# 12 Traffic, transport, parking and access

*Chapter 12 provides an assessment of the impacts of the construction and operation of the Proposal on traffic and transport. This includes the anticipated effects on roads and traffic in the vicinity of the rail corridor when major works are underway at existing bridge crossings, impacts of truck movements generated during construction and identifies various measures required to minimise disruption to motorists, pedestrians and cyclists. Commuter parking is also assessed.*

## 12.1 Corridor characteristics

### 12.1.1 Road network and traffic

The East Hills Line and the road network in its vicinity are shown on **Figure 12.1**. The rail line runs parallel to the South Western Motorway (M5) which is less than 500 metres to the north at its closest point. King Georges Road and Davies Road are the major arterials crossing the rail corridor and Bonds Road, Belmore Road, The River Road and Henry Lawson Drive are other arterial roads providing access across the East Hills Line. The importance of the road network to the railway stations along the East Hills Line is highlighted by **Table 12.1.** This illustrates that the majority of passengers gain access to the stations by car or on foot. Only five percent of passengers access the stations by bus with few using taxi, cycling or other modes.

**Table 12.1 East Hills Line mode of access**

| Station | Mode of access (%) | | | | |
|---|---|---|---|---|---|
| | Car park | Car passenger | Walk | Bus | Other |
| Beverly Hills | 23 | 9 | 66 | 1 | 1 |
| Narwee | 13 | 19 | 67 | 1 | 1 |
| Riverwood | 24 | 17 | 52 | 6 | 1 |
| Padstow | 23 | 31 | 26 | 8 | - |
| Revesby | 29 | 18 | 49 | 2 | 1 |

**Source: RailCorp 2007**.

Peak hour traffic volumes and the proportion of heavy vehicles on the roads crossing the rail corridor between Kingsgrove and Revesby stations are shown in **Table 12.2.**

***King Georges Road***

King Georges Road is a major arterial running north to south and crossing the rail corridor adjacent to Beverly Hills Station. It comprises three lanes in each direction between the M5 and George Street, two lanes in each direction between George Street and Ruby Street and three lanes in each direction between Ruby Street and Bridge Street. RTA traffic volume data adjacent to Beverly Hills Station shows averages for northbound morning and evening peak hour traffic of approximately 2,900 and 2,200 vehicles, respectively. An average of 2,100 vehicles was recorded moving southbound in the morning peak with 3,000 vehicles during evening peak hours.

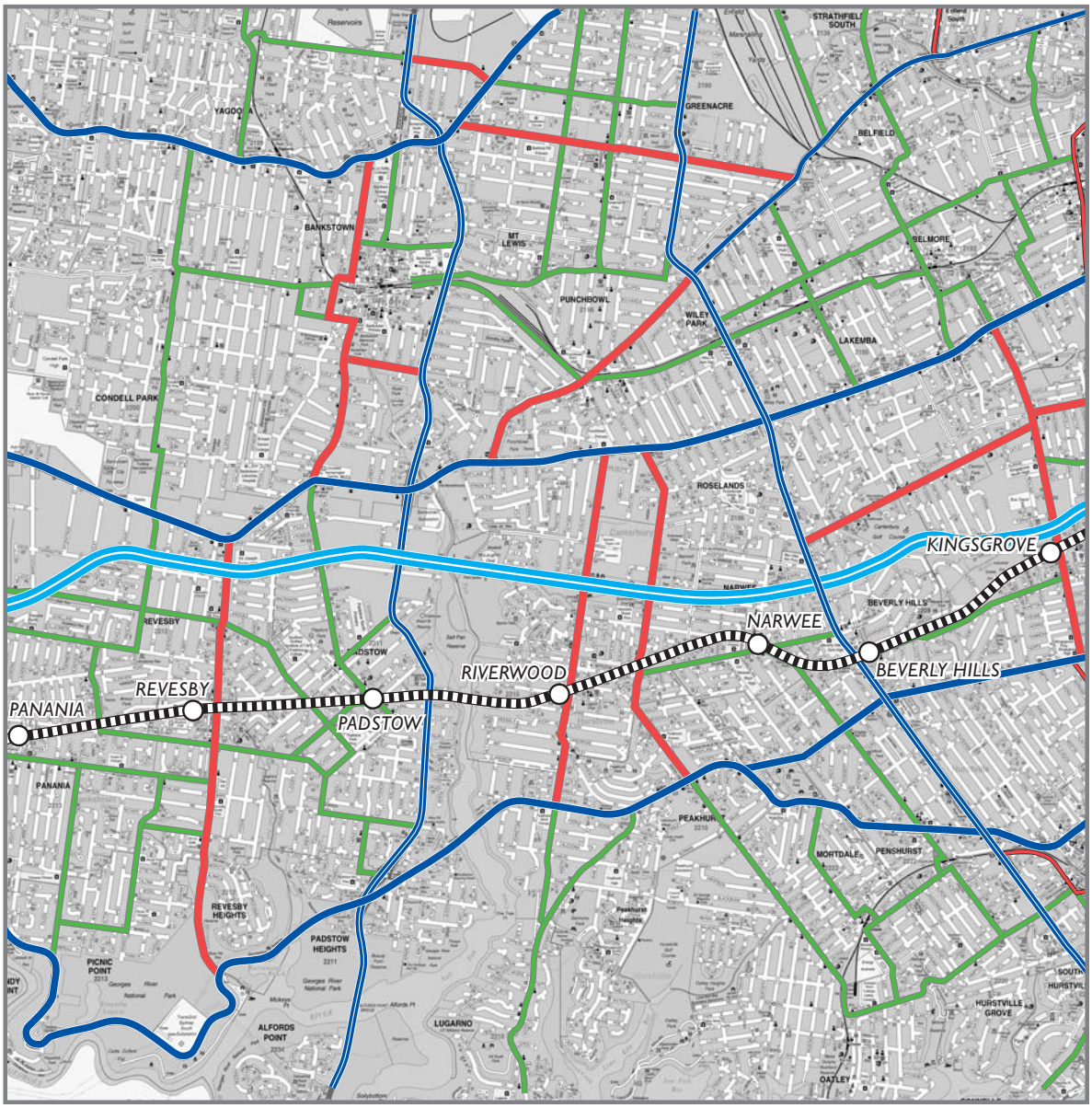


Figure 12.1 **Road network in the vicinity of the East Hills Line**

## Table 12.2 Peak hour traffic volumes and heavy vehicles on selected roads

| | Peak Hour | Traffic volume (% heavy vehicles) | | |
|---|---|---|---|---|
| | | Northbound | Southbound | Total |
| King Georges Road north of Morgan Street | AM | 2,924 (4) | 2,085 (7) | 5.009 (6) |
| | PM | 2,253 (4) | 3,028 (2) | 5,281 (3) |
| Broad Arrow Road south of Hannans road | AM | 706 (3) | 525 (6) | 1,231 (4) |
| | PM | 392 (4) | 871 (3) | 1,263 (3) |
| Bonds Road north of Broad Arrow Road | AM | 899 (2) | 387 (5) | 1,286 (3) |
| | PM | 439 (2) | 801 (2) | 1,249 (2) |
| Belmore Road north of Thurlow Street | AM | 911 (4) | 428 (6) | 1,339 (5) |
| | PM | 567 (3) | 795 (2) | 1,362 (2) |
| Davies Road north of Ryan Road | AM | 2,647 (4) | 943 (7) | 3,590 (5) |
| | PM | 1,020 (6) | 2,494 (3) | 3,514 (4) |
| Memorial Road north of Howard Road | AM | 636 (4) | 274 (8) | 910 (5) |
| | PM | 425 (3) | 604 (2) | 1,029 (2) |
| Doyle Street south of Sphinx Avenue | AM | 438 (3) | 216 (2) | 654 (3) |
| | PM | 290 (0.3) | 462 (2) | 752 (2) |
| The River Road south of Marco Avenue | AM | 1,292 (4) | 637 (70 | 1,929 (5) |
| | PM | 1,249 (4) | 1,243 (3) | 2,492 (3) |

***Broad Arrow Road***

Broad Arrow Road runs east to west between Romilly Street and King Georges Road. It is classified as a minor arterial between Romilly Street and Hannans Road, comprising one lane in each direction. It passes under the rail corridor between Hannans Road and Bryant Street.

***Bonds Road***

Bonds Road is a minor arterial running in a north-south direction between Canterbury Road and Forrest Road. Bonds Road comprises one lane in both directions, with a posted speed of 60 kilometres per hour. Bonds Road passes under the rail corridor between Broad Arrow Road and Josephine Street.

***Belmore Road***

Belmore Road runs north to south between Canterbury Road and Forrest Road. It is classified as an arterial road between Canterbury Road and Henry Lawson Drive, with two lanes in each direction. It is considered to be a collector road between Henry Lawson Drive and Forrest Road with one lane in each direction. Belmore Road passes over the rail corridor between Thurlow Street and Morotai Avenue.

***Davies Road***

Davies Road is classified as a major arterial and runs north to south. It is named Fairford Road and Stacey Road in the north and Alfords Point Road in the south. Fairford Road intersects with Canterbury Road and Alfords Point Road intersects with Henry Lawson Drive. Fairford Road comprises three lanes between Canterbury Road and Watson Road. Davies Road comprises two lanes between Watson Road and Henry Lawson Drive. Alfords Point Road is three lanes wide to allow tidal flow operations with two lanes north bound and one lane southbound in the morning peak and two lanes southbound and one lane northbound in the evening peak. The posted speed along Davies Road is 60 kilometres per hour between Canterbury Road and Henry Lawson Drive, increasing to 80 kilometres per hour south of Henry Lawson Drive. Davies Road passes over the rail corridor between Bridge Street and Meagher Avenue.

***Memorial Drive***

Memorial Drive is a minor arterial running parallel to Doyle Street between Howard Road and Watson Road. Memorial Drive is one lane in each direction with a posted speed of 50 kilometres per hour. Memorial Drive passes over the rail corridor between Howard Road and Banks Street.

***Doyle Street***

Doyle Street is classified as a minor arterial with one lane in both directions. It runs in a north-west direction between Faraday Road and The River Road with a posted speed limit of 50 kilometres per hour. Doyle Street passes over the rail corridor between Arab Road and McGirr Street.

***The River Road***

The River Road is an arterial road running in a north-south direction between Canterbury Road and Henry Lawson Drive. It comprises two lanes in each direction between Canterbury Road and Blamey Street and one lane in each direction between Blamey Street and Henry Lawson Drive. The posted speed limit is 60 kilometres per hour. The roadway passes under the rail corridor between Marco Avenue and Blamey Street.

### 12.1.2 Bus network and interchanges

Veolia, Punchbowl and Sydney buses provide services to all stations along the East Hills Line, operating at 15 to 20 minute headways during the morning peak. Current bus services in the vicinity of the along the East Hills Line are shown on **Figure 12.2.**

### 12.1.3 Pedestrian and bicycle network

Walking to a station on the East Hills Line contributes on average 46 percent of the total station mode of access. Local pedestrian linkages are focused on railway stations and local shops, while a dedicated regional pedestrian network has been created throughout the open space networks and along various rivers and creeks. Regional pedestrian and cycling facilities in the vicinity of the rail corridor include the footbridge across Salt Pan Creek and within Salt Pan Reserve, the M5 cycleway and pedestrian/cycle way alongside Little Salt Pan Creek to Revesby Station. Dedicated cycling facilities in the study area serve a recreational rather than a strategic transport function.

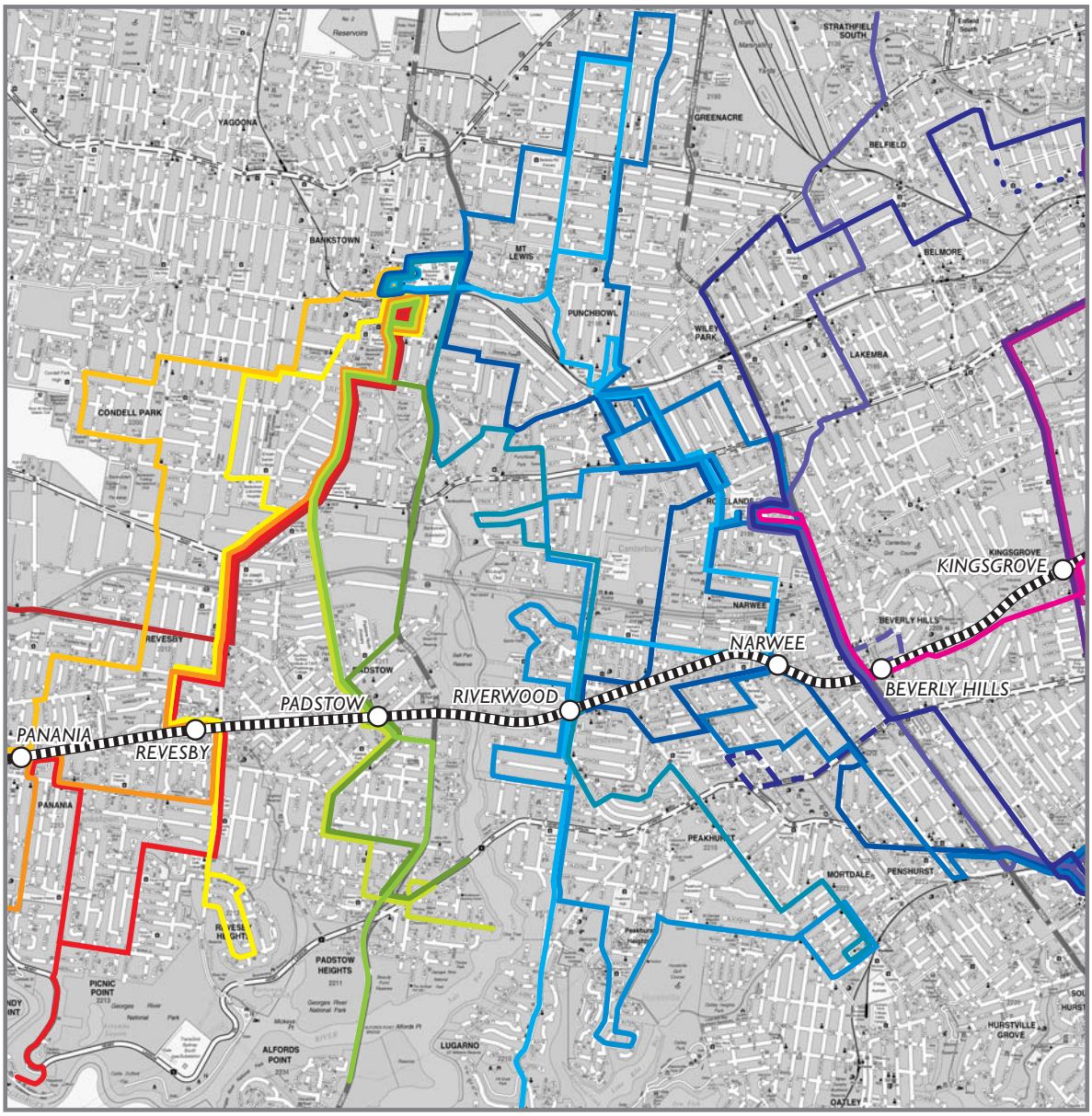


Figure 12.2 **East Hills Line bus services**

**Veolia Transport**

- Route 922
- Route 923
- Route 924
- Route 925
- Route 926
- Route 927
- Route 948
- Route 962

**Sydney Buses**

- Route 411
- Route 492
- Route 494

**Punchbowl Buses**

- Route 450
- Route 451
- Route 940
- Route 941
- Route 942
- Route 944
- Route 945

East Hills Railway Line

### 12.1.4 Commuter parking

A commuter parking options study was undertaken along the East Hills Line between Kingsgrove and East Hills Stations, including parking surveys conducted to determine the existing number of parking spaces and their usage and identify options for the provision of additional spaces (RailCorp 2007).

While some of the cars parked near railway stations could be used for purposes other than rail commuting, it was assumed that 80 percent of all spaces were used by commuters. As a result, the parking surveys concluded that a total of 3,000 commuters parked their vehicles adjacent to the East Hills Line. The survey also showed that overall only about 40 percent of all available commuter parking is accommodated within dedicated commuter car parks, totalling 1,315 spaces. **Table 12.3** outlines existing parking availability and utilisation between Beverly Hills and Revesby.

**Table 12.3 Existing commuter parking availability and utilisation**

| Station | Existing dedicated car spaces | Existing utilisation of dedicated car spaces (%) |
|---|---|---|
| Beverly Hills | 147 | 86 |
| Narwee | 82 | 99 |
| Riverwood | 92 | 100 |
| Padstow | 461 | 98 |
| Revesby | 152 | 91 |
| **Total/average utilisation** | **934** | **95** |

**Source: RailCorp 2007**.

Numerous other factors influence commuter car parking choice along the East Hills Line including:

- proximity to the arterial road network;
- rail service patterns;
- available train capacity;
- level of bus service availability;
- existing local activity and passenger surveillance; and
- availability of land for parking.

Padstow is currently the most attractive station for car users due to the availability of parking spaces, comprising 35 percent of the total on the East Hills Line.

## 12.2 Impacts during construction

### 12.2.1 Vehicle movements

Bridge widening works would be required at eight locations within the study area which have the potential to affect traffic movements.

The requirements for the re-construction of the three underbridges (Broad Arrow Road, Bonds Road and Webb Street) are relatively straightforward, with a weekend road closure and track possession likely to be all that is required for these bridges. Since these works would be undertaken during track possessions, full or partial closure would only be required for the overbridges.

Full or partial road closures are planned to enable the overbridge construction and widening works to be carried out. A summary of proposed road closures due to bridge construction is provided in **Table 7.5**. These closures would be subject to approval by the RTA and the relevant local council. If full closures are not available, their duration would need to be reviewed. Construction methodology is predicated on the assumption that only standard rail corridor possessions would be available to carry out the work.

Opportunities for better outcomes, both in staging of the works and technical solutions to construction issues, have been actively explored with RailCorp. These discussions will be continued with the intention of achieving better traffic management and other positive outcomes by identifying improved bridge construction solutions.

***King Georges Road***

The southbound bridge over King Georges Road requires modification and would be closed to traffic during the demolition of the existing bridge and installation of the new bridge deck. This phase of construction is expected to take six months. During this period, all traffic would be accommodated on the northbound lanes and the median. The existing northbound bridge could accommodate four lanes of traffic. During this period, additional incident management resources would be deployed at the site to respond to disabled vehicles. Closed circuit TV monitoring of King Georges Road on the approach to the worksite and a contracted tow truck on stand-by during both the morning and afternoon peak periods would be provided during the closure period.

Access to all properties, in particular retail commercial properties along King Georges Road, would be maintained throughout the construction period. The existing kerbside parking fronting businesses along the eastern side of King Georges Road would also be maintained throughout the time when the southbound carriageway is closed,

The construction methodology is predicated on the assumption that only standard weekend rail possessions would be available in which to carry out the works. Opportunities (both in staging and technical solutions) are currently being explored with the intention of achieving better traffic management solutions where practical.

The northbound lanes may require closure for short periods to relocate major utilities. A section of the existing median would be used for traffic during construction requiring the removal of a number of the palm trees. The median would be reinstated on completion. Consideration would be given to closing the northbound bridge to traffic during the

underpinning (as described in **Chapter 7**) for safety reasons. Should this closure be required, it would not take place at the same time as the works on Davies Road.

The proposed traffic management scenario for King Georges Road would involve the simultaneous closure of Memorial Drive and the reduction of King Georges Road from three lanes to two lanes in each direction. Right hand turns from the northbound carriageway of King Georges Road to both Morgan Street and Tooronga Terrace would be prohibited. The left hand turn from King Georges Road to Morgan Street would also be banned. All turning movements would be prohibited from Morgan Street and Tooronga Terrace to King Georges Road. In addition right turn movements into and out of Edgbaston Road, and the left turn movement from Edgbaston Road to King Georges Road will be banned. However, the left turn movement from the northbound carriageway of King Georges Road into Edgbaston Road would be maintained.

Subject to RTA and Council approval, it is proposed to modify the intersection of King Georges Road and Ponyara Road in order to accommodate right turn movements and, hence, provide an alternative route for traffic wishing to access Tooronga Terrace.

A tidal flow operation with three lanes for the peak flow and one lane for the non-peak flow was reviewed. Although the peak directional flow could be accommodated under this scenario, the non-peak directional flow in both the morning and evening would be too large to be accommodated in a single lane. The complexity associated with the tidal operations would also restrict any right-turn movements on King Georges Road.

The intersections in the vicinity of the rail corridor, and close to the proposed southbound bridge closure of King Georges Road, were forecast to operate at an acceptable level of service. The intersection analysis concluded that the diversion of traffic to other roads and the ability to restrict turning movements, particularly conflicting right-turn movements, would result in intersections in the vicinity of the King Georges Road overbridge operating at a level of service no worse than existing.

The restriction of turning movements at Morgan Street and Tooronga Terrace would cause some inconvenience to local trips, as additional distances would need to be travelled in order to reach end destinations. Traffic signs could be placed on King Georges Road to advise regional traffic of the turn bans at Morgan Street and Tooronga Terrace and suggesting the selection of Stoney Creek Road as an alternative. A similar arrangement to identify alternative routes could be introduced on Morgan Street and Tooronga Terrace. Proposed traffic management arrangements adjacent to Beverly Hills Station are shown on **Figure 12.3** and traffic diversions over a wider area on **Figure 12.4.** These would use Ponyara Road and Pallamana Road to the north and Stoney Creek Road and Gloucester Street to the south of the rail corridor.

Further analysis of the intersection would be required during detailed design and this would be undertaken in consultation with the RTA to ensure that a solution that minimises impact on motorists is developed.

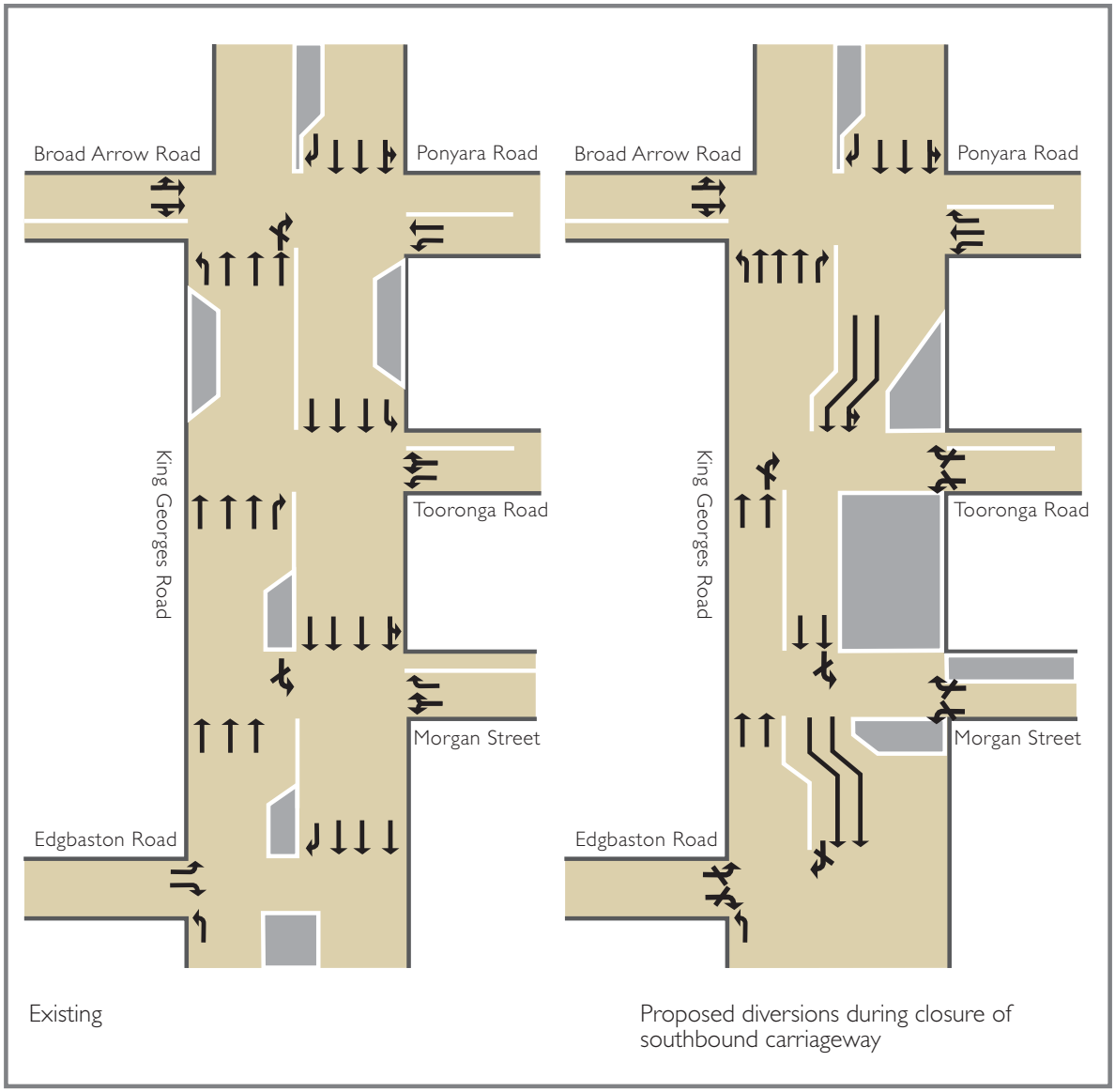


Figure 12.3 **Traffic management measures on King Georges Road during construction**

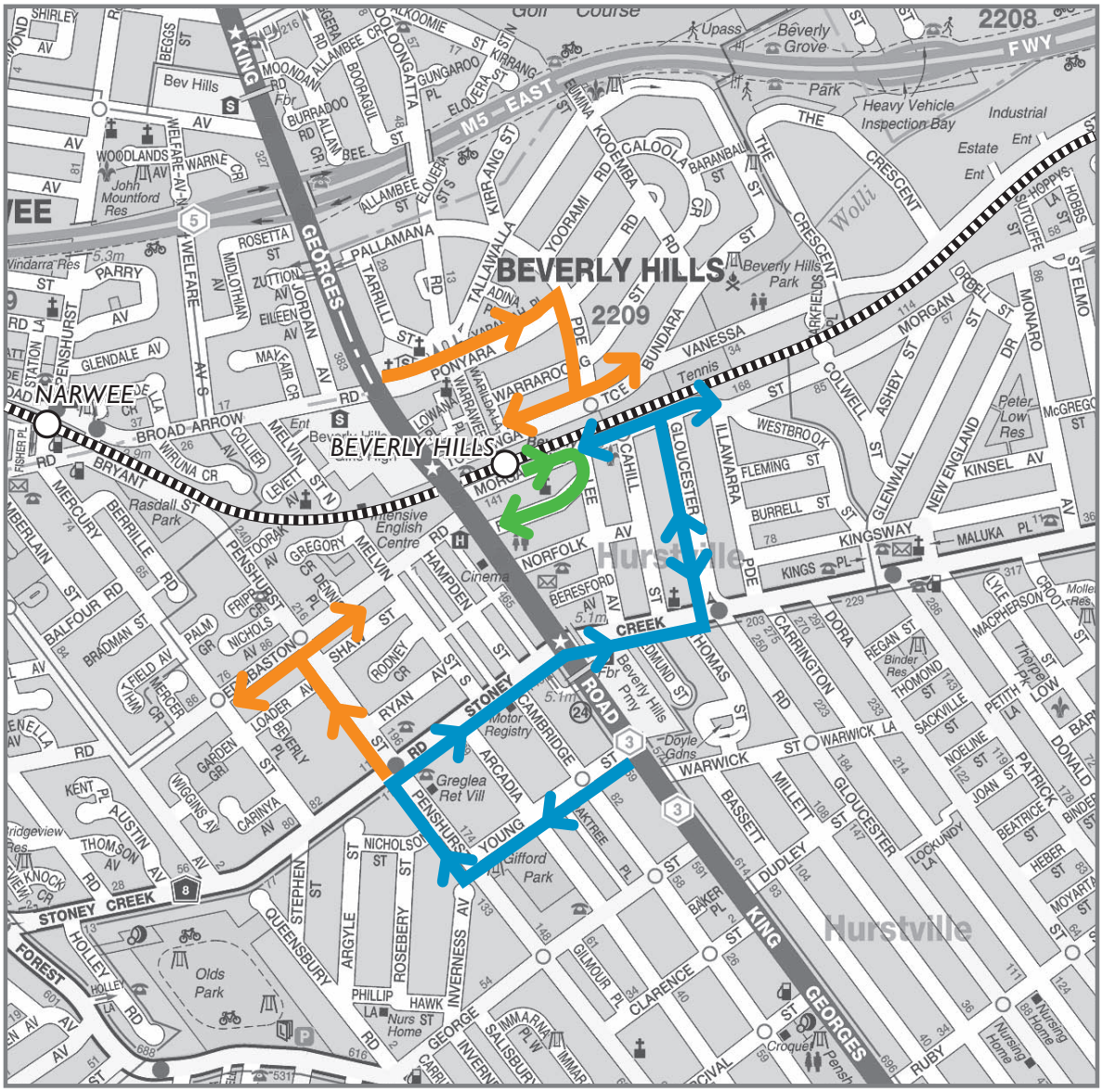


Figure 12.4 **Traffic diversions adjacent to King Georges Road during construction**

N

Traffic diversion

Traffic diversion - King Georges Road to Morgan Street

Traffic diversion - Morgan Street left turn to King Georges Road

East Hills Railway line

Traffic management measures including temporary turning prohibitions are set out in Section 12.4.1

***Memorial Drive***

All traffic, approximately 600 vehicles in the peak direction, would be diverted from Memorial Drive during its closure. The majority of this traffic would be redistributed to Doyle Road and Davies Road, both of which are located close to Memorial Drive. Less than five percent of traffic would be expected to choose a route further to the west such as The River Road, Carson Street and Park Road. Restricting King Georges Road to two lanes in each direction would result in the diversion of between 15 and 20 percent of the total peak flow (approximately 400 vehicles). Traffic would be diverted to Bexley Road, Kingsgrove Road, Broad Arrow Road and Belmore Road.

The closure of Memorial Drive would result in the performance of the intersection of Memorial Drive and Howard Road improving from a very poor level of service to an intersection that operates well. The Doyle Road alternative was forecast to operate at an acceptable level of service. However, Davies Road was forecast to continue operating with an extremely poor level of service and increased traffic delays would be expected at the intersections of Davies Road/Watson Road and Davies Road/Ryan Road.

***Belmore Road***

The Belmore Road overbridge comprises two bridges, each accommodating two, three metre wide lanes of traffic, abutted together and separated by a one metre median. Both bridges would need to be demolished and replaced.

Two traffic scenarios for the construction period were assessed; one involving full closure of the overbridge between Morotai Avenue and Thurlow Street and the other, requiring the reduction of Belmore Road to one lane in each direction between Morotai Avenue and Cairns Street. The model predicts little or no diversions from Belmore Road if the bridge remains open to one lane of traffic in each direction. Under a full closure scenario, approximately half the traffic diverted from Belmore Road closure would use Bonds Road with the remaining traffic distributed to Broad Arrow Road and King Georges Road.

The closure of Belmore Road would adversely affect the Bonds Road/Broad Arrow Road intersection and the Broad Arrow Road/Hannans Road intersection in both the morning and evening peaks.

The proposed construction scenario would therefore comprise the closure of the southbound carriageway between Thurlow Street and William Road and the use of the northbound bridge to accommodate one traffic lane in each direction. Access to the car park and William Road would be maintained. A temporary pedestrian bridge would be required on the western side between William Road and Riverwood Station concourse. On completion of the works, traffic would switch to the new southbound bridge with one lane in each direction and work on the northbound bridge would commence. Diversion routes required during the reconstruction of Belmore Road overbridge are shown on **Figure 12.5.** These routes would also be used while the Bonds Road underbridge is closed for reconstruction.

***Doyle Road***

The existing Doyle Road overbridge accommodates two lanes of traffic and a pedestrian path on each side of the bridge. The network and intersection analysis of the full closure of the Doyle Road overbridge indicates that 350 to 400 vehicles in the peak direction would be diverted to either The River Road or Memorial Drive. The closure of Doyle Road, at the

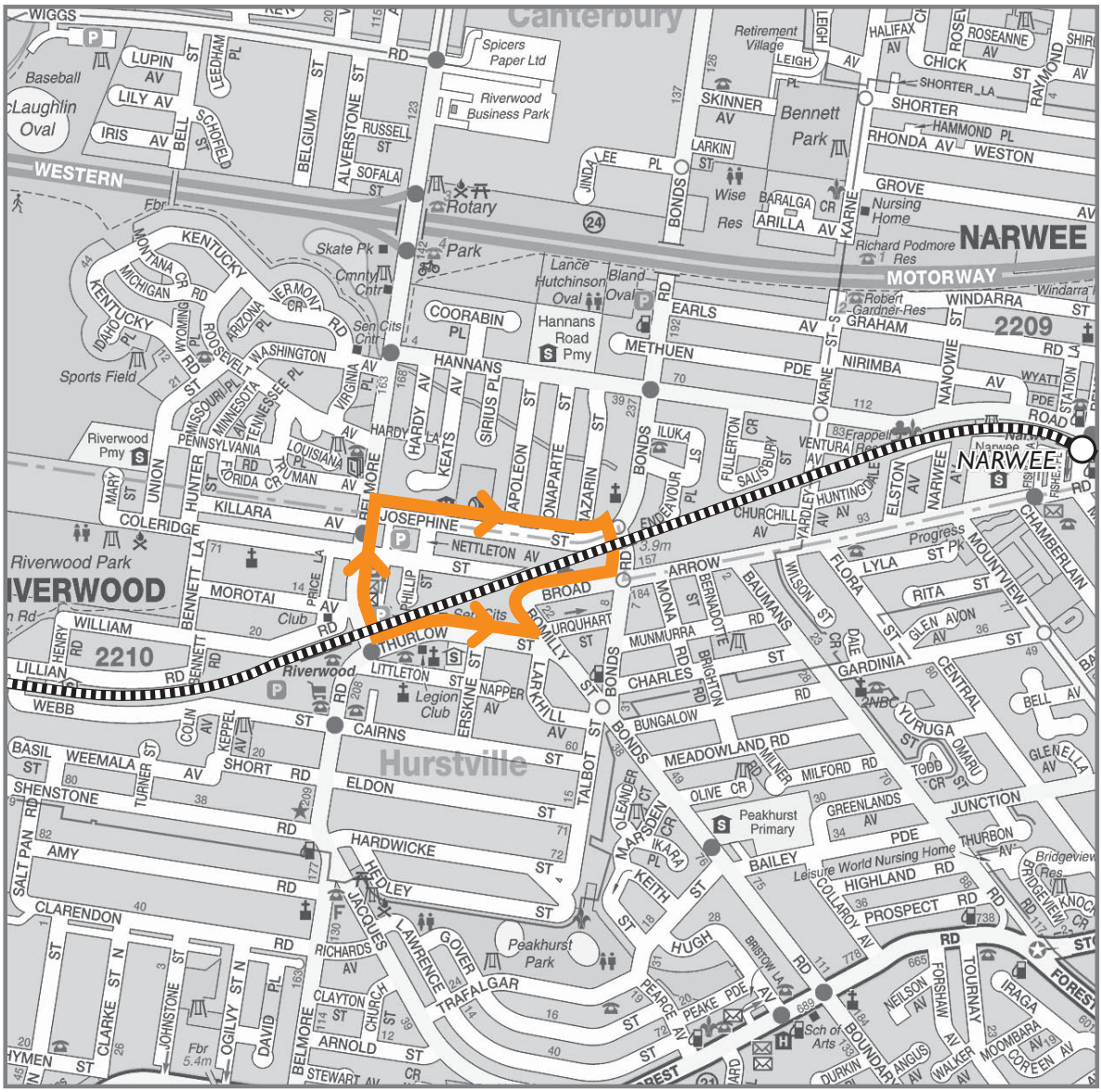


Figure 12.5 **Traffic diversions during partial closure of Belmore Road overbridge and full closure of Bonds Road underbridge**

Traffic diversion

East Hills Railway line

Traffic management measures including temporary turning prohibitions are set out in Section 12.4.1

same time as Davies Road, was considered a worst case scenario and it is likely that some traffic would be diverted to Davies Road.

The closure of Doyle Road would adversely affect performance of The River Road/Sphinx Avenue intersection and reduce its level of service from satisfactory to an intersection that would delay vehicles by more than one minute during the morning peak. This intersection would also continue to operate at a level of service with more than one minute delays in the evening peak. The closure of Doyle Road would cause additional delay and congestion at the Memorial Drive/Howard Road intersection.

However, in practice it is likely that more traffic would be diverted to Davies Road and the intersections on alternative diversion routes would operate at more satisfactory levels of service. Diversion routes required during the reconstruction of Doyle Road overbridge are shown on **Figure 12.6**. These routes would also be used while the Memorial Drive underbridge is closed for reconstruction.

***Davies Road***

The existing Davies Road overbridge comprises two bridges abutted together. Two 3.5 metre wide lanes of traffic are provided in each direction, with a four metre wide median. A pedestrian path is provided on both sides of the road. A bus stop bay is provided on the southbound carriageway in the vicinity of the bridge whereas the bus stop located on the northbound carriageway is located closer to Meagher Avenue. Right turn lanes are provided to the north of the overbridge on the northbound carriageway to facilitate access to Bridge Street and development adjacent to Padstow Park. A protected right turn bay allows movement to Meagher Avenue, on the south side of the bridge.

The staging of the partial closures of the Davies Road overbridge would involve constructing one bridge while keeping the other open. This would entail reconfiguring the lane markings on Davies Road, keeping a minimum of three lanes open to traffic at all times. There is sufficient space to incorporate four 2.7 metre lanes within the width used by the existing two lanes of traffic and the median. However, it is unlikely that the full median would be available for use by traffic at all times due to the space required for construction. Both the four lane and three lane options under tidal flow operation were assessed.

The southbound bridge would be modified first with traffic switched to the northbound carriageway operating in a 2/1 tidal flow arrangement. Temporary pedestrian bridges would be required to maintain pedestrian movement across the rail corridor during construction. Once the modifications to the southbound bridge are complete, traffic would be diverted onto the new southbound bridge providing two traffic lanes in each direction and construction of the northbound bridge would commence.

The design of the bridge works has been formulated to minimise the duration that Davies Road would need to operate on a 2/1 tidal flow arrangement. This configuration is only required for a period of up to 10 weeks while modifications to the southbound bridge are undertaken. Following this work, all other activities can be carried out in a two lane-each way configuration, replicating existing conditions.

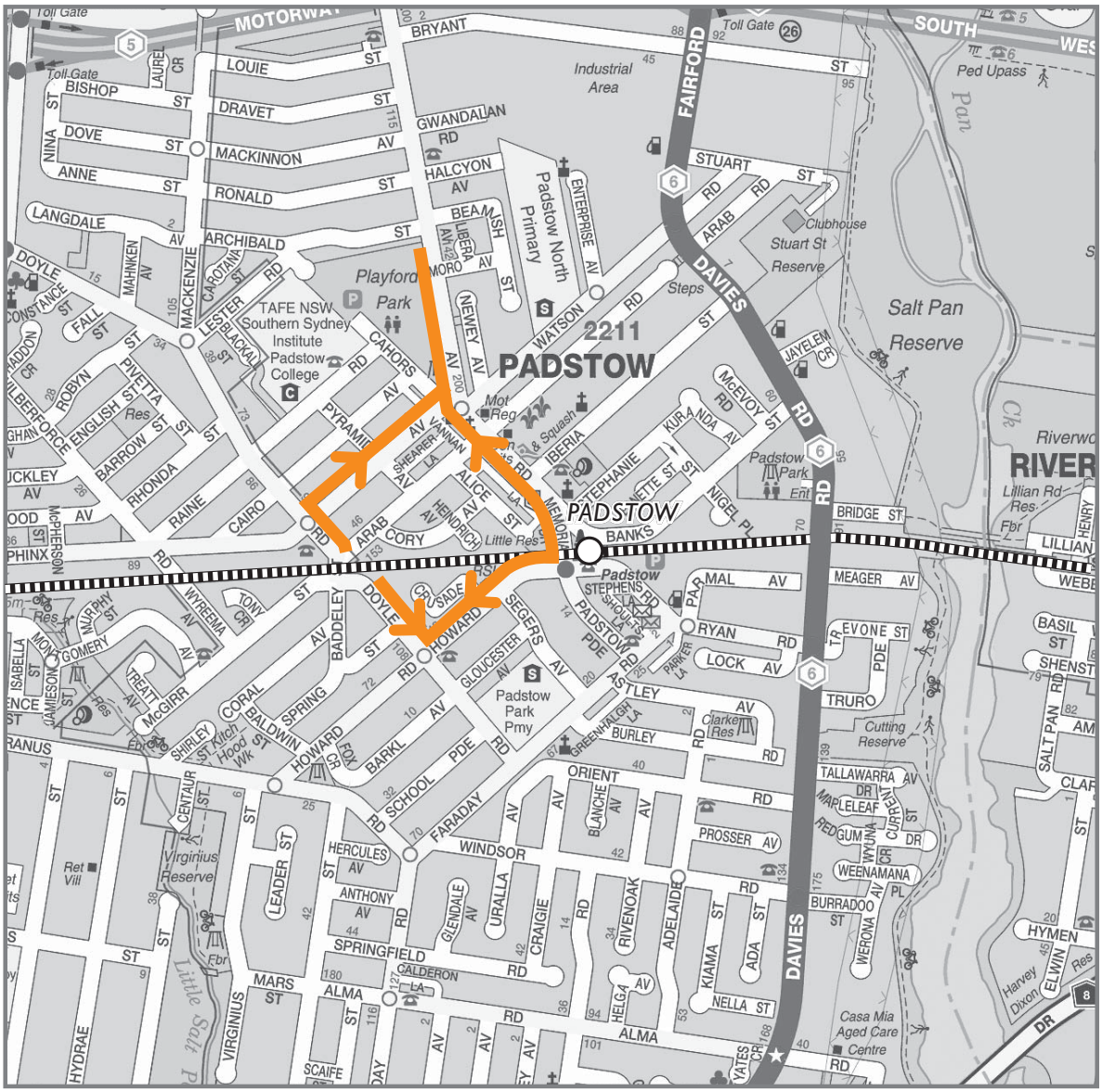


Figure 12.6 **Traffic diversions during closure of Doyle Road overbridge and Memorial Drive overbridge**

Traffic management measures including temporary turning prohibitions are set out in Section 12.4.1

Right-turn movements from Davies Road to both Meagher Avenue and Bridge Street would not be permitted during reconstruction. Local traffic with destinations in Bridge Street and Meagher Avenue would be required to travel to the Davies Road/Watson Avenue intersection and return to Davies Road via Arab Road. Similarly restricting right-turn movements from Meagher Avenue and Bridge Street to Davies Road would increase capacity on Davies Road with improvements in safety. Right turning traffic from Bridge Street and Meagher Avenue to Davies Road would be required to travel south to the Ryan Road/Davies Road intersection, via Memorial Drive and Watson Road prior to travelling north on Davies Road. These temporary detour arrangements are shown on **Figure 12.7**. The bus stop bay in the southbound lane would need to be relocated south of Meagher Avenue.

During partial closure, Davies Road is expected to operate at or above capacity and localised queuing and congestion is expected to occur during the peak hour. During the remainder of the peak period and during inter-peak period, capacity exceeds demand with little or no delay or queuing expected. Some diversion of traffic onto alternative roads including Ryan Road, Memorial Drive and Watson Road and other regional roads including Henry Lawson Drive and King Georges Road is expected during the partial closure of the Davies Road overbridge.

### 12.2.2 Buses and taxis

All existing bus services providing access to railway stations along the East Hills Line would be affected by the general traffic delays and congestion associated with the various full or partial road closures required for the construction of the Proposal. The closure of the Belmore Road overbridge would affect Punchbowl bus routes, while the closure of the Memorial Drive overbridge would affect Veolia Transport bus services. The existing bus terminus located alongside Padstow Station on Howard Road immediately to the west of Padstow Parade would be an appropriate location for a relocated facility.

The partial closure of King Georges Road and associated restrictions on intersection turning movements would affect both Punchbowl Buses and Sydney Buses. Delays to these bus services associated with the King Georges Road works are expected to be minimal, in line with that experienced by the general traffic, given the mitigation measures proposed to maximise the capacity of through-movements. Existing bus services do not use King Georges Road during peak periods and would therefore be largely unaffected by these works.

The bus routes affected and potential rerouting patterns, discussed and agreed with each operator, are shown in **Table 12.3.**

Travel by taxi contributes approximately one percent to the total mode of access to stations along the East Hills Line. Taxis perform a more important function during the off-peak period and are a particularly important mode of access during the evening and at night. Taxi lay-over locations would not be directly affected by construction. Taxi operations would however be affected by increased congestion and delay associated with full and partial road and bridge closures and increased demand due to reduced commuter parking and other parking spaces.

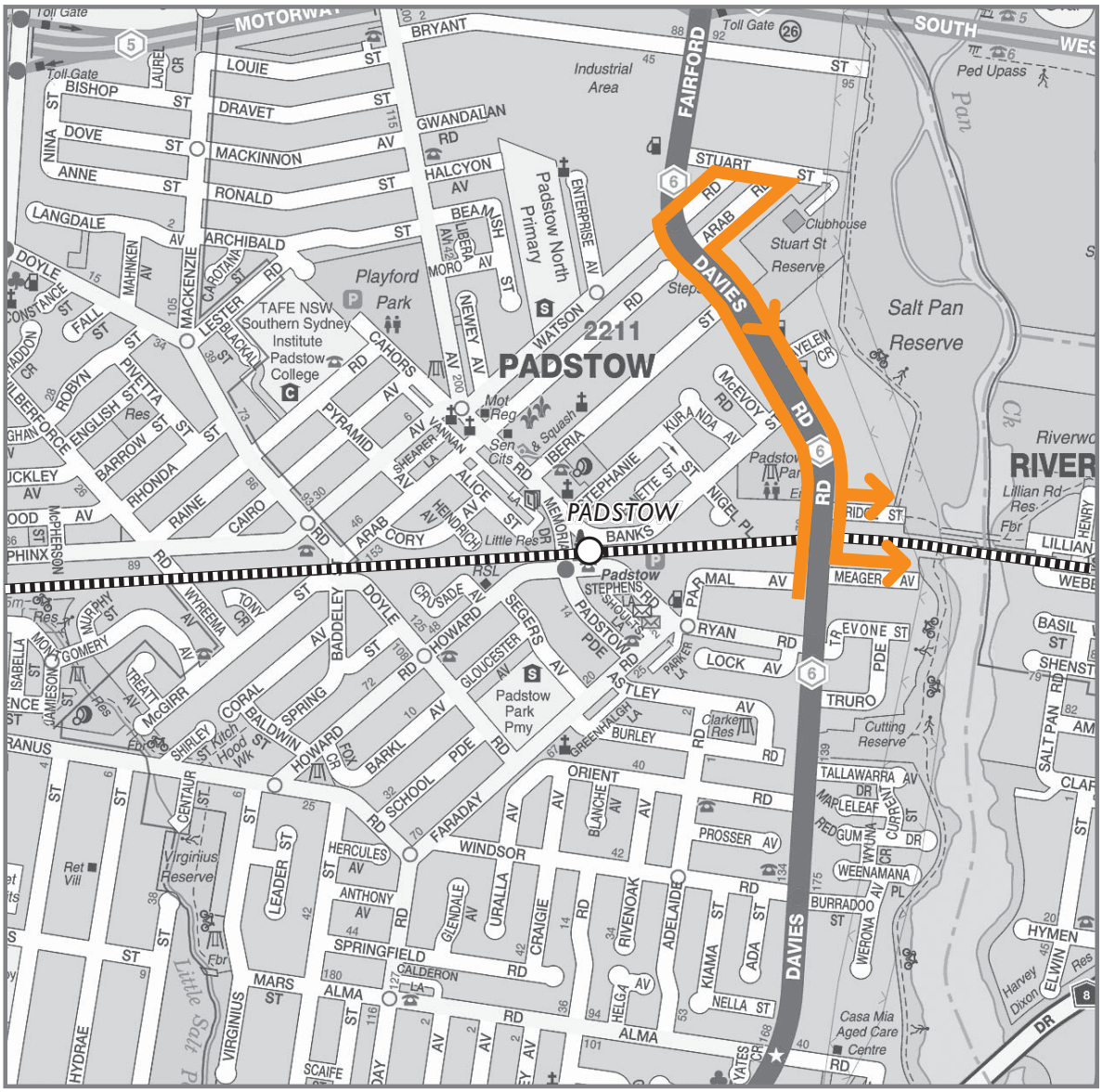


Figure 12.7 **Traffic diversions during partial closure of Davies Road overbridge**

N

Traffic diversions

East Hills Railway line

Traffic management measures including temporary turning prohibitions are set out in Section 12.4.1

**Table 12.3 Description of affected bus routes and alternative routing pattern**

| Bus route | Route description | Daily frequency | Hours of operation | Alternative route during construction (*in italics*) and pedestrian access |
|---|---|---|---|---|
| **King Georges Road partial closure** | | | | |
| Sydney Buses Route 411 | Along Morgan Street crossing the rail corridor on King Georges Road to Roselands | 6 bus trips are made varying in frequency of 45 minutes, 105 minutes or 2 hours | Operates between 09.00 hours and 17.10 hours on weekdays only | Morgan/King Georges. *Morgan/Gloucester/Stoney Creek King Georges Road.* (additional 700m) |
| **Belmore Road bridge closure** | | | | |
| Punchbowl Bus Route 940 Bankstown to Hurstville via Riverwood | Roselands down Bonds Road turning right into Josephine Street then left into Belmore Road, over the railway | 27 half hourly service on weekdays and 15 half hourly services on Saturdays both ways. One service on Sundays | Bus services run between 05.45 hours and 19.00 hours on weekdays, 07.48 hours and 17.50 hours on Saturdays and at 16.45 hours on Sundays | No changes proposed |
| Punchbowl Bus Route 942 Bankstown to Lugarno via Riverwood | Roselands to Narwee then right into Hannans Road, left at Belmore Road over the Riverwood rail bridge, continuing along Belmore Road to Lugarno | 34 half hourly service on weekdays and 11 half hourly services on Saturdays both ways. There are no services on Sundays | Buses run between 06.00 hours and 19.00 hours on weekdays and until 21.30 hours on Thursdays. Busses operate between 07.45 hours and 17.48 hours on Saturdays | Coleridge Street, Belmore Road, *Josephine Street, Bonds Road, Broad Arrow Road, Romilly Street,* Thurlow Street |
| Punchbowl Bus Route 944 Punchbowl to Mortdale via Riverwood | Down Belmore Road from Punchbowl over the Riverwood rail bridge to Mortdale | 29 half hourly service on weekdays and 8 half hourly services on Saturdays both ways. 5 hourly services on Sundays | Bus services operate between 05.30 hours and 19.15 hours on weekdays, between 08.00 hours and 18.30 hours on Saturdays and between 08.00 hours and 17.05 hours on Sundays | Belmore Road, *Josephine Street, Bonds Road, Broad Arrow Road, Romilly Street,* Thurlow Street |

| Bus route | Route description | Daily frequency | Hours of operation | Alternative route during construction (*in italics*) and pedestrian access |
|---|---|---|---|---|
| Punchbowl Bus Route 945<br>Bankstown to Mortdale via Riverwood | Down Belmore Road from Bankstown over the Riverwood rail bridge to Mortdale | 22 half hourly service on weekdays and 10 half hourly services on Saturdays both ways. 5 hourly services on Sundays | Services run on weekdays between 06.00 hours and 21.30 hours, between 07.45 hours and 17.00 hours on Saturdays and between 09.00 hours and 18.00 hours on Sundays | Belmore Road, *Josephine Street, Bonds Road, Broad Arrow Road, Romilly Street,* Thurlow Street |
| **Memorial Drive bridge closure** | | | | |
| Veolia Transport Bus Route 927 | One Tree Point to Bankstown and crosses the railway via Memorial Drive | 79 services operate on weekdays. Bus driving the full route operates every 10 to 20 minutes, and the additional express service operates every 30 minutes. 49 services operate on Saturdays ever 15 minutes and 20 buses operate every 60 minutes on Sundays | Bus services operate between 05.58 hours and 21.48 hours on weekdays, between 07.36 hours and 19.07 hours on Saturdays and between 08.29 hours and 18.56 hours on Sundays | Gibson/Watson, *Sphinx, Doyle, Baddeley, Doyle, Howard*, Ryan/Faraday (additional 1.2 km) |
| Veolia Transport Bus Route 948 | Between Bankstown and Hurstville, crossing the rail corridor at Memorial Drive | 35 buses operate every 20 to 30 minutes on weekdays, 22 services operate every 30 minutes on Saturdays and 10 services every 60 minutes on Sundays | Services operate Monday to Friday between 05.51 hours and 21.08 hours, between 07.21 hours and 18.44 hours on Saturdays and between 08:46 hours and 21.48 hours on Sundays | Gibson/Watson, *Sphinx, Doyle, Baddeley, Doyle, Howard*, Ryan/Faraday (additional 1.2 km) |
| Veolia Transport Bus Route 962 | Between Bankstown and Miranda crossing the rail corridor at Memorial Drive. | 46 services varying between 13 minutes and one hour accommodating the busier morning and afternoon periods on weekdays. 27 half hourly services on Saturdays and 12 hourly services on Sundays | Bus services operate between 05.20 hours and 23.01 hours weekdays, between 07.34 hours and 00.56 hours Saturdays and between 07.23 hours and 19.01 hours on Sundays and public holidays | Gibson/Watson, *Sphinx, Doyle, Baddeley, Doyle, Howard*, Ryan/Faraday (additional 1.2 km) |

### 12.2.3 Emergency access

Access for emergency vehicles to all stations, major work sites and along the rail corridor would be maintained during construction although delays associated with the various partial and full road closures required during construction could affect response times. Potential disruption and alternative traffic access for emergency services would be assessed as part of the proposed construction sequence during detailed design

### 12.2.4 Station access

Construction of the Proposal would affect pedestrian access at the following stations:

- **Beverly Hills** – pedestrian access to Beverly Hills Station is from King Georges Road (southbound carriageway) which would be reconstructed, potentially interrupting existing pedestrian access. The pedestrian diversion required for the northbound carriageway require pedestrians on the east side of King Georges Road, to walk to the intersections of King Georges Road and Broad Arrow Road and the pedestrian activated signal on King Georges Road located between Frederick Avenue and Norfolk Avenue. This would involve a 500 metre diversion for pedestrians and access via the lift would not be available. As such, this diversion would not be acceptable and access would therefore be provided on the eastern side of King Georges Road via a pedestrian bridge structure;

- **Narwee** – pedestrian access would be restricted during the lengthening of the Narwee pedestrian underpass. The Broad Arrow Road underbridge provides an alternative short diversion for pedestrians;

- **Riverwood** – pedestrian access to Riverwood Station would be affected during the construction of the Belmore Road overbridge, particularly from the northern side of the rail corridor. The closest alternatives are Lillian Road underbridge and Bonds Road underbridge involving a one kilometre diversion (equating to about 12 to 15 minutes walk). This is at the limit of an acceptable commuter walking distance. A pedestrian bridge would therefore be provided during construction to allow access to Riverwood Station;

- **Padstow** – pedestrian access to Padstow Station may be restricted during modifications of the station concourse and Memorial Drive overbridge construction. However, access either via the northern or southern entry would be available at all times, maintaining pedestrian access; and

- **Revesby** – modifications to Blamey Street would affect pedestrian access from the south side of the station. Patrons would be required to use The River Road as an alternative. The diversion is expected to be about 400 metres.

Interruptions to pedestrian access to stations would be temporary. The provision of access during construction would maintain linkages between those centres which straddle the railway corridor without resorting to increased walking distances.

### 12.2.5 Commuter parking

Existing commuter parking spaces would be affected during construction of the Proposal. Some would be required to make way for construction activities and would be reinstated

on completion; others are located on land within the rail corridor required for the permanent works. A strategy would be developed to replace those commuter parking spaces lost on a permanent basis at Beverly Hills, Narwee, Riverwood and Padstow. This would aim to replace any spaces lost at alternative locations within a reasonable walking distance (not exceeding 500 metres) from the affected stations. Suitable locations have been identified for additional parking spaces and/or where existing parking areas can be reconfigured to provide a more efficient layout. Space is available to eliminate any permanent loss of parking at and adjacent to Beverly Hills, Narwee and Riverwood Stations. Further investigations would be necessary to confirm the feasibility of providing additional parking spaces at Padstow.

Impacts on available commuter car parking spaces are summarised in **Table 12.4** and impacts on commuter parking availability are discussed in **Section 12.3.5.**

**Table 12.4 Impacts on commuter parking spaces during construction**

| Existing commuter parking spaces | Parking spaces not available during construction | Comment |
|---|---|---|
| Beverly Hills - **147** | North – Tooronga Terrace **(40)**<br>South – Morgan Street **(28)** | Approximately half the parking spaces on Tooronga Terrace and Morgan Street would not be available. |
| Narwee - **82** | North – Hannans Road **(40)** | All parking spaces may be unavailable during construction. |
| Riverwood - **92** | North – Morotai Avenue **(26)**<br>South – Thurlow Road **(38)** | A significant proportion of all parking spaces located both north and south of the rail corridor would be temporarily displaced during construction. |
| Padstow - **467** | Access road to multi-storey car park **(17)**<br>South – near Padstow RSL **(55)**<br>South – Howard Road **(20)** | Approximately 20% of parking spaces would be displaced during construction. The western access to the existing multi-storey car park would be affected during construction. |
| Revesby - **152** | South – Blamey street **(32)**<br>South – RailCorp land **(51)** | A further 32 spaces would not be available during construction. |

In its *Urban Transport Statement* (2006), the NSW Government has committed to investigate the provision of commuter car parking to cater for forecast growth and demand at Revesby. RailCorp and the Ministry of Transport have commenced initial investigations in accordance with the Urban Transport Statement. Although timing for the provision of this additional commuter parking is yet to be determined, it is anticipated that consideration would be given to aligning it with the introduction of new train servicing patterns to be introduced on completion of the Proposal.

### 12.2.6 Pedestrian and cycle crossings

Impacts on pedestrian access to the railway stations between Kingsgrove and Revesby during the construction of the Proposal are discussed in **Section 12.2.4**. In addition to inhibiting access to railway stations, pedestrian and cycle crossings throughout the study area may be affected during construction activities.

The northern section of the pedestrian walkway over Salt Pan Creek would remain open where possible during the construction of the rail underbridge. However, the southern section and access to/from Meagher Avenue would need to be closed throughout the construction works (9 to 12 months) due to the proximity of the bridge works. There would be times when the northern section of the walkway would also require temporary closure. Signage would be installed prior to the required closure and peak-periods avoided where possible. The walkway is mainly used for recreational purposes and its potential closure during construction would temporarily disrupt these activities. Alternative pedestrian and cycle crossings over Salt Pan Creek are provided below the M5 South Western Motorway to the north and Henry Lawson Drive to the south. Both alternatives involve a diversion of about four kilometres.

Further interruptions are also likely to be associated with proposed overbridge and underbridge works at Doyle Road, Davies Road, Bonds Road, and Broad Arrow Road. A pedestrian bridge would be provided at both Doyle Road and Davies Road.

Webb Street does not currently have a dedicated pedestrian access. Some disruptions would be expected during the bridge works at this location although construction would, where feasible, minimise impacts during peak periods (for example during Montessori school start and finish times).

### 12.2.7 Construction traffic

Construction work with the greatest impacts on the surrounding transport network includes:

- bridge construction and road closures that require traffic diversions and potential temporary lane closures; and
- earthworks including truck and plant movements associated with haulage of excess stripping and/or cut material, including mobilisation and de-mobilisation of plant to work sites and truck haulage from work sites to designated stockpile areas.

During the bulk earthworks phase, large volumes of spoil would need to be removed and either transported off-site for disposal, or to other locations within the corridor to be used as fill. This would involve heavy vehicles using local roads, and in some cases, local residential streets that are not designed to accommodate heavy vehicles. The current estimates of the earthworks indicate that there would be a substantial volume of surplus material to be removed from the study area. Access points for the removal of spoil and the transport of material, together with haulage routes to the nearest B-double designated route are shown on **Figures 12.8a** to **12.8g.** The figures show that there would be multiple access points and routes used by construction traffic on both sides of the rail corridor.

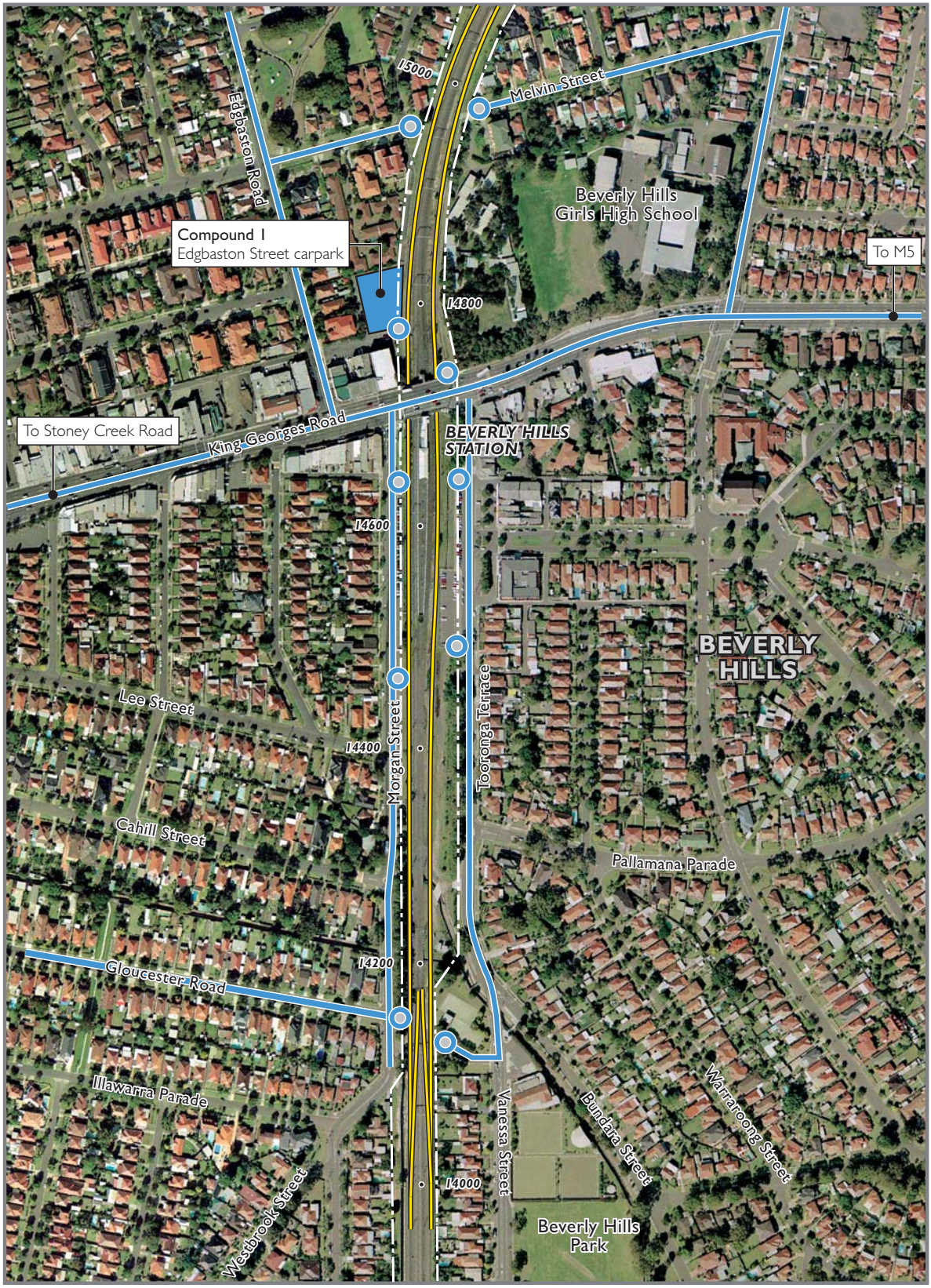


Figure 12.8a **Construction compounds and rail corridor access**

Proposal work
2008 Revesby turnback work
Limit of works
19600 • Metres from Central Station
Haulage route
Access/egress
Construction compounds

Indicative and subject to detailed design


0 200

Figure 12.8b **Construction compounds and rail corridor access**

Proposal work

2008 Revesby turnback work

Limit of works

19600 • Metres from Central Station

Haulage route

Access/egress

Construction compounds

Indicative and subject to detailed design


0 200

Figure 12.8c **Construction compounds and rail corridor access**

Proposal work
2008 Revesby turnback work
Limit of works
19600 • Metres from Central Station
Haulage route
Access/egress
Construction compounds

Indicative and subject to detailed design


Figure 12.8d **Construction compounds and rail corridor access**

Proposal work
2008 Revesby turnback work
Limit of works
19600 • Metres from Central Station
Haulage route
Access/egress
Construction compounds

Indicative and subject to detailed design


0 200

Figure 12.8e **Construction compounds and rail corridor access**

Proposal work
2008 Revesby turnback work

Limit of works
19600 • Metres from Central Station

Haulage route
Access/egress
Construction compounds

Indicative and subject to detailed design

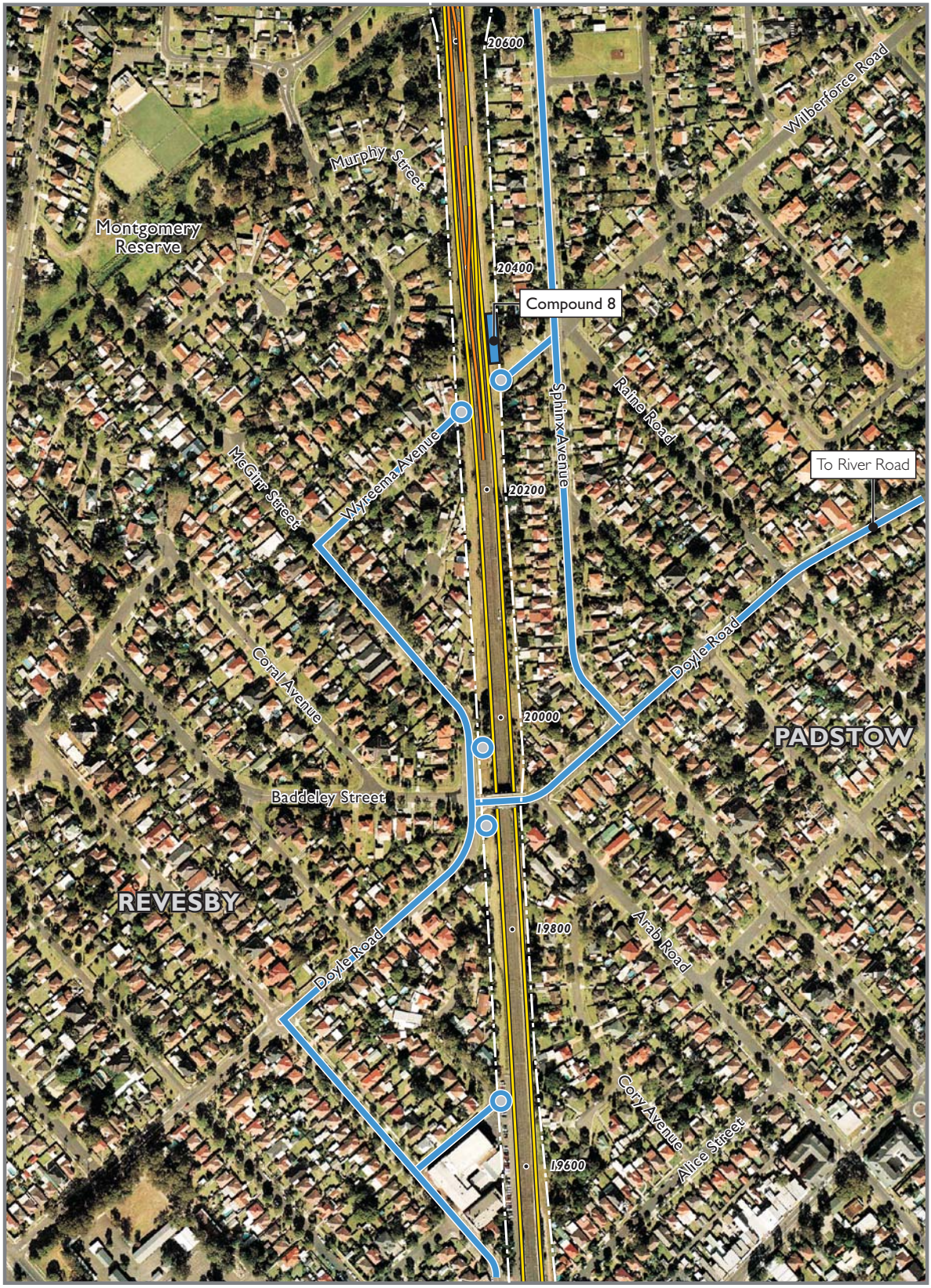


Figure 12.8f **Construction compounds and rail corridor access**


Figure 12.8g **Construction compounds and rail corridor access**

Collector roads or minor arterials within the study area were identified as routes most suitable to accommodate truck movements to the designated B-double route network. The B-double routes include:

- M5 Motorway and Milperra Road;
- King Georges Road;
- Stoney Creek Road; and
- Davies Road.

Widening the corridor would involve the excavation of a significant volume of material. It has been assumed for the purposes of traffic forecasting that all excavated material would be removed from the site. The total volume of excavated material to be removed would be approximately 290,000 cubic metres. In addition, it has been assumed that fill material for embankment works would be transported to the site. The total volume of fill required for the works is approximately 250,000 cubic metres. An estimate of excavated and fill material by access point is shown in **Table 12.5**, representing the potential construction truck traffic associated with the earthworks phase of the Proposal. However, if the excavated material is found to be suitable as fill, it is likely that the total amount of traffic would be considerably reduced and therefore the figures shown in the Table would be a worst case scenario.

The transportation of excavated material and fill to and from the site would be undertaken during a 5.5 day working week and by an average 20 tonne truck load, although it is likely that a mix of 15, 20 and 26 tonne trucks would be used. The estimated average daily truck trip rates could vary considerably. Similarly, there may be periods of inactivity. Overall, the construction traffic impact would be evenly distributed throughout the entire study area. The volumes and timeframes detailed are estimates based on the current level of concept design and preliminary construction programming and are subject to change as detailed design proceeds.

The extent of staff parking would depend on the construction methodology employed. Staff would generally access the site before the morning and evening peak periods and are unlikely to have an adverse traffic impact. Staff would generally use haulage routes shown in **Figures 12.8a** to **12.8g** to access each construction access point. Construction staff would not normally be permitted to use commuter parking spaces on a routine basis.

## 12.3 Impacts during operation

### 12.3.1 Road network changes

The future road hierarchy resulting from the operation of the Proposal is unlikely to vary significantly from the existing situation. Beverly Hills and Padstow stations have good accessibility from the major arterials of King Georges Road and Davies Road respectively. Narwee, Riverwood, Padstow and Revesby stations have good access from minor arterials, including Broad Arrow Road, Belmore Road, Memorial Road and The River Road.

## Table 12.5 Truck movements related to site works

| Access Point | Description (chainage/location) | Removal of excavated material ($m^3$) | Imported fill ($m^3$) | Total materials ($m^3$) | Total trucks required | Construction period (months) | Range of truck movements per day |
|---|---|---|---|---|---|---|---|
| 512 | 14.120 Up – Vanessa Street | 1,000 | 1,700 | 2,700 | 338 | 15 | 5–40 |
| 511 | 14.140 Down – Morgan Street | 1,000 | 1,100 | 2,100 | 258 | 15 | 5–40 |
| 510 | 14.250 Down – Morgan Street | 2,300 | 1,000 | 3,300 | 413 | 15 | 5–40 |
| 509 | 14.280 Up – Tooronga Terrace | 900 | 2,900 | 3,800 | 475 | 17 | 5–40 |
| 508 | 14.460 Down – Morgan Street | 8,200 | 1,900 | 10,100 | 1,263 | 17 | 4–40 |
| 507 | 14.480 Up – Tooronga Terrace | 1,700 | 9,000 | 10,700 | 1,331 | 17 | 3–40 |
| 506 | 14.650 Up – Tooronga Terrace | 14,400 | 1,000 | 15,400 | 1,923 | 17 | 5–40 |
| 505 | 14.660 Down – Morgan Street | 1,000 | 1,500 | 2,500 | 313 | 15 | 5–40 |
| 504 | 14.740 Up – King Georges Road | 1,000 | 2,200 | 3,200 | 400 | 15 | 5–40 |
| 503 | 14.790 Down – Project office car park | 9,000 | 1,000 | 19,000 | 1,246 | 15 | 4–40 |
| 502 | 14.930 Down – Melvin Street South | 1,000 | 3,900 | 4,900 | 609 | 17 | 5–40 |
| 501 | 14.960 Up – Melvin Street North | 12,700 | 1,600 | 14,300 | 1,788 | 17 | 5–40 |
| 414 | 15.250 Down – Bryant Street | 3,400 | 10,600 | 14,000 | 1,750 | 9 | 8–40 |
| 413 | 15.310 Up – Wiruna Crescent | 6,700 | 11,100 | 17,800 | 2,225 | 9 | 11–40 |
| 412 | 15.520 Down – Bryant Street | 1,300 | 1,000 | 2,300 | 293 | 9 | 5–40 |
| 411 | 15.520 Up – Broadmeadow Road | 1,900 | 1,000 | 2,900 | 363 | 9 | 5–40 |
| 410 | 15.570 Down – Bryant Street | 1,000 | 1,000 | 2,000 | 250 | 9 | 5–40 |
| 409 | 15.560 Up – Broadmeadow Road | 1,000 | 1,000 | 2,000 | 250 | 9 | 5–40 |
| 408 | 15.590 Up – Hannans Road | 1,000 | 4,000 | 5,000 | 625 | 9 | 5–40 |
| 407 | 15.620 Down – Broadmeadow Road | 1,000 | 1,000 | 2,000 | 250 | 9 | 5–40 |
| 406 | 15.680 Down – Mercury Road | 500 | 1,000 | 1,500 | 188 | 9 | 5–40 |

| Access Point | Description (chainage/location) | Removal of excavated material ($m^3$) | Imported fill ($m^3$) | Total materials ($m^3$) | Total trucks required | Construction period (months) | Range of truck movements per day |
|---|---|---|---|---|---|---|---|
| 405 | 15.680 Up – Hannans Road | 1,000 | 1,000 | 2,000 | 250 | 9 | 5–40 |
| 404 | 15.610 Down – Broad Arrow Road | 1,000 | 3,600 | 4,600 | 573 | 9 | 5–40 |
| 403 | 15.720 Up – Narwee Station Car Park | 1,000 | 2,700 | 3,700 | 459 | 9 | 5–40 |
| 402 | 15.730 Down – Fisher Place | 1,000 | 1,700 | 2,700 | 337 | 9 | 5–40 |
| 401 | 15.890 Up – Hannans Road | 5,200 | 1,000 | 6,200 | 775 | 9 | 4–40 |
| 316 | 16.025 Down – Narwee Avenue | 16,600 | 2,700 | 19,300 | 2,413 | 9 | 5–40 |
| 315 | 16.100 Up – Hannans Road | 500 | 1,300 | 1,800 | 225 | 9 | 5–40 |
| 314 | 16.345 Up – Karine Street | 4,300 | 1,800 | 6,100 | 763 | 9 | 4–40 |
| 313 | 16.370 Down – Yardley Avenue | 1,000 | 3,500 | 4,500 | 569 | 9 | 5–40 |
| 312 | 16.775 Up – Bonds Road | 600 | 11,000 | 11,600 | 1,448 | 6 | 9–40 |
| 311 | 16.785 Down – Bonds Road | 1,000 | 5,000 | 6,000 | 750 | 6 | 4–40 |
| 310 | 16.815 Down - Bonds Road | 1,000 | 3,300 | 4,300 | 538 | 6 | 3–40 |
| 309 | 16.885 Up – Josephine Street | 1,500 | 5,100 | 6,600 | 831 | 6 | 6–40 |
| 308 | 17.020 Down – Broad Arrow Road | 1,500 | 1,400 | 2,900 | 363 | 11 | 5–40 |
| 307 | 17.135 Up – Coleridge Road | 7,100 | 2,900 | 10,000 | 1,250 | 11 | 5–40 |
| 306 | 17.480 Down – Thurlow Street | 7,500 | 1,800 | 9,300 | 1,163 | 11 | 5–40 |
| 305 | 17.579 Up – William Street | 2,000 | 5,200 | 7.200 | 906 | 11 | 3–40 |
| 304 | 17.820 Down – Webb Street | 1,000 | 4,500 | 5,500 | 684 | 11 | 2–40 |
| 303 | 17.978 Up – Lillian Road | 2,000 | 1,600 | 3,600 | 456 | 11 | 2–40 |
| 302 | 18.070 Down – Webb Street | 3,000 | 1,400 | 4,400 | 549 | 11 | 2–40 |
| 301 | 18.150 Down – Webb Street | 1,900 | 800 | 2,700 | 338 | 11 | 1–40 |
| 204 | 18.320 Up – Lillian Road | 500 | 7,600 | 8,100 | 1,013 | 11 | 3–20 |
| 203 | 18.350 Down – Webb Street | 1,000 | 5,400 | 6,400 | 800 | 11 | 3–20 |

| Access Point | Description (chainage/location) | Removal of excavated material ($m^3$) | Imported fill ($m^3$) | Total materials ($m^3$) | Total trucks required | Construction period (months) | Range of truck movements per day |
|---|---|---|---|---|---|---|---|
| 202 | 18.610 Down – Meagher Avenue | 3,500 | 14,200 | 17,700 | 2,221 | 15 | 4–40 |
| 113 | 19.180 Up – Bank Street | 5,300 | 8,000 | 13,300 | 1653 | 7 | 10–40 |
| 112 | 19.190 Down – Howard Street | 22,100 | 5,700 | 27,800 | 3,474 | 7 | 24–40 |
| 111 | 19.450 Up – Alice Street | 3,400 | 5,000 | 8,400 | 1,048 | 7 | 6–40 |
| 110 | 19.450 Down – Howard Street | 73,200 | 2,400 | 75,600 | 9,450 | 7 | 8–40 |
| 109 | 19.650 Down – Crusade Avenue | 2,000 | 4,000 | 6,000 | 750 | 7 | 4–40 |
| 108 | 19.880 Down – Doyle Road | 4,000 | 1,300 | 5,300 | 663 | 10 | 3–40 |
| 107 | 19,950 Down – Doyle Road | 9,200 | 5,000 | 14,200 | 1,775 | 10 | 8–40 |
| 106 | 20.290 Up – Wilberforce Road | 11,500 | 10,600 | 22,100 | 2,760 | 10 | 12–40 |
| 105 | 20.270 Down – Wyreema Road | 1,700 | 28,300 | 30,000 | 3,754 | 10 | 15–40 |
| 104 | 21.020 Down – Blamey Street | 6,900 | 10,400 | 17,300 | 2,163 | 10 | 9–40 |
| 103 | 21.750 Up – The River Road | 1,400 | 5,200 | 6,600 | 825 | 10 | 3–40 |
| 102 | 21.220 Up – Polo Street | 6,300 | 4,900 | 11,200 | 1,391 | 10 | 6–40 |
| 101 | 21.220 Down – Polo Street | 5,500 | 6,200 | 11,700 | 1,463 | 10 | 6–40 |
| **Total (approximate)** | | **290,200** | **247,900** | **539.100** | **67,382** | **-** | **-** |

Note: This table is indicative and the volumes shown are subject to further detailed investigations. If larger trucks are used, the number of movements will be substantially reduced.

The Proposal involves the widening and replacement of existing under and overbridges and would have no impact on the regional or local road network.

### 12.3.2 Pedestrian and cyclist access

The Proposal would not permanently affect pedestrian or cycle access throughout the study area. Pedestrian access to Narwee station would be improved and all pedestrian footpaths associated with the bridge and/or road construction would be enhanced according to current planning standards.

### 12.3.3 Vehicle movements

The Proposal would generate additional use of the East Hills Line by providing increased capacity to accommodate increasing demand and a more reliable service attracting greater patronage. This may result in additional local traffic movement in order to provide access to the stations for an increasing number of passengers. This would be influenced by the level of bus servicing. However, these trips would, for the most part, be substitutes for the longer road-based trips that would have been made if the new services along the rail corridor had not been available. While improved rail services can be expected to result in greater demand for car parking facilities at the stations, any other impacts would not be significant and wider community benefits would result from the anticipated modal shift.

### 12.3.4 Buses and taxis

There would be no direct impact on bus routes from the operation of the Proposal although increased rail patronage could be expected to lead in increased demand for bus services at the stations along the corridor. There would be minor changes to the location of bus stops at some stations.

### 12.3.5 Commuter parking

The construction and subsequent operation of the Proposal would have an impact on existing car parking provision at the stations between Kingsgrove and Revesby. In some cases, parking is provided within the rail corridor and the addition of the two new tracks and their associated works would permanently remove a proportion of current provision. Construction activities would also affect the availability of parking spaces at a number of locations as described in **Section 12.2.5.** Car parking areas used for construction activities would be reinstated on completion of the Proposal and in some cases the layout of the existing parking areas would be reconfigured to accommodate changes resulting from the widening of the active rail corridor and the location of new and modified structures.

Sites are being investigated for additional permanent parking adjacent to the stations to replace losses resulting from the Proposal. These include reconfigurations of existing parking areas, extensions where RailCorp land is available adjacent to the rail corridor and the use of areas of land suitable for parking use but either vacant or underused. These require consultation with stakeholders and agreements would be required prior to their availability being confirmed.

***Beverly Hills***

A total of 85 unrestricted parking spaces is currently available in Tooronga Terrace to the north of the rail corridor and 62 spaces to the south in Morgan Street. The proposed works in this area would result in the loss of approximately 27 spaces along Tooronga Terrace. These spaces could be replaced either to the east of the current Tooronga Terrace

parking area or to the east of the parking area in Morgan Street as shown on **Figure 12.9.** Both these options would be subject to possible amendment due to construction issues and land owner agreement.

***Narwee***

Commuter parking at Narwee is currently provided on the northern side of the railway with 83 unrestricted spaces located in an off-street area adjacent to Hannans Road. The proposed works in this area require a new retaining wall on the northern side reducing the space available for parking. The parking area could be reconfigured to allow part angled and part parallel parking for 59 spaces resulting in a potential loss of 24 spaces.

It is proposed therefore to extend the parking area westwards into the open space reserve as shown on **Figure 12.10**, subject to landowner agreement. This would result in no net loss of parking at Narwee Station and could be achieved with a minimal loss of trees located in the reserve. If the use of this area for commuter parking is not acceptable, a loss of 24 spaces at the station would result.

***Riverwood***

Commuter parking adjacent to Riverwood Station is currently provided on both sides of the rail corridor with 54 unrestricted parking spaces on William Road and 20 on Morotai Avenue. Eighteen unrestricted spaces are provided to the south of the station on Thurlow Street.

The Proposal would include a new retaining wall on the northern side of the existing tracks resulting in the narrowing of the space available for parking in Morotai Avenue. The existing parking area could be reconfigured subject to landowner agreement with no net loss of parking resulting. The parking areas are shown on **Figure 12.11.**

***Padstow***

A total of 467 commuter car parking spaces is available adjacent to Padstow Station. The majority are available off-street to the south of the station. Some off-street roadside parking is also available to the north of the rail corridor. Parking availability at Padstow Station comprises:

- 300 spaces in the purpose-built multi-level car park to the south east of the station;
- 37 spaces off Howard Road, including 17 spaces on the access to the multi-storey car park and 20 off-street car spaces immediately south and east of the station;
- 55 off-street spaces south west of the station adjacent to Padstow RSL off Howard Road/Crusade Avenue; and
- 75 spaces north of the station in Banks Street.

The Proposal would require the construction of retaining walls on both sides of the existing tracks narrowing the space available for parking and leading to a potential loss of 92 spaces, including:

- 55 off-street spaces south west of the rail corridor adjacent to Padstow RSL off Howard Road; and


Figure 12.9 **Parking adjacent to Beverly Hills Station**

Indicative and subject to detailed design


Figure 12.10 **Parking adjacent to Narwee Station**

Indicative and subject to detailed design


Figure 12.11 **Parking adjacent to Riverwood station**

Indicative and subject to detailed design

- 37 spaces south east of the station off Howard Road comprising 17 spaces on the multi-storey car park access road and 20 off-street spaces immediately to the south and east of the station; and

Options to locate replacement parking would be investigated further in consultation with the land owners, RailCorp, Bankstown City Council and the Ministry of Transport. **Figure 12.12** shows the location of the affected parking areas. This investigation would seek to replace the lost commuter car parking spaces.

***Revesby***
Parking at Revesby Station has been modified during the works associated with the Turnback project. Some 32 spaces on the south east side of the station in Blamey Street would be removed during the works for the Proposal to allow a retaining wall to be built along the southern side of the new Down Main. In addition, 51 parking spaces on the south west side of the station are located within the Turnback work area which would ultimately be used by the Proposal for trackworks and the new substation. A potential loss of 83 parking spaces would therefore result. These are all located on the southern side of the rail corridor with no loss on the northern side. The parking areas affected by the Proposal are shown on **Figure 12.13**.

RailCorp and Ministry of Transport are currently investigating the provision of further commuter car parking at Revesby in line with the commitments in the Urban Transport Statement. This also incorporates investigation of the upgrading of the bus interchange and access arrangements for the Revesby Station precinct consistent with recent Government commitments to improve bus interchange facilities at Revesby.

A strategy for the development of Revesby commercial centre is currently being formulated by the Ministry of Transport and Bankstown City Council. This will incorporate proposals for the expansion of Revesby Workers Club, improved integration of public transport facilities to complement the improvements at the station, increased provision of car parking and improvements to pedestrian facilities and the public domain.

The proposals which will be included in the strategy are at various stages of development requiring a high level of stakeholder involvement. The strategy needs to be resolved prior to decisions being made concerning the extent and location of future commuter parking in the area.

## 12.4 Management measures

### 12.4.1 Traffic management measures

The following measures have been adopted in order to control, manage and minimise the potential impacts on road network operations, bus services, the movement of pedestrians and cyclists and access to properties surrounding the rail network during the construction period. The assessment of traffic and transport impacts has confirmed the requirement to construct the overbridges individually to minimise the overall cumulative traffic impact. Mitigation measures to minimise any adverse traffic impacts would include:


Figure 12.12 **Parking adjacent to Padstow Station**


Figure 12.13 **Parking adjacent to Revesby Station**

Indicative and subject to detailed design

- a community liaison group, project information line and complaints management system set up for the duration of the detailed design and construction period to address community issues and provide updates on project status and progress;

- provision of timely and accurate information to the community, prior to and during construction, to ensure that road users, public transport operators, public transport users, businesses and residents, are informed regularly on changed conditions including likely disruptions to access, bridge and road closures and parking losses. Specific access measures to minimise disruption to access and parking would be detailed in the Traffic Management Plan and relevant site-based environmental control maps;

- a specific communications strategy would be developed to advise affected commuters about disruptions to commuter parking facilities during the construction period. Investigations into alternative locations for commuter parking are currently underway and would be detailed in the strategy.

- appropriate traffic management, including temporary speed restrictions, precautionary signs, illuminated warning devices, manual and/or electronic traffic control and provision of temporary barriers and markers, to control work areas and minimise delays. Managed traffic control arrangements would also be necessary during periods of reduced lane flow. Construction traffic impacts would be managed in accordance with a two-level hierarchy of plans;

- site-specific traffic management plans developed for complex construction traffic and transport arrangements during the construction of a number of road bridges along the corridor. Emergency services and relevant councils would be consulted as part of the preparation of these plans. The plans would include the following matters that are outlined in the *Procedures for use in the Preparation of a Traffic Management Plan* (RTA 2001*):*

  - description or detailed plan of proposed measures;
  - identification and assessment of impact of proposed measures;
  - assessment of public transport services affected;
  - details of provision made for emergency vehicles, heavy vehicles, cyclists and pedestrians; and
  - measures to ameliorate the expected impacts.

  Section 2 of *Australian Standard 1742.3-2002 Manual of Uniform Traffic Control Devices, Part 3: Traffic Control Devices for Works on Roads* details planning procedures for works involving complex traffic arrangements and staging. These procedures and guidelines would be considered and incorporated in the traffic management reports where relevant;

- traffic control plans for all works proposed to occur in the road or that would affect trafficable areas. The plans would be completed in accordance with the RTA *Traffic Control Devices at Works on Roads guidelines* and the *Australian Standard 1742.3 Manual of Uniform Traffic Control Devices, Part 3: Traffic Control Devices for Works on Roads;*

- timing of night works would be scheduled to take account of closures of the M5 East Motorway for routine maintenance;
- establishment of safe access points to work areas from the adjacent road network including safety measures such as barriers, maintaining sight distance requirements and signage and the provision of traffic management measures such as those described above; and
- disruptive works, including road closures associated with the underbridges scheduled generally to take place outside peak commuting hours and peak weekend travel times.

In addition, specific management measures would be required during the construction of the overbridges and the associated road closures. The following site-specific temporary traffic management measures would be required to minimise the impact of road closures on the entire road network throughout the study area, and would need to be incorporated in the site-specific traffic management plans.

***King Georges Road***

- closure of King Georges Road southbound carriageway;
- use of the existing northbound carriageway and median to accommodate two lanes of traffic northbound and two lanes of traffic southbound;
- prohibition of right-hand turns from King Georges Road northbound carriageway to Morgan Street and Tooronga Terrace;
- prohibition of all turning movements from Morgan Street and Tooronga Terrace into King Georges Road northbound;
- prohibition of left-hand turns from King Georges Road into Morgan Street;
- conversion of the left turn northbound slip lane into Broad Arrow Road into a through and left turn lane and provision of a right turn lane from King Georges Road into Ponyara Road;
- prohibition of right-hand turns from King Georges Road into Edgbaston Road;
- prohibition of left-hand turns from Edgbaston Road into King Georges Road;
- establishment of diversion routes for local access using Ponyara Road and Pallamana Road to the north and Stoney Creek Road and Gloucester Street to the south of the rail corridor; and
- provision of advisory bridge closure and alternative directional signs for regional traffic to use Stoney Creek Road, Bexley Road, Canterbury Road and Davies Road as alternatives routes during the construction period.

Further analysis and discussion of the measures proposed to minimise traffic impacts during construction is included in **Technical Paper 5** in Volume Two.

***Memorial Drive***

- closure of Memorial Drive north of the railway south of Stephanie Road/Banks Street intersection to all traffic (allowing southbound traffic to be rerouted via Banks Street and Stephanie Road);
- closure of Memorial Drive south of the railway at Howard Road creating a Tee intersection at Howard Road/Padstow Parade; and
- provision of advisory bridge closure and alternative directional signs for Doyle Road and Davies Road.

***Belmore Road***

- closure of the southbound carriageway of Belmore Road, between Thurlow Street and William Road while retaining access to the car park and William Road;
- use of the northbound carriageway to accommodate two lanes of traffic, one in each direction;
- switch traffic to the eastern bridge on completion operating with one lane in each direction;
- closure of the north bound carriageway between Thurlow Street and William Road while maintaining access to the car park and William Road; and
- provision of advisory bridge closure and alternative directional signs at Belmore Road/Josephine Street and Belmore Road/Thurlow Street to guide traffic to Bonds Road.

***Davies Road***

- closure of the northbound carriageway of Davies Road;
- use of the southbound carriageway (including the indented bus bay)and footpath to accommodate four lanes of traffic, two in each direction;
- prohibition of right-hand turns from Davies Road northbound carriageway to Bridge Street and Meagher Avenue;
- prohibition of right-hand turns from Bridge Street and Meagher Avenue into Davies Road northbound;
- provision of advisory bridge closure and alternative directional signs for regional traffic to use Henry Lawson Drive, King Georges Road and Canterbury Roads during the construction period; and,
- communication of right turn prohibitions on Bridge Street and Meagher Avenue and information related to alternative routes.

***Doyle Road***

- closure of Doyle Road south of Sphinx Roundabout (for regional traffic);
- closure of Doyle Road south of Arab Street intersection (for local traffic);
- closure of Baddeley Road south of the railway crossing; and,
- provision of advisory bridge closure and alternative directional signs for The River Road and Memorial Road.

### 12.4.2 Corridor management

The following management measures would be implemented along the corridor to minimise the impact of reduced commuter parking, effects on bus and taxi operations, and impacts on pedestrians and cyclist movement and access.

***Commuter Parking***

- undertake feasibility studies into sites identified to accommodate project operations and long-term parking demand and develop these for parking prior to displacing parking associated with construction;
- investigate the feasibility of using the Edgbaston Council Car Park for commuter car parking for the duration of construction in the vicinity of Beverly Hills Station;
- develop station-specific *Voluntary Behavioral Change* strategies that would include targeted letter-box drops, providing information related to alternative modes of access choices to a specific station. Residents would be offered the opportunity for face-to-face or phone conversations to discuss and identify access constraints or frustrations and then — building on the residents own ideas — work with them to find a solution; and
- encourage the NSW Taxi Council to inform taxi operators (particularly Legion and St George Taxi operators) of the shortfall in parking spaces and potential demand for increased taxi use.

***Bus operation***

- consider constructing Belmore overbridge in two sections leaving one lane of traffic open for two way public transport and emergency services operations and the pedestrian footpath for pedestrians during normal working hours with night time closures;
- temporarily relocate the existing Padstow bus stop located on Howard Road further west (and west of Padstow Parade);
- ensure that any on-street parking that may affect the maneuverability of buses (particularly close to intersections or other narrow points) is removed during the construction period;
- prohibit temporary parking or stopping of any construction vehicles on temporary bus routes during bridge construction periods; and

- provide suitable notice to bus operators of any changes to the construction program to ensure that operators have adequate time to inform patrons of changes to bus operating patterns; and

***Taxi operation***

- work closely with the NSW Taxi Council to inform taxi operators and owners of the proposed changes and anticipated traffic impact of various stages of the construction program (including providing input to the publication *Meter*); and
- include taxi as an option in the station-specific *Voluntary Behavioral Change* strategies.

***Pedestrian and cyclist access***

- provide access during the closure of Memorial Drive and Belmore Road to ensure that pedestrian movement between the development on both sides of the rail corridor is retained (refer to **Section 12.2.4**);
- provide access across Revesby Station and to all operating platforms during construction of the extension to the overhead concourse; and
- ensure that adequate pedestrian directional signs are placed at appropriate locations to guide pedestrians along alternative routes.