



Revesby Commuter Car Park Extension

Traffic and Transport Report

Prepared for Transport for NSW

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on behalf of Beca Limited

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Executive Summary

The Revesby Commuter Car Park Extension is a proposal to build two to three additional floors above the existing Revesby multi-storey car park (MSCP), adding 385 new commuter car parking spaces to serve the nearby Revesby Station. The proposal would result in a total of 1,099 car parking spaces within Revesby MSCP, of which 964 of those spaces will be designated as all-day commuter car parking spaces, and the remaining 135 spaces as short-term 3-hour parking.

The proposal provides for eight new accessible parking spaces to be provided within Revesby MSCP. To future-proof the car park for the transition to electric vehicles, there is also the provision in power supply for up to 20 charging stations and cable containment for up to 58 spaces.

Additional bike racks are also planned for installation near the existing bike racks on Abel Reserve, north of Revesby station. This would replace the existing non-compliant bike rack outside the station and include a shelter for the new bike racks.

These proposed works would provide public transport users with more convenient access to Revesby Station. It would cater to the high demand for commuter car parking which was found to be exceeding available supply.

The operation of the proposed MSCP extension is not expected to result in any major impacts on the surrounding area, as there would be no change to the existing footprint of the Revesby MSCP structure. The additional trips generated by the increase size of the MSCP would have a minimal impact on the local road network, as the number of trips generated is relatively small compared to existing traffic volumes so it can be accommodated within the existing spare capacity on the road network.

Construction of the proposed MSCP is expected to take up to 12 months, during which the top level of the MSCP will be temporarily unavailable, resulting in the temporary loss of 166 commuter car parking spaces would be temporarily lost. In addition, parts of Simmons Street between Winders Lane and Haydock Lane would be closed, resulting in the temporary loss of 7 short-term (1 hour) on-street car parking spaces, and some pedestrian and cyclist connectivity. These closures are necessary for the established of construction work zones.

There will also be intermittent closures of Simmons Street itself, including the Simmons Street entrance of the MSCP. This would require vehicles accessing the Revesby MSCP to use alternative entrances and exits on The River Road and Haydock Lane. These closures would be infrequent and only last up to two days each time. Winders Lane and Haydock Lane may also be subject to intermittent closures, affecting property access for businesses. All access restrictions would be done in consultation with affected businesses.

Trucks accessing the MSCP construction site would be required to approach from the north via The River Road, turn left into Bransgrove Road then travel via Winders Lane to enter the site at Simmons Street. Trucks leaving the site would exit via Haydock Lane and turn left into The River Road to head back north. This route has been chosen to avoid Marco Avenue to minimise their impacts on the town centre. Up to 50 trucks per day is expected during concrete pours, which would be spread evenly throughout the day resulting in around six to seven trucks per hour.

1 Introduction

1.1 Project background

Transport for NSW's (TfNSW) Commuter Car Park Program aims to provide public transport users more convenient access to public transport at key transport interchanges. Since 2011, more than 10,000 new commuter car parking spaces have been delivered across Sydney, with around 8,000 additional spaces on the way.

As part of this program, the Revesby Commuter Car Park Extension proposal is to construct additional floors over the existing multi-storey car park (MSCP) near Revesby Station. The proposed project will add three levels on the eastern side of the MSCP and two levels on the western side. These additional levels will provide approximately 385 more commuter car parking spaces to reach a total of approximately 1,099 spaces within the MSCP, of which 964 would be all-day parking spaces available to commuters, with the remaining 135 spaces being short-term 3-hour parking.

1.2 Purpose of this assessment

This report forms part of the environmental assessment documents to support the construction and operation of the Revesby Commuter Car Park Extension proposal.

A Traffic, Transport and Access Impact Assessment (TT&AIA) was prepared for the proposal by FutureRail in March 2020 for the purpose of input into the definition design required for business case documentation, which identified traffic & transport issues and mitigations. This report builds upon that assessment with additional analysis and traffic modelling undertaken subsequent to the TT&AIA. A copy of the TT&AIA is included in Appendix C.

2 Existing environment

2.1 Revesby Station

Revesby Station is located south-west of Sydney in the City of Canterbury-Bankstown LGA, approximately 20 kilometres away from the Sydney Central Business District (CBD). The station serves the suburb of Revesby, consisting mostly of low-density residential buildings and retail businesses concentrated around Revesby Station. The station provides interchange opportunities between trains, buses, bicycle and private vehicles.

2.2 Car parking

The MSCP near Revesby Station currently provides 579 commuter car parking spaces. An additional 135 spaces are also provided within the MSCP for short-term (3-hour) parking, providing parking for the surrounding retail precinct. Unrestricted kerbside parking is available in nearby local streets within walking distance to the station, adding around 120 all-day parking spaces.

A significant number of on street parking and two at-grade short-term car parks are also provided around Revesby Station to serve the surrounding retail precinct, with varying time restrictions. The location of the MSCP and at-grade car parks is shown in Figure 1 below.



Figure 1 Revesby Station and nearby car parks

The TT&AIA indicates that formal all-day car parking spaces are significantly over-subscribed within the MSCP. A site visit conducted in February 2020 showed that the all-day parking spaces were full by 8.05am, leading to illegal parking practices (example shown in Figure 2) and parking overspill on Robb Street, Polo Street and Selems Parade north of the station, and Tarro Avenue, Brett Street and Revesby Place south of the station. Note that these observations occurred before the COVID-19 pandemic had a major impact on

travel patterns within Sydney, more recent observations using aerial imagery indicates that during November 2020 there was still plenty of spare capacity on the roof level of the MSCP.



Figure 2 Vehicles parked illegally on the roof of the MSCP due to unavailability of parking bays, taken February 2020 at 8.05am. (courtesy of the TT&AIA)

2.3 Rail services

Revesby Station is served by the T8 Airport & South Line, providing train services to Campbelltown and Glenfield towards the west, and Sydney Airport and Sydney CBD towards the east. The number of these services during the AM and PM peak periods is shown in Table 1 and Table 2 below (taken from transportsw.info at 17 November 2020).

Table 1 Revesby Station AM peak period rail services

Hour	To city	From city (then to Macarthur)	Total
5-6am	5	3 (3)	8
6-7am	8	6 (4)	14
7-8am	10	8 (4)	18
8-9am	9	9 (5)	18
AM Peak Total	32	26 (16)	58

Table 2 Revesby Station PM peak period rail services

Hour	To city	From city	Total
3-4pm	8	8 (4)	16
4-5pm	8	7 (4)	15
5-6pm	8	7 (4)	15
6-7pm	8	8 (4)	16
PM Peak Total	32	30 (16)	62

2.4 Bus services

Revesby Station is served by several bus services connecting the station with the local suburban area. Bus stops are located north of the station on Marco Avenue. The station is served by the following bus routes:

- Route 923 operating between Panania and Bankstown via Picnic Street
- Route 924 operating between Bankstown and East Hills via Panania
- Route 926 operating between Bankstown and Revesby Heights
- Route 962 operating between East Hills and Miranda

The number of these services during a typical weekday is shown in Table 3 below (taken from transportnsw.info at 17 November 2020).

NightRide bus route N40 also stops at Revesby Station, operating between East Hills and Town Hall Station in the Sydney CBD. It departs every hour at 1.09am to 5.09am towards East Hills, and at 0.27am to 4.27am towards Town Hall, for a total of 10 services per night on weekdays and weekends.

Additionally, several school buses connect the station to schools in the surrounding area.

Table 3 Revesby Station weekday bus services

Time	Route 923		Route 924		Route 926		Route 962	
	Towards Panania	Towards Bankstown	Towards East Hills	Towards Bankstown	Towards Revesby Heights	Towards Bankstown	Towards East Hills	Towards Miranda
5am to 6am	0	1	0	0	1	0	0	0
6am to 9am	6	6	3	7	3	4	6	6
9am to 4pm	14	16	13	13	7	7	14	15
4pm to 7pm	6	6	7	6	6	6	5	5
7pm to 10pm	6	6	6	6	6	6	2	3
Total	32	35	29	32	23	23	27	29

2.5 Taxi and kiss and ride facilities

A taxi rank is provided south of Revesby Station on the northern side of Blamey Street, with spaces for about six vehicles.

A kiss and ride area is provided south of Revesby Station on the southern side of Blamey Street, with spaces for about three vehicles. No formal kiss and ride area is provided north of the station.

2.6 Bicycle network and facilities

Cycling infrastructure around Revesby Station is very limited, with cycle routes primarily being unmarked, on-road and shared with other vehicles. Marco Avenue is an east/west cycle route, connecting with the off-road cycle network at Virginius Reserve and Little Salt Pan Creek southeast of the station, and running on-road parallel with the rail line towards East Hills Station and Georges River west of the station.

Bicycle racks and bicycle lockers are provided on both sides of the station, shown in Figure 3 below. North of the station these are provided in 3 separate locations in close proximity. The bicycle rack nearest to the northern entrance of the station is non-compliant with Austroads guidelines, as it lies on a gradient which leads to bicycles falling over.

The TT&AIA indicates that demand for bicycle parking both north and south of the station appear to exceed supply, as observed in site visits made in December 2019 and January 2020. Bicycles were observed being chained to fencing south of the station.



Figure 3 Revesby Station bicycle network and facilities

2.7 Pedestrian access

Pedestrian access to Revesby Station is provided via entrances both north and south of the station. Marked pedestrian crossings give pedestrians the right-of-way where key pedestrian access routes cross Selems Parade, Simmons Street, Marco Avenue, Blamey Street and Revesby Place. Signalised pedestrian crossings are also provided on The River Road, a major arterial road with higher traffic volumes.

The station itself is fully accessible with a footbridge and lifts providing access to platforms and both sides of the station.

Pedestrian access between the MSCP and Revesby Station is via two main routes as shown in red on Figure 4 below. Both routes are around 240m long and take approximately three minutes to walk. Pedestrian crossings are provided where these routes intersect with Marco Avenue and Simmons Street.

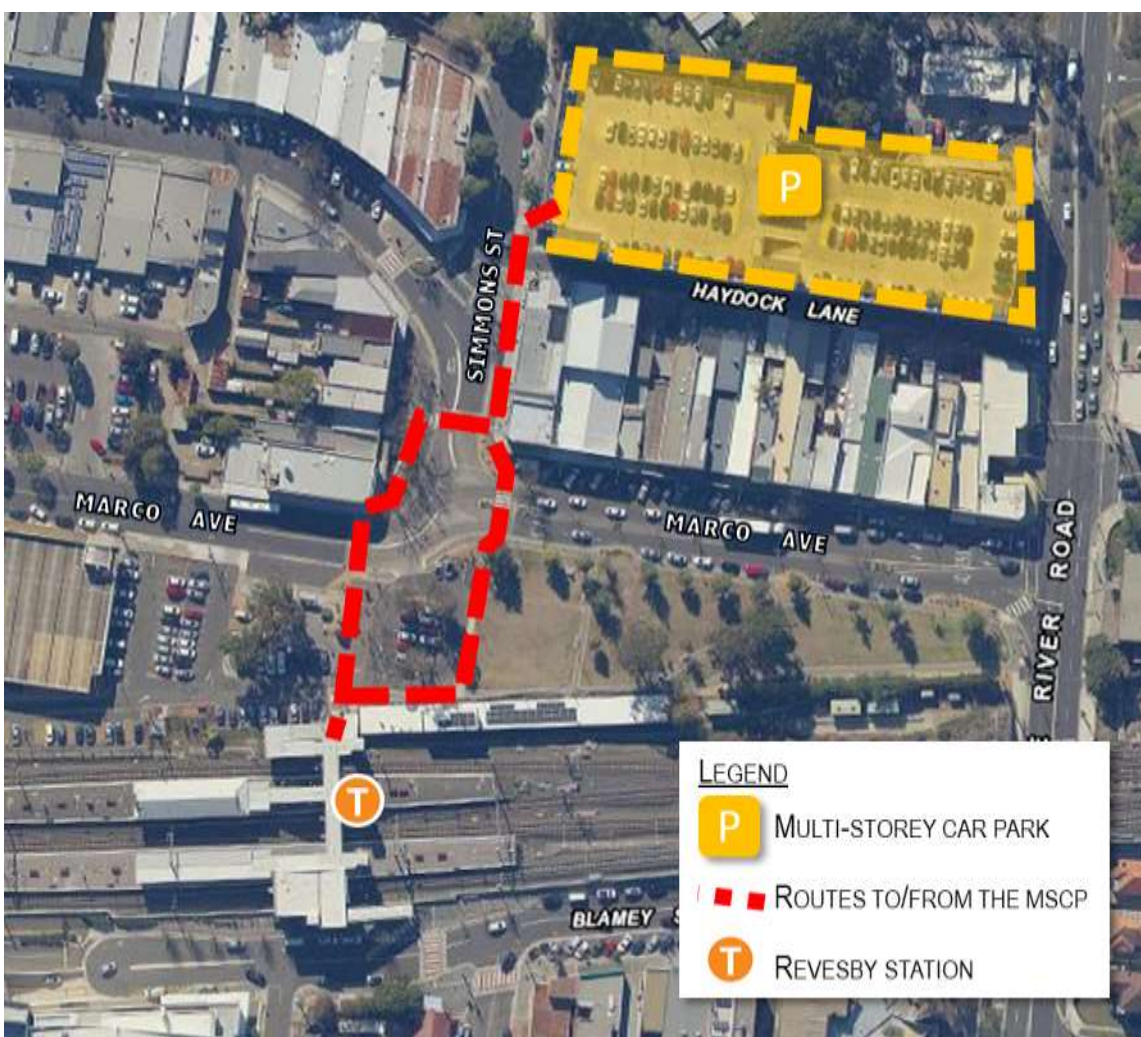


Figure 4 Routes to and from Revesby Station and the MSCP

2.8 Local road network

The major routes on the local road network are The River Road and Marco Avenue. The River Road is a north-south arterial road connecting Revesby to the M5 Motorway to the north and to Henry Lawson Drive to the south. Marco Avenue is an east-west route through Revesby Town Centre which connects with Sphinx Avenue to connect to the east.

The main entrance and exit of the MSCP is on Simmons Street, which connects with Selems Parade and Marco Avenue into the wider local road network. An entrance is also provided on The River Road into the MSCP, for northbound traffic only. The median strip on The River Road blocks southbound traffic from turning right into the entrance, southbound traffic is generally observed to turn right at Bransgrove Road and enter via Simmons Street.

A left-out only exit is provided onto Haydock Lane, from which vehicles are only able to proceed onto The River Road and head northbound.

The major access routes for vehicles entering the MSCP are:

- Route A, from The River Road via Bransgrove Road
- Route B, from west of the MSCP via Marco Avenue or Winders Lane
- Route C, from Sphinx Avenue
- Route D, from Weston Street via The River Road
- Route E, from The River Road south of Weston Street/Uranus Road
- Route F, from Uranus Road via The River Road

From these routes, vehicles have the choice of entering via the Simmons St entrance or The River Road entrance, with vehicles often using Marco Avenue to arrive at their desired entrance.

The major access routes for vehicles exiting the MSCP are:

- Route A, to The River Road north of Bransgrove Road via either Haydock Lane or Marco Avenue
- Route B, to west of the MSCP via Marco Avenue or Selems Parade
- Route E, to The River Road south of Weston Street/Uranus Road
- Route F, to Uranus Road via The River Road

These access routes are shown in Figure 5 and Figure 6 below.

For vehicles exiting the MSCP, the route to Sphinx Avenue (reverse of entry Route C) is not shown as no vehicles were observed using this route. The route to Weston Street via The River Road (reverse of entry Route D) is not also shown because a right-turn ban forbids southbound vehicles on The River Road turning into Weston Street. These vehicles are assumed to travel via Route E instead.

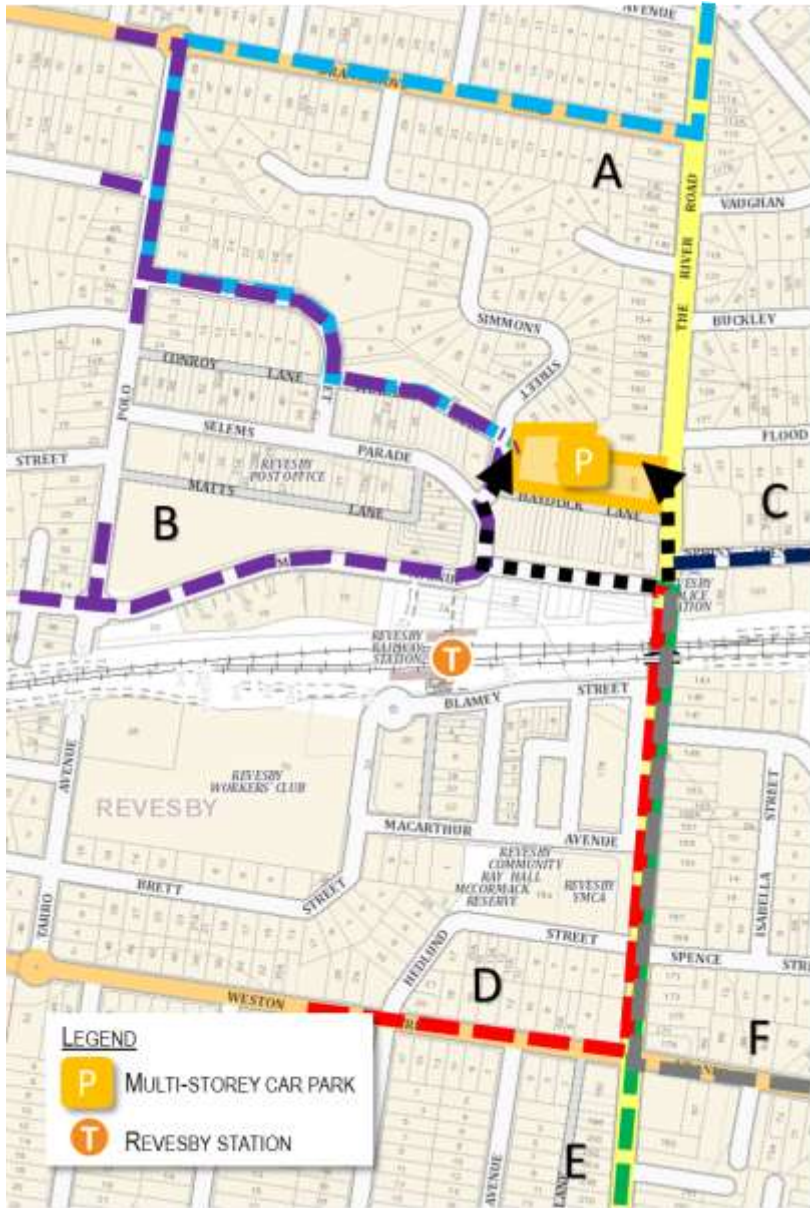


Figure 5 Entrance routes to the MSCP



Figure 6 Exit routes from the MSCP

3 Operational impacts

3.1 Commuter car parking facilities

The proposed MSCP extension would provide an additional 385 commuter car parking spaces, increasing the capacity of parking spaces within the MSCP from 714 to 1,099 spaces. Within the extended MSCP, 964 of those spaces will be designated all-day parking which can be used by commuters. The remaining 135 spaces provide for short-term 3-hour parking (unchanged).

The MSCP extension should be future-proofed for the installation of electric vehicle (EV) charging equipment to accommodate the expected increase in electric vehicle usage. The overall electrical installation (maximum demand calculations) will provision for the necessary power supply for up to five percent of the additional spaces (20 spaces). Additionally, provisions will be made to have sufficient cable containment to enable the installation of EV charging stations for 15% of the additional spaces (58 spaces).

3.2 Accessible car parking facilities

Commuter car parks require a precinct-wide provision of a minimum of two per cent of spaces be reserved for accessible parking as per the *Technical Specification for Design of Commuter Car Parks* (Transport for NSW, March 2019). Since the proposed MSCP extension would provide a total of 964 commuter car parking spaces, 20 of those spaces are required to be accessible car parking spaces. The existing MSCP currently has 12 accessible car parking spaces for commuter car park users, therefore an additional 8 spaces is required.

The 8 new accessible car parking spaces are proposed to be installed within the existing MSCP.

3.3 Traffic demand

3.3.1 Traffic surveys

To inform this assessment, traffic surveys were conducted over three days between 13 to 15 October 2020 (Tuesday to Thursday), between 6am to 9am to capture AM peak traffic data and 4pm to 7pm for the PM peak data. These times aligned with when traffic is expected to be heaviest in the local area as predicted by Google Maps and based on the peak times identified in the TT&AIA. The mean of the traffic volumes and queue lengths across the three days were calculated and used in this analysis.

Traffic surveys were conducted on the following intersections to be assessed, and shown in Figure 7 below:

- The River Road/Bransgrove Road
- The River Road/Sphinx Avenue/Marco Avenue
- The River Road/Blamey Street
- The River Road/MacArthur Avenue
- The River Road/Weston Street/Uranus Road

It should be noted that the COVID-19 pandemic was ongoing during these traffic surveys. Although this may affect the traffic volumes collected, no adjustment was made as the collected traffic volumes were within five per cent of the pre-COVID traffic volumes presented in the TT&AIA, and it is not known how traffic patterns and volumes would ultimately be affected by the pandemic in the longer term.

Except for the ongoing pandemic, no other significant events (such as school holidays or local events) were observed in the local area that would affect traffic patterns. A summary of the collected traffic survey data is provided in Appendix B.

Data from traffic surveys identified an AM peak hour (8am to 9am) and PM peak hour (4.45pm to 5.45pm). These peak hours correspond to the hour where the sum of traffic volumes on all surveyed intersections were at their highest. Traffic data from these peak hours were used to model each intersection.

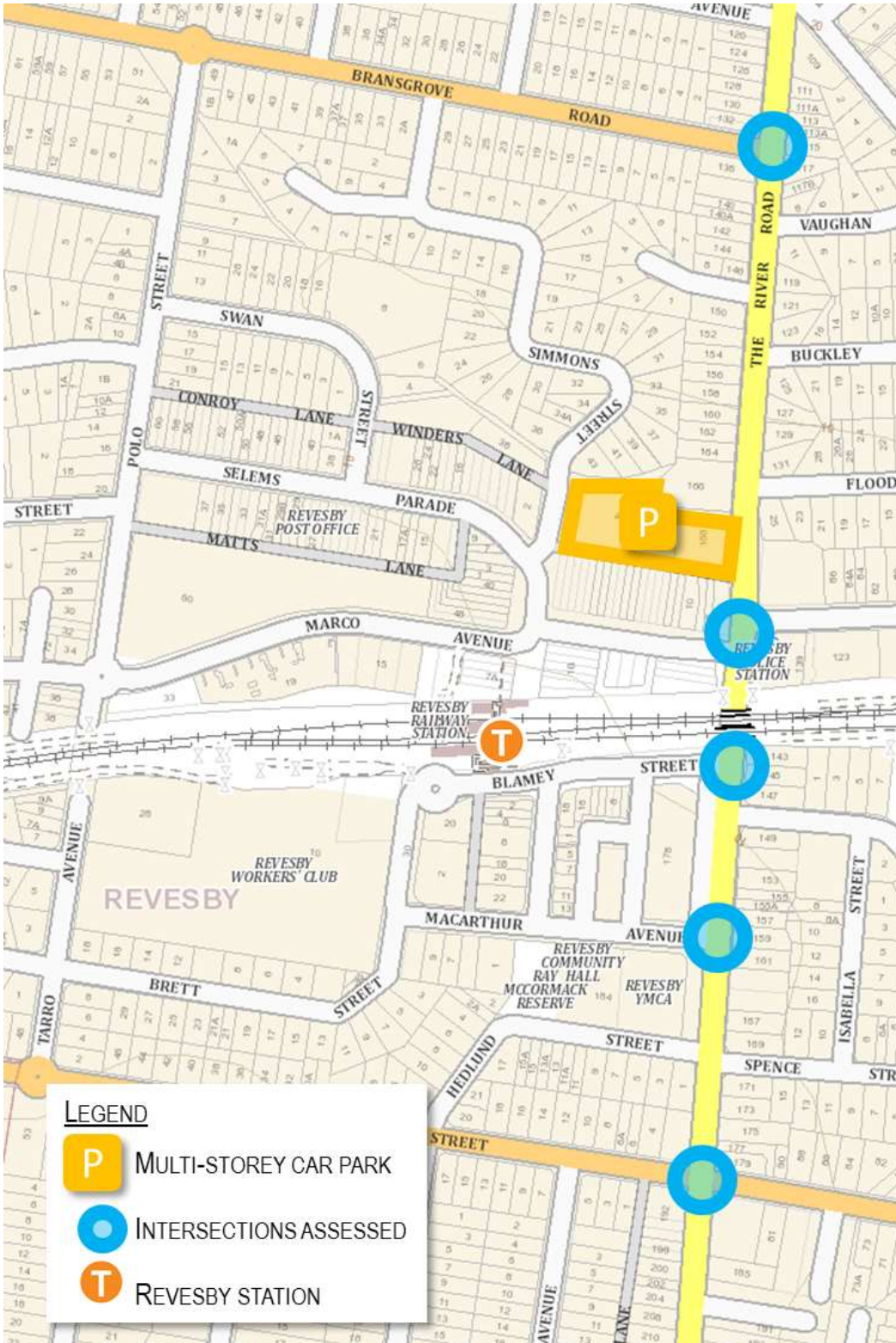


Figure 7 Intersections surveyed for assessment

3.3.2 Traffic distribution

An origin-destination survey of MSCP users was also conducted in the October 2020 traffic survey, with the summary of results shown in Table 4 and Table 5 below.

Table 4 Distribution of AM peak hour traffic entering Revesby MSCP

Revesby MSCP entrance routes	Percentage
A – From north The River Road	38%
B – From west Marco Ave or Polo St	39%
C – From Sphinx Ave	5%
D – From Weston St via The River Road	6%
E – From The River Road south of Weston St/Uranus St	10%
F – From Uranus St via The River Road	2%
Total	100%

Table 5 Distribution of PM peak hour traffic exiting Revesby MSCP

Revesby MSCP exit routes	Percentage
A – To north The River Road	17%
B – To west Marco Ave or Polo St	45%
C – To Sphinx Ave	0%
D – To Weston St via The River Road	0%
E – To The River Road south of Weston St/Uranus St	31%
F – To Uranus St via The River Road	7%
Total	100%

The survey of MSCP users identified that 37 per cent of commuter car park users entering during the AM peak period (6am to 9am) enter the MSCP during the identified AM peak hour of 8am to 9am. Similarly 37 per cent of commuter car park users exiting during the PM peak period (4pm to 7pm) also exited the MSCP during the identified PM peak hour of 4.45pm to 5.45pm.

Of the two Revesby MSCP entrances, the Simmons Street entrance is the most commonly used, with 83 per cent of AM peak hour commuter car park users using this entrance. Similarly, the Simmons Street exit is the most commonly used exit, with 87 per cent of PM peak hour commuter car park users using this exit instead of the Haydock Lane exit.

3.3.3 Traffic generation

The expected impact of increased traffic flows have been assessed using an assumed figure of 393 additional commuter car parking spaces. This is higher than the current proposal for 385 additional spaces, as such no update to the traffic generation and modelling was made, as the performance assessment that follows is expected to represent a worse case scenario.

Based on the above traffic distributions, and the 393 additional commuter car parking spaces assumed, the expected impact of increased traffic flows through the intersections assessed is shown in Figure 8 and Figure 9 below. It should be noted that vehicles using routes A, D, E or F may travel through multiple of the modelled intersections, whilst vehicles using routes A or B may travel through none of the modelled intersections.



Figure 8 Additional trips generated by the proposed Revesby MSCP extension (AM peak hour)



Figure 9 Additional trips generated by the proposed Revesby MSCP extension (PM peak hour)

3.4 Local road network

To assess the impact of the proposed MSCP extension on the local road network, the five surveyed intersections were assessed using SIDRA Intersection 8.0 traffic modelling software.

3.4.1 Base model calibration

The SIDRA intersection models were calibrated against observed operation of the intersection including road geometry, signal settings (taken from video footage) and queue lengths that were observed on the October 2020 traffic surveys. Video footage was also reviewed to assess how each intersection operates and determine signal phasing operation.

During the calibration of the intersection models, significant queuing and lane blockages were identified along The River Road, especially between Marco Avenue and Blamey Street (which are only 60 metres apart). Queues from downstream intersections would often extend into and affect upstream intersections during the identified peak hours. As such, the queue lengths modelled on The River Road / Blamey Street intersection are significantly lower than those observed during traffic surveys as it was not constrained by the capacity of the intersection itself but by the nearby The River Road / Sphinx Avenue / Marco Avenue intersection.

At other intersections modelled, calibration was undertaken which enabled successful validation of results, when compared with observations made on site during the surveys.

3.4.2 Intersection performance

Table 6 presents the performance of modelled intersections before and after the proposed MSCP extension is complete. Performance is indicated by the average delay, level of service (LOS), degree of saturation (DoS) and 95 per cent back of queue distance for both modelled AM and PM peak hours. The full SIDRA modelling results are provided in Appendix A.

The performance of the intersection of **The River Road / Bransgrove Road** is largely unaffected by the proposed MSCP extension, with performance staying at LOS C in the AM peak hour and LOS B in the PM peak hour. The degree of saturation also remains the same at around 0.55, and below the 0.90 threshold where a treatment is recommended by TfNSW's *Traffic Modelling Guidelines* (2013). This is because the direction of peak traffic flows is northbound in the AM peak hour (presumably to access the M5 motorway to the north), and similarly southbound the PM peak hour, whereas the proposed MSCP extension is expected to increase traffic volumes in the opposite directions. As such, there is sufficient spare capacity on this intersection to handle the expected increase in traffic volumes.

Performance on the intersection of **The River Road / Sphinx Avenue / Marco Avenue** is generally poor in both AM and PM peak hours in the existing environment, and would worsen due to the proposed MSCP extension, continuing to perform at LOS D and with the degree of saturation going from around 0.77 to 0.79.

Unlike the Bransgrove Road intersection, the direction of peak traffic coincides with the increase in traffic expected from the proposed MSCP extension. Marco Avenue and The River Road south approach experiences most of the increase in traffic as commuters use this route to access or exit from the MSCP, resulting in longer average delays of around two seconds. Queue lengths on The River Road south approach extend southwards and impact on the nearby Blamey Road intersection, as confirmed in video survey footage of the intersections.

Currently, during both AM and PM peak hours the intersection of **The River Road / Blamey Street** is heavily impacted by queues which extend from the Sphinx/Marco intersection into the north side of this intersection, resulting in queues extending past this intersection further southwards on The River Road and westwards on Blamey Street. The impact of the proposed MSCP in the AM peak hour is expected to further increase this queuing on The River Road south approach by one to two vehicles per cycle. During the PM peak hour, the queuing on The River Road north approach would also increase by two to three vehicles per cycle, potentially extending the queue into and affecting the performance of the Sphinx/Marco intersection to the north.

The intersection of **The River Road / Macarthur Avenue** performs well in both AM and PM peak hours, with sufficient capacity to handle the impact of the proposed MSCP extension, performing at LOS A and degree of saturations at less than 0.50.

The performance of the intersection at **The River Road / Weston Street / Uranus Road** also worsens slightly with the impact of the proposed MSCP extension, however it continues to perform at LOS C for both AM and PM peak hours. Currently, the worst performing approach of this intersection the Weston Street approach, with modelling indicating it is performing with a degree of saturation above 1 on the inner lane for through movements heading eastbound onto Uranus Road (right turn movements from this approach are banned), during both AM and PM peak hours. This approach is expected to receive an additional nine left-turning vehicles from the proposed MSCP extension in the AM peak hour, and no additional traffic in the PM peak hour. Therefore, queue lengths and the degree of saturation worsens slightly for the AM peak hour with no change in the PM peak hour after the completion of the MSCP extension.

Overall, the effect of the proposed MSCP will have a minimal impact on the local road network, as the impact of the additional trips generated is relatively small compared to existing traffic volumes, and/or result in additional trips that utilise existing spare capacity at intersections.

Table 6 Intersection performance before and after the proposed MSCP extension

Intersection	Scenario	AM peak hour				PM Peak			
		Delay (s)	Level of Service	Degree of Saturation	95 per cent back of queue length (m)	Delay (s)	Level of Service	DoS	95 per cent back of queue length (m)
The River Road / Bransgrove Road	Before	20.6	LOS C	0.555	89.2	18.2	LOS B	0.549	62.7
The River Road / Bransgrove Road	After	20.7	LOS C	0.555	89.2	18.4	LOS B	0.549	63.3
The River Road / Sphinx Avenue / Marco Avenue	Before	47.9	LOS D	0.769	200.0	49.2	LOS D	0.767	161.9
The River Road / Sphinx Avenue / Marco Avenue	After	48.7	LOS D	0.788	209.8	49.9	LOS D	0.788	161.9
The River Road / Blamey Road	Before	3.7	LOS A	0.325	45.1	4.5	LOS A	0.413	59.3
The River Road / Blamey Road	After	3.7	LOS A	0.330	46.1	4.4	LOS A	0.413	63.2
The River Road / Macarthur Avenue	Before	6.3	LOS A	0.479	56.3	9.5	LOS A	0.849	53.9
The River Road / Macarthur Avenue	After	6.3	LOS A	0.479	58.3	9.3	LOS A	0.849	53.9
The River Road / Weston Street / Uranus Road	Before	27.4	LOS C	1.002	120.0	28.7	LOS C	1.040	112.2
The River Road / Weston Street / Uranus Road	After	28.8	LOS C	1.030	122.4	28.6	LOS C	1.040	112.2

3.5 Rail and bus services

The proposed MSCP extension is unlikely to affect rail services as the MSCP is located some distance from the rail corridor and Revesby Station. Existing bus stops are also unlikely to be impacted for the same reason.

The speed and reliability of bus routes running along The River Road would be affected by any worsening of intersection performance along this road but, as described in section 3.5.2, the MSCP does not have a significant impact on performance of the modelled intersections.

3.6 Taxi and kiss and ride facilities

The proposed MSCP extension is unlikely to affect taxi and kiss and ride facilities as these facilities are located some distance from the MSCP and routes to and from the MSCP do not go through the location of the kiss and ride facilities. No changes to these facilities are included in this proposal.

3.7 Bicycle network and facilities

The proposed MSCP extension is unlikely to affect the bicycle facilities, as these facilities are located some distance from the MSCP and not on the access route to the MSCP.

Due to the limited dedicated cycling network infrastructure (such as shared paths or cycle lanes), cyclists routes are currently on-road and shared with vehicular traffic, which may be impacted by intersection performance issues as identified in Section 3.4.2.

Additional bike racks are currently planned for installation near the existing bike racks on Abel Reserve, north of Revesby station (as shown in Figure 10 below). This would involve replacing the existing non-compliant bike rack outside the station and include a new shelter for the bike racks.



Figure 10 Planned changes to bicycle parking facilities

3.8 Pedestrian access

The proposed MSCP extension is unlikely to have any impact on pedestrian access to the MSCP or around the area.

3.9 Property access

The proposed MSCP extension is unlikely to have any impact on property access in the area.

4 Operational mitigation measures and recommendations

Mitigation measures to be considered to reduce the impacts during the operation of the extended MSCP include:

- Additional bike racks are currently planned for installation near the existing bike racks on Abel Reserve, north of Revesby station, replacing the existing non-compliant bike rack outside the station and including a shelter on the bike racks. The improved cycling infrastructure would encourage people to travel via bicycle, reducing traffic on the local road network.
- Future proofing the installation of electric vehicle charging stations by provisioning the power supply for up to 20 charging stations, and cable containment to 58 spaces within the additional spaces.

5 Construction impacts

Construction of the proposed MSCP extension is expected take up to 12 months, during which there will be some impacts on the surrounding area.

5.1 Commuter car parking facilities

The existing top level of the MSCP will be temporarily unavailable during construction, according to the TT&AIA, reducing car parking capacity by 166 spaces. In addition, 7 short-term (1 hour) on-street car parking spaces (on Simmons Street between Winders Lane and Haydock Lane) and 25 short-term (3 hour) MSCP car parking spaces will also be temporarily unavailable during construction to accommodate construction works.

The TT&AIA indicates that up to 80 construction site workers per day are expected to commute to the MSCP during construction. An estimated 60 per cent of workers are expected to commute via public transport, as the construction site is well served by the public transport service at Revesby Station and nearby bus stops.

The remaining 40 per cent of workers, assuming a car occupancy rate of 1.5 workers, would require 21 car parking spaces. Workers will not be permitted to park in designated commuter spaces within the MSCP to minimise disruption for commuters, however they may be able to park within the top level of the MSCP (which would be closed to the public during construction). It is unknown how many vehicles this would be able to accommodate.

5.2 Local road network

5.2.1 Closure of MSCP Simmons Street entrance

The MSCP Simmons St entrance will predominately be open during construction, however there will be intermittent closures and MSCP users would be directed to use the alternative entrance and exit. These closures will be infrequent and only last up to two days each time.

More than 75 per cent of commuter car park users use the Simmons Street entrance to access and exit from the MSCP, therefore the proposed closures of the Simmons Street entrance during construction would severely affect access to the MSCP and result in increased detour traffic.

The alternative MSCP entrance is a left-in only from The River Road. Detour traffic accessing this entrance may put additional pressure on the already poor performing intersection of The River Road / Sphinx Avenue / Marco Avenue. The alternative MSCP exit is on Haydock Lane, which proceeds left-out only and then onto The River Road to head northbound only. This routing would be a major inconvenience for vehicles wishing to head south from the MSCP, with no convenient route available to them and no easy U-turn opportunities.

During any closures, consideration should be made to reversing the direction of the one-way Haydock Lane to improve the egress routes for vehicles exiting the MSCP wishing to head southbound. Appropriate signage should also be in place to direct detour traffic towards the alternative MSCP entrances. The impact of detour traffic on the local road network should be investigated.

5.2.2 Closures of Winders Lane, Simmons Street and Haydock Lane

Winders Lane, Simmons Street and Haydock Lane will predominately be open during construction, however there will be intermittent closures and traffic would be directed to use the alternative routes. These closures will be infrequent and only last for a few days each time. There will also be periods where these roads come under traffic control to allow large vehicle movements into and out of the car park (as described in the following section).

5.2.3 Construction traffic route

Trucks accessing the MSCP construction site would be required to approach from the north via The River Road, following a cumbersome route via Bransgrove Road, Polo Street, Swan Street, Winders Lane, and entering the site at Simmons Street. Trucks leaving the construction site would exit at Simmons Street, follow Haydock Lane and turn into The River Road to return northbound, before proceeding onto the M5 Motorway to access the wider road network. These routes are shown in Figure 11.

No construction access is proposed via the eastern entry and exit portals of the MSCP. No construction trucks will be permitted on Marco Avenue to minimise their impacts on the town centre.

Winders Lane and Haydock Lane provide access to the back entrances to a number of shops. A Construction Traffic and Pedestrian Management Plan (CTPMP) should be prepared to coordinate truck movements and notify affected businesses to minimise the impacts of truck movements. Access restrictions to businesses on Winders Lane and Haydock Lane would be intermittent and done in consultation with affected businesses.

A peak of up to 50 trucks per day is expected during concrete pours, which would be spread evenly throughout the day (around six to seven trucks per hour). The TT&AIA indicates that the impact of these truck movements on the local road network would be minimal.

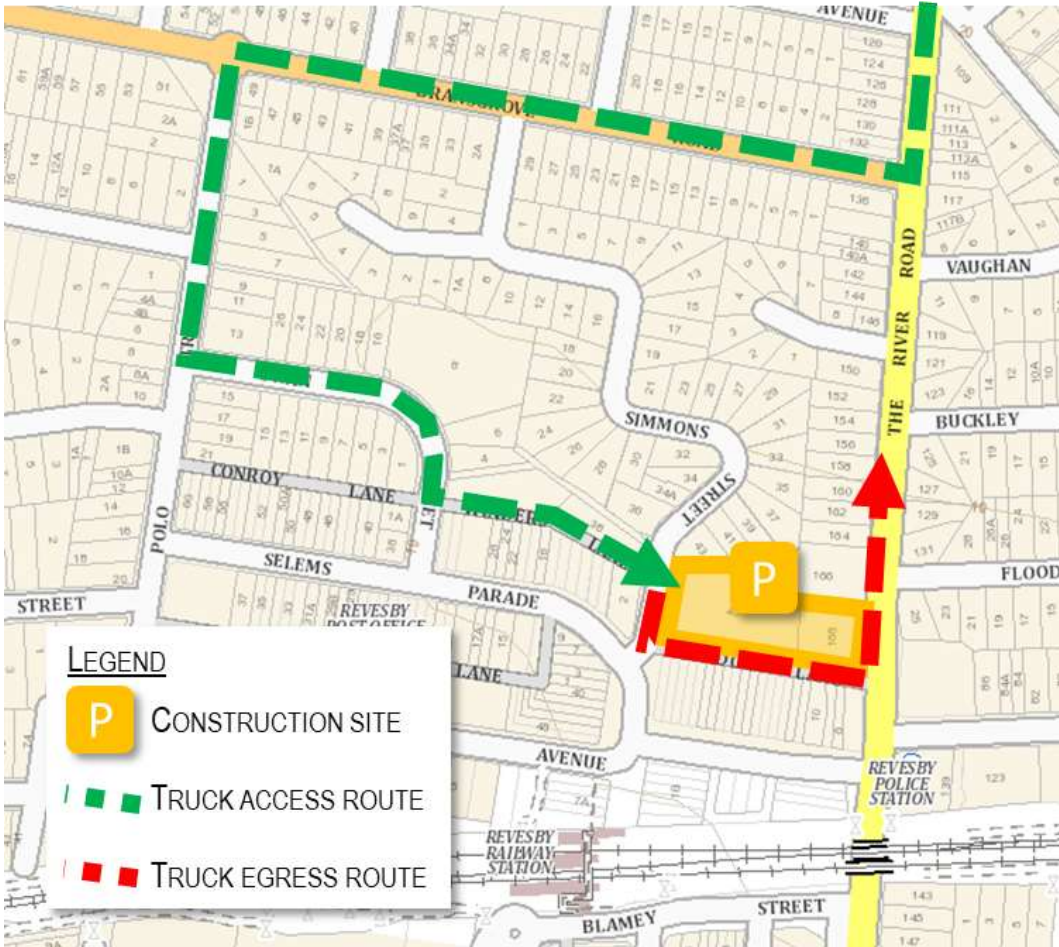


Figure 11 Proposed construction vehicle routes to and from the MSCP extension construction site

5.3 Rail and bus services

Construction of the proposed MSCP extension is unlikely to affect rail or bus services, as the construction site is located some distance away from Revesby Station, bus stops and the rail corridor.

Bus routes running along The River Road, Bransgrove Road and/or Polo Street do share the same route as the proposed construction vehicle routes, however this is unlikely to affect bus services as the impact of construction vehicle movements on the local road network is expected to be minimal.

5.4 Taxi and kiss and ride facilities

Construction of the proposed MSCP extension is unlikely to affect taxi and kiss and ride facilities, as they are provided away from the proposed construction site south of Revesby Station.

5.5 Bicycle network and facilities

Construction of the proposed MSCP extension is unlikely to affect bicycle network or facilities, as the construction site does not block any existing bicycle routes and is located away from existing bicycle racks. Cycle access through Simmons Street will be predominantly open during construction, however there will be intermittent closures as described in Section 5.2.2.

5.6 Pedestrian access

The footpath on the east side of Simmons Street between Winders Lane and Haydock Lane would be closed to pedestrians during construction for the establishment of construction work zone. Pedestrian access through Simmons Street will be predominantly open during construction, however there will be intermittent closures as described in Section 5.2.2.

5.7 Property access

Winders Lane and Haydock Lane provide access to the back entrances to a number of shops. These lanes will be predominantly open during construction, however there will be intermittent closures as described in Section 5.2.2.

A Traffic Management Plan should be prepared to coordinate truck movements and notify affected businesses to minimise the impacts of truck movements. Access restrictions to businesses on Winders Lane and Haydock Lane would be done in consultation with affected businesses.

6 Construction mitigation measures and recommendations

Mitigation measures to be considered to reduce the impacts during the construction of the MSCP extension include:

- Development of a Construction Traffic & Pedestrian Management Plan (CTPMP).
- During intermittent closures of the MSCP Simmons Street entrance:
 - appropriate signage should be in place to warn users that the Simmons Street entrance is closed, and direct traffic to the The River Road entrance
 - direction of the one-way Haydock Lane should be reversed to improve egress routes for vehicles exiting the MSCP wishing to head southbound
 - the impact of any detour traffic on the local road network should also be investigated
- During intermittent closures or access restrictions of local roads:
 - appropriate signage should be to provide appropriate detour routes
 - consult with and notify any affected businesses and other stakeholders
- Scheduling the movement of construction vehicles and deliveries outside of peak periods to minimise the impact on local traffic.
- Identification of final construction traffic access routes, site compound, loading zones, and worker and construction vehicle parking.
- Confine construction activities within the construction site as much as possible to minimise disruption to the local area.
- Workers will not be permitted to park in designated commuter car parking spaces to minimise disruption for commuters.

A

Appendix A – SIDRA Output Summary

B

Appendix B – Traffic Survey Data Summary

Table 7 Peak hour traffic volumes at The River Road / Sphinx Avenue / Marco Avenue

Peak Time		North Approach The River Rd				East Approach Sphinx Ave				South Approach The River Rd				West Approach Macro Ave				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
8:00	9:00	0	98	424	13	0	38	107	123	0	139	658	208	0	133	96	50	2088
16:45	17:45	0	108	654	13	0	33	125	178	0	106	381	207	0	229	75	68	2176

Table 8 Peak hour traffic volumes at The River Road / Blamey Street

Peak Time		North Approach The River Rd			South Approach The River Rd			West Approach Blamey St			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
8:00	9:00	0	94	587	0	926	27	0	31	80	1743
16:45	17:45	0	120	940	0	597	41	0	55	97	1850

Table 9 Peak hour traffic volumes at The River Road / Weston Street / Uranus Road

Peak Time		North Approach The River Rd				East Approach Uranus Rd				South Approach The River Rd				West Approach Weston St				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
8:00	9:00	0	0	481	147	0	250	297	91	0	85	734	33	0	0	227	111	2456
16:45	17:45	0	0	712	289	0	193	257	98	0	56	461	57	0	0	263	114	2500

Table 10 Peak hour traffic volumes at The River Road / MacArthur Avenue

Peak Time		North Approach The River Rd			South Approach The River Rd			West Approach MacArthur Ave			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
8:00	9:00	0	89	552	0	925	155	0	64	39	1825
16:45	17:45	0	111	896	0	571	173	0	114	77	1942

Table 11 Peak hour traffic volumes at The River Road / Bransgrove Road

Peak Time		North Approach The River Rd			South Approach The River Rd			West Approach Bransgrove Rd			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
8:00	9:00	0	169	384	0	496	226	0	198	259	1732
16:45	17:45	0	199	550	0	370	150	0	208	181	1658

C

Appendix C – Traffic, Transport and Access Impact Assessment