	5%
Sydney GMA	47%	22%	69%	5%	6%	18%	2%

Note: Inner West Council data has been derived by combining data from the former Leichhardt, Ashfield and Marrickville LGAs  
Source: NSW Bureau of Transport Statistics (BTS), Household Travel Survey Report: Sydney 2012/13, Nov 2014 Release



#### LEGEND

##### Existing features

- Waterway
- ... Light rail
- Suburb boundary
- Arterial road
- Subarterial road
- Local road

Figure 5-3 Road network around the Rozelle interchange site



## 5.4.2 Public transport services

The Rozelle area has access to light rail and bus services that provide frequent connections to key centres and transport nodes, but does not have access to the heavy rail network.

### Light rail services

The L1 Dulwich Hill line runs from Central to Dulwich Hill via Pyrmont, Glebe, Lilyfield and Leichhardt, as shown in **Figure 5-4**. The closest stops to the Rozelle interchange are at Rozelle Bay and Lilyfield. The line runs along a former freight railway for most of its length, with a short on-street section in the southern Sydney CBD between Darling Drive and Castlereagh Street. **Table 5-6** shows the existing service frequency of light rail on the Dulwich Hill Line, with services every eight to 10 minutes during peak periods.

**Table 5-6 Weekday light rail service frequency**

Line	Early AM (0600–0700)	AM peak (0700–1000)	Off-peak (1000–1500)	PM peak (1500–1900)	Late PM (1900–2300)
L1 Dulwich Hill Line	15 min	8–10 min	15 min	8–10 min	15 min

Source: Transport for NSW 2016



Source: Transport for NSW 2016

**Figure 5-4 L1 Dulwich Hill light rail line**

### Bus services

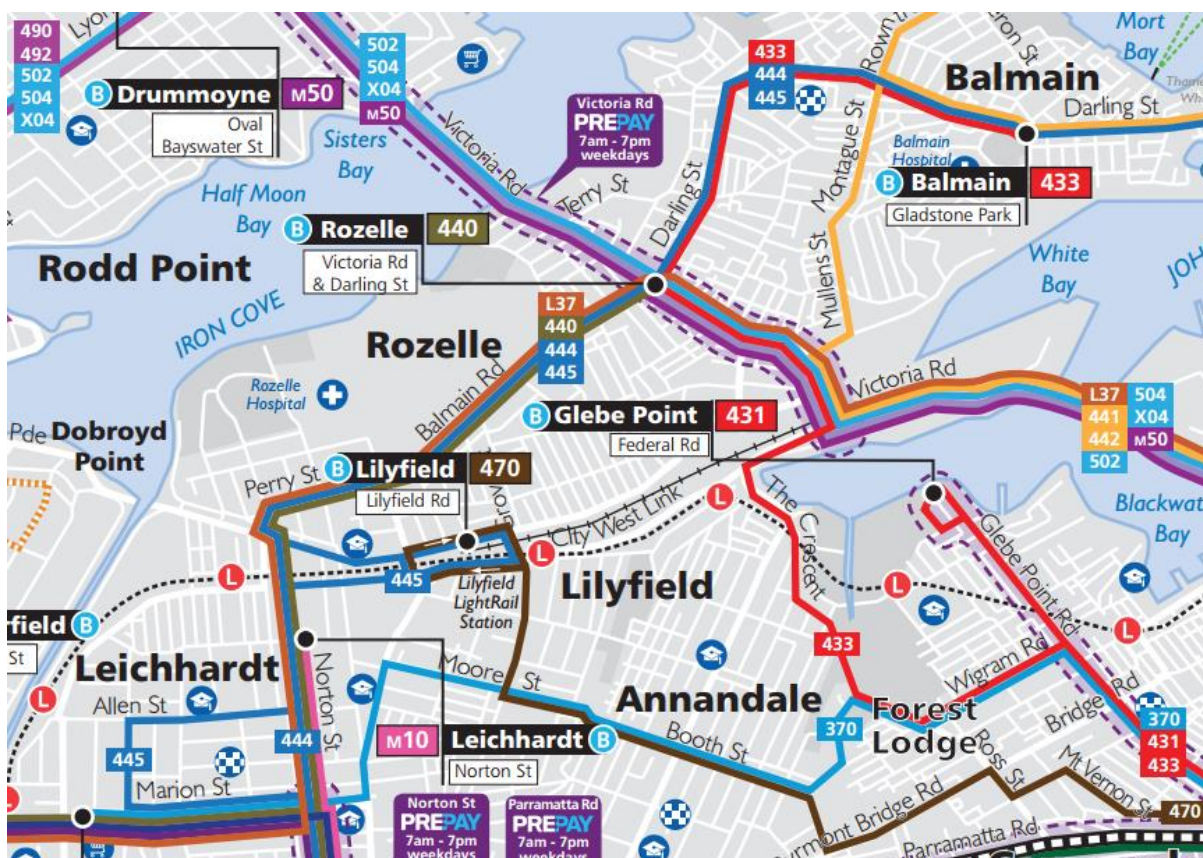
The bus network in the area surrounding the Rozelle interchange is shown in **Figure 5-5**, while **Table 5-7** shows the bus services and frequencies. Victoria Road serves as a major transit corridor between Sydney's north-western suburbs and the Sydney CBD, with sections of bus priority. Balmain Road is also a key bus corridor linking Balmain with Rozelle and Leichhardt.

**Table 5-7 Bus services around Rozelle and surrounds**

Route	Operator	AM peak <sup>1</sup> services	AM peak frequency	PM peak <sup>2</sup> services	PM peak frequency
502 Bayview Park to City	Sydney Buses	5	10–15 min	8	10–20 min
504 Chiswick to City	Sydney Buses	16	5 min	11	7–20 min
X04 City to Chiswick	Sydney Buses	–	–	4	15–20 min
M50 Drummoyne to Coogee via City	Sydney Buses	12	10 min	12	10 min
M52 Parramatta to City	Sydney Buses	24	5 min	15	8 min
431 Glebe Point to City	Sydney Buses	25	3–7 min	19	4–10 min
433 Balmain to Railway Square	Sydney Buses	18	9–12 min	13	5–12 min
444 Campsie to Balmain East	Sydney Buses	10	10 min	7	15 min
445 Campsie to Balmain East via Lilyfield light rail stop	Sydney Buses	1	–	–	–
L37 Haberfield to City	Sydney Buses	5	11–20 min	4	25 min
441 Birchgrove to Art Gallery NSW	Sydney Buses	6	12–35 min	6	15–25 min
442 Balmain East to City	Sydney Buses	29	4 min	24	5 min
440 Bronte to Rozelle via Central Station	Sydney Buses	21	3–10 min	14	6–10 min
500 Ryde to City	Sydney Buses	4	30 min	0	–
501 West Ryde to Central via Pyrmont and Ultimo	Sydney Buses	14	9 min	12	10 min
506 Macquarie University to City via East Ryde	Sydney Buses	18	7 min	9	13 min
507 Macquarie University to City via Putney	Sydney Buses	6	20 min	5	24 min
510 Ryde to City	Sydney Buses	15	8 min	3	40 min
515 Eastwood to City	Sydney Buses	5	24 min	1	–
518 Macquarie University to City	Sydney Buses	7	17 min	5	24 min
520 Parramatta to City via West Ryde (out of peak hours service)	Sydney Buses	1	–	–	–
X00 City to Ryde (Limited Stops)	Sydney Buses	–	–	5	24 min
X06 City to East Ryde (Express)	Sydney Buses	–	–	5	24 min
X15 City to Eastwood	Sydney Buses	–	–	3	40 min
X18 City to Denistone East (Express)	Sydney Buses	–	–	3	40 min

Notes: <sup>1</sup>7am–9am (higher frequency direction), <sup>2</sup>4pm–6pm (higher frequency direction)

Source: Sydney Buses 2016



Source: Sydney Buses 2016

**Figure 5-5 Bus network around the Rozelle interchange site**

### 5.4.3 Walking and cycling facilities

Details of existing walking and cycling infrastructure and facilities can be found in **Appendix N** (Technical working paper: Active transport strategy) of the EIS.

### 5.4.4 Existing traffic volumes and patterns

**Table 5-8** provides the 2016 AM peak hour, PM peak hour and AWT flows for key roads in the vicinity of the future interchange. Only total traffic volumes were available on the Anzac Bridge. Count data was taken from 2014 and 2016 traffic surveys. The table indicates higher traffic flows in the southbound and eastbound (citybound) direction during the AM peak and in the opposite directions during the PM peak. The proportion of heavy vehicles is not significantly high in this area compared to other arterial routes in Sydney.

**Table 5-8 Average peak mid-block traffic volumes at key locations around Rozelle and surrounds (2014 and 2016 count data)**

Location	Direction	AM peak hour		PM peak hour		AWT	
		veh/hr	HCV%	veh/hr	HCV%	veh/day	HCV%
City West Link, between The Crescent and James Craig Road	Eastbound	3,520	6%	3,080	3%	38,500	5%
	Westbound	2,260	5%	2,940	2%	36,000	5%
The Crescent, between City West Link and	Northbound	1,040	3%	870	2%	11,500	4%
	Southbound	880	5%	950	1%	12,500	4%

Location	Direction	AM peak hour		PM peak hour		AWT	
		veh/hr	HCV%	veh/hr	HCV%	veh/day	HCV%
Johnston Street							
Victoria Road, north of The Crescent	Northbound	1,660	8%	2,790	4%	34,500	5%
	Southbound	3,400	5%	2,390	3%	38,500	5%
Victoria Road, south of Gordon Street	Northbound	1,250	7%	2,060	4%	25,000	5%
	Southbound	2,820	4%	1,920	3%	30,500	4%
Victoria Road, north of Gordon Street	Northbound	1,890	5%	2,040	4%	27,000	5%
	Southbound	2,660	5%	1,840	3%	28,000	4%
Anzac Bridge	Eastbound	5,890	–	4,400	–	71,500	–
	Westbound	2,900	–	4,950	–	63,500	–

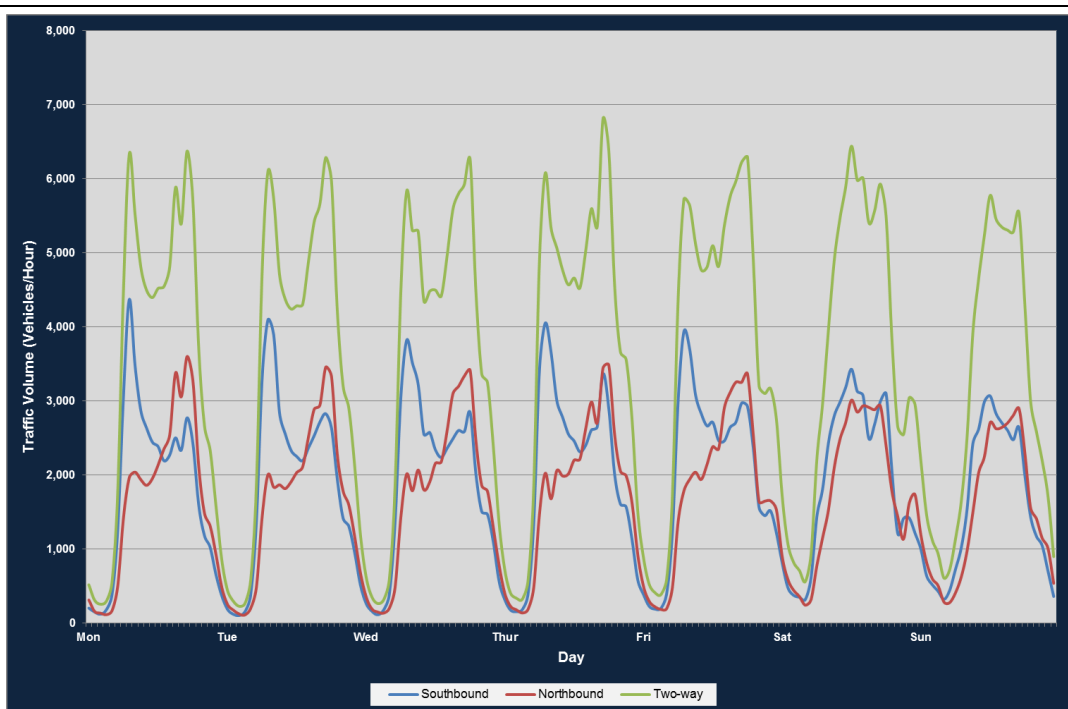
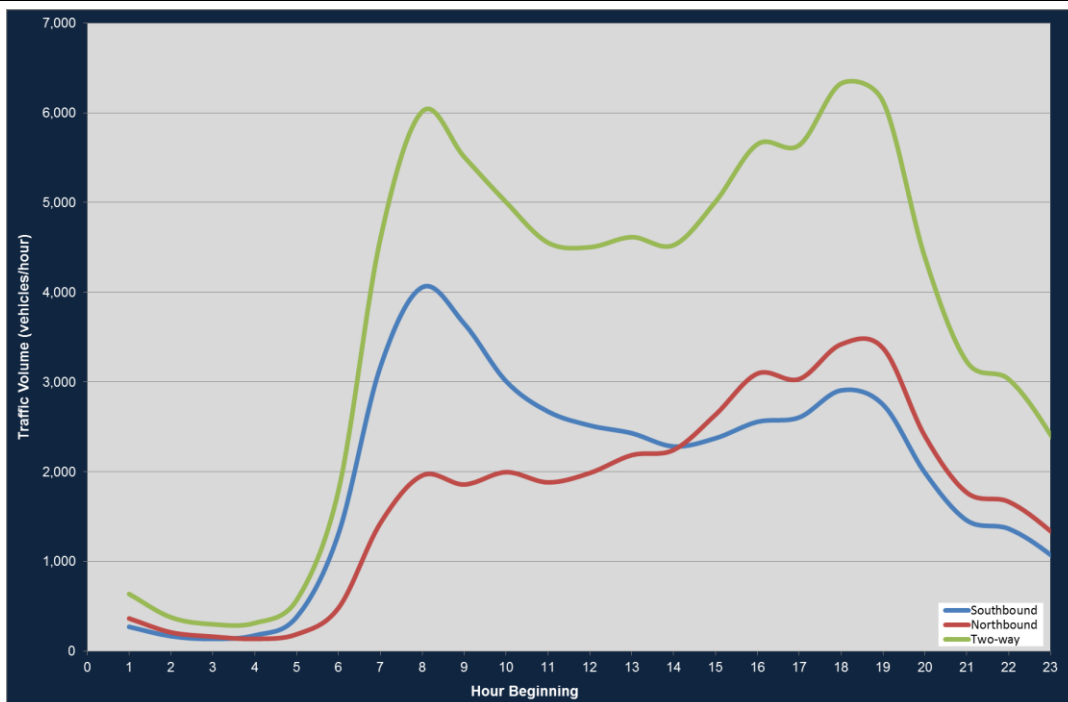
Source: RMS traffic surveys (2014 – 2016)

**Table 5-9** to **Table 5-11** show details of the average peak, daily and weekly traffic volumes recorded at three key locations, by direction and in combination, namely Victoria Road, City West Link and Anzac Bridge. In addition, each table displays traffic volumes and patterns for an average daily and weekly profile based on the following key statistics:

- AM peak hour: highest one hour traffic volume recorded between midnight and midday
- PM peak hour: highest one hour vehicle traffic volume recorded between midday and midnight
- Heavy commercial vehicle per cent (HCV%): per cent of total vehicles that are heavy vehicles
- AWT) volume: daily traffic volume derived from 24 hour traffic counts recorded between Monday and Friday during the survey week
- Average daily traffic (ADT) volume: daily traffic volume derived from 24 hour traffic counts recorded between Monday and Sunday during the survey week.

**Table 5-9 Victoria Road, north of The Crescent**

Southbound		Northbound		Two-way	
AM peak hour total (HCV%)	4,050 (4%)	AM peak hour total (HCV%)	2,000 (8%)	AM peak hour total (HCV%)	6,010 (5%)
PM peak hour total (HCV%)	2,900 (2%)	PM peak hour total (HCV%)	3,500 (3%)	PM peak hour total (HCV%)	6,330 (3%)
AWT (HCV%):	46,000 (5%)	AWT (HCV%):	40,500 (5%)	AWT (HCV%):	86,500 (5%)
ADT:	45,000	ADT:	40,000	ADT:	85,000



**Table 5-10 City West Link, between The Crescent and James Craig Road**

Eastbound		Westbound		Two-way	
AM peak hour total (HCV%)	3,340 (6%)	AM peak hour total (HCV%)	2,210 (7%)	AM peak hour total (HCV%)	5,550 (7%)
PM peak hour total (HCV%)	2,950 (3%)	PM peak hour total (HCV%)	2,680 (2%)	PM peak hour total (HCV%)	5,630 (3%)
AWT (HCV%):	46,000 (7%)	AWT (HCV%):	43,000 (7%)	AWT (HCV%):	89,000 (7%)
ADT:	45,500	ADT:	43,000	ADT:	88,500

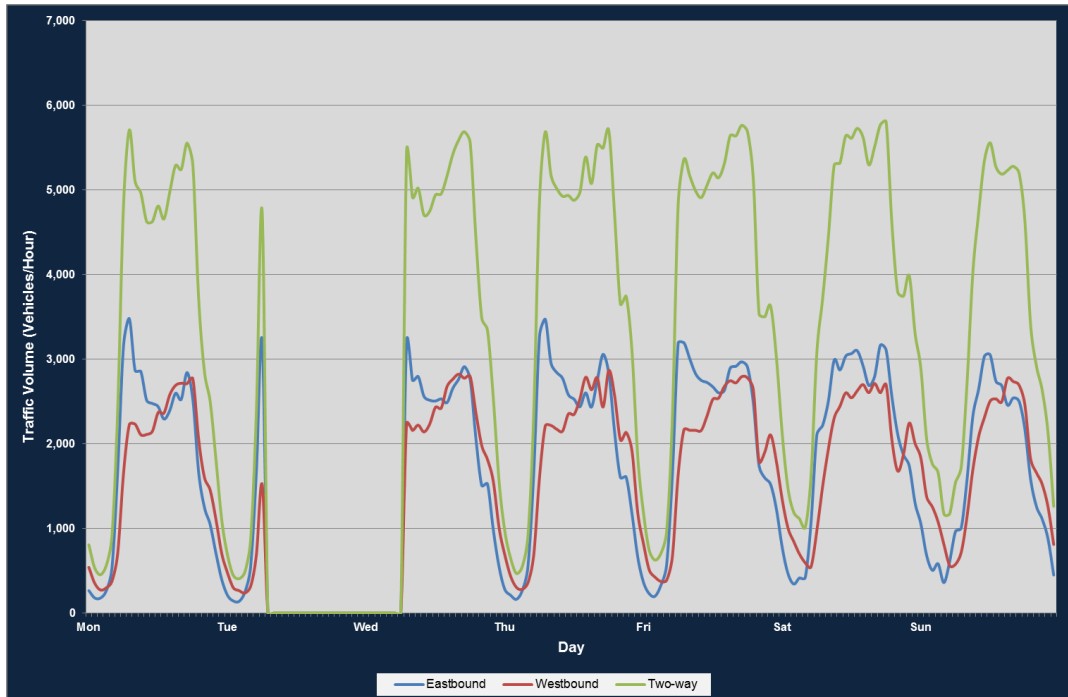
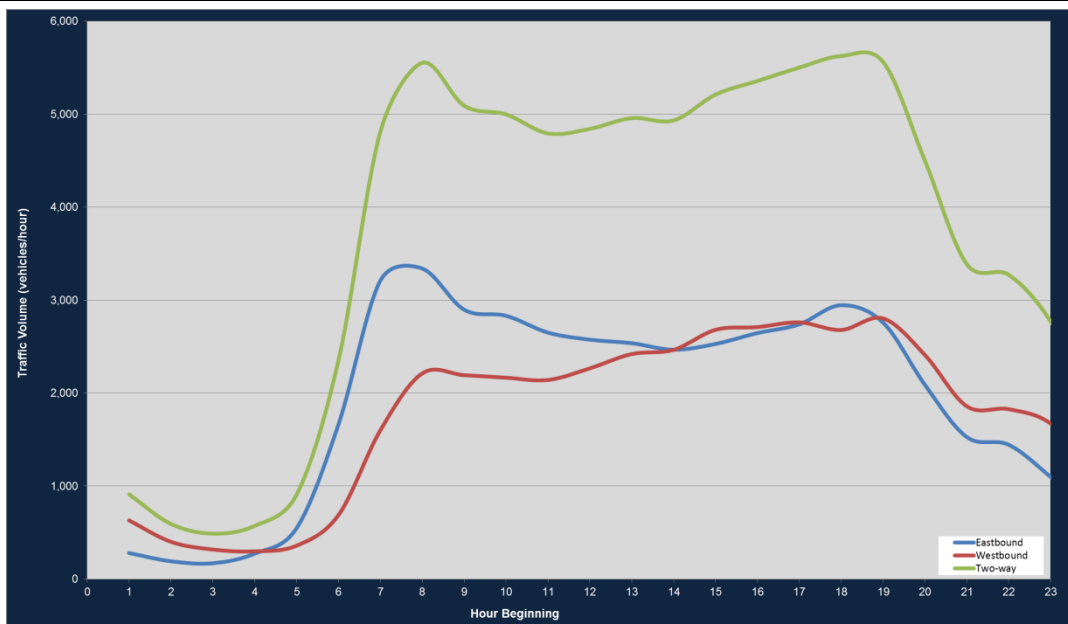
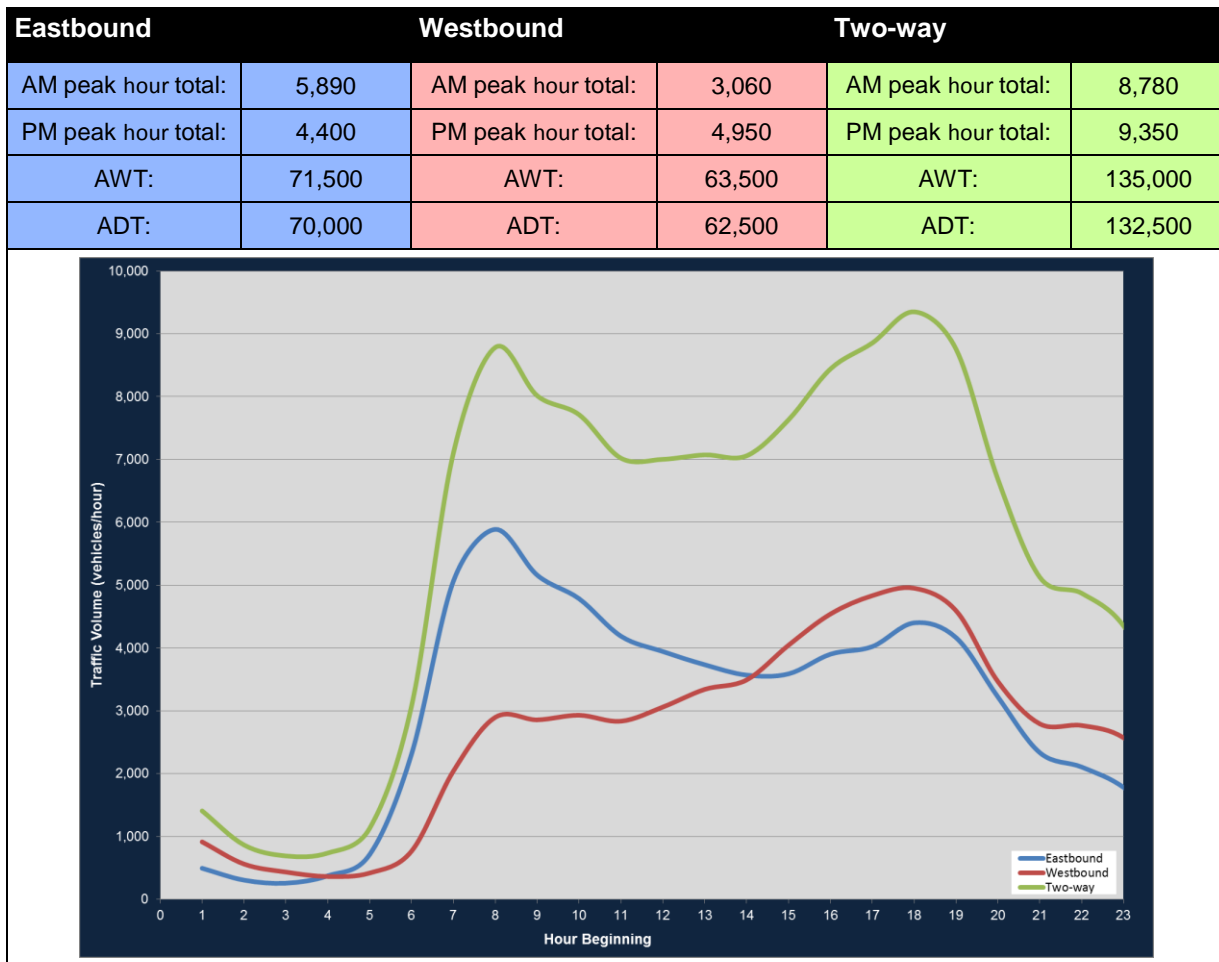




Table 5-11 Anzac Bridge



The tables and graphs show the following key findings for the existing traffic volumes and patterns:

- AWT and ADT are similar to each other at all three locations, indicating that average daily weekend traffic is generally at similar levels to the ADT. Therefore, these roads accommodate consistently high volumes of traffic that are not biased towards weekday work related trip purposes. However, the weekday peak hour traffic flows are higher than the weekend peak hour flows
- The AM peak hour citybound traffic flows are slightly higher than the PM peak hour outbound traffic flows, indicating a sharper AM peak profile than PM peak profile, which is spread over a longer period.

## 5.5 Rozelle interchange to St Peters interchange corridor

The Rozelle interchange to St Peters interchange corridor connects the Sydney CBD and northern Sydney with the M5 Motorway corridor. As identified in **section 3.2**, southeast of the Rozelle interchange, north–south traffic movement is focused on the Eastern Distributor, with Abercrombie Street, Regent Street, Chalmers Street and Elizabeth Street providing supporting north–south routes. North of the St Peters interchange, north–south traffic is mainly focused on the Princes Highway, King Street and City Road, while traffic from Sydney Airport and Port Botany area also use O’Riordan Street and Botany Road.

Several of the roads identified above lie within the Sydney Airport to the Sydney CBD travel demand corridor which, as identified in **section 3.1.3**, experiences high levels of transport congestion. There are also significant heavy vehicle routes along this corridor, extending from the airport and Port Botany, through the city to areas north of Sydney Harbour.

### 5.5.1 Existing traffic volumes and patterns

**Table 5-12** provides 2014 AM peak hour, PM peak hour and AWT flows for at key locations within the Rozelle interchange to St Peters interchange corridor.

The volumes illustrate the road functions described above. Southeast of the Rozelle interchange, the main north–south movement is focused on the Eastern Distributor, with surrounding north–south links playing a supporting role. North of the St Peters interchange, traffic is mainly focused on Princes Highway and, to a lesser degree King Street, while O’Riordan Street and Botany Road also carry a significant amount of north–south traffic.

**Table 5-12 Average peak mid-block traffic volumes at key locations within the Rozelle interchange to St Peters interchange corridor (2014 count data)**

Location	Direction	AM peak hour		PM peak hour		AWT	
		veh/hr	HCV%	veh/hr	HCV%	veh/hr	HCV%
Southeast of Rozelle interchange							
Eastern Distributor, north of Cleveland Street	Northbound	3,230	6%	2,820	4%	41,500	5%
	Southbound	3,300	4%	3,310	4%	52,500	5%
Abercrombie Street, north of Cleveland Street	One-way northbound	1,560	7%	1,430	4%	21,000	7%
Regent Street, north of Cleveland Street	Northbound	930	7%	740	2%	12,000	5%
	Southbound	1,670	5%	1,930	3%	27,000	5%
Chalmers Street, north of Cleveland Street	One-way northbound	1,340	9%	1,100	7%	17,000	9%
Elizabeth Street, north of Cleveland Street	One-way southbound	980	11%	1,440	8%	18,500	9%
North of St Peters interchange							
Princes Highway, south of Railway Road	Northbound	3,500	5%	1,970	4%	37,500	8%
	Southbound	1,590	13%	3,680	6%	40,000	10%
King Street, south of Missenden Road	Eastbound	1,410	13%	890	8%	17,500	9%
	Westbound	610	11%	1,050	9%	16,000	9%
O'Riordan Street, north of Gardeners Road	Northbound	1,210	8%	1,040	6%	16,000	8%
	Southbound	890	8%	1,160	6%	15,000	8%
Botany Road, north of Gardeners Road	Northbound	1,380	11%	880	7%	14,000	13%
	Southbound	750	11%	1,180	10%	13,500	11%

Source: WDA traffic surveys (2014)

## 5.6 St Peters interchange and surrounds

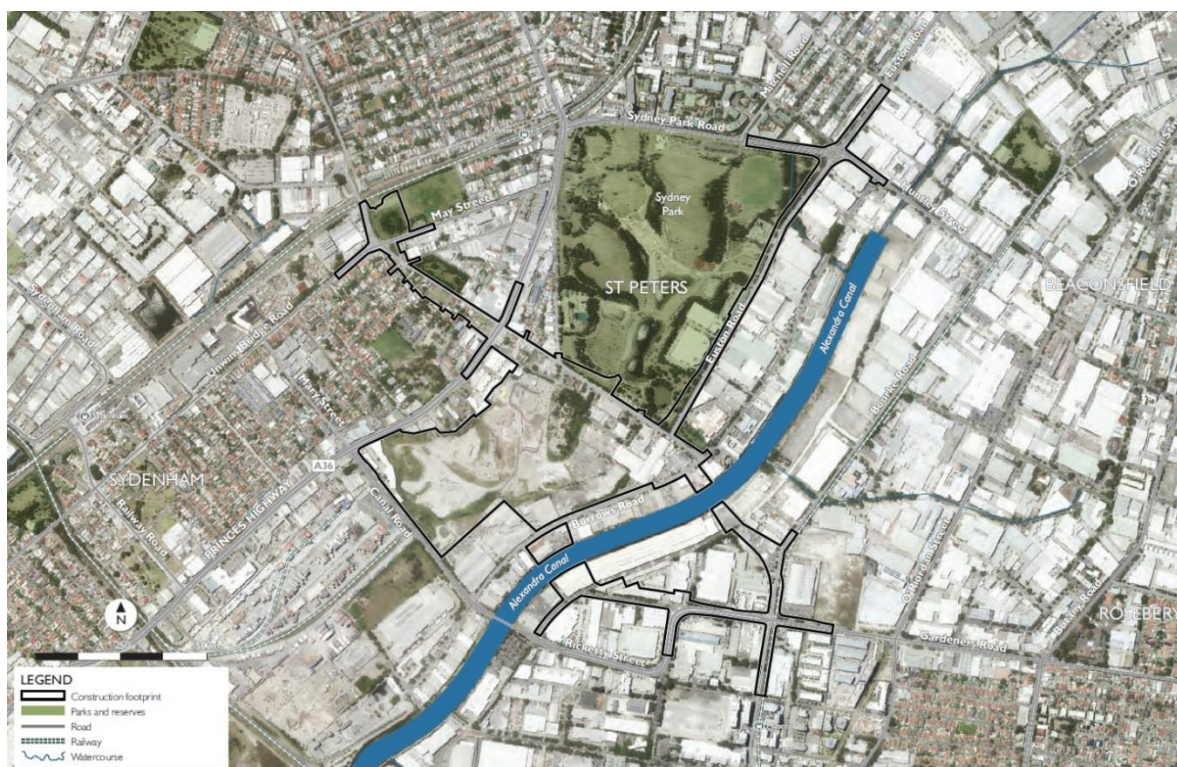
Existing land uses in the vicinity of the St Peters interchange include an enterprise corridor along the Princes Highway, warehouses, limited residential lands, local and arterial roads, Sydney Park to the north and Alexandra Canal to the east. Surrounding land uses include the residential neighbourhoods of St Peters, Sydenham and Newtown, as well as general residential and industrial areas of Alexandria to the east. Other significant areas include commercial activity around the Bourke Road/Bourke Street/Gardeners Road intersection associated with Sydney Airport and residential development associated with Mascot town centre.

The key roads in the vicinity of the St Peters interchange and surrounds are shown in **Figure 5-6** and include:

- Princes Highway (A36) – is a significant highway in Australia, extending from Sydney, NSW to Port Augusta, South Australia, passing through NSW, Victoria and South Australia. It runs from Sydney CBD at Broadway, through Newtown and St Peters, and on beyond Kogarah. In this location, the Princes Highway has many signal controlled intersections and is frequently congested

- King Street – is a state road, part of the Princes Highway, running through the retail precinct of Newtown. It serves as one of the key connections between the Sydney CBD and areas in the south of Sydney. It is two lanes in each direction during clearway periods. King Street has a posted speed limit of 50 kilometres per hour and on-street parking in non-clearway periods
- Canal Road/Ricketty Street/Kent Road – provides a link in the state road network, connecting Princes Highway to Gardeners Road. It is two to three lanes in each direction, operating at a posted speed limit of 60 kilometres per hour. The Ricketty Street Bridge provides the only crossing of the Alexandra Canal in the area
- Gardeners Road – is a state road which runs east–west, connecting Kent Road in the west to Anzac Parade and Bunnerong Road in the east. It is two to three lanes in each direction and has a posted speed limit of 60 kilometres per hour
- Burrows Road – is a wide, local road with one lane in each direction and on-street parking on both sides of the road. The road begins at Huntley Street and end south of Canal Road. It has a posted speed limit of 50 kilometres per hour from Huntley Street to Campbell Road and the speed limit increases to 60 kilometres per hour after Campbell Road
- Campbell Road – is a wide, regional road with one lane in each direction with a posted speed limit of 60 kilometres per hour. It runs between Burrows Road and Barwon Park Road. It has on-street parking from Burrows Road to Barwon Park Road
- Campbell Street – is a regional road with one lane in each direction with a posted speed limit of 60 kilometres per hour. It runs between Barwon Park Road and Unwins Bridge Road and operates with vehicle restrictions from 10.00 pm to 6.00 am prohibiting goods vehicles weighing more than three tonnes
- Euston Road – is a wide collector road with on-street parking on both sides of the road. It connects McEvoy Street in the north and Campbell Road in the south. It has a posted speed limit of 60 kilometres per hour from McEvoy Street to Sydney Park Road. In this section, it is marked as four lanes and is a state road. From Sydney Park Road to Campbell Road, it is posted at 50 kilometres per hour and serves a light industrial precinct
- Bourke Road/Bourke Street – Bourke Road is a local road. It runs between Botany Road, Waterloo and Gardeners Road, Alexandria. North of Botany Road, it becomes Bourke Street and continues until Campbell Street, Darlinghurst. To the south of Gardeners Road, it becomes Bourke Street through Mascot town centre to Coward Street, Mascot, when it then returns to being Bourke Road until O’Riordan Street, Mascot. It is generally one lane in each direction and is posted at 50 kilometres per hour, except through Mascot town centre where it is posted at 40 kilometres per hour. It contains a major cross-regional, separated two-way cycleway.

Several of these roads are proposed to be upgraded as part of the New M5 project.



Source: New M5 EIS, AECOM, November 2015

**Figure 5-6 Road network around the St Peters interchange**

### 5.6.1 Modes of travel

The area around the St Peters interchange site is located in parts of the Sydney, Inner West and Bayside LGAs. Travel mode shares for these LGAs in comparison with the Sydney GMA are shown in **Table 5-13**. As the Sydney LGA includes the Sydney CBD and the Inner West LGA is located close to the Sydney CBD, these two LGAs have a significantly different mode share compared to the GMA, characterised by an extensive public transport network and a land use mix where residential developments are located closer to employment areas, thereby reducing the need for car travel. These two LGAs have a much lower mode share for private vehicles (30 and 49 per cent) and a high mode share for walking (49 and 30 per cent) compared to 69 per cent for private vehicles and 18 per cent for walk trips in the GMA.

The Bayside LGA, which is farther away from the Sydney CBD and where a number of industrial sites such as Sydney Airport and Port Botany are located, has a similar mode share to the GMA average. There is more reliance on private vehicles compared to the Sydney and Inner West LGAs and a lower rail mode share of two per cent compared to the Sydney and Inner West LGAs.

**Table 5-13 Average weekday travel mode share for Sydney, Inner West and Bayside LGAs<sup>1</sup>**

Area	Private vehicles			Rail	Bus	Walk only	Other modes
	Driver	Passenger	Total				
Sydney LGA	21%	9%	30%	8%	9%	49%	4%
Inner West LGA	36%	13%	49%	7%	8%	32%	5%
Bayside LGA	46%	21%	67%	2%	11%	19%	1%
Sydney GMA	47%	22%	69%	5%	6%	18%	2%

Note: Inner West Council LGA data has been derived by combining data from the former Leichhardt, Ashfield and Marrickville LGAs, while Bayside LGA data has been derived from data for the former Botany Bay LGA

Source: NSW Bureau of Transport Statistics (BTS), Household Travel Survey Report: Sydney 2012/13, Nov 2014 Release



## 5.6.2 Public transport services

### Rail services

Sydney and Inner West LGAs are well served by several rail services while Bayside LGA has limited rail coverage. The closest stations to the St Peters interchange site are Mascot Station on the T2 Airport Line and St Peters Station on the T3 Bankstown Line. Mascot and St Peters stations are located one kilometre to the south and 750 metres to the north of the future interchange respectively. These stations in the context of the Sydney Trains network are shown in **Figure 5-7**.



Source: Sydney Trains, 2015

**Figure 5-7 Extract of Sydney train network map around St Peters and surrounds**

**Table 5-14** shows the train services at Mascot and St Peters stations. In the AM peak, there are 18 trains from Mascot Station and 14 trains from St Peters Station travelling to the Sydney CBD. In the PM peak, the train services from the city to Mascot Station and St Peters Station are 16 and 18 respectively. The train headways at Mascot Station are less than 10 minutes at all times on a weekday including inter-peak, AM and PM peak while the headways at St Peters Station is six to 15 minutes and seven to 15 minutes during AM and PM peak respectively. During inter-peak, the train service stop at St Peters Station at a frequency of 15 minutes.

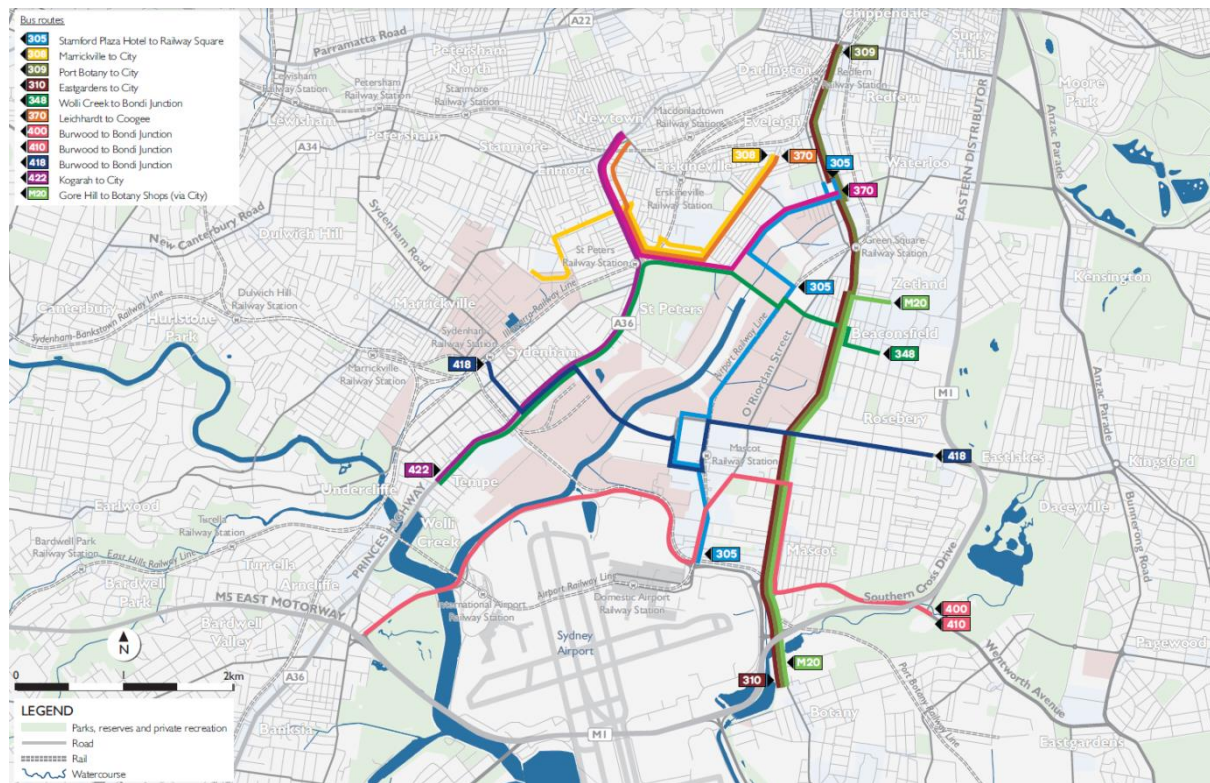
**Table 5-14 Weekday rail service frequency**

Station	Line	AM peak <sup>1</sup> services	AM peak frequency	PM peak <sup>2</sup> services	PM peak frequency
Mascot	T2 Airport Line	18	6–9 min	16	6–9 min
St Peters	T3 Bankstown Line	14	6–15 min	18	7–15 min

Notes: <sup>1</sup>7.00 am–9.00 am to city, <sup>2</sup>4.00 pm–6.00 pm from city  
Source: New M5 EIS, AECOM, November 2015

## Bus services

**Figure 5-8** presents the bus services map in St Peters and surrounds. Given this area is located six kilometres southwest of the Sydney CBD, this area has a comprehensive bus network providing access to its surrounding activity and employment centres.



Source: New M5 EIS, AECOM, November 2015

**Figure 5-8 Bus routes around the St Peters interchange**

The bus routes operated around the St Peters interchange are summarised in **Table 5-15**. All bus routes are operated by Sydney Buses. In addition to the train services from St Peters and Mascot stations, there are a number of bus routes travelling to the Sydney CBD, including routes 308, 422 and M20, with a service frequency of between seven minutes and 20 minutes in the AM and PM peaks. The other bus routes provide access to suburbs such as Wolli Creek, Bondi Junction, Marrickville and Burwood. These bus routes are less frequent than the bus routes travelling to the Sydney CBD.

**Table 5-15 Bus services around St Peters and surrounds**

Route	Operator	AM peak <sup>1</sup> services	AM peak frequency	PM peak <sup>2</sup> services	PM peak frequency
305 Stamford Plaza Hotel to Railway Square	Sydney Buses	5	20 min	5	20 min
308 Marrickville to City	Sydney Buses	8	20 min	4	30 min
309 Port Botany to City	Sydney Buses	13	7–14 min	18	2–14 min
348 Wolli Creek to Bondi Junction	Sydney Buses	4	30 min	4	30 min
370 Leichhardt to Coogee	Sydney Buses	14	8–9 min	11	10–11 min
400 Burwood to Bondi Junction	Sydney Buses	7	17–18 min	8	15 min



Route	Operator	AM peak <sup>1</sup> services	AM peak frequency	PM peak <sup>2</sup> services	PM peak frequency
410 Burwood to Bondi Junction	Sydney Buses	4	30 min	7	17–18 min
418 Burwood to Bondi Junction	Sydney Buses	6	20 min	8	20 min
422 Kogarah to City	Sydney Buses	9	13–14 min	9	13–14 min
M20 Gore Hill to Botany Shops via City	Sydney Buses	12–17	7–10 min	12–17	7–10 min

Notes: <sup>1</sup>7.00 am–9.00 am (higher frequency direction), <sup>2</sup>4.00 pm–6.00 pm (higher frequency direction)  
Source: New M5 EIS, AECOM, November 2015

### 5.6.3 Walking and cycling facilities

Details of existing walking and cycling facilities can be found in **Appendix N** (Technical working paper: Active transport strategy) of the EIS.

### 5.6.4 Existing traffic volumes and patterns

**Table 5-16** provides the 2014 AM peak hour, PM peak hour and AWT flows for the key road corridors in the vicinity of the future St Peters interchange. The shading in the table groups the locations into the King Street/Princes Highway corridor, the Euston Road corridor, the Campbell Street corridor and the Ricketty Street/Gardeners Road corridor. At some locations, only peak hour volumes were available.

Roads running east–west experience higher traffic flows in the eastbound direction during the AM peak hour and in the westbound direction during the PM peak hour. The Princes Highway experiences higher traffic flows in the northbound direction during the AM peak hour and southbound direction during the PM peak hour. A number of locations have a high proportion of heavy vehicles.

**Table 5-16 Average peak mid-block traffic volumes at key locations around St Peters and surrounds (2014 count data)**

Location	Direction	AM peak hour		PM peak hour		AWT flow	
		veh/hr	HCV%	veh/hr	HCV%	veh/day	HCV%
King Street, south of Alice Street	Northbound	1,020	5%	950	2%	–	–
	Southbound	780	7%	940	3%	–	–
Princes Highway, north of Campbell Street	Northbound	1,660	5%	980	3%	19,00	6%
	Southbound	560	9%	1,600	4%	17,500	7%
Princes Highway, south of Campbell Street	Northbound	1,720	11%	1,040	6%	19,500	9%
	Southbound	610	10%	1,550	9%	18,000	10%
Railway Road, west of Princes Highway	Eastbound	630	12%	640	4%	–	–
	Westbound	390	17%	550	5%	–	–
Princes Highway, south of Railway Road	Northbound	3,370	5%	1,590	5%	27,000	15%
	Southbound	780	10%	2,610	2%	25,500	17%
Euston Road, north of Campbell Road	Northbound	410	13%	190	7%	3,000	13%
	Southbound	200	23%	190	7%	2,500	16%
Euston Road, north of	Northbound	1,220	7%	600	5%	–	–

Location	Direction	AM peak hour		PM peak hour		AWT flow	
		veh/hr	HCV%	veh/hr	HCV%	veh/day	HCV%
Sydney Park Road	Southbound	500	15%	1,330	5%	–	–
Campbell Road, west of Euston Road	Eastbound	860	9%	410	12%	7,500	11%
	Westbound	160	21%	320	13%	3,500	14%
Campbell Street, east of May Street	Eastbound	360	8%	320	8%	5,000	8%
	Westbound	140	16%	280	11%	3,000	12%
Edgeware Road, west of Edinburgh Road	Northbound	670	8%	810	3%	–	–
	Southbound	730	7%	780	1%	–	–
Ricketty Street	Eastbound	2,290	7%	1,160	9%	22,000	11%
	Westbound	960	17%	1,830	7%	20,500	12%
Gardeners Road, west of O'Riordan Street	Eastbound	1,090	13%	920	15%	14,000	14%
	Westbound	1,000	11%	1,120	12%	15,000	11%

Source: WDA traffic surveys (2014)

## 5.7 Wattle Street interchange to St Peters interchange corridor

The Wattle Street interchange to St Peters interchange corridor connects the M4 and M5. There is an existing primary freight route between these interchange sites that extends along Parramatta Road, Old Canterbury Road, Railway Terrace, Gordon Street, Livingstone Road, Sydenham Road, Gleeson Avenue and Railway Road until connecting to Princes Highway, as indicated in red in **Figure 5-9**. While this route is classified as a primary freight route, its use is restricted to heavy vehicles under 19 metres. An alternative route option runs along Parramatta Road, Stanmore Road and Edgeware Road. The green lines indicate secondary freight routes and the blue lines tertiary freight routes.



Source: Excerpt from Metropolitan Road Freight Hierarchy on the State Road Network Practice Note, June 2011

**Figure 5-9 Excerpt from Sydney Road Freight Hierarchy**

### 5.7.1 Existing traffic volumes and patterns

**Table 5-17** provides 2012 AM peak hour, PM peak hour and AWT flows on Sydenham Road in Marrickville, along the primary freight route. The table indicates clear changes in peak direction between the AM peak hour and the PM peak hour, with more vehicles travelling eastbound in the AM peak hour, and more vehicles travelling westbound in the PM peak hour. The survey data also indicates a high heavy vehicle percentage, which is high through the day. This is consistent with the use of this route by freight vehicles, which may try and travel outside of peak traffic periods.

**Table 5-17 Average peak mid-block traffic volumes at key locations within the Wattle Street interchange to St Peters interchange corridor (2012 count data)**

Location	Direction	AM peak hour		PM peak hour		AWT	
		veh/hr	HCV%	veh/hr	HCV%	veh/hr	HCV%
Sydenham Road, west of Victoria Road (Marrickville)	Westbound	390	12%	920	4%	9,500	8%
	Eastbound	840	7%	500	3%	10,000	7%

Source: RMS traffic survey (2012)

## 6 Existing road network performance

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### 6.1 Introduction

This section outlines the existing road network performance within the study area. These reflect conditions prior to the commencement of construction of the M4 East or the New M5.

The assessment of the existing operational performance of the road network considered the following aspects of performance:

- Network performance
- Intersection performance
- Travel times and speeds
- Traffic crashes.

### 6.2 Wattle Street interchange and surrounds

Network performance and intersection performance analysis for the Wattle Street interchange and surrounds is presented in **section 6.2.1** and **section 6.2.2**. It is noted that currently traffic conditions around the Wattle Street interchange are temporarily altered due to the construction of the M4 East project. To allow an assessment that reflects the unaltered road network performance, the network performance reported is for the situation prior to this construction commencing.

#### 6.2.1 Network performance

**Table 6-1** presents the performance of the modelled road network for Wattle Street and surrounds, as presented in **Figure 4-2**, for a 2015 base scenario for the AM and PM peak hours.

The Parramatta Road corridor currently functions under high levels of traffic demand, with the demand often exceeding the capacity of the road, especially eastbound during the AM peak period. This results in congested conditions and long queues and delays during peak periods.

An exception is east of Bland Street, where citybound Parramatta Road volumes in the AM peak are somewhat lower, due to congestion at the Wattle Street intersection, which acts as a gating mechanism holding back traffic flow. Northbound congestion is also evident on Dobroyd Parade reflecting citybound demand in the AM peak.

A similar pattern is evidenced in the PM peak although congestion is recorded in both directions. East of Bland Street, westbound traffic flows relatively well due to an extra lane on Parramatta Road, west of Dalhousie Street, and congestion at the Hume Highway intersection that holds back westbound traffic.

#### 6.2.2 Intersection performance

To assess intersection performance in this assessment, all exit blocking constraints, applied in the microsimulation models to reflect network congestion beyond the modelled network extents, were removed (see **section 4.3.2**). This allows for an assessment of intersections within the modelled network, irrespective of downstream queuing that would mask the actual operation of the intersection. The assessment undertaken in the M4 East EIS used a different methodology; therefore intersection results at the Wattle Street interchange are not directly comparable.

**Table 6-2** presents the modelled AM and PM peak hour LoS for key intersections in the vicinity of the Wattle Street interchange. The intersection performance results demonstrate that most of the key intersections perform acceptably in the AM peak hour, with the exception of the Parramatta Road and Wattle Street intersection. In the PM peak hour, results indicate that key intersections operate to an acceptable level under existing demand.

**Table 6-1 Wattle Street interchange modelled network performance – 2015 AM and PM peak hour**

Network measure	AM peak hour	PM peak hour
<b>All vehicles</b>		
Total traffic demand (veh)	13,233	13,559
Total vehicle kilometres travelled in network (km)	25,663	27,377
Total time travelled approaching and in network (hr)	1,731	1,504
Total vehicles arrived	13,191	13,559
Total number of stops	244,016	183,725
<b>Average per vehicle in network</b>		
Average vehicle kilometres travelled in network (km)	1.7	1.8
Average time travelled in network (mins)	7.0	5.9
Average number of stops	14.8	11.0
Average speed (km/h)	14.9	18.3
<b>Unreleased vehicles</b>		
Unreleased demand (veh)	41	0
% of total traffic demand	0%	0%

**Table 6-2 Wattle Street interchange: modelled key intersection performance (LoS) – 2015 AM and PM peak hour**

Key intersections	AM peak hour	PM peak hour
Parramatta Road/Sloane Street	B	B
Parramatta Road/Liverpool Road	C	B
Parramatta Road/Dalhousie Street	B	B
Parramatta Road/Bland Street	B	B
Parramatta Road/Wattle Street	E	D
Parramatta Road/Great North Road	B	B
Parramatta Road/Arlington Street	B	B
Frederick Street/Church Street	B	B
Wattle Street/Ramsay Street	C	C
Dobroyd Parade/Waratah Street	A	A
City West Link/Timbrell Drive	C	D

### 6.2.3 Traffic crashes

An analysis of traffic crashes was carried out for Parramatta Road between Wattle Street and City Road. The crash analysis considered relies on data recorded, with all crashes conforming to the national guidelines for reporting and classifying road vehicle crashes. The main criteria for these crashes are:

- The crash was reported to police
- The crash occurred on a public road

- The crash involved at least one moving vehicle
- The crash involved at least one person being killed or injured or at least one motor vehicle being towed away.

Unreported crashes, generally of a minor nature, are therefore not considered.

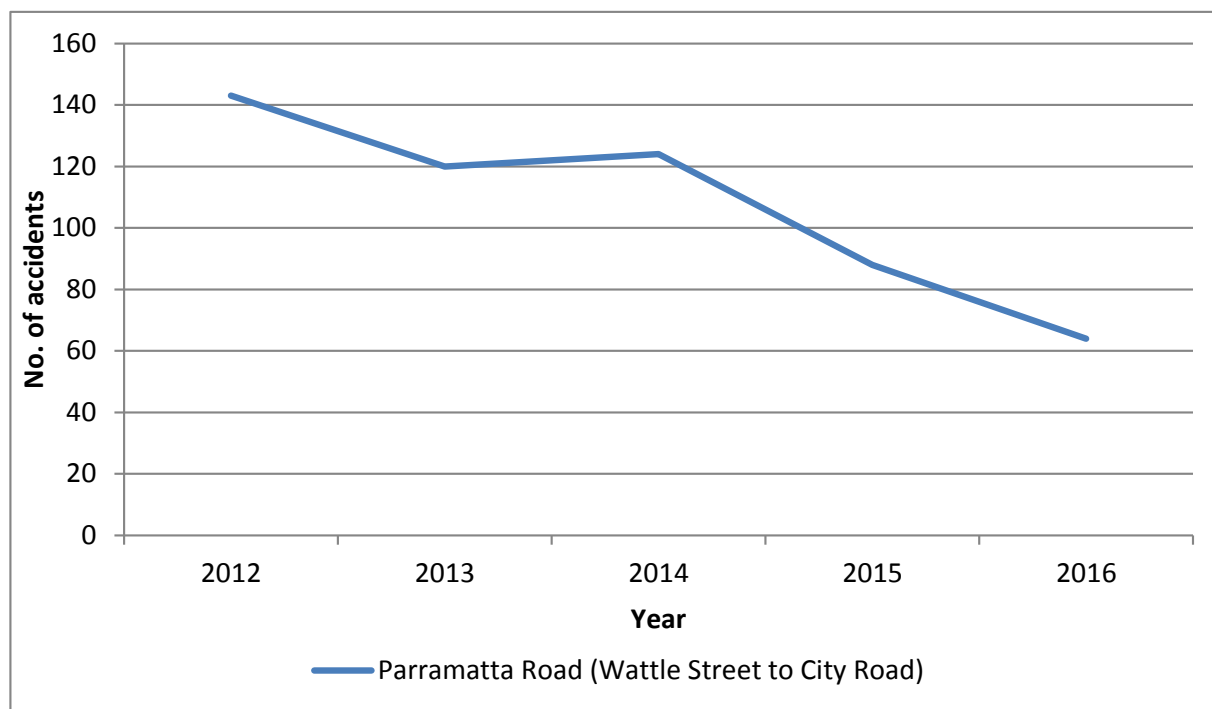
**Table 6-3** summarises the crash history for the past five years (1 January 2012–31 December 2016) on Parramatta Road between Wattle Street and City Road.

**Table 6-3 Parramatta Road from Wattle Street to City Road: crash statistics (Jan 2012 to Dec 2016)**

Road	Section from	Section to	Crashes			
			Total	Fatal	Injury	Tow-away
Parramatta Road	Wattle Street	Broadway	539	0	404	135

Source: Summarised from crash reports, 2017

**Figure 6-1** presents the crash profile over a five-year period for Parramatta Road between Wattle Street and City Road. The profile indicates that while accidents have broadly decreased since 2012, this decrease is not necessarily consistent from year to year with accidents increasing slightly in 2014.



**Figure 6-1 Historical crash profile for Parramatta Road between Wattle Street and City Road**

Source: Summarised from crash reports, 2017

Crash severity indices provide an assessment of road safety based on the type and number of crashes occurring on a route. Fatal, injury and tow-away crashes carry different weightings; they are determined independently of absolute traffic volumes, and calculated to establish the average level of severity of crashes that occur.

The following equation is applied to calculate the crash severity indices with results presented in **Table 6-4**.

$$\text{Crash Severity Index} = \frac{[(\text{No. of fatal crashes} * 3.0) + (\text{No. of injury crashes} * 1.5) + (\text{No. of non - injury crashes})]}{\text{Total no. of crashes}}$$

Source: Roads and Maritime Crash Data, 2016



The average crash severity index on Parramatta Road between Wattle Street and City Road is about 1.37, which is above the average for NSW (1.24) and the Sydney Metropolitan Area (1.22), as presented in **Table 6-4**.

**Table 6-4 Parramatta Road between Wattle Street and City Road: crash severity indices (Jan 2012 to Dec 2016)**

Road	Section from	Section to	Crash severity index
Parramatta Road	Wattle Street	City Road	1.37
<b>NSW   Sydney Metropolitan Averages – all roads (2010–2014)</b>			
NSW			1.24
Sydney Metropolitan Area			1.22

Source: Summarised from crash reports, 2014 and 2017

Crash rates per 100 million vehicle kilometres travelled (100MVKT) are shown in **Table 6-5**. These crash rates are calculated using the volume of traffic and distance travelled along a route, therefore offering a measure of risk per kilometre travelled. The following formula is used to calculate this rate:

$$\text{Crash rate per 100 MVKT} = \frac{(\text{Total no. of crashes in period}) * (100,000,000)}{(\text{No. of years} * 365 * \text{Length (km)} * \text{AADT})}$$

Source: Roads and Maritime Crash Data, 2016

The latest available data (for the 12-month period ending December 2013) show average fatality and injury rates across the Sydney Metropolitan Area of 0.2 and 29.4 per 100MVKT respectively. **Table 6-5** indicates that the occurrence of injury crashes is higher on Parramatta Road between Wattle Street and City Road, compared to the Sydney Metropolitan Area average, while fatal and tow-away crashes are lower. In particular, tow-away crash rates are significantly lower, with a tow-away crash rate of about 18 crashes per 100MVKT compared with about 39 crashes per 100MVKT for the Sydney Metropolitan Area.

**Table 6-5 Parramatta Road between Wattle Street and City Road: crash rates per 100MVKT (Jan 2012 to Dec 2016)**

Road	Section from	Section to	Section length (km)	ADT (veh)	Crash rates per 100MVKT			
					Total	Fatal	Injury	Tow-away
Parramatta Road	Wattle Street	City Road	6.6	61,517	72.7	–	54.5	18.2
Sydney Metropolitan Area (1 Jan 2013 to 31 Dec 2013)					68.8	0.2	29.4	39.2

Source: Summarised from crash reports, 2017

**Table 6-6** provides details of the crash costs for Parramatta Road between Wattle Street and City Road. Average crash costs based on crash severity have been calculated using Roads and Maritime's Economic Analysis Manual (Economic Parameters for 2009). The crash costs presented in this Appendix are based on a 'willingness to pay' approach. Willingness to pay values for road safety reflect the accumulated value the NSW community is willing to pay or forgo in exchange for a reduction in the probability of crash related injuries and deaths on NSW roads.

**Table 6-6 Parramatta Road from Wattle Street to City Road: crash costs (Jan 2012 to Dec 2016)**

Road	Section from	Section to	Section length (km)	ADT (veh)	Total cost	Crash cost Average annual cost	Cost per 100MVKT
Parramatta Road	Wattle Street	City Road	6.6	61,517	\$58,207,728	\$11,641,546	\$7,891,440

Source: Summarised from crash reports, 2017

### 6.3 Wattle Street interchange to Rozelle corridor

Key east–west movement in this corridor is focused on City West Link, Victoria Road and Parramatta Road, which fall within the Parramatta to the Sydney CBD via Strathfield and Parramatta to the Sydney CBD via Ryde transport demand corridors. The *NSW Long Term Transport Master Plan* reported low levels of performance on these corridors. On the Parramatta to the Sydney CBD via Strathfield corridor, an average variance of up to eight minutes in the AM and PM peak periods for buses was reported, while along the Parramatta to the Sydney CBD via Ryde corridor, low average peak period speeds and high variability in bus travel times was reported.

Average speed and travel times on Wattle Street/City West Link, Parramatta Road and Victoria Road, are shown in **Table 6-7**. The low speeds and long travel times indicate the peak hour congestion currently experienced along the Wattle Street interchange to Rozelle interchange corridor.

**Table 6-7 Average speed and travel times along key roads within the Wattle Street interchange to Rozelle interchange corridor (2016 survey data)**

Location	Direction	Average speed (km/hr)		Average travel time (min:sec)	
		AM peak	PM peak	AM peak	PM peak
Wattle Street/City West Link (Parramatta Road – Victoria Road)	Eastbound	22	36	13:30	8:20
	Westbound	27	32	8:10	9:20
Parramatta Road (Wattle Street – City Road)	Eastbound	24	28	19:10	16:30
	Westbound	31	26	15:00	17:30
Victoria Road (Lyons Road – Anzac Bridge)	Eastbound	23	27	11:40	7:10
	Westbound	27	29	10:00	9:00

### 6.4 Rozelle and surrounds

#### 6.4.1 Network performance

**Table 6-8** presents the performance of the modelled road network for Rozelle and surrounds, as presented in **Figure 4-3**, in the 2015 base scenario for the AM and PM peak hours.

**Table 6-8 Rozelle modelled network performance – 2015 AM and PM peak hour**

Network measure	AM peak hour	PM peak hour
<b>All vehicles</b>		
Total traffic demand (veh)	19,969	22,148
Total vehicle kilometres travelled in network (km)	54,959	61,980
Total time travelled approaching and in network (hr)	4,016	3,276
Total vehicles arrived	20,298	20,714
Total number of stops	267,250	133,380

Average per vehicle in network		
Average vehicle kilometres travelled in network (km)	2.7	3.0
Average time travelled in network (mins)	9.6	8.2
Average number of stops	11.5	5.6
Average speed (km/h)	16.9	21.9
Unreleased vehicles		
Unreleased demand (veh)	357	823
% of total traffic demand	2%	4%

The above results represent the peak hour – the hour with the worst traffic performance. For the AM peak period, this is 8.00 am to 9.00 am and for the PM peak period, this is 5.00 pm to 6.00 pm. The microsimulation models include a preloading period prior to the peak hour. Due to the large model area and high level of congestion in the road network, some vehicles generated in the previous hours arrive during the peak hour. As a result, in the AM peak hour, the models report a higher number of vehicles arriving at their destinations than the AM peak hour demand.

The unreleased demand indicates about four per cent of the demand during the PM peak hour remains unreleased from the origin zones in the models. Due to high congestion levels, queues extend back into zones and vehicles are unable to enter the network. This indicates the network does not have sufficient capacity to accommodate the existing demand resulting in extensive queuing from intersections. This is not unusual and occurs across many parts of the Sydney metropolitan road network during peak hours.

During the AM peak hour, Anzac Bridge/Western Distributor eastbound capacity is affected by various operational behaviours:

- The ‘zipper’ merge between The Crescent underpass and Victoria Road left turn
- General weaving on Anzac Bridge deck and the Western Distributor and the general constrained nature and complexity of the Western Distributor alignment and environment, worsened by short ramps and the merge and diverge areas
- Weaving effects of traffic flows to Pyrmont Bridge Road, Allen Street and King Street exit ramps and Sydney Harbour Bridge approach
- Weaving effects of traffic flows from Pyrmont Bridge Road and Harris Street entry ramps
- Tidal operations and capacity constraints on Sydney Harbour Bridge, combined with weaving and merging on the Sydney Harbour Bridge deck and approach
- Queue back effects from downstream capacity constraints at Bathurst Street.

During the AM peak hour, the capacity constraints at Bathurst Street and Sydney Harbour Bridge have the most significant impacts on the eastbound movement on the Western Distributor with extensive congestion extending back to or across Anzac Bridge.

During the PM peak hour, the westbound traffic experiences long delays at the Victoria Road/The Crescent intersection, because the intersection does not have sufficient capacity to accommodate the large westbound demands across the intersection. Long delays and queuing is also observed eastbound on Darling Street at the Victoria Road intersection and northbound on The Crescent at the Johnston Street intersection.

## 6.4.2 Intersection performance

**Table 6-9** presents the modelled AM and PM peak hour LoS for key intersections at Rozelle. The intersection performance results show that several intersections along Victoria Road in Rozelle experience poor levels of service during the PM peak hour. The poor level of service indicates that the

intersections are at or close to capacity and small increases in demand would result in large additional delays and queuing.

**Table 6-9 Rozelle: modelled key intersection performance (LoS) – 2015 AM and PM peak hour**

Key intersections	AM peak hour	PM peak hour
Victoria Road/Lyons Road	D	D
Victoria Road/Wellington Street	D	B
Victoria Road/Darling Street	F	F
Victoria Road/Robert Street	D	F
Victoria Road/The Crescent	B	F
The Crescent/James Craig Road	A	B
City West Link/The Crescent	B	D
The Crescent/Johnston Street	C	F

### 6.4.3 Travel times and speeds

Travel time surveys were conducted in 2014 along both Victoria Road and City West Link onto Anzac Bridge. **Table 6-10** shows the average travel time on Victoria Road and Anzac Bridge between Darling Street, Rozelle and Pyrmont Bridge ramps, Pyrmont in the AM and PM peak hours. Eastbound travel time during the AM peak hour averages about six minutes, with an average speed of about 21 kilometres per hour (km/h) on a typical weekday. The westbound travel time during the PM peak hour averages about eight minutes, with an average speed of about 18 kilometres per hour. The speed limit on Victoria Road and Anzac Bridge is 60 kilometres per hour.

The eastbound direction during the AM peak hour and the westbound direction in the PM peak hour experience the most congested conditions. This is illustrated in the longer travel times and slower speeds compared to the reverse direction during these same peak periods. It is noted that the average speed in the eastbound direction during the PM peak hour is also slow – 23 kilometres per hour compared to the speed limit of 60 kilometres per hour.

**Table 6-10 Travel speed and time on Victoria Road and Anzac Bridge between Darling Street, Rozelle and Pyrmont Bridge entry and exit ramp, Pyrmont**

Location	Direction	Average speed (km/hr)		Average travel time (min:sec)	
		AM peak	PM peak	AM peak	PM peak
Victoria Road/Anzac Bridge (Darling Street – Pyrmont Bridge entry and exit ramp)	Eastbound	21	23	6:20	5:40
	Westbound	35	18	3:50	7:40

Source: Based on Matrix survey data, 2014

**Table 6-11** shows the average travel time on City West Link and Anzac Bridge between Catherine Street at Lilyfield and Pyrmont Bridge ramps at Pyrmont during the AM and PM peak hours. Eastbound travel time during the AM peak hour averages about 10 minutes, with an average speed of about 16 kilometres per hour on a typical weekday. Westbound travel time during the PM peak hour averages six minutes, with an average speed of about 26 kilometres per hour. The speed limit on City West Link and Anzac Bridge is 60 kilometres per hour.

The eastbound direction in the AM peak hour and the westbound direction in the PM peak hour experience the most congested conditions. This is illustrated in the longer travel times and slower speeds compared to the reverse direction in these same peak hours. Compared to the Victoria Road surveys, the eastbound direction in the PM peak hour does not experience as much congestion.

**Table 6-11 Travel speed and time on City West Link and Anzac Bridge between Catherine Street, Lilyfield and Pyrmont Bridge entry and exit ramp, Pyrmont**

Location	Direction	Average speed (km/hr)		Average travel time (min:sec)	
		AM peak	PM peak	AM peak	PM peak
City West Link/Anzac Bridge (Catherine Street – Pyrmont Bridge entry and exit ramp)	Eastbound	16	44	10:00	3:30
	Westbound	35	26	4:30	6:00

Source: Based on Matrix survey data, 2014

#### 6.4.4 Traffic crashes

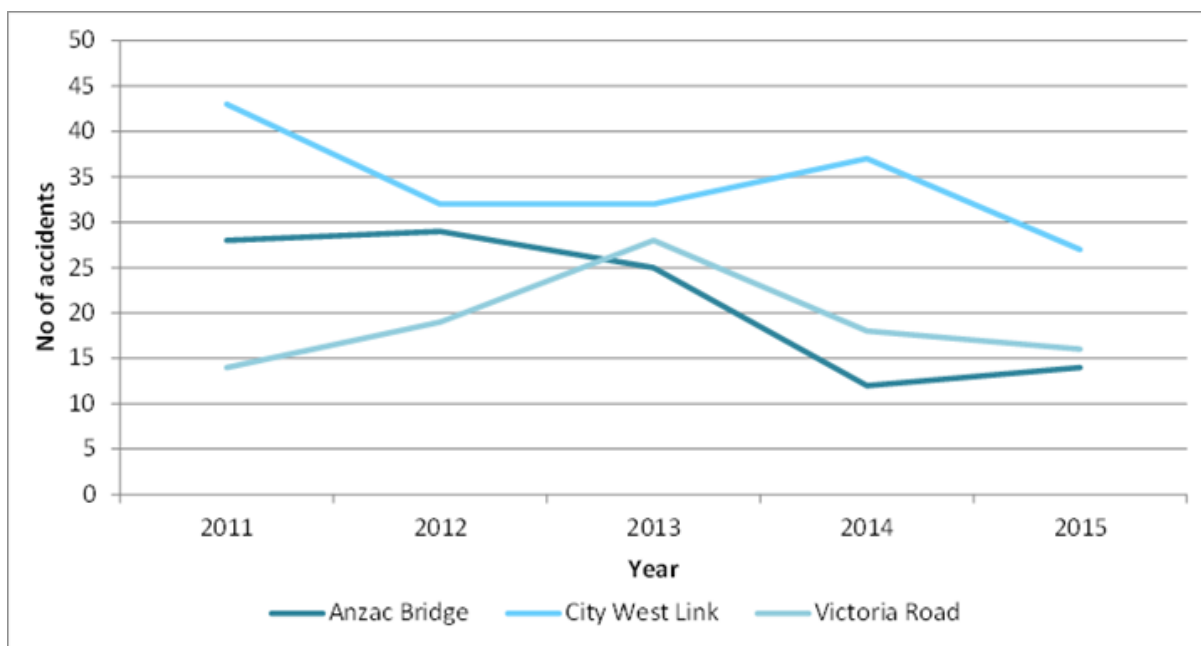
**Table 6-12** summarises the crash history for five years (1 January 2011 – 31 December 2015) on the key roads around the Rozelle interchange. On key arterial roads, including Anzac Bridge and City West Link, about 60 per cent of crashes were rear-end, which is consistent with roadways approaching capacity and on which a high level of queuing occurs.

**Table 6-12 Rozelle and surrounds: crash statistics (Jan 2011 to Dec 2015)**

Road	Section from	Section to	Crashes			
			Total	Fatal	Injury	Tow-away
Anzac Bridge	Miller Street	Victoria Road	108	0	66	42
City West Link	James Street	Victoria Road	171	1	87	83
Victoria Road	Darling Street	The Crescent	95	1	51	43
Lilyfield Road	Victoria Road	Canal Road	41	0	28	13
The Crescent	City West Link	Wigram Road	62	0	35	27
Johnston Street	The Crescent	Parramatta Road	62	0	40	22

Source: Summarised from crash reports, 2016

**Figure 6-2** presents the crash profile for the five-year period for Anzac Bridge, City West Link and Victoria Road. The profile indicates each road has a different trend, with accidents on Anzac Bridge and City West Link generally decreasing, while accidents were increasing on Victoria Road between 2011 and 2013 before decreasing between 2013 and 2015.



Source: Summarised from crash reports, 2016

**Figure 6-2 Historical crash profile for Anzac Bridge, City West Link and Victoria Road**

The average crash severity index on key roads in Rozelle and surrounds is about 1.29 – above the average for NSW (1.24) and the Sydney Metropolitan Area (1.22), as presented in **Table 6-13**.

**Table 6-13 Rozelle and surrounds: crash severity indices (Jan 2011 to Dec 2015)**

Road	Section from	Section to	Crash Severity Index
Anzac Bridge	Victoria Road	Miller Street	1.31
City West Link	James Street	Victoria Road	1.27
Victoria Road	Darling Street	The Crescent	1.29
Lilyfield Road	Victoria Road	Canal Road	1.38
The Crescent	City West Link	Wigram Road	1.28
Johnston Street	The Crescent	Parramatta Road	1.32
<b>NSW   Sydney Metropolitan averages – all roads (2010–2014)</b>			
NSW			1.24
Sydney Metropolitan Area			1.22

Source: Summarised from crash reports, 2014 and 2016

**Table 6-14** indicates that the occurrence of fatal crashes is higher on City West Link and Victoria Road compared to the Sydney Metropolitan Area average, while crashes causing injury on Victoria Road, Lilyfield Road, The Crescent and Johnston Street are higher than the Sydney Metropolitan Area average. Injury crashes on Anzac Bridge and City West Link are lower than the Sydney Metropolitan Area average.



**Table 6-14 Rozelle and surrounds: crash rates per 100MVKT (Jan 2011 to Dec 2015)**

Road	Section from	Section to	Section length (km)	ADT (veh)	Crash rates per 100MVKT			
					Total	Fatal	Injury	Tow-away
Anzac Bridge	Victoria Road	Miller Street	0.99	134,000	44.6	-	27.3	17.3
City West Link	James Street	Victoria Road	2.13	86,991	50.6	0.3	25.7	24.5
Victoria Road	Darling Street	The Crescent	0.85	83,648	73.2	0.8	39.3	33.1
Lilyfield Road	Victoria Road	Canal Road	2.48	4,301	205.5	-	143.8	66.8
The Crescent	City West Link	Wigram Road	1.32	28,010	91.9	-	51.9	40.0
Johnston Street	The Crescent	Parramatta Road	1.8	15,869	118.9	-	76.7	42.2
Sydney Metropolitan Area (1 Jan 2013 to 31 Dec 2013)					68.8	0.2	29.4	39.2

Source: Summarised from crash reports, 2016

**Table 6-15** provides details of the crash costs for the key roads surrounding the Rozelle interchange. Average crash costs based on crash severity have been calculated using Roads and Maritime's Economic Analysis Manual (Economic Parameters for 2009).

**Table 6-15 Rozelle and surrounds: crash costs (Jan 2011 to Dec 2015)**

Road	Section from	Section to	Section length (km)	ADT (veh)	Total cost	Crash cost Average annual cost	Cost per 100MVKT
Anzac Bridge	Victoria Road	Miller Street	0.99	134,000	\$27,402,300	\$5,480,460	\$11,318,380
City West Link	James Street	Victoria Road	2.13	86,991	\$41,928,450	\$8,385,690	\$12,399,150
Victoria Road	Darling Street	The Crescent	0.85	83,648	\$26,842,450	\$5,368,490	\$20,686,390
Lilyfield Road	Victoria Road	Canal Road	2.48	4,301	\$11,585,950	\$2,317,190	\$59,517,910
The Crescent	City West Link	Wigram Road	1.32	28,010	\$14,570,050	\$2,914,010	\$21,592,910
Johnston Street	The Crescent	Parramatta Road	1.8	15,869	\$16,579,300	\$3,315,860	\$31,803,960

Source: Summarised from crash reports, 2016

## 6.5 Rozelle to St Peters interchange corridor

Several of the key north–south links between the proposed Rozelle interchange and St Peters interchange areas lie within the Sydney Airport to the CBD transport demand corridor. The *NSW Long Term Transport Master Plan* reported high levels of transport congestion on this corridor, with Southern Cross Drive reported to operate at capacity during the AM peak period with low average

speeds of 35 kilometres per hour, which diverted traffic onto adjacent arterial roads including O'Riordan and Bourke Streets, which were also congested.

Average speeds and travel times on key road links within the Rozelle to St Peters interchange corridor are shown in **Table 6-16**. Southern Cross Drive, posted at 80 kilometres per hour, exhibits the slow speeds described above especially in the peak directions, while conditions on Botany Road and Princes Highway/King Street, posted at 50 or 60 kilometres per hour on different sections, indicate the congestion on the surface road network in this corridor.

**Table 6-16 Average speed and travel times along key roads within Rozelle to Wattle Street interchange corridor (2016 survey data)**

Location	Direction	Average speed (km/hr)		Average travel time (min:sec)	
		AM peak	PM peak	AM peak	PM peak
Southern Cross Drive (Gardeners Road – Cleveland Street)	Northbound	28	39	8:00	5:40
	Southbound	50	32	4:30	7:00
Botany Road (Gardeners Road – Raglan Street)	Northbound	28	23	6:20	7:40
	Southbound	24	25	7:10	7:10
Princes Highway/King Street (Canal Road to Broadway)	Northbound	24	22	11:10	12:00
	Southbound	25	24	10:50	11:30

## 6.6 St Peters interchange and surrounds

Network performance and intersection performance analysis around the St Peters interchange is presented in **section 6.6.1** and **section 6.6.2**. It is noted that currently traffic conditions around the St Peters interchange are temporarily altered due to the construction of the New M5 project. To allow an assessment that reflects the unaltered road network performance, the network performance reported is for the situation prior to this construction commencing.

### 6.6.1 Network performance

**Table 6-17** presents the performance of the modelled road network for St Peters and surrounds, as presented in **Figure 4-4**, in the 2015 'base case' scenario modelled for the AM and PM peak hours. The results indicate a similar level of demand in each peak hour, with a similar level of network performance in each peak hour.

**Table 6-17 St Peters interchange modelled network performance – 2015 AM and PM peak hour**

Network measure	AM peak hour	PM peak hour
<b>All vehicles</b>		
Total traffic demand (veh)	22,080	21,390
Total vehicle kilometres travelled in network (km)	62,220	59,650
Total time travelled in network (hr)	2,350	2,370
Total vehicles arrived	21,840	21,160
Total number of stops	105,830	101,670
<b>Average per vehicle in network</b>		
Average vehicle kilometres travelled in network (km)	2.6	2.6
Average time travelled in network (mins)	5.8	5.9
Average number of stops	4.8	4.8

Average speed (km/h)	26.8	26.1
<b>Unreleased vehicles</b>		
Unreleased demand (veh)	90	250
% of total traffic demand	0%	1%

## 6.6.2 Intersection performance

**Table 6-18** presents the AM and PM peak hour intersection average delays and LoS for the existing situation at St Peters. The intersection performance results demonstrate several intersections in the vicinity of the new St Peters interchange experience significant congestion during the AM and PM peak hours. The poor LoS indicates the local network is at capacity and vulnerable to small increases in demand without improvements to intersection layouts.

**Table 6-18 St Peters interchange: modelled key intersection performance (LoS) – 2015 AM and PM peak hour**

Key intersections	AM peak hour	PM peak hour
Princes Highway/Sydney Park Road	C	D
Princes Highway/May Street	D	F
Princes Highway/Canal Road	D	D
Princes Highway/Railway Road	F	D
Sydney Park Rd/Mitchell Road	C	D
Euston Road/Sydney Park Road	A	B
Unwins Bridge Road/Campbell Street	C	D
Campbell Road/Euston Road	A	A
Campbell Road/Bourke Road	C	D
Princes Highway/Campbell Street	C	C
Ricketty Street/Kent Road	A	A
Gardeners Road/Kent Road	C	D
Gardeners Road/Bourke Road	D	E

### 6.6.3 Traffic crashes

**Table 6-19** summarises the crash history for a five-year period (1 January 2009 to 31 December 2013) for key roads around the St Peters interchange that were identified as warranting additional attention based on crash density mapping.

**Table 6-19 St Peters and surrounds: crash statistics (Jan 2009 to Dec 2013)**

Road	Section from	Section to	Crashes			
			Total	Fatal	Injury	Tow-away
Princes Highway	Enmore Road	Gannon Street	407	2	189	216
Canal Road/ Ricketty Street/ Gardeners Road	Princes Highway	Botany Road	248	1	100	147
Euston Road	Sydney Park Road	Campbell Road	21	0	13	12
Bourke Road	Wyndham Street	Gardeners Road	69	0	35	34

Source: Summarised from crash reports, 2014

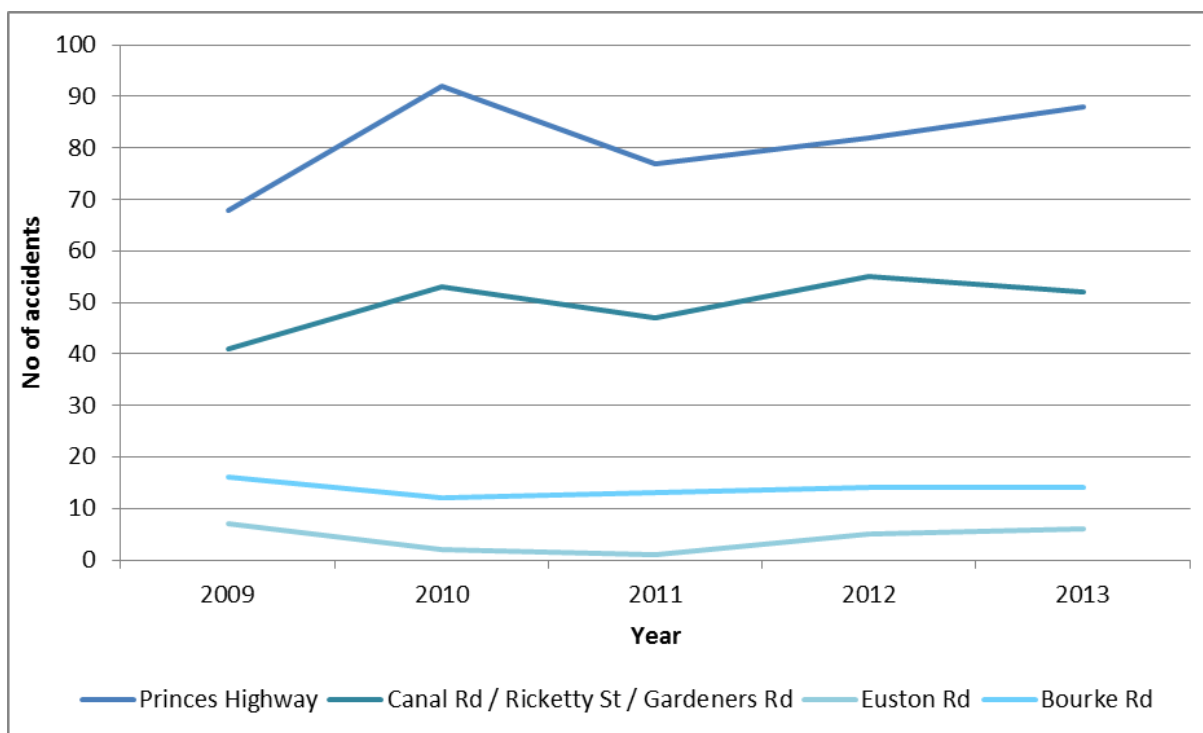
**Figure 6-3** presents the crash profile for the five-year period for the four sections of roads. Bourke Road and Euston Road reflect a fairly constant accident rate over the five years, while Canal Road, Ricketty Street, Gardeners Road and the Princes Highway show an inconsistent profile.

The average crash severity indices in the St Peters area range from 1.21 to 1.50. The Princes Highway, Bourke Road and especially Euston Road have averages higher than the NSW and Sydney Metropolitan Area average, as presented in **Table 6-20**.

**Table 6-20 St Peters and surrounds: crash severity indices (Jan 2009 to Dec 2013)**

Road	Section from	Section to	Crash severity index
Princes Highway	Enmore Road	Gannon Street	1.24
Canal Road/ Ricketty Street/Gardeners Road	Princes Highway	Botany Road	1.21
Euston Road	Sydney Park Road	Campbell Road	1.50
Bourke Road	Wyndham Street	Gardeners Road	1.25
<b>NSW   Sydney Metropolitan Averages – all roads (2010–2014)</b>			
NSW (2008–2012)			1.24
Sydney Metropolitan Area (2008–2012)			1.22

Source: Summarised from crash reports, 2014



Source: Summarised from crash reports, 2014

**Figure 6-3 Historical crash profile (Jan 2009 to Dec 2013)**

**Table 6-21** indicates the occurrence of fatal crashes and crashes causing injury on the Princes Highway, Canal Road, Ricketty Street and Gardeners Road is higher than the Sydney Metropolitan Area average, but the occurrence of crashes causing injury or tow-away on Euston Road is significantly higher than the Sydney Metropolitan Area average. Euston Road also has a very high crash rate compared to other roads in the area.

**Table 6-21 St Peters and surrounds: crash rates per 100MVKT (Jan 2009 to Dec 2013)**

Road	Section from	Section to	Section length (km)	ADT (veh)	Crash rates per 100MVKT			
					Total	Fatal	Injury	Tow-away
Princes Highway	Enmore Road	Gannon Street	3.8	50,981	115.1	0.6	53.5	61.1
Canal Road/ Ricketty Street/ Gardeners Road	Princes Highway	Botany Road	2.4	39,599	143.0	0.6	57.7	84.8
Euston Road	Sydney Park Road	Campbell Road	0.9	4,810	265.8	–	164.5	151.9
Bourke Road	Wyndham Street	Gardeners Road	2.1	11,430	157.5	–	79.9	77.6
Sydney Metropolitan Area (1 Jan 2013 to 31 Dec 2013)					68.8	0.2	29.4	39.2

Source: Summarised from crash reports, 2014

**Table 6-22** provides details of the crash costs for roads in the St Peters area. Average crash costs, based on crash severity, have been calculated using Roads and Maritime's Economic Analysis Manual (Economic Parameters for 2009). Again, Euston Road stands out as a section of road with a very high crash cost compared to other roads in the area.

**Table 6-22 St Peters and surrounds: crash costs (Jan 2009 to Dec 2013)**

Road section	Section length (km)	ADT (veh)	Total cost	Crash cost Average annual cost	Cost per 100MVKT
Princes Hwy (Enmore Rd – Gannon St)	3.8	50,981	\$90,414,400	\$18,082,880	\$25,573,070
Canal Rd/Ricketty St/Gardeners Rd (Princes Hwy – Botany Rd)	2.4	39,599	\$47,780,050	\$9,556,010	\$27,547,890
Euston Road (Sydney Park Rd – Campbell Rd)	0.9	4,810	\$5,427,800	\$1,085,560	\$68,702,630
Bourke Road (Wyndham St – Gardeners Rd)	2.1	11,430	\$14,627,100	\$2,925,420	\$33,391,030

Source: Summarised from crash reports, 2014

## 6.7 Wattle Street interchange to St Peters interchange corridor

As detailed in **section 5.7**, a primary freight route exists between the Wattle Street interchange and St Peters interchange via Parramatta Road, Old Canterbury Road, Railway Terrace, Gordon Street, Livingstone Road, Sydenham Road, Gleeson Avenue and Railway Road. An alternative route option runs along Parramatta Road, Stanmore Road and Edgeware Road. Roads identified on these routes perform a mix of functions (mobility and access), which consequently conflict during peak periods resulting in a drop in the operational performance.

Average speeds and travel times on the primary freight route, described above, within the Wattle Street interchange to St Peters interchange corridor are shown in **Table 6-23**. The low speeds and long travel times indicate the peak hour congestion currently experienced along this route.

**Table 6-23 Average speed and average travel time along key roads within the Wattle Street interchange to St Peters interchange corridor (2016 survey data)**

Location	Direction	Average speed (km/hr)		Average travel time (min:sec)	
		AM peak	PM peak	AM peak	PM peak
Railway Terrace/Livingstone Road/Sydenham Road/Railway Road (Old Canterbury Rd – Princes Highway)	Northbound	18	19	13:10	12:40
	Southbound	22	23	11:20	11:10

## 7 Assessment of construction impacts

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### 7.1 Construction overview

Surface areas would be required to support tunnelling activities, construct the tunnel portals, the Rozelle interchange and Iron Cove Link, works at the Wattle Street interchange and St Peters interchange, surface roadworks to the local network, ventilation facilities, tunnel support facilities and other ancillary operations buildings and facilities.

Construction of the project is expected to be around five years (2018 to 2023), which includes commissioning that would occur concurrently with the final stages of construction, and would include (but not be limited to) the following:

- Enabling and temporary works, including provision of construction power and water supply, ancillary site establishment including establishment of acoustic sheds and construction hoarding, demolition works, property and utility adjustments and public and active transport modifications (if required)
- Construction compound establishment, including erection of acoustic sheds, intersection adjustments and provision of site access
- Construction of the road tunnels, interchanges, intersections, and roadside and ancillary infrastructure
- Haulage of spoil generated during tunnelling and excavation activities
- Fitout of the road tunnels and support infrastructure, including ventilation and emergency response systems
- Construction and fitout of the motorway operations complexes
- Realignment, modification or replacement of surface roads, bridges and/or underpasses
- Environmental management and pollution control facilities for the project.

Civil works including earthworks and construction of underpasses and retaining structures would be required at multiple locations along the project. Associated surface road works may require temporary traffic and/or cyclist and pedestrian detours, road occupation, temporary changes to road markings or temporary road closures. These would be undertaken in accordance with approvals required by Roads and Maritime or relevant road authority, as required. Following exhibition of the EIS, the Response to Submissions and Preferred Infrastructure Report would likely describe some changes to the indicative construction plans reported in this section and the resultant traffic, safety and construction management plans would then form part of the road occupancy licences for the construction works.

Temporary works are proposed at various stages of construction, such as temporary diversions for road, cycle and pedestrian traffic near work areas, and alternative arrangements where property accesses may be temporarily disrupted.

Tunnelling and associated above-ground tunnelling support activities are proposed to operate 24 hours a day, seven days a week. Other activities that would potentially impact on the performance of the road network would be scheduled for periods of typically lower traffic volumes, where feasible and reasonable, to minimise potential disruption to the regional and local traffic network.

Heavy vehicles would be required to deliver and remove construction plant, equipment and materials as well as remove waste from the project sites. Waste removal would include general construction waste, office waste and spoil from tunnelling activities. The construction period would also result in increased use of light vehicles on the surrounding road network to cater for the construction workforce, including shift workers for tunnelling activities.

Twelve construction ancillary facilities are described and assessed in this EIS. This includes two options for construction ancillary facilities around Haberfield that have been grouped together in this EIS and are denoted by the prefix *a* (for Option A) or *b* (for Option B) (eg C1a Wattle Street civil and tunnel site, which is part of Option A). Although both of these options have been assessed in this EIS,

only one of these options would be used during construction. The construction ancillary facilities required to support construction of the project include:

- Construction ancillary facilities at Haberfield (Option A), comprising:
  - Wattle Street civil and tunnel site (C1a)
  - Haberfield civil and tunnel site (C2a)
  - Northcote Street civil site (C3a)
- Construction ancillary facilities at Ashfield and Haberfield (Option B), comprising:
  - Parramatta Road West civil and tunnel site (C1b)
  - Haberfield civil site (C2b)
  - Parramatta Road East civil site (C3b)
- Darley Road civil and tunnel site (C4)
- Rozelle civil and tunnel site (C5)
- The Crescent civil site (C6)
- Victoria Road civil site (C7)
- Iron Cove Link civil site (C8)
- Pyrmont Bridge Road tunnel site (C9)
- Campbell Road civil and tunnel site (C10).

Surface construction works (such as for ancillary infrastructure, portal works, and integrations to the M4 East and New M5 Motorway and surface roads) and the establishment of construction sites with their associated entry/exit points may result in a number of traffic related impacts including temporary alterations to:

- Existing property access
- Existing pedestrian and cyclist access and movements
- Location of existing bus stops
- Local traffic environment.

Temporary road closures associated with the works are detailed in **section 7.4.4**, while temporary impacts on bus stop locations are detailed in **section 7.4.6**. Temporary changes to pedestrian and cyclist access and movements are summarised in **section 7.4.7**.

Site management works would also occur within the Rozelle Rail Yards at Rozelle before the commencement of construction of the M4-M5 Link. Site management works have commenced, with completion planned for 2018 and would be carried out in accordance with a separate planning approval issued in April 2017.

## 7.2 Construction ancillary facilities

The construction ancillary facilities would be used for a mix of civil surface works, tunnelling support and administrative purposes. The project footprint and construction ancillary facilities are shown in overview in **Figure 7-1**. Details of each of these facilities are provided in the following sections.



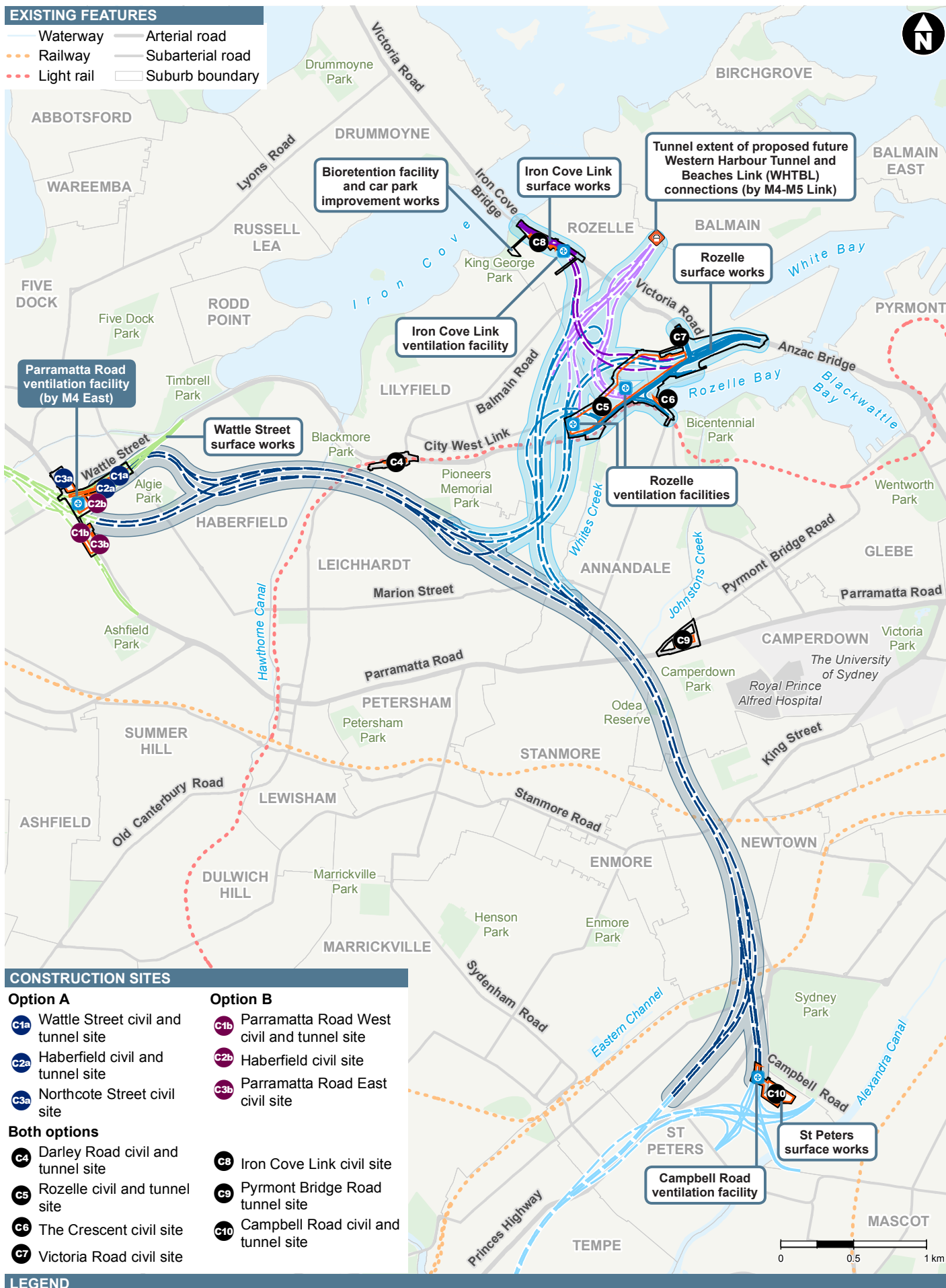


Figure 7-1 Project footprint and overview of construction ancillary facilities

## 7.2.1 Haberfield Option A – Wattle Street civil and tunnel site (C1a)

### Location and construction activities

The Wattle Street civil and tunnel site would be located above and below ground along Wattle Street at Haberfield between Parramatta Road and Ramsay Street. This construction ancillary facility would use land above ground that is currently being used as a construction zone for the M4 East project.

Roadheaders would be launched below ground from this site to excavate the tunnels that would connect the Wattle Street entry and exit ramps with the M4-M5 Link mainline tunnels. Works at this site would also be supported by the facilities at Haberfield civil and tunnel site (C2a) and car parking and laydown at Northcote Street civil site (C3a).

Spoil handling on the site would occur 24 hours a day, seven days a week. Where practical, spoil would be removed during the day, outside of peak periods. Reasonably practical management strategies would be investigated to minimise the volume of heavy vehicle movements at night.

An indicative construction site layout for the Wattle Street civil and tunnel site is shown in **Figure 7-2** and an indicative cross-section showing how spoil would be managed within the entry and exit ramps is shown in **Figure 7-3**. The construction activities program relevant to the site is outlined in **Table 7-1**.

**Table 7-1 Wattle Street civil and tunnel site indicative construction program**

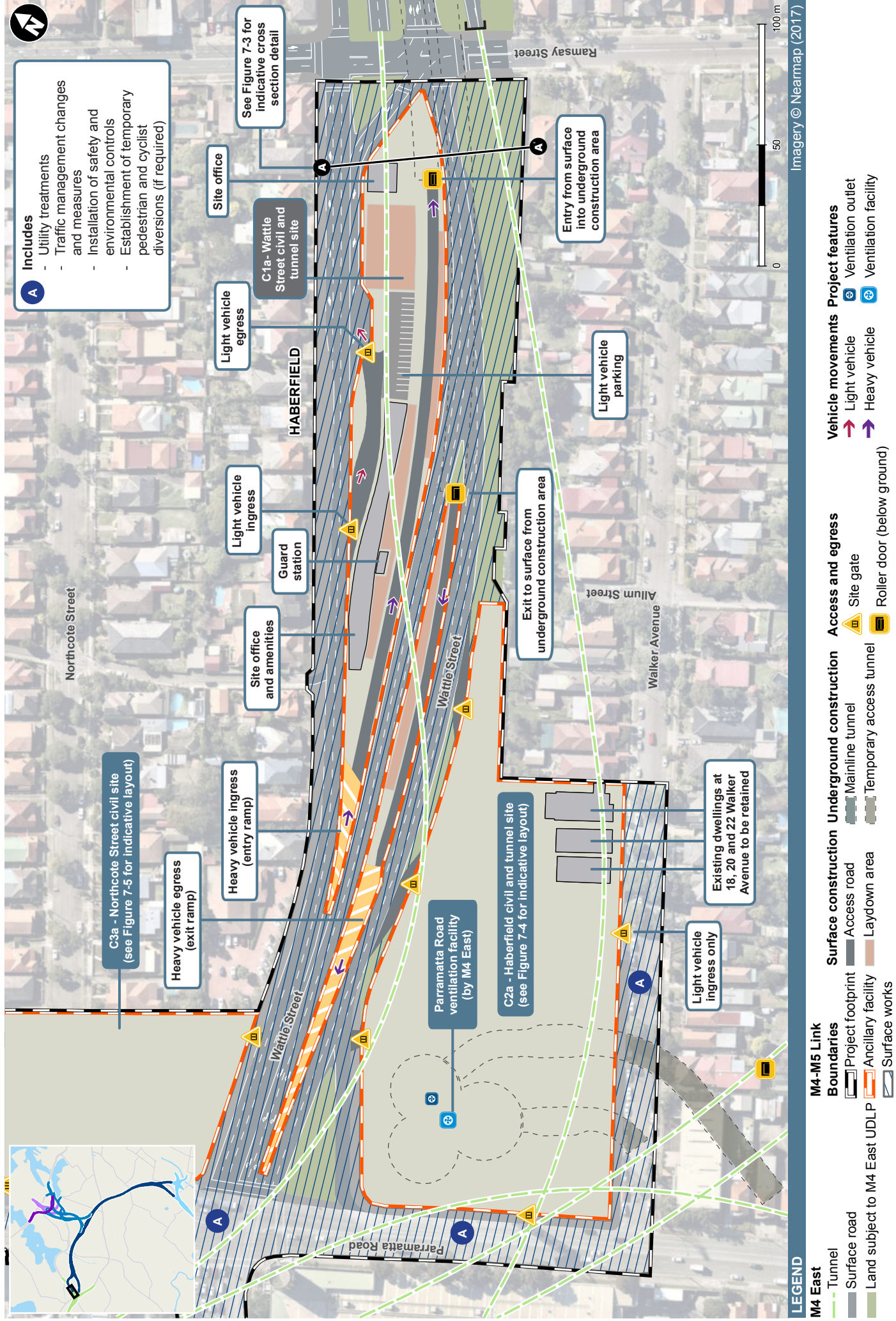
Construction activity	Indicative construction timeframe															
	2019				2020				2021				2022			
Initial road works and traffic management																
Site establishment and utility works																
Below ground site set up																
Tunnelling																
Civil and mechanical fitout																
Testing and commissioning																
Site rehabilitation and landscaping																

### Entry and exit

The Wattle Street interchange entry and exit ramps that will be constructed as part of the M4 East project would be used for spoil removal. Heavy vehicles would enter the site via the eastbound entry ramp, be loaded with spoil underground within the tunnels, and then exit the site to Wattle Street via the westbound exit ramp. Light vehicles would enter and exit the site via a left-in/left-out arrangement off the eastbound Wattle Street carriageway.

### Local road impacts

No vehicle impacts are expected on local roads with heavy and light vehicle access and egress taken directly to and from Wattle Street.



**Figure 7-2** Indicative Wattle Street civil and tunnel site (C1a) layout



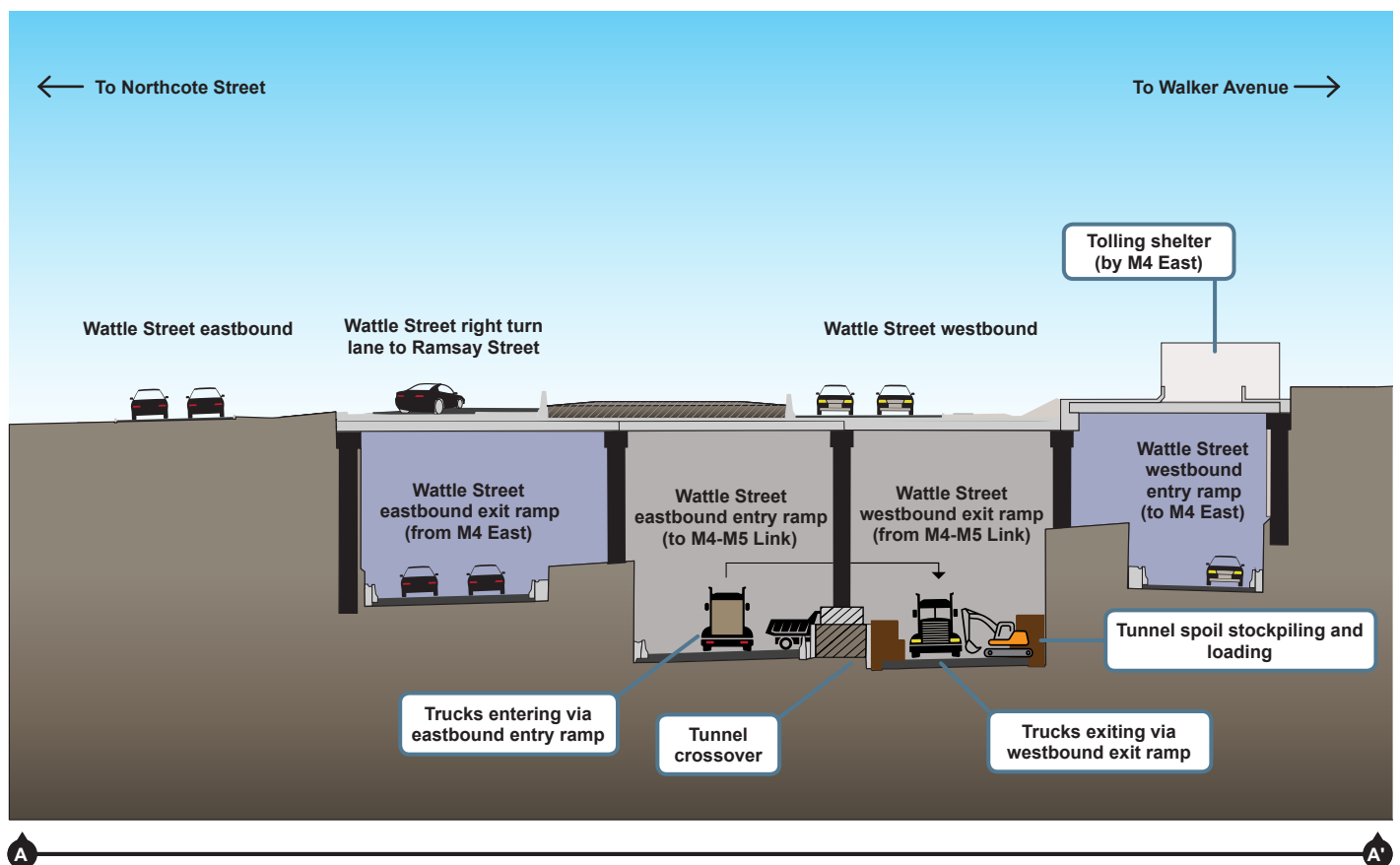
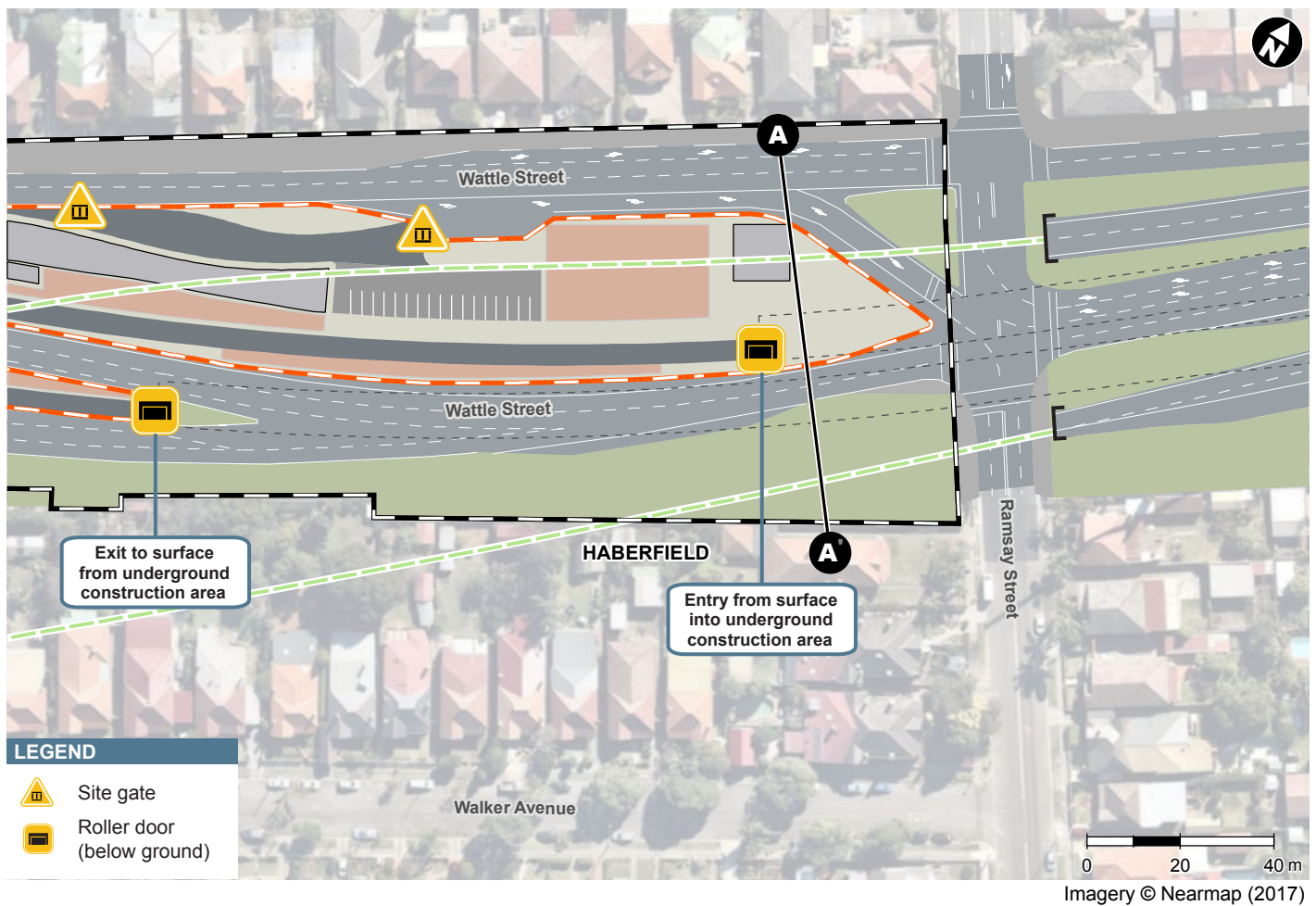


Figure 7-3 Indicative Wattle Street civil and tunnel site (C1a) cross section

## 7.2.2 Haberfield Option A – Haberfield civil and tunnel site (C2a)

### Location and construction activities

The Haberfield civil and tunnel site would be located above and below ground around the south-eastern corner of the Parramatta Road and Wattle Street intersection, extending along Parramatta Road between Wattle Street and Walker Avenue. This construction ancillary facility would use land above ground that is currently being used as a construction ancillary facility for the M4 East project.

The below ground section of the Haberfield civil and tunnel site would be within the M4 East tunnel stubs being built by the M4 East project and would support tunnelling of the mainline tunnels. The above ground section of the site would be used to support civil construction of a substation, and fitout of permanent operational infrastructure including the Parramatta Road ventilation facility (being constructed as part of the M4 East project).

Roadheaders would be launched from this site below ground to excavate the mainline tunnels. Spoil handling on the site would occur 24 hours a day, seven days a week. Excavated spoil from tunnelling would only be stockpiled within the M4 East tunnel stubs. An indicative construction site layout for the Haberfield civil and tunnel site is shown in **Figure 7-4** and a construction activities program relevant to the site is outlined in **Table 7-2**.

**Table 7-2 Haberfield civil and tunnel site indicative construction program**

Construction activity	Indicative construction timeframe															
	2019				2020				2021				2022			
Initial road works and traffic management																
Site establishment and utility works																
Below ground site set up																
Establish temporary ventilation systems for Wattle Street and mainline																
Fitout of ventilation station and substation																
Tunnelling																
Civil and mechanical fitout																
Testing and commissioning																
Site rehabilitation and landscaping																

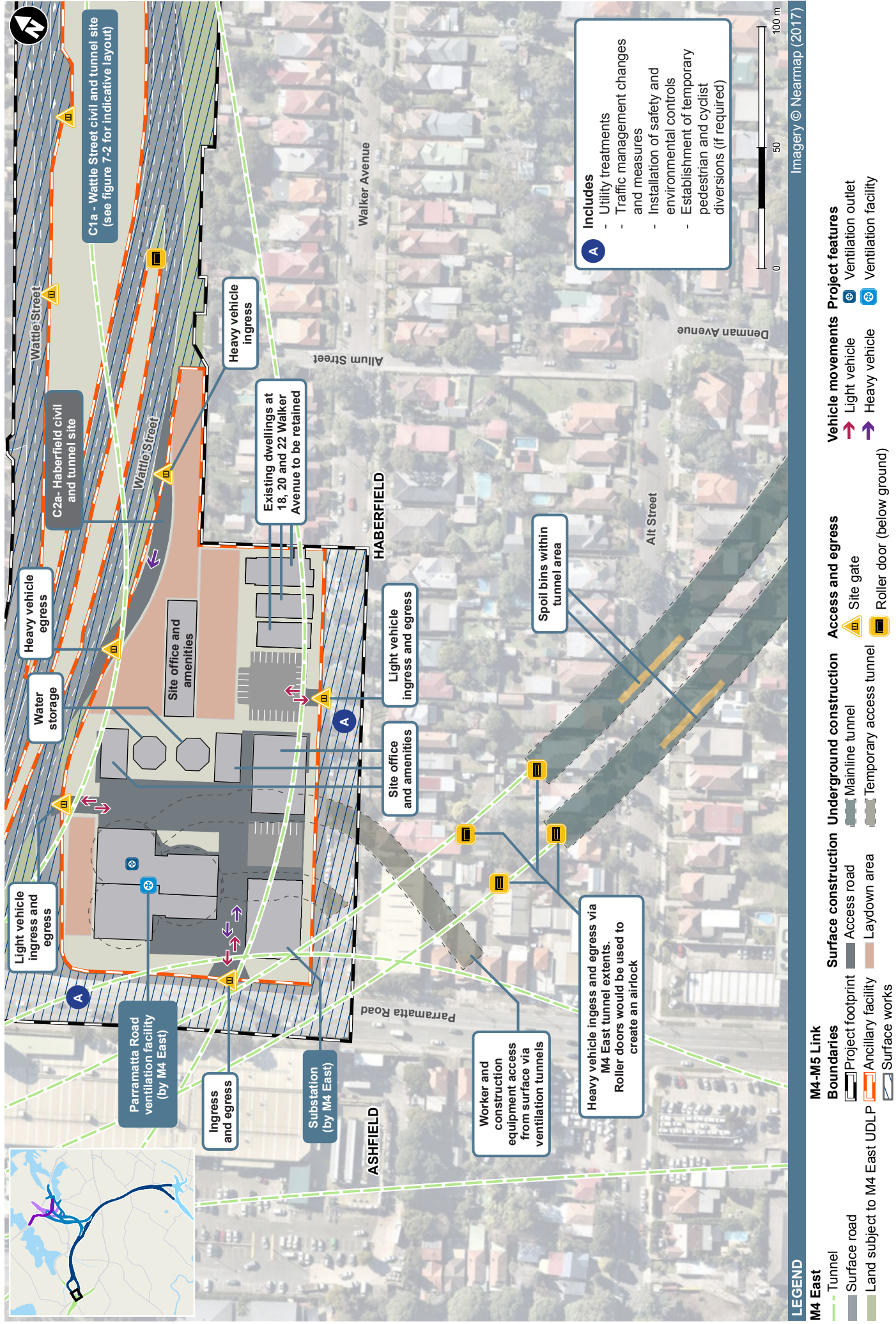
### Entry and exit

Trucks would enter the eastbound stub tunnel from the M4 East mainline tunnels, be loaded with spoil, and exit to the westbound M4 East mainline tunnels. No tunnel spoil would be removed to the surface via the Haberfield civil and tunnel site – all spoil would be transported below ground via the M4 East mainline tunnels.

Heavy vehicles delivering materials and equipment would enter and exit the surface section of the Haberfield civil and tunnel site via the westbound Wattle Street carriageways. Light vehicles would enter and exit the site via the westbound Wattle Street carriageways, the southbound Parramatta Road carriageways, and via Walker Avenue.

### Local road impacts

While Walker Avenue is a local road, only 90 daily light vehicle trips are expected to access the site, and these trips are distributed between three accesses. The impact on Walker Avenue is expected to be minor. The majority of workforce car parking for this area would be located at the Northcote Street civil site (C3a).



**Figure 7-4** Indicative Haberfield civil and tunnel site (C2a) layout



### 7.2.3 Haberfield Option A – Northcote Street civil site (C3a)

#### Location and construction activities

The Northcote Street civil site at Haberfield would be located between Wattle Street and Wolseley Street at Haberfield. This construction ancillary facility would use land that is currently being used as a construction ancillary facility for the M4 East project. The site would be used for construction workforce parking and to support construction activities at the nearby civil and tunnel sites, including laydown and storage of materials.

The use of the laydown area and light vehicle parking would occur 24 hours a day, seven days a week. Reasonable practical management strategies would be investigated to minimise the volume of heavy vehicles using the laydown area at night.

An indicative construction site layout for the site is shown in **Figure 7-5** and an indicative program for works to be carried out within the Northcote Street civil site is provided in **Table 7-3**.

**Table 7-3 Northcote Street civil site indicative construction program**

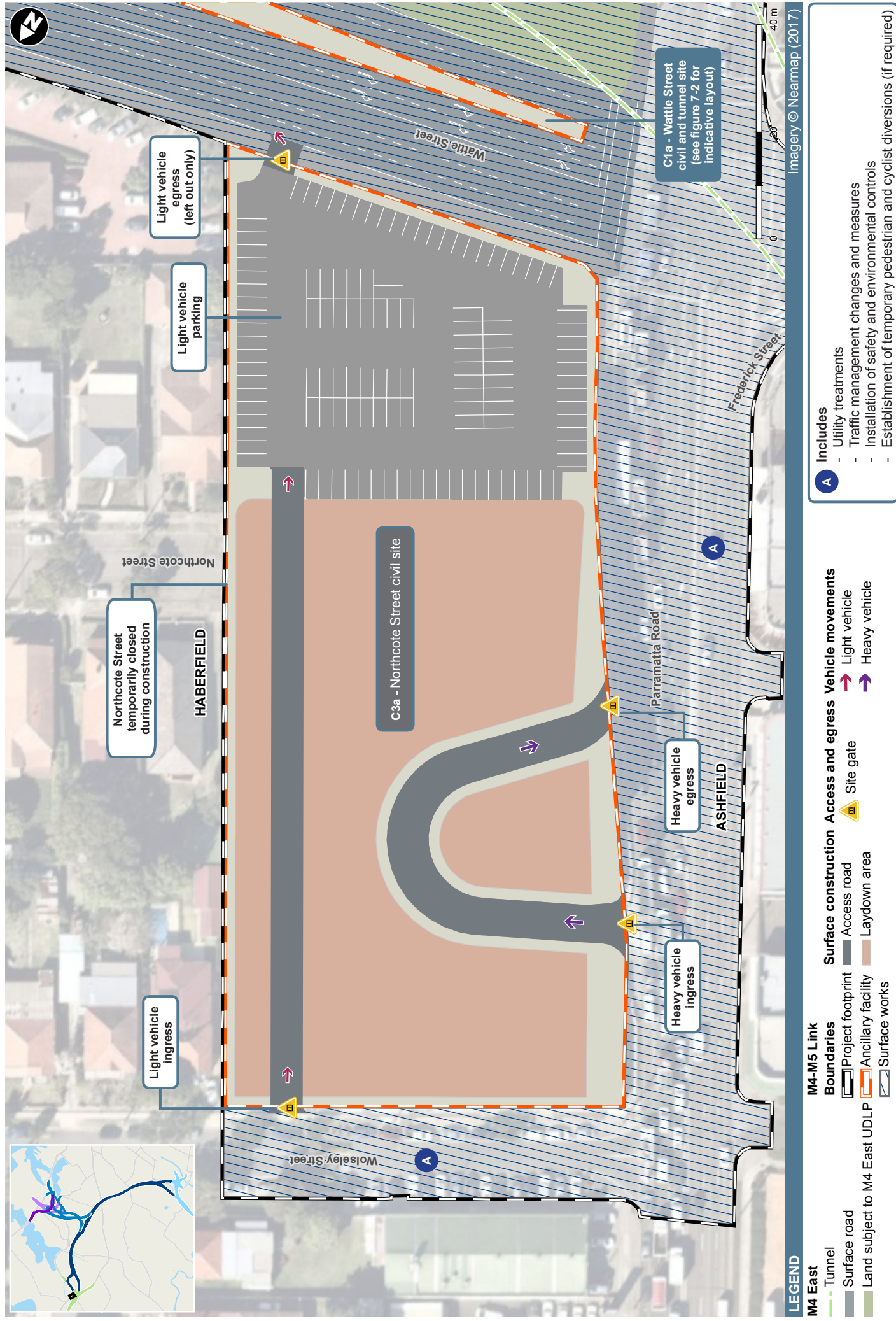
Construction activity	Indicative construction timeframe											
	2019			2020			2021			2022		
Site establishment and utility works												
Construct car park												
Construct laydown area												
Operation of car park and laydown area												
Site rehabilitation and landscaping												

#### Entry and exit

Heavy vehicles would enter and exit the site to and from Parramatta Road. Light vehicles would enter the site via Wolseley Street and an egress only point for light vehicles would be provided on to Wattle Street. During construction, Northcote Street would be closed at the intersection with Parramatta Road and the site would occupy around 100 metres of Northcote Street east of Parramatta Road. Northcote Street would be reopened to Parramatta Road when construction is complete.

#### Local road impacts

Wolseley Street is a local road and 150 daily light vehicle trips are expected to be accessing the site. While these trips would only be accessing from Wolseley Street with egress onto Wattle Street, there is likely to be a minor impact on Wolseley Street. No heavy vehicle impacts are expected on local roads with heavy vehicle access and egress taken directly to and from Parramatta Road.



## 7.2.4 Haberfield and Ashfield Option B – Parramatta Road West civil and tunnel site (C1b)

### Location and construction activities

The Parramatta Road West civil and tunnel site (C1b) would be used where Option B is selected as the preferred construction option at Haberfield. This site would not be used if Option A is selected as the preferred option.

The Parramatta Road West civil and tunnel site (C1b) would be located west of Parramatta Road between Alt Street and Bland Street at Ashfield. The site is currently occupied by several commercial properties. Residential properties including single dwelling and apartment blocks are located to the immediate west and north. A construction site for the M4 East project is located to the south. Spoil handling on the site would occur 24 hours a day, seven days a week, within an acoustic shed.

An indicative construction site layout for the site is shown in **Figure 7-6** and an indicative program for works to be carried out within the site is provided in **Table 7-4**.

**Table 7-4 Parramatta Road West civil and tunnel site indicative construction program**

Construction activity	Indicative construction timeframe																			
	2018				2019				2020				2021				2022			
Site establishment and utility works																				
Construction of temporary access tunnel																				
Tunnelling																				
Civil and mechanical fitout																				
Testing and commissioning																				
Site rehabilitation																				

### Entry and exit

Construction traffic would enter and exit the site to and from the western (northbound) carriageway of Parramatta Road via new driveways. There will also be cross-over on Alt Street.

### Local road impacts

It is expected that heavy vehicle impacts on local roads will be minimised with heavy vehicle access and egress taken directly from and to Parramatta Road. The cross-over on Alt Street is likely to cause minor impacts on Alt Street. Due to existing property driveways, there would be no loss of on-street parking on Alt Street or Bland Street, west of Parramatta Road.



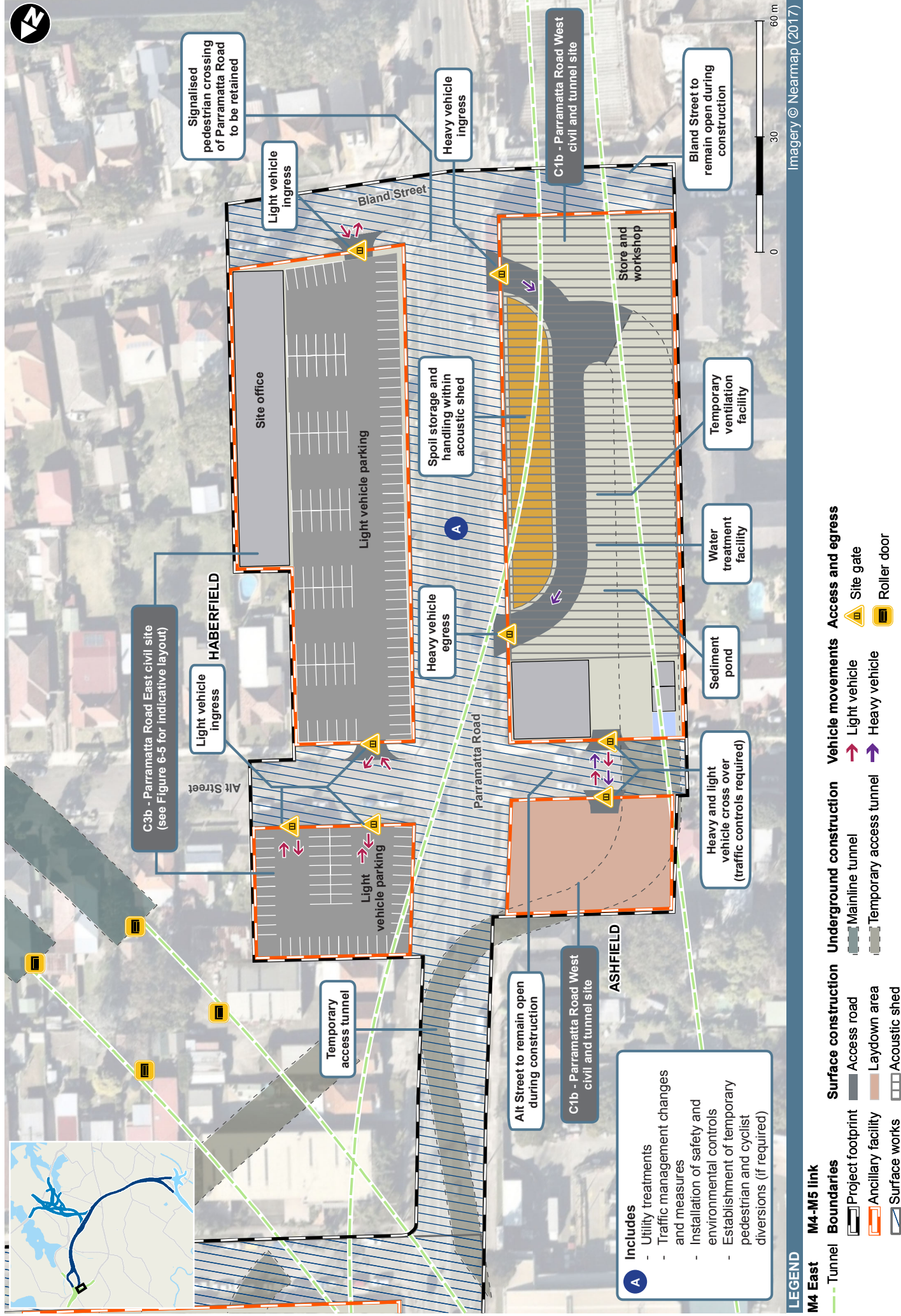


Figure 7-6 Indicative Parramatta Road West civil and tunnel site (C1b) and Parramatta Road East civil site (C3b) layout

## 7.2.5 Haberfield and Ashfield Option B – Haberfield civil site (C2b)

### Location and construction activities

The Haberfield civil site (C2b) would be used for civil construction where Option B is selected as the preferred construction option at Haberfield. If Option A is selected as the preferred option, the Haberfield civil and tunnel site (C2a) would be used.

The Haberfield civil site would be located around the south-eastern corner of the Parramatta Road and Wattle Street intersection, extending along Parramatta Road between Wattle Street and Walker Avenue. This construction ancillary facility would use land that is currently being used as a construction ancillary facility for the M4 East project.

The Haberfield civil site (C2b) would be used to support civil construction of a substation, and fitout of permanent operational infrastructure including the Parramatta Road ventilation facility (being constructed as part of the M4 East project).

An indicative construction site layout for the Haberfield civil site is shown in **Figure 7-7** and an indicative program for works to be carried out within the site is provided in **Table 7-5**.

**Table 7-5 Haberfield civil site indicative construction program**

Construction activity	Indicative construction timeframe															
	2019				2020				2021				2022			
Initial road works and traffic management																
Site establishment and utility works																
Fitout of Parramatta Road ventilation facility and substation																
Civil and mechanical fitout																
Testing and commissioning																
Site rehabilitation and landscaping																

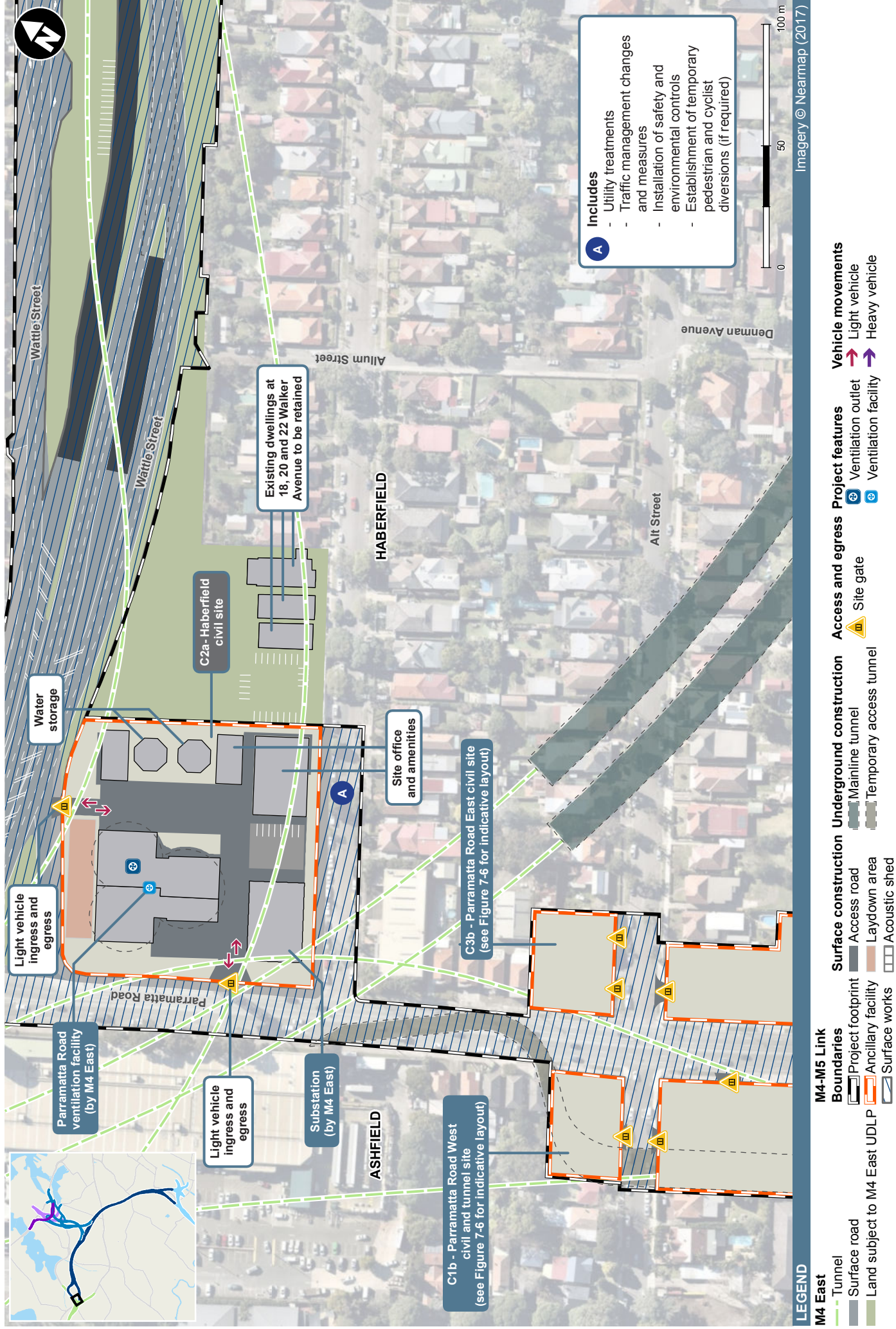
### Entry and exit

Heavy vehicles delivering materials and equipment would enter and exit the site via the westbound Wattle Street carriageways. Light vehicles would enter and exit the site via Wattle Street and Walker Avenue.

### Local road impacts

While Walker Avenue is a local road, only 90 daily light vehicle trips are expected to be accessing the site, and these trips are distributed between three accesses. The impact on Walker Avenue is therefore expected to be minor. The majority of workforce car parking for this area would be located at the Parramatta Road East civil site (C3b).





**Figure 7-7** Indicative Haberfield civil and tunnel site (C2b) layout



## 7.2.6 Haberfield and Ashfield Option B – Parramatta Road East civil site (C3b)

### Location and construction activities

The Parramatta Road East civil site (C3b) would be used where Option B is selected as the preferred construction option at Haberfield. This site would not be used if Option A is selected as the preferred option.

The Parramatta Road East civil site (C3b) would be located east of Parramatta Road at Haberfield between around Alt Street and Bland Street. The site is currently occupied by the Muirs car dealership. Residential properties are located to the immediate east and north. A construction site for the M4 East project is located to the south.

The Parramatta Road East civil site (C3b) would be used to support tunnelling construction activities that would occur at the Parramatta Road West civil and tunnel site (C1b) and to provide construction workforce parking.

An indicative construction site layout for the Parramatta Road East civil site is shown in **Figure 7-8** and an indicative program for works to be carried out within the site is provided in **Table 7-6**.

**Table 7-6 Parramatta Road East civil site indicative construction program**

Construction activity	Indicative construction timeframe																				
	2018			2019			2020			2021			2022			2023					
Site establishment and utility works																					
Use of car park and site amenities during construction																					
Demobilisation																					

### Entry and exit

Heavy vehicles delivering materials and equipment would enter and exit via the southbound Parramatta Road carriageways. In addition to using the Parramatta Road access, light vehicles would enter and exit the site using Alt Street and Bland Street accesses.

### Local road impacts

With 150 daily light vehicle trips expected split between the three accesses, the potential impact on Alt Street and Bland Street is expected to be minor. Due to existing property driveways, there would be no loss of on-street parking on Alt Street or Bland Street, east of Parramatta Road.

## 7.2.7 Darley Road civil and tunnel site (C4)

### Location and construction activities

The Darley Road civil and tunnel site would be located between the Inner West light rail corridor to the north and Darley Road to the south. The site is currently occupied by a commercial property. Immediately adjacent in the northeast corner of the site is the Leichhardt North light rail stop.

Spoil handling on the site would occur 24 hours a day, seven days a week, within an acoustic shed. Spoil removal would occur between 7.00 am and 6.00 pm Monday to Friday, and between 8.00 am and 1.00 pm on Saturdays. Where practical, spoil would be removed during the day, outside of peak periods. The location of the construction ancillary facility and an indicative layout of the site are shown in **Figure 7-8**. An indicative program for works to be conducted within the Darley Road civil and tunnel site is provided in **Table 7-7**.

**Table 7-7 Darley Road civil and tunnel site indicative construction program**

Construction activity	Indicative construction timeframe																	
	2018			2019			2020			2021			2022					
Site establishment and utility works																		
Construction of temporary access tunnel																		
Tunnelling																		
Civil and mechanical fitout																		
Testing and commissioning																		
Site rehabilitation and landscaping																		

## Entry and exit

It is anticipated that the majority of construction traffic would enter the site from the southern (westbound) carriageway of Darley Road via new driveways. Heavy vehicles associated with spoil haulage would travel eastbound on City West Link and turn right into Darley Road. A temporary right turn lane at the intersection of City West Link and Darley Road would be provided for use by construction vehicles. Heavy vehicles would exit the site by turning left onto Darley Road before turning left onto City West Link.

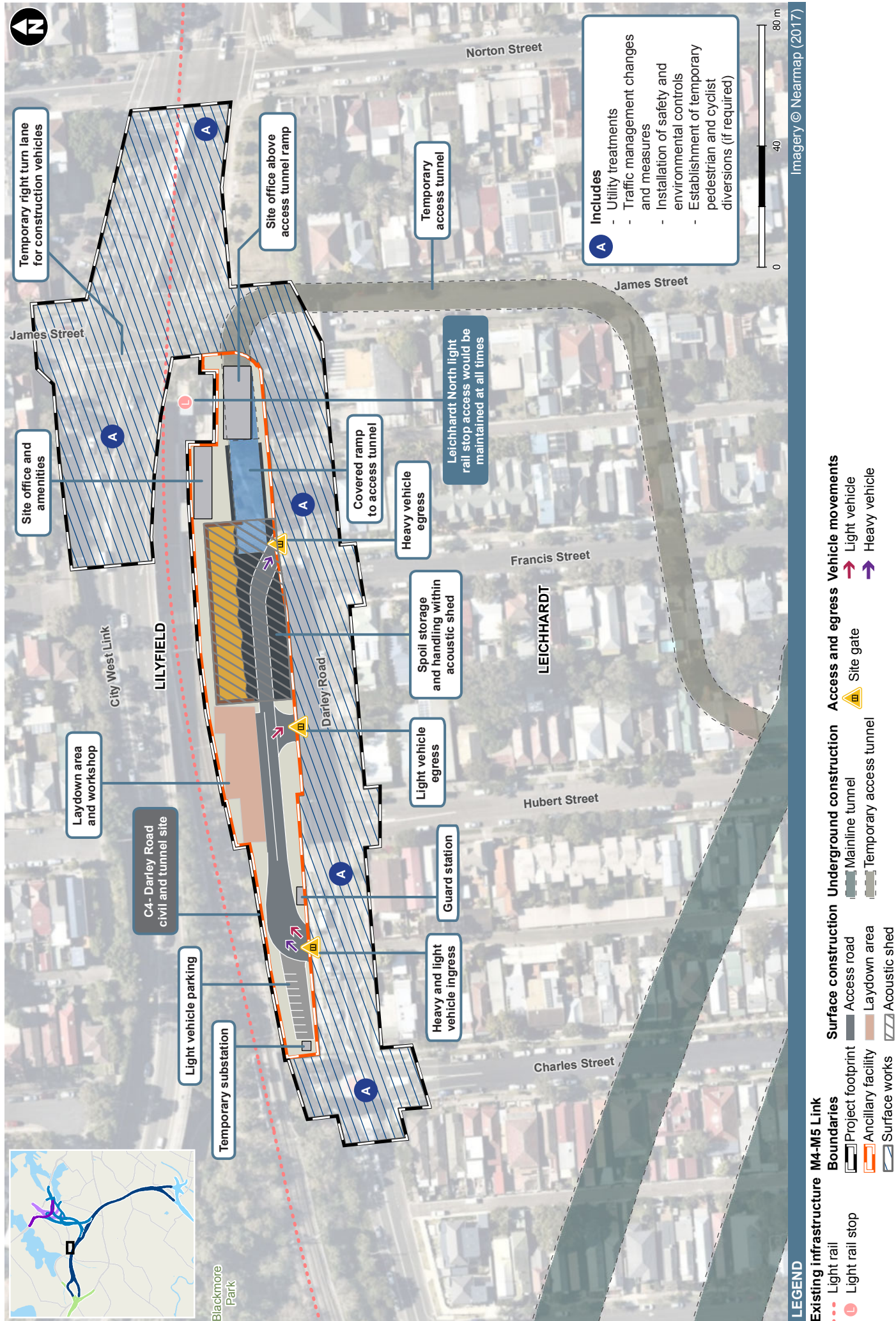
The southern approach of the City West Link/James Street intersection has a blind corner and a steep approach, which could cause difficulties for trucks departing the Darley Road civil and tunnel site and turning left onto City West Link Road westbound. Traffic signal phasing and timing would need to consider this to allow loaded trucks to safely traverse the intersection and these signal phasing and timing changes were included in the construction traffic assessment.

## Local road impacts

Temporary changes to Darley Road to enable access to and from the ancillary facility would likely be required, including changes to lane marking to provide a temporary turning lane for construction traffic and temporary diversions to the pedestrian path on the northern side of Darley Road. These would be confirmed following the appointment of a design and construction contractor and in consideration of the safety and function of the road network, maintaining access to the Leichhardt North light rail stop and providing for continued pedestrian and cyclist movement.

On-street parking along the eastbound carriageway of Darley Road between around Francis Street and Charles Street would be removed (about 20 spaces) during construction. Impacts on the kiss and ride parking for the light rail stop would need to be considered in the Construction Traffic and Access Management Plan (CTAMP).

Heavy vehicle movements outside of standard construction hours associated with the removal of spoil from tunnelling would occur via access and egress directly to and from Darley Road and City West Link. Reasonably practical management strategies would be investigated to minimise the volume of heavy vehicle movements outside standard construction hours.



**Figure 7-8** Indicative Darley Road civil and tunnel site (C4) layout

## 7.2.8 Rozelle civil and tunnel site (C5)

### Location and construction activities

The Rozelle civil and tunnel site would be located within the Rozelle Rail Yards between Lilyfield Road to the north, City West Link to the south, Victoria Road to the east and the CBD and South East Light Rail Rozelle maintenance depot to the west.

Roadheaders would be launched from this site to excavate the Rozelle interchange, the Iron Cove Link and the stub tunnels that would enable connections to the proposed future Western Harbour Tunnel and Beaches Link. Acoustic sheds would be built to minimise noise from out of hours tunnelling and spoil handling. Tunnelling and spoil management would also be carried out within the cut-and-cover sections of the tunnels at the eastern end of the site. These cut-and-cover sections would be acoustically lined to minimise noise from out of hours tunnelling and spoil handling. Tunnel spoil would be transported to a stockpile within the cut-and-cover structures, with sufficient space for about two heavy vehicles to be loaded with spoil. Spoil handling on the site would occur 24 hours a day, seven days a week.

An indicative site layout for the Rozelle civil and tunnel site is shown in **Figure 7-9**. The construction activities program relevant to the site is outlined in **Table 7-8**.

**Table 7-8 Rozelle civil and tunnel site indicative construction program**

Construction activity	Indicative construction timeframe																							
	2018				2019				2020				2021				2022				2023			
Site establishment and utility works																								
Traffic diversions and intersection works																								
Construction of cut-and-cover and tunnel portals																								
Tunnelling																								
Construction of motorway operational ancillary infrastructure																								
Civil and mechanical fitout																								
Establishment of tolling facilities																								
Site rehabilitation and landscaping																								
Demobilisation and rehabilitation																								
Testing and commissioning																								

### Entry and exit

Heavy vehicle access would be via City West Link. Vehicles would enter the site from the eastbound carriageway of City West Link via new slip lanes and driveways. A temporary signalised intersection would be built along City West Link and a new northern leg added to the intersection with The Crescent to enable vehicles to exit the site and turn right at both these locations to head westbound on City West Link. Five light vehicle access points would be constructed along Lilyfield Road to enable light vehicle access and egress.

### Local road impacts

The main local road impacts would be on Lilyfield Road. While 350 daily light vehicle trips are expected to access the site, the impact would be spread out through the use of five access and egress points along Lilyfield Road, depending on where the vehicles are required and where they are coming from. As a worst case, this would equate to an increase in two-way weekday daily vehicles of 10 to 15 per cent depending on the location on Lilyfield Road.



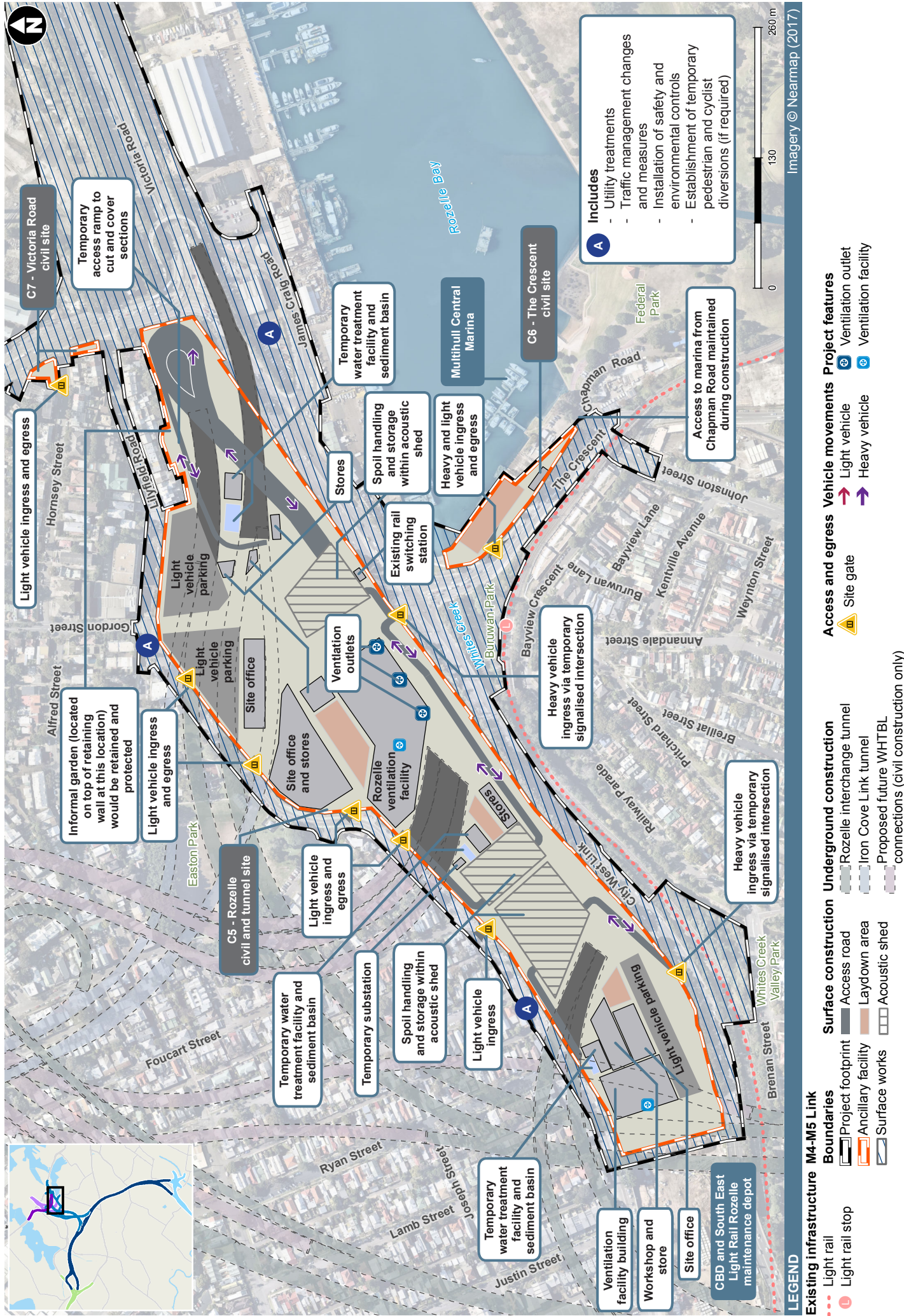


Figure 7-9 Indicative Rozelle civil and tunnel site, The Crescent civil site and Victoria Road civil site (C5, C6 and C7) layout

## 7.2.9 The Crescent civil site (C6)

### Location and construction activities

The Crescent civil site (C6) would be located between The Crescent and Rozelle Bay on land owned by Roads and Maritime. The site would be used to support the realignment of The Crescent, including the construction of the new bridge over Whites Creek, widening and improvement works to Whites Creek, and construction of the drainage outfall and culvert that would direct flows through and from the Rozelle Rail Yards to Rozelle Bay.

The location of The Crescent civil site and an indicative layout are shown in **Figure 7-10** and the construction activities program relevant to the site is outlined in **Table 7-9**.

**Table 7-9 The Crescent civil site indicative construction program**

Construction activity	Indicative construction timeframe																							
	2018				2019				2020				2021				2022				2023			
Site establishment and utility works																								
Surface road and intersection works																								
Whites Creek widening and improvement works																								
Drainage works including construction of the culvert below City West Link and upgrades to the drainage outfall to Rozelle Bay																								
Construction of Whites Creek Bridge and demolition of existing bridge																								
Rehabilitation and landscaping																								

### Entry and exit

It is anticipated that heavy vehicles would enter the site via a left-in from The Crescent (southbound). They would then travel through the site, turn around and exit back onto The Crescent northbound via a right hand turn. Temporary traffic management measures would be established to enable access and egress arrangements.

Heavy vehicle movements would be carried out during non-peak periods where feasible and reasonable. Light vehicles would enter via the same arrangement, but may also exit southbound along The Crescent towards Johnston Street.

### Local road impacts

No vehicle impacts are expected on local roads with heavy and light vehicle access and egress directly to and from The Crescent.

## 7.2.10 Victoria Road civil site (C7)

### Location and construction activities

The Victoria Road civil site (C7) would be located on the western side of Victoria Road between Quirk Street and Lilyfield Road on land currently occupied by commercial and residential properties. The existing buildings and other structures on the site would be demolished to facilitate establishment of temporary site offices, a laydown area, workforce amenities and car parking. A portion of this site would be occupied by operational road infrastructure during operation.



The location of the Victoria Road civil site and an indicative layout of the site are shown in **Figure 7-10** and the construction activities program relevant to the site is outlined in **Table 7-10**.

**Table 7-10 Victoria Road civil site indicative construction program**

Construction activity	Indicative construction timeframe																			
	2018				2019				2020				2021				2022			
Site establishment and utility works																				
Support for the reconstruction of Victoria Road including construction of the new bridge																				
Site rehabilitation and landscaping																				

### Entry and exit

Heavy vehicles would enter and exit the site via left-in/left-out accesses off the northbound Victoria Road carriageway.

### Local road impacts

Minor vehicle impacts are expected to the eastern end of Hornsey Street. On-street parking along the eastbound carriageway would be removed (about four spaces) during construction, although this would be lessened by the removal of the traffic to and from the commercial properties that would be replaced by the Victoria Road civil site.

## 7.2.11 Iron Cove Link civil site (C8)

### Location and construction activities

The Iron Cove Link civil site (C8) would be located along the southern side of Victoria Road at Rozelle between Byrnes Street and Springside Street. The site would be located on land currently occupied by Victoria Road and residential and commercial properties that are to be acquired.

The site would be mainly used to support construction of the Iron Cove Link surface works, including tunnel entry and exit ramps and upgrades and modifications to the eastbound and westbound carriageways of Victoria Road. There is no provision at this site to operate roadheaders, however the site may be used to support limited excavation of the initial sections of the Iron Cove Link tunnels.

During operation, a portion of the site would be occupied by the Iron Cove Link motorway operations complex (MOC4) including the Iron Cove Link ventilation facility.

The location of the Iron Cove Link civil site and an indicative layout of the site is shown in **Figure 7-10**. The construction activities program relevant to the site is outlined in **Table 7-11**.

**Table 7-11 Iron Cove Link civil site indicative construction program**

Construction activity	Indicative construction timeframe																							
	2018				2019				2020				2021				2022				2023			
Site establishment and utility works																								
Traffic diversions and intersection works																								
Construction of cut-and-cover and tunnel portals																								
Construction of motorway operational infrastructure																								
Site rehabilitation and landscaping																								
Testing and commissioning																								

## Entry and exit

Heavy and light vehicles would enter and exit the site via left-in/left-out accesses off the northbound Victoria Road carriageway.

## Local road impacts

Temporary changes to the local road network would be required to enable construction of the permanent design and the operation of the Iron Cove Link civil site during construction. The Clubb Street/Victoria Road intersection would also be permanently closed before the start of construction.

The Toelle Street and Callan Street intersections with Victoria Road would generally remain open during construction. There would be instances where one of these intersections would be closed temporarily to construct the permanent design, however these works would be short term and conducted during non-peak times, where practical, especially as these roads would be carrying additional traffic from the closure of Clubb Street. Regard would also be given to the peak periods of use of King George Park when considering temporary closures. When construction is complete, these intersections would be reopened in the same arrangement as existing (ie left-in, left-out).

There would be loss of limited on-street parking spaces on Clubb Street, Toelle Street and Callan Street, west of Victoria Road. This would be confirmed following the appointment of a design and construction contractor. These parking spaces are adjacent to properties being acquired and so the impact of their loss would be reduced.

Further detail on the temporary and permanent changes to the surface road network around the Iron Cove Link civil site are provided in **Chapter 5** (Project description) and **Chapter 6** (Construction work) of the EIS.

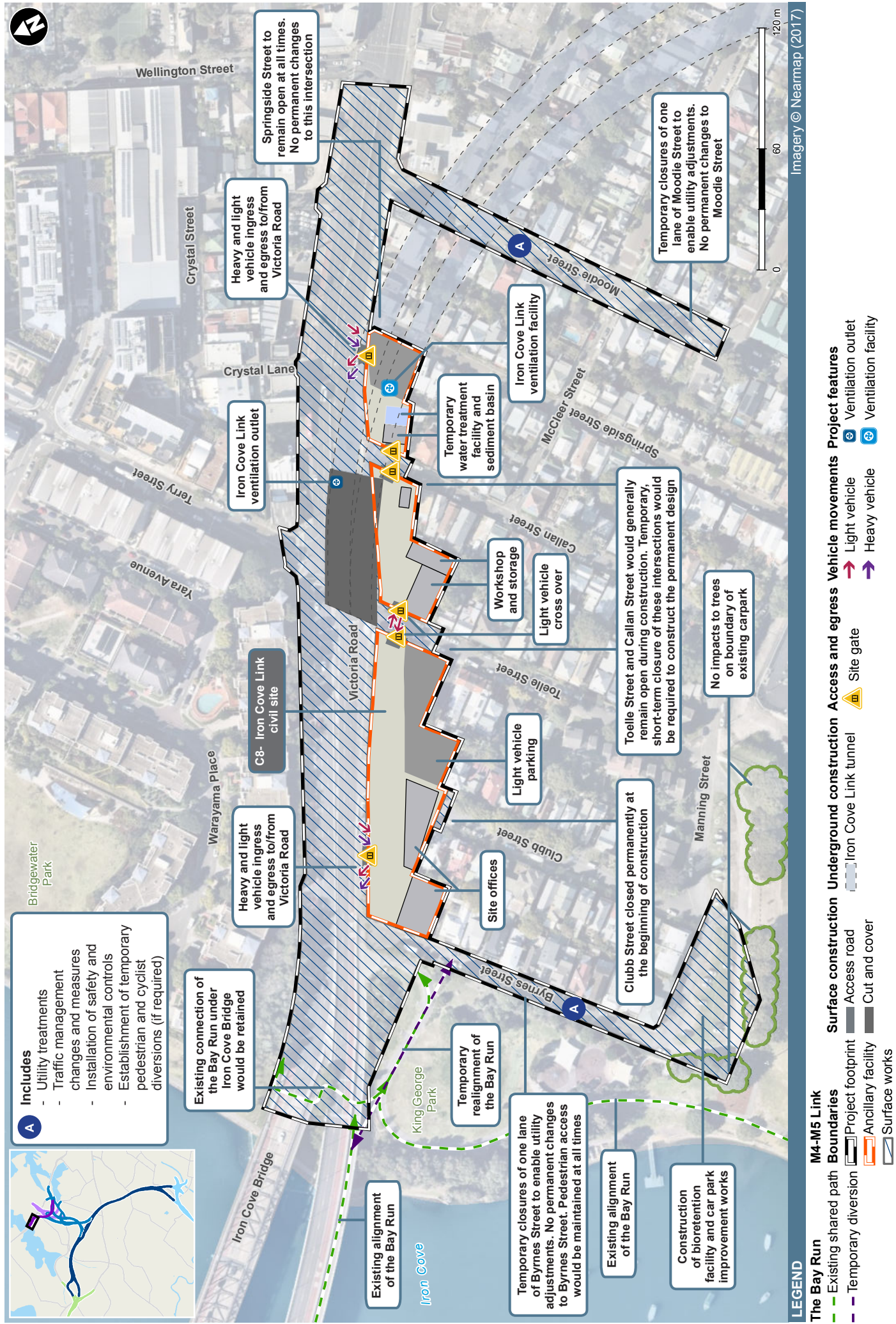


Figure 7-10 Indicative Iron Cove Link civil site (C8) layout

## 7.2.12 Pyrmont Bridge Road tunnel site (C9)

### Location and construction activities

The Pyrmont Bridge Road tunnel site would be located between Parramatta Road and Pyrmont Bridge Road at Annandale on land currently occupied by commercial and light industrial businesses. The construction ancillary facility would be mainly used to support tunnelling construction activities.

Roadheaders would be launched from this site and would initially excavate the temporary access tunnel and the mainline tunnels. Spoil handling on the site would occur 24 hours a day, seven days a week. Where practical, spoil would be removed during the day, outside of peak periods. Reasonably practical management strategies would be investigated to minimise the volume of heavy vehicle movements at night.

The location of the Pyrmont Bridge Road tunnel site and an indicative layout of the site are shown in **Figure 7-11**. An indicative program for works to be conducted within the Pyrmont Bridge Road tunnel site is provided in **Table 7-12**.

**Table 7-12 Pyrmont Bridge Road tunnel site indicative construction program**

Construction activity	Indicative construction timeframe																							
	2018				2019				2020				2021				2022							
Initial road works and traffic management																								
Site establishment and utility works																								
Construction of temporary access tunnel																								
Tunnelling																								
Civil and mechanical fitout																								
Testing and commissioning																								
Site rehabilitation																								

### Entry and exit

Heavy vehicle access to the site would be from the northern (eastbound) carriageway of Parramatta Road. Vehicles would enter via a new driveway, travel in an anti-clockwise direction via an internal access road and exit onto Pyrmont Bridge Road via a new temporary signalised intersection. Light vehicle access would be from Pyrmont Bridge Road, either via the temporary signalised intersection or a separate give-way access.

### Local road impacts

No vehicle impacts are expected on local roads with heavy and light vehicle access and egress taken directly to and from Parramatta Road and Pyrmont Bridge Road.

Works would be carried out to realign Bignell Lane between Mallett Street and Pyrmont Bridge Road. Short-term, temporary closure of Bignell Lane would be required during construction to allow for the realignment works, but rear-access to commercial properties along Bignell Lane would be maintained during construction.



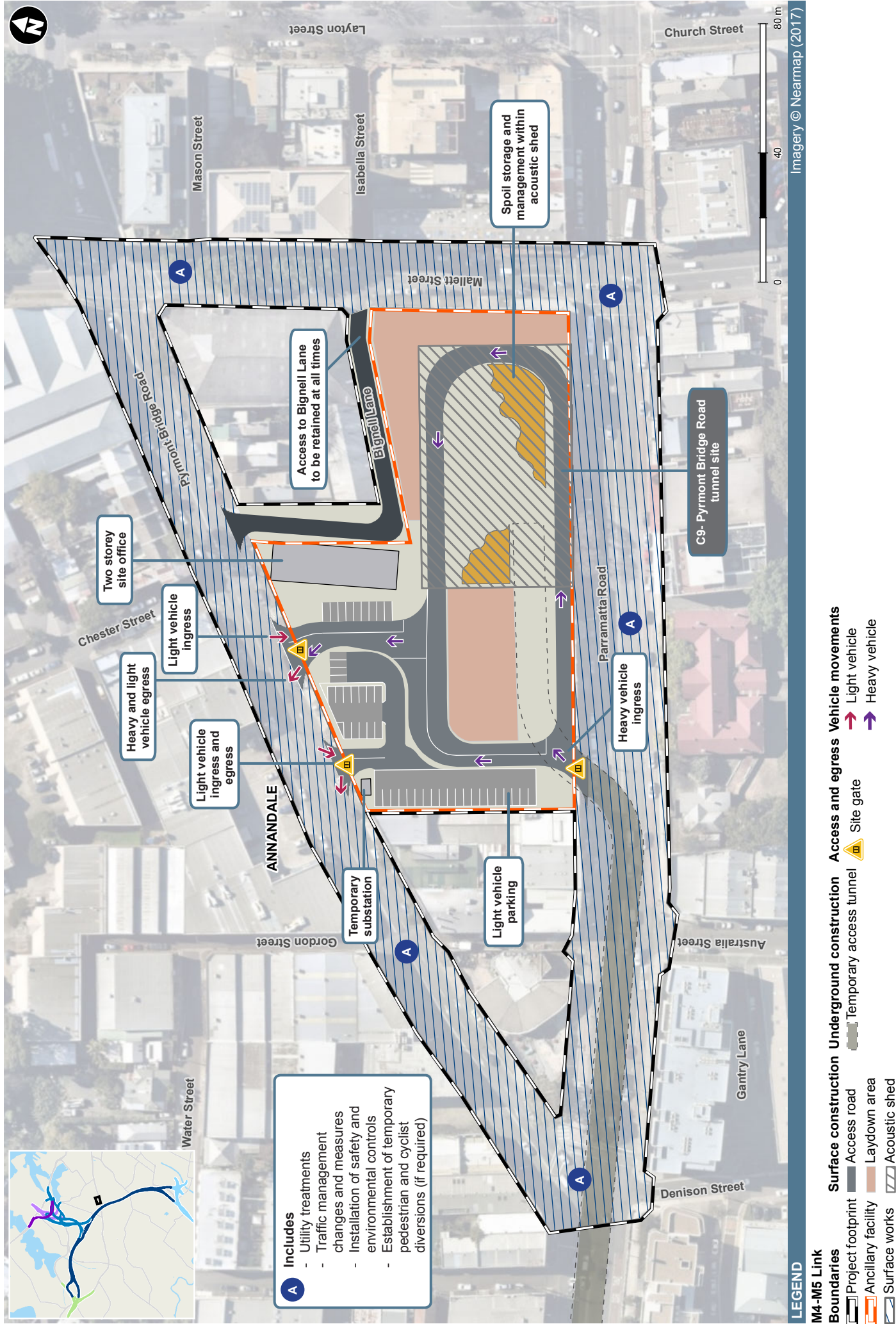


Figure 7-11 Indicative Pyrmont Bridge Road tunnel site (C9) layout

## 7.2.13 Campbell Road civil and tunnel site (C10)

### Location and construction activities

The Campbell Road civil and tunnel site would be located within the St Peters interchange site on the southern side of Albert Street and Campbell Road in St Peters. The site would be used to support tunnelling of the mainline tunnels and the entry and exit ramps that would connect the St Peters interchange with the M4-M5 Link mainline tunnels. A portion of the site would be used for the Campbell Road motorway operations complex (MOC5) during operation, including the Campbell Road ventilation facility.

Roadheaders would be launched from this site and would excavate the entry and exit ramps and mainline tunnels, travelling in a northerly direction. Spoil handling would occur within the cut-and-cover structure below Campbell Road being built as part of WestConnex New M5 and within an acoustic shed. Spoil handling on the site would occur 24 hours a day, seven days a week. Where practical, spoil would be removed during the day, outside of peak periods. Reasonably practical management strategies would be investigated to minimise the volume of heavy vehicle movements at night. Heavy vehicle movements outside of standard construction hours associated with the removal of spoil from tunnelling would only occur via access and egress directly to and from Campbell Road.

The location of the construction ancillary facility and an indicative layout of the site are shown in **Figure 7-12**. An indicative program for works to be conducted within the Campbell Road construction ancillary facility is provided in **Table 7-13**.

**Table 7-13 Campbell Road civil and tunnel site indicative program**

Construction activity	Indicative construction timeframe																			
	2018				2019				2020				2021				2022			
Initial road works and traffic management																				
Site establishment and utility works																				
Tunnelling																				
Civil and mechanical fitout																				
Construction of motorway operations complex (MOC5)																				
Testing and commissioning																				
Site demobilisation and rehabilitation																				

### Entry and exit

Vehicles would enter and exit the site from Albert Street via the signalised intersection on Campbell Road that is being built as part of the New M5 local road upgrade works. Within the site, an access driveway would provide access between Albert Road and the acoustic shed and cut-and-cover structure.

### Local road impacts

Negligible impacts on local roads are expected. Heavy and light vehicles would need to cross over Albert Street to access Campbell Road, however traffic volumes along this section of Albert Street are expected to be low, and standard construction traffic management and measures would be used to minimise potential disruptions.

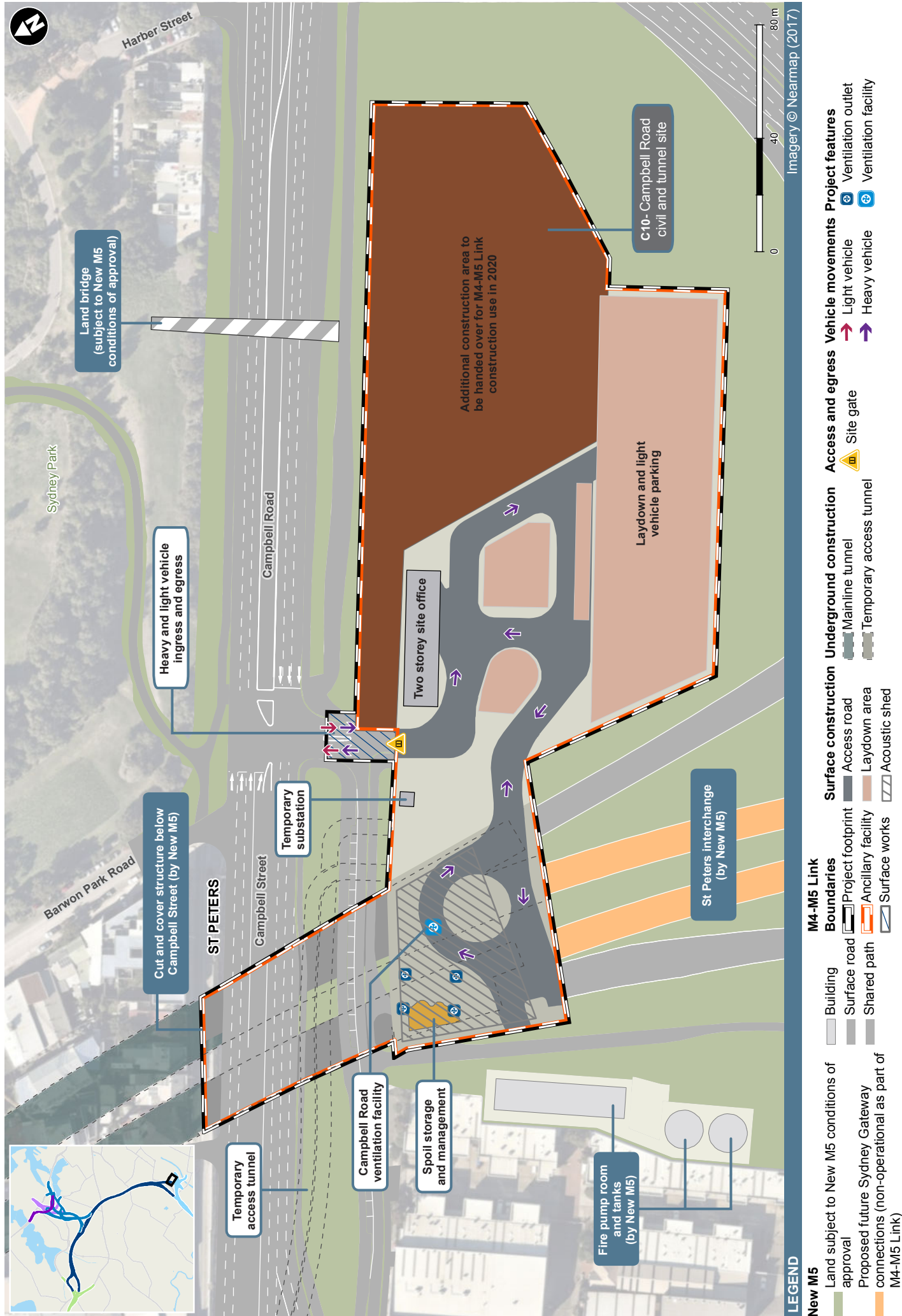


Figure 7-12 Indicative Campbell Road civil and tunnel site (C10) layout



## 7.3 Construction traffic management and access

This section identifies the route and scheduling of construction movements, and the number, frequency and size of construction-related vehicles, including for spoil removal and construction worker parking.

### 7.3.1 Construction traffic generation and distribution

The project would generate around four million cubic metres of spoil, the majority of which would be generated from excavation of the tunnels. As such, the primary facilities for receipt and dispatch of spoil would be the tunnel construction sites.

The project would seek to reuse at least 95 per cent of uncontaminated spoils, either within the project or at other locations. Where feasible and reasonable, spoil would be managed according to the following hierarchy:

- Minimisation of spoil generation through design and management
- Reuse of spoil within the project
- Beneficial reuse of spoil outside the project
- Where reuse is not possible, disposal of spoil would be the last resort.

Five potential sites have been identified for receiving excess spoil from the project, as summarised in **Table 7-14**. Negotiations for the final destination(s) for excess spoil would be undertaken during detailed design, and may include one or more of the sites listed in **Table 7-14** or other alternatives.

**Table 7-14 Potential spoil management sites**

Spoil management site	Location	Distance from the project (kilometres)	Capacity for site to accept spoil (m <sup>3</sup> )
Horsley Park (manufacturing facility)	Wallgrove Road at Horsley Park	About 40	Capacity for entirety of project spoil generation
Blacktown Waste Services (landfill)	920 Richmond Road at Marsden Park	About 45	250,000
Sakkara Development (industrial estate)	Riverstone Parade at Riverstone	About 45	3,500,00
Kurnell Landfill	330 Captain Cook Drive at Kurnell	About 20	7,000,000
Moorebank Intermodal Terminal Precinct	Moorebank Avenue, Moorebank	About 30	2,500,000

The haulage routes from construction ancillary facilities to the arterial road network are shown in **Figure 7-13** to **Figure 7-18**. Depending on final spoil management sites, spoil haulage routes may be subject to change. Delivery of concrete to support tunnel construction would originate from batching plants close to the project region, although other sources may also be required. Other materials required for construction would, where available, originate from within the Sydney region and surrounds and would generally use the arterial road network to access the various construction sites.

**Table 7-15** provides details of light and heavy vehicle volumes predicted to arrive and depart from construction ancillary facilities during the typical AM peak hour, PM peak hour and daily period. While these peak hours are slightly different to the surrounding road network peak hours, for a conservative assessment they have been assumed to occur in the modelled road network peak hour. With a shift start time of 7.00 am, the majority of light vehicle arrivals would occur before the road network AM peak hour. The end of the shift is more likely to impact on the road network PM peak hour, and although some vehicles would leave before the modelled peak hour, they have been assessed in the PM peak hour. **Table 7-15** shows that the highest volumes of heavy and light construction vehicles

are forecast at the Rozelle civil and tunnel site (C5). Construction vehicles would use the M4 East and New M5 tunnels at Haberfield and St Peters rather than the surface road network, wherever possible.

Table 7-15 Indicative daily and peak period construction traffic volumes

Location	Daily vehicles				AM peak hour				PM peak hour			
	(one way)		(7.30–8.30 am)				(4.15–5.15 pm)					
	Heavy vehicles	Light vehicles	Heavy vehicles		Light vehicles		Heavy vehicles		Light vehicles			
			Arrive	Depart	Arrive	Depart	Arrive	Depart	Arrive	Depart		
Option A												
C1a	133	50	7	7	10	–	7	7	–	50		
C2a	136	90	7	7	30	–	7	7	–	90		
C3a	100	150	5	5	50	–	5	5	–	150		
Option B												
C1b	140	10	7	7	10	–	7	7	–	10		
C2b	10	20	2	2	10	–	2	2	–	10		
C3b	30	150	3	3	50	–	3	3	–	150		
Both options												
C4	100	70	7	7	10	–	7	7	–	70		
C5	517	350	23	23	100	–	23	23	–	350		
C6	10	20	2	2	0		2	2		5		
C7	42	140	2	2	0	–	2	2	–	0		
C8	42	140	2	2	15	–	2	2	–	140		
C9	133	70	7	7	20	–	7	7	–	70		
C10	133	70	7	7	20	–	7	7	–	70		
WHT	200	24	10	10	24	–	10	10	–	24		
Proposed future Western Harbour Tunnel and Beaches Link site (cumulative impact assessment scenario only)												





Figure 7-13 Indicative spoil haulage route – Wattle Street and Haberfield civil and tunnel sites (C1a and C2a)



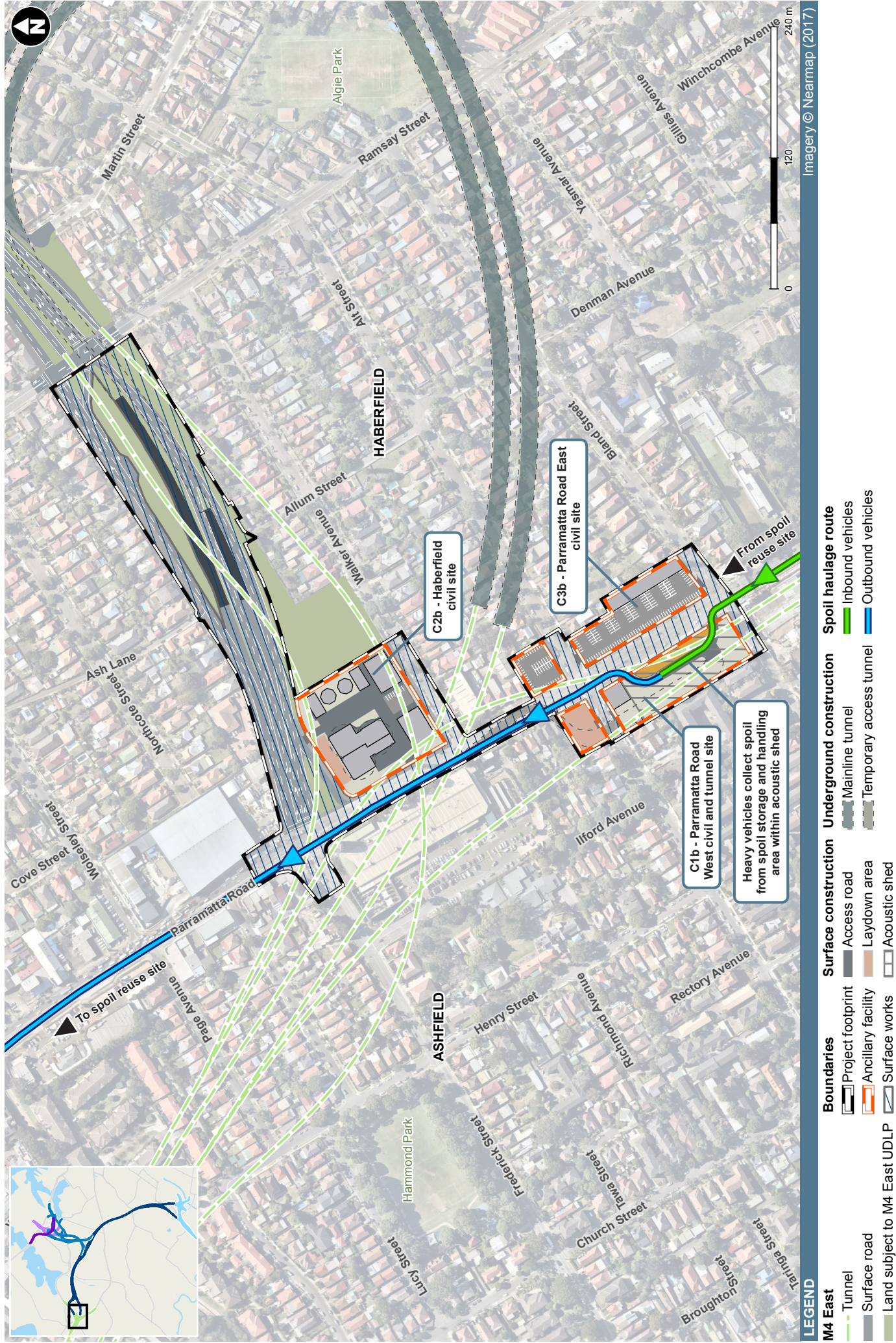
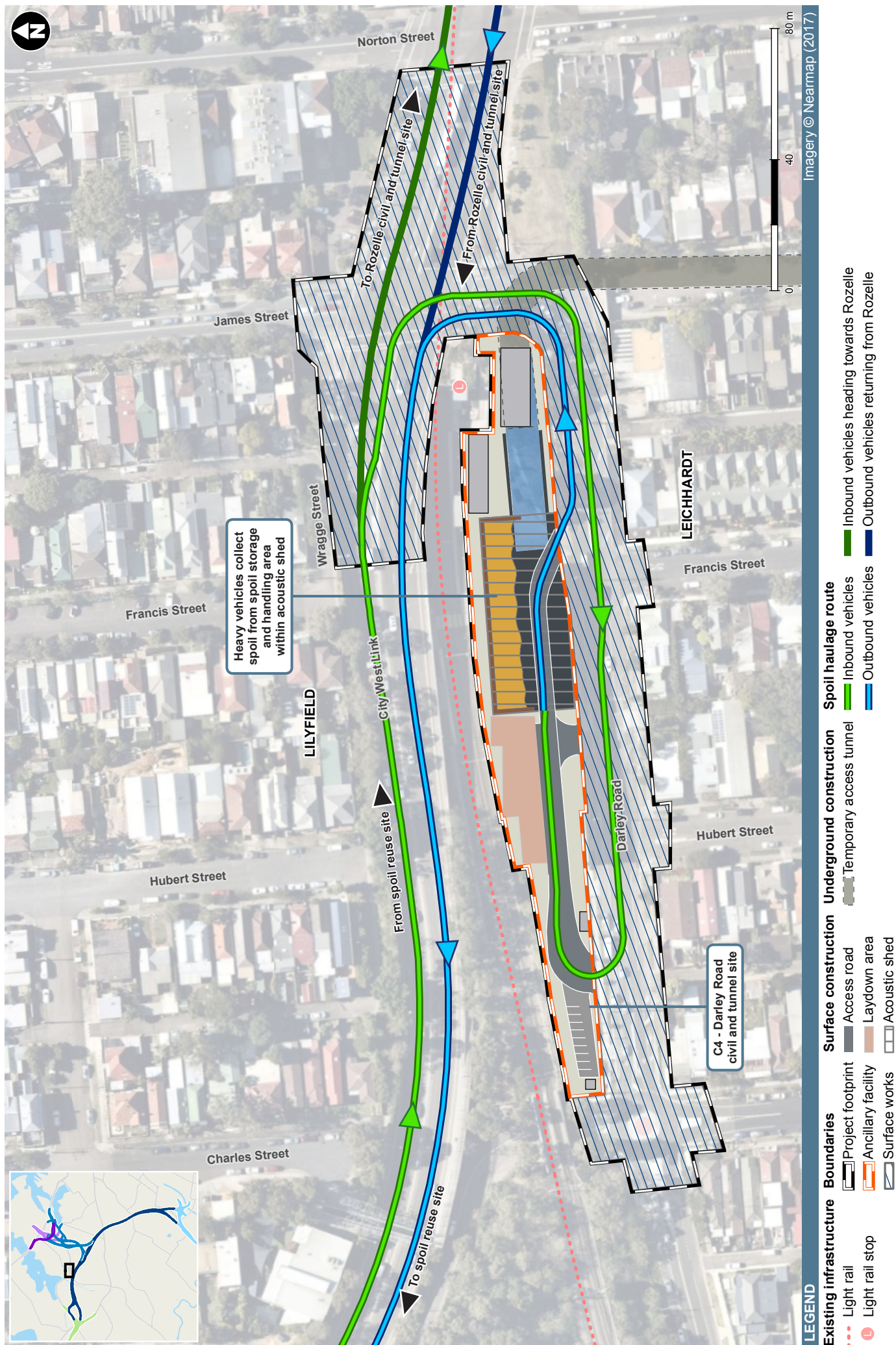


Figure 7-14 Indicative spoil haulage route – Parramatta Road West civil and tunnel site (C1b)





**Figure 7-15** Indicative spoil haulage route – Darley Road civil and tunnel site (C4)



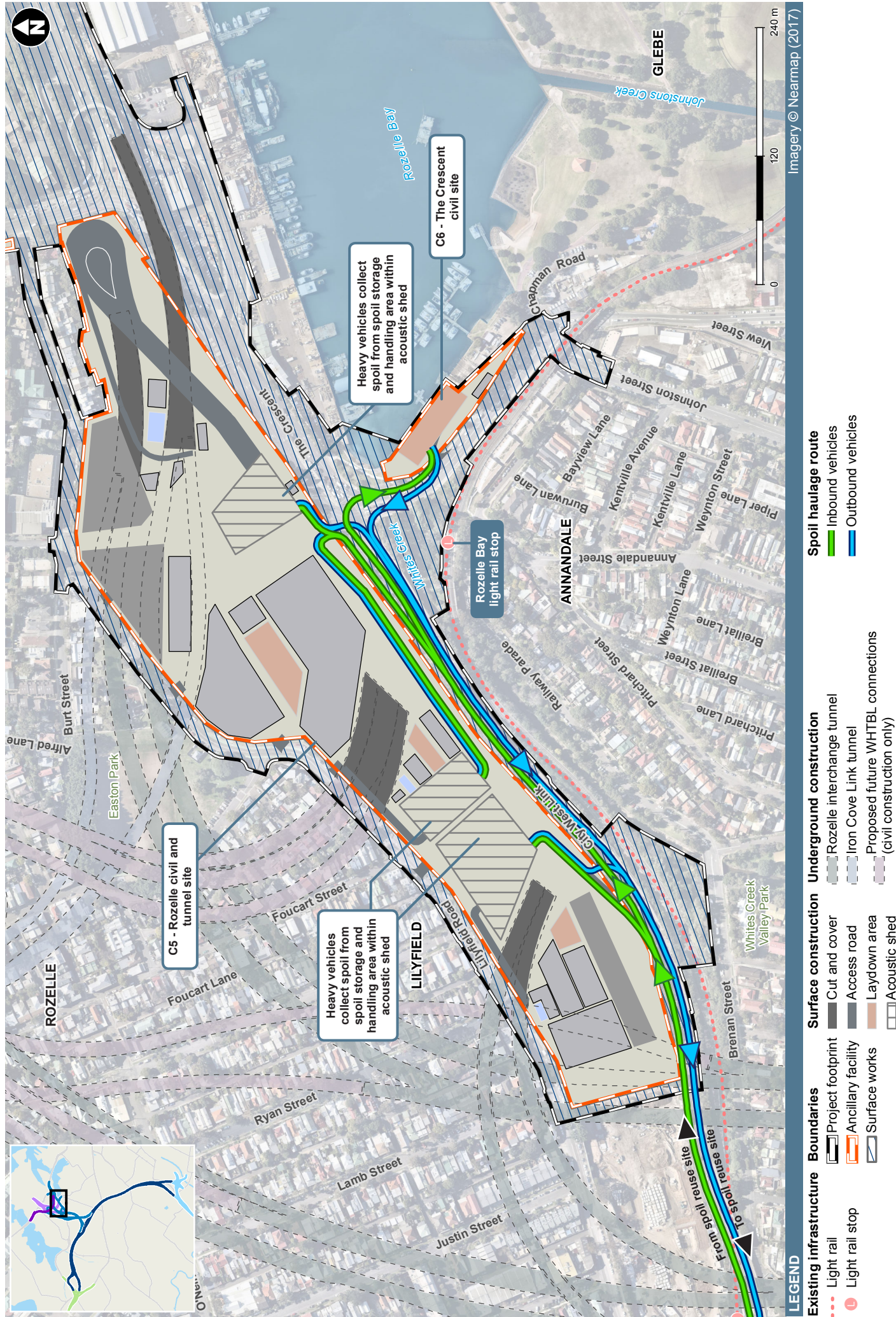
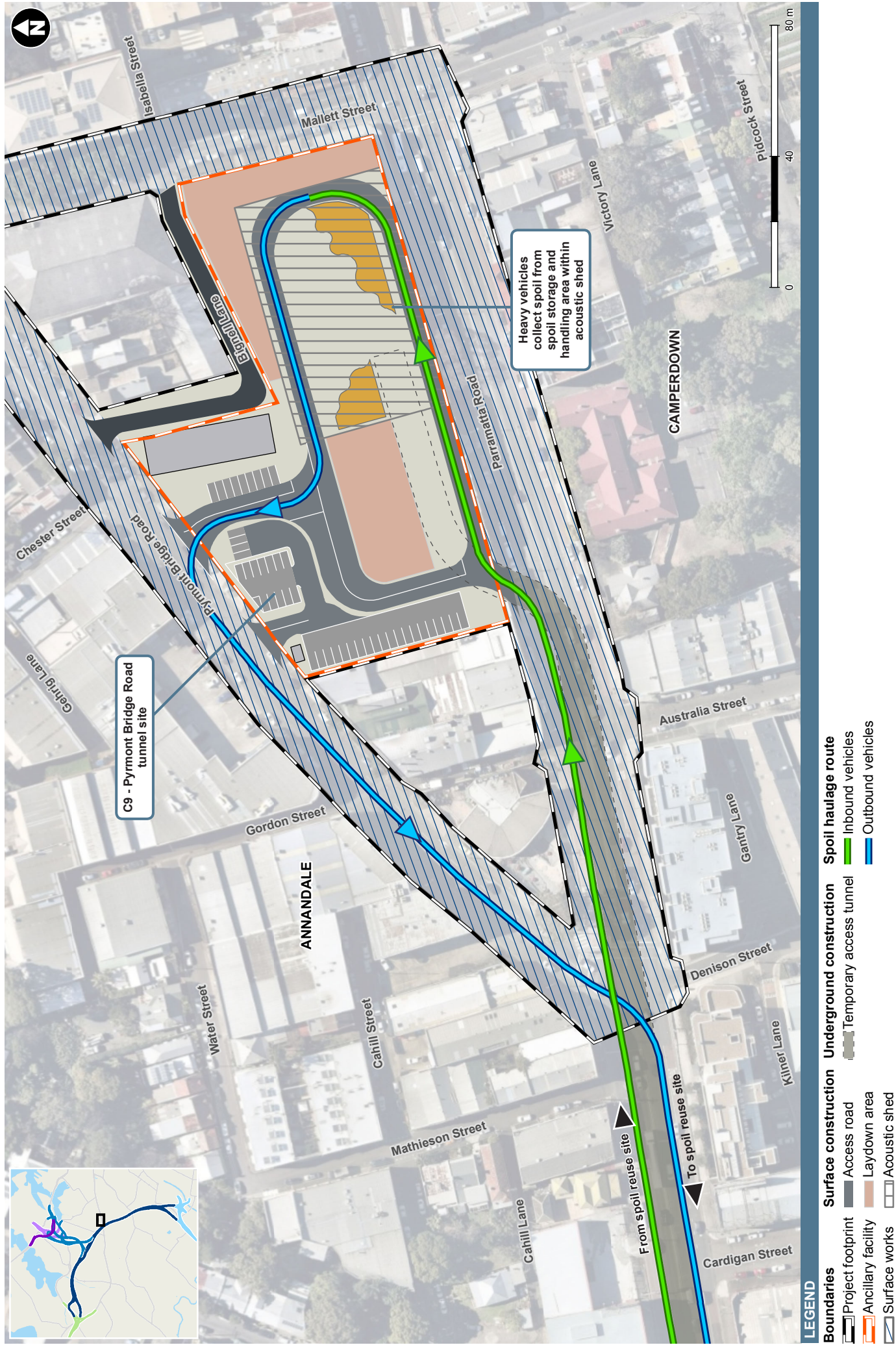


Figure 7-16 Indicative spoil haulage route – Rozelle civil and tunnel sites (C5)





**Figure 7-17** Indicative spoil haulage route – Pymont Bridge Road civil and tunnel site (C9)