Prepared for

TURNER STUDIO ON BEHALF OF HOLDMARK PROPERTY GROUP

Transport Impact Assessment Addendum

Mixed Use Development Planning Proposal
1 Leicester Street, Chester Hill

Ref: P1007r03
26/05/2020

Info@asongroup.com.au | +61 2 9083 6601 | Suite 5.02, Level 5, 1 Castlereagh Street. Sydney, NSW 2000

Document Control

Project No: P1007

Project: 1 Leicester Street, Chester Hill; Planning Proposal

Client: Holdmark Property Group

File Reference: P1007r03 PP TIA Addendum 1 Leicester St, Chester Hill

Revision History

Revision	Date	Details	Author	Approved
-	26/05/2020	Draft	D. Budai	

Table of Contents

Appendices

Tables

Figures

1 Introduction

1.1 Background

Ason Group has prepared a Transport Impact Assessment (TIA) to support a Planning Proposal for a mixed-use development—seeking to increase the building height to 65 metres and increase the FSR to 4.53:1 (the Proposal)—at 1 Leicester Street, Chester Hill (Site). City of Canterbury Bankstown Council (Council) commissioned a peer review of the TIA to assess the traffic and transport impacts, associated with the proposed development (TIA Peer Review). Council also requested that a review of the Chester Hill Village Centre be completed in relation to broader traffic and transport related matters that should be further considered as part of detail planning for the precinct. This TIA Addendum has been prepared in response to Council's review.

1.2 Objectives

The objectives of this TIA Addendum are as follows:

- Update the relevant sections of the TIA with revised information following the review, submissions and discussions with relevant authorities.
- Directly respond to the recommendations made following the TIA Peer Review and comment on the technical adequacy and completeness of the assessment.
- Review and respond to the appropriateness and effectiveness of management and mitigation measures recommended for the project, taking into account relevant guidelines, and industry best practice, and
- Assess the overall implications of Proposal on the local and regional road network, having regard for the revised assumptions above.

1.3 References

In preparing this report, reference has been made to the following:

- Transport Impact Assessment, Mixed Use Development Planning Proposal, 1 Leicester Street Chester Hill, prepared by Ason Group, dated 2 August 2019
- Chester Hill Planning Proposal Urban Design Review, Place Design Group, dated 7 February 2020
- Bankstown Development Control Plan (DCP) 2015
- Roads and Maritime Services (Roads and Maritime), Guide to Traffic Generating Developments (Guide) 2002 and Technical Direction Updated Traffic Surveys (TDT 2013/ 04a)

- Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area, 2013 TfNSW (IPTS Guidelines);

2 Responses to Assessment and Recommendations

This TIA Addendum has been prepared to address the Conclusions and Recommendations detailed in the Peer Review as identified in **Table 1**.

Table 1: Peer Review Recommendation Summary

Dot Point	Recommendation	TIA Addendum Reference
1	Existing SIDRA modelling is recommended to be updated and calibrated against current operating conditions, with these models then to be used for future conditions modelling.	Section 4.2
2	The proposal will likely generate a DCP 2015 car parking requirement of between 1,300 and 1,400 spaces, with there being potential for this provision to be decreased through implementation of sustainable travel initiatives and shared use of parking spaces between the various land uses.	Acknowledged. No action required.
3	It is recommended that traffic generation estimates for the site be updated to consider the existing staff car park accessed off Priam Street, considering this accounts for around nine per cent of the existing car parking supply for the site.	Section 5
4	The traffic generation estimates for the residential and commercial components of the site are considered appropriate given the location of the site.	Acknowledged. No action required.
5	It is recommended that the anticipated distribution of traffic be updated to reflect the existing distribution of traffic at the key surveyed intersections.	Section 5
6	While it is recognised that the project is at a Planning Proposal stage, the indicative location and quantum of site accesses and supporting traffic modelling does not seem to provide an appropriate level of detail to adequately assess the traffic impact of the Planning Proposal.	Section 5
7	It is unclear how “2021 without development” traffic volumes were calculated, as it seems that some turning movements at key intersections reduce when compared with existing turning movements despite STFM data indicating increased traffic growth.	Section 5
8	Clarification should be provided as to the reason behind using 2026 STFM growth rates for calculating 2021 future traffic volumes.	Section 6.2
9	The adopted arrival and departure split of traffic for the proposed land uses is considered appropriate.	Acknowledged. No action required.
10	Modelled mitigation measures for the Priam Street/ Waldron Road do not align with Transport for NSW requirements for signalised intersections.	Section 7.2
11	Preliminary SIDRA modelling indicates that with upgrading of the Priam Street/ Waldron Road intersection and lengthening of turning bays, the additional traffic generated could potentially be accommodated on the surrounding network, subject to clarification of the above concerns and recommendations.	Section 7.2
12	While the intent of Waldron Road pedestrianisation concept recommended in the Place Design Group Urban Design Review of the Planning Proposal is acknowledged, the recommendation does not align with the intended function of Waldron Road and further detailed analysis such as microsimulation traffic modelling would likely be required to support such a proposal.	Section 7.2
13	It is recommended the location of the access points be further refined to better understand the likely traffic distribution of traffic around the site.	Sections 3 and 6.1

3 The Proposal

The Proposal provides for the development of the Site to its maximum height and FSR provisions, in turn providing for a mix of residential, retail and commercial land uses. Further to the removal of all existing Site development, the Proposal provides for:

- 648 high density residential units
- 14,763m^2 gross floor area (GFA) of retail floorspace
- 1,000m^2 GFA of commercial floorspace
- Provision of parking within the ground floor and basement level
- Vehicular access from Bent Street and Priam Street

As previously stated, full details of the Proposal are provided elsewhere in the broader submission which the TIA accompanies, and it is important to note that – as a Planning Proposal – some components of the proposed land-use mix may change over time further to consultation with key stakeholders.

An indicative Concept Plan for the Site is shown in **Figure 1**.

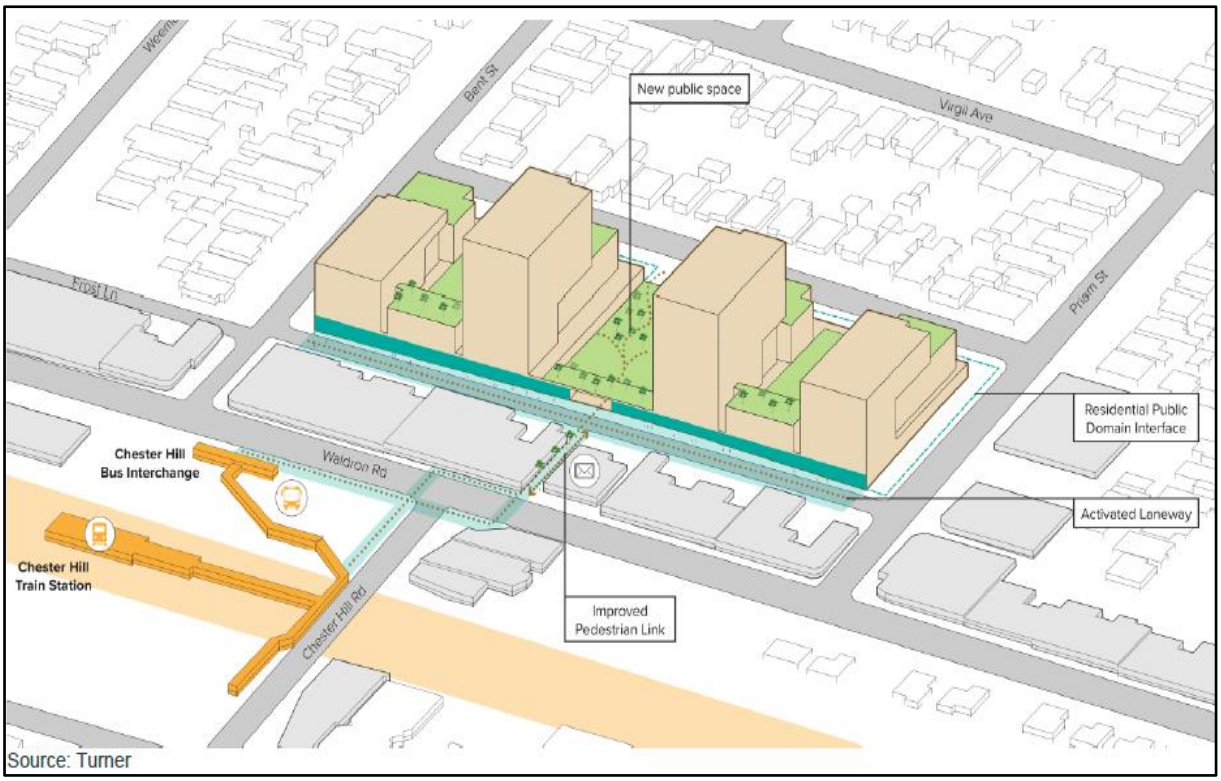

Figure 1: Indicative Concept Plan

The original Concept Plan provided for the removal of all existing access driveways to the adjacent local roads, consolidated into one access driveway on Bent Street. The assessment provided in the sections below indicates that an additional access point on Priam Street is feasible and will be required to accommodate future Site traffic demands in conjunction with Council's vision for the area. It is anticipated that the design and location of these access points would be further examined as part of a future detailed Development Application (DA).

It is expected that on-site loading shall need to make provision of access by 19m articulated vehicles (semi-trailers) to service the shopping centre. Notwithstanding, the relevant 'design vehicle' shall be clarified in due course once the nature of retail premises is known and is again a detailed matter for DA stage.

4 Existing Conditions

4.1 Traffic Volumes

The existing traffic on the surrounding road network was surveyed during weekday AM(7:00am–9:00am) and PM (3:00pm–6:pm) peak periods on Thursday, 6th June 2019 and during the weekend peak (10:00am–1:00pm) on Saturday 8th June 2019. These surveys do not coincide with any school or public holiday period and are considered suitable for the purpose of the assessment. The surveyed traffic flows during these periods are shown in **Figure 2** to **Figure 4** and identifies the following peak hours:

- Weekday Morning (AM): 7:45am–8:45am
- Weekday Morning (AM): 15:45am–16:45am
- Weekday Morning (AM): 12:00pm–1:00pm

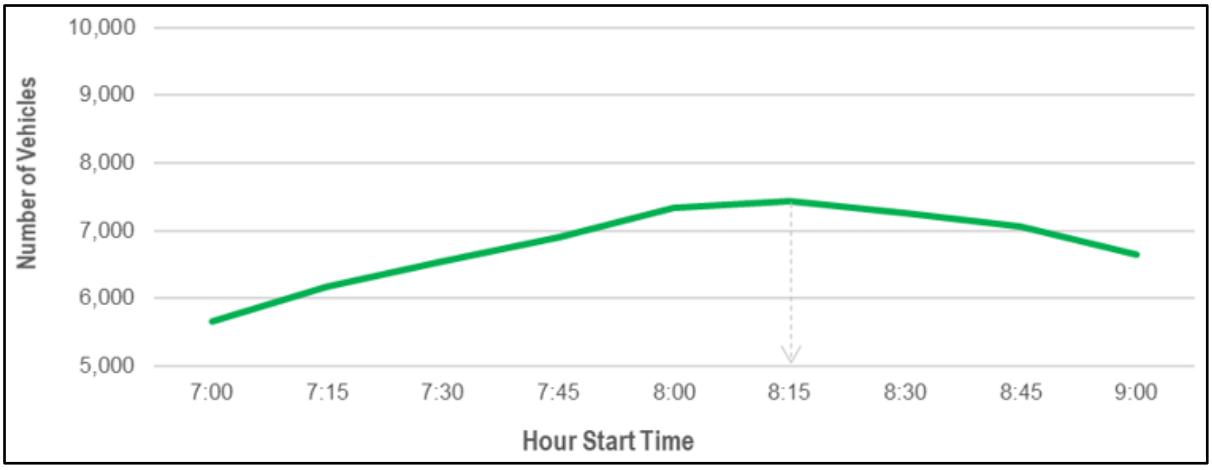

Figure 2: Local Network Volumes (AM Peak)

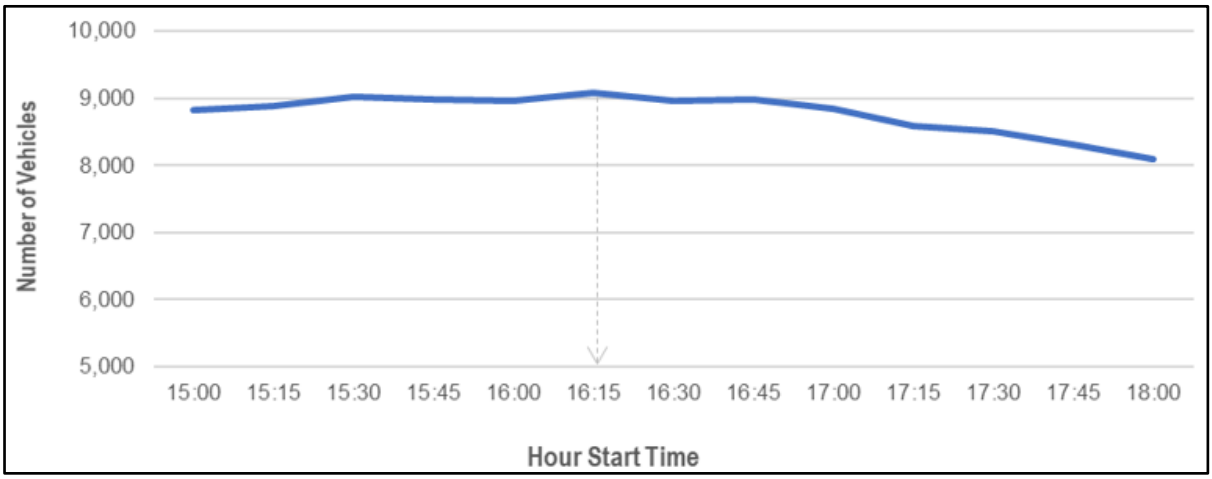

Figure 3: Local Network Volumes (PM Peak)

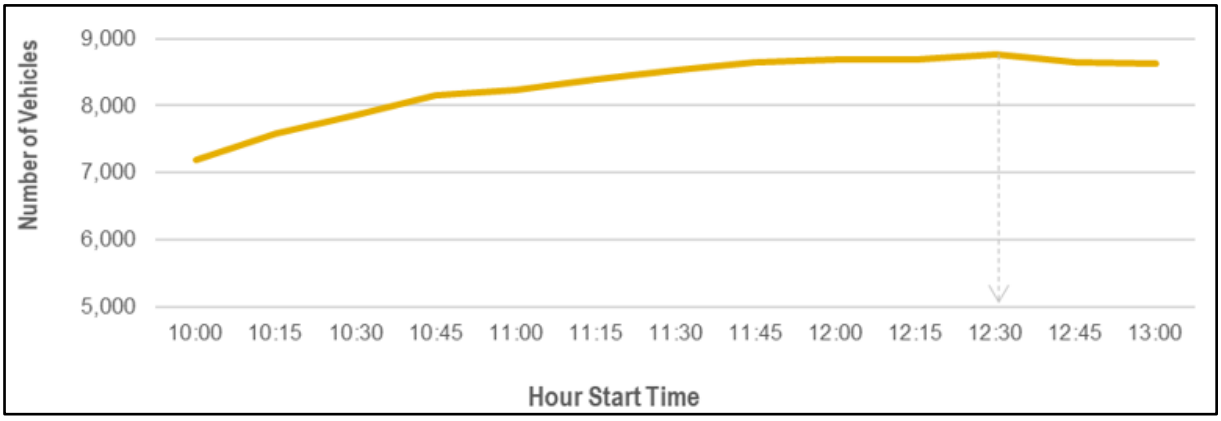

Figure 4: Local Network Volumes (Saturday Peak)

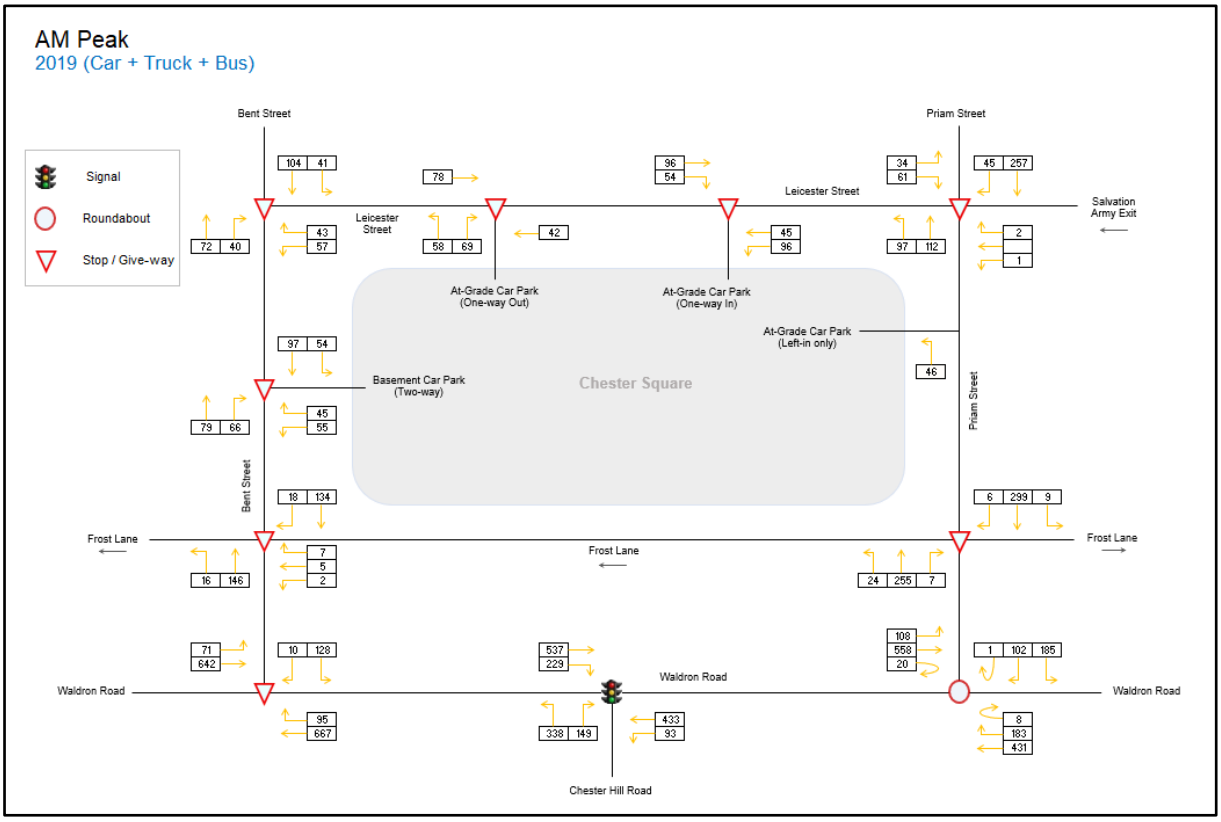

Figure 5: Weekday AM Peak Traffic Volumes

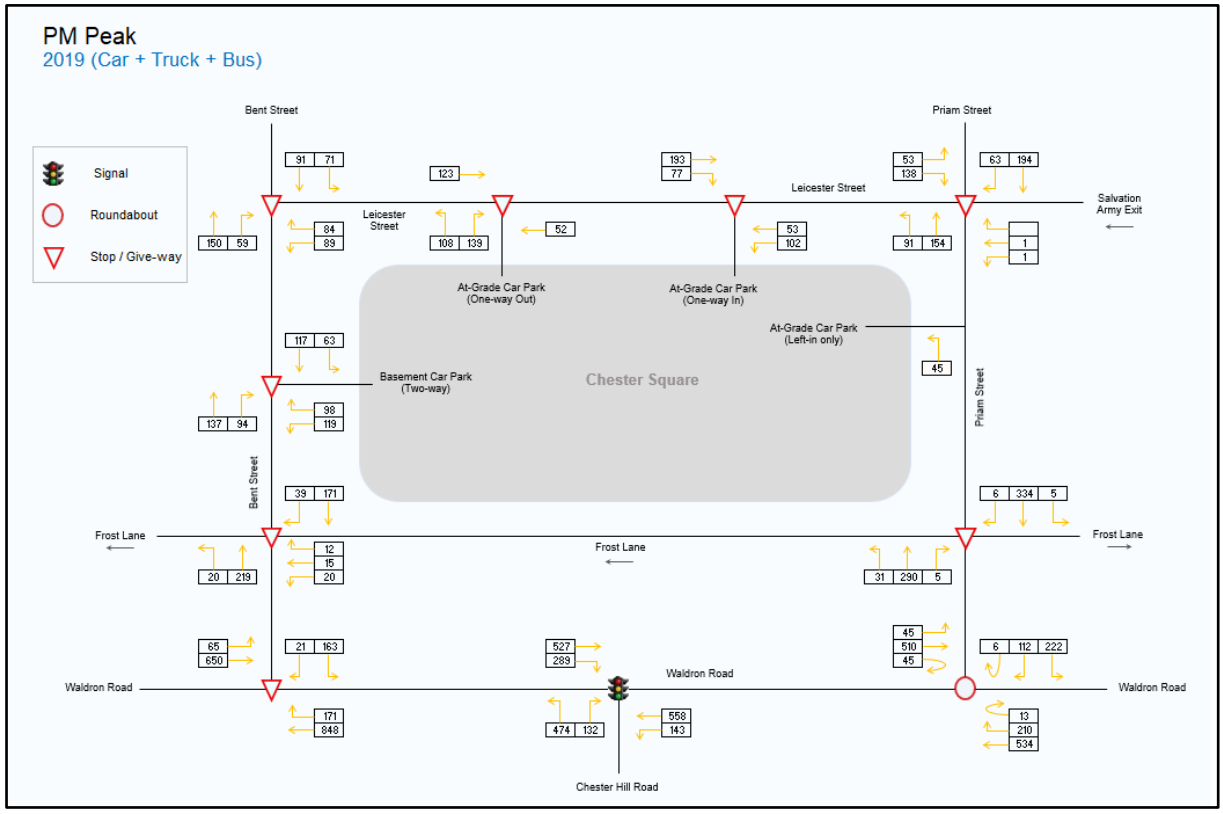

Figure 6: Weekday PM Peak Traffic Volumes

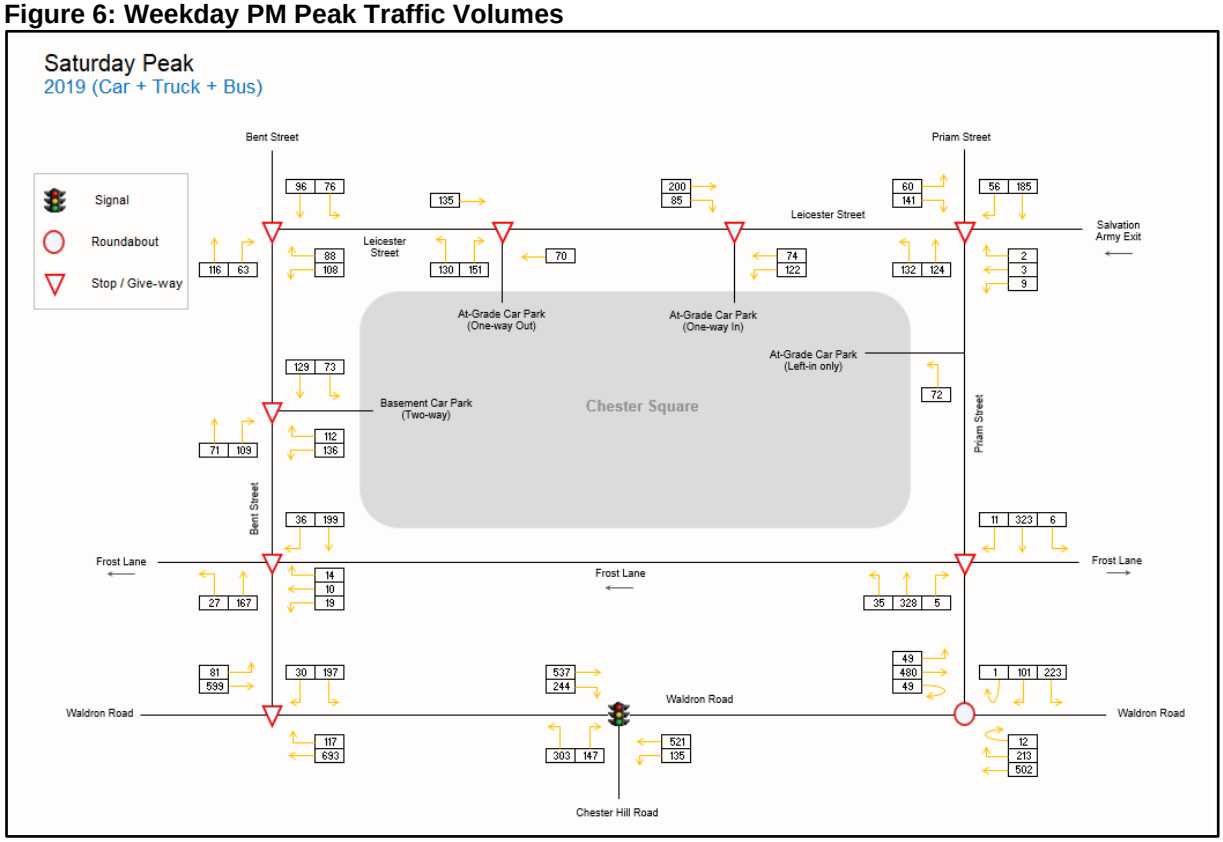

Figure 7: Saturday Peak Traffic Volumes

4.2 Existing Intersection Operations

4.2.1 SIDRA

The performance of the key intersections has been analysed using the SIDRA Intersection model. SIDRA provides a range of performance measures, including:

- **Degree of Saturation (DOS):** DOS is defined as the ratio of demand (arrival) flow to capacity.
- **Average Vehicle Delay (AVD):** The AVD (or average delay per vehicle in seconds) for intersections also provides a measure of the operational performance of an intersection and is used to determine an intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the average of all vehicle movements through the intersection. For priority (Give Way, Stop & Roundabout controlled) intersections, the AVD reported is that for the movement with the highest AVD.
- **Level of Service (LOS):** LOS is a comparative measure that provides an indication of the operating performance, based on AVD. For signalised and roundabout intersections, LOS is based on the average delay to all vehicles, while at priority-controlled intersections LOS is based on the worst approach delay.

The following table provides a summary of the SIDRA LOS parameters, which are based on the RMS Guide.

Table 2: SIDRA Level of Service Summary

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

4.2.2 Existing Intersection Operations

SIDRA modelling for the existing scenario has been revised by adopting the left turn slip lane from Chester Hill Road as the primary lane and the right turn lane as a 25-metre short lane, as advised in the TIA Peer Review.

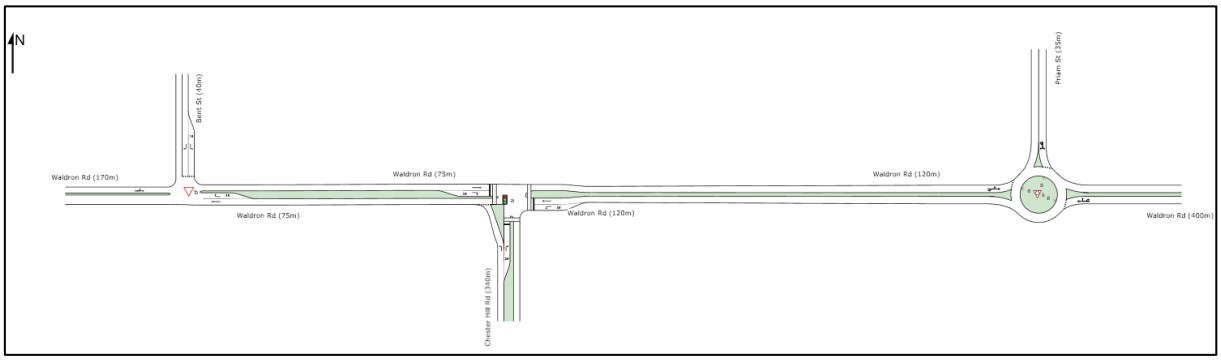

Figure 8: Waldron Road - SIDRA Modelling Intersection Layouts (Existing)

The result of the SIDRA analysis of existing intersections are summarised in **Table 3**.

Table 3: Existing Intersection Performance

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)[1]	Average Queue (m)	Level of Service (LOS)
Waldron Road / Bent Street	AM	East	0.38	8.8	1	A
		North	0.18	27.4	2	B
		West	0.40	4.6	0	A
	PM	East	0.47	9.0	3	A
		North	0.24	45.0	3	D
		West	0.42	4.6	0	A
	SAT	East	0.382	8.4	2	A
		North	0.249	28.2	3	B
		West	0.371	4.6	0	A
Chester Hill Road / Waldron Road	AM	South	0.69	19.6	28	B
		East	0.65	20.1	63	B
		West	0.67	9.5	42	A
		Overall	0.69	15.4	63	B
	PM	South	0.61	18.2	45	B
		East	0.87	29.4	105	C

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)[1]	Average Queue (m)	Level of Service (LOS)
		West	0.74	15.1	47	B
		Overall	0.87	20.7	105	B
	SAT	South	0.56	19.8	25	B
		East	0.77	21.9	79	B
		West	0.71	11.8	43	A
		Overall	0.77	17.2	79	B
Waldron Road/ Priam Street	AM	East	0.56	9.2	14	A
		North	0.46	12.5	11	A
		West	0.67	10.2	18	A
	PM	East	1.00	39.0	100	C
		North	0.62	15.5	15	B
		West	0.65	10.7	16	A
	SAT	East	0.72	9.6	18	A
		North	0.50	12.3	12	A
		West	0.70	11.3	21	A

Note: 1) Maximum Average Delay for any one movement for unsignalised intersections.

With reference to **Table 3**, all of the key intersections operate at satisfactory LOS C or better during weekday AM and PM peak periods with the exception of the north approach of Waldron Road / Bent Street (PM) which is operating near capacity.

All of the key intersections operate with a good LOS B or better with acceptable delays and spare capacity during the Saturday Peak.

With reference to the TIA Peer Review and specifically it's base model development, the following points are noteworthy:

1. The TIA Peer Review adopted 2% Heavy Vehicles (HV) at all intersections, while the HV% is actually higher and/or has significant variation between some intersection approaches—especially at Priam Street / Waldron Road during the PM Peak: 9.8% HV for right turn movements on north approach.
2. Site observations undertaken for the TIA Peer Review were between 5pm and 6pm, while our survey data indicates the total traffic volume in the network started dropping after 5pm. Therefore, it is expected that their site observation did not catch the 'maximum' delay / queue length at Priam Street x Waldron Road.

3. Our survey videos indicate that the roundabout was in fact experiencing delays during the PM Peak, much longer than the 15 sec suggested by GTA's model.

Figure 9: Survey Video Queue on Waldron Road (PM Peak) – Photo 1

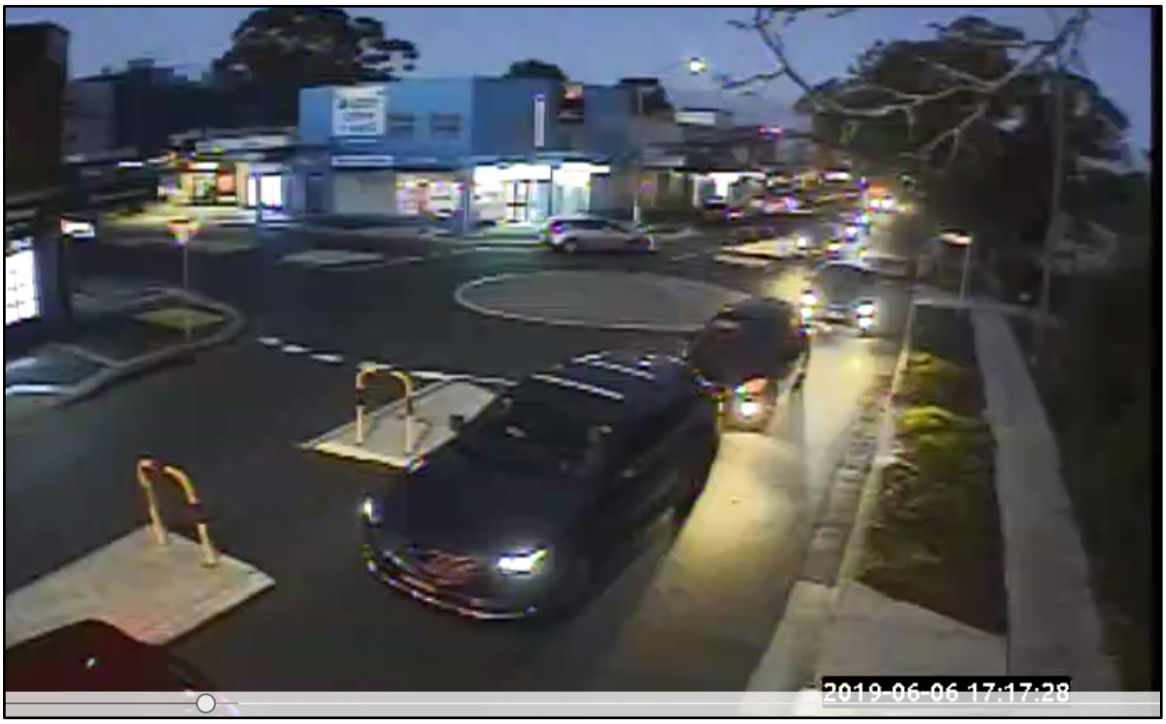

Figure 10: Survey Video Queue on Waldron Road (PM Peak) – Photo 2

5 Development Traffic Generation and Distribution

Existing traffic generation for the site was captured in the surveys of each intersection. Therefore, the traffic volumes for the base case assessment of intersection operation/performance are accurate. It should also be noted that the TIA demonstrated a reduction in some turning movements between the "Existing" and "With Development" scenarios. This was due to the removal of the existing development traffic prior to the addition of the proposed development traffic as well as the differing access locations and redistribution between the two scenarios.

Notwithstanding, a revised traffic distribution assessment has been calculated with the following considerations:

- Use of the recommended traffic distribution for retail traffic only, being the use of existing development on-site. The Peer Review did not address the residential and commercial component.
- Use of calculated 2016 Journey to Work distribution for the residential and commercial component of the Proposal.

A summary of traffic directional distribution for each component is provided in **Table 4** below.

Table 4: Directional Distribution

Land Use	Bent St (N) / Priam Street (N)	Waldron Rd (W)	Chester Hill Rd (S)	Waldron Rd (E)	Total
Retail	45%	14%	17%	25%	100%
Commercial	40%	30%	24%	7%	100%
Residential	42%	8%	2%	48%	100%

With reference to available RMS surveys or non-retail and the recent Site traffic surveys for retail, the arrival and departure distribution profile adopted for the assessment is shown in **Table 5**.

Table 5: Arrival and Departure Distribution

Land Use	AM		PM		SAT	
	In	Out	In	Out	In	Out
Residential	20%	80%	80%	20%	50%	50%
Office	80%	20%	20%	80%	NA	NA
Retail	50%	50%	50%	50%	50%	50%

It should be noted that the Proposal now envisages rationalisation of all existing access crossovers into 2 which are proposed to be located on Bent Street and Priam Street. A 50:50 distribution is assumed between these 2 accesses for traffic arriving from/departing to northern area (Bent St/Priam St).

Based on the above, the traffic distribution shown in the figures below is considered more appropriate for reassessing development traffic.

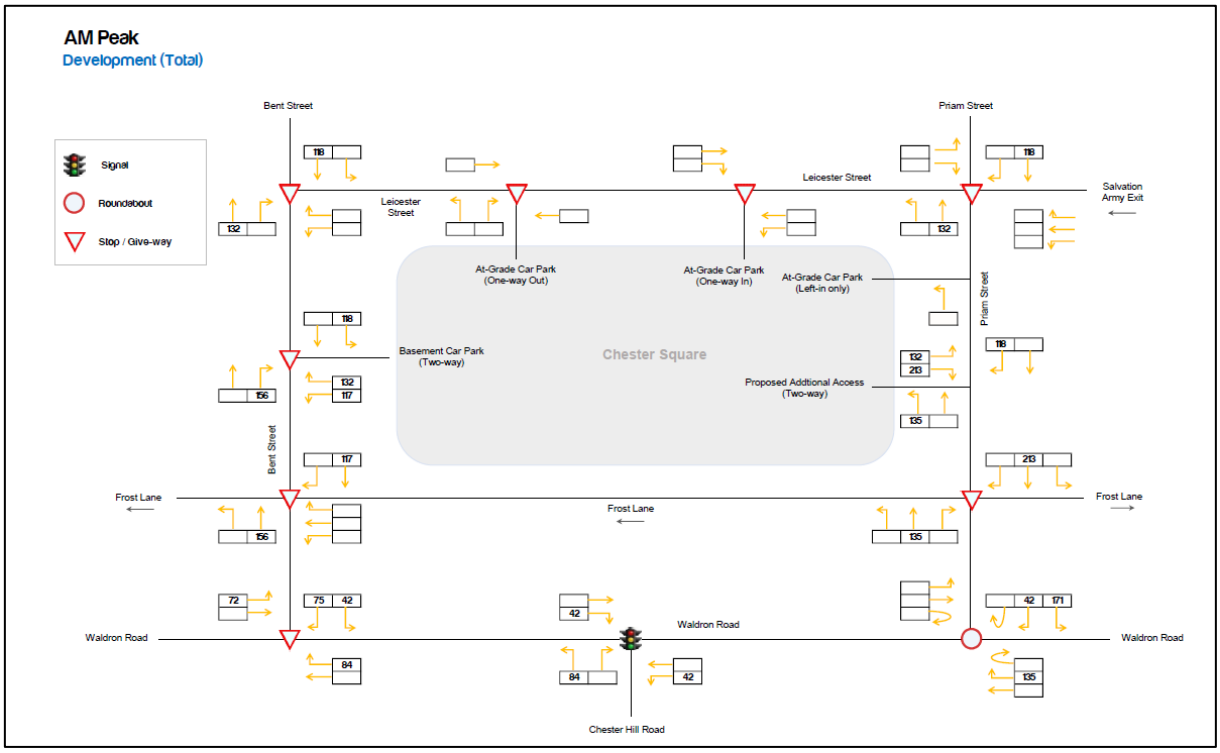

Figure 11: Revised Development Traffic Distribution - Weekday AM Peak

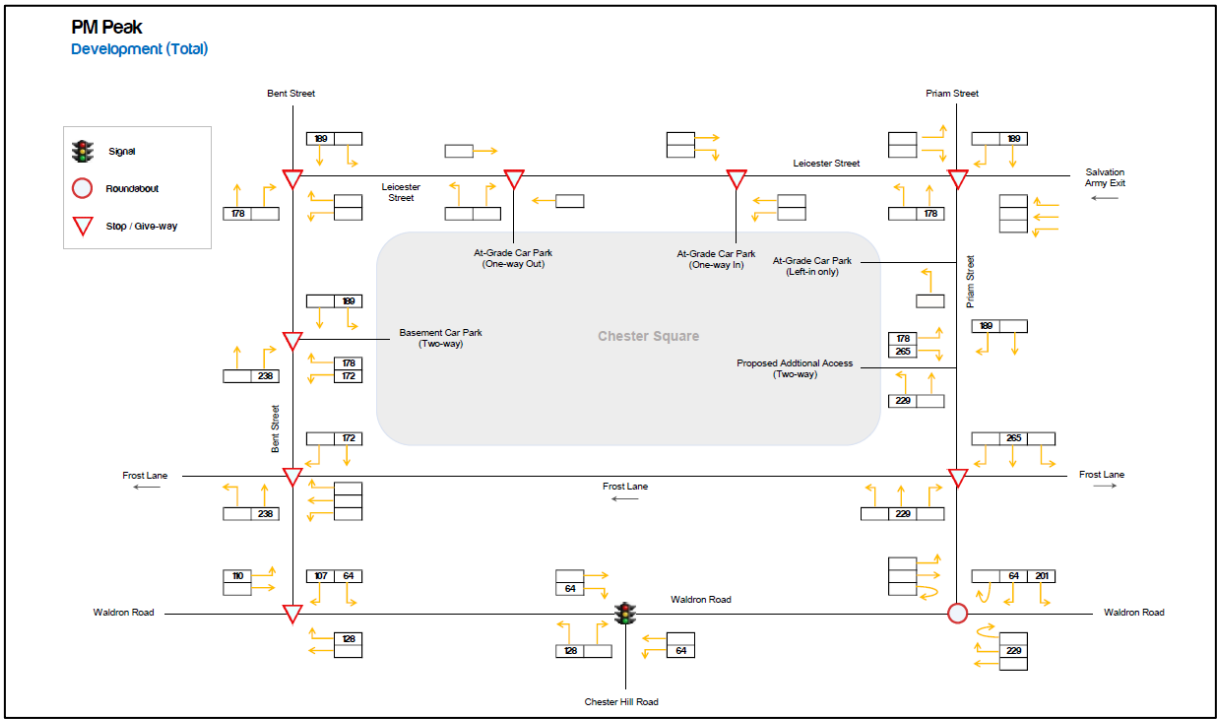

Figure 12: Revised Development Traffic Distribution - Weekday PM Peak

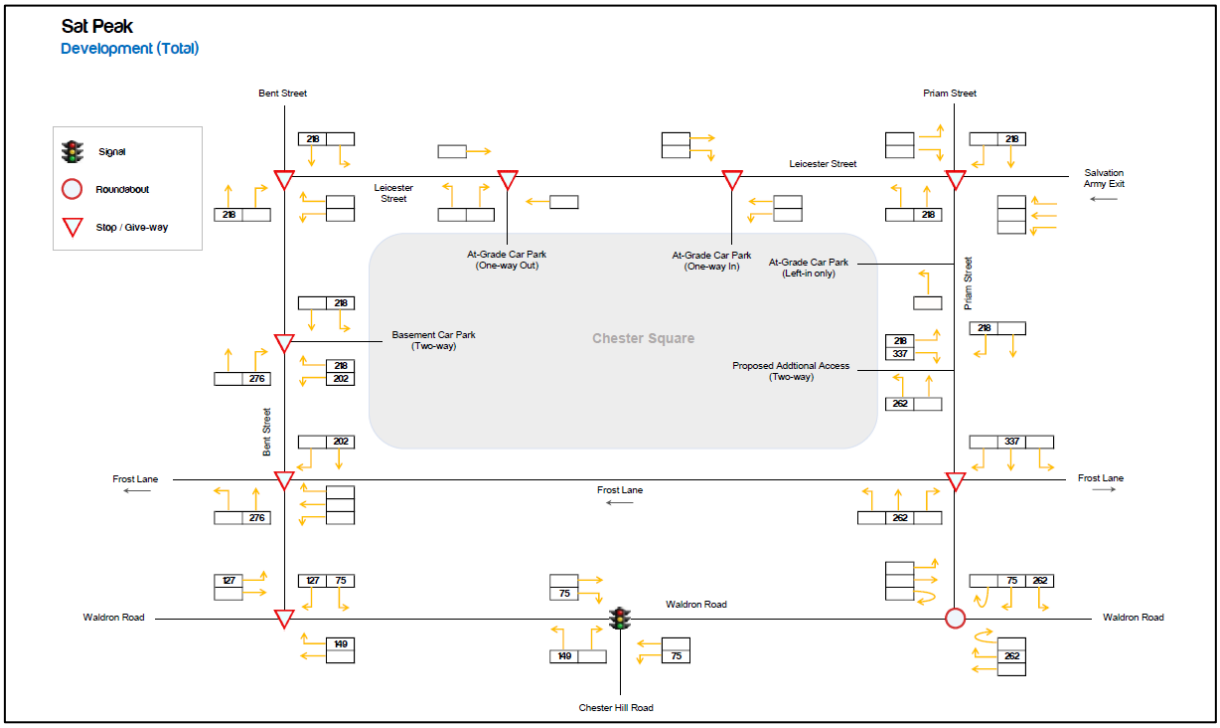

Figure 13: Revised Development Traffic Distribution - Saturday Peak

6 Future Road Network Operations

6.1 Access Location

The concept plans prepared to assess the Proposal now envisage rationalisation of all existing access crossovers into 2 which are proposed to be located on Bent Street and Priam Street as shown in **Figure 14** and indicative Site access layouts are shown in **Figure 15**.

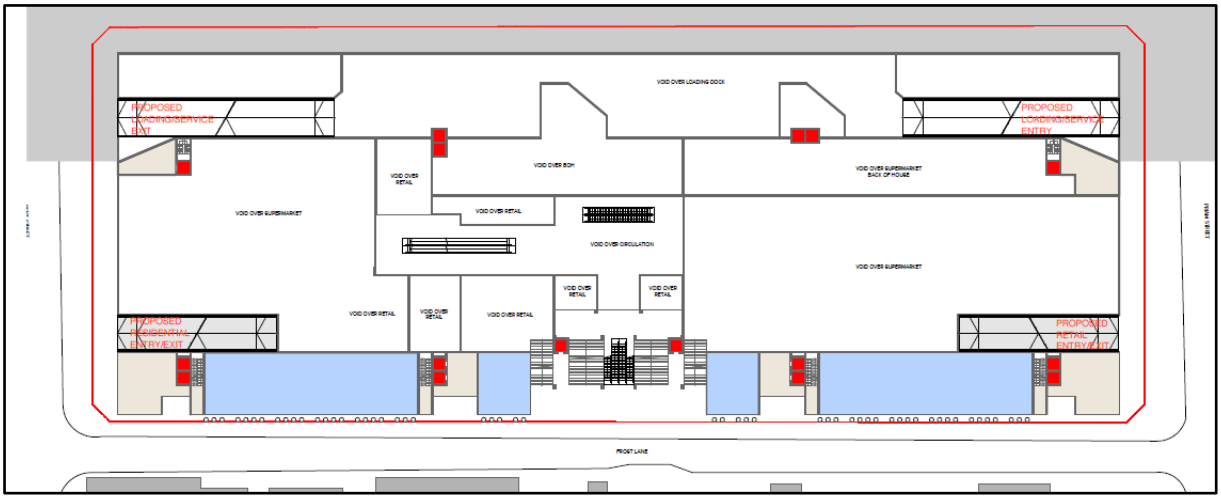

Figure 14: Revised Access Locations for Loading Area

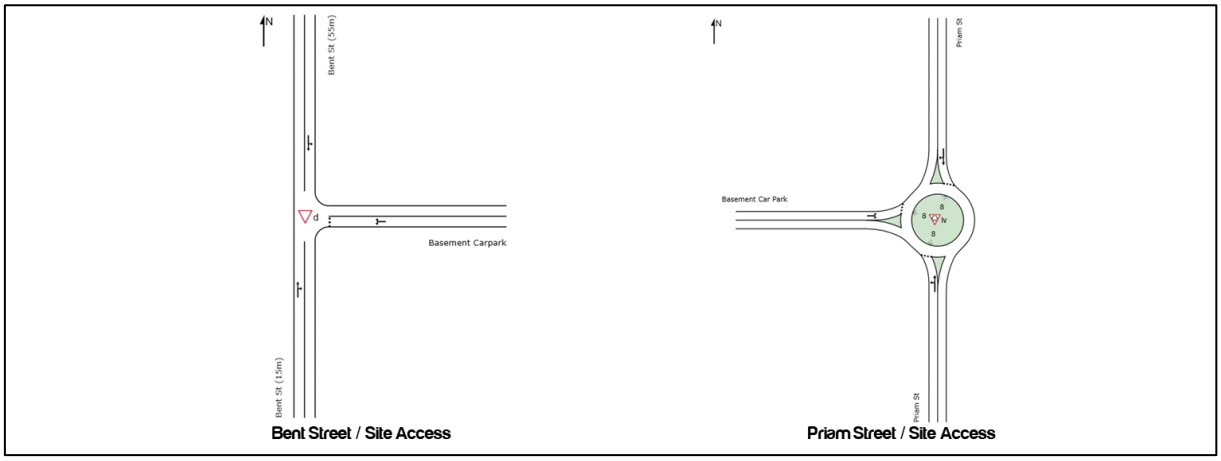

Figure 15: Proposed Site Access Layout (Indicative)

Detailed design of the access points shall occur as part of future DA phase design development. It is expected that on-site loading shall need to make provision of access by 19m articulated vehicles (semi-trailers) to service the shopping centre. Notwithstanding, the relevant 'design vehicle' will be clarified in due course once the nature of retail premises is known.

6.2 Future Intersection Operations

The background traffic growth rates on the surrounding road network—extracted from TfNSW's Strategic Traffic Forecasting Model (STFM)—have been provided by TfNSW and are contained in **Appendix B**.

For the purposes of this study, relevant future base year assumed to be the estimated opening year of 2021 (subject to planning approvals) and the background growth for that year has been interpolated from the 2026 STFM data. With reference to sections above, trip generation of the Site further to the Proposal has been assigned to the local road network in addition to the 2021 Base traffic flows. The resulting flows for each of the peak periods are shown in the figures below.

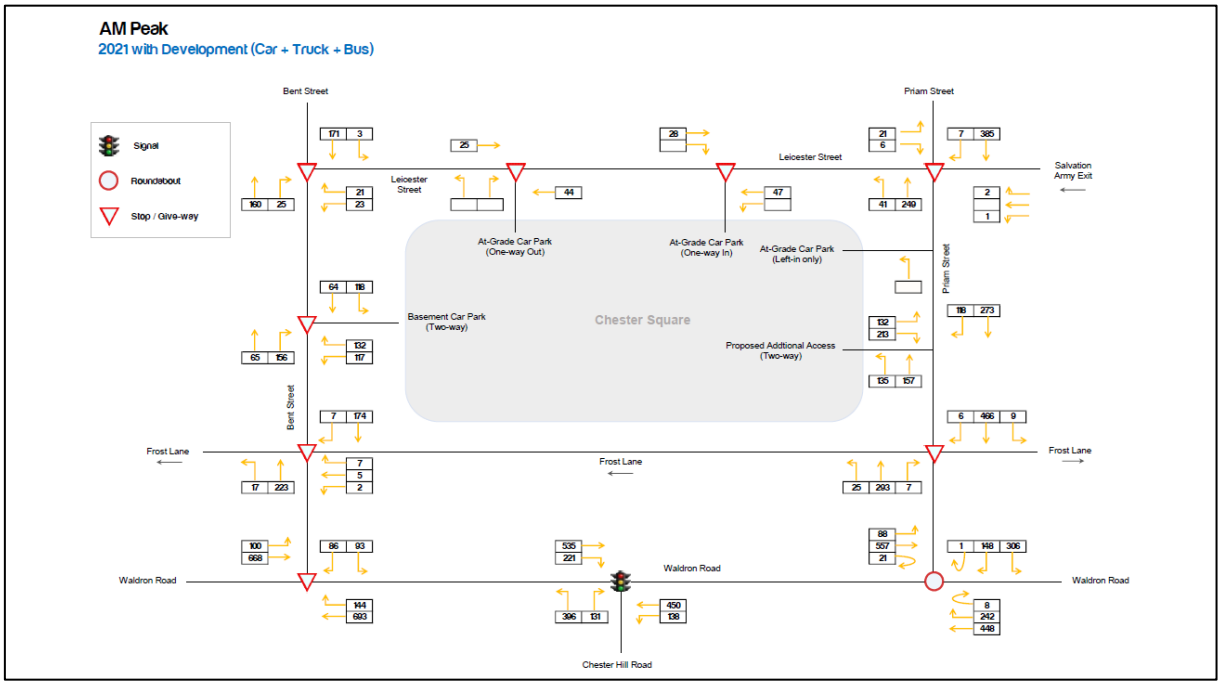

Figure 16: 2021 Project Case Traffic Volume - Weekday AM Peak

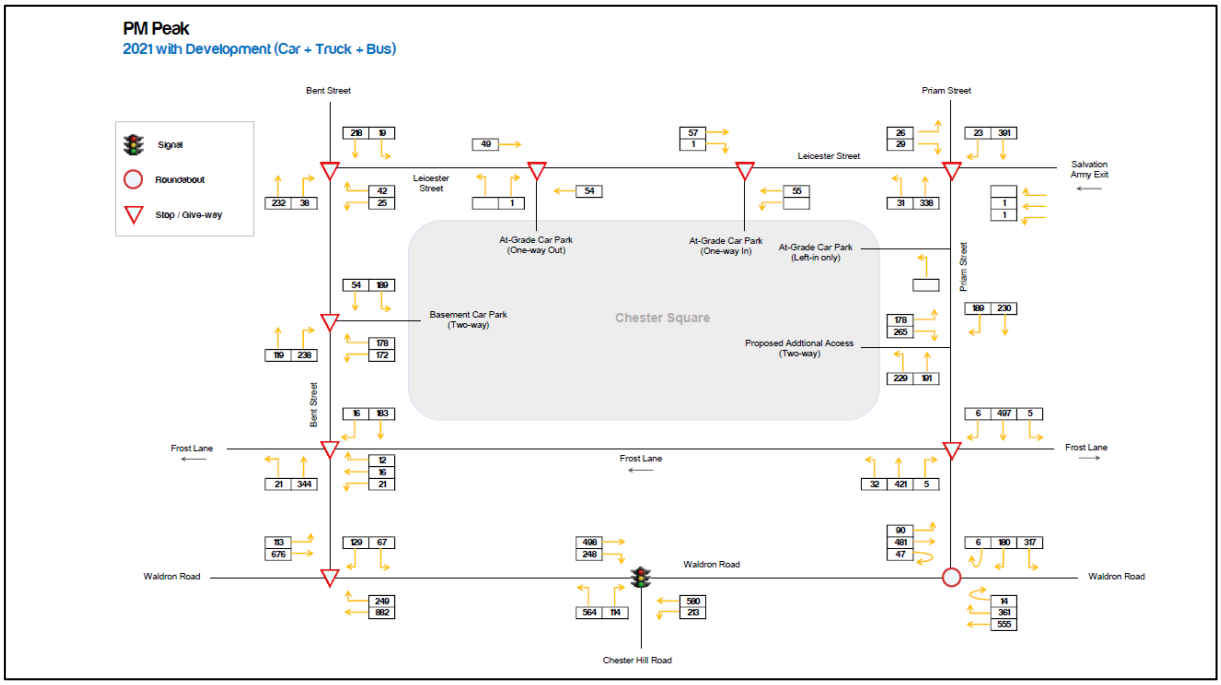

Figure 17: 2021 Project Case Traffic Volume - Weekday PM Peak

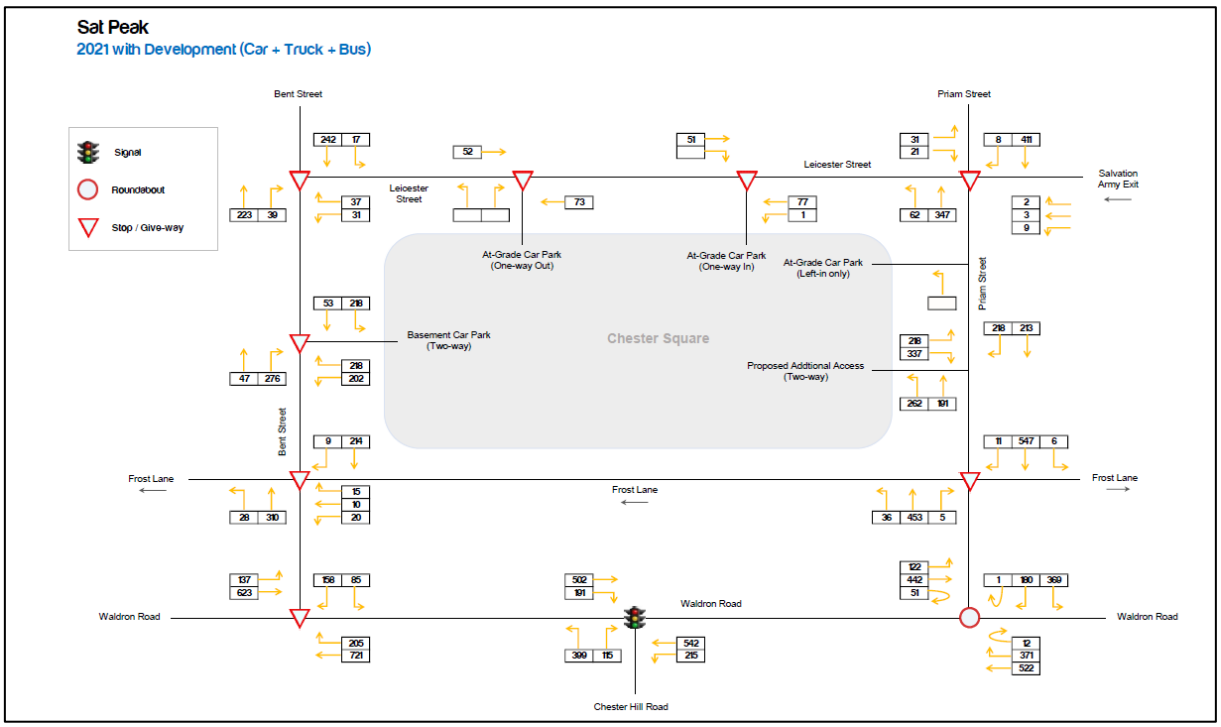

Figure 18: 2021 Project Case Traffic Volume - Saturday Peak

The future (year 2021) performance of the site accesses and key intersections further to the introduction of the Proposal's traffic has been assessed using SIDRA; the results of the SIDRA analysis are summarised in **Table 6**, along with the comparative operation under Existing (2019) conditions.

Table 6: Intersection Operation 2021 Base + Proposal

Intersection	Period	Average delay in seconds (Level of Service)	
		Existing	2021 Project Case
Chester Hill Road / Waldron Road	AM	15.4 (B)	14.7 (B)
	PM	20.7 (B)	16.2 (B)
	Sat	17.2 (B)	19.8 (B)
Waldron Road / Bent Street	AM	27.4 (B)	69.8 (E)
	PM	45.0 (D)	694.0 (F)
	Sat	28.2 (B)	463.8 (F)
Bent Street / Leicester Street	AM	5.5 (A)	6.0 (A)
	PM	6.1 (A)	6.9 (A)
	Sat	6.1 (A)	7.1 (A)
Leicester Street / Priam Street	AM	7.5 (A)	10.6 (A)
	PM	7.5 (A)	6.9 (A)
	Sat	7.3 (A)	11.2 (A)
Waldron Road / Priam Street	AM	12.5 (A)	19.9 (B)
	PM	39.0 (C)	143.8 (F)
	Sat	12.3 (A)	39.7 (C)
Bent Street / Site Access	AM	-	9.7 (A)
	PM	-	26.0 (B)
	Sat	-	52.7 (D)
Priam Street / Site Access	AM	-	9.9 (A)
	PM	-	19.6 (B)
	Sat	-	38.0 (C)

The results of the analysis show that the Waldron Road / Bent Street intersection fails during the weekday evening and Saturday peaks and is at capacity during the weekday morning peak.

The Waldron Road / Priam Street intersection also fails in the weekday evening peak. All other intersections continue to operate close to existing.

7 Impact Mitigation

7.1 Improvements to Accommodate Existing Demand

Council's 2019-2020 Capital Expenditure Program does not include any improvements to the intersections of Waldron Road / Bent Street, which is expected to fail during all peak periods. It also does not include any improvements to the intersections of Waldron Road / Priam Street, which is expected to fail during the PM peak period.

7.2 Additional Improvements to Accommodate the Proposal

To offset the impact from the Planning Proposal traffic, some option testing and sensitivity analysis was conducted on the existing critical intersections within the study area.

In in response to Council's expressed desire to improve the pedestrian environment on Waldron Road and in order to mitigate congestion and improve public domain along Waldron Road, it is proposed to partially close Waldron Road for private vehicles to drive through from Bent Street to Priam Street, whilst allowing buses and access to Chester Hill Road, as shown in **Figure 19**.

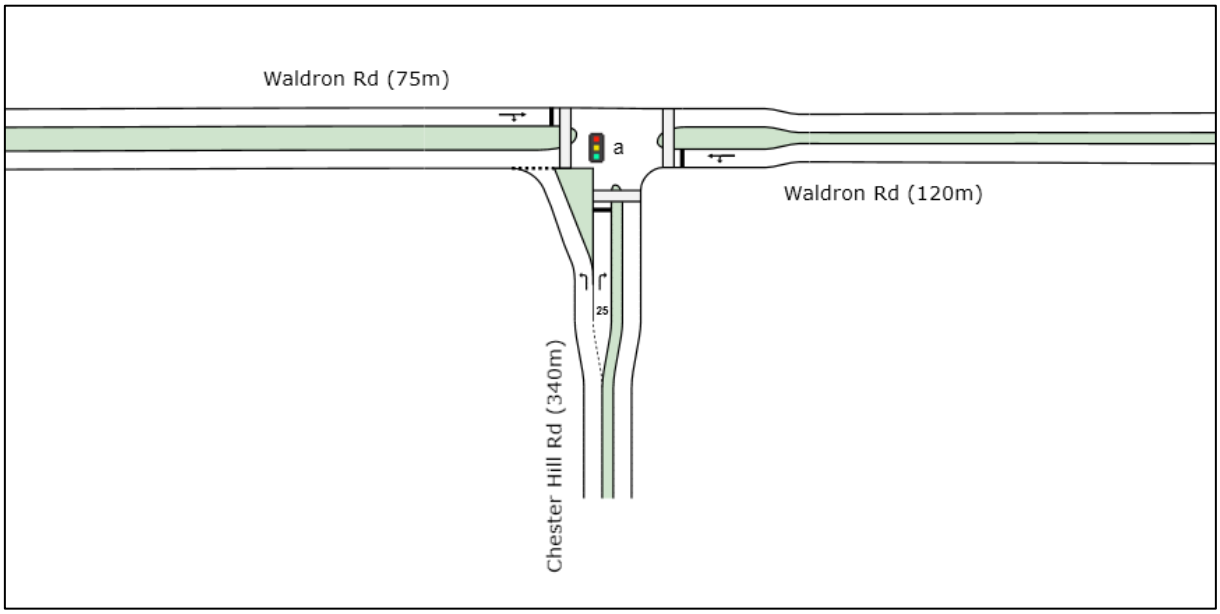

Figure 19: Chester Hill Road / Waldron Road Intersection Upgrade

This proposal is expected to result in:

- 70% of through traffic on Waldron Road will re-route by using Leicester Street
- 30% of through traffic on Waldron Road will re-route by using other alternative roads (outside of the study network)

The resulting flows for each of the peak periods are shown in the figures below.

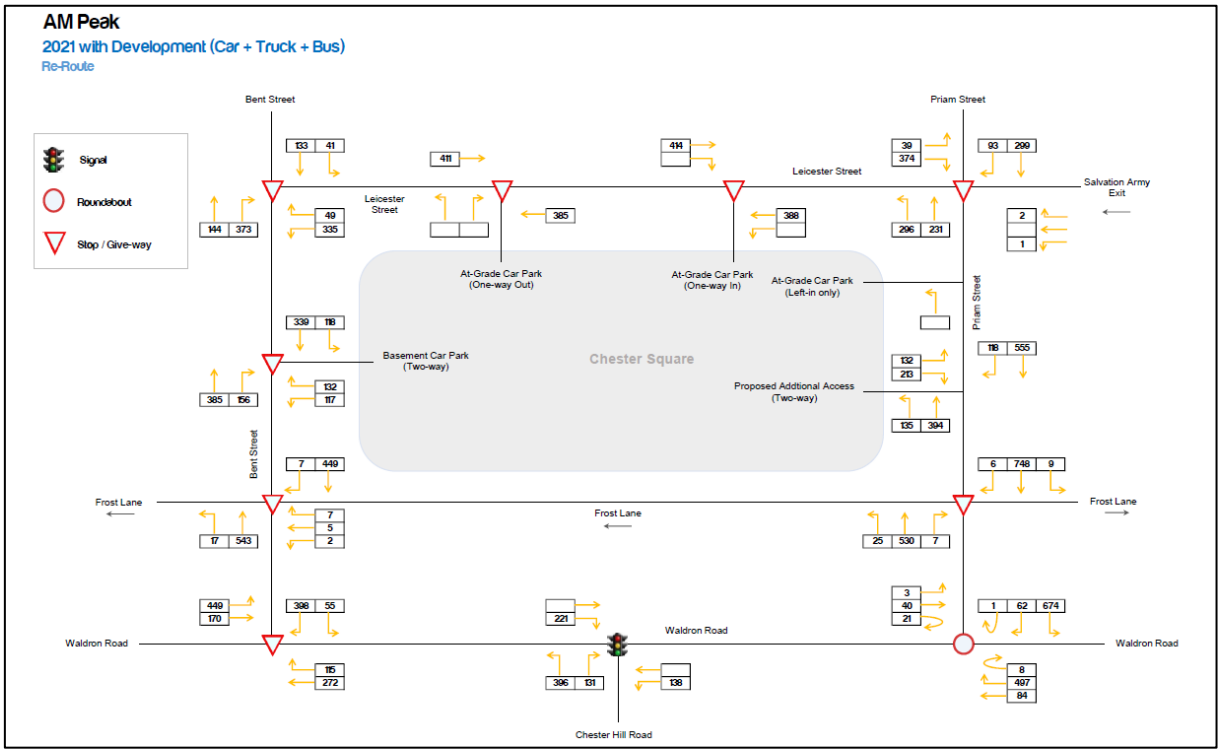

Figure 20: 2021 Project Case Traffic Volume (Re-route) – Weekday AM Peak

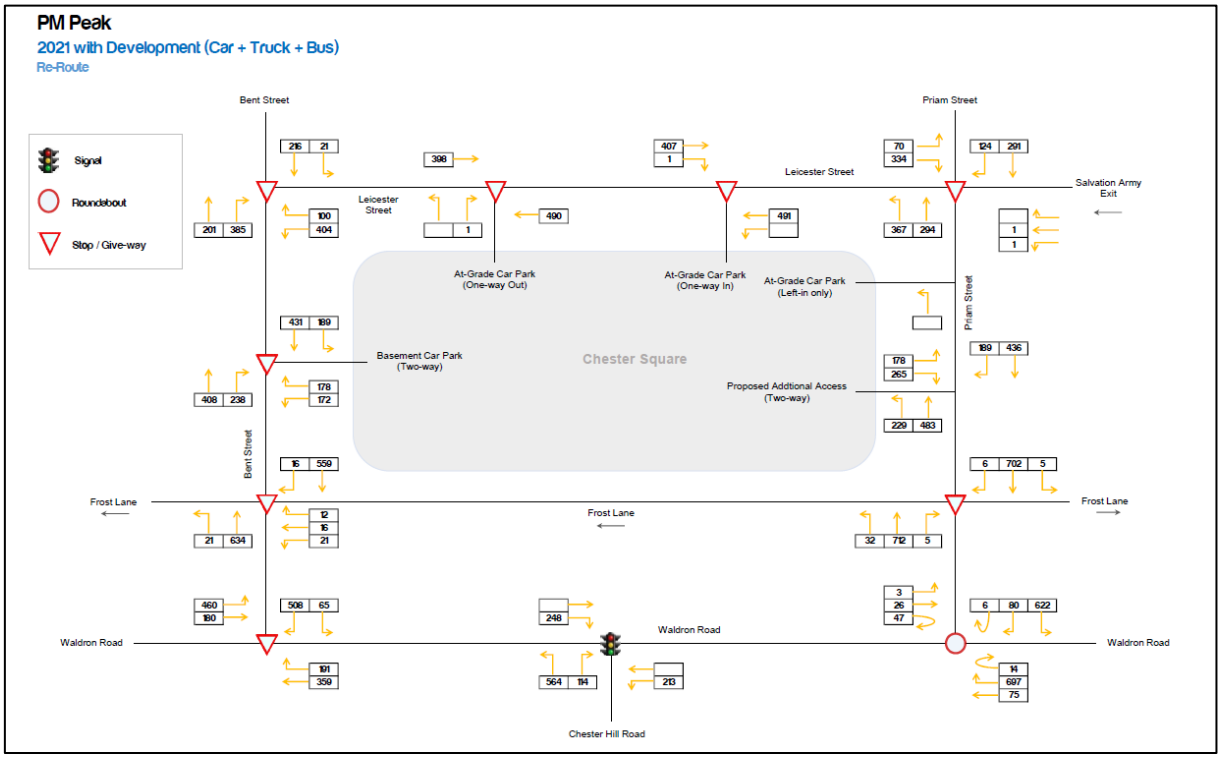

Figure 21: 2021 Project Case Traffic Volume (Re-route) – Weekday PM Peak

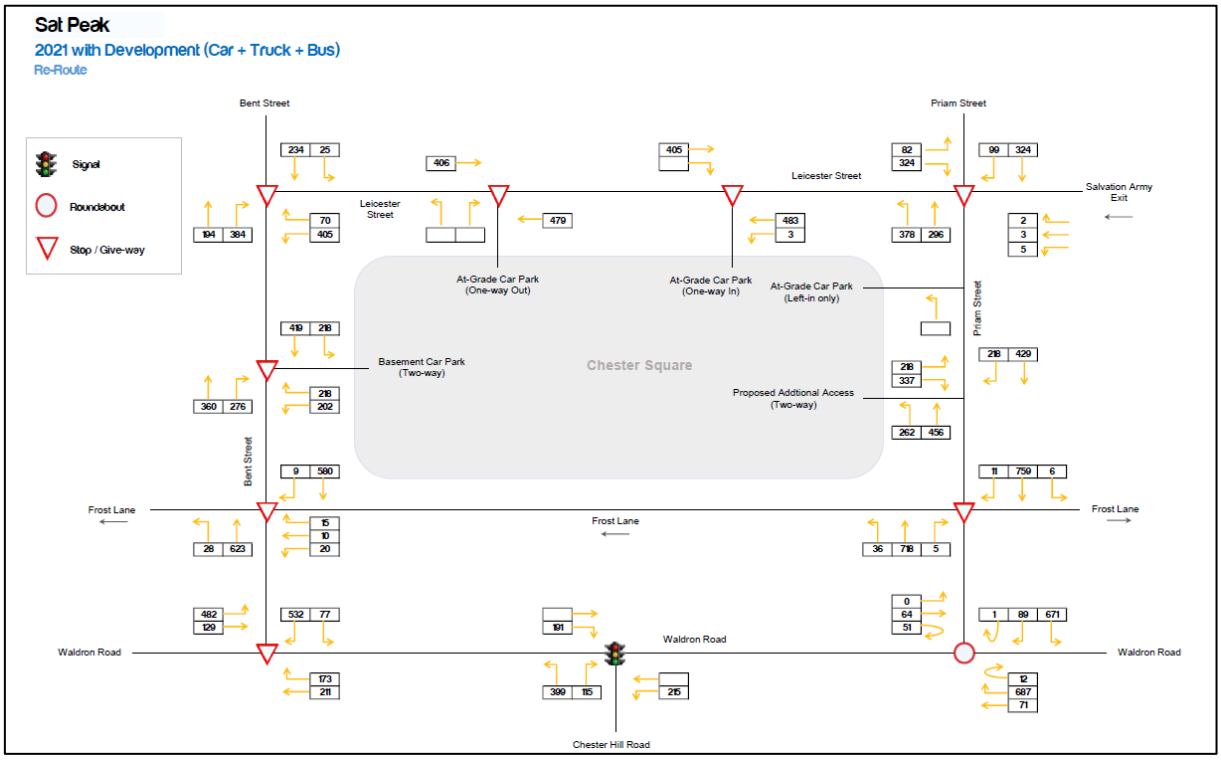

Figure 22: 2021 Project Case Traffic Volume (Re-route) - Saturday Peak

To accommodate the re-routed traffic volume, upgrades are proposed:

- Intersections:
  - Waldron Road / Bent Street: upgrade to roundabout
  - Leicester Street / Priam Street: upgrade to roundabout
  - Waldron Road / Priam Street: upgrade to priority-controlled intersection
- Local Area Traffic Management:
  - Traffic calming within Waldron Rd, between Chester Hill Road and Priam Street

    (Subject to TfNSW endorsement, this may include implementation of a Shared Zone)

SIDRA layouts of the upgraded intersections are presented in **Figure 23**.

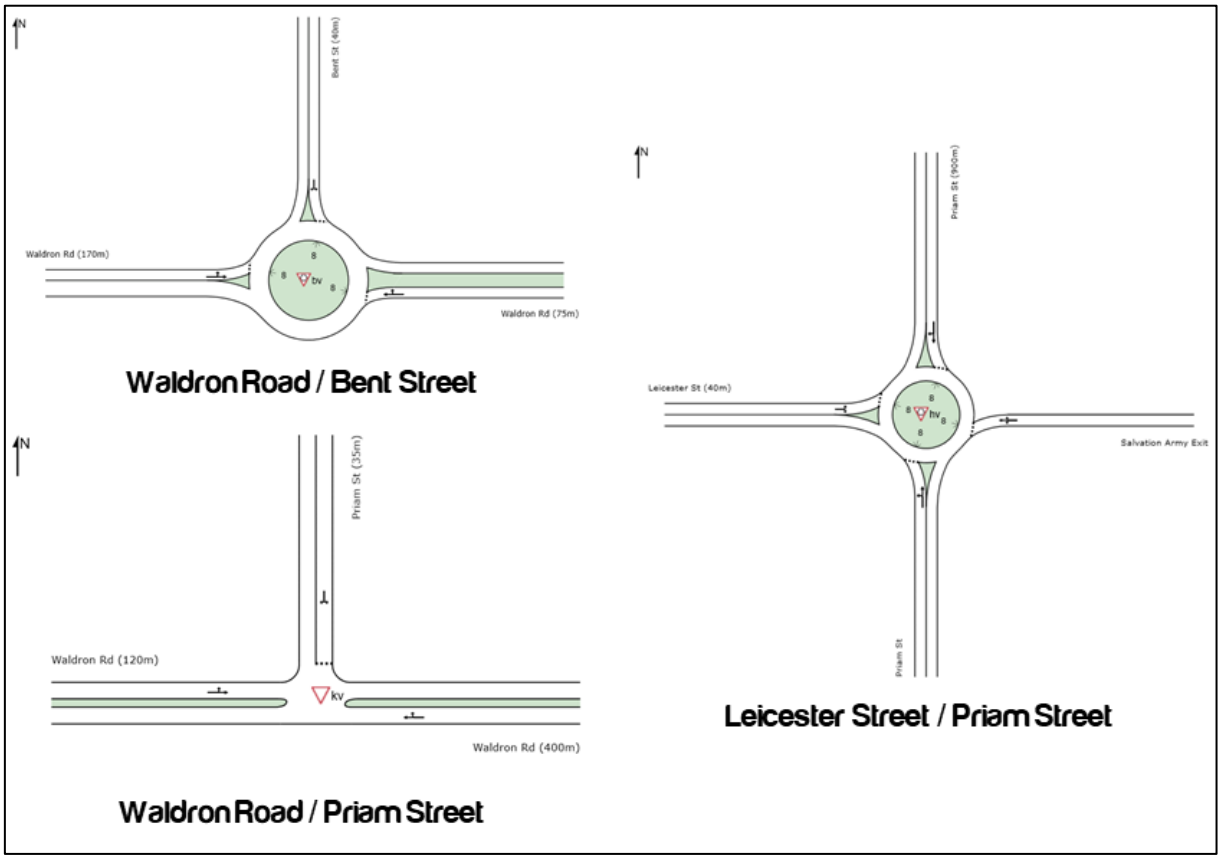

Figure 23: Proposed Intersection Upgrades

The resulting SIDRA modelling results are shown in **Table 7**.

Table 7: 2021 Intersection Performance with Proposal and Improvements

Intersection	Period	Intersection Performance (seconds | (LoS))		
		Existing	2021 Project Case	Project Case (Improvements)
Chester Hill Road / Waldron Road	AM	15.4 (B)	14.7 (B)	16.6 (B)
	PM	20.7 (B)	16.2 (B)	15.4 (B)
	Sat	17.2 (B)	19.8 (B)	16.7 (B)
Waldron Road / Bent Street	AM	27.4 (B)	69.8 (E)	12.3 (A)
	PM	45.0 (D)	694.0 (F)	28.9 (C)
	Sat	28.2 (B)	463.8 (F)	16.1 (B)
Bent Street / Leicester Street	AM	5.5 (A)	6.0 (A)	9.7 (A)
	PM	6.1 (A)	6.9 (A)	13.9 (A)
	Sat	6.1 (A)	7.1 (A)	13.3 (A)

Intersection	Period	Intersection Performance (seconds | (LoS))		
		Existing	2021 Project Case	Project Case (Improvements)
Leicester Street / Priam Street	AM	7.5 (A)	10.6 (A)	20.1 (B)
	PM	7.5 (A)	6.9 (A)	25.7 (B)
	Sat	7.3 (A)	11.2 (A)	48.6 (D)
Waldron Road / Priam Street	AM	12.5 (A)	19.9 (B)	10.8 (A)
	PM	39.0 (C)	143.8 (F)	15.0 (B)
	Sat	12.3 (A)	39.7 (C)	17.7 (B)

From a transport perspective, it is understood that Council's vision is for Waldron Road to be modified to a shared zone between Chester Hill Road and Priam Street. This improvement of pedestrian amenity and reinforcement of desire lines between the railway station and the Chester Square Shopping Centre has been incorporated into the impact mitigation strategy and analysis. The results demonstrate the feasibility to accommodate both the Proposal and Council's vision. However, should Council wish to pursue their vision, it would require significantly more detailed analysis to refine details such intersection treatments, midblock capacity, local area traffic management etc.

Whist an inner bypass of Waldron Road has been shown to be feasible, consideration needs to be given to the outer distribution of traffic on the surrounding network and how changed routes will affect travel times.

Previous planning documents as well as current planning controls all emphasise the importance of Waldron Road as the 'main street' of Chester Hill". This is highlighted by its classification as a Regional Road and being the key east-west road in the area, providing connection between Woodville Road to the west and the Hume Highway and Olympic Drive to the east via various other Regional Roads. However, reclassification is possible provided the local transport needs are met.

8 Conclusions

8.1 Key Findings

The key findings of this Traffic Impact Assessment are:

- The Proposal generally seeks amendment to the existing planning controls applicable to the site, as summarised below.

Planning Control	Existing	Proposed
Zoning	B2: Local Centre	B2: Local Centre (no change)
Floor-space-ration (FSR)	2.5 : 1	4.5 : 1

- Resulting from the above changes to planning controls, it is anticipated that future development could include:
  - 648 high density residential dwellings;
  - 15,763m^2 of retail and commercial floor space, including-
  - 1,000m^2 of commercial floor space
  - Provision of parking within the ground floor and basement level
  - Vehicular access from Bent Street and Priam Street

  The above has been developed to explore the impact of the Proposal and will be subject to further refinement as part of future Development Application submission, following planning approval.
- The Site is located in close proximity to Chester Hill railway station and a number of bus routes, which will encourage new residents and employees to use alternative transport modes (other than private vehicles) to travel to and from the Site. As such, increased density on this site—as proposed—seeks to maximise the potential of this public transport infrastructure.
- It is expected that the on-site parking provisions will be assessed as part of the Development Application (DA) stage of the project. However, it is anticipated that the Proposal will provide sufficient off-street parking to satisfy Council DCP requirements.
- Regarding the proposed access, the Planning Proposal now envisages rationalisation all existing access crossovers into two access crossovers to be located on Bent Street and Priam Street, However, subject to future development size and land-use mix, consideration for additional access points should be considered to disperse traffic onto the surrounding road network.

- In response to Council's expressed desire to improve the pedestrian environment on Waldron Road and in order to mitigate congestion and improve public domain along Waldron Road, a partial closure of Waldron Road for private vehicles from Bent Street to Priam Street has been assessed as a mitigation and improvement strategy and a summary of the modelled intersection performance at key intersections is provided below.

Intersection	Period	Intersection Performance (seconds | (LoS))		
		Existing	2021 Project Case	Project Case (Improvements)
Chester Hill Road / Waldron Road	AM	15.4 (B)	14.7 (B)	16.6 (B)
	PM	20.7 (B)	16.2 (B)	15.4 (B)
	Sat	17.2 (B)	19.8 (B)	16.7 (B)
Waldron Road / Bent Street	AM	27.4 (B)	69.8 (E)	12.3 (A)
	PM	45.0 (D)	694.0 (F)	28.9 (C)
	Sat	28.2 (B)	463.8 (F)	16.1 (B)
Bent Street / Leicester Street	AM	5.5 (A)	6.0 (A)	9.7 (A)
	PM	6.1 (A)	6.9 (A)	13.9 (A)
	Sat	6.1 (A)	7.1 (A)	13.3 (A)
Leicester Street / Priam Street	AM	7.5 (A)	10.6 (A)	20.1 (B)
	PM	7.5 (A)	6.9 (A)	25.7 (B)
	Sat	7.3 (A)	11.2 (A)	48.6 (D)
Waldron Road / Priam Street	AM	12.5 (A)	19.9 (B)	10.8 (A)
	PM	39.0 (C)	143.8 (F)	15.0 (B)
	Sat	12.3 (A)	39.7 (C)	17.7 (B)

- The addition of the Proposal traffic does not adversely affect intersections within the study area, other than Waldron Road / Bent Street and Waldron Road / Priam Street.
- .

8.2 Recommendations

The key recommendations of this TIA Addendum are:

- The scale of development envisaged for the Site presents manageable challenges for road and public transport infrastructure and services.
- Transport infrastructure improvements proposed and assessed in this TIA can accommodate the development yields and regional transport requirements.
- In order to mitigate congestion and improve public domain along Waldron Road, it is proposed to partially close Waldron Road for private vehicles to drive through from Bent Street to Priam Street, whilst allowing buses and access to Chester Hill Road.
- To accommodate the re-routed traffic volume, upgrades are proposed on the following key intersection:
    - Waldron Road / Bent Street: upgrade to roundabout
    - Leicester Street / Priam Street: upgrade to roundabout
    - Waldron Road / Priam Street: upgrade to priority controlled intersection

In summary, the Proposal is supportable on traffic planning grounds, subject to the above recommendations.

Appendix A

SIDRA Outputs

Appendix B

STFM Data