A12 Chelmsford to A120 widening scheme

TR010060

9.83 The impact of Covid on traffic model forecasts

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning
(Examination Procedure) Rules 2010

A12 Chelmsford to A120 widening scheme

Development Consent Order 202[ ]

The impact of Covid on traffic model forecasts

Regulation Number	Rule 8(1)(k)
Planning Inspectorate Scheme Reference	TR010060
Application Document Reference	TR010060/EXAM/9.83
Author	A12 Project Team and National Highways

Version	Date	Status of Version
Rev 1	12/07/2023	Final for Deadline 8

CONTENTS

APPENDICES

LIST OF PLATES

LIST OF TABLES

1   Executive Summary

1.1.1   The Department for Transport (DfT)'s latest guidance on incorporating Covid-19 impacts into model forecasts was released in May 2023 and is included in its Transport Analysis Guidance Unit M4.

1.1.2   In parallel with the application for Development Consent, the Applicant holds regular meetings with the Department for Transport as part of the governance process around the proposed scheme's funding approval. Following discussion around this new guidance, in its May 2023 meeting with the Department the Applicant has proposed an approach as to how to address the new guidance. This involves analysis of the observed traffic changes since Covid-19, and how that compares to assumptions within the traffic model. Although it would not result in any changes to the traffic model at this late stage of scheme development, the aim is to provide insights into the effects of Covid-19 on traffic flows and highlight any disparities with modelled assumptions. This methodology strikes a balance between the constraints imposed by the proposed scheme's advanced stage and the necessity to account for the impacts of Covid-19.

1.1.3   Observed traffic data on the A12 was collected for 2019 and 2023. Comparing these showed a reduction in daily traffic between 2019 and 2023 of less than 1%. There were higher traffic reductions in the AM peak and particularly the PM peak (3.5% reduction), but slight increases in traffic across the middle of the day.

1.1.4   The next step was to compare these real-life observations against assumptions used within the traffic model. The traffic models used traffic growth forecasts from the DfT National Trip End Model (NTEM 7.2) forecasts published in March 2017, which was the latest available version at the time of model development.

1.1.5   The observed A12 traffic counts from 2019 were factored by NTEM 7.2 traffic growth factors to estimate the likely 2023 traffic levels if Covid had not occurred. By comparing these predictions against the real-life observations, it was found that in 2023 the observed daily traffic on the A12 is 4.8% lower than what would have been expected had Covid not occurred. During peak hours, the observed traffic is between 0.9% and 6.7% lower than what would have been expected, depending on the specific time of day.

1.1.6   This analysis therefore suggests that the traffic model potentially overestimates future daily traffic levels by 4.8% due to not accounting for Covid. However, this overestimation of traffic would be across both the 'without proposed scheme' and 'with proposed scheme' model scenarios. The actual impact of the proposed scheme itself is likely to be similar to that predicted in the traffic model. This implies that the traffic models still provide a good prediction of the impact of the proposed scheme, despite the impact of Covid in slowing traffic growth.

2   Purpose of the Technical Note

2.1.1   This technical note analyses observed traffic data to understand how traffic has changed between 2019 and 2023. It also describes how traffic growth might have been expected to change if Covid had not occurred, using the DfT's NTEM traffic predictions. As the A12 DCO traffic models are based on NTEM 7.2 traffic predictions, the report assesses the likely implications that Covid would be expected to have on the traffic model's conclusions.

2.1.2   Through this analysis, the aim is to identify and comprehend any disparities that emerge, providing insights into the effects of Covid-19 on traffic flows within the proposed scheme area. This methodology strikes a balance between the constraints imposed by the proposed scheme's advanced stage and the necessity to account for the impacts of Covid-19.

3   Observed data used

3.1.1   Traffic data was extracted from the National Highways TRIS database of long-term traffic counts. Data was extracted for any suitable sites between junctions 19 and 25 of the A12, as this is where the majority of scheme benefits are derived from. Only sites which had observed data for both 2019 and 2023 were used. Data was extracted for the month of March, which is identified in TAG as a neutral month.

3.1.2   The sites for which data was analysed are shown in Figure 3-1. Data for a site at A12 junction 23 northbound was excluded from the analysis, as it showed an unusual change in traffic in the PM peak, reducing by 17% between 2019 and 2023. As this was out of line with any other observed site, it was assumed that this change was due to non-Covid reasons and therefore this data was removed from the analysis.
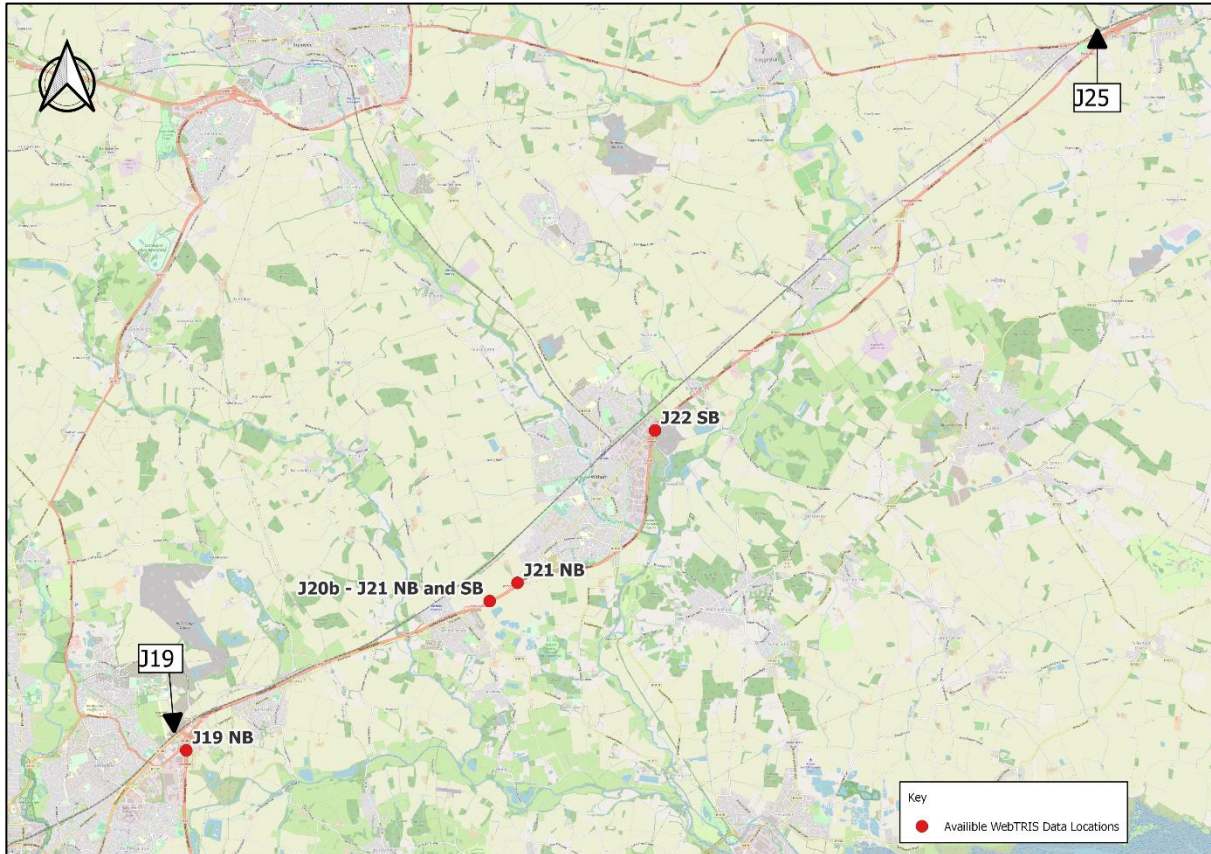
Figure 3-1 Traffic count sites used

3.1.3   Traffic data was extracted for these sites during the AM peak hour (0730-0830),
PM peak hour (1700-1800), an average Interpeak hour (1000-1600), and a 24hr
total. The data was extracted for 2019 and 2023, to help identify significant
changes that have occurred in traffic volume due to any change in travel
patterns following the pandemic. Traffic data was summed across all vehicle
types.

Information on the 24-hour profile of traffic was also extracted for both 2019 and
2023. This provides a more comprehensive assessment of traffic variations
throughout the entire day. This analysis helps to identify if there are consistent
changes in traffic flow throughout the day, or if there have been any shifts or
flattening in the traditional peak travel times.

4   Analysis of observed data

4.1.1   A comparison of total vehicles for the selected sites was conducted to assess
the changes in traffic volume before and after the Covid-19 pandemic. The
changes for peak hours are shown in Table 4-1 with the changes in total 24hr
traffic shown in Table 4-2.

Count Location	Direction	AM			IP			PM		
		Observed traffic 2019	Observed traffic 2023	Difference (%)	Observed traffic 2019	Observed traffic 2023	Difference (%)	Observed traffic 2019	Observed traffic 2023	Difference (%)
	NB	3,337	3,125	-6.3%	2,719	2,697	-0.8%	3,946	3,670	-7.0%
	SB	3,938	4,024	2.2%	2,421	2,530	4.5%	3,230	3,092	-4.3%
Junction 20 to Junction 21	Two Way	7,275	7,150	-1.7%	5,140	5,227	1.7%	7,176	6,762	-5.8%
J19 NB	NB	2,199	2,108	-4.1%	1,770	1,783	0.7%	2,297	2,431	5.8%
J21 NB	NB	2,629	2,551	-3.0%	2,094	2,104	0.5%	2,835	2,638	-7.0%
J22 SB	SB	2,666	2,830	6.2%	1,748	1,852	6.0%	2,171	2,145	-1.2%
Overall		**14,768**	**14,639**	**-0.9%**	**10,751**	**10,966**	**2.0%**	**14,480**	**13,976**	**-3.5%**

Table 4-1 Change in total vehicles 2019-2023: peak hours

Count Location	Direction	24hr		
		Observed traffic 2019	Observed traffic 2023	Difference (%)
	NB	45,277	44,349	-2.0%
	SB	45,041	44,531	-1.1%
Junction 20 to Junction 21	Two Way	90,317	88,880	-1.6%
J19 NB	NB	29,311	29,648	1.1%
J21 NB	NB	34,606	34,470	-0.4%
J22 SB	SB	32,365	32,515	0.5%
Overall		**186,600**	**185,514**	**-0.6%**

Table 4-2 Change in total vehicles 2019-2023: 24-hour total

4.1.2 Overall, the total daily traffic reduced between 2019 and 2023 by less than 1%. There were overall reductions in the AM peak and particularly the PM peak, but slight increases in traffic across the middle of the day. The traffic changes vary at each individual site.

4.1.3 The daily profiles of traffic for each selected site are shown in Appendix A. All sites show broadly similar patterns, and an example for one site is shown in Figure 4-1 below.

4.1.4 Based on the daily profile graphs, there are slight changes such as a slight flattening of peak hour travel at some sites and a slight transfer of traffic from peak hours to the interpeak. However, the changes in daily traffic patterns are not particularly significant. This suggests that although the overall demand has slightly decreased, the traffic patterns along the proposed scheme corridor still broadly align with the pre-Covid conditions.
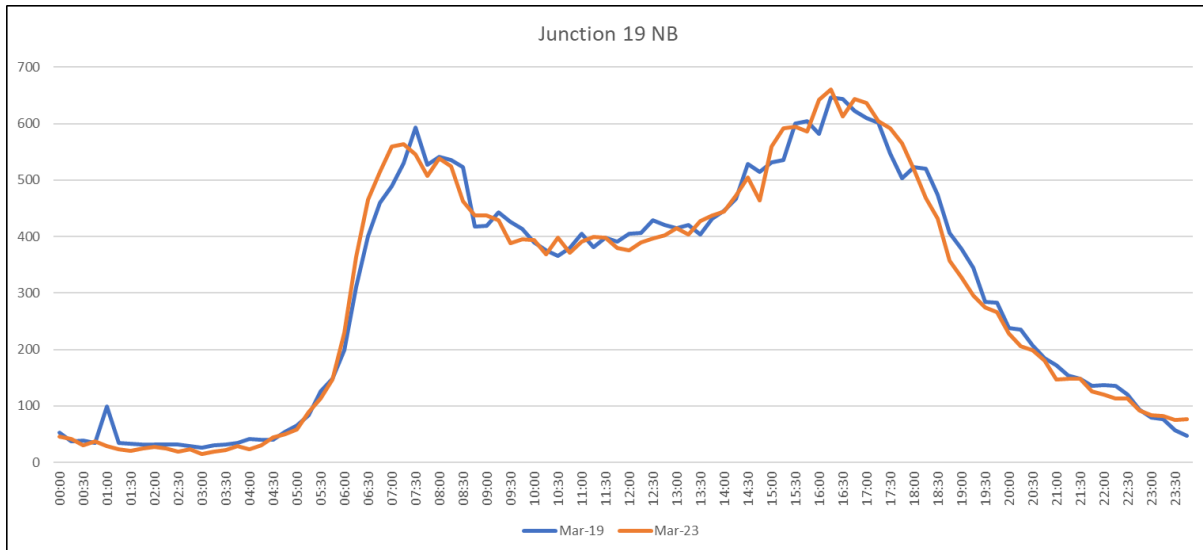
Figure 4-1 Daily traffic comparison between 2019 and 2023 – Junction 19 NB

5 Traffic growth if Covid had not occurred

5.1.1 To understand the likely traffic growth if Covid had not occurred, growth factors for the period 2019 to 2023 have been extracted from DfT's NTEM 7.2 core scenario dataset. This dataset was released prior to the Covid pandemic and therefore does not account for the impact of Covid. These are the traffic growth assumptions used within the A12 DCO traffic core scenario model.

5.1.2 The growth factor between 2019 and 2023 from TEMPro 7.2 at the Essex level was extracted for the three model time periods and for an average day. This shows a total predicted growth from 2019 to 2023 of around 4% in each time period.

5.1.3 By multiplying the observed traffic data from 2019 by the predicted NTEM growth factor of around 4%, Table 6-1 predicts what the traffic levels would be at each site if Covid had not occurred.

6 Extent to which the traffic model underestimates the impact of Covid

6.1.1 As described above, Table 6-1 compares the **observed** change in traffic between 2019 and 2023 with how much traffic would have been **expected** to change if Covid had not occurred (based on NTEM 7.2 growth factors which do not account for Covid).

6.1.2 This shows that, over a 24-hour period, observed traffic is 4.8% lower than would have been expected had Covid not occurred.

6.1.3   Looking at the individual modelled peak hours, the AM peak hour has observed traffic that is 3.7% lower than would have been predicted, the PM peak hour 6.7% lower, and the Interpeak 0.9% lower than would have been predicted.

Count Location	Direction	AM			
		Observed traffic 2019	2019 traffic uplifted to 2023 using NTEM7.2	Observed traffic 2023	Difference between observed 2023 and 'NTEM7.2 predicted' 2023 traffic
	NB	3,337	3,426	3,125	-8.8%
	SB	3,938	4,043	4,024	-0.5%
Junction 20 to Junction 21	Two Way	7,275	7,469	7,150	-4.3%
J19 NB	NB	2,199	2,257	2,108	-6.6%
J21 NB	NB	2,629	2,699	2,551	-5.5%
J22 SB	SB	2,666	2,737	2,830	3.4%
Overall		**22,043**	**22,631**	**21,789**	**-3.7%**

Count Location	Direction	IP			
		Observed traffic 2019	2019 traffic uplifted to 2023 using NTEM7.2	Observed traffic 2023	Difference between observed 2023 and 'NTEM7.2 predicted' 2023 traffic
	NB	2,719	2,796	2,697	-3.5%
	SB	2,421	2,489	2,530	1.6%
Junction 20 to Junction 21	Two Way	5,140	5,285	5,227	-1.1%
J19 NB	NB	1,770	1,820	1,783	-2.0%
J21 NB	NB	2,094	2,153	2,104	-2.3%
J22 SB	SB	1,748	1,797	1,852	3.1%
Overall		**15,891**	**16,339**	**16,193**	**-0.9%**

Count Location	Direction	PM			
		Observed traffic 2019	2019 traffic uplifted to 2023 using NTEM7.2	Observed traffic 2023	Difference between observed 2023 and 'NTEM7.2 predicted' 2023 traffic
	NB	3,946	4,052	3,670	-9.4%
	SB	3,230	3,316	3,092	-6.8%
Junction 20 to Junction 21	Two Way	7,176	7,368	6,762	-8.2%
J19 NB	NB	2,297	2,358	2,431	3.1%
J21 NB	NB	2,835	2,911	2,638	-9.4%
J22 SB	SB	2,171	2,229	2,145	-3.8%
Overall		**21,656**	**22,235**	**20,737**	**-6.7%**

Count Location	Direction	24 Hour			
		Observed traffic 2019	2019 traffic uplifted to 2023 using NTEM7.2	Observed traffic 2023	Difference between observed 2023 and 'NTEM7.2 predicted' 2023 traffic
	NB	45,277	47,110	44,349	-5.9%
	SB	45,041	46,865	44,531	-5.0%
Junction 20 to Junction 21	Two Way	90,317	93,975	88,880	-5.4%
J19 NB	NB	29,311	30,498	29,648	-2.8%
J21 NB	NB	34,606	36,008	34,470	-4.3%
J22 SB	SB	32,365	33,676	32,515	-3.4%
Overall		**276,918**	**288,133**	**274,394**	**-4.8%**

Table 6-1 Difference between observed traffic growth and NTEM7.2 predicted traffic growth

6.1.4　As the traffic models were based on NTEM 7.2 growth factors, which overestimated traffic growth compared to reality, this implies that the actual level of traffic on the A12 is likely to be between 0.9% and 6.7% lower than predicted in the traffic model, depending on the time of day.

6.1.5　As described above, over a 24-hour period the observed traffic is 4.8% lower than would have been expected had Covid not occurred. This is slightly lower than the NRTP22 findings (National Road Traffic Projections 2022, Annex C: Adjusting for Coronavirus) on the Covid impact, where a net reduction of 5% has been applied in car vehicle miles compared to a no-Covid-19 projection.

6.1.6　However, this overestimation of traffic in the traffic model would be across both the 'without proposed scheme' and 'with proposed scheme' model scenarios. The actual impact of the proposed scheme itself is likely to be similar to that

predicted in the traffic model. The traffic models therefore still provide a good prediction of the impact of the proposed scheme, despite the impact of Covid in slowing traffic.

7   Conclusion

7.1.1   Comparing observed traffic data on the A12 between 2019 to 2023, there has been a reduction in daily traffic of less than 1%. There were overall reductions in the AM peak and particularly the PM peak (3.5% reduction), but slight increases in traffic across the middle of the day.

7.1.2   By comparing against predictions using the DfT's NTEM 7.2 traffic growth factors which do not take into account the impact of Covid-19, it was found that in 2023 observed daily traffic on the A12 is 4.8% lower than what would have been expected had Covid not occurred. During peak hours, the observed traffic is between 0.9% and 6.7% lower than what would have been expected, depending on the specific time of day.

7.1.3   The traffic models used to inform the DCO were based on the DfT's NTEM 7.2 traffic growth factors, therefore they do not take Covid's impact on traffic into account. The traffic models therefore potentially overestimates future daily traffic levels by 4.8% due to not accounting for Covid. However, this overestimation of traffic would be across both the 'without proposed scheme' and 'with proposed scheme' model scenarios. The actual impact of the proposed scheme itself is likely to be similar to that predicted in the traffic model. This implies that the traffic models still provide a good prediction of the impact of the proposed scheme, despite the impact of Covid in slowing traffic growth.
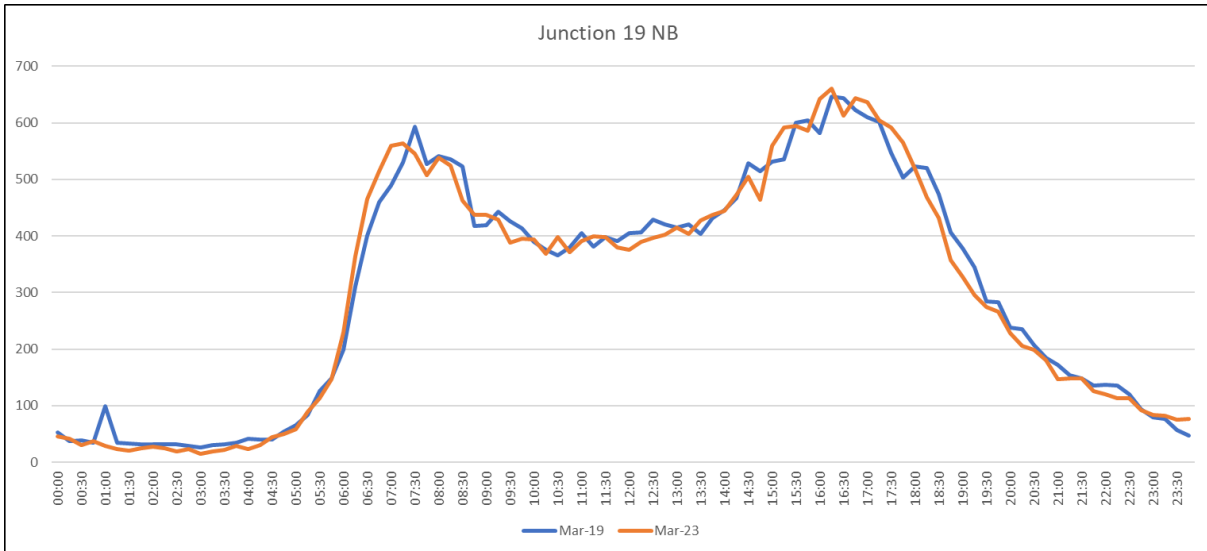
Appendix A

Daily Traffic Profiles

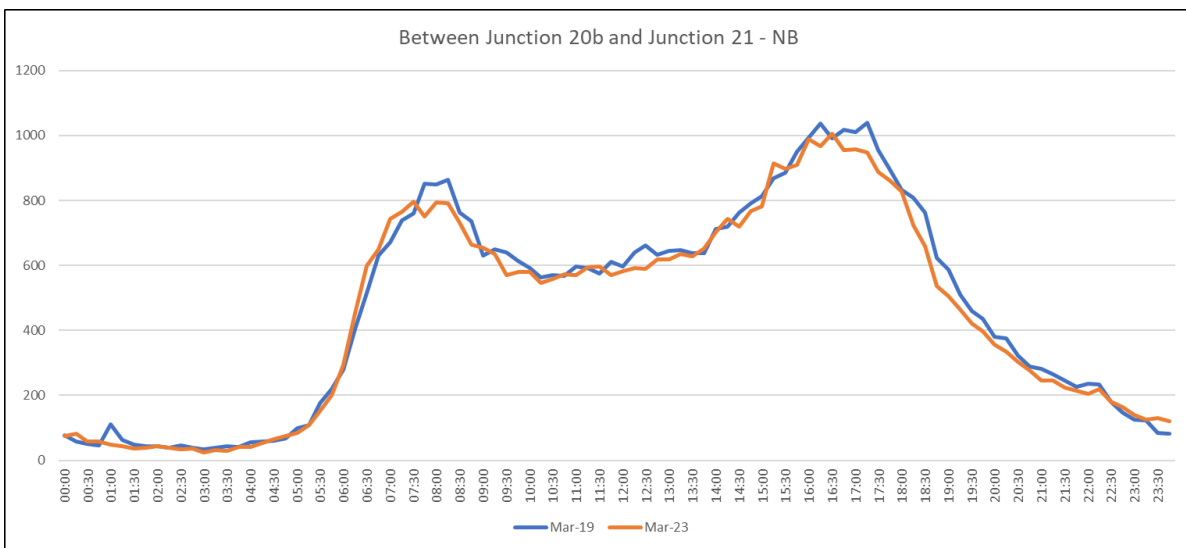**Figure 7-1 Junction 19 NB 24 hr Profile**

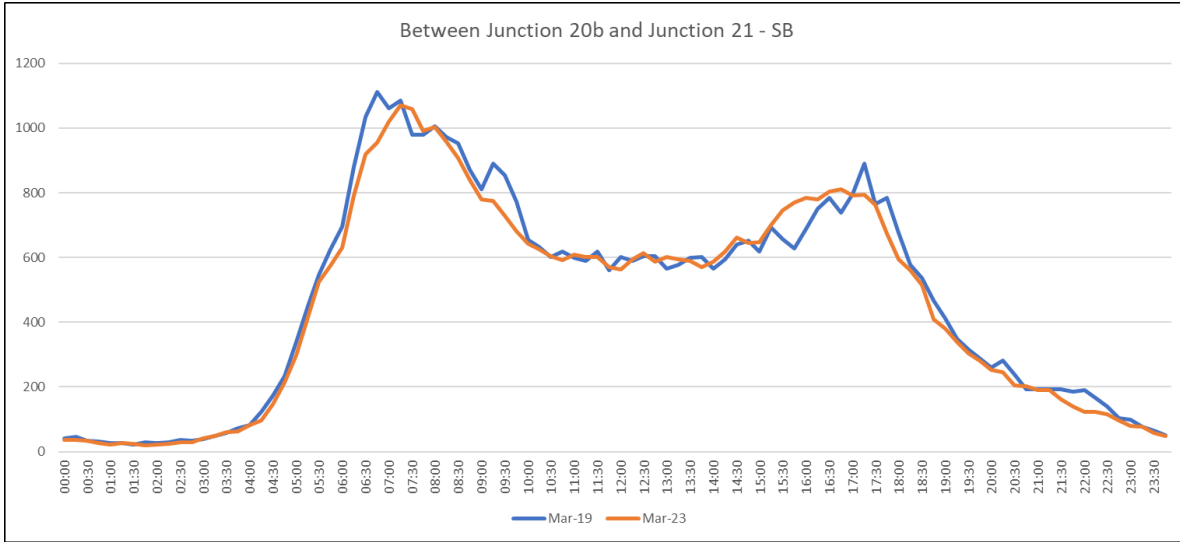**Figure 7-2 Between Junction 20b and Junction 21 - NB**

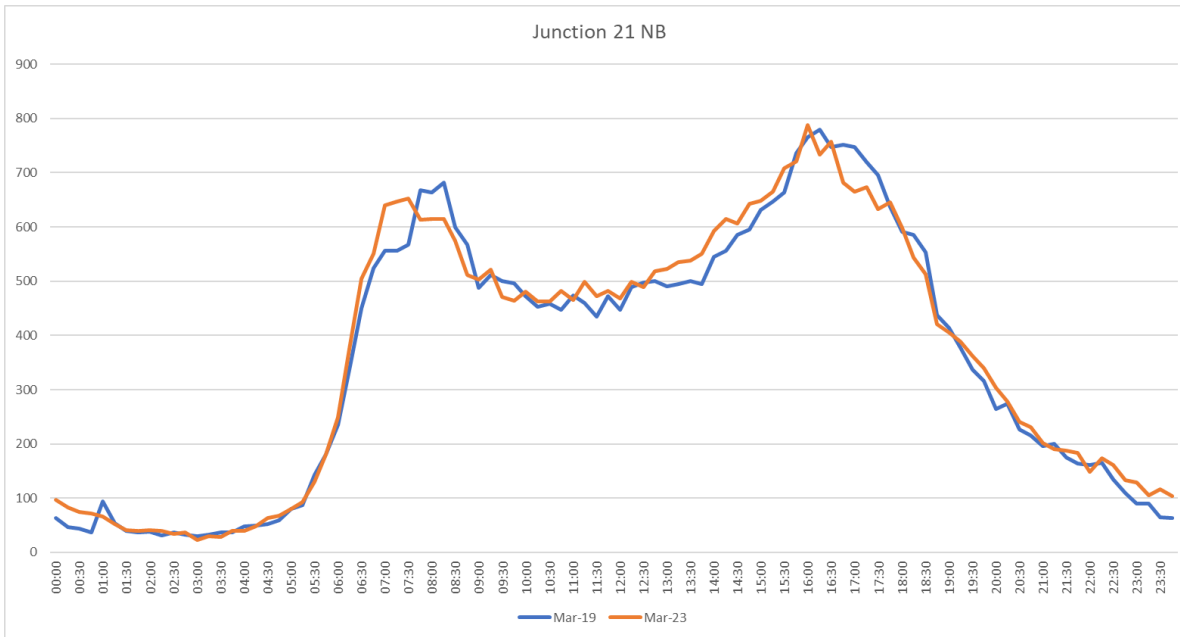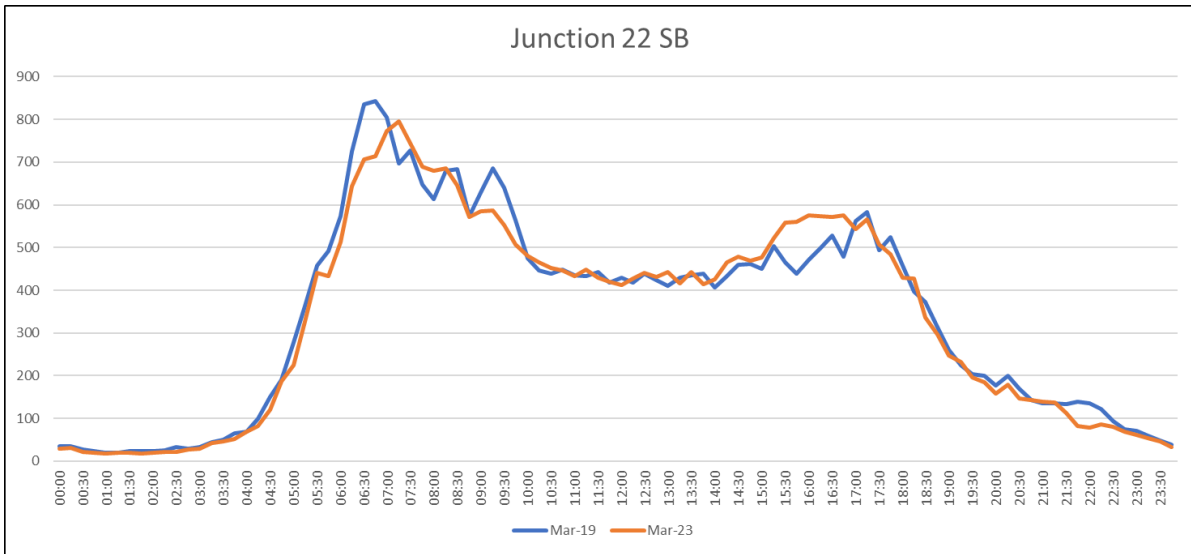**Figure 7-3 Between Junction 20b and Junction 21 - SB**

Figure 7-4 Junction 21 NB 24 hr Profile

Figure 7-5 Junction 22 SB 24 hr Profile