Stantec

Mercer Street and Gheringhap Street Masterplan – Traffic Modelling

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October 2022

Revision	Description	Author	Date	Independent Review and Approved By	Date
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The Stantec Team acknowledges the First Nations peoples of this nation. We acknowledge the traditional custodians of the lands on which our offices are located and where we conduct our work. We pay our respects to ancestors and Elders, past and present. Stantec is committed to honouring First Nations peoples' unique cultural and spiritual relationships to the land, waters and seas and their rich contribution to society.

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01 INTRODUCTION

BACKGROUND

Central of Geelong is undergoing a revitalisation program to support an increase in development and population growth within the Central Business District (CBD). As part of the transformation, the City of Greater Geelong is developing a masterplan for Gheringhap Street, Mercer Street and Bayley Street. The masterplan proposes some geometric changes to the road network which need to be developed and assessed in the context of the road network operation.

The primary intent of this assessment was to undertake a high-level validation of the masterplan and if required, recommend refinements to the masterplan options using a traffic model. The Geelong mesoscopic model was originally developed in 2018 to assist in evaluating the transport impacts of changes to bus routes and stops in and through the City Centre.

Figure 1: Draft Masterplan Study Area (source: City of Greater Geelong)

02 MODEL DEVELOPMENT

REVIEW OF TRAFFIC VOLUMES

Given the Geelong traffic model was originally developed using 2018 traffic information, it was critical to undertake a review of the changes in traffic volumes between 2018 and 2022. This was particularly important in the context of the Covid-19 and its impacts on existing travel patterns.

SCATS detector volume data for signalised intersections has been sourced from Department of Transport (DoT) for March and April of 2018 and 2022. The data obtained for the area corresponding with the model extents has been used to compare the typical daily profile and magnitude of network traffic flows throughout Geelong.

A comparison of the data has been undertaken at a network level as well as for individual intersections within the core study area. In order to ensure a robust assessment, only information from SCATS sites which had 'clean' data for all assessed time periods (March 2018/2022 and April 2018/2022) was considered.

Figure 2: Model Extents

REVIEW OF TRAFFIC VOLUMES

Figure 3 shows that on a typical weekday in March 2018 (data used for the Geelong traffic model development and calibration) traffic volumes were higher than for the same period in March 2022 and April 2018/2022. This could suggest that traffic volumes within wider Geelong have not yet returned to pre-Covid equivalents. The results also illustrate that despite lower traffic volumes, the overall temporal profile (shape) is consistent across all assessed time periods, suggesting there has not been a significant shift in peak travel patterns, i.e., away from typical commuter peaks. The temporal profile also shows that the evening peak is generally higher and longer than the morning peak. This is noted in the context of the masterplan and its likely impact on the road network performance.

In addition to the wider area assessment, a further investigation has also been undertaken for the 'core' study area, which is relevant to the masterplan. This compared traffic flows at intersections along Gheringhap Street, Mercer Street and Bayley Street – Figure 4. The core area analysis demonstrates a consistent pattern with the broader Geelong network where the overall traffic volume profile is relatively consistent between all time periods evaluated, whilst the magnitude of demands is proportionally lower in 2022 than the 2018 equivalent time period.

Based on the assessment of historical and existing traffic volumes, the 2018 Geelong model is considered appropriate for this assessment, noting a slightly conservative estimate of network traffic demands. Accordingly, the study has adopted the 2018 model demands.

In addition to the review of traffic volume changes, the Geelong traffic model has also been updated to reflect any changes in road network configuration that occurred between 2018 and 2022. The key configuration changes were at Malop Street and Ormond Road. Both roads have reopened to traffic (with modified configurations) since 2018.

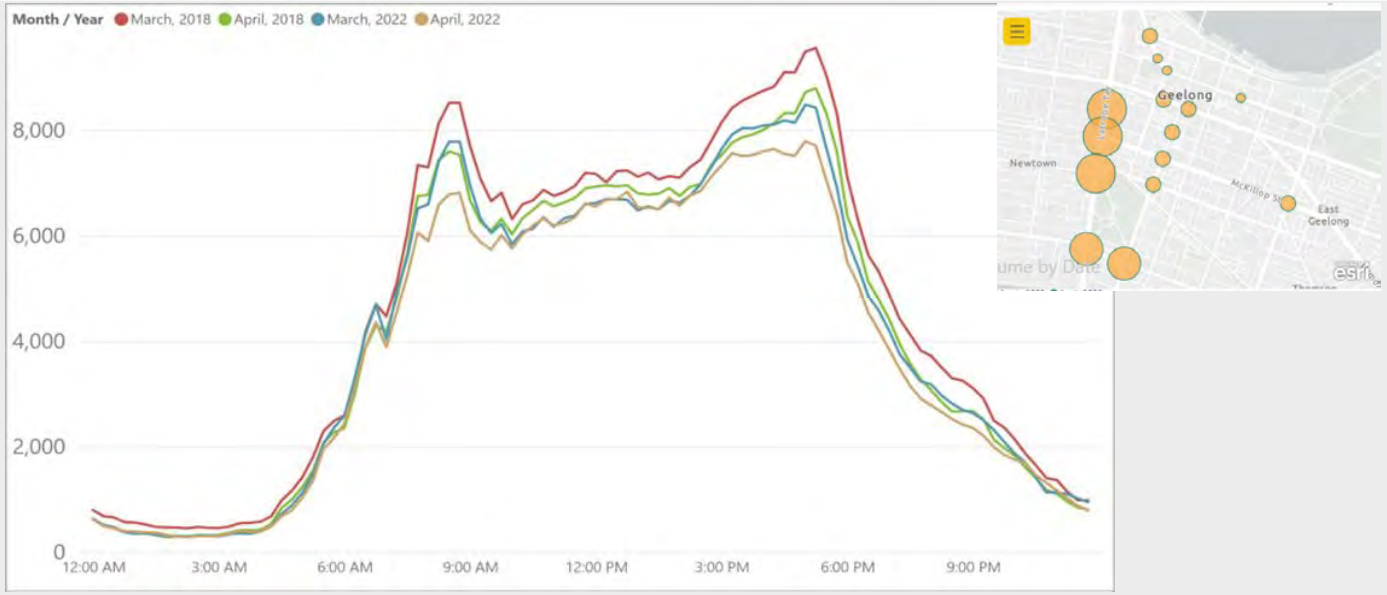


Figure 3: Traffic Volumes Profile – Wider Area

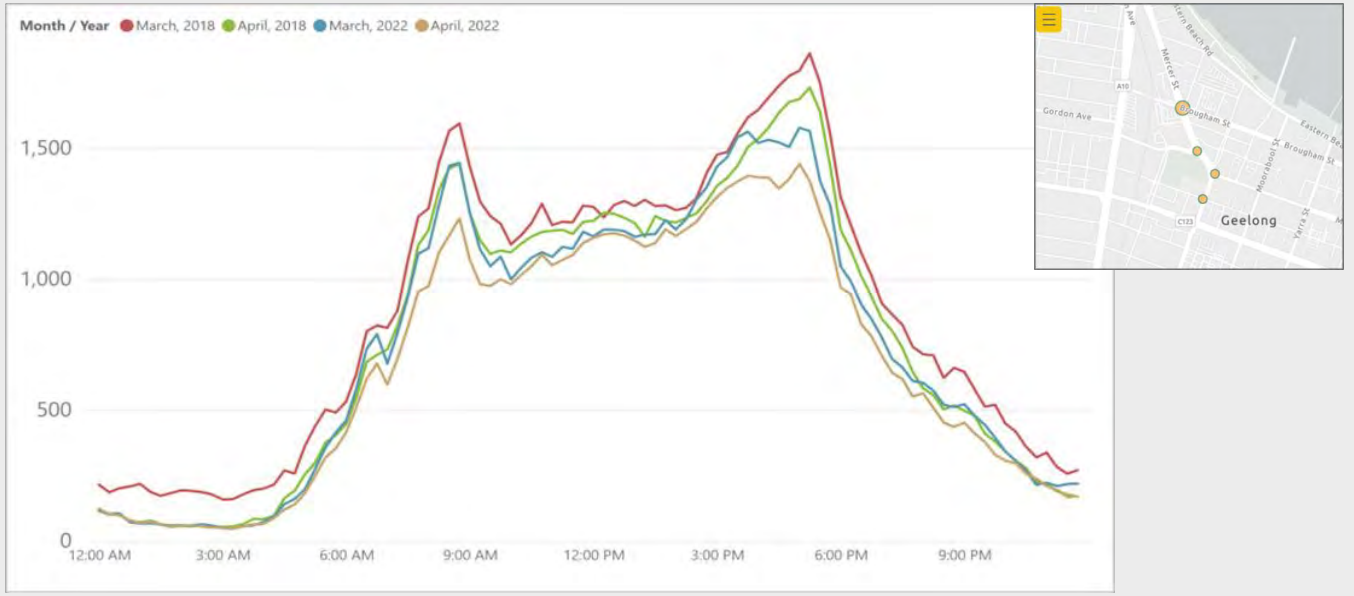


Figure 4: Traffic Volumes Profile – Mercer Street Corridor

EXISTING TRAVEL PATTERNS – AM PEAK

The morning peak is characterised by larger inbound traffic volumes along Mercer Street. The inbound 2-hour volumes are in the order of 1,700 vehicles, whilst the outbound volumes are close to 900 vehicles.

The Mercer Street inbound traffic splits at the Mercer Street/Brougham Street intersection with 45% of trips choosing to turn left and travel along Brougham Street. The remaining traffic continues southbound along Mercer Street and Gheringhap Street.

The outbound traffic patterns in the morning peak mirror the inbound patterns.

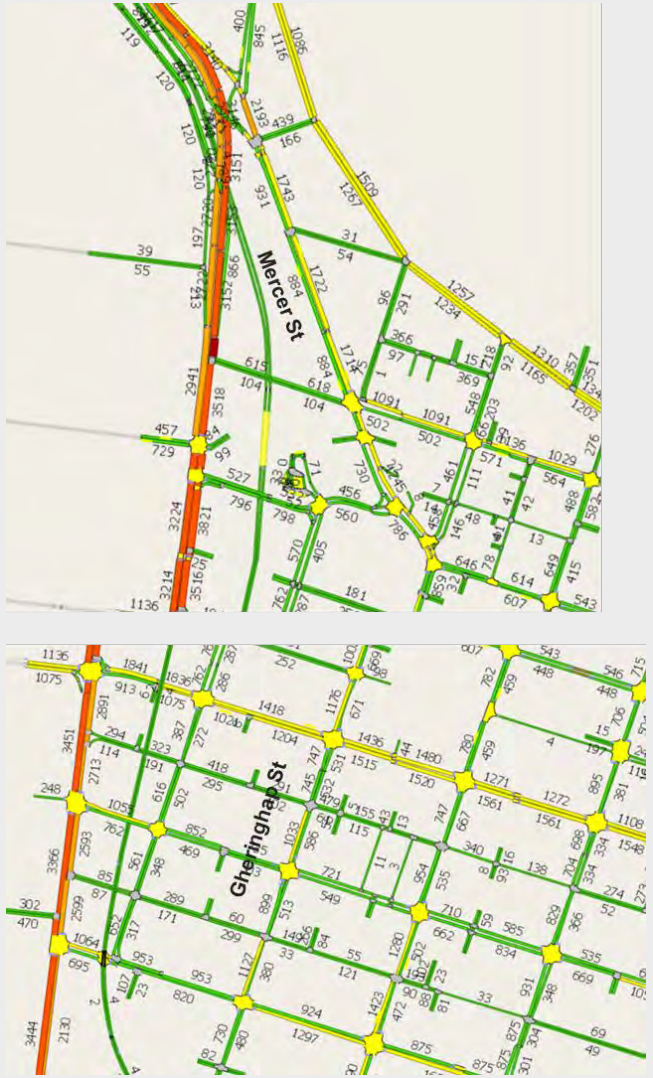


Figure 5: 2022 Traffic Volumes AM Peak (2hours)

Figure 6: 2022 Travel Patterns AM Peak

EXISTING TRAVEL PATTERNS – PM PEAK

In contrast to the morning peak, the afternoon peak does not demonstrate any dominant directional traffic flows. 2-hour traffic volumes along Mercer Street (inbound and outbound) are similar and range in the order of 1,500 vehicles. Unlike the morning peak conditions, a larger proportion of inbound trips continues along Mercer Street and then Gheringhap Street instead of utilising Brougham Street.

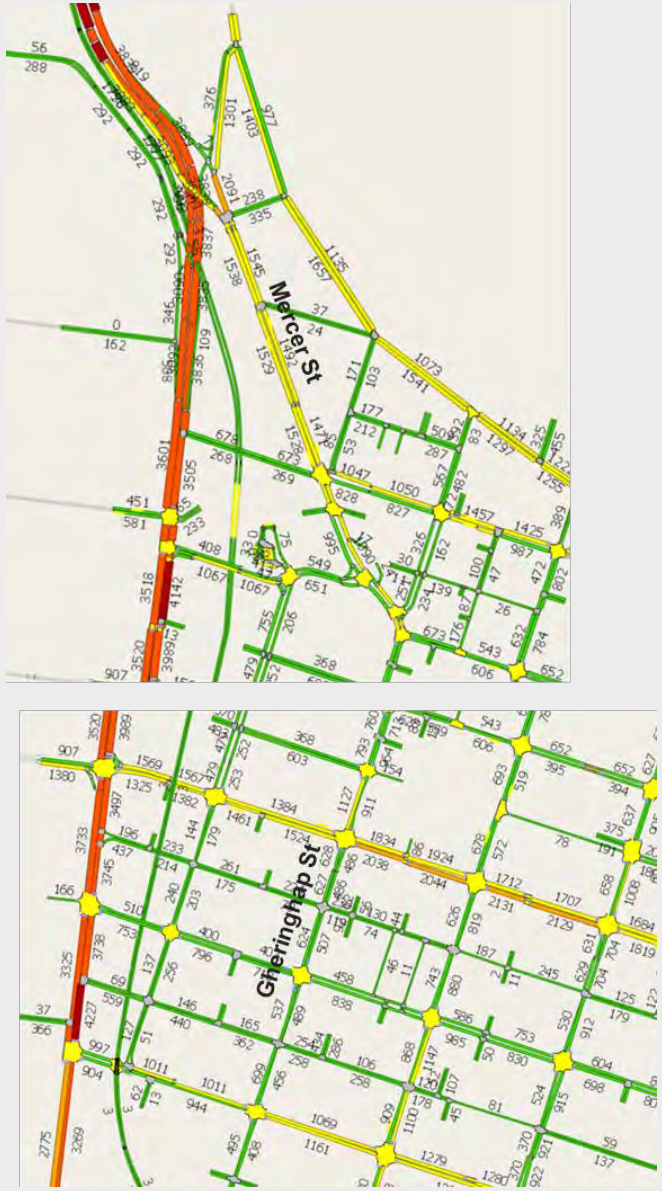


Figure 7: 2022 Traffic Volumes PM Peak (2hours)

Figure 8: 2022 Travel Patterns PM peak

EXISTING TRAVEL PATTERNS – CONGESTION

Congestion results show that in the morning peak, the Mercer Street and Brougham Street intersection is the key congestion hotspot in the area relevant to the masterplan assessment. There is also some congestion build-up along Brougham Street eastbound but overall, the network appears to operate without major flow breakdowns.

In the afternoon peak, there is some congestion build-up along Western Beach Road as well as Brougham Street eastbound. The Mercer Street and Brougham Street intersection experiences some congestion but to a lesser extent than the morning peak.

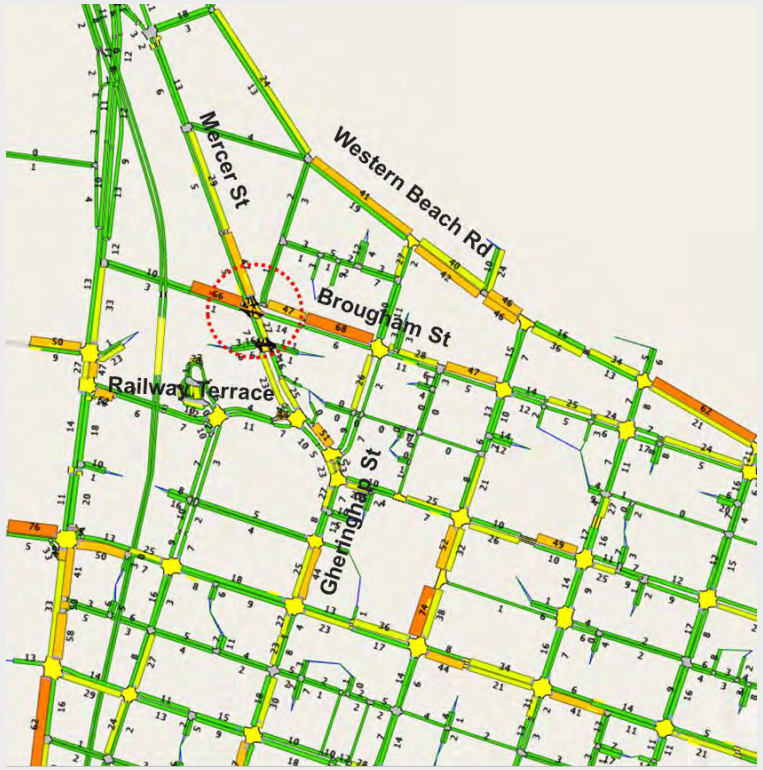


Figure 9: Morning Peak Congestion (9am)

Figure 10: Evening Peak Congestion (5pm)

03 MASTERPLAN

MASTERPLAN ARRANGEMENTS

Information provided by Council [1] formed the basis for road network changes that have been incorporated and tested in the Geelong traffic model. An initial assessment of the proposed changes has identified specific elements of the masterplan which should be included in the model due to the likely impact on road network capacity. This mainly included a reduction in number of lanes or changes to posted speeds in shared zones.

It is also noted that for the purpose of this assessment no changes to the existing traffic signal arrangements have been implemented in the traffic model. This will be undertaken at the concept designs development stage.

Figures 9 and 10 illustrate key areas where the masterplan required changes to the model road network cross sections. The red marked lanes show the location of lane closures being applied. Accordingly, in the morning peak, two (2) lanes remain open along Mercer Street southbound and one (1) northbound. This arrangement is reversed in the evening peak.

It is noted that a physical closure is not proposed along Mercer Street, rather dynamic parking on either side with both lanes open in the direction of peak flow. However, to evaluate this scenario within a model environment a lane closure has been implemented to represent the worst-case scenario, whereby parking is fully utilised and the lane is unavailable to traffic.

[1] MG Streetscape Masterplan – Confirmed Street Sections (Draft), June 2022

Figure 9: Masterplan Arrangements – AM Peak

Figure 10: Masterplan Arrangements – PM Peak

04 TRAFFIC MODELLING RESULTS

TRAFFIC IMPACTS

Network analysis has been conducted for each model scenario followed by evaluation of traffic volume changes and key travel time routes to ensure network impacts are well understood in the context of the proposed changes. The evaluation has been undertaken for 2022- and 2031-year horizons, noting that the 2031 scenario incorporates growth in travel demands resulting from future population and employment forecasts.

Network wide performance statistics have been extracted to provide a high-level comparison of aggregated performance measures in the masterplan scenarios against the base conditions (without the masterplan). The metrics evaluated included the following:

- Vehicle Kilometres Travelled (VKT) – aggregated total vehicle kilometres travelled by all the vehicles that have travelled through the network during a respective time period.
- Vehicle Hours Travelled (VHT) – aggregated vehicle hours travelled by all the vehicles that have travelled through the network during a respective period.
- Delay – a measure of additional time taken to pass through the network when compared to free flow conditions for a respective time period.
- Speed – average speed for all vehicles that have completed their trips at the end of a simulation period.
- Travel time – average travel time for all vehicles to travel one kilometre during a respective time period.

Traffic volumes and congestion level plots for each analysed scenario for the morning and evening peaks have been included in Appendix A and B.

TRAFFIC IMPACTS - 2022

Network performance statistics (Table 1) have shown that the masterplan is expected to have a varying degree of impact in the morning and evening peaks. The impacts in the morning peak are relatively minor and it is the evening peak where deterioration in network performance is considered more significant. Average delays for general traffic increase by 24%, whilst average speed across the network declines by 7%.

Overall, it can be concluded that the evening peak would be critical in terms of managing the performance of the road network under the proposed masterplan arrangements.

Network Statistic	Units	2022 Base AM	2022 Masterplan AM	Absolute difference	Relative difference (%)
Delay Time - All	sec/km	78	80	+2	+2.8%
Delay Time - Bus	sec/km	119	121	+3	+2.2%
Average Speed - All	km/h	28	28	0	-1.0%
Total Travel Time - All	h	3,134	3,175	+42	+1.3%
Total Travelled Distance - All	km	78,302	78,070	-231	-0.3%
Average Travel Time - All	sec/km	149	151	+2	+1.5%

Network Statistic	Units	2022 Base PM	2022 Masterplan PM	Absolute difference	Relative difference (%)
Delay Time - All	sec/km	82	101	+20	+24.3%
Delay Time - Bus	sec/km	122	140	+18	+14.9%
Average Speed - All	km/h	28	26	-2	-7.0%
Total Travel Time - All	h	3,389	3,891	+503	+14.8%
Total Travelled Distance - All	km	84,178	84,649	+471	+0.6%
Average Travel Time - All	sec/km	153	173	+20	+12.8%

Table 1: Masterplan 2022 Results – Network Performance Statistics

TRAFFIC IMPACTS – 2022 AM PEAK

Traffic volume results (2-hour totals) show that in the morning peak the introduction of the masterplan has no or only marginal impacts on traffic volumes or travel patterns. Figures 11 and 12 show that volumes along key corridors relevant to the masterplan assessment (Mercer Street and Brougham Street) are expected to operate with traffic volumes comparable to the base scenario.

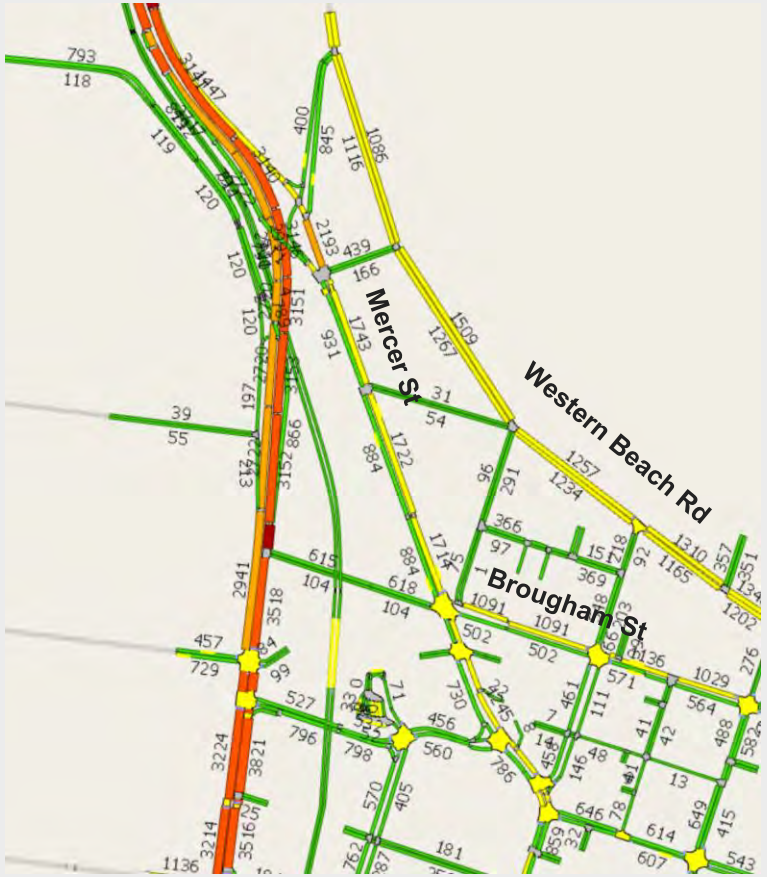


Figure 11: AM Peak Traffic Volumes (2 hours) – 2022 Base

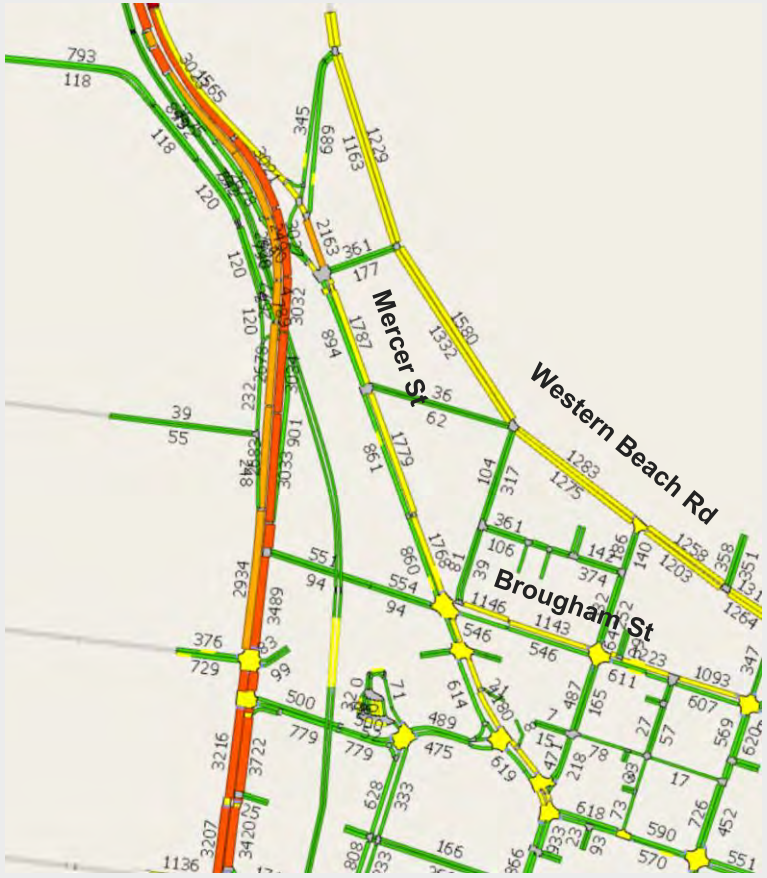


Figure 12: AM Peak Traffic Volumes (2 hours) – 2022 Masterplan

TRAFFIC IMPACTS – 2022 AM PEAK

Traffic congestion plots (Figure 13 and 14) show that in the morning peak the masterplan is likely to result in only minor increase in congestion along Mercer Street southbound on the approach to Brougham Street. There is also a slight increase in congestion along Princes Highway southbound on the approach to the intersection with Gordon Avenue.

Overall, the road network in the masterplan scenario in the morning peak appears to operate with similar levels of congestion as observed in the base scenario.

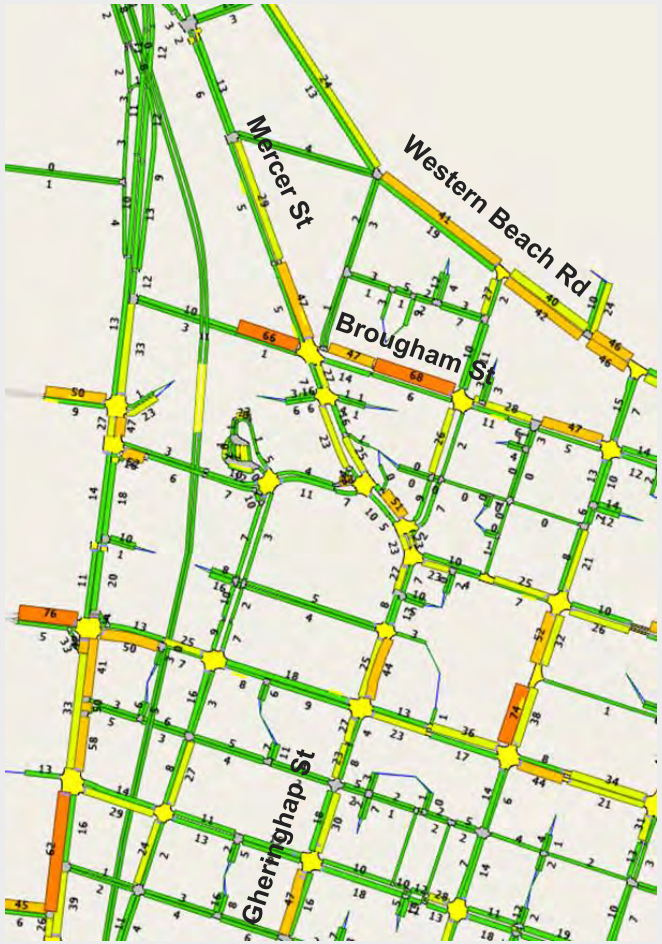


Figure 13: Morning Peak Congestion (at 9am) – 2022 Base

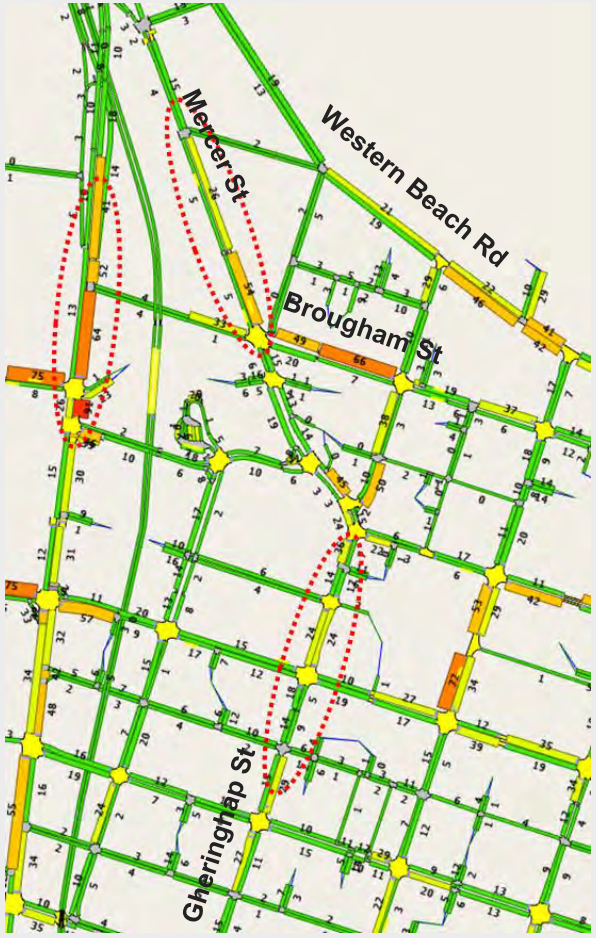


Figure 14: Morning Peak Congestion (at 9am) – 2022 Masterplan

TRAFFIC IMPACTS – 2022 PM PEAK

The evening peak results show that the masterplan changes are likely to result in significant changes in travel patterns as traffic seeks alternative routes due to an increase in congestion. The results show less traffic in both directions along Mercer Street. Traffic that would normally use Mercer Street is observed to reroute to Western Beach Road or Princes Highway.

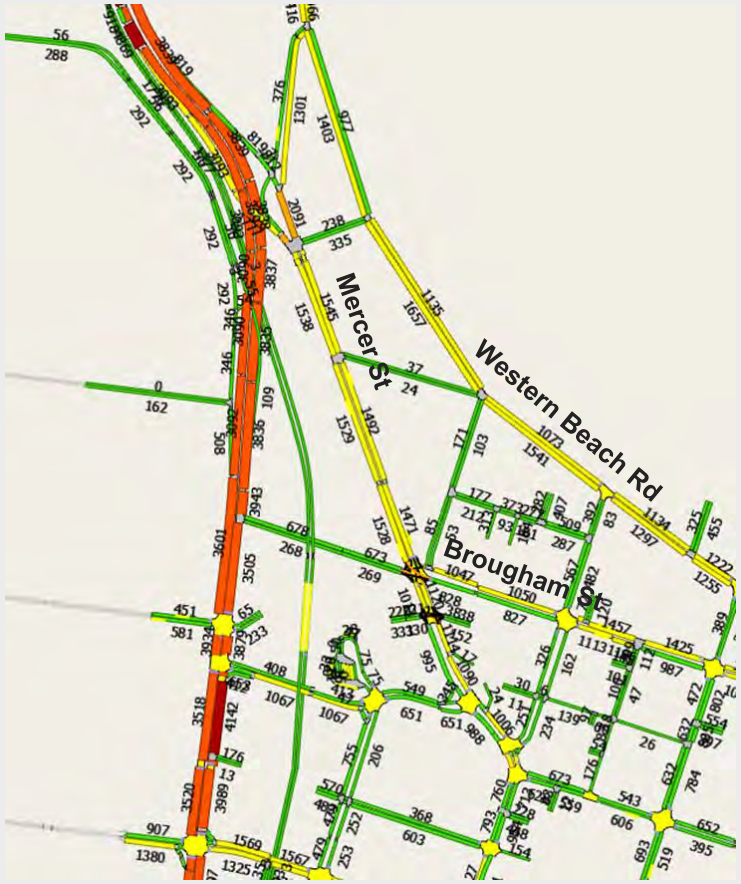


Figure 15: PM Peak Traffic Volumes (2 hours) – 2022 Base

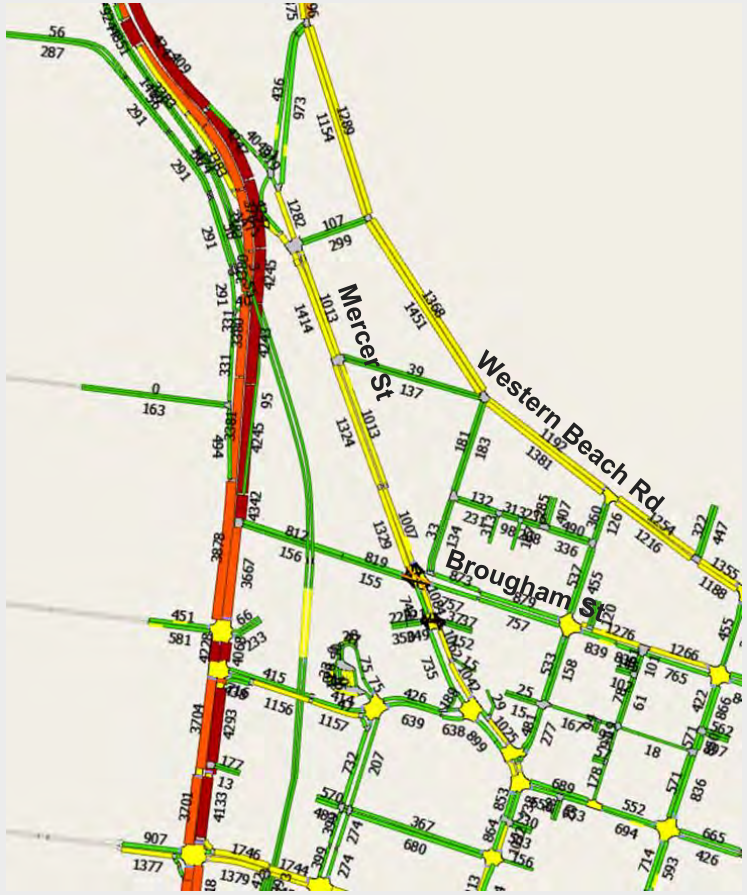


Figure 16: PM Peak Traffic Volumes (2 hours) – 2022 Masterplan

TRAFFIC IMPACTS – 2022 PM PEAK

Traffic congestion plots for the evening peak (Figure 13 and 14) show that the masterplan is likely to result in a significant increase in congestion when compared to the base model. The reduction in capacity along Mercer Street southbound results in more traffic using Princes Highway and Brougham Street (railway underpass). This change increases operational pressure on the Mercer Street and Brougham Street intersection and results in queues build-up which affect the Princes Highway southbound movement.

The results also show that rerouting of traffic to Western Beach Road results in a significant increase in eastbound congestion.

Figure 17: Evening Peak Congestion (at 5pm) – 2022 Base

Figure 18: Evening Peak Congestion (at 5pm) – 2022 Masterplan

POTENTIAL MITIGATIONS – OPTION 1

The evening peak results have highlighted a need to revisit the proposed masterplan arrangements. In the first instance, a sensitivity test has been carried out which considered changes to the mid-block capacity along Mercer Street between Brougham Street and Railway Parade. In this scenario, the cross section of Mercer Street has been retained as per the existing conditions.

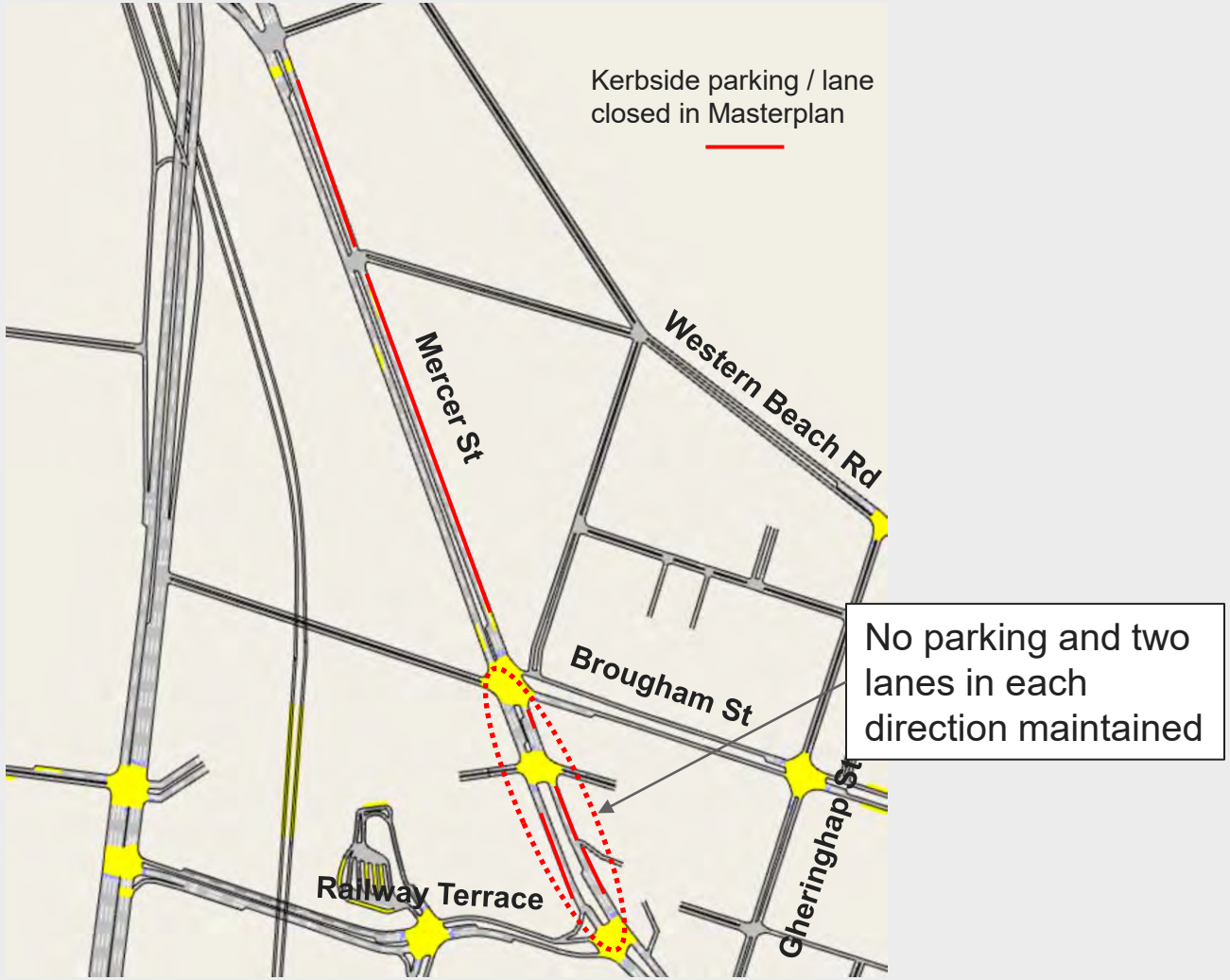


Figure 19: Masterplan Refinement – Option 1

POTENTIAL MITIGATIONS – OPTION 1

The proposed changes to the masterplan arrangements have been assessed in the evening peak only. The results have shown that despite some improvements in the overall network performance, the network is still expected to experience a significant deterioration in performance. Average speed is shown to decrease by approximately 6%, whilst total travel time across the assessed road network increases by 12%.

The travel times results also show that journeys along Princes Highway and Mercer Street are significantly longer compared to the base model.

Network Statistic	Units	2022 Base PM	2022 Masterplan PM	Absolute difference	Relative difference (%)	2022 Masterplan (modified)	Relative difference (%)
Delay Time - All	sec/km	82	101	+20	+24.3%	98	+19.9%
Delay Time - Bus	sec/km	122	140	+18	+14.9%	132	+8.1%
Average Speed - All	km/h	28	26	-2	-7.0%	26	-5.7%
Total Travel Time - All	h	3,389	3,891	+503	+14.8%	3,799	+12.1%
Total Travelled Distance - All	km	84,178	84,649	+471	+0.6%	84,648	+0.6%
Average Travel Time - All	sec/km	153	173	+20	+12.8%	169	+10.6%

Table 2: Masterplan Refinements Option 1 2022 Results – Network Performance Statistics

Figure 20: Masterplan Refinement Option 1 2022 – Princes Highway Travel Time

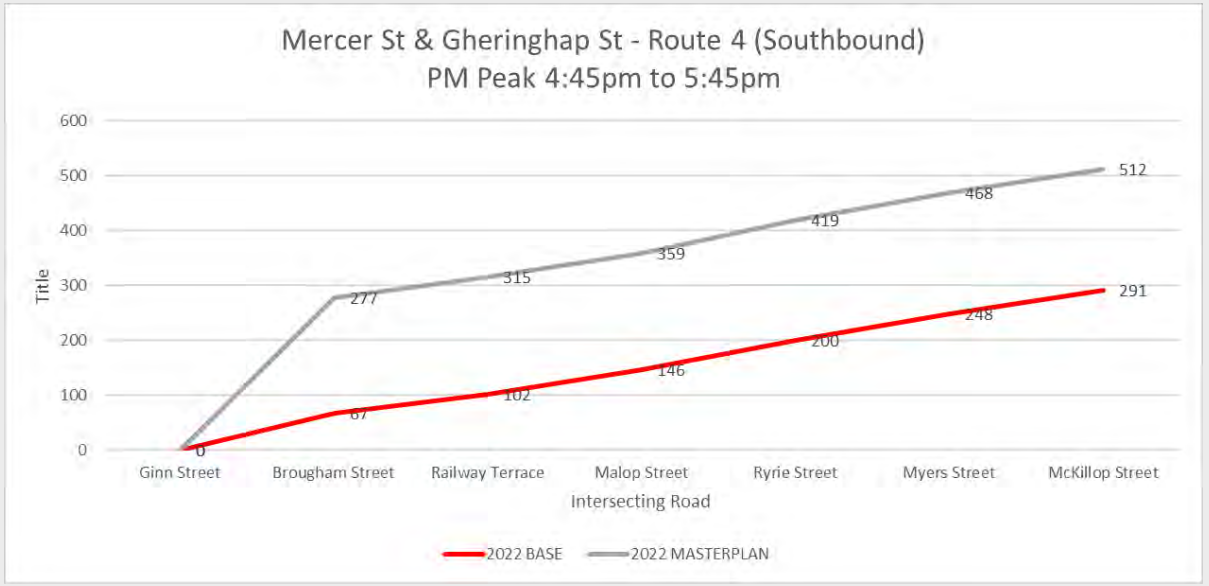


Figure 21: Masterplan Refinement Option 1 2022 – Mercer Street Travel Time

POTENTIAL MITIGATIONS – OPTION 2

Based on the results of Option 1, it has been concluded that in order to better manage the likely impacts of the proposed masterplan arrangements on the performance of the road network, the section of Mercer Street (north of Brougham Street) should maintain its current configuration during both peak periods (Figure 22). As indicted by Council, these arrangements can be reviewed in the future and the proposed protected bicycle lanes extended along the full length of Mercer Street.

It is expected that a variation of the current masterplan proposal for Mercer Street - north of Brougham - which has clearways in both directions during the evening peak to enable separated bike lanes would yield similar outcomes to the 'Potential Mitigations Option 2'. However, there would likely be small differences associated with the impacts of changed parking habits and potentially points where cyclists interact with motorists (i.e. dependent on cyclist volumes). To understand these impacts further investigation would be required when proposed concept designs have been complted.

Figure 22: Masterplan Refinement – Option 2

POTENTIAL MITIGATIONS – OPTION 2

The network statistics for the evening peak (Table 3) show that the proposed modifications to the masterplan result in improved performance of the road network. Although the network continues to experience deterioration in performance when compared to the base model, the level of changes is considered manageable from the network operation perspective. The results show that the average speed decrease by only 3%, whilst in the original masterplan option this reduction was as great as 7%. Similarly, delays are expected to increase by 10%, which is a significant improvement compared to the previously reported increase of 24%.

The travel time results, which previously showed considerable increases, are now comparable with the base model (Princes Highway) or slightly longer (in the order of 50 seconds) for the Mercer Street – Gheringhap Street corridor in southbound direction. This is a significant improvement compared to the original masterplan results and illustrates that with further signal optimisation works the impacts can be minimised even further.

Network Statistic	Units	2022 Base PM	2022 Masterplan – Option 1 PM	2022 Masterplan – Option 2 PM	Relative difference (%)
Delay Time - All	sec/km	82	98	90	+10.7%
Delay Time - Bus	sec/km	122	132	121	-0.7%
Average Speed - All	km/h	28	26	27	-3%
Total Travel Time - All	h	3,389	3,799	3,607	+6.5%
Total Travelled Distance - All	km	84,178	84,648	84,613	+5.6%
Average Travel Time - All	sec/km	153	169	162	+5.6%

Table 3: Masterplan Refinements Option 1 2022 Results – Network Performance Statistics

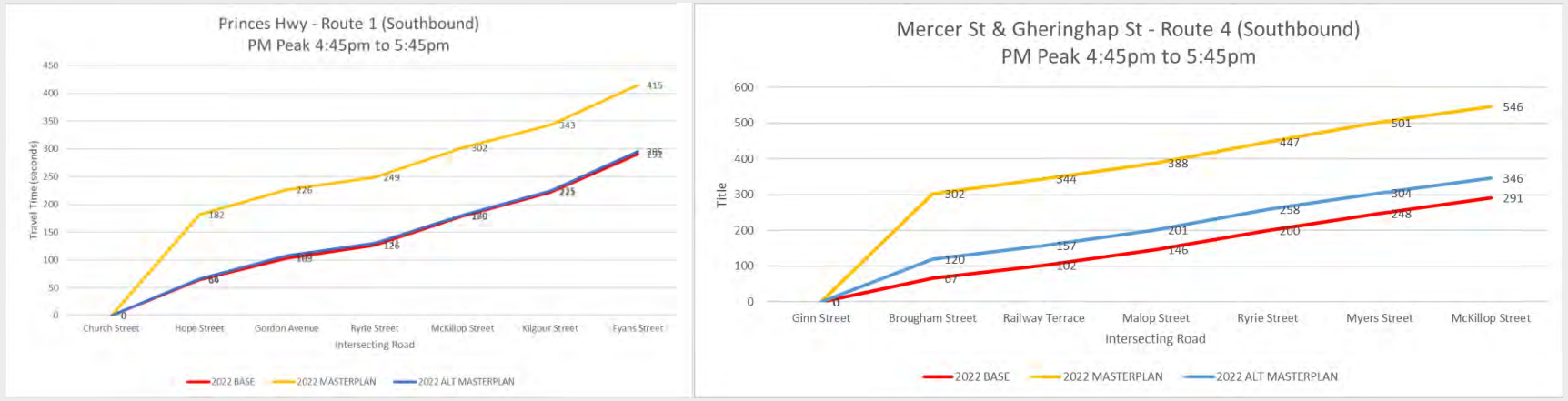


Figure 23: Masterplan Refinement Options – Travel Times Along Princes Highway and Mercer Street southbound (PM Peak)

POTENTIAL MITIGATIONS – OPTION 2

In terms of congestion patters (Figure 25), it is evident that the proposed refinements would bring congestion to the level which is considered manageable from the road network performance perspective. The results show that Mercer Street generally operates satisfactorily with no major queueing. There is some build up of congestion along Brougham Street and Gheringhap Street, but it is only temporary and without any major operational impacts on the wider road network.

Figure 24: Evening Peak Congestion (at 5pm) – 2022 Masterplan

Figure 25: Evening Peak Congestion (at 5pm) – 2022 Masterplan Option 2

TRAFFIC IMPACTS - 2031

The modelling assessment has also considered the likely impacts of the masterplan in the future and a 2031 future year horizon has been chosen for this purpose.

Geelong is growing and the Revitalising Central Geelong Action Plan (2016) by the Department of Environment, Land, Water and Planning (DELWP) outlined the Government's plan to drive change in central Geelong, prompting growth and employment opportunities. The growth in population and employment will correspond with growth in travel demand, including vehicle trips. The estimate of future trips sourced from the Victorian Integrated Transport Model (VITM) shows that car trips in peak hours are likely to continue to grow at a rate of 1% per annum (Table 4). Similarly, heavy goods vehicle volumes are also forecast to increase at a rate of 1.3-1.4% per annum.

Given the above, the masterplan with the recommended refinements (Option 2) has also been assessed using 2031 demands.

Year	Trips	Growth per annum
Cars (including LCV)		
AM		
2019	32,495	
2031	36,776	1.0%
PM		
2019	42,089	
2031	47,481	1.0%
Trucks		
AM		
2019	586	
2031	691	1.4%
PM		
2019	440	
2031	516	1.3%

Table 4: 2019 – 2031 VITM Forecast Growth (Cars and Trucks)

TRAFFIC IMPACTS - 2031

The network performance statistics show that in the 2031 morning peak, the masterplan with the recommended changes will have relatively minor impacts on delays and travel times. Average speed across the network is forecast to reduce by approximately 2%, whilst delays increase by approximately 9%.

The impacts in the evening peak are more pronounced with average speed reducing by approximately 5% and delays increasing by approximately 17%.

It is recognised that managing the impacts of the masterplan in the future will be of a greater challenge than in 2022 due to the overall increase in vehicular demands. Even without the masterplan, the network is expected to experience a significant increase in congestion. For example, due to higher traffic volumes, the evening peak is likely to see a reduction in average speed of 14%.

Network Statistic	Units	2031 Base AM	2031 Masterplan AM	Relative difference (%)
Delay Time - All	sec/km	109	119	+9.4%
Delay Time - Bus	sec/km	134	148	+10.3%
Average Speed - All	km/h	25	24	-1.9%
Total Travel Time - All	h	4,246	4,371	+2.9%
Total Travelled Distance - All	km	86,660	84,066	-3.0%
Average Travel Time - All	sec/km	180	191	+5.6%

Table 5: 2031 Network Performance Statistics – AM Peak

Network Statistic	Units	2031 Base PM	2031 Masterplan PM	Relative difference (%)
Delay Time - All	sec/km	120	140	+16.7%
Delay Time - Bus	sec/km	174	209	+20.4%
Average Speed - All	km/h	24	23	-4.6%
Total Travel Time - All	h	4,733	5,185	+9.5%
Total Travelled Distance - All	km	92,343	90,836	-1.6%
Average Travel Time - All	sec/km	191	211	+10.5%

Table 6: 2031 Network Performance Statistics – PM Peak

TRAFFIC IMPACTS - 2031

Congestion patterns in the 2031 morning peak (Figure 26 and 27) show that the introduction of the masterplan has only minor impacts on congestion levels in the key areas relevant to the proposed changes. There appears to be a slight increase in queueing on the approach to the Mercer Street and Brougham Street intersection, but Princes Highway and Western Beach Road operate at similar levels to what is observed in the 2031 base model. The Gheringhap Street also appears unaffected by the masterplan changes and operates with relatively low congestion levels.

Figure 26: Morning Peak Congestion (at 9am) – 2031 Base

Figure 27: Morning Peak Congestion (at 9am) – 2031 Masterplan

TRAFFIC IMPACTS - 2031

In the 2031 evening peak, congestion is shown to generally increase across the analysed road network when compared to the 2031 base model . An increase in congestion is observed along Brougham Street and Western Beach Road within the central district. The introduction of the masterplan elevates the levels of congestion along those corridors, but overall, the network appears to be able to accommodate the proposed changes within major gridlocks or prolonged queueing. As observed in the 2022 scenario, there will be opportunities to optimise the performance of the road network (signal optimisation) in order further minimise impacts on travellers.

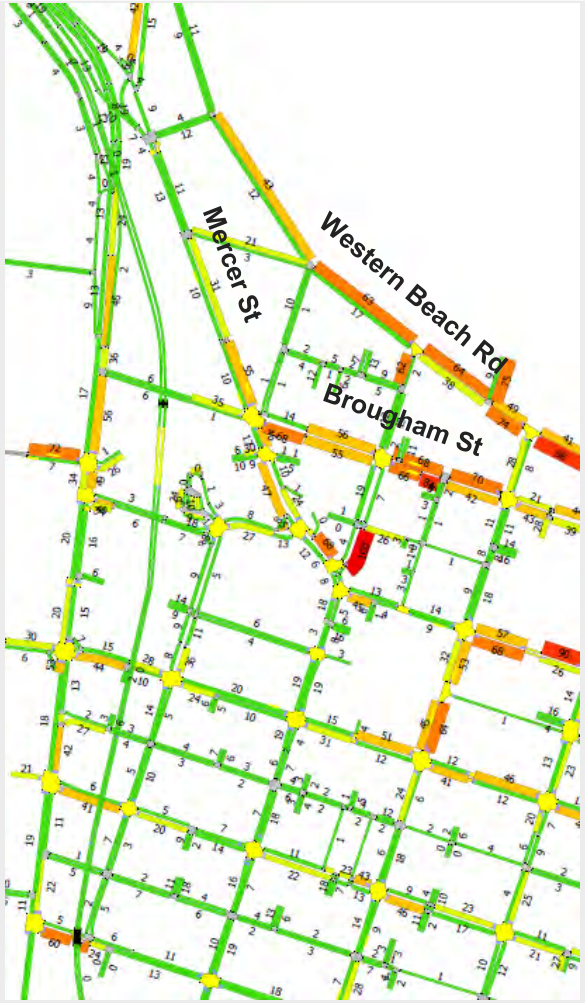
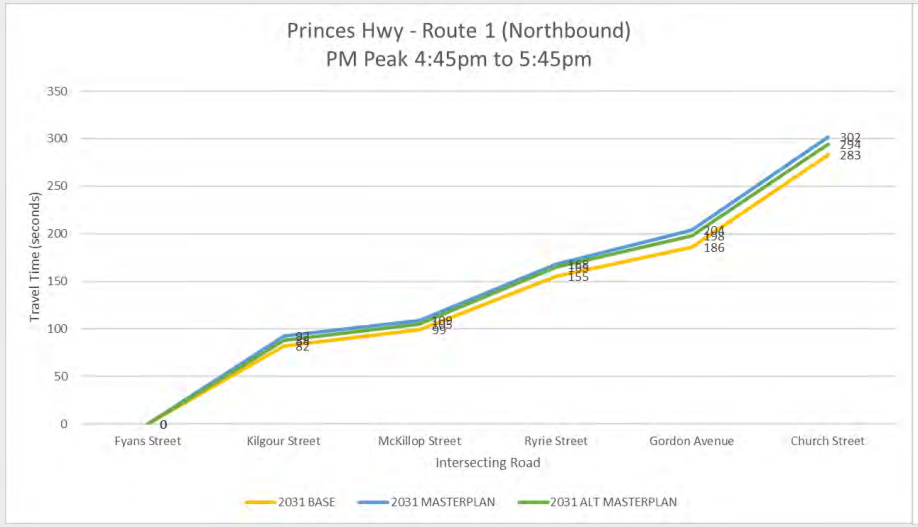


Figure 28: Evening Peak Congestion (at 5pm) – 2031 Base

Figure 29: Evening Peak Congestion (at 5pm) – 2031 Masterplan

TRAFFIC IMPACTS - 2031

Travel time results for the evening peak demonstrate that the proposed refinements to the masterplan offer benefits to travel times. Although there are still increases to travel times along specific key routes (Princes Highway southbound and Mercer Street southbound and northbound), these increases should be considered in the context of the expected travel conditions in 2031.



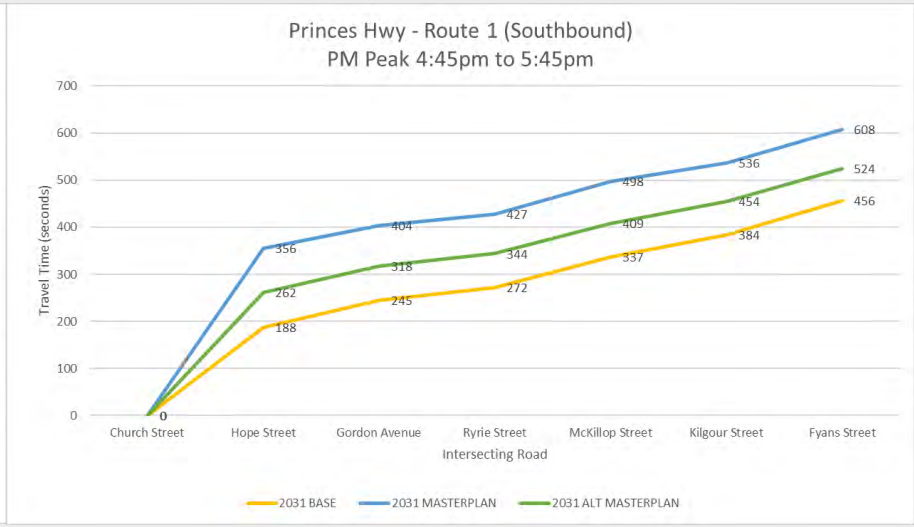
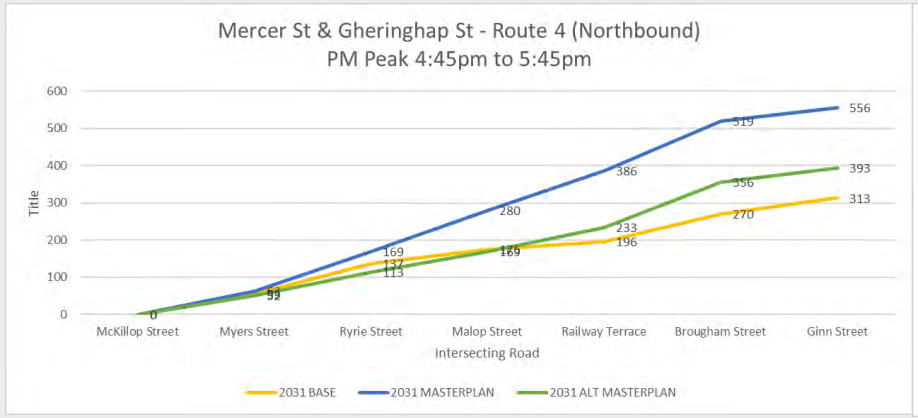


Figure 30: 2031 Travel Time Along Princes Highway Corridor (PM Peak)



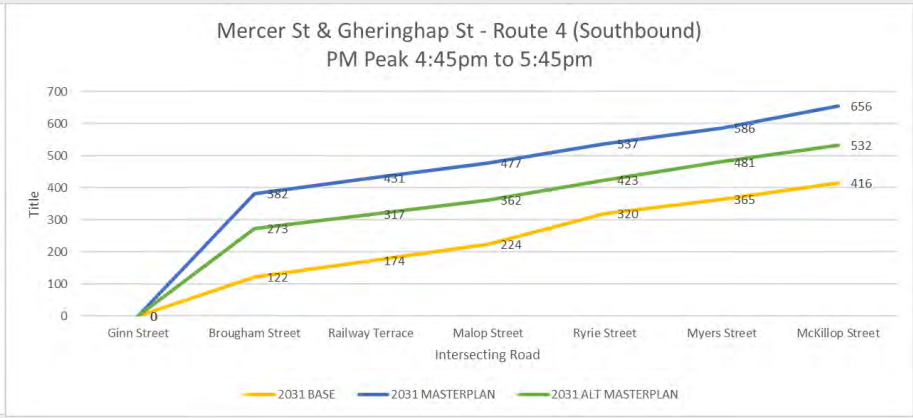


Figure 31: 2031 Travel Times Along Mercer Street and Gheringhap Street Corridor (PM Peak)

05 CONCLUSIONS

CONCLUSIONS

Analysis presented in this report has showed that the proposed masterplan without any modifications would result in unacceptable deterioration of the road network performance. As a results, some modifications have been recommended which involved a removal of the proposed protected bike lanes from the section of Mercer Street north of Brougham Street. This change alone offered a significant improvement to the network performance in the scenario with the existing (2022) traffic volumes. In particular, the critical peak (PM peak) results showed that the network can operate satisfactorily and with further signal control optimisation, the likely impacts could be further minimised.

A continual growth of Geelong (up to 2031) is expected to result in increased vehicle traffic volumes. During both peak periods, car traffic volumes are forecast to increase on average by one percent per annum. This rise in traffic volumes is likely to increase pressure on the road network (without the masterplan) and the modelling results showed that in 2031, the evening peak will continue to be a critical time period in terms of managing road congestion. The introduction of the masterplan increases delays (17%) as well as travel times (10%). This results in higher congestion levels with longer duration. However, the model results also showed that despite this increase in congestion, the network is expected to function satisfactorily without any major gridlocks or prolong periods of heavy congestion and flow breakdowns. It is also expected that there will be a need to further review and optimes traffic signal operation as well as refine the masterplan option so these impacts can be minimised further.

Finally, it is recommended that a future assessment be undertaken when the Mercer Street corridor redevelops as a high-density residential precinct with the transport focus away from private vehicles to active transport, shared and public transport.

Appendix A – Modelled Traffic Volume Plots

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
9:45:00 AM
7672525: active scenario id
209 - AM Meso DUE 2022 Base: active scenaro name
7672527: active experiment id
209 AM Meso DUE: active experiment name
7672529: active replication id
209 - AM Meso DUE: active replicarion id

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
9:45:00 AM
7672696: active scenario id
219 - AM Meso DUE 2022 Masterplan: active scenaro name
7672698: active experiment id
219 - AM Meso DUE: active experiment name
7672700: active replication id
219 - AM Meso DUE: active replicarion id

VS_Count (Label)
Count - All - 209 - AM Meso DU
VS_Count (Colour)
0 to 1000
1000 to 2000
2000 to 3000
3000 to 4000
4000 to inf
VS_Count (Width)
0 to 5000
5000 to inf

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
9:45:00 AM
7673314: active scenario id
239 - AM Meso DUE 2022 Masterplan Alternate 1: active scenaro name
7673316: active experiment id
239 - AM Meso DUE: active experiment name
7673318: active replication id
239 - AM Meso DUE: active replicarion id

VS_Count (Label)
Count - All - 209 - AM Meso DUE

VS_Count (Colour)
0 to 1000
1000 to 2000
2000 to 3000
3000 to 4000
4000 to inf

VS_Count (Width)
0 to 5000
5000 to inf

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
9:45:00 AM
7673248: active scenario id
409 - AM Meso DUE 2031 Base: active scenaro name
7673250: active experiment id
409 AM Meso DUE: active experiment name
7673252: active replication id
409 - AM Meso DUE: active replicarion id

VS_Count (Label)
Count - All - 209 - AM Meso DUE

VS_Count (Colour)
0 to 1000
1000 to 2000
2000 to 3000
3000 to 4000
4000 to inf

VS_Count (Width)
0 to 5000
5000 to inf

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
9:45:00 AM
7673286: active scenario id
419 - AM Meso DUE 2031 Masterplan: active scenaro name
7673288: active experiment id
419 - AM Meso DUE: active experiment name
7673290: active replication id
419 - AM Meso DUE: active replicarion id

VS_Count (Label)
Count - All - 209 - AM Meso DUE

VS_Count (Colour)
0 to 1000
1000 to 2000
2000 to 3000
3000 to 4000
4000 to inf

VS_Count (Width)
0 to 5000
5000 to inf

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
9:45:00 AM
7673388: active scenario id
439 - AM Meso DUE 2031 Masterplan Alternate 1: active scenaro name
7673390: active experiment id
439 - AM Meso DUE: active experiment name
7673392: active replication id
439 - AM Meso DUE: active replicarion id

VS_Count (Label)
Count - All - 209 - AM Meso DUE

VS_Count (Colour)
0 to 1000
1000 to 2000
2000 to 3000
3000 to 4000
4000 to inf

VS_Count (Width)
0 to 5000
5000 to inf

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
6:15:00 PM
7672535: active scenario id
309 - PM Meso DUE 2022 Base: active scenaro name
7672537: active experiment id
309 - PM Meso DUE: active experiment name
7672539: active replication id
309 - PM Meso DUE: active replicarion id

VS_Count (Label)
Count - All - 209 - AM Meso DU

VS_Count (Colour)
0 to 1000
1000 to 2000
2000 to 3000
3000 to 4000
4000 to inf

VS_Count (Width)
0 to 5000
5000 to inf

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
6:15:00 PM
7672843: active scenario id
319 - PM Meso DUE 2022 Masterplan: active scenaro name
7672845: active experiment id
319 - PM Meso DUE: active experiment name
7672847: active replication id
319 - PM Meso DUE: active replicarion id

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
6:15:00 PM
7673326: active scenario id
339 - PM Meso DUE 2022 Masterplan Alternative 1: active scenaro name
7673328: active experiment id
339 - PM Meso DUE: active experiment name
7673330: active replication id
339 - PM Meso DUE: active replicarion id

VS_Count (Label)
Count - All - 209 - AM Meso DUE
VS_Count (Colour)
0 to 1000
1000 to 2000
2000 to 3000
3000 to 4000
4000 to inf
VS_Count (Width)
0 to 5000
5000 to inf

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
6:15:00 PM
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509 - PM Meso DUE 2031 Base: active scenaro name
7673279: active experiment id
509 - PM Meso DUE: active experiment name
7673281: active replication id
309 - PM Meso DUE: active replicarion id

VS_Count (Label)
Count - All - 209 - AM Meso DUE

VS_Count (Colour)
0 to 1000
1000 to 2000
2000 to 3000
3000 to 4000
4000 to inf

VS_Count (Width)
0 to 5000
5000 to inf

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
6:15:00 PM
7673298: active scenario id
519 - PM Meso DUE 2031 Masterplan: active scenaro name
7673300: active experiment id
519 - PM Meso DUE: active experiment name
7673302: active replication id
519 - PM Meso DUE: active replicarion id

VS_Count (Label)
Count - All - 209 - AM Meso DUE

VS_Count (Colour)
0 to 1000
1000 to 2000
2000 to 3000
3000 to 4000
4000 to inf

VS_Count (Width)
0 to 5000
5000 to inf

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
6:15:00 PM
7673418: active scenario id
539 - PM Meso DUE 2031 Masterplan Alternate 1: active scenaro name
7673420: active experiment id
539 - PM Meso DUE: active experiment name
7673422: active replication id
539 - PM Meso DUE: active replicarion id

VS_Count (Label)
Count - All - 209 - AM Meso DUE

VS_Count (Colour)
0 to 1000
1000 to 2000
2000 to 3000
3000 to 4000
4000 to inf

VS_Count (Width)
0 to 5000
5000 to inf

Appendix B – Modelled Density Plots

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
9:00:00 AM
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309 - PM Meso DUE 2022 Base: active scenaro name
7672537: active experiment id
309 - PM Meso DUE: active experiment name
7672539: active replication id
309 - PM Meso DUE: active replicarion id

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
9:00:00 AM
7672696: active scenario id
219 - AM Meso DUE 2022 Masterplan: active scenaro name
7672698: active experiment id
219 - AM Meso DUE: active experiment name
7672700: active replication id
219 - AM Meso DUE: active replicarion id

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
9:00:00 AM
7673314: active scenario id
239 - AM Meso DUE 2022 Masterplan Alternate 1: active scenaro name
7673316: active experiment id
239 - AM Meso DUE: active experiment name
7673318: active replication id
239 - AM Meso DUE: active replicarion id

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
9:00:00 AM
7673286: active scenario id
419 - AM Meso DUE 2031 Masterplan: active scenaro name
7673288: active experiment id
419 - AM Meso DUE: active experiment name
7673290: active replication id
419 - AM Meso DUE: active replicarion id

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
9:00:00 AM
7673286: active scenario id
419 - AM Meso DUE 2031 Masterplan: active scenaro name
7673288: active experiment id
419 - AM Meso DUE: active experiment name
7673290: active replication id
419 - AM Meso DUE: active replicarion id

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
9:00:00 AM
7673388: active scenario id
439 - AM Meso DUE 2031 Masterplan Alternate 1: active scenaro name
7673390: active experiment id
439 - AM Meso DUE: active experiment name
7673392: active replication id
439 - AM Meso DUE: active replicarion id

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
5:00:00 PM
7672535: active scenario id
309 - PM Meso DUE 2022 Base: active scenaro name
7672537: active experiment id
309 - PM Meso DUE: active experiment name
7672539: active replication id
309 - PM Meso DUE: active replicarion id

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
5:00:00 PM
7672843: active scenario id
319 - PM Meso DUE 2022 Masterplan: active scenaro name
7672845: active experiment id
319 - PM Meso DUE: active experiment name
7672847: active replication id
319 - PM Meso DUE: active replicarion id

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
5:00:00 PM
7673326: active scenario id
339 - PM Meso DUE 2022 Masterplan Alternative 1: active scenaro name
7673328: active experiment id
339 - PM Meso DUE: active experiment name
7673330: active replication id
339 - PM Meso DUE: active replicarion id

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
5:00:00 PM
7673277: active scenario id
509 - PM Meso DUE 2031 Base: active scenaro name
7673279: active experiment id
509 - PM Meso DUE: active experiment name
7673281: active replication id
509 - PM Meso DUE: active replicarion id

Simulated Density (Colour)
0 to 20
20 to 40
40 to 60
60 to 80
80 to 100
100 to 120
120 to 1.79769e+308

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
5:00:00 PM
7673298: active scenario id
519 - PM Meso DUE 2031 Masterplan: active scenaro name
7673300: active experiment id
519 - PM Meso DUE: active experiment name
7673302: active replication id
519 - PM Meso DUE: active replicarion id

Aimsun Next Version: 8.2.3 (R54491): Aimsun Next version
5:00:00 PM
7673418: active scenario id
539 - PM Meso DUE 2031 Masterplan Alternate 1: active scenaro name
7673420: active experiment id
539 - PM Meso DUE: active experiment name
7673422: active replication id
539 - PM Meso DUE: active replicarion id

Simulated Density (Colour)
0 to 20
20 to 40
40 to 60
60 to 80
80 to 100
100 to 120
120 to 1.79769e+308

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