To	LB Enfield	**Technical Note**	
From	Steer		
Date	23 February 2022		
Project	A1010S to North Middlesex Hospital Cycle Route	Project No.	24108202

A1010S to North Middlesex Hospital Cycle Route - Traffic Analysis

1. On behalf of LB Enfield, Steer has undertaken traffic analysis using a range of data sources, to identify the traffic impacts of various interventions that form part of Enfield's A1010S to North Middlesex Hospital Cycle Route. This note presents the technical findings of traffic analysis aimed at understanding the impacts of trial interventions on roads near the Hospital.

2. This analysis draws on data up to June 2021. This includes:

   - Data from before the trial interventions were introduced, and prior to the onset of the COVID-19 pandemic. Much of this data was collected prior to January 2020 and it is called '**before**' data here.
   - Data from after the interventions were introduced, collected in May to July 2021, called '**after'** data here. This data will have been affected by COVID-19, however it has been collected from 10 May 2021 onwards. This coincides with the implementation of Step 3 of the government's COVID-19 roadmap which included guidance advising:
     – People to continue to work from home if you can and avoid public transport
     – Educational institutions to fully open
     – Shops to open and hospitality to open with maximum of six people per table

3. The purpose of this review is to outline the findings of this analysis. The scope of Steer's work means that this review is limited to describing what the available data indicates about the impacts of each scheme. It is not Steer's role to comment on whether these are positive or negative. Whilst it is expected that LB Enfield will use this review to inform the decision-making process, this review does not make any recommendations as to whether the schemes should be continued, amended or removed, as there are other information sources (such as stakeholder feedback) that LB Enfield will also take into account.

Data sources

4. A number of data sources were available to produce comparisons between the traffic movements 'before' and 'after' the trial scheme were implemented. These data sources included:

   - Automatic Traffic Counter (ATC) data (speed and volume)
   - iBus journey time data
   - TfL collision data
   - Classified Link Counts (CLC) (vehicle counts performed usage footage)

5. Specific dates in which the data was captured are provided alongside the data below.

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Traffic Volume Data

Data available

6. Automatic Traffic Counter (ATC) data was available for the locations in the table below.

Table 1: ATC survey locations and dates near A1010S to North Middlesex Hospital Cycle Route

#	Location	Before	After
1	Fore Street north of Park Road	26/04/2018 – 02/05/2018	17/05/2021 – 23/05/2021
2	Fore Street south of Park Road	26/04/2018 – 02/05/2018	17/05/2021 – 23/05/2021
3	Park Road	20/11/2017 – 04/12/2017	17/05/2021 – 23/05/2021
4	Victoria Road	26/04/2018 – 02/05/2018	17/05/2021 – 23/05/2021
5	Sweet Briar Walk	25/11/2017 – 01/12/2017	17/05/2021 – 23/05/2021

Analysis

7. Classified Link Counts (CLC) data was available for the locations in the table below.

Table 2: CLC survey locations and dates near A1010S to North Middlesex Hospital Cycle Route

#	Location	Before	After
3	Park Road	n/a	27/05/2021
5	Sweet Briar Walk	n/a	27/05/2021

8. The data presented in Figure 1 shows the difference in traffic volume across the sites from before and after implementation of the trial cycle scheme. Interventions are also marked on the figures. It should be noted the 'before' data was not available over a single time period, which means that the figures across different survey sites may not be directly comparable.

9. However, it is only possible to work with the data that is available, and it still provides a useful indication of changes to traffic patterns in the area.

10. It should also be noted that while two weeks of 'after' data was collected for all the sites, the analysis presented in this note only uses one week (starting 17/05/21). This is because the second week of data (starting 24/05/21) would end on a bank holiday weekend and would therefore represent atypical traffic flows at the end of the week.

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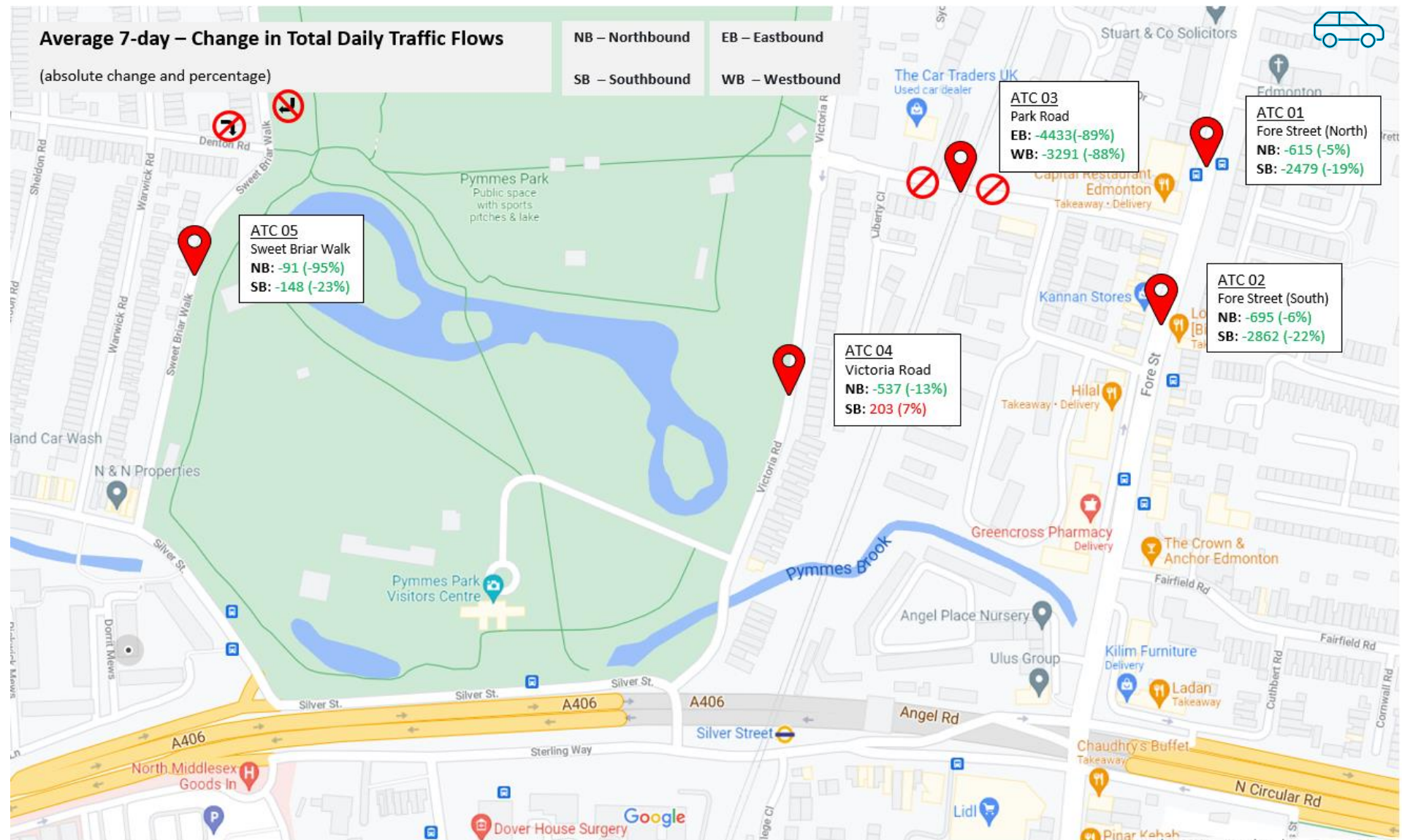**Figure 1: Change in the 7-day average traffic flow (all modes) on roads near A1010S to North Middlesex Hospital Cycle Route**

Average 7-day – Change in Total Daily Traffic Flows

(absolute change and percentage)

NB – Northbound   EB – Eastbound
SB – Southbound   WB – Westbound

ATC 03
Park Road
EB: -4433(-89%)
WB: -3291 (-88%)

ATC 01
Fore Street (North)
NB: -615 (-5%)
SB: -2479 (-19%)

ATC 05
Sweet Briar Walk
NB: -91 (-95%)
SB: -148 (-23%)

ATC 02
Fore Street (South)
NB: -695 (-6%)
SB: -2862 (-22%)

ATC 04
Victoria Road
NB: -537 (-13%)
SB: 203 (7%)

Base map: GoogleMaps. Source ATC is as shown in Table 1.

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Figure 2: Daily vehicle flow (all modes excluding bicycles) (7-day average)

(NB –Northbound; SB –Southbound; EB –Eastbound; WB –Westbound)
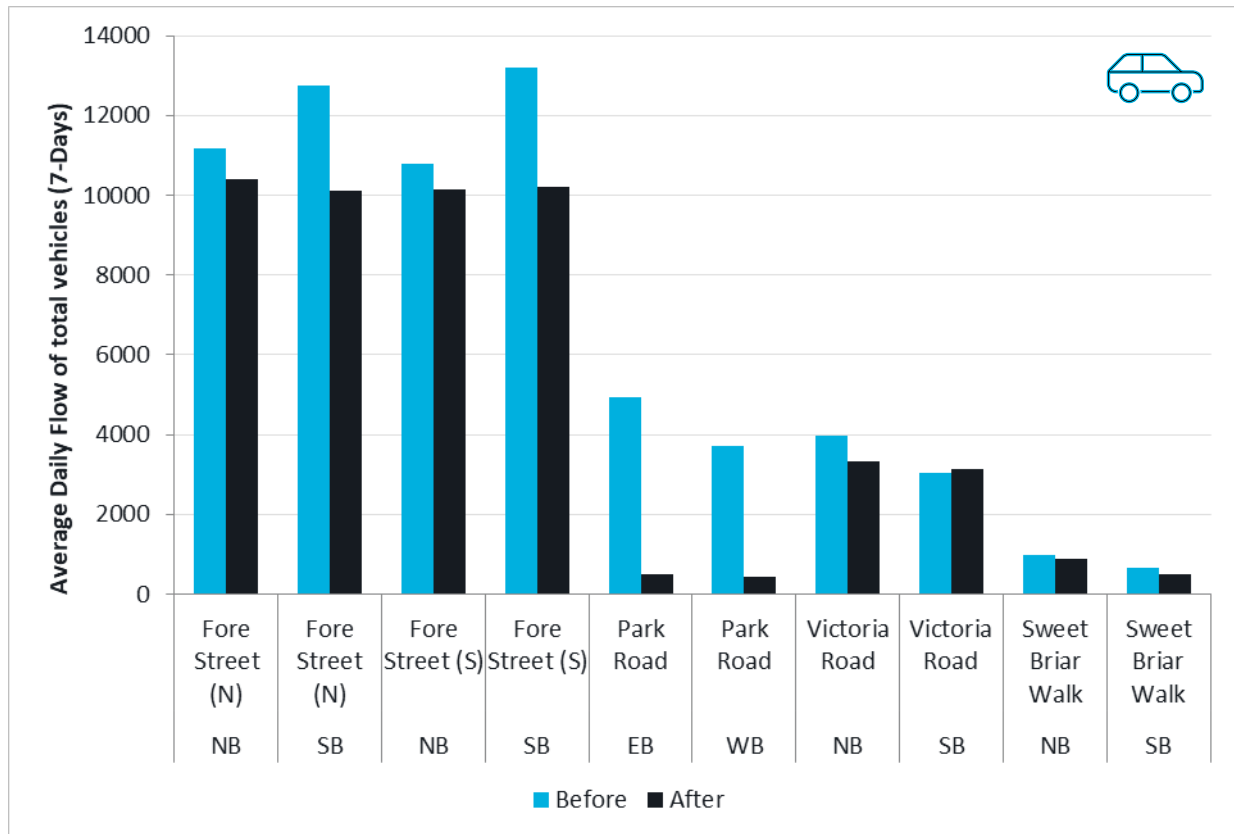
Source ATC is as shown in Table 1.

11. Generally, traffic has decreased across the area. As expected, Park Road, where a road closure has been introduced, has seen a very large reduction in traffic. Traffic reductions on Victoria Road and Fore Street are likely to have occurred as vehicles are now routing via alternative routes in the wider network, suggesting either the traffic has been displaced further afield, or the overall traffic flows in the area have decreased.

12. The two banned right turns at the Denton Road and Sweet Briar Walk junction have resulted in a drop in traffic on Sweet Briar Walk.

Figure 3: Daily cycle flow (7-day average)

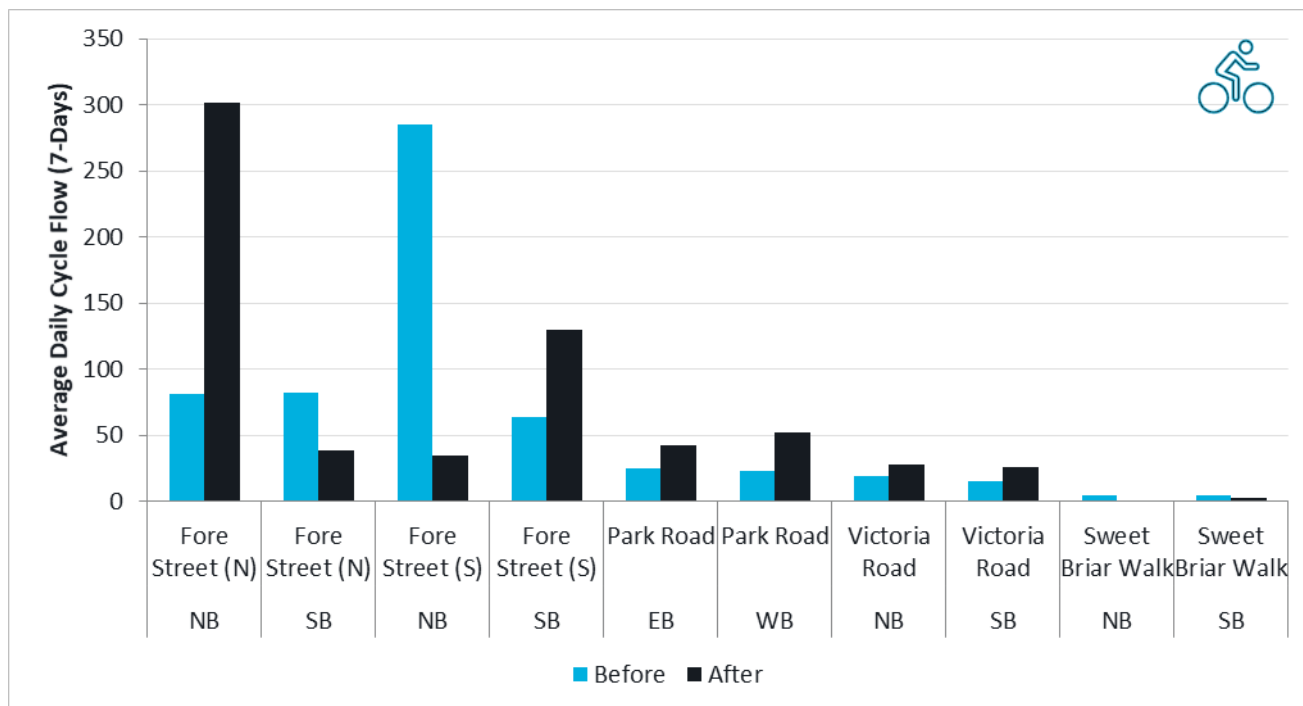**(NB – Northbound; SB – Southbound; EB – Eastbound; WB – Westbound)**

Table 3: Difference in daily cycle flow (7-day average) (NB –Northbound; SB –Southbound; EB–Eastbound; WB –Westbound)

	Fore Street (N) NB	Fore Street (N) SB	Fore Street (S) NB	Fore Street (S) SB	Park Road EB	Park Road WB	Victoria Road NB	Victoria Road SB	Sweet Briar Walk NB	Sweet Briar Walk SB
Before	81	82	285	63	25	23	19	16	5	5
After	302	38	35	130	42	52	28	26	0	3
Diff.	220	-44	-251	67	18	29	9	10	-5	-2
%Diff.	271%	(53%)	(88%)	105%	71%	127%	48%	66%	(100%)	(34%)

Source ATC is as shown in Table 1.

13. The table and graph above show the change in the number of cycles at the five survey locations. There is a clear uplift in northbound cycle flows on Fore Street (North of Park Road) as well as southbound on Fore Street (South of Park Road). Cycle flows significantly dropped on Fore Street in the northbound direction (South of Park Road).

14. Cycle flows have approximately doubled on Park Road, however they still remain low across Park Road and Sweet Briar Walk.

15. It should be noted that this data was collected by Automatic Traffic Counters (ATCs). ATC surveys are better suited to accurately counting larger motorised vehicles rather than cycles. This is due to their sensitivity and how they are installed and positioned on road surfaces. Whilst this survey data will not have captured 100% of cycling movements, it still serves as an indicator of relative cycle flows.

16. Cycle count data was also collected by Classified Link Counts (CLC), on 27th May 2021 on Park Road and Sweet Briar Walk. These values are captured through the analysis of CCTV footage with greater accuracy than ATC data. The CLC data has been included in the cycle figures below for Park Road and Sweet Briar Walk for completeness, however the analysis of the ATC values has been prioritised here as the comparison between before and after data is 'like for like'.

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Figure 4: Average weekday flow (all modes excluding bicycles) comparison for ATC 01 (Fore Street North of Park Road) for Northbound (left) and Southbound (right)
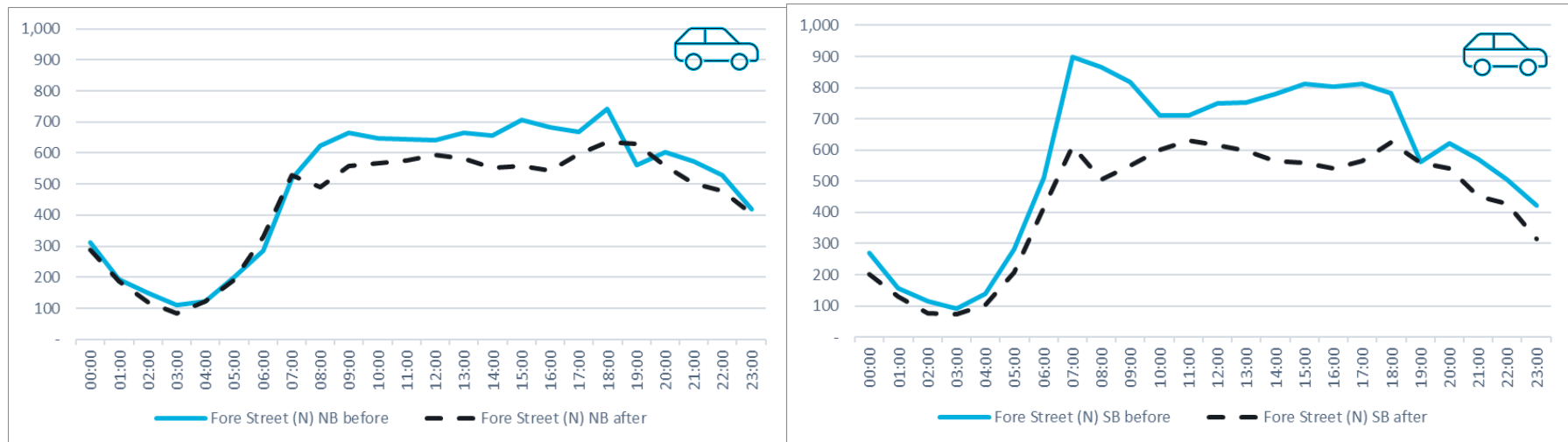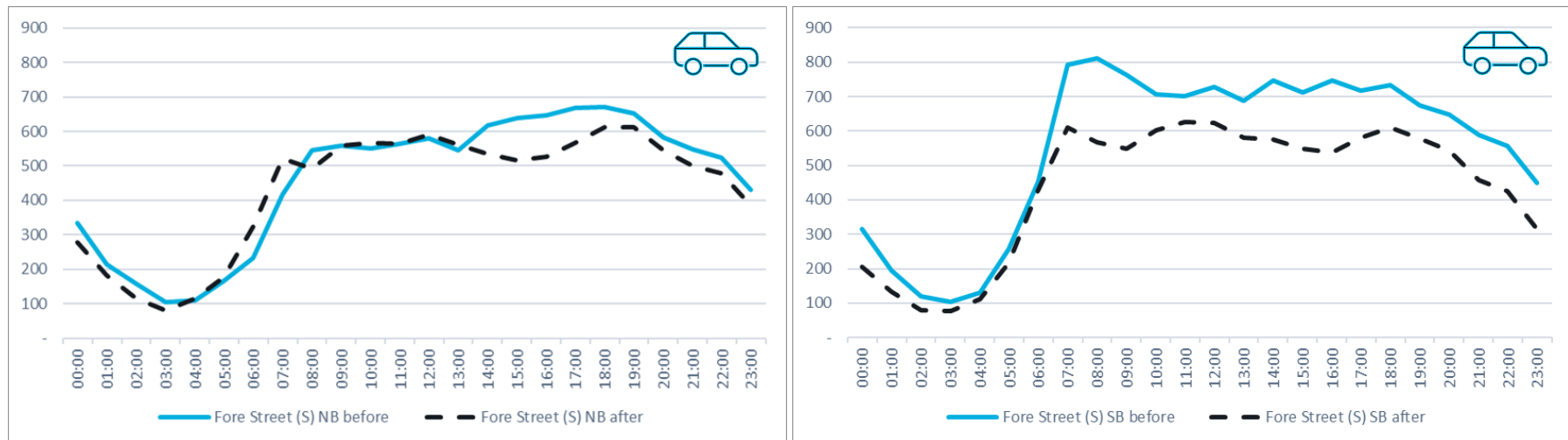

Figure 5: Average weekday flow (all modes excluding bicycles) comparison for ATC 02 (Fore Street South of Park Road) for Northbound (left) and Southbound (right)

Source ATC is as shown in Table 1.

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Figure 6: Average weekday flow (all modes excluding bicycles) comparison for ATC 03 (Park Road) for Eastbound (left) and Westbound (right)
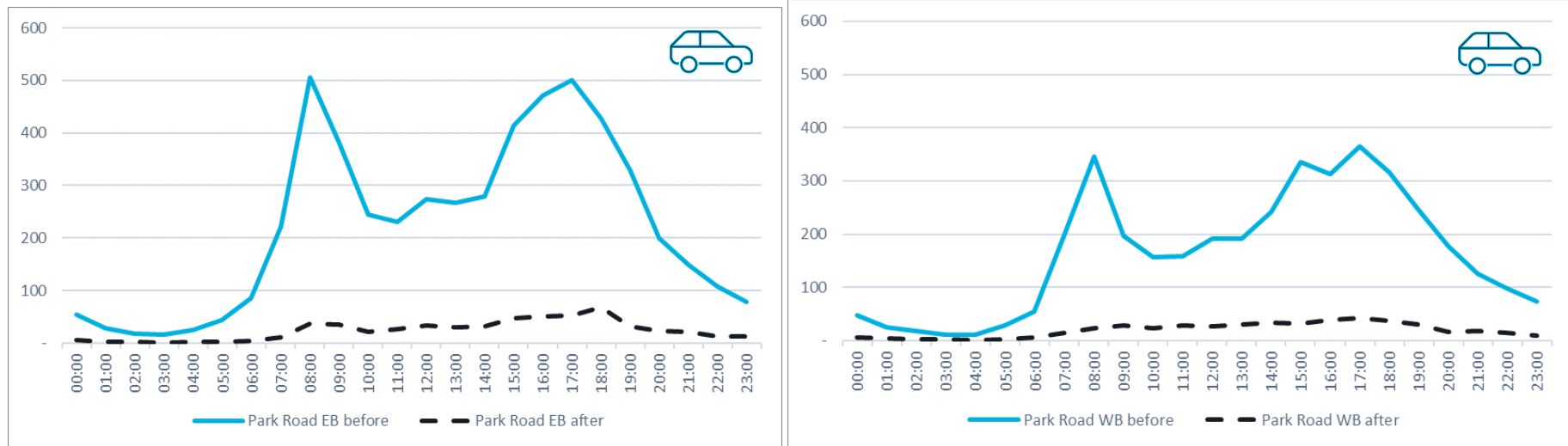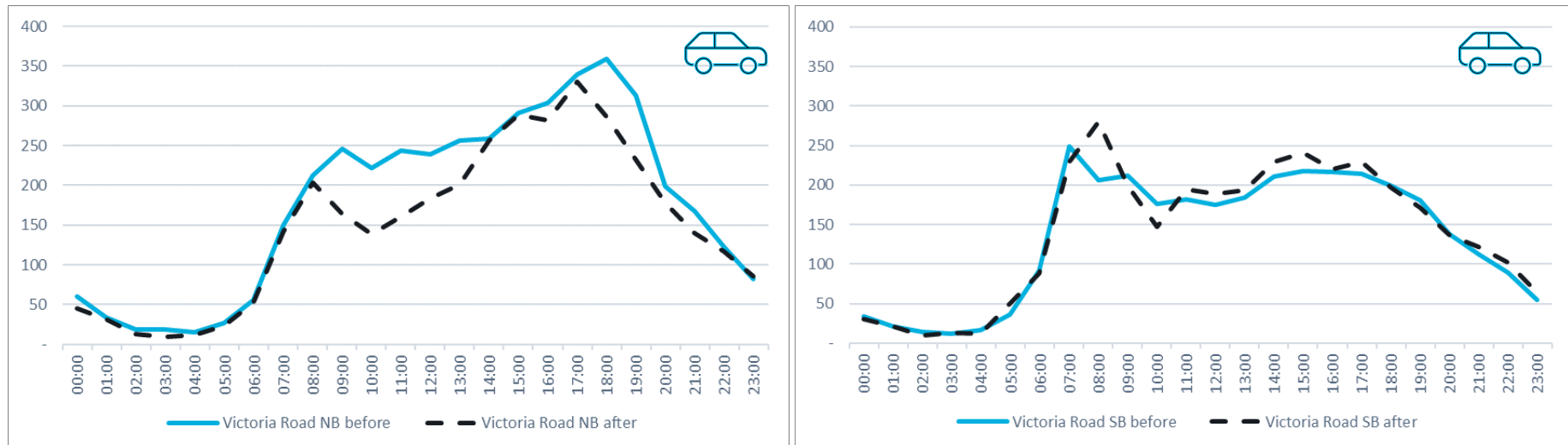

Figure 7: Average weekday flow (all modes excluding bicycles) comparison for ATC 04 (Victoria Road) for Northbound (left) and Southbound (right)

Source ATC is as shown in Table 1.

Figure 8: Average weekday flow (all modes excluding bicycles) comparison for ATC 05 (Sweet Briar Walk) for Northbound (left) and Southbound (right)
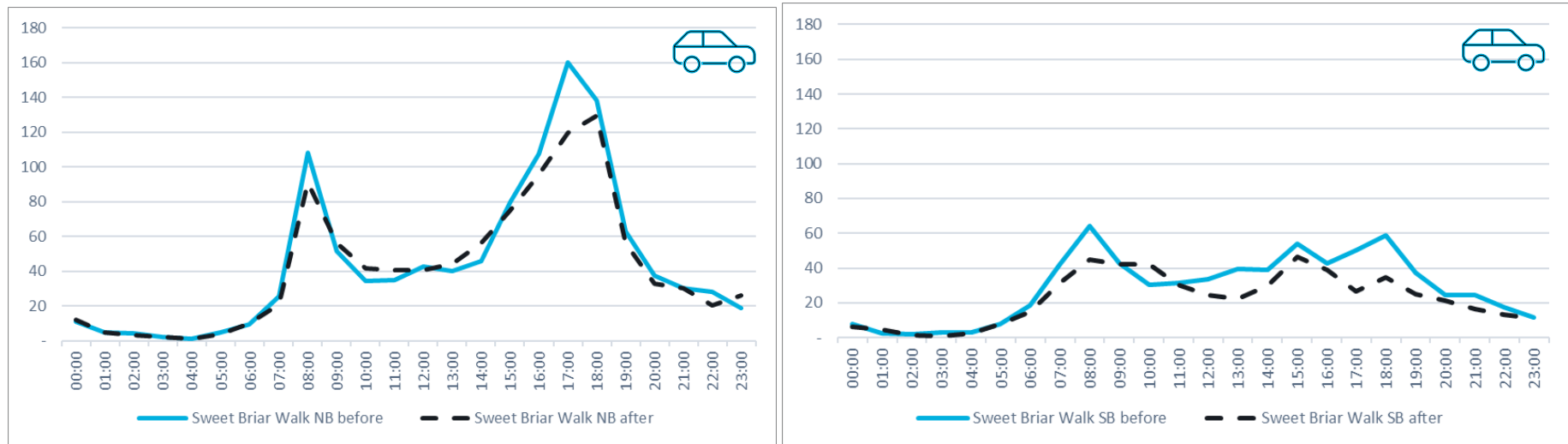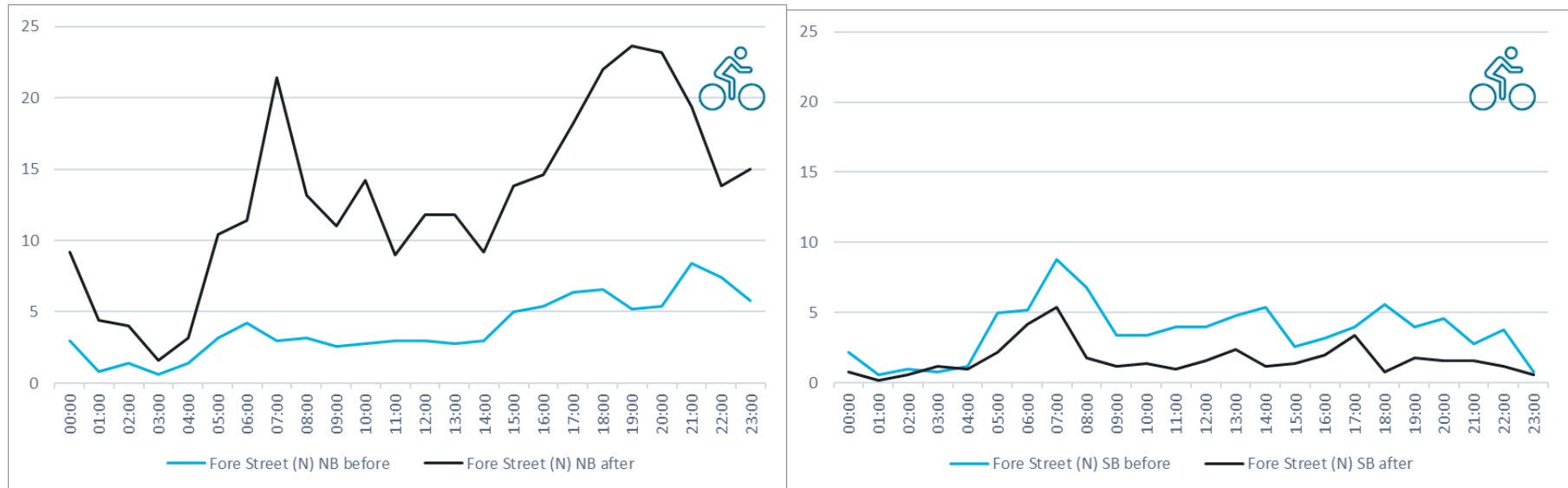

Figure 9: Average weekday flow (bicycles) comparison for ATC 01 (Fore Street North of Park Road) for Northbound (left) and Southbound (right)

Source ATC is as shown in Table 1.

Figure 10: Average weekday flow (bicycles) comparison for ATC 02 (Fore Street South of Park Road) for Northbound (left) and Southbound (right)
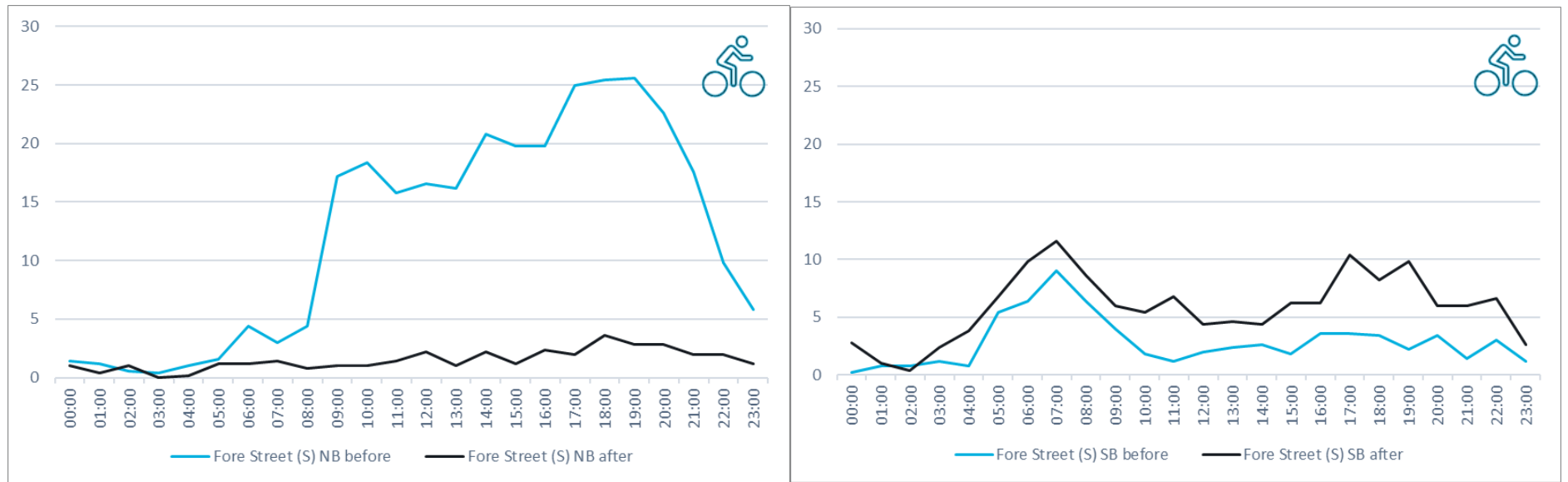

Figure 11: Average weekday flow (bicycles) comparison for ATC 03 (Park Road) for Northbound (left) and Southbound (right)

Source ATC is as shown in Table 1. as well as Classified Link Counts (CLC) on Park Road taken on 27/05/21
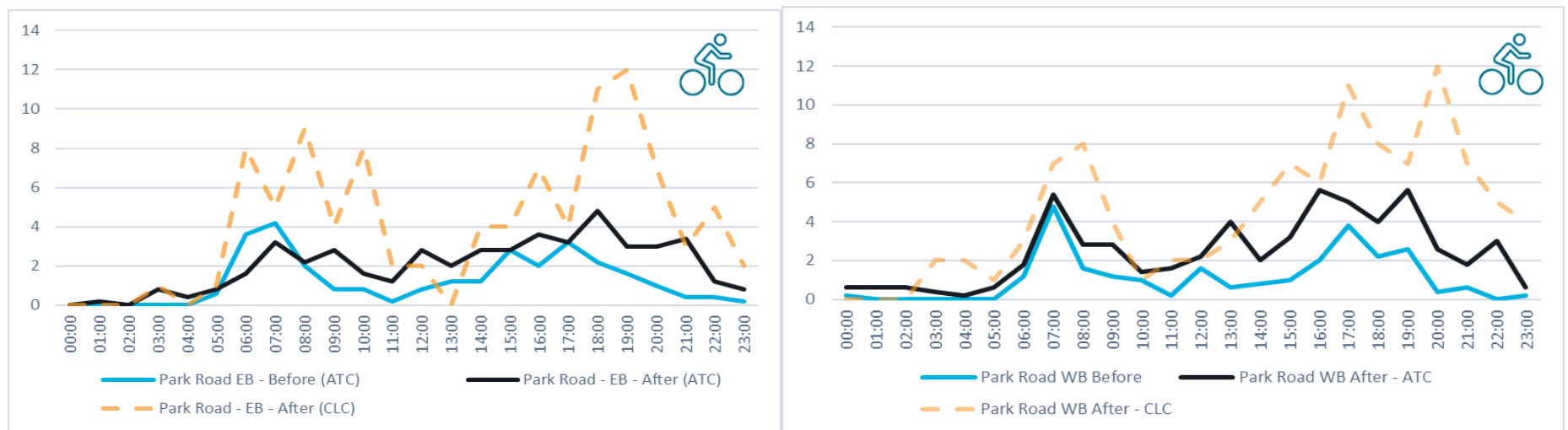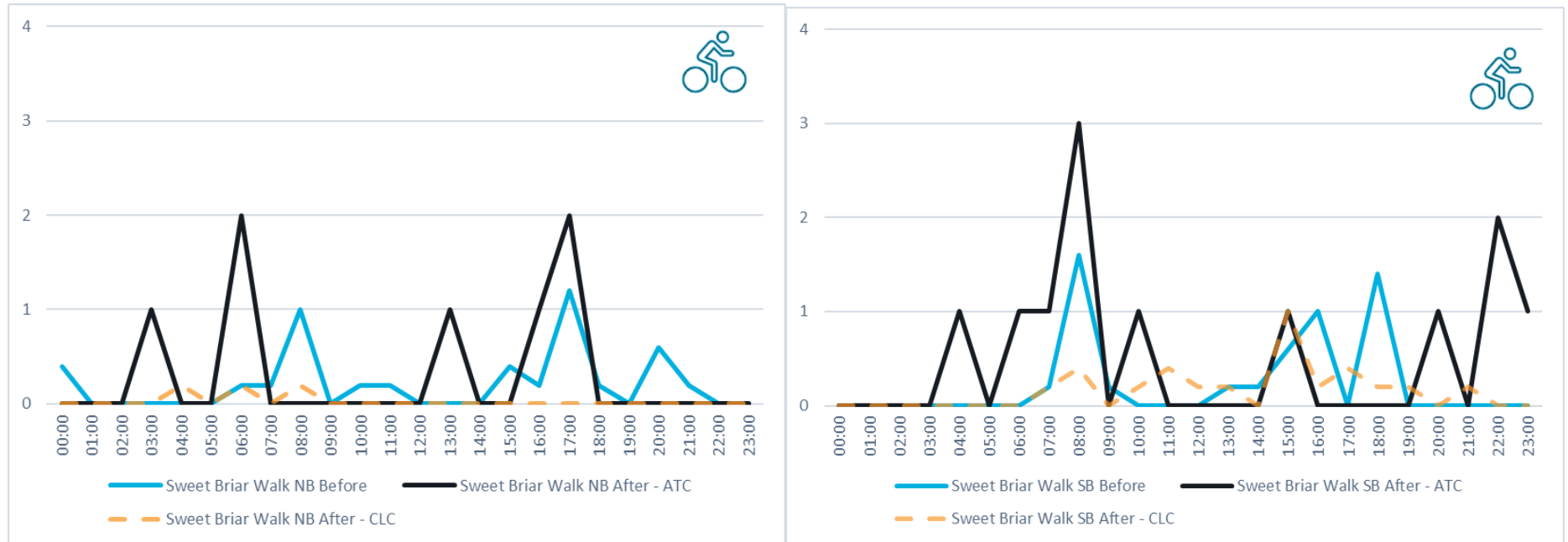
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Figure 12: Average weekday flow (bicycles) comparison for ATC 05 (Sweet Briar Walk) for Northbound (left) and Southbound (right)
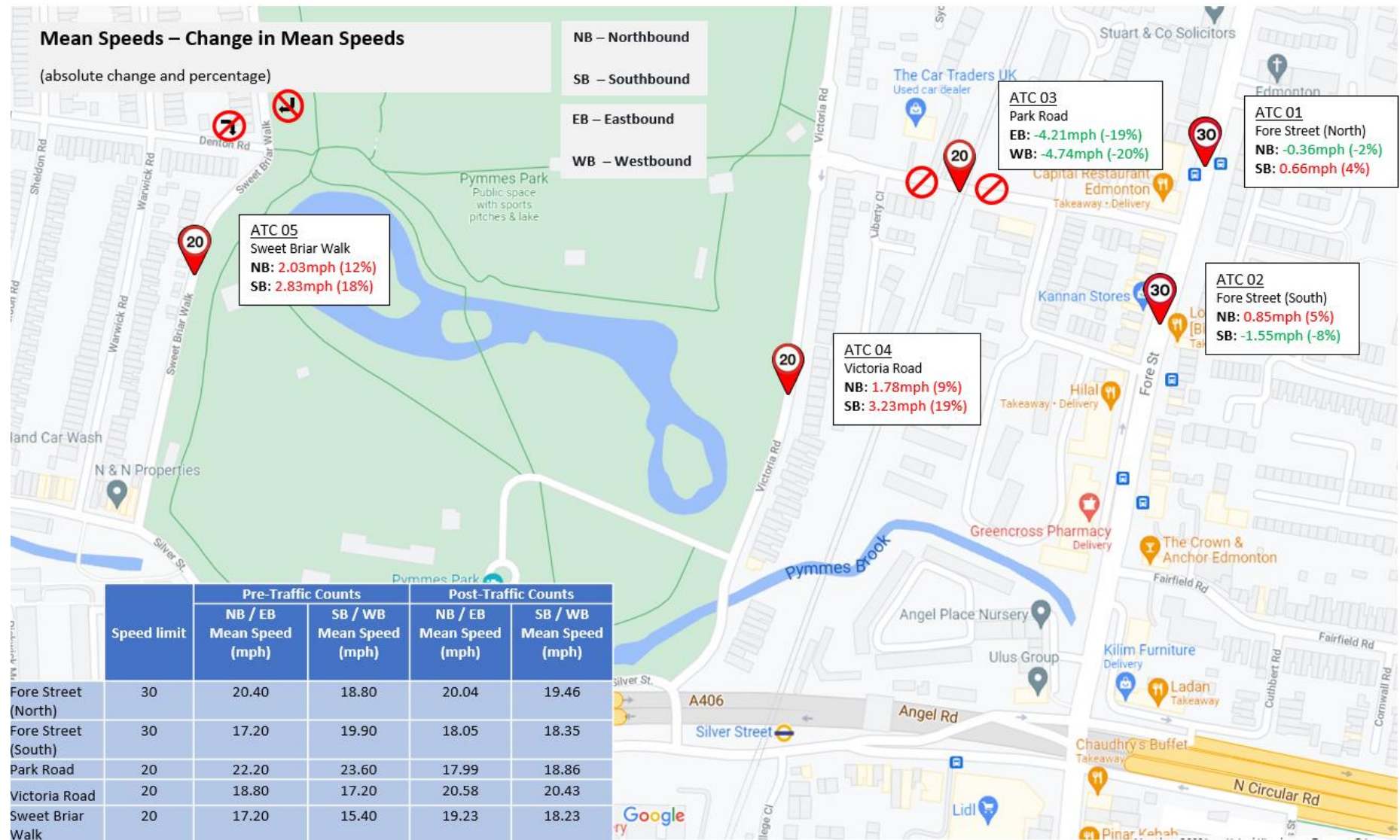

Source ATC is as shown in Table 1 as well as Classified Link Counts (CLC) on Sweet Briar Walk taken on 27/05/21.

17. As noted above, the two sites on **Fore Street** show a significant reduction in traffic throughout the day, with traffic flows consistently around 20% lower than the pre-scheme levels in the southbound direction.

18. **Northbound cycle flows on Fore Street** have increased north of Park Road and decreased south of Park Road. Interestingly **southbound cycle flows** show the opposite trend with an increase south of Park Road and a decrease north of Park Road. This could indicate cyclists are joining Fore Street at the Park Road junction.

19. **Park Road** shows a significant drop in traffic levels, consistent with the closure of the road to all motor vehicles. Cycle trips have approximately doubled on Park Road which equates to an additional 47 cycles daily, as shown by the ATC data. The CLC data shows the cycle numbers may be larger, however there is no before CLC data to compare it to.

20. On **Victoria Road,** although the total amount of daily traffic did not vary significantly, the graphs show that the spread of traffic throughout the day has changed considerably, with both directions showing more peaks and troughs in demand in the post-scheme data. Whether this can be attributed to the scheme or to wider changes in traffic patterns is unclear.

21. Traffic flows on **Sweet Briar Walk** show a reduction in traffic flows throughout the day, particularly in the southbound direction. As noted above, this may be due to the closure of two right turn movements at the nearby junction.

22. The data shows **cycling trips on Sweet Briar Walk** have remained at a low level in both the before and after data.

Traffic Speed Data

23. Figure 13 below shows the impact on average speed at each of the ATC sites:

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Figure 13: Changes to mean traffic speeds on roads near A1010S to North Middlesex Hospital Cycle Route

Mean Speeds – Change in Mean Speeds

(absolute change and percentage)

NB – Northbound

SB – Southbound

EB – Eastbound

WB – Westbound

ATC 05
Sweet Briar Walk
NB: 2.03mph (12%)
SB: 2.83mph (18%)

ATC 03
Park Road
EB: -4.21mph (-19%)
WB: -4.74mph (-20%)

ATC 01
Fore Street (North)
NB: -0.36mph (-2%)
SB: 0.66mph (4%)

ATC 02
Fore Street (South)
NB: 0.85mph (5%)
SB: -1.55mph (-8%)

ATC 04
Victoria Road
NB: 1.78mph (9%)
SB: 3.23mph (19%)

	Speed limit	Pre-Traffic Counts		Post-Traffic Counts	
		NB / EB Mean Speed (mph)	SB / WB Mean Speed (mph)	NB / EB Mean Speed (mph)	SB / WB Mean Speed (mph)
Fore Street (North)	30	20.40	18.80	20.04	19.46
Fore Street (South)	30	17.20	19.90	18.05	18.35
Park Road	20	22.20	23.60	17.99	18.86
Victoria Road	20	18.80	17.20	20.58	20.43
Sweet Briar Walk	20	17.20	15.40	19.23	18.23

Base map: Google Maps. Source ATC is as shown in Table 1.

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Figure 14: Average (7-day) Speed data compared to speed limits
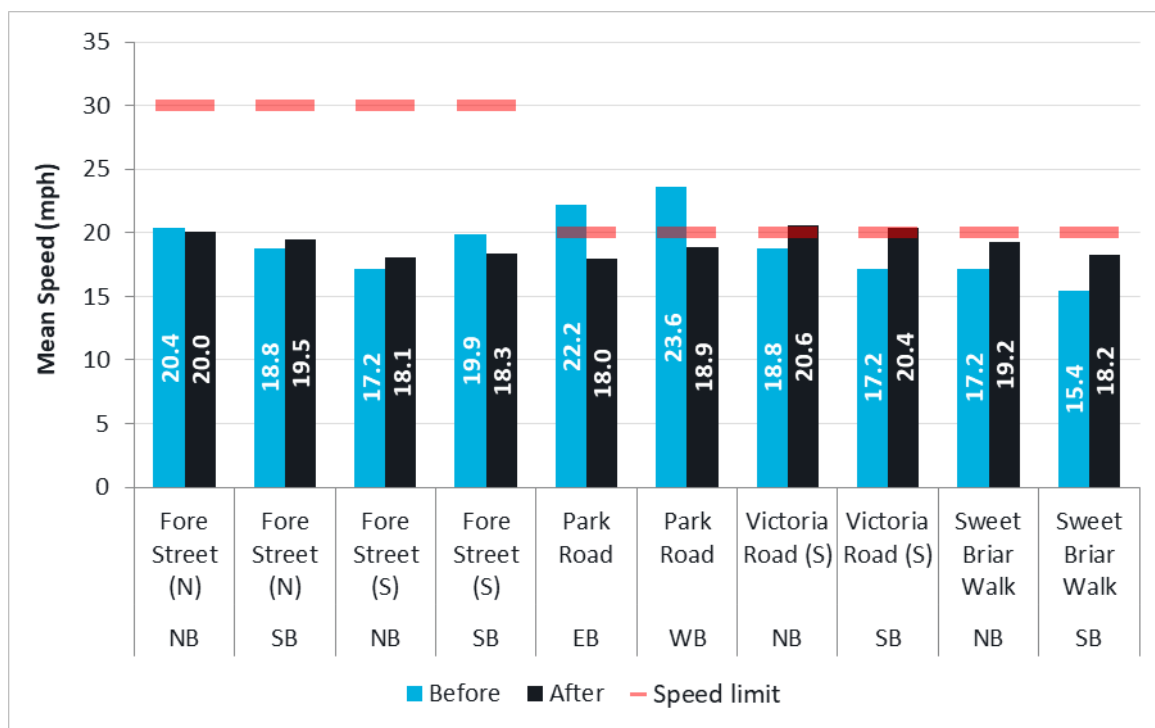
Source ATC is as shown in Table 1.

24. The results for Fore Street show only small changes, with only Fore Street South of Park Road in the southbound direction shows a change in speed of more than 1mph, suggesting the changes in speed on this road is likely caused by random variations rather than a direct impact of the interventions.

25. There was an additional speed survey at the site of Fore Street North of Park Road which occurred in March 2019. This showed an average northbound speed of 22.3 mph and an average southbound speed of 22.7 mph which has been included here for completeness. This shows a similar trend of speed reduction on Fore Street since the introduction of the intervention.

26. Park Road shows a 20% reduction in speed in both directions, suggesting that the scheme has had an impact in this location. This is in line with expectations as Park Road has been closed to all traffic except cyclists and emergency services between Liberty Close and Park Avenue (under the railway bridge).

27. Victoria Road shows a notable increase in traffic speeds in both directions, although the reason for this change not readily apparent. It is possible the speed increase may be linked to the decreasing volumes on this road (as detailed above in the traffic volume section) as it is common for average speeds to increase with less congestion.

28. Sweet Briar Walk also shows increases in average speed, possibly due to the removal of turning movements at nearby junctions allowing a smoother flow of traffic. As noted above, there is also a significant reduction in traffic on this road, which may also be a significant contributor to the increase in speeds. However, both before and after average speeds remain below the 20mph speed limit.

Bus journey times

29. iBus is a GPS system which tracks all of London's buses in real-time. This location data is stored by TfL, and can therefore be used to provide actual bus journey times.

30. This bus journey time data covers date ranges for 'before' and 'after' the introduction of the various schemes that form part of Enfield's A1010S to North Middlesex Hospital Cycle Route.

- The 'before' data range was captured over the month of February 2020.

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- The 'after' data range was captured over the period after the schemes were introduced and after COVID-19 travel restrictions were lifted. To align with the traffic survey data, the data range was captured over the month of May 2021.

31. For each date range the data is supplied by TfL aggregated into the following time periods:

- Hour-by-hour average journey times for weekdays between 05:00 to 00:00.
- Hour-by-hour average journey times for Saturdays between 05:00 to 00:00.
- Hour-by-hour average journey times for Sundays between 05:00 to 00:00.

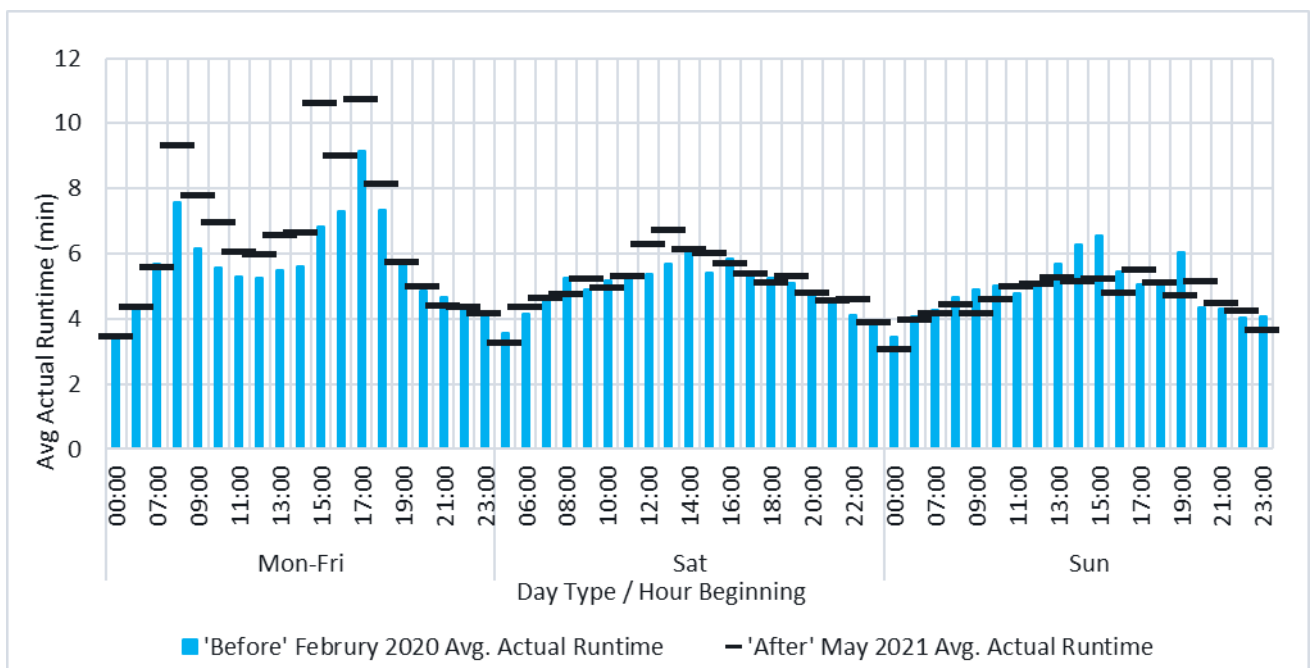**Routes between North Middlesex Hospital and Angel Corner (Route 34)**

32. Figure 15 shows a map of the assessed sections of bus route 34, marked in red and blue.

Figure 15: Map of route that data has been collected for route 34 between North Middlesex Hospital and Angel Corner
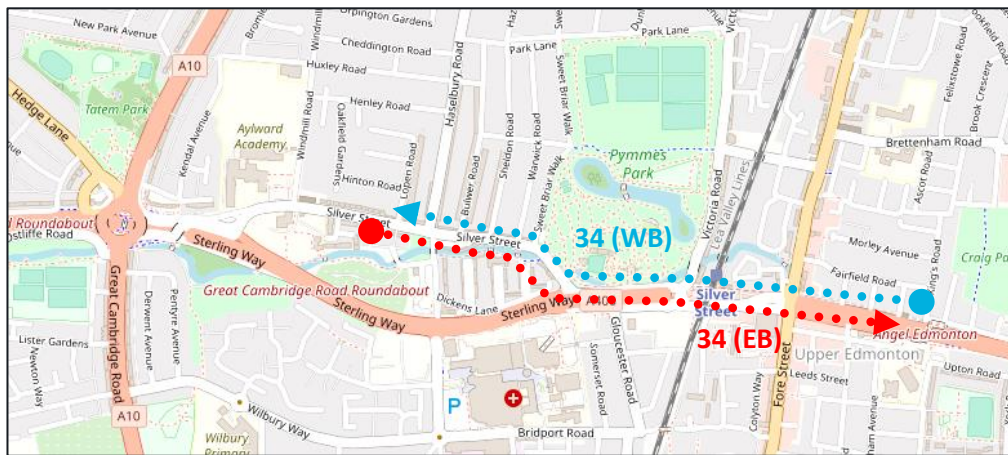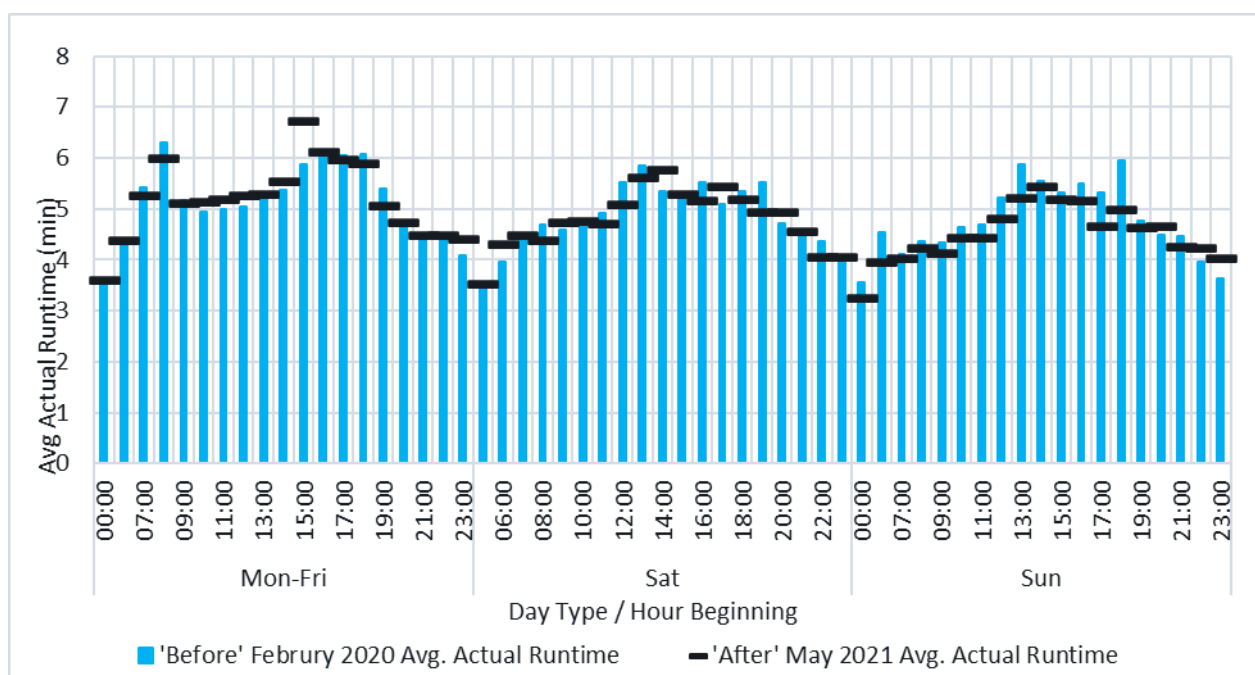

33. Figure 16 and Figure 17 show the change in bus journey times for Route 34. In the eastbound direction, bus journey times have increased between 2020 and 2021 during the weekday AM and PM peaks. During the weekend, eastbound journey times have remained unchanged with the exception of slight decreases during Sunday afternoon. There is less variation in the westbound direction where the bus journey times show little significant change between 2020 and 2021.

Figure 16: Route 34 eastbound average journey times from North Middlesex Hospital to Angel Corner

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Figure 17: Route 34 westbound average journey times from Angel Corner to North Middlesex Hospital
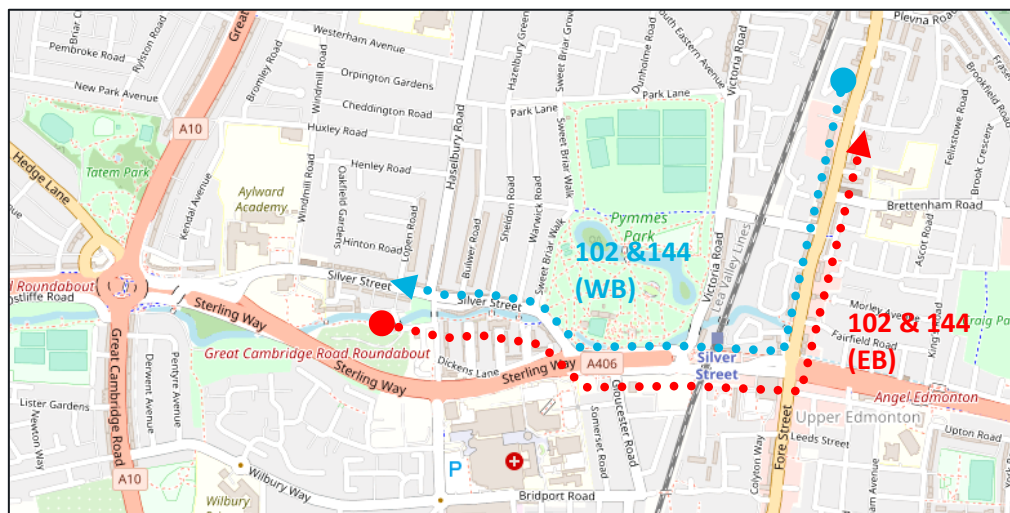

Source: TfL iBus data, 01/02/2020-28/02/2020; and 01/05/2021 31/05/2021

Routes between North Middlesex hospital and Shrubbery Road (Routes 102 and 144)

34.　Figure 18 shows a map of the assessed sections of bus routes, marked in red and blue.

Figure 18: Map of route that data has been collected for route 102 and 144 between North Middlesex Hospital and Angel Corner

Route 102

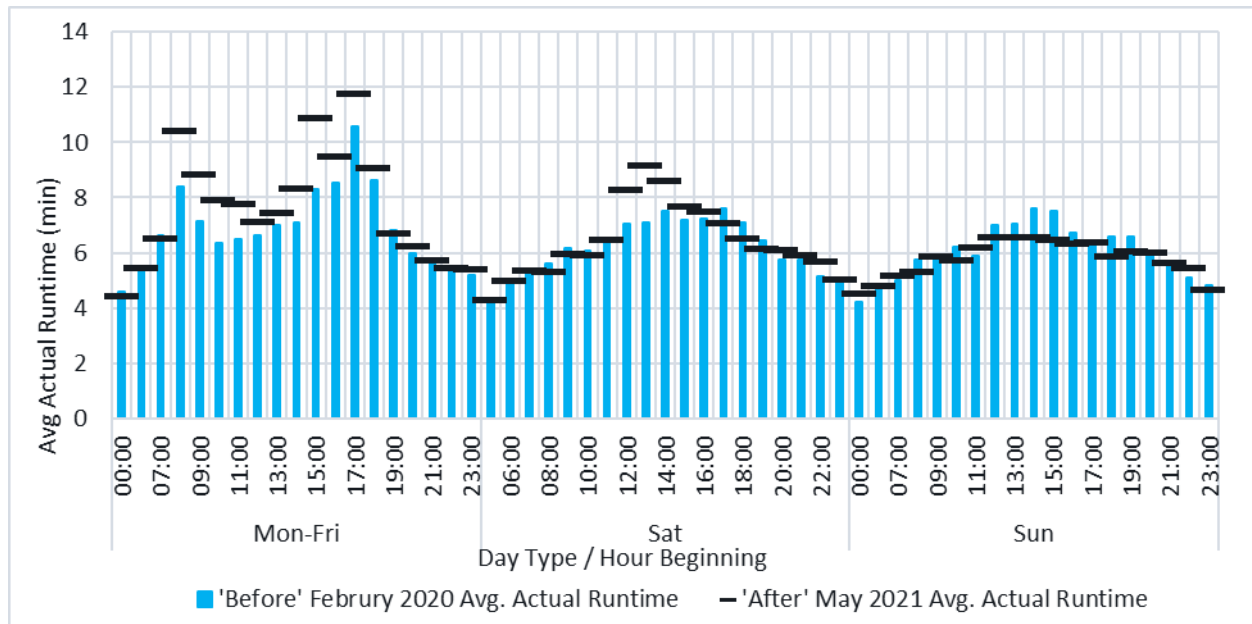35.　Figure 19 and Figure 20 shows the change in bus journey times for Route 102. In the eastbound direction, bus journey times have increased during the weekday AM and PM peaks compared to data from 2020. During the weekend, eastbound journey times have remained unchanged with the exception of slight increases during midday Saturday and slight decreases during midday Sunday. In the westbound direction

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there is less variation, the bus journey times show little change between 2020 and 2021, except for a slight increase during the day on weekdays (08:00 to 17:00).

Figure 19: Route 102 eastbound average journey times from North Middlesex Hospital to Shrubbery Road

Source: TfL iBus data, 01/02/2020-28/02/2020; and 01/05/2021 31/05/2021

Figure 20: Route 102 westbound average journey times from Shrubbery Road to North Middlesex Hospital
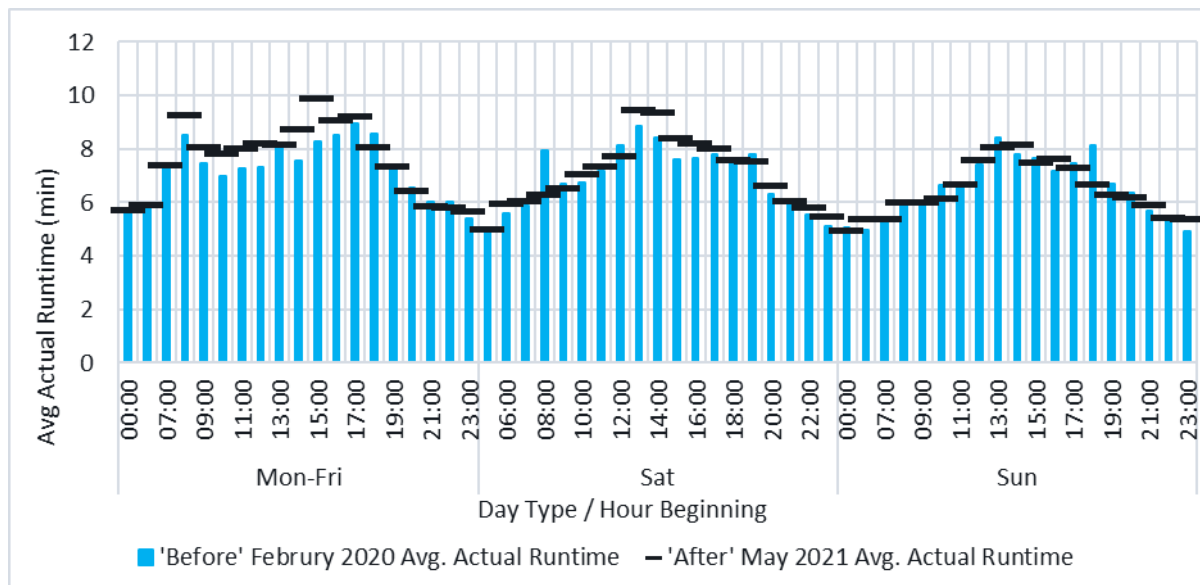
Source: TfL iBus data, 01/02/2020-28/02/2020; and 01/05/2021 31/05/2021

Route 144

36.   Figure 21 and Figure 22 shows the change in bus journey times for Route 144. As route 144 follows the same route as route 102 presented above, the findings are similar. In the eastbound direction, bus journey times have increased during the weekday AM and PM peaks since 2020, with increases also apparent around the middle of the day on Saturdays. Westbound journey times have experienced little change, however the weekday journey times are slightly longer during the day from 12:00 to 17:00.

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Figure 21: Route 144 eastbound average journey times from North Middlesex Hospital to Shrubbery Road

Source: TfL iBus data, 01/02/2020-28/02/2020; and 01/05/2021 31/05/2021

Figure 22: Route 144 westbound average journey times from Shrubbery Road to North Middlesex Hospital
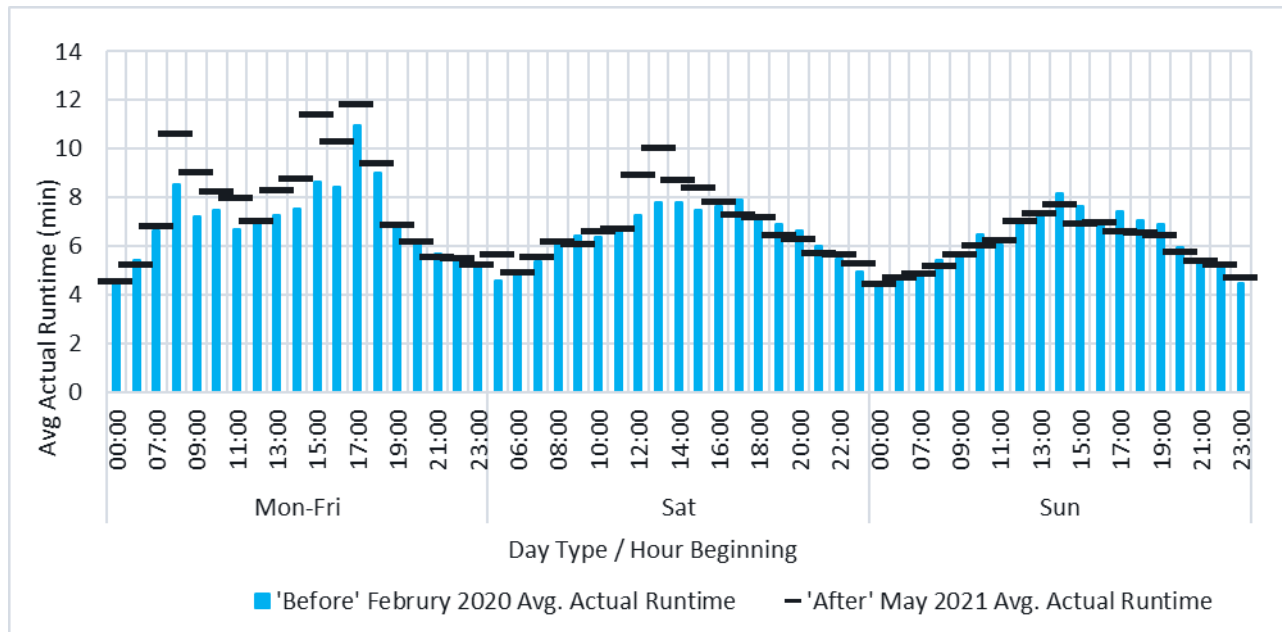

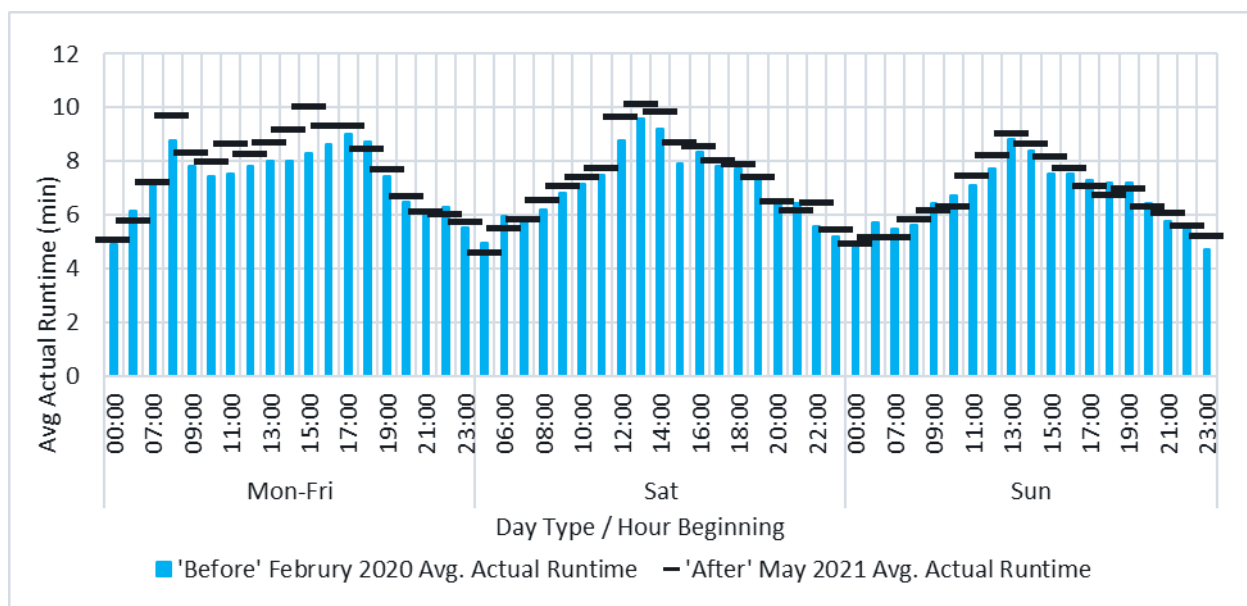Source: TfL iBus data, 01/02/2020-28/02/2020; and 01/05/2021 31/05/2021

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Collision Data

37. A review of collision data has been undertaken for the scheme, this encompasses the three years leading up to the introduction of the scheme (2018-2020) to provide a baseline for comparison and the period after implementation.

38. The 2020 results omit 2 collisions in December, as that is when the scheme was being implemented.

39. At time of reporting, TfL have only released provisional data for January to March 2021, meaning there is only limited data available after the introduction of the scheme, and it may not be possible to draw any solid conclusions at this stage.

40. The collision records provided by TfL have been filtered to identify incidents logged as occurring inside the boundary shown in the figure below:

Figure 23: Area of Study for the Accident Assessment
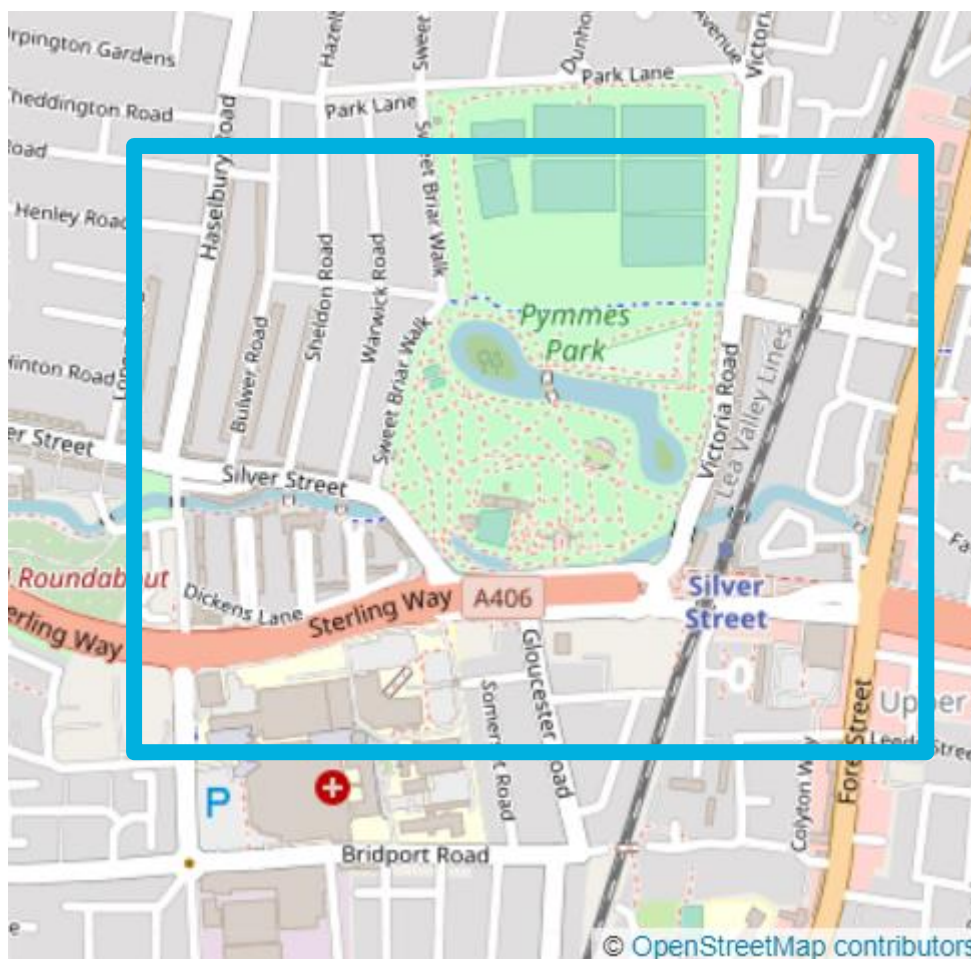
Table 4 Collisions reported per year

Severity	2018	2019	2020*	2021**
Slight	41	40	23	6
Serious	4	7	4	0
Fatal	0	0	1	0
Total	45	47	28	6

*Excludes December due to scheme implementation.

**January to March only

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41.   The 2020 results show a lower number of collisions than the previous years, this is to be expected due to the impacts of COVID-19 lockdowns and the corresponding reduction in traffic levels across London and is consisted with wider trends on the highway network.

42.   Due to the limited amount of available post-implementation data, it is not possible to infer a pattern with regards to collision rates for the year, although it should be noted that no serious accidents have occurred since the introduction of the scheme.

43.   One of the reported accidents from 2021 occurred on Fore Street, near the junction with Park Avenue, although the available data does not provide enough detail to determine if the changes to the road due to the scheme were a direct cause of the collision.

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APPENDIX A – Daily two-way vehicle flow (all modes excluding bicycles) (7-day average)

	Two-way Fore Street (N) Before	Two-way Fore Street (N) After	Two-way Fore Street (S) Before	Two-way Fore Street (S) After	Two-way Park Road Before	Two-way Park Road After	Two-way Sweet Briar Walk Before	Two-way Sweet Briar Walk After
00:00	579	479	649	480	101	10	18	19
01:00	349	314	407	313	53	4	7	10
02:00	261	192	277	193	36	3	6	4
03:00	198	152	206	153	26	1	5	3
04:00	259	220	238	223	36	2	4	4
05:00	476	387	416	386	71	4	12	11
06:00	787	733	674	740	135	8	28	24
07:00	1403	1115	1200	1116	413	17	68	52
08:00	1479	980	1348	1051	848	55	170	135
09:00	1477	1098	1299	1101	577	58	94	99
10:00	1352	1153	1238	1162	399	42	64	84
11:00	1349	1196	1249	1182	390	52	66	71
12:00	1384	1197	1289	1207	463	54	77	65
13:00	1412	1166	1215	1135	456	54	79	66
14:00	1427	1107	1341	1104	519	60	84	86
15:00	1513	1101	1330	1055	747	74	132	121
16:00	1477	1067	1370	1057	779	79	149	134
17:00	1469	1140	1357	1137	858	87	209	146
18:00	1514	1238	1376	1213	739	96	195	164
19:00	1114	1164	1301	1176	570	53	100	81
20:00	1215	1076	1204	1082	374	34	61	54
21:00	1131	930	1117	949	274	35	54	46
22:00	1021	889	1070	895	207	22	46	34
23:00	832	701	873	697	152	20	30	37
TOTAL	**25478**	**20798**	**24043**	**20806**	**9223**	**926**	**1761**	**1548**

Source ATC is as shown in Table 1.

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APPENDIX B – Daily two-way cycle flow (bicycles) (7-day average)

	Two-way Fore Street (N) Before	Two-way Fore Street (N) After	Two-way Fore Street (S) Before	Two-way Fore Street (S) After	Two-way Park Road Before	Two-way Park Road After	Two-way Sweet Briar Walk Before	Two-way Sweet Briar Walk After
00:00	5	10	2	4	0	1	0	0
01:00	1	5	2	1	0	1	0	0
02:00	2	5	1	1	0	1	0	0
03:00	1	3	2	2	0	1	0	0
04:00	3	4	2	4	0	1	0	0
05:00	8	13	7	8	1	1	0	0
06:00	9	16	11	11	5	3	0	0
07:00	12	27	12	13	9	9	0	0
08:00	10	15	11	9	4	5	3	1
09:00	6	12	21	7	2	6	0	0
10:00	6	16	20	6	2	3	0	0
11:00	7	10	17	8	0	3	0	0
12:00	7	13	19	7	2	5	0	0
13:00	8	14	19	6	2	6	0	0
14:00	8	10	23	7	2	5	0	0
15:00	8	15	22	7	4	6	1	1
16:00	9	17	23	9	4	9	1	0
17:00	10	22	29	12	7	8	1	0
18:00	12	23	29	12	4	9	2	0
19:00	9	25	28	13	4	9	0	0
20:00	10	25	26	9	1	6	1	0
21:00	11	21	19	8	1	5	0	0
22:00	11	15	13	9	0	4	0	0
23:00	7	16	7	4	0	1	0	0
TOTAL	**182**	**350**	**363**	**177**	**55**	**107**	**10**	**4**

Source ATC is as shown in Table 1.

steer