Wellington Street Corridor Upgrade

Traffic Analysis Report

City of Yarra

14 March 2025

→ The Power of Commitment

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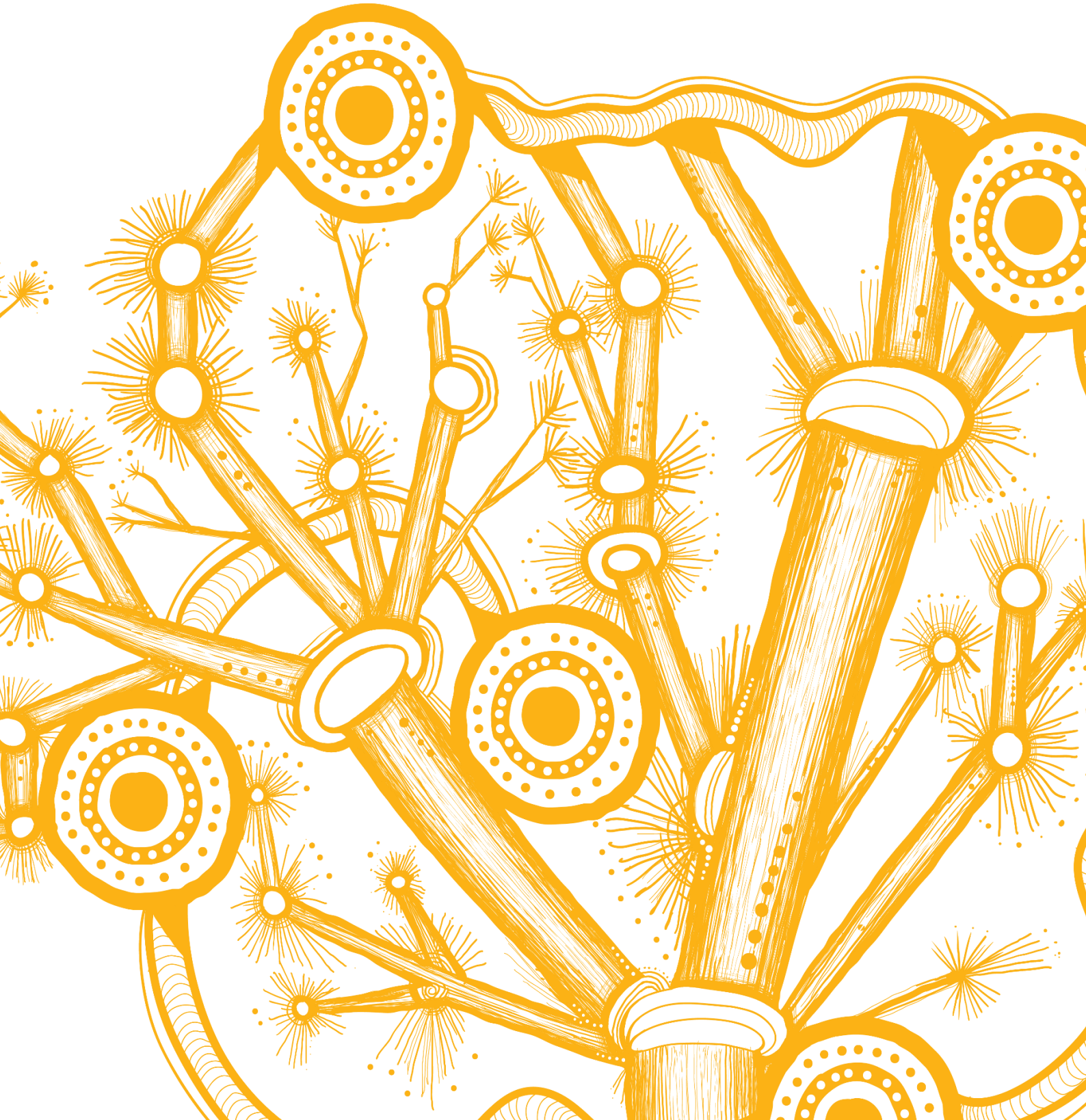

Contents

Table index

Figure index

Appendices

1. Introduction

Wellington Street in the City of Yarra, Melbourne is identified as a C1 Strategic Cycling Corridor. The City of Yarra has recently constructed protected bicycle lanes along Wellington Street, between Victoria Parade and Johnston Street, Collingwood. A number of options for altering Wellington Street, between Johnston Street in Fitzroy and Queens Parade in Clifton Hill to include more bicycle friend infrastructure are currently being explored. This would involve significant changes to cross section and layout of the road in order to fit in the required infrastructure.

1.1 Purpose of this report

The purpose of this report is to provide a preliminary assessment of the potential traffic redistribution from proposed treatments on the Wellington Street corridor through the surrounding road network and potential impacts. At this stage, the analysis undertaken is a first principles desktop analysis of the likely traffic shifts from Wellington Street to adjacent roads.

1.2 Scope and limitations

This report: has been prepared by GHD for City of Yarra and may only be used and relied on by City of Yarra for the purpose agreed between GHD and City of Yarra as set out in section 1.2 of this report.

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The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

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Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

1.3 Assumptions

Any assumptions that have been made during this assessment have been mentioned within the relevant sections of the report.

1.4 Report structure

Summarise report structure

- Section 2 provides an overview of the project area and the four scenarios analysed.
- Section 3 details existing traffic conditions in the study area.
- Section 4 summarises the methodology to assess the potential impacts of each scenario on the road network.
- Section 5 presents the assessment results for each scenario considering daily traffic volumes.
- Section 6 provides the conclusions from this assessment and recommended next steps.
- Appendix A contains maps of each scenario showing traffic volumes for the AM, PM and daily traffic volumes.
- Appendix B contains a table of existing traffic volumes in the study area.

2. Project overview

Wellington Street in the City of Yarra is a C1 Strategic Cycling Corridor. The City of Yarra has recently constructed protected bicycle lanes along Wellington Street, between Victoria Parade and Johnston Street, Collingwood (to the south of the study area). A number of options for altering Wellington Street, between Johnston Street in Fitzroy and Queens Parade in Clifton Hill to include more bicycle friend infrastructure are currently being explored.

The City of Yarra seeks to understand how traffic would potentially be distributed through the surrounding road network if this were to occur. At this preliminary stage in the development of the project, the City of Yarra is currently not seeking any detailed traffic modelling to be undertaken.

The following sections below provide an overview of the proposed options.

2.1 Project area

The project area is defined by the streets which will likely be impacted by traffic diversions as a result of the proposed changes to Wellington Street. A map showing the project area is shown in Figure 1 below:

Figure 1 Project site area

Base image source: VicRoads maps

2.2 Wellington Street bicycle infrastructure options

Table 1 summarises the proposed changes with Stage 3 referring to the southern section of the corridor between Johnston Street and Alexandra Parade, and Stage 4 referring to the northern section of the corridor between Alexandra Parade and Queens Parade. As can be seen there is an intent to reduce motorised traffic on Wellington Street significantly through the following:

- A modal filter, also called a point closure, is a road design feature that limits access for certain vehicles, typically to reduce motorised traffic in residential areas by redirecting these vehicles to main roads. This encourages walking and cycling by making local streets safer and more enjoyable.
- A "Bicycle Street" is a road cross-section with significantly enhanced bicycle priority, typically where motorised vehicles are allowed but these vehicles must yield to bicycles. Often these streets feature traffic calming measures to ensure a safe and comfortable environment for cyclists.
- Uni-directional bike lanes are dedicated lanes for cyclists that run in a single direction, typically on each side of the road. These lanes are often separated from motor vehicle traffic by physical barriers such as kerbing, enhancing safety and comfort for cyclists

Table 1 Proposed scenarios and traffic management

Scenario	1	2	3	4
Description	– Stages 3 and 4: Two-way "Bicycle Street" with modal filters	– Stage 3: Two-way vehicle traffic, painted bike lanes and one modal filter – Stage 4: Two-way vehicle traffic and uni-directional protected bike lanes	– Stage 3: Two-way "Bicycle Street" with modal filters in – Stage 4 Two-way vehicle traffic and uni-directional protected bike lanes	– Stage 3: Two-way vehicle traffic, painted bike lanes and one modal filter – Stage 4: Two-way "Bicycle Street" with modal filters
Traffic Management	– Partial modal filters at: • Easey Street • Keele Street • Hotham Street • Noone Street • Council Street – Reconfiguration of the Alexandra Parade Intersection	– Full modal filter at Keele Street – Reconfiguration of the Alexandra Parade Intersection	– Partial modal filters at: • Easey Street • Keele Street • Hotham Street – Reconfiguration of the Alexandra Parade Intersection	– Full modal filter at Keele Street – Partial modal filters at: • Noone Street • Council Street – Reconfiguration of the Alexandra Parade Intersection
Traffic Direction	– Two-way vehicle traffic with local access only	– Stage 3: Two-way vehicle traffic with access limited – Stage 4: Two-way vehicle traffic with full local and through access	– Stage 3: Two-way vehicle traffic with local access only in southern section – Stage 4: Two-way vehicle traffic with full local and through access in northern section	– Stage 3: Two-way vehicle traffic with access limited in southern section – Stage 4: Two-way vehicle traffic with local access only in northern section
Desired Traffic Volumes (as estimated by the City of Yarra)	– Less than 2000 vehicles per day	– Stage 3: 2000-5000 vehicles per day – Stage 4: 5000+ vehicles per day	– Stage 3: Less than 2000 vehicles per day – Stage 4: 5000+ vehicles per day in northern section	– Stage 3: 2000-5000 vehicles per day – Stage 4: Less than 2000 vehicles per day

Figure 2 presents the different proposed changes for each option in a map of the study area.

Figure 2 ***Proposed scenario layouts***

Base image source: VicRoads maps

3. Existing traffic assessment

Traffic data along Wellington Road and the surrounding road network have been collated to determine the Daily or Average Annual Daily Traffic (AADT), AM Peak (7am-9am) and PM Peak (4pm-6pm) volumes. This process is outlined in the sections below:

3.1 Wellington Street traffic volumes

Automatic Traffic Counter (ATC) data has been provided by the City of Yarra at a number of locations along Wellington Street dated 10 October 2023. This information has been used to determine the existing traffic volumes along Wellington Street.

The summary of the existing daily, AM Peak and PM Peak traffic volumes for Wellington Street between Queens Parade and Johnston Street is presented in Table 2.

Based on the collected data, a detailed summary of the volumes are as follows:

– Wellington Street has higher daily traffic volumes at the south segment located between south of Alexandra Parade to south of Perry St near Johnston Street, with about 5,000 for northbound traffic and around 6,000 for southbound traffic.
– At the north segment, between Queens Parade and Alexandra Parade, daily traffic totals are around 2,500 to 3,000 vehicles for each direction, which is relatively half of the observed traffic volumes in the south segment.
– During the AM Peak, traffic along Wellington Street is higher in the south segments between Alexandra Parade and Johnston Street with around 800 to 1,200 southbound vehicles while northbound traffic is around 200 to 300 vehicles.
– Northbound traffic is higher during PM Peak notably at segments between Alexandra Parade and Johnston Street with around 700 to almost 900 vehicles.

Table 2 Wellington Street Existing Traffic Volumes

Segment	Direction	AADT	AM Peak	PM Peak
Wellington St (South of Queens Parade)	NB	3,000	290	620
Wellington St (South of Queens Parade)	SB	2,600	560	370
Wellington St (North of Alexandra Parade)	NB	2,700	240	570
Wellington St (North of Alexandra Parade)	SB	2,500	390	360
Wellington St (South of Alexandra Parade)	NB	4,500	390	890
Wellington St (South of Alexandra Parade)	SB	5,900	1,170	660
Wellington St (South of Hotham St)	NB	4,200	410	740
Wellington St (South of Hotham St)	SB	5,900	1,100	680
Wellington St (South of Easey St)	NB	4,500	390	870
Wellington St (South of Easey St)	SB	5,200	870	630
Wellington St (South of Perry St, near Johnston St)	NB	4,300	340	750
Wellington St (South of Perry St, near Johnston St)	SB	5,900	1,180	670

3.2 Wellington Street traffic distribution

In order to provide detailed information about travel origins and destinations in the study area TomTom data was sourced for the Wellington Street corridor.

TomTom's Origin-Destination (O/D) data provides insights into traffic patterns by detailing where trips start and end, as well as the routes taken. This data is derived from anonymised information collected from over 600 million connected devices across the world. For this project on Wellington Street, Collingwood, this data can be used to:

- **Analyse traffic flow**: Understand how vehicles currently move through the area.
- **Assess impact of changes**: Predict how modifications to Wellington Street might affect traffic distribution on surrounding roads.
- **Improve infrastructure planning**: Inform decisions on road improvements, traffic signal adjustments, and other infrastructure needs.
- **Support urban planning**: Aid in the development of strategies to manage traffic congestion and enhance mobility.

The key findings from the TomTom data are discussed in the following subsections, showing traffic patterns in the northbound and southbound directions.

3.2.1 Northbound traffic

Figure summarises destination splits for Wellington Street immediately to the south of Alexandra Parade for vehicles heading north. At this point:

- 24% of traffic turns left onto Alexandra Parade to go to the west
- 41% of traffic turns rights onto Alexandra Parade to head to the east.
- 31% of traffic of traffic goes straight onto Wellington Street to the north.

Figure summarises the origins of northbound vehicles on Wellington Street immediately to the south of Alexandra Parade. At this point:

- 50% of traffic has originated from south of Johnston Street
- 9% has originated from Johnston Street to the west.
- 4% has originated from Johnston Street to the east.
- 46% of traffic has originated from a local place between Johnston Street and Alexandra Parade

3.2.2 Southbound traffic

Figure summarises the origins of southbound vehicles Wellington Street immediately to the south of Alexandra Parade. At this point:

- 19% of traffic turns right from Alexandra Parade onto Wellington Street.
- 40% of traffic turns left from Alexandra Parade to head south onto Wellington Street.
- 26% of traffic of traffic goes straight onto Wellington Street south from Wellington Street north.

Figure summarises the destinations of southbound vehicles on Wellington Street immediately to the south of Alexandra Parade. At this point:

- 50% of traffic continues southbound after crossing Johnston Street.
- 9% of traffic turns right onto Johnston Street to the west.
- 4% of traffic turns left onto Johnston Street to the east.
- The rest of the traffic travels to a local destination between Alexandra Parade and Johnston Street.

3.2.3 Summary

In summary a large proportion of traffic on Wellington Street is using this corridor as a through route, presumably to avoid other key arterial roads in the study area. Whilst there are an element of trips that could be classed as local a large number of trips are for journeys that start and end outside of Wellington Street.

For trips that originate or have a destination outside of Alexandra Parade a large proportion of trips originate or head to the east, in particular via the Eastern Freeway.

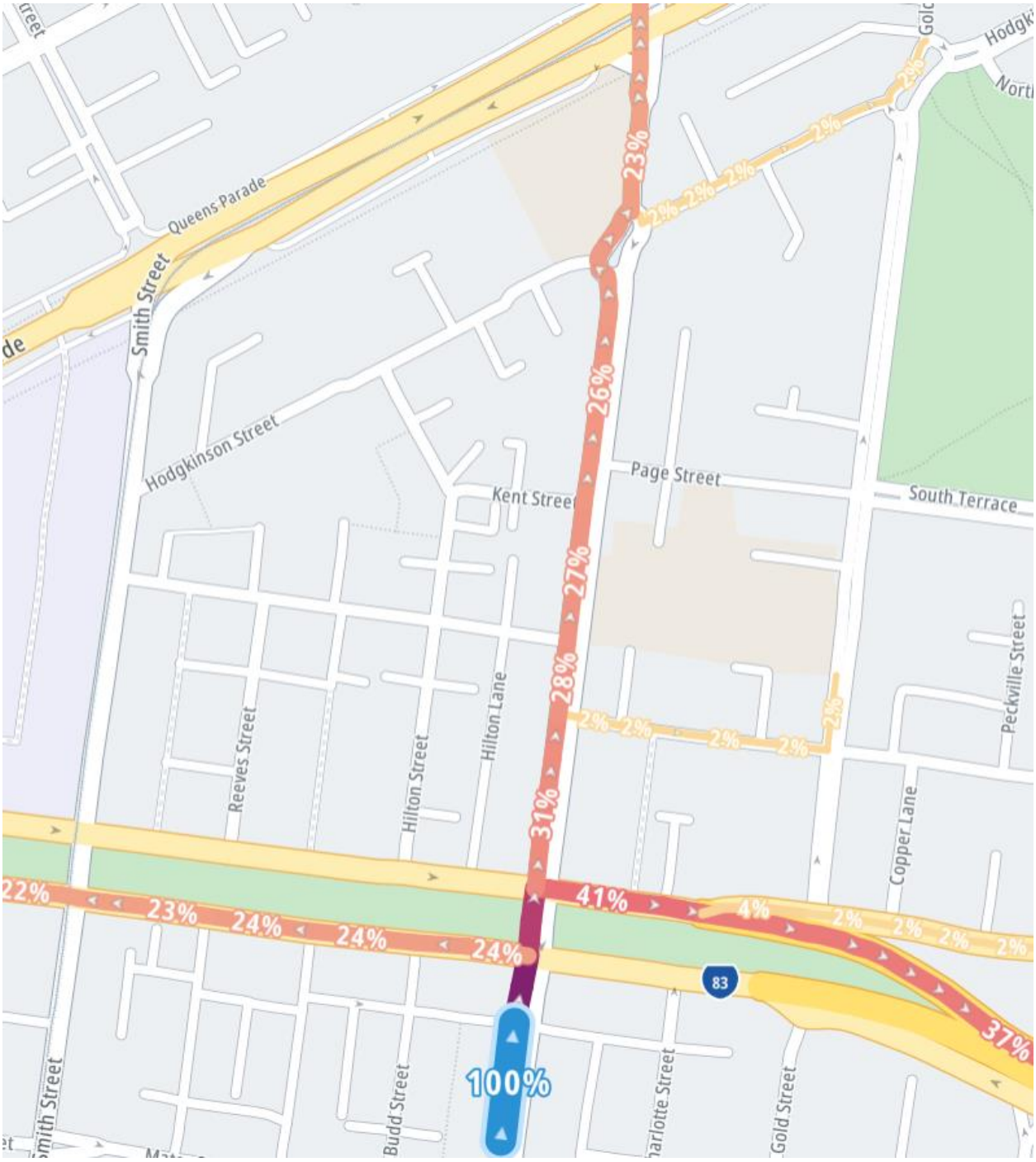


Figure 3 *Wellington Street Northbound Destination Traffic Trends*

Figure 4 *Wellington Street northbound origin traffic trends*

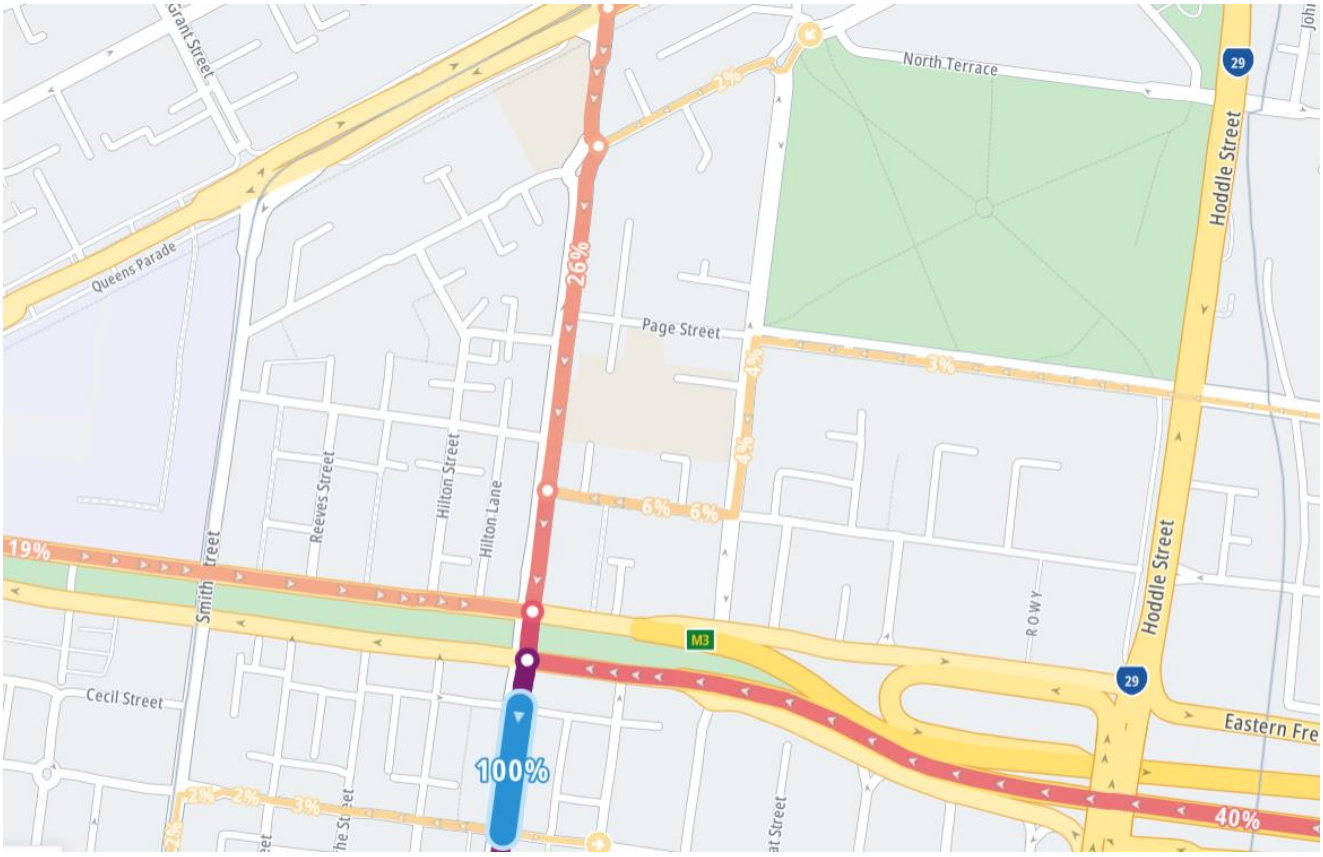


Figure 5 ***Wellington Street southbound origin traffic movements***

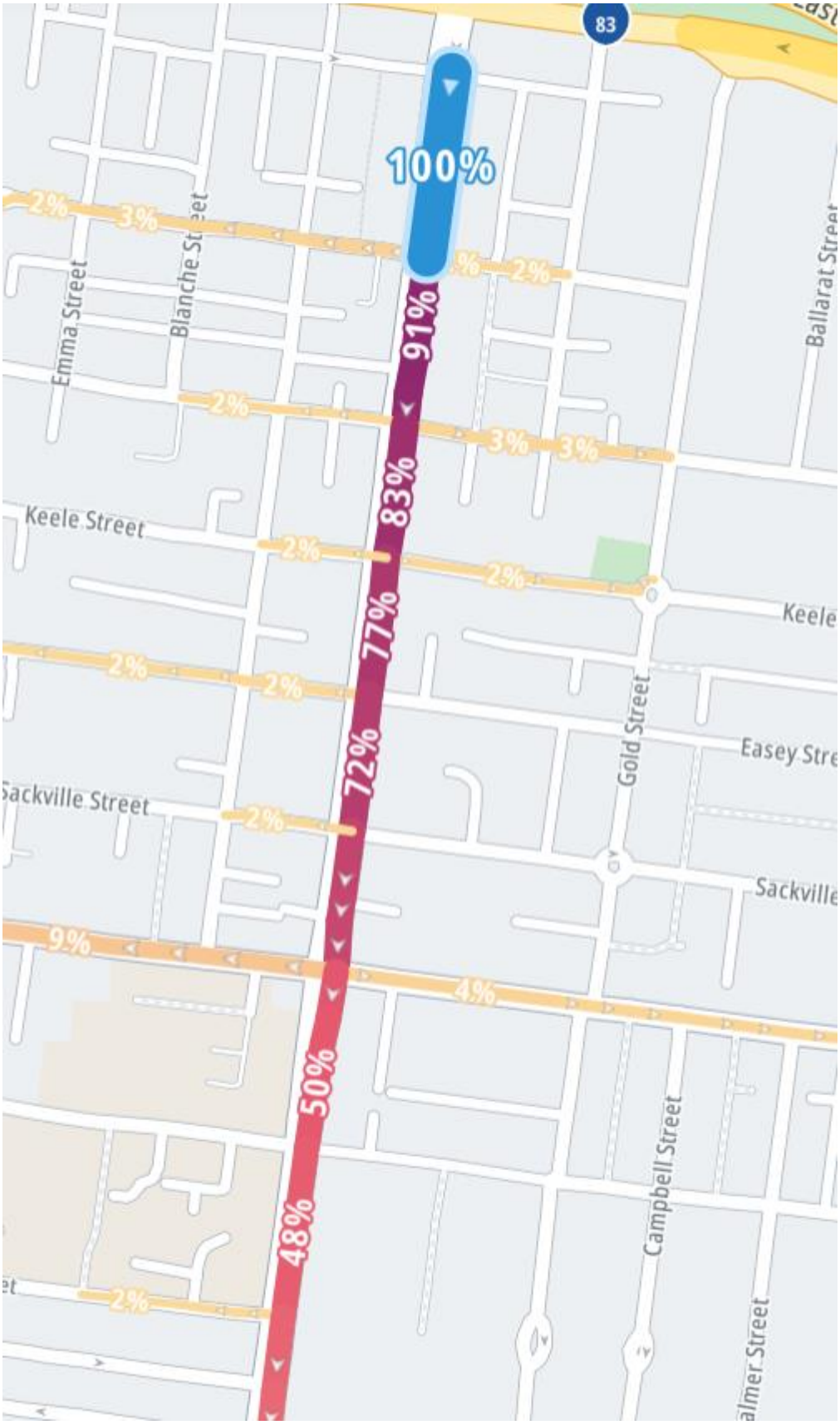


Figure 6 ***Wellington Street southbound destination traffic movements***

3.3 Surrounding road network data

Department of Transport and Planning (DTP) collects traffic volumes through the SCATS system at detector loops on the approaches to signalised intersections. This information is publicly available via the DataVic website. The traffic data on this website was downloaded for 2024 and filtered to capture typical weekday volumes outside non-summer holiday periods. The data information was checked and calibrated for accuracy and consistency.

Traffic volumes were collected on the arterial road network, on roads which will likely be directly affected by any changes to Wellington Street, between Johnston Street and Queens Parade.

Shown in Figure 7 are the data collection sites at intersections within the project area along the following streets:

- Queens Parade
- Alexandra Parade
- Johnston Street
- Gertrude Street
- Nicholson Street
- Brunswick Street
- Smith Street
- Wellington Street
- Hoddle Street

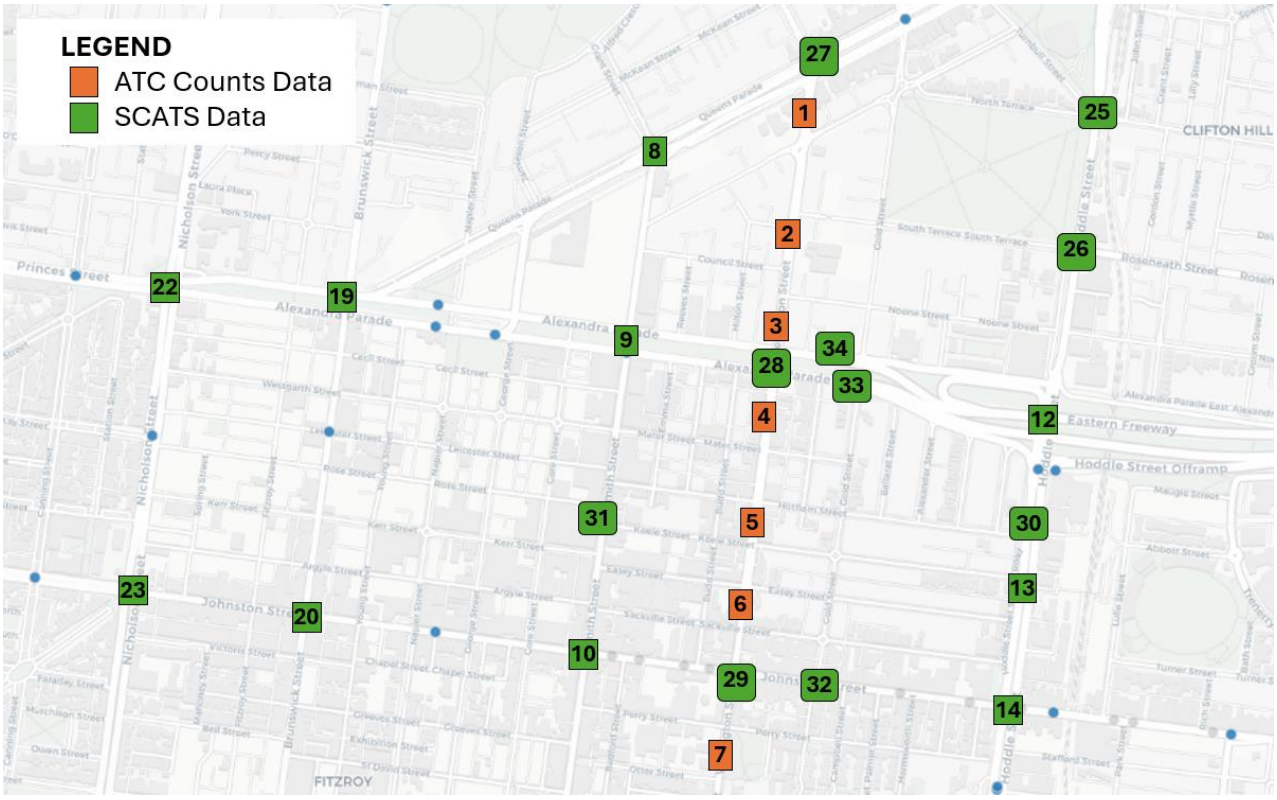


Figure 7 Data collection sites

The existing daily traffic for the study area is presented in Figure 8 in a map format. The detailed summary of traffic volumes for the surrounding area are as follows:

- Majority of eastbound and westbound traffic passes along Alexandra Parade and towards the Eastern Freeway, with about 30,000 to 44,000 vehicles per day.
- Johnston Street also serves as a main accessway towards east and west of Collingwood, with about 7,500 to 10,600 vehicles per day while Queens Parade serves around 6,400 to 11,500 vehicles per day.
- For the north-south direction, traffic is mainly concentrated along Hoddle Street, serving around 20,000 to 50,000 vehicles per day.
- Nicholson Street, Brunswick Street and Smith Street serve around 6,000 to 9,000 vehicles per day as observed on the traffic trend for both northbound and southbound direction.

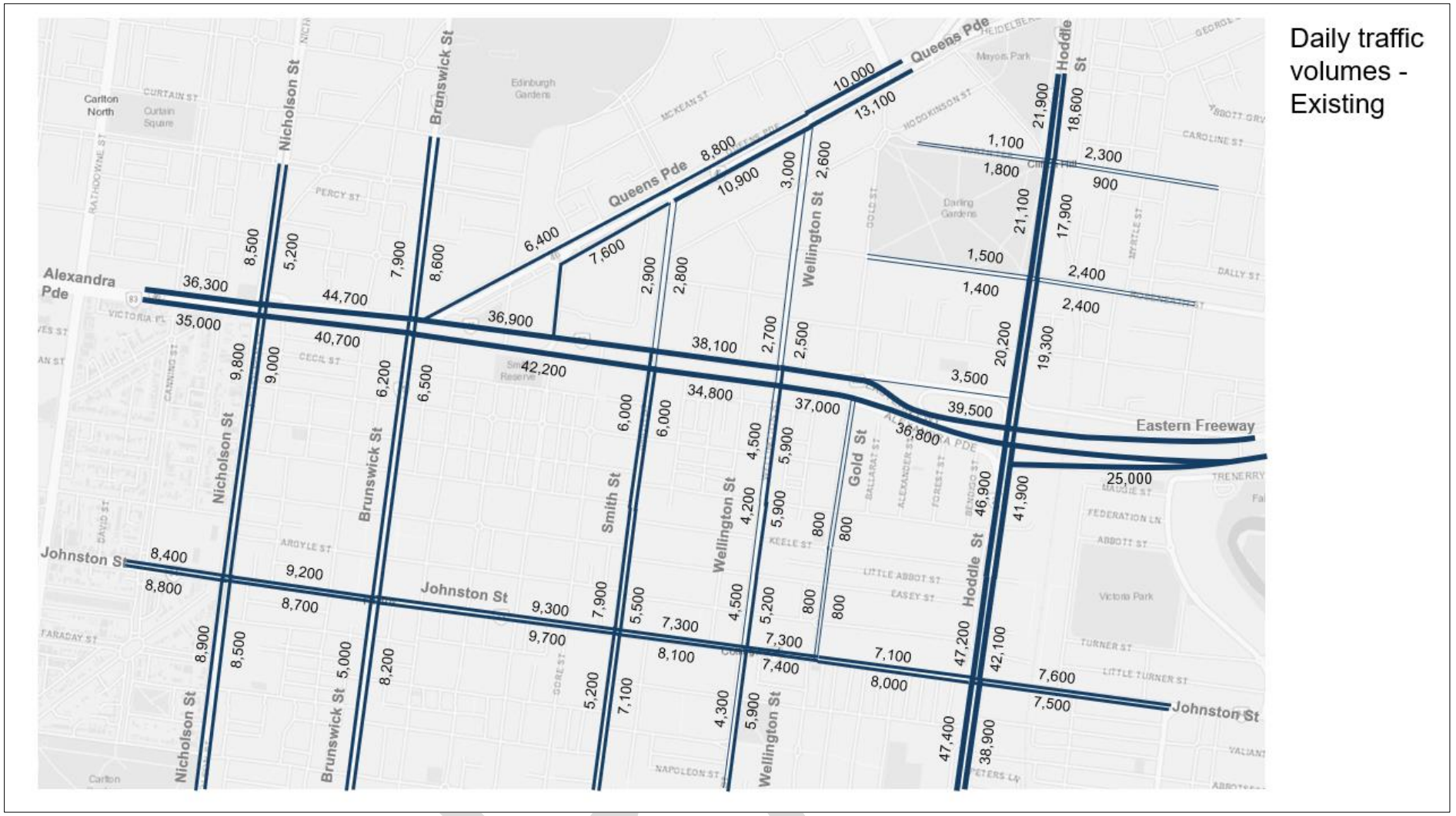


Figure 8 *Existing daily traffic volumes in study area*

4. Traffic redistribution methodology

4.1 Methodology

The following sections outline the methodology to which has been applied to the traffic redistribution analysis.

It is noted that the redistribution analysis is limited to the arterial road network and does not provide detailed redistribution analysis within the local road network.

4.2 TomTom data

As discussed in Section 3.2 TomTom data has been collected along Wellington Street between Johnston Street and Queens Parade. The data shows origin-destination patterns along the corridor. Based on the TomTom data, the directional splits were collated and used to estimate the percentage of traffic to be diverted due to the proposed road closures or limitations in traffic directions.

4.3 Assumptions

The following assumptions have been applied to the existing traffic data for the redistribution of traffic around the network:

- Where vehicles travel directly through a particular segment of Wellington Street where modal filters are proposed, these vehicles have been redistributed through the network according to their destination based on the TomTom origin-destination patterns.
- Where modal filters restrict traffic significantly it is assumed that a proportion of local vehicle trips on Wellington Steet would be diverted onto the adjacent Smith Street and Gold Street corridors.
- The intent of the wider traffic distribution is to push traffic onto adjacent arterial corridors without on-road tram routes.
    - As such it is assumed that Nicholson Street will be the major corridor for diverted traffic coming from or going to the north west of the study area with a smaller diversion to Brunswick Street.
    - Hoddle Street will absorb the majority of the diverted traffic coming from or going to the north and east of the study area.
- For traffic travelling to areas to the south of Johnston Street from the north and east it is assumed that some of this traffic will divert via Johnston Street, and some will travel via Hoddle Street and Gipps Street to the south.
- Given this is a high level assessment GHD has not considered theoretical midblock or intersection capacities in this analysis.
- It is assumed that vehicles would divert in each scenario and there would be no reductions in trips (i.e. people continue to travel between their origins and destinations).

5. Assessment Results

A summary of the changes in daily traffic volumes for each scenario is presented in the sections below.

Detailed results for each of the scenarios is shown in Appendix A while a summary of changes in traffic volumes is shown in Table 3.

5.1 Scenario 1

Figure 9 shows the resulting differences in daily traffic volumes for Scenario 1 in comparison to the existing traffic volumes in the study area. The red lines show an increase in traffic volumes on those roads and the green lines show a decrease in traffic volumes.

In Scenario 1 there is a large reduction in traffic on Wellington Street in both Stage 3 and Stage 4 due to both stages being classed as a “Bicycle Street”:

– Overall traffic volumes on Wellington Street are estimated to reduce by 87% in the Stage 3 section and 83% in the Stage 4 section.
– Stage 3:
  - Wellington Street’s function is for local traffic only with all through traffic now assumed to divert to alternative corridors.
  - Through traffic that previously used Wellington Street for trips to and from the wider road network is assumed to divert to alternative corridors. There are increases in traffic on Hoddle Street, Johnston Street in particular with smaller increases in traffic on Nicholson Street and Brunswick Street.
  - There is an assumed redistribution of traffic on Wellington Street undertaking trips within the local area to Gold Street and Smith Street. This is due to the downgrading of Wellington Street to a Bicycle Street.
– Stage 4:
  - Wellington Street’s function is for local traffic only in the area bounded by Alexandra Parade, Queens Parade and Hoddle Street. As such traffic is heavily restricted in this area.
  - There is a further diversion for traffic that previously used this section of the corridor to access Wellington Street to the south of Alexandra Parade. This traffic is assumed to divert to the Smith Street and Hoddle Street corridors.

5.2 Scenario 2

Figure 10 shows the resulting differences in daily traffic volumes for Scenario 2 in comparison to the existing traffic volumes in the study area. The red lines show an increase in traffic volumes on those roads and the green lines show a decrease in traffic volumes.

In Scenario 2, there is smaller reduction in traffic volumes when compared to Scenario 1 considering that there will be more modest infrastructure changes (no presence of Bike Streets that require a significant reduction in motor traffic for either area) in both Stage 3 and Stage 4:

– Overall traffic volumes on Wellington Street are estimated to reduce by 68% in the Stage 3 section and 39% in the Stage 4 section.
– Stage 3:
  - Traffic along Wellington Street between Alexandra Parade and Johnston Street will be reduced by around 3,000 vehicles.
  - Restricting through-traffic at Keele Street will divert traffic towards Hoddle Street and Nicholson Street, which increases traffic on east-west corridors such Johnston Street.
  - Local traffic diversions within the areas are assumed to be minimal when compared to Option 1.
– Stage 4:
  - There is a large reduction in traffic on Wellington Street in this option due to the modal filters installed.

- Through traffic to the wider road network is assumed will be diverted mostly towards Hoddle Street, resulting in increases in traffic on this corridor along Johnston Street.

5.3 Scenario 3

Figure 11 shows the resulting differences in daily traffic volumes for Scenario 3 in comparison to the existing traffic volumes in the study area. The red lines show an increase in traffic volumes on those roads and the green lines show a decrease in traffic volumes.

In Scenario 3, there would be a reduction in traffic volumes due to the reconfiguration of Stage 3 into a “Bicycle Street” and uni-directional protected bike lanes being installed in the Stage 4 section:

– Overall traffic volumes are estimated to reduce by 78% in the Stage 3 section and 39% in the Stage 4 section.
– Stage 3:
  - There is an approximate reduction of about 3000 to 4000 vehicles on this segment of Wellington Street as it will only allow through-traffic access in the northern section at Hotham Street.
  - Through traffic along Wellington Street from the north and east will be diverted mostly towards Hoddle Street, with a portion of traffic undertaking local trips taking alternative routes at Smith Street and Gold Street.
  - Traffic going to the west of the study area will be redistributed towards Johnston Street and Nicholson Street, diverting from the original route via Alexandra Parade .
– Stage 4:
  - There will be a reduction of through traffic going to and from the southern segment of Wellington Street leading to diversion of traffic to Hoddle Street between Queens Parade and Alexandra Parade.
  - Similar to Scenario 2, there will be minimal impact on the local and through traffic along this segment of Wellington Street since the existing cross section will largely be retained.

5.4 Scenario 4

Figure 12 shows the resulting differences in daily traffic volumes for Scenario 4 in comparison to the existing traffic volumes in the study area. The red lines show an increase in traffic volumes on those roads and the green lines show a decrease in traffic volumes.

In Scenario 4, there is significant reduction in traffic due to converting Stage 4 into a two-way “Bicycle Street” and introducing full intersection filters at Stage 3 section:

– Overall traffic volumes is estimated to reduce by 77% in the Stage 3 section and 83% in the Stage 4 section.
– Stage 3:
  - In this section, Wellington Street traffic would decrease by approximately 2,600 vehicles for northbound traffic and 2,600 vehicles for southbound traffic.
  - Hoddle Street will mostly absorb the diverted traffic for traffic heading to the north and east while there is an assumed diversion of local traffic in the area to Smith Street and Gold Street as alternative routes.
  - There will also be a reduction in through traffic along Alexandra Parade as this traffic would be diverted onto Nicholson Street and Johnston Street.
– Stage 4:
  - Only local traffic will be allowed at this segment of Wellington Street due to it being classed as a “Bicycle Street” and the proposed changes in traffic directions at Noone Street and Council Street.
  - Traffic would reduce significantly along Wellington Street and will divert towards Hoddle Street and other alternative routes such as Smith Street to enter the Collingwood area.
  - It is estimated that the two-way traffic volume along Wellington Street in this section will decrease to about 950 vehicles per day.

Table 3 Summary of changes in traffic volumes on key road corridors

Location	Dir	Existing	Option 1	Option 2	Option 3	Option 4
Wellington St between Queens Parade and Alexandra Parade (Stage 4)	NB	3,000	-2,600	-900	-900	-2,600
	SB	2,600	-2,000	-1,300	-1,300	-2,000
Wellington St between Alexandra Parade and Johnston Street (Stage 3)	NB	4,200	-3,600	-3,000	-3,300	-3,200
	SB	5,900	-4,900	-3,700	-4,300	-4,300
Smith Street between Alexandra Parade and Johnston Street	NB	7900	300	0	200	100
	SB	6000	600	0	300	300
Gold Street between Alexandra Parade and Johnston Street	NB	800	500	0	200	300
	SB	800	400	0	300	100
Nicholson Street between Alexandra Parade and Johnston Street	NB	9,800	600	600	600	600
	SB	9,000	600	600	600	600
Brunswick St between Alexandra Parade and Johnston Street	NB	6,200	100	100	100	100
	SB	6,500	100	100	100	100
Hoddle Street between Queens Parade and Alexandra Parade	NB	21,900	1,000	900	900	1,000
	SB	18,600	1,600	1,300	1,300	1,600
Hoddle Street between Alexandra Parade and Johnston Street	NB	47,200	2,400	2,300	2,300	2,400
	SB	42,100	3,100	2,800	2,800	3,100
Alexandra Parade between Hoddle Street and Wellington Street	EB	39,500	-4,200	-4,200	-4,200	-4,200
	WB	37,000	-1,500	-1,500	-1,500	-1,500
Alexandra Parade between Smith Street and Wellington Street	EB	38,100	-800	-800	-800	-800
	WB	34,800	-700	-700	-700	-700
Alexandra Parade between Brunswick Street and Smith Street	EB	36,900	-800	-800	-800	-800
	WB	42,200	-700	-700	-700	-700
Alexandra Parade between Nicholson Street and Brunswick Street	EB	44,700	-700	-700	-700	-700
	WB	40,700	-600	-600	-600	-600
Johnston Street between Hoddle Street and Wellington Street	EB	7,100	2,000	1,900	1,900	2,000
	WB	8,000	2,600	2,300	2,300	2,600
Johnston Street between Smith Street and Wellington Street	EB	7,300	800	800	800	800
	WB	8,100	700	700	700	700
Johnston Street between Brunswick Street and Smith Street	EB	9,300	800	800	800	800
	WB	9,700	700	700	700	700
Johnston Street between Nicholson Street and Brunswick Street	EB	9,200	700	700	700	700
	WB	8,700	700	700	700	700

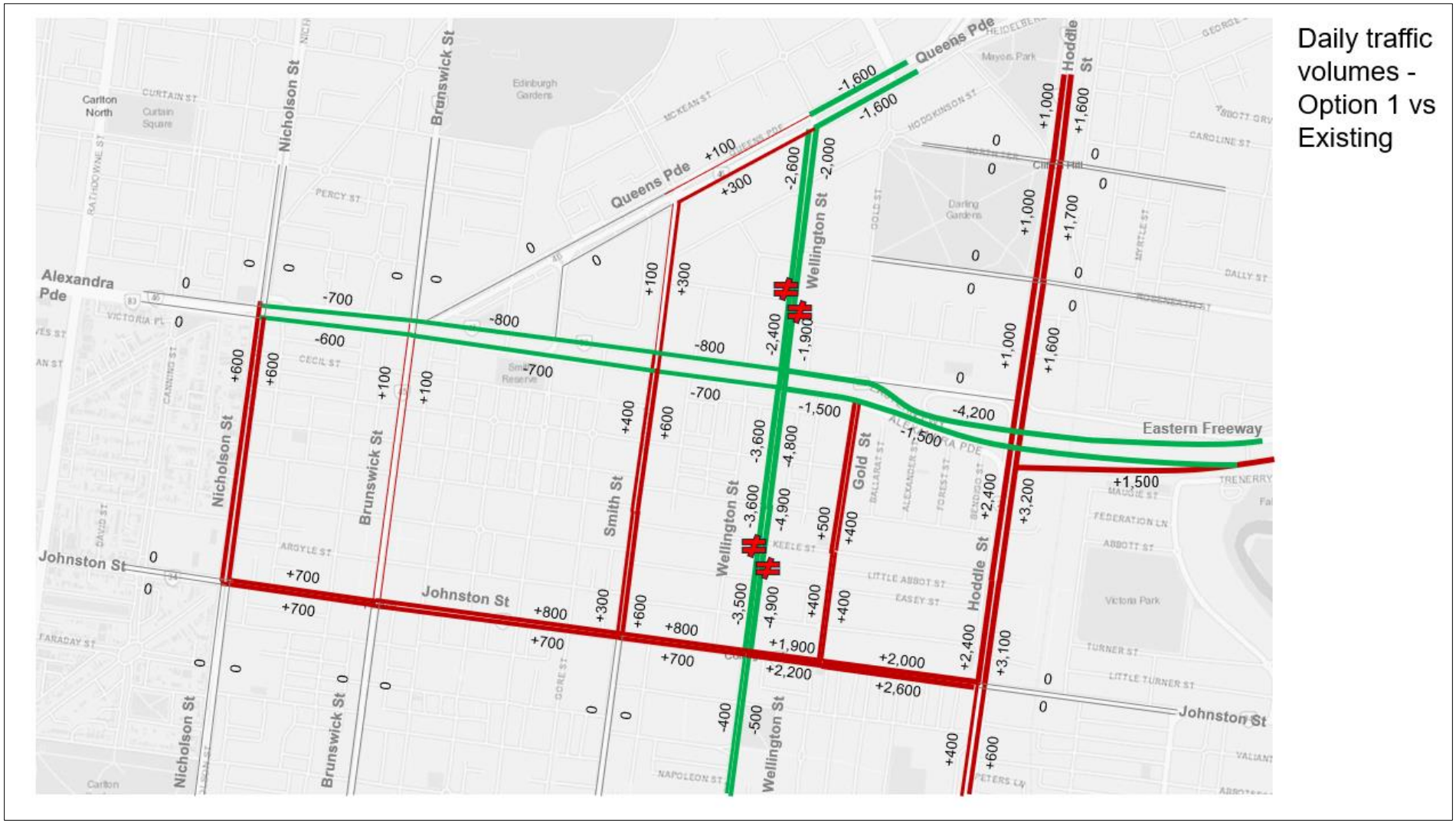


Figure 9 *Differences in daily traffic volumes – Scenario 1*

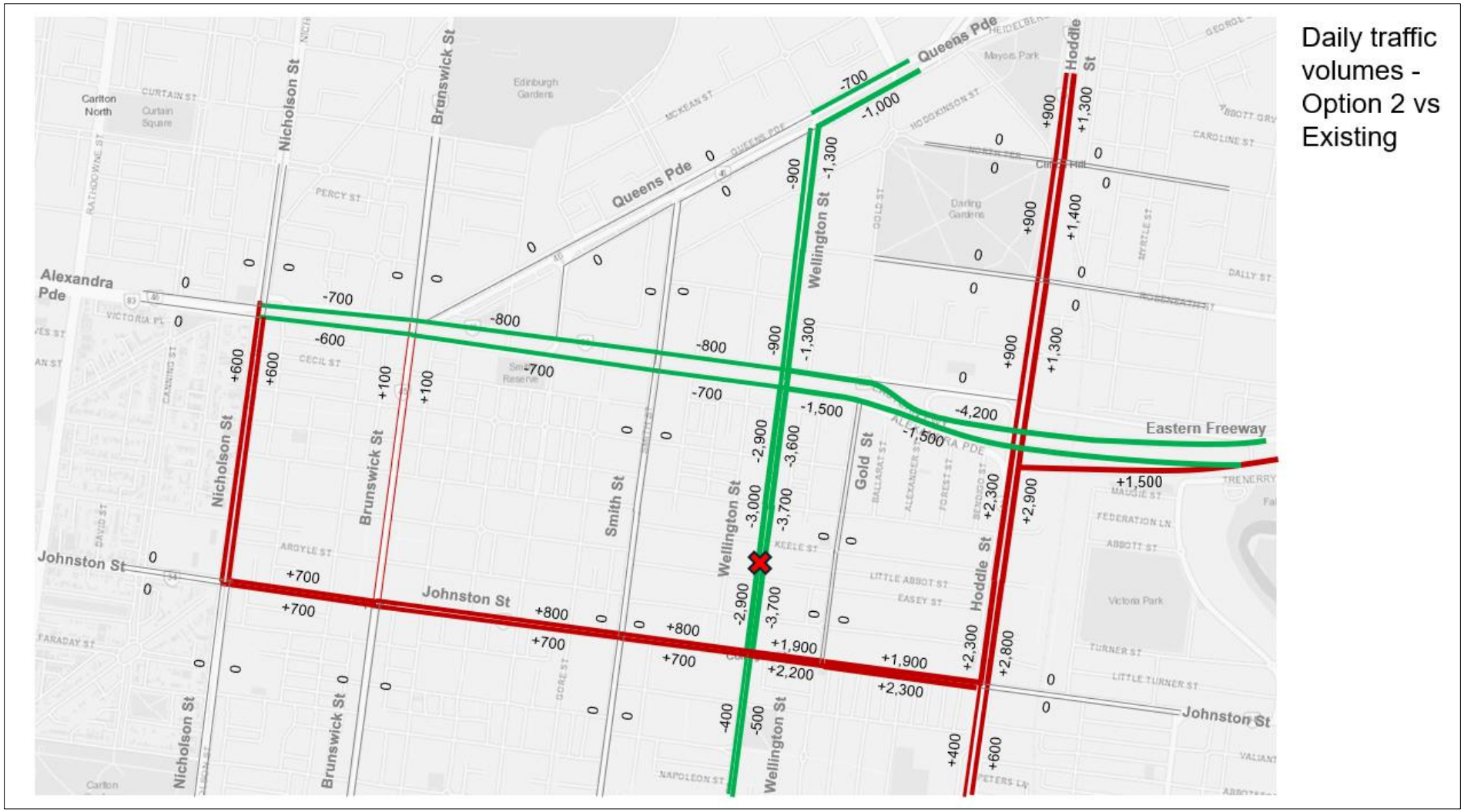


Figure 10 *Differences in daily traffic volumes – Scenario 2*

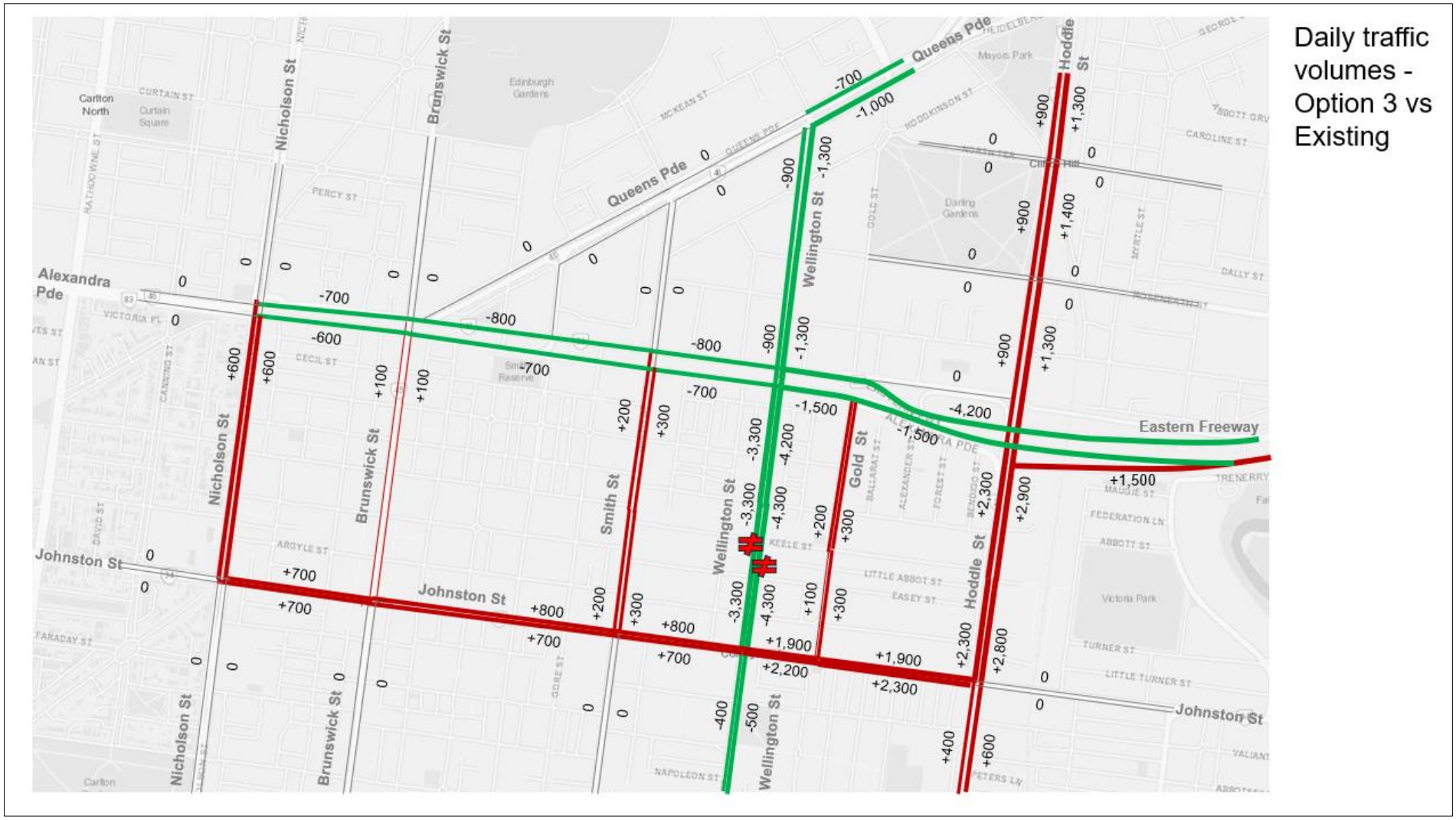


Figure 11 Differences in daily traffic volumes – Scenario 3

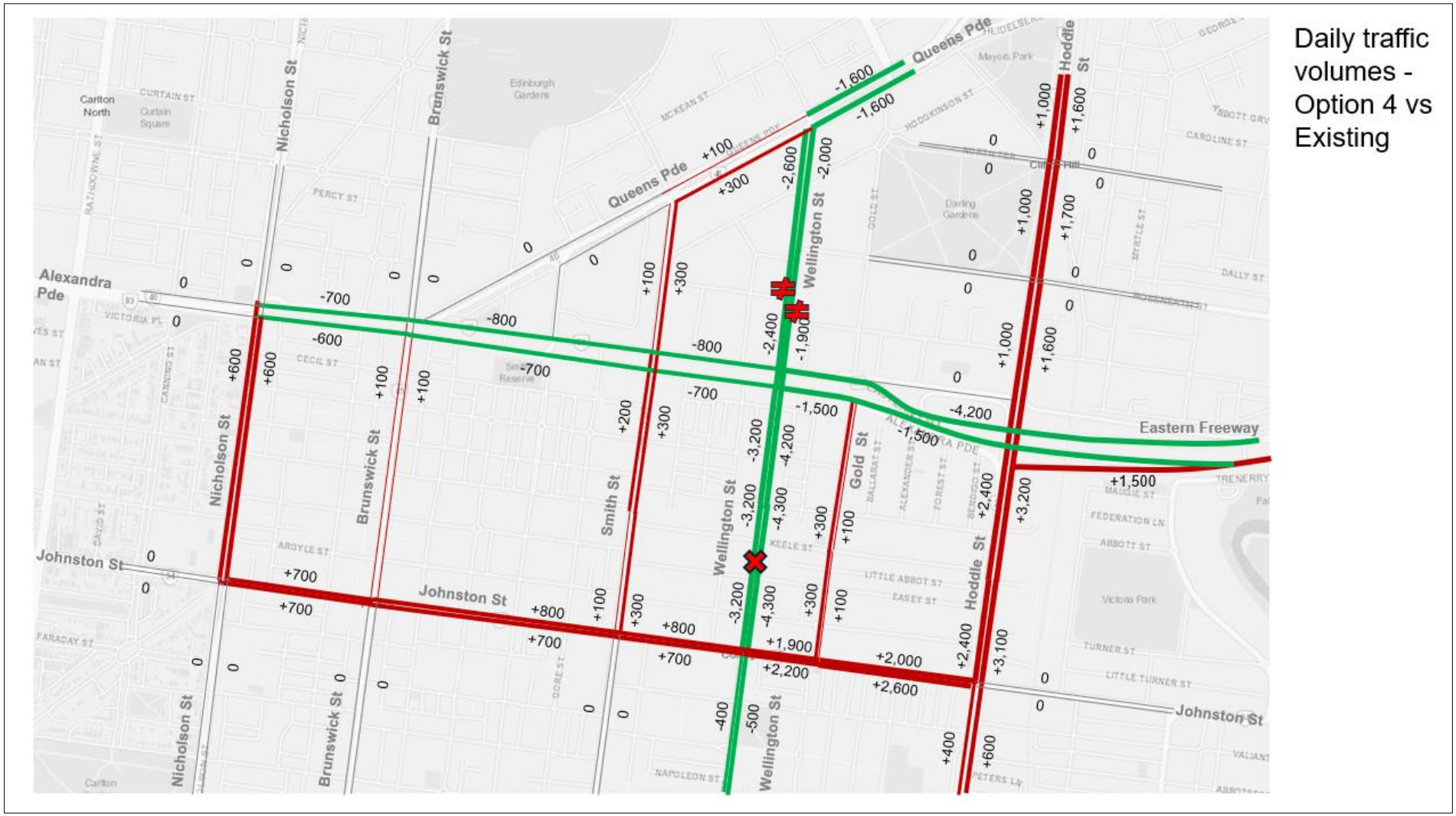


Figure 12 Differences in daily traffic volumes – Scenario 4

6. Conclusions

6.1 Summary

Wellington Street in the City of Yarra is a C1 Strategic Cycling Corridor. The City of Yarra has recently constructed protected bicycle lanes between Victoria Parade and Johnston Street, Collingwood and intends to include more bicycle friend infrastructure. This report explored the potential traffic redistribution from proposed treatments on the Wellington Street corridor through the surrounding road network and potential impacts through testing the proposed options using a first-principles methodology.

The data collected by GHD shows that a large proportion of motor vehicle traffic on the Wellington Street corridor between Queens Parade and Johnston Street starts or finishes outside of the corridor. Therefore, Wellington Street is not currently being used as a local collector street. By downgrading the road this would enable enhanced active transport measures.

The proposed four scenarios aim to reduce motorised traffic on Wellington Street through introducing modal filters, converting street segments into a “Bicycle Street” and uni-directional bike lanes along the street. The scenarios are divided in two stages, with Stage 3 referring to the southern section of the corridor between Johnston Street and Alexandra Parade, and Stage 4 referring to the northern section of the corridor between Alexandra Parade and Queens Parade.

Based on the assessment undertaken above, the following are the conclusions of the study:

– Under all scenarios there is a significant reduction in traffic on Wellington Street in the Stage 3 area due to the modal filters proposed. In the Stage 4 area the reductions in traffic are varied and are dependent on whether a modal filter is installed on this corridor.
– For all scenarios, a reduction in traffic along Wellington Street will lead to a consequential increase in traffic on Hoddle Street, Nicholson Street and Johnston Street. This has implications for other modes of transport such as the key bus routes on these corridors.
– There is an assumed redistribution of traffic on Wellington Street undertaking trips within the local area to Gold Street and Smith Street. As such there would be impacts on the on-road tram route on Smith Street and local traffic conditions on Gold Street.
– A summary of the comparison of the scenarios in terms of estimated overall traffic reduction are as follows:
    - In Stage 3, Scenario 1 would have the largest diversion of traffic, with about an 87% decrease in two-way traffic volumes compared to existing traffic volumes.
    - Scenario 2 will have the least impact at Stage 3 section, with about 68% of traffic reduced.
    - In Stage 4, both Scenario 1 & Scenario 4 would see the highest traffic reduction, with about an 83% reduction in traffic compared to existing traffic volumes.

Table 4 provides a summary of each scenario, the expected daily traffic volumes and further information on expected traffic diversion impacts.

6.2 Recommendations for future work

This is an initial assessment of the potential impacts of the proposed scenarios and only calculates the estimated volume of traffic diversion. In order to provide a more detailed traffic analysis, it is recommended that the City of Yarra continue to monitor traffic volumes in the study area.

It is also recommended that the City of Yarra consider the use of the Department of Transport and Planning’s DOMINO mesoscopic model to provide a more detailed assessment of rerouting and impacts on the road network as well as providing a more comprehensive understanding of the adjacent road network’s ability to absorb the diverted traffic.

Table 4 Project Scenario Summary

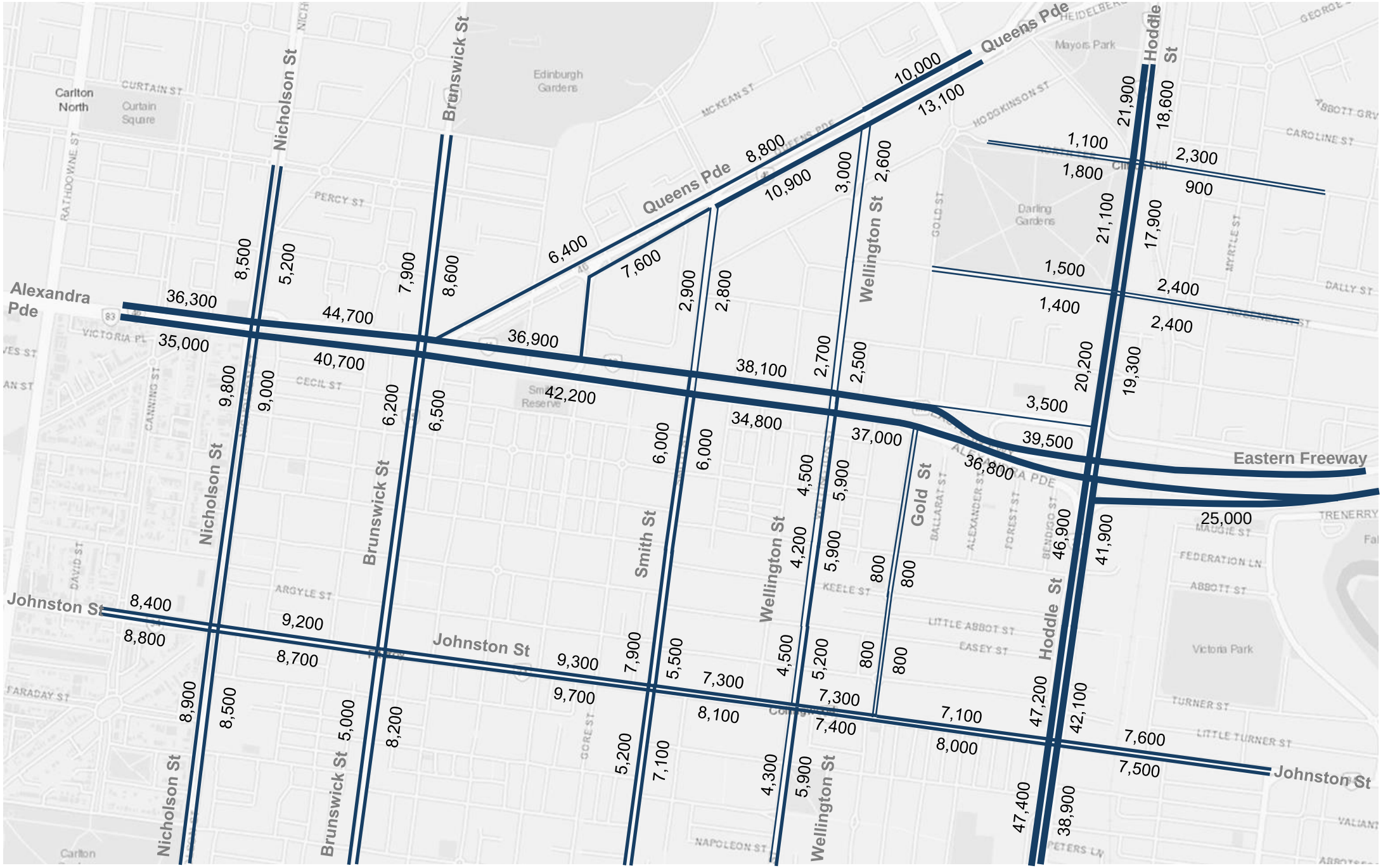
	Existing		Scenario 1	Scenario 2	Scenario 3	Scenario 4
Wellington Street Stage 3 (Johnson Street to Alexandra Parade) treatments	– Not applicable		– Two-way "Bicycle Street" with modal filters Two-way vehicle traffic with local access only	– Two-way vehicle traffic, painted bike lanes and one modal filter – Two-way vehicle traffic with access limited	– Two-way "Bicycle Street" with modal filters in – Two-way vehicle traffic with local access only in southern section	– Stage 3: Two-way vehicle traffic, painted bike lanes and one modal filter – Two-way vehicle traffic with access limited in southern section
Stage 3 daily traffic volumes	NB	4,200	900	1,200	900	1,000
	SB	5,900	1,100	2,200	1,600	1,600
Wellington Street Stage 4 (Queens Parade to Alexandra Parade) treatments	– Not applicable		– Two-way "Bicycle Street" with modal filters Two-way vehicle traffic with local access only	– Two-way vehicle traffic and uni-directional protected bike lanes – Two-way vehicle traffic with full local and through access	– Two-way vehicle traffic and uni-directional protected bike lanes – Two-way vehicle traffic with full local and through access in northern section	– Two-way "Bicycle Street" with modal filters – Two-way vehicle traffic with local access only in northern section
Stage 4 daily traffic volumes	NB	3,000	400	2,100	2,100	400
	SB	2,600	600	1,300	1,300	600
Commentary on option impacts	Currently the corridor is being used for a large number of through trips that start and/or finish outside of the immediate area.		This scenario leads to a large diversion of traffic to adjacent corridors due to the Bike Corridor treatments, particularly Hoddle Street, Johnston Street and Nicholson Street. There is a diversion of local traffic to Smith Street and Gold Street.	The impacts of this option are less pronounced than Scenario 1 due to the lower order traffic treatments. In this option through traffic is diverted to adjacent key corridors such as Hoddle Street, Johnston Street and Nicholson Street.	In this scenario through traffic in Stage 3 diverts to adjacent key corridors. There is some further local traffic diversion to Smith Street and Gold Street. In Stage 4 two way access is still provided so the impacts in this location are less pronounced with only through traffic impacted.	In this option both Stage 3 and Stage 4 are blocked for through traffic leading to a diversion of traffic to adjacent corridors. There is some diversion of local traffic in the Stage 3 section to Smith Street and Gold Street..

Appendix A

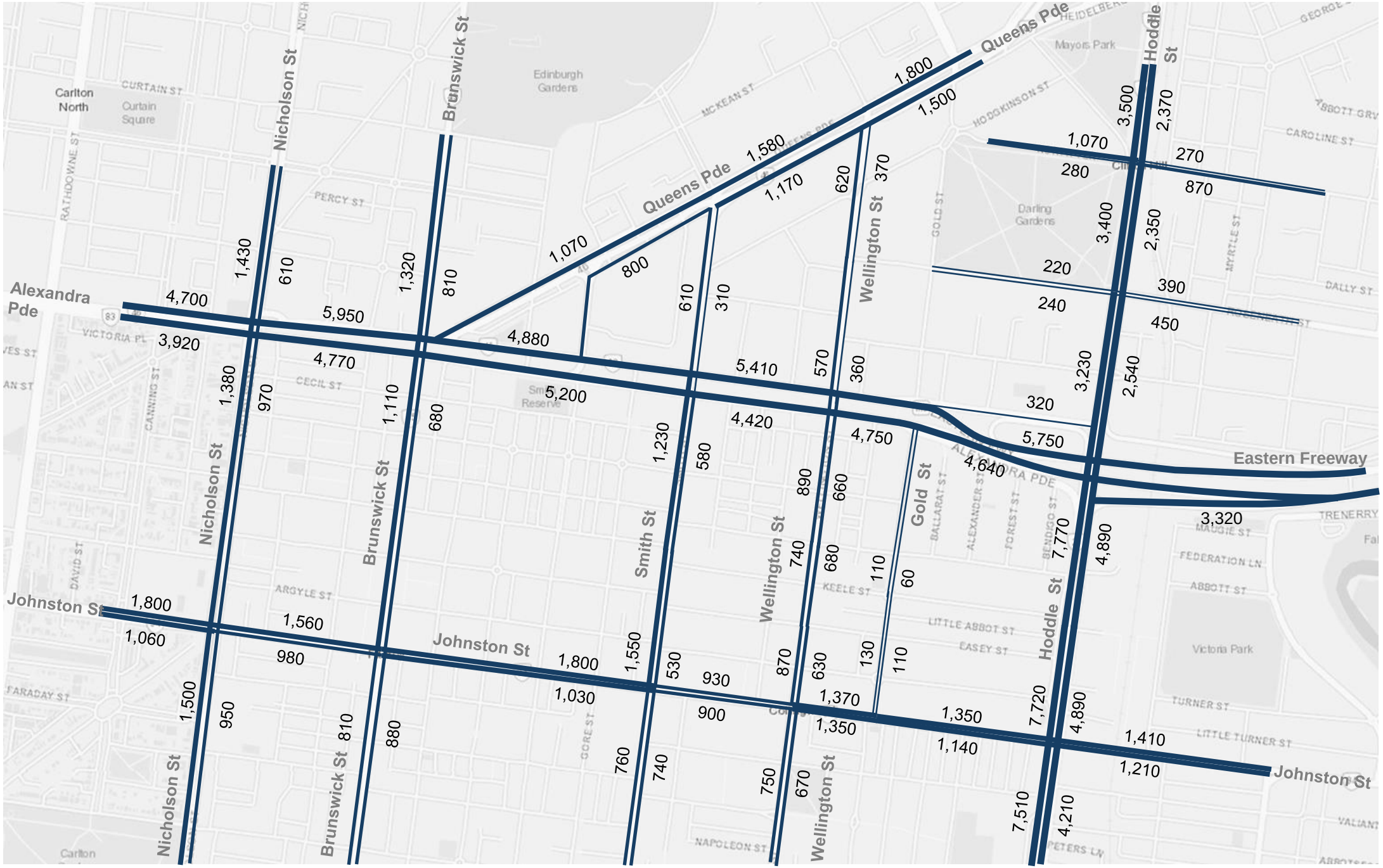
Detailed Traffic Maps

Existing Traffic Volumes

Daily traffic volumes - Existing



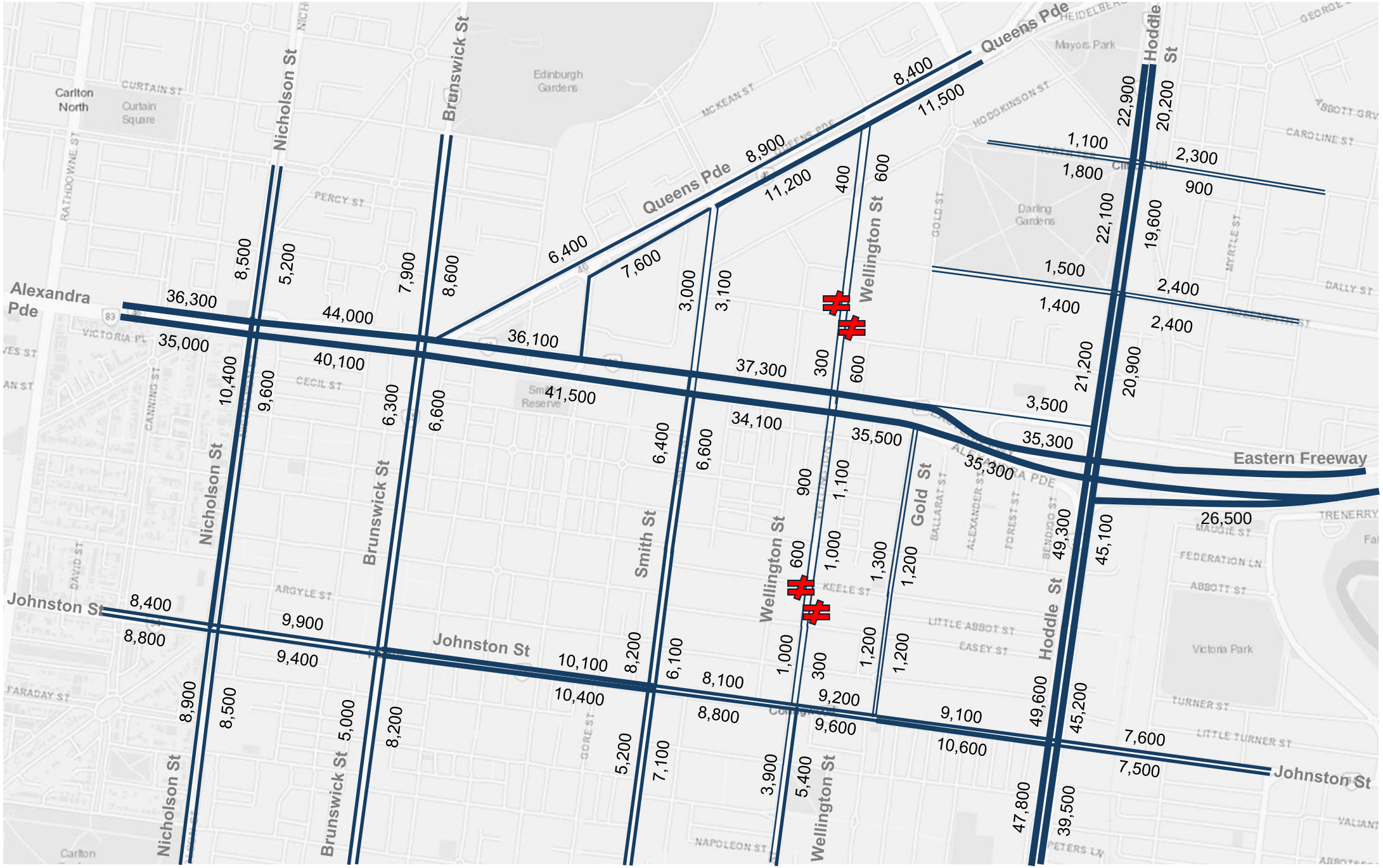
AM traffic volumes - Existing

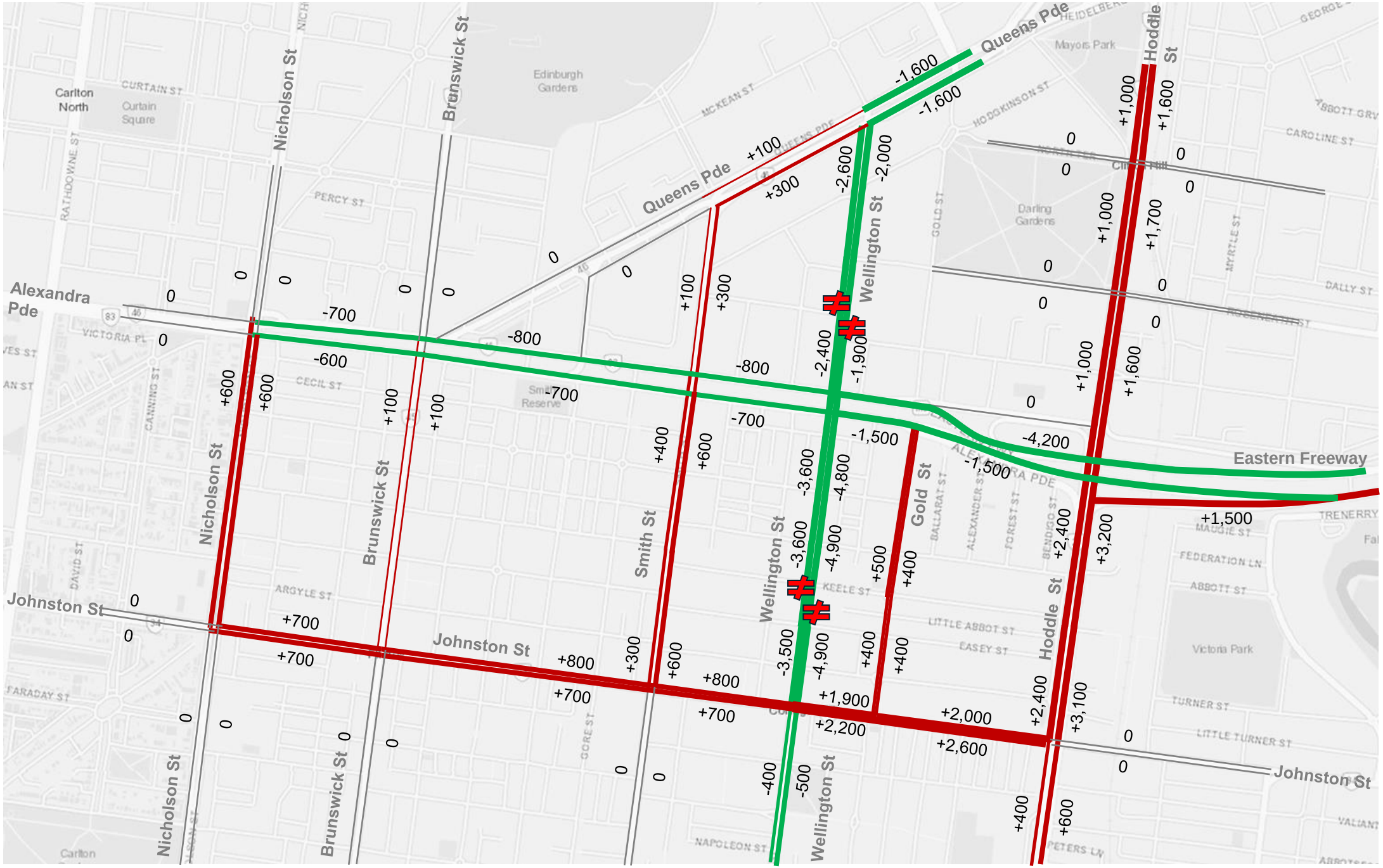


PM traffic volumes - Existing

Scenario 1: Traffic Volumes

Daily traffic volumes - Option 1

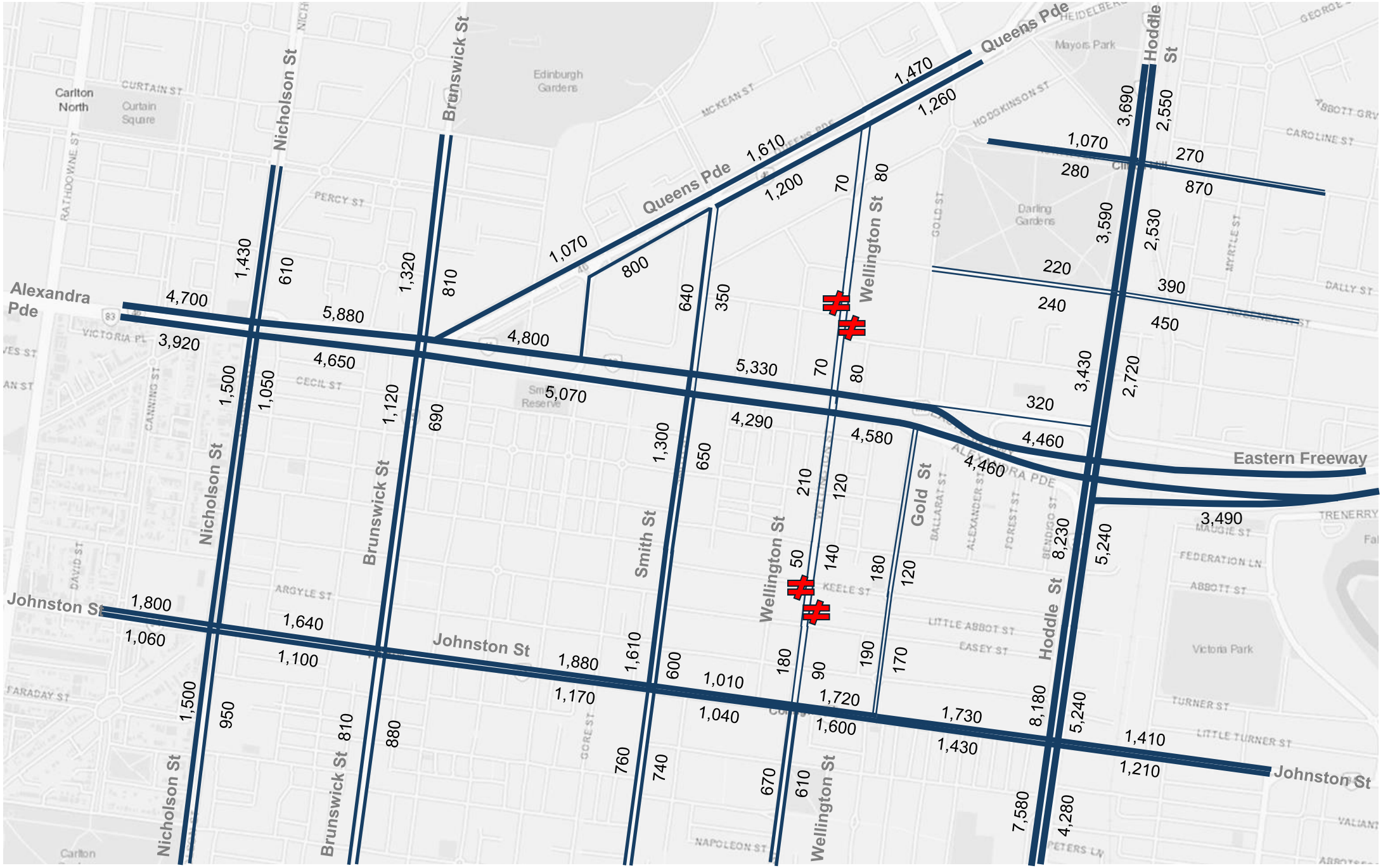




Daily traffic volumes - Option 1 vs Existing

AM traffic volumes - Option 1

AM traffic volumes - Option 1 vs Existing

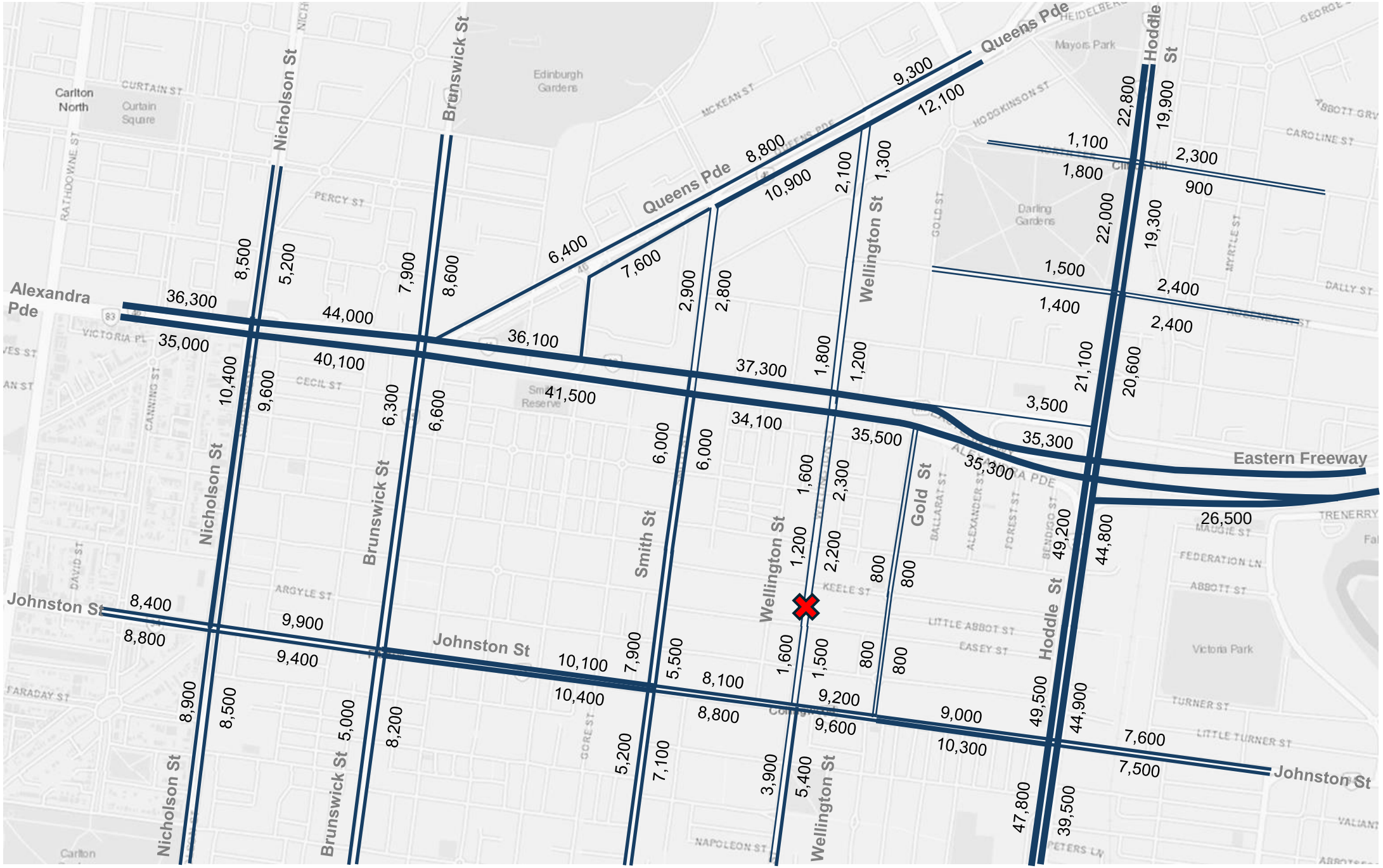


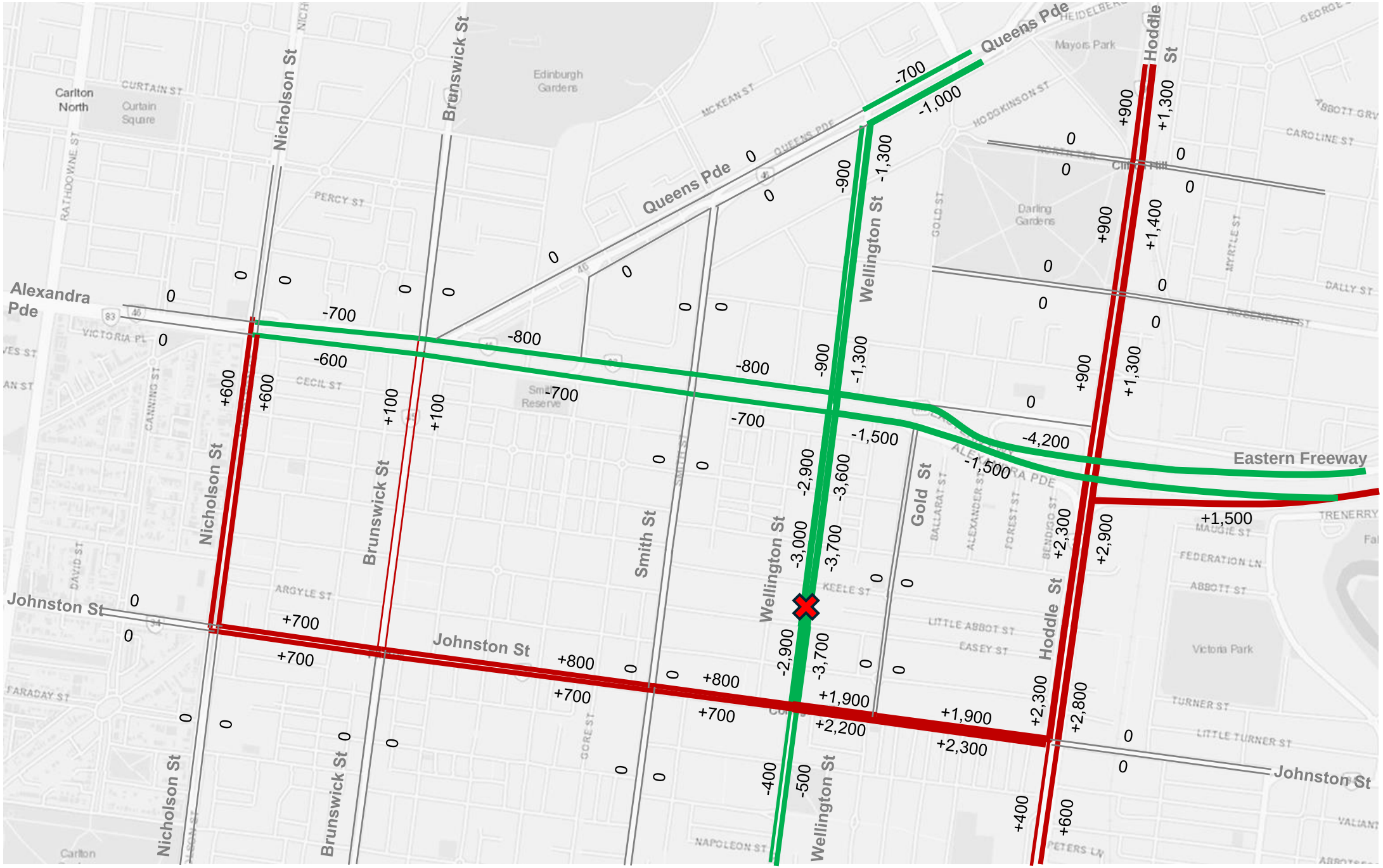
PM traffic volumes - Option 1

PM traffic volumes - Option 1 vs Existing

Scenario 2: Traffic Volumes

Daily traffic volumes - Option 2




Daily traffic volumes - Option 2 vs Existing
Queens Pde
Alexandra Pde
Johnston St
Nicholson St
Brunswick St
Smith St
Wellington St
Gold St
Hoddle St
Eastern Freeway
Carlton North
Curtain Square
Edinburgh Gardens
Mayors Park
Darling Gardens
Victoria Park
-700
-1,000
-900
-1,300
-1,400
+900
+1,300
+1,400
-800
-600
+600
+100
-1,500
-4,200
-2,900
-3,600
-3,000
-3,700
+2,300
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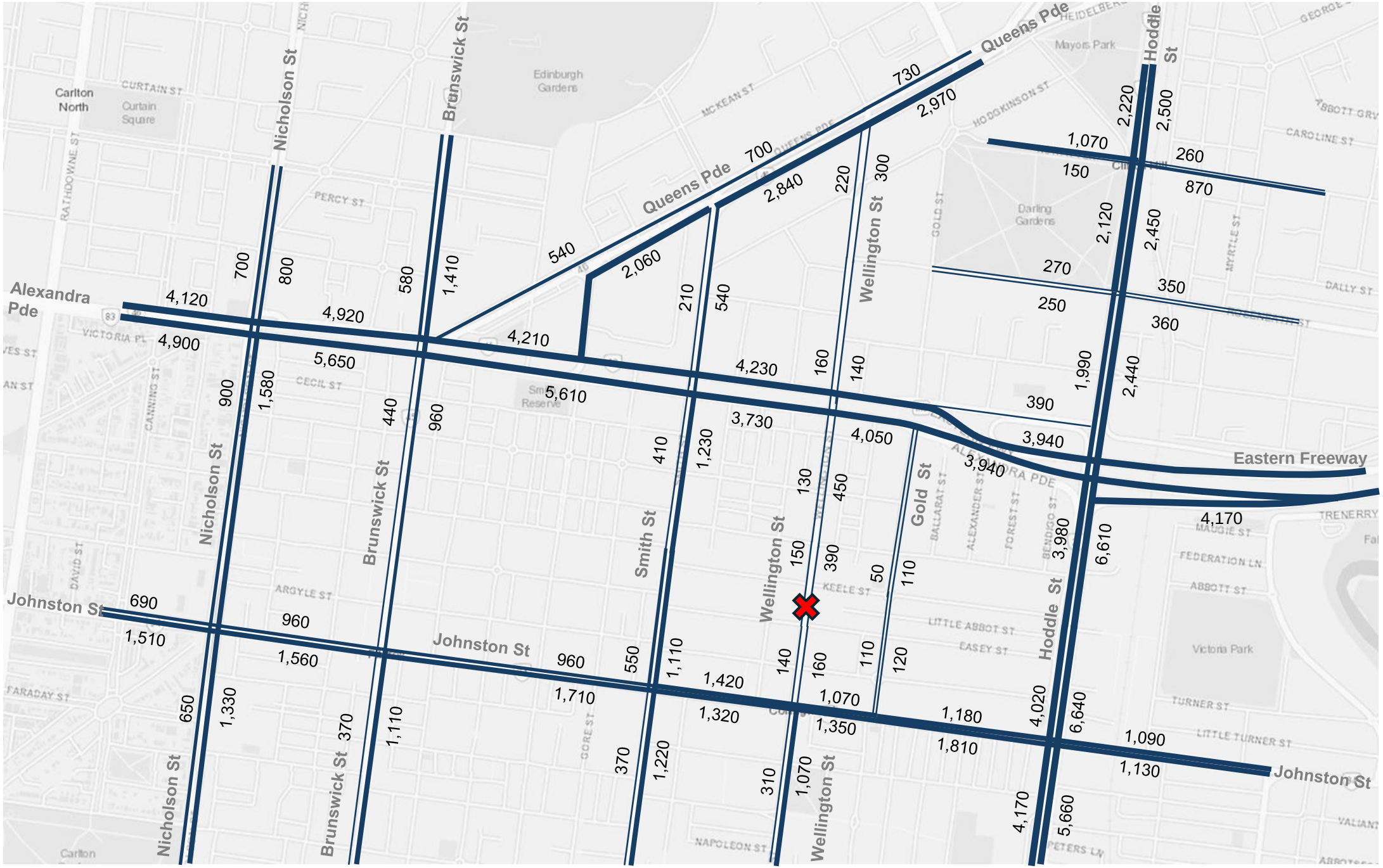
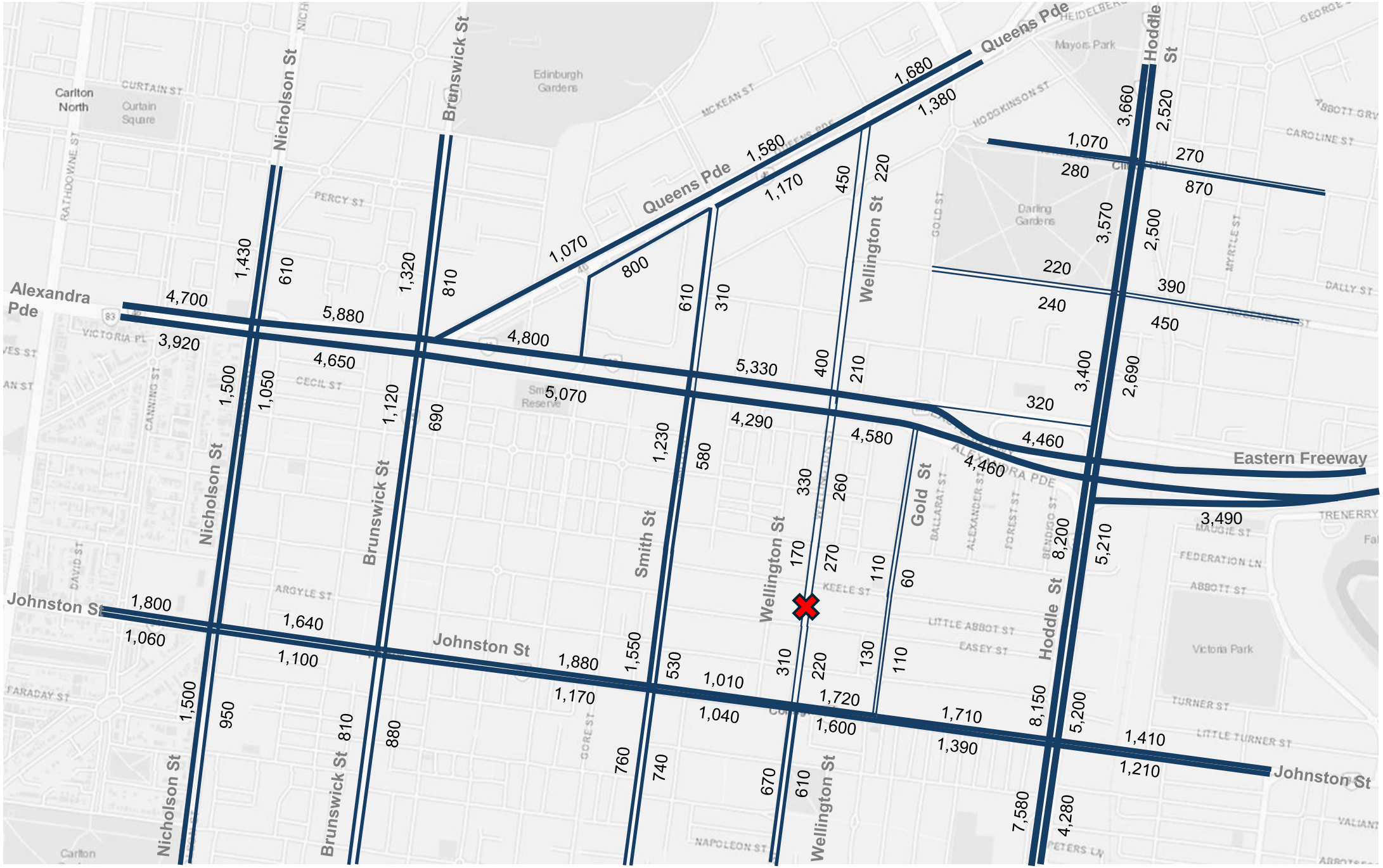
-400
-500
+400
+600



AM traffic volumes - Option 2

AM traffic volumes - Option 2 vs Existing

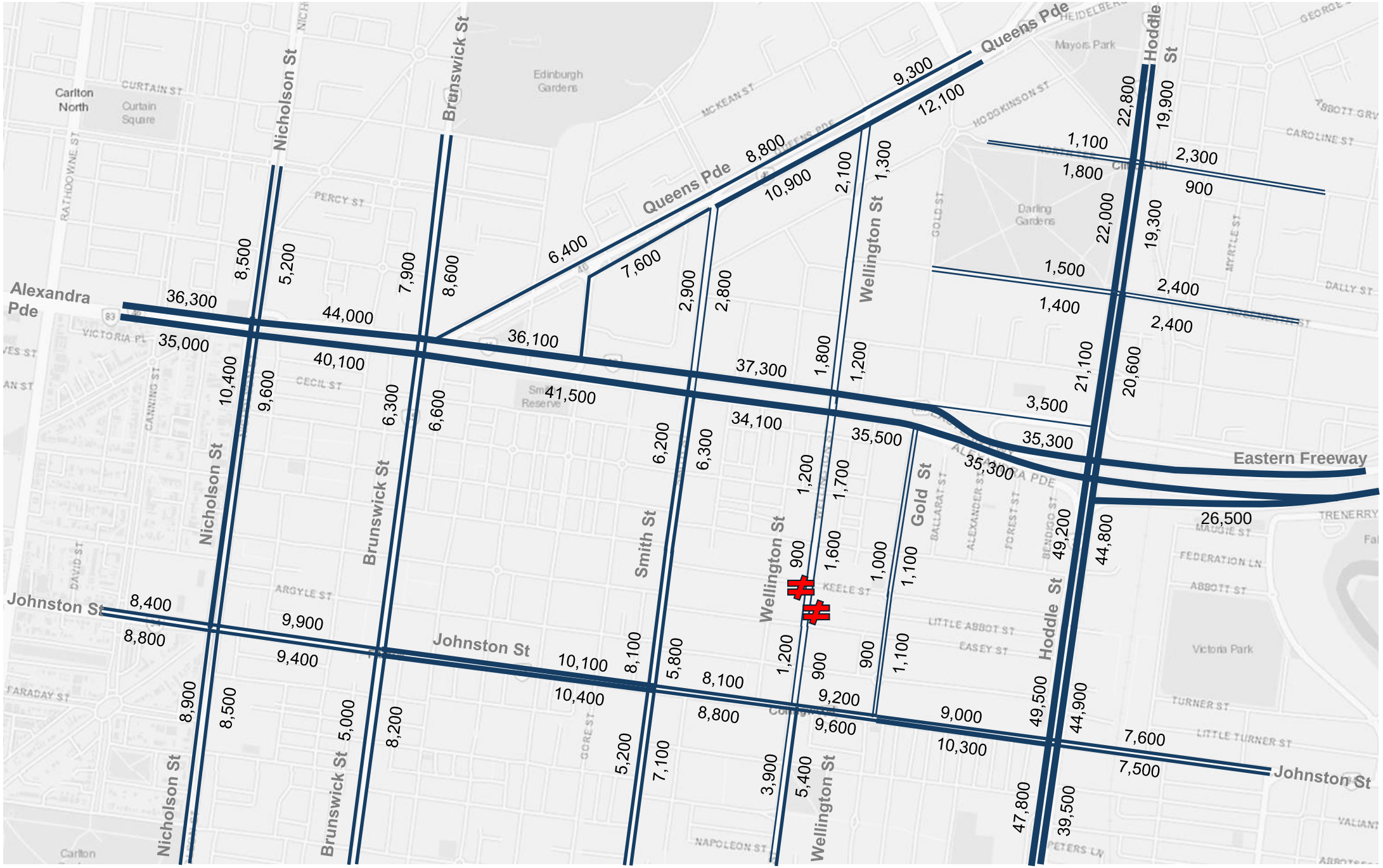


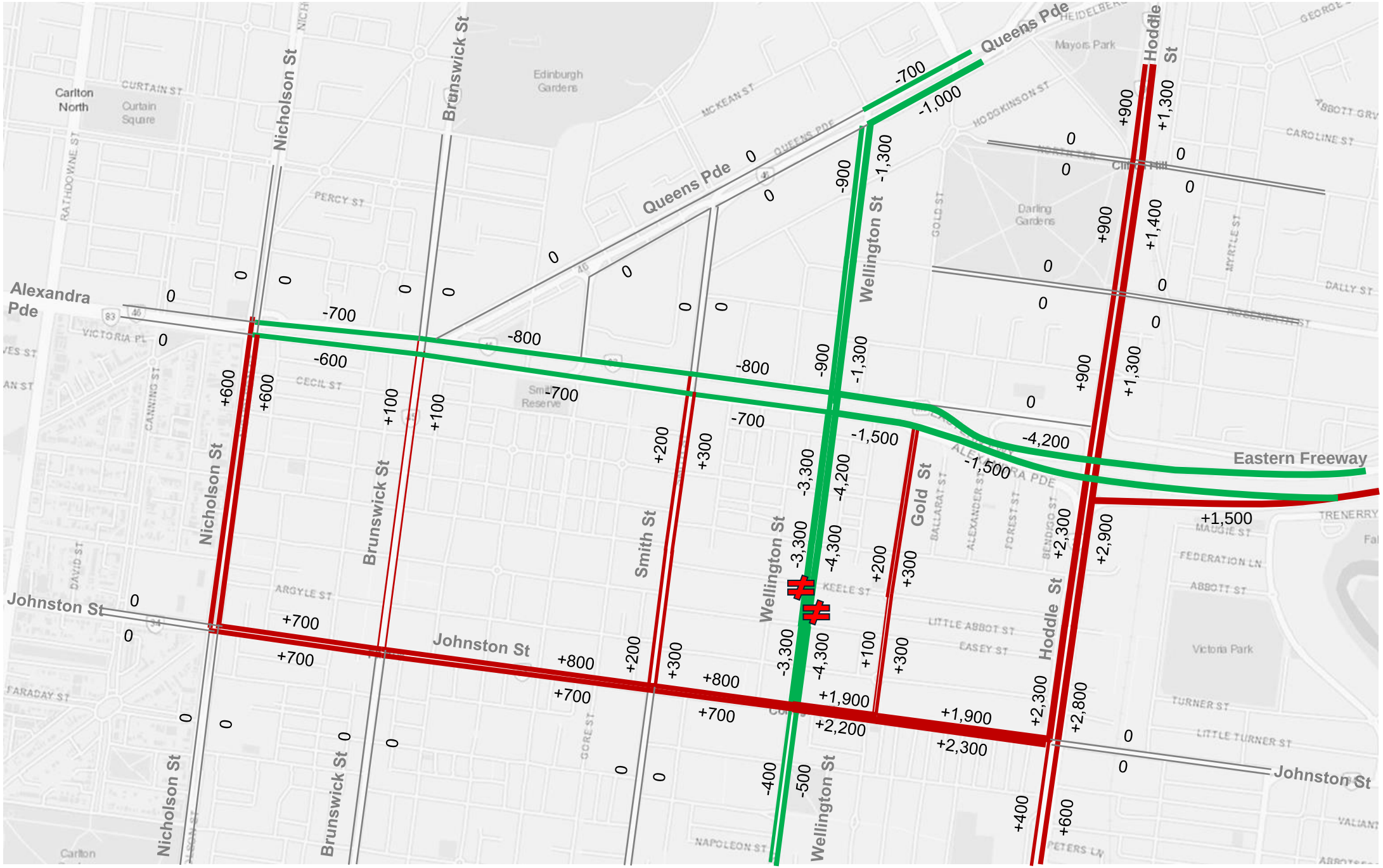
PM traffic volumes - Option 2

PM traffic volumes - Option 2 vs Existing

Scenario 3: Traffic Volumes

Daily traffic volumes - Option 3




Daily traffic volumes - Option 3 vs Existing
Queens Pde
Wellington St
Hoddle St
Nicholson St
Brunswick St
Smith St
Gold St
Johnston St
Alexandra Pde
Eastern Freeway
Carlton North
Curtain Square
Edinburgh Gardens
Mayors Park
Darling Gardens
Victoria Park
-700
-1,000
-900
-1,300
-1,400
+900
+1,300
+1,400
-800
-600
+600
+100
-700
+200
+300
-1,500
-4,200
-3,300
-4,300
+200
+300
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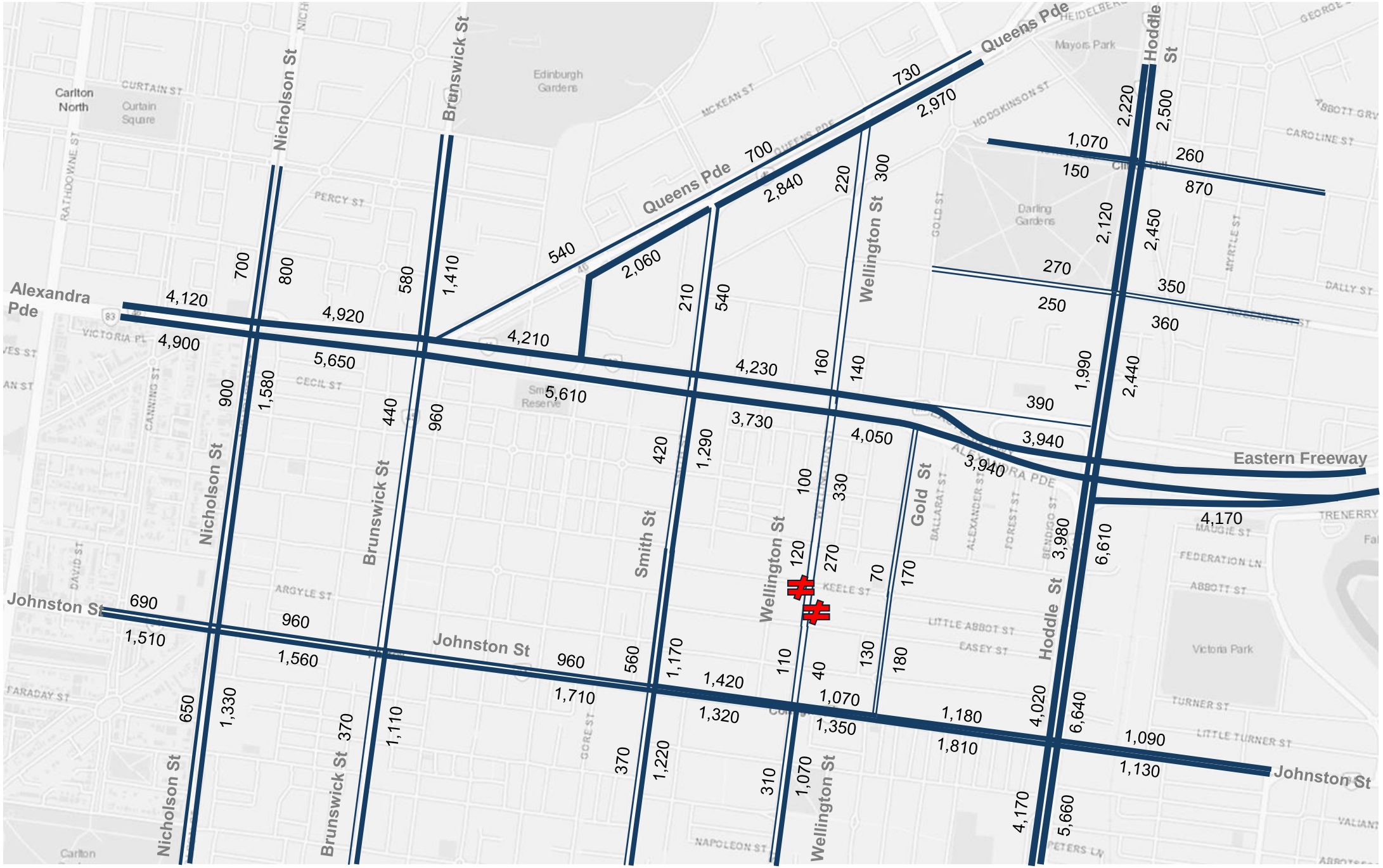
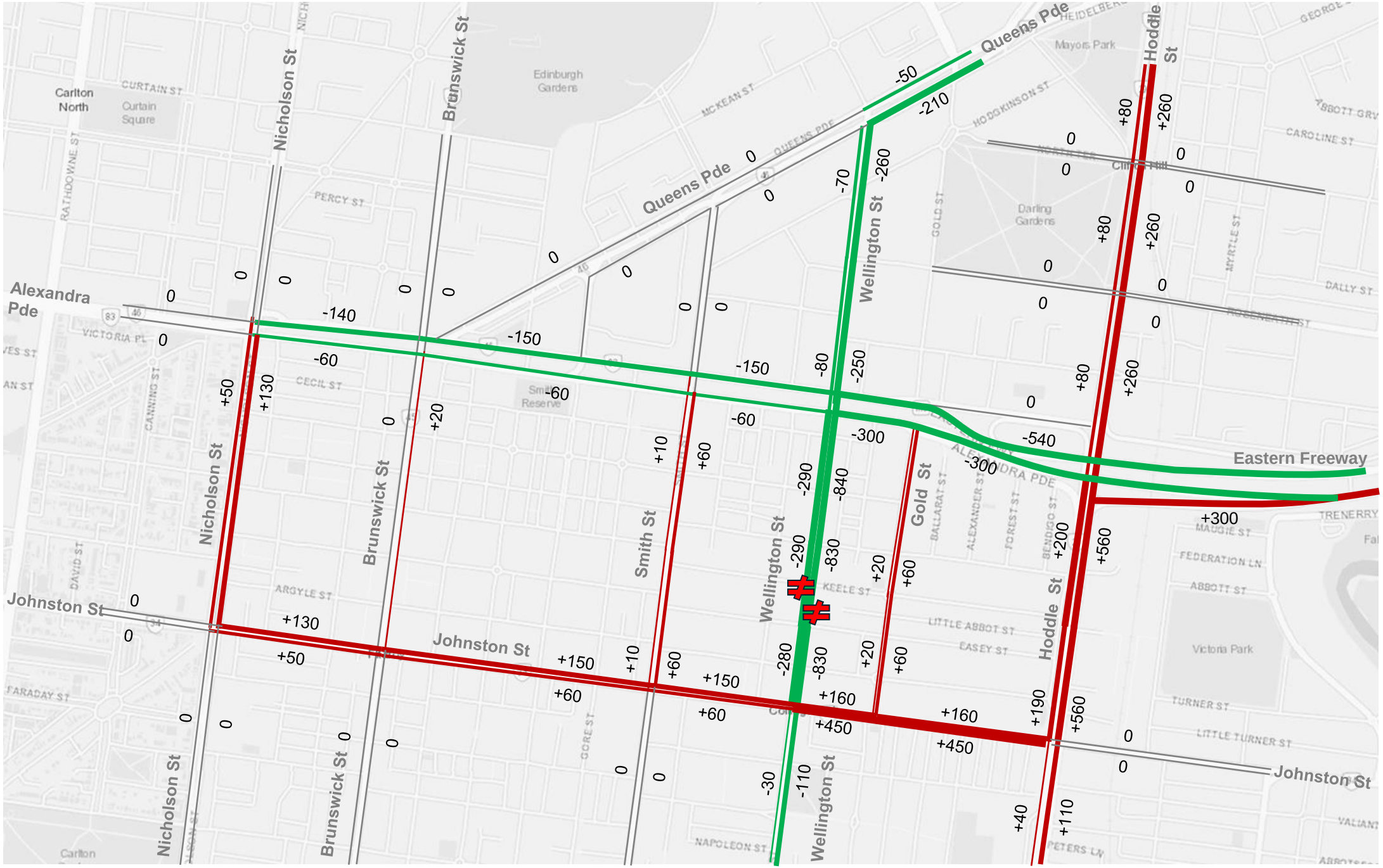
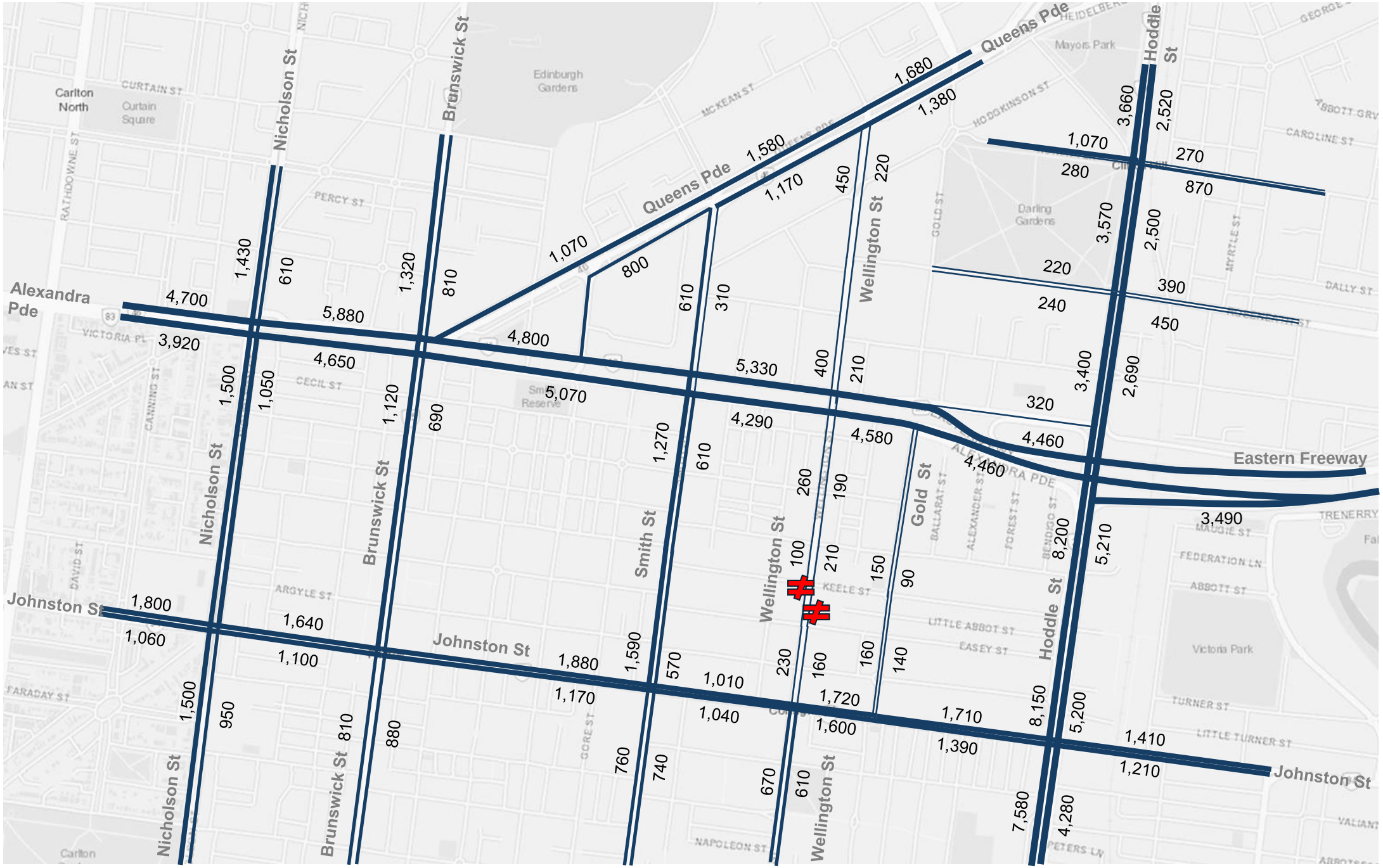
-400
-500
+400
+600



AM traffic volumes - Option 3

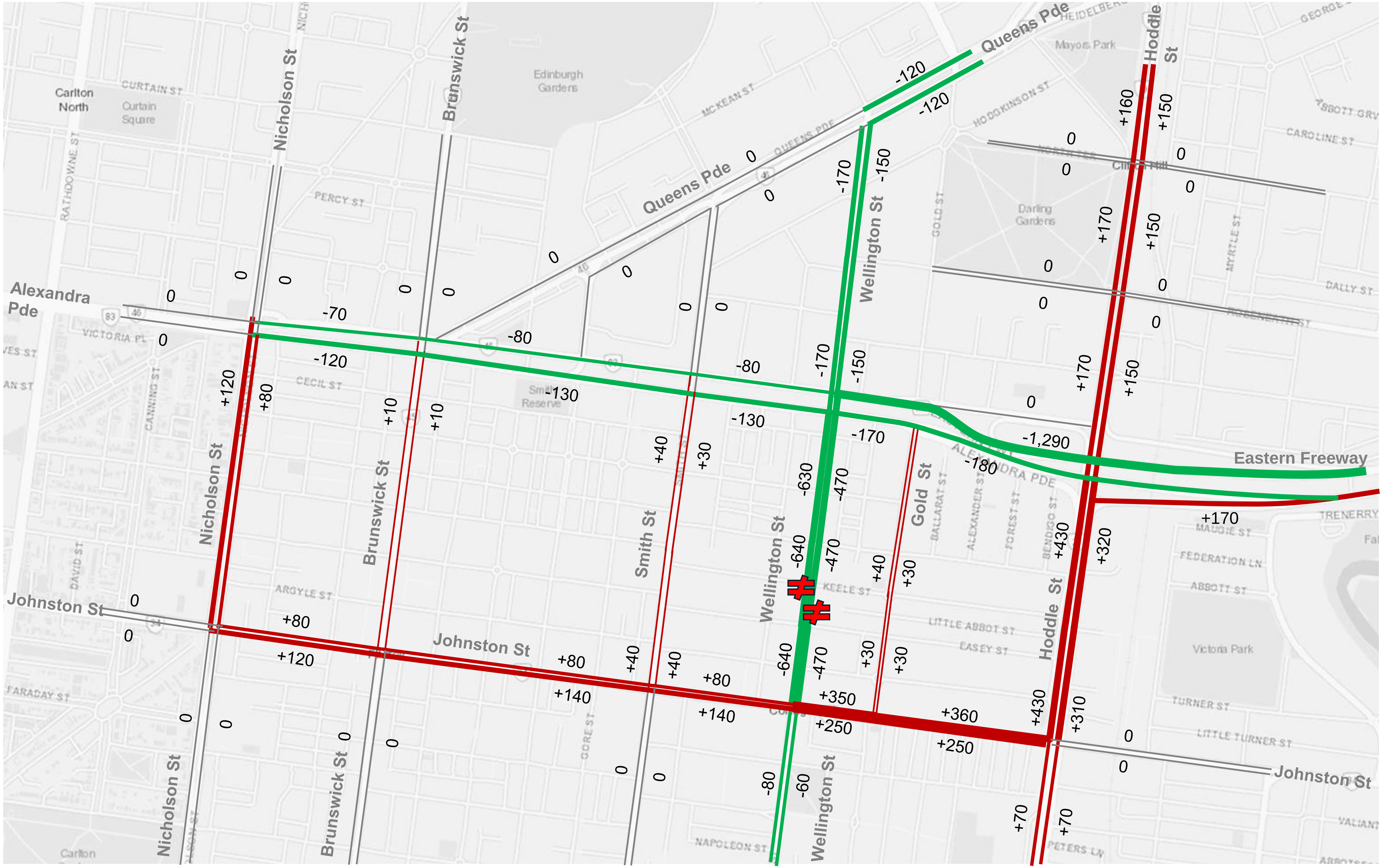


AM traffic volumes - Option 3 vs Existing



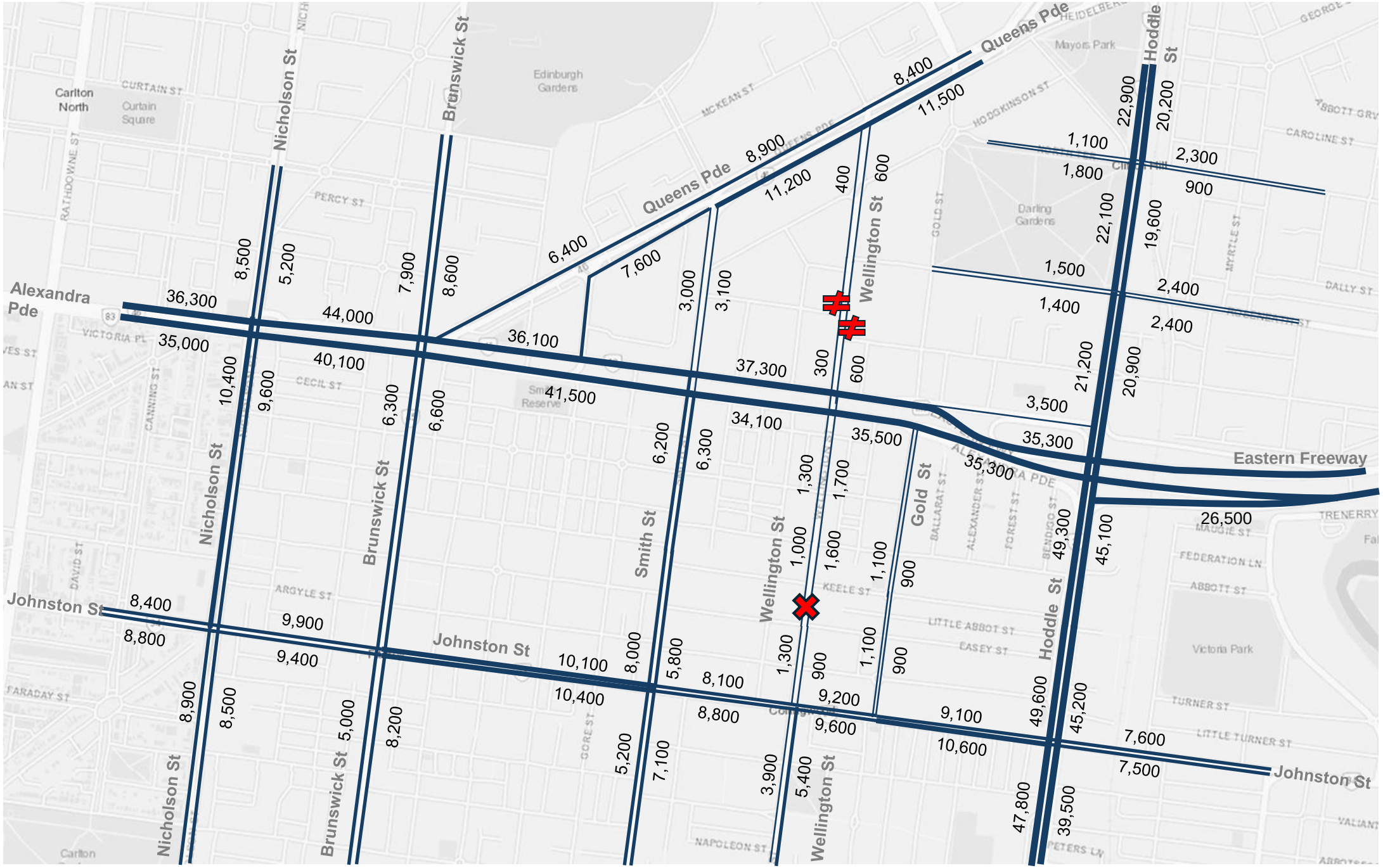
PM traffic volumes - Option 3

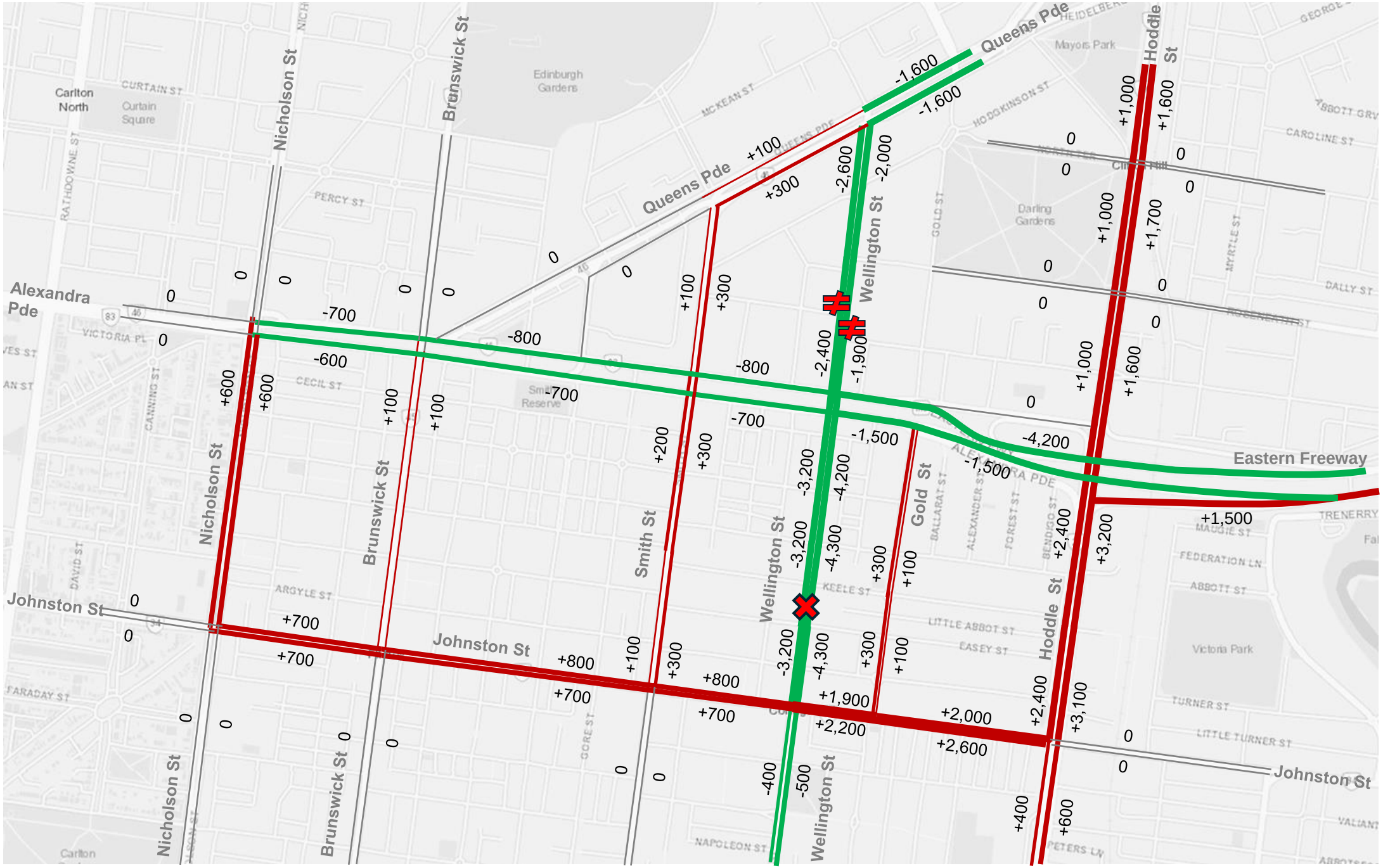
PM traffic volumes - Option 3 vs Existing



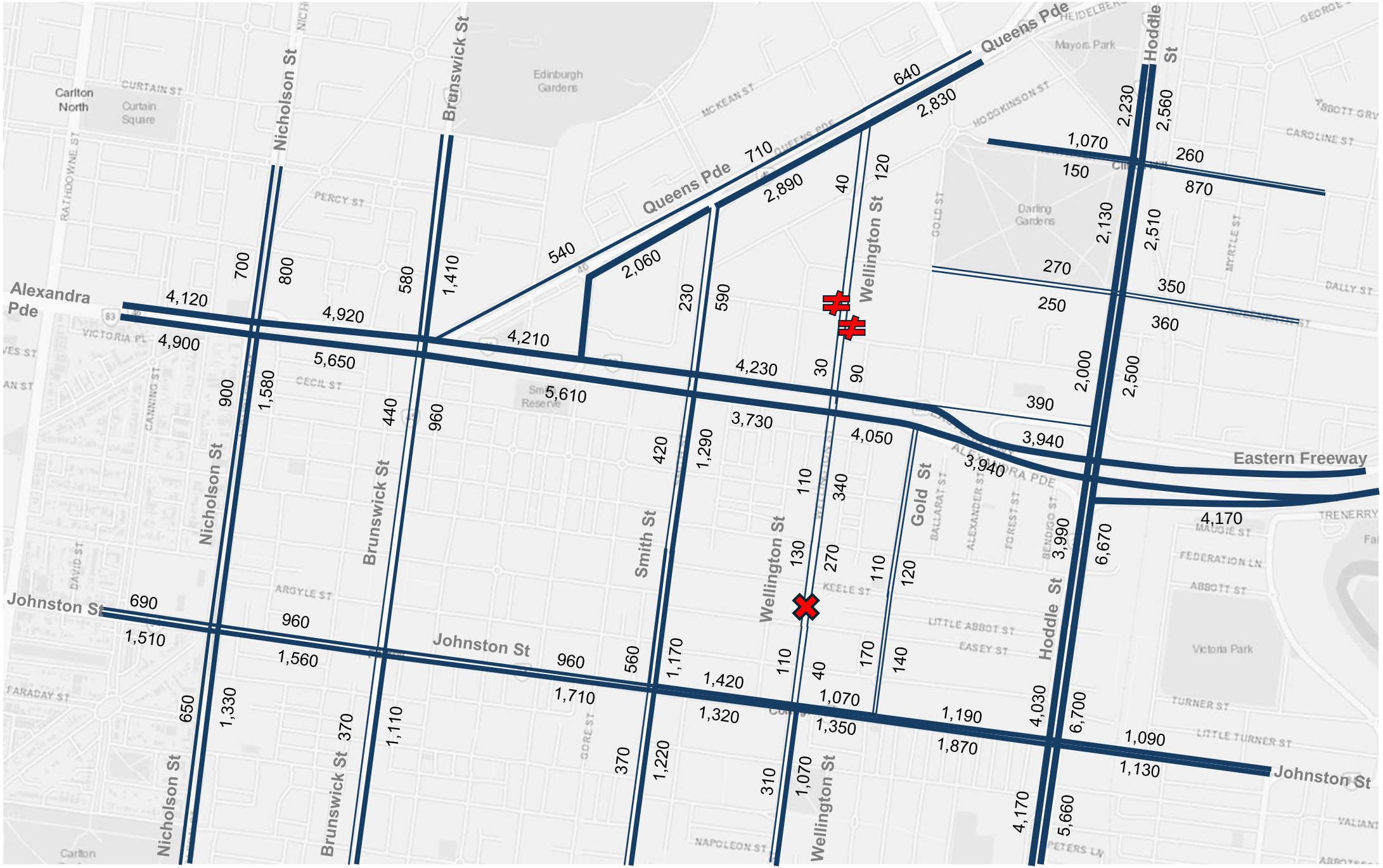
Scenario 4: Traffic Volumes

Daily traffic volumes - Option 4

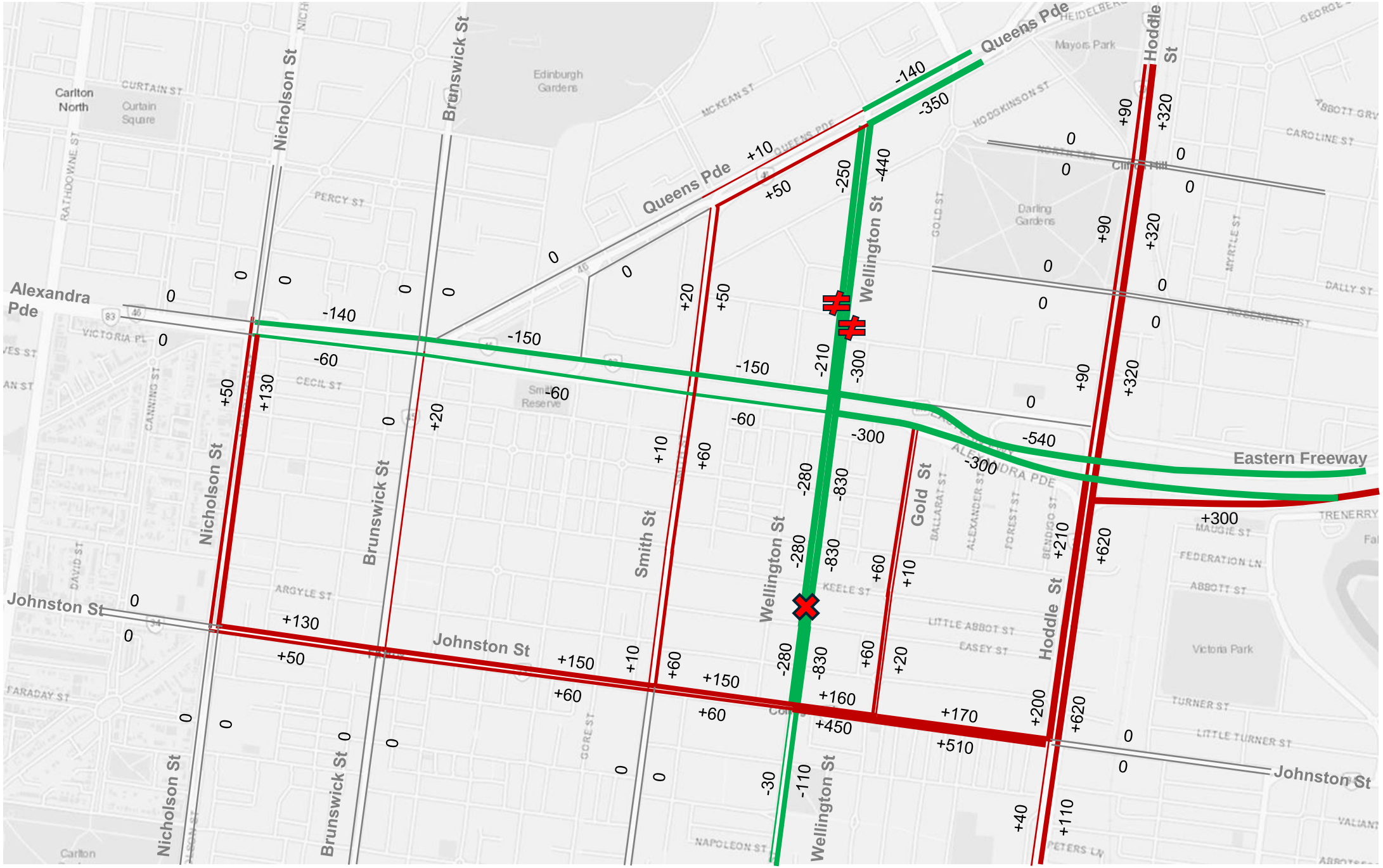




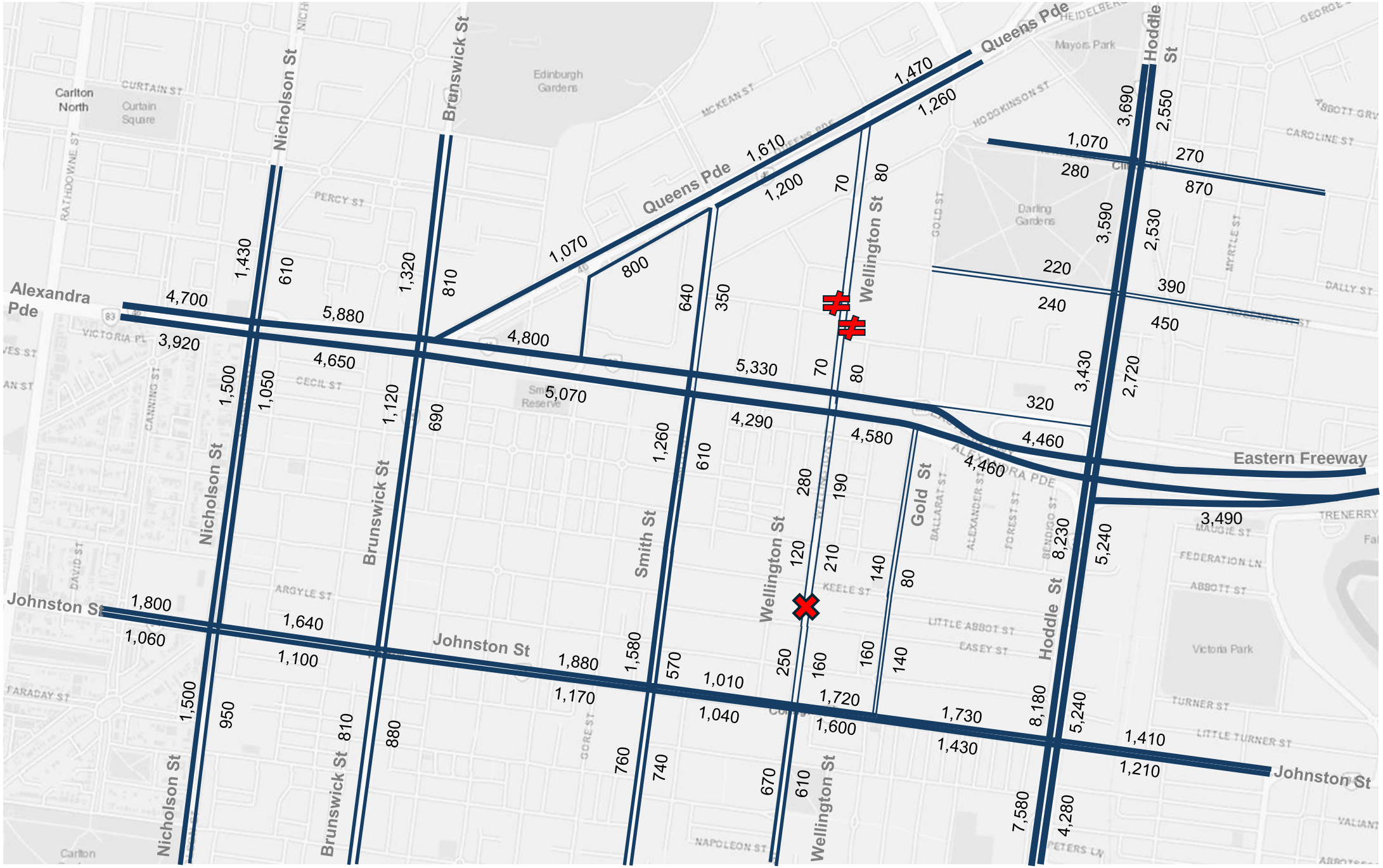
Daily traffic volumes - Option 4 vs Existing



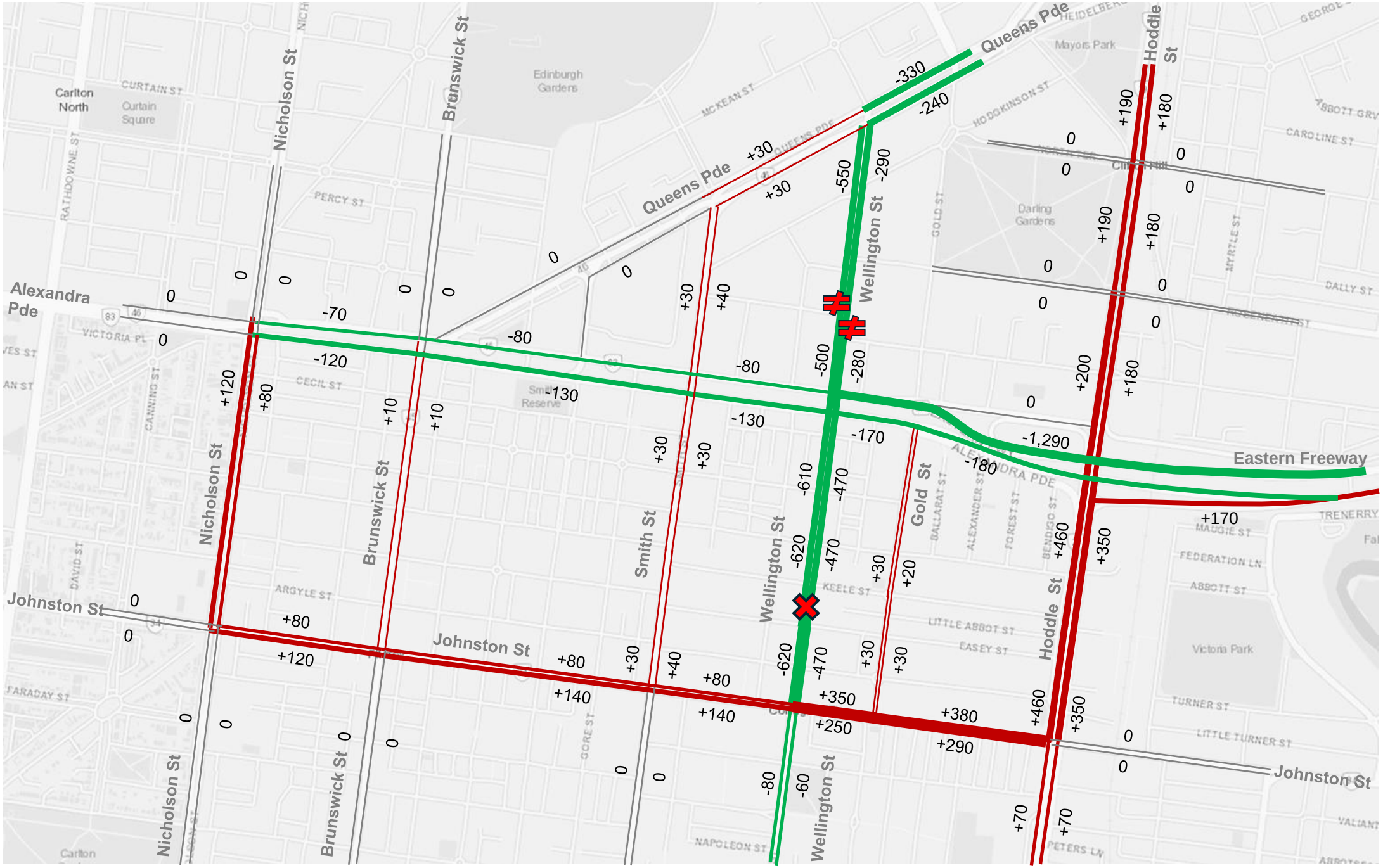
AM traffic volumes - Option 4



AM traffic volumes - Option 4 vs Existing



PM traffic volumes - Option 4



PM traffic volumes - Option 4 vs Existing

Appendix B

Existing Traffic Volumes

The existing traffic volumes within the project area are summarised below.

Site ID	Location	Direction	AADT	AM Peak	PM Peak
1	Wellington St (South of Queens Parade)	NB	2988	295	622
	Wellington St (South of Queens Parade)	SB	2650	555	369
3	Wellington St (North of Alexandra Parade)	NB	2721	240	573
	Wellington St (North of Alexandra Parade)	SB	2535	393	357
4	Wellington St (South of Alexandra Parade)	NB	4513	387	894
	Wellington St (South of Alexandra Parade)	SB	5932	1166	663
5	Wellington St (South of Hotham St)	NB	4193	407	736
	Wellington St (South of Hotham St)	SB	5871	1101	679
6	Wellington St (South of Easey St)	NB	4541	391	871
	Wellington St (South of Easey St)	SB	5171	874	628
7	Wellington St (South of Perry St)	NB	4325	340	746
	Wellington St (South of Perry St)	SB	5935	1176	674
8	Queens Parade (West of Smith St)	EB	6366	538	1065
	Queens Parade (West of Smith St)	WB	7583	2063	799
	Queens Parade (East of Smith St)	WB	10927	2835	1165
	Smith St (South of Queens Parade)	NB	2899	214	613
9	Alexandra Parade (West of Smith St)	EB	36869	4359	4884
	Alexandra Parade (East of Smith St)	WB	34763	3795	4423
	Smith St (South of Alexandra Parade)	NB	6040	408	1234
	Smith St (North of Alexandra Parade)	SB	2812	535	312
10	Johnston St (West of Smith St)	EB	9323	807	1797
	Johnston St (East of Smith St)	WB	8050	1262	902
	Smith St (South of Johnston St)	NB	5185	367	761
	Smith St (South of Johnston St)	SB	7139	1223	740
	Smith St (North of Johnston St)	SB	5526	1115	535
12	Alexandra Parade (West of Hoddle St)	EB	3526	393	316
	Eastern Fwy Ramp (East of Hoddle St)	WB	24975	3871	3316
	Hoddle St (South of Alexandra Pde)	NB	46942	3781	7770
	Hoddle St (North of Alexandra Pde)	SB	19310	2182	2543
	Hoddle St (South of Truro St)	NB	47209	3826	7722
	Hoddle St (North of Truro St)	SB	41911	6050	4888
14	Johnston St (West of Hoddle St)	EB	7124	1016	1352
	Johnston St (East of Hoddle St)	WB	7480	1134	1210
	Johnston St (East of Hoddle St)	EB	7589	1089	1414
	Hoddle St (South of Johnston St)	NB	47399	4134	7511
	Hoddle St (North of Johnston St)	SB	42083	6085	4887
	Hoddle St (North of Gipps St)	SB	38928	5554	4214
19	Alexandra Parade St (West of Brunswick Street)	EB	44695	5059	5955
	Alexandra Parade St (East of Brunswick Street)	WB	42213	5671	5201
	Brunswick St (South of Alexandra Parade)	NB	6202	438	1105
	Brunswick St (North of Alexandra Parade)	SB	8624	1409	813
	Brunswick St (North of Alexandra Parade)	NB	7920	581	1324
20	Johnston St (West of Brunswick St)	EB	9247	827	1561
	Johnston St (East of Brunswick St)	WB	9673	1648	1032
	Brunswick St (South of Johnston St)	NB	5017	366	809
	Brunswick St (South of Johnston St)	SB	8212	1110	885
	Brunswick St (North of Johnston St)	SB	6542	944	676
22	Princes St (West of Nicholson St)	EB	36324	4118	4697
	Princes St (West of Nicholson St)	WB	35028	4904	3923

	Alexandra Parade (East of Nicholson St)	WB	40697	5708	4769
	Nicholson St (South of Alexandra Parade)	NB	9759	849	1376
	Nicholson St (North of Alexandra Parade)	SB	5240	802	607
	Nicholson St (North of Alexandra Parade)	NB	8523	695	1426
23	Eigin St (West of Nicholson St)	EB	8354	687	1798
	Eigin St (West of Nicholson St)	WB	8837	1513	1063
	Johnston St (East of Nicholson St)	WB	8744	1508	983
	Nicholson St (South of Eigin St & Johnston St)	NB	8869	651	1498
	Nicholson St (South of Eigin St & Johnston St)	SB	8472	1328	945
	Nicholson St (North of Eigin St & Johnston St)	SB	8957	1449	972
25	North Terrace St (West of Hoddle St)	EB	1067	1067	1067
	North Terrace St (West of Hoddle St)	WB	1822	150	279
	Ramsden St (East of Hoddle St)	WB	874	874	874
	Ramsden St (East of Hoddle St)	EB	2265	257	270
	Hoddle St (South of North Terrace & Ramsden St)	NB	21137	2042	3399
	Hoddle St (North of North Terrace & Ramsden St)	SB	18632	2242	2373
	Hoddle St (North of North Terrace & Ramsden St)	NB	21886	2142	3496
26	South Terrace St (West of Hoddle St)	EB	1458	268	215
	South Terrace St (West of Hoddle St)	WB	1434	249	238
	Roseneath St (East of Hoddle St)	WB	2391	358	448
	Roseneath St (East of Hoddle St)	EB	2440	355	385
	Hoddle St (South of South Terrace & Roseneath St)	NB	20208	1912	3233
	Hoddle St (North of South Terrace & Roseneath St)	SB	17943	2189	2354
27	Queens Parade (West of Wellington St)	EB	8803	699	1582
	Queens Parade (East of Wellington St)	WB	13146	3183	1497
	Queens Parade (East of Wellington St)	EB	9959	784	1800
28	Alexandra Parade (West of Wellington St)	EB	38127	4381	5414
	Alexandra Parade (East of Wellington St)	WB	37012	4349	4754
29	Johnston St (West of Wellington St)	EB	7336	1266	926
	Johnston St (East of Wellington St)	WB	7367	904	1349
	Wellington St (South of Johnston St)	NB	4928	937	571
31	Smith Street (South of Keele St)	NB	7869	548	1553
	Smith Street (North of Keele St)	SB	5954	1227	578
32	Johnston St (West of Gold St)	EB	7333	914	1365
	Johnston St (East of Gold St)	WB	8007	1364	1137
	Gold St (North of Johnston St)	SB	764	125	110
	Gold St (North of Johnston St)	NB	764	110	125
33	Alexandra Parade (Near Gold St)	WB	36820	4242	4635
	Alexandra Parade (Near Gold Street)	EB	39514	4481	5751
34	Gold St (South of Hotham St)	NB	829	54	110
	Gold St (South of Hotham St)	SB	803	109	59