

Surrey County Council

Walnut Tree Close Traffic Analysis

Impact of One-Way Trial

Reference:

Draft | 15 February 2023

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Ove Arup & Partners International Limited
63 St Thomas Street
Bristol
BS1 6JZ
United Kingdom
arup.com

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Executive Summary

The Scheme

Walnut Tree Close, Guildford is a south-north link from the A322 to the A25. The close caters for Guildford train station at its southern end and the Royal Mail Delivery Office at its northern end. In between, the road is largely residential in character including student accommodation. Alternative north-south routes to Walnut Tree Close include the A322 Woodbridge Road and the A320 Stoke Road, both of which are of a higher classification than the close.

Surveys in year 2019 show that pedestrians and cyclists account for 26% of traffic on Walnut Tree Close and vehicles for 74%. Surrey County Council, as local highway authority, implemented a trial active travel scheme initially in year 2020 and again in 2022. Analysis of the scheme impact is based on the later trial, for which more data is available. The trial consists of a one-way northbound vehicle lane between Bankside Student Living and the turning facility south of the Royal Mail Delivery Office. An advisory cycle lane runs northbound and a segregated contraflow cycle lane southbound. Potential impacts of the scheme include:

- increased active travel on Walnut Tree Close
- redistribution of southbound traffic from Walnut Tree Close to the A322 and A320
- redistribution of turning movements at junctions.

A range of traffic data was analysed to understand the local and wider impacts of the one-way trial. Baseline data is for year 2019, which is pre-pandemic and overcomes any distortions to travel habits during the covid-19 pandemic and recovery period. Scheme data is for year 2022: pre-trial for May 2022, and during the trial for July and September 2022.

Active Travel

As noted, active travel by pedestrians and cyclists accounted for 26% of the Walnut Tree Close traffic in year 2019. New student accommodation built along the close in the intervening years will have increased the numbers of pedestrians and cyclists. The surveys do not show a definitive increase in active travel but the surveys were undertaken at different times of year. Student activity would have been greater in the pre-trial surveys months of May and October, compared to July and September during the trial. However, walking and cycling flows generally increase between May and September whereas the number of northbound vehicles falls. On balance, it seems likely that the trial one-way scheme on Walnut Tree Close did increase the proportion of walking and cycling activity.

Redistribution of Southbound Traffic

Walnut Tree Close

In 2019, the 24-hour southbound traffic flows on a typical weekday were 2,206 vehicles on Walnut Tree Close, 11,291-11,963 on the A322 Woodbridge Road and 5,112-6,712 on the A320 on Stoke Road. Walnut Tree Close traffic comprises three discrete types:

- motorcycles/scooters, which the surveys show continue southbound on Walnut Tree Close using the cycle lanes
- local traffic that starts/ends somewhere off Walnut Tree Close, which would redistribute northbound on the close
- through traffic that would redistribute onto other roads such as the A322 and A320.

With the one-way scheme in place on Walnut Tree Close, approximately 1,700-1,800 vehicles are estimated to redistribute onto other roads.

The table below shows recorded traffic flows on the three key highway links across different times. Data that corresponds to the trial period is highlighted in blue.

24-Hour Weekday Southbound Traffic Flows

	24-Hour Weekday Traffic Flows			Difference from 2019 pre-trial		Difference from May 2022 pre-trial	
	Walnut Tree Close	A322	A320	A322	A320	A322	A320
May 2019		11,963	5,112				
June 2019	2,206						
July 2019		11,683	6,712				
September 2019		11,291	6,356				
May 2022	2,353	N/A	6,439				
July 2022	-1,728	11,788	6,083	+105	-629	N/A	-356
September 2022	-1,813	11,491	5,770	+200	-586	N/A	-669

A322 Woodbridge Road

Taking year 2019 as the baseline for the A322, southbound traffic increases by 105 vehicles in the month of July 2022 and by 200 vehicles in September. The southbound traffic flow on the A322 exceeds 11,000 vehicles on a weekday and the scheme impact is less than 2%, which is within the limits for typical daily fluctuation and would not be discernible to users. The data does not show an impact of the trial on the A322.

A320 Stoke Road

Taking year 2019 as the baseline for the A320, traffic fell by 629 vehicles in July 2022 and by 586 vehicles in September. Compared to pre-trial conditions in May 22, traffic fell by 356 vehicles in July and by 669 in September. The ratio of northbound to southbound traffic remained consistent before and during the trial and the data does not show an impact of the trial on the A320.

Redistribution at Junctions

Overall, movements at the Station View junction with Walnut Tree Close decreased after the introduction of the trial. An increase in northbound traffic through the junction appears to be local trips that end somewhere off Walnut Tree Close, which has redistributed from a southbound direction to northbound. Changes in the turning movements at the Station View junction are largely because of construction works being completed during the trial, which opened up access to the station car park.

Conclusions

It seems likely that the trial one-way scheme on Walnut Tree Close has led to an increase in walking and cycling activity. However, the outcome is inconclusive due to the timing of the surveys, and particularly in the context of university term times, extreme weather and gaps in data. The analysis does not show an increase in traffic on the A322 and A320 because of the one-way trial on Walnut Tree Close. It is likely that the remaining traffic that can't be accounted for redistributed via The Chase.

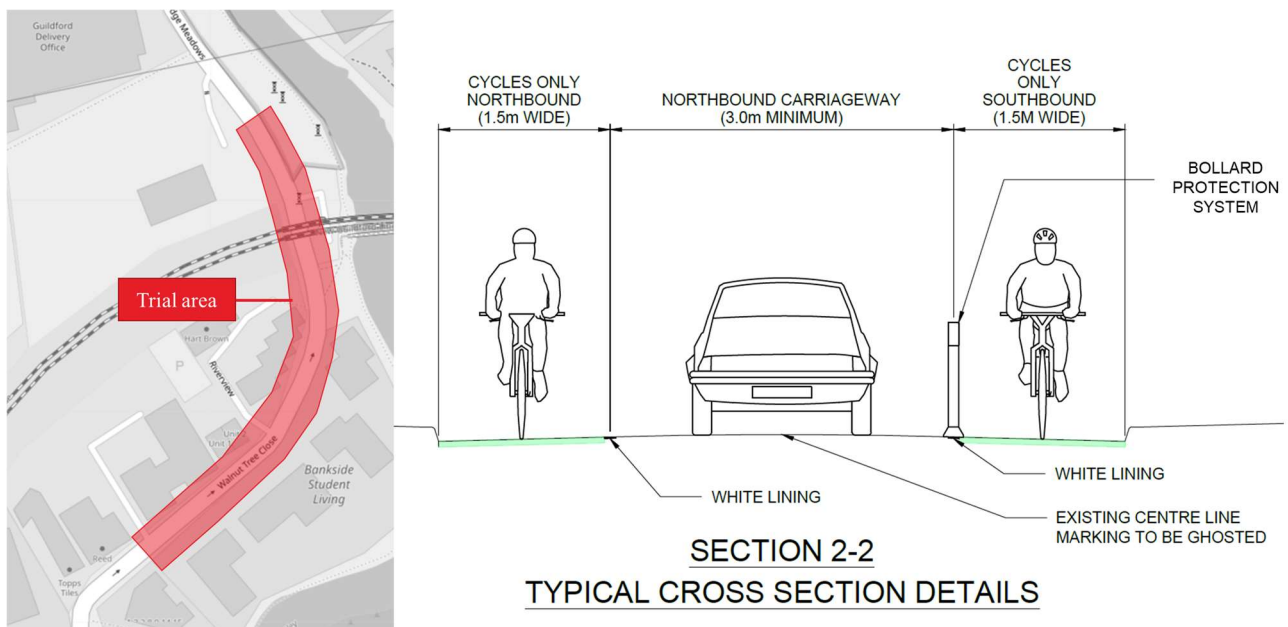
1. Introduction

1.1 The Scheme

Walnut Tree Close, Guildford is a south-north link from the A322 to the A25. The close caters for Guildford train station at its southern end and the Royal Mail Delivery Office at its northern end. In between, the road is largely residential in character including student accommodation. Surrey County Council, as local highway authority, implemented a trial active travel scheme initially in year 2020 and again in 2022.

Ove Arup and Partners Ltd (Arup) is commissioned to assess the impact of the Walnut Tree Close active travel scheme on traffic in the local area, in terms of cycling and pedestrian numbers as well as the redistribution of vehicular traffic onto neighbouring roads. The principal concern is the vehicular impact of the scheme on the A322 and A320 as well as on the exit from Guildford train station.

This report analyses the impact of the scheme for the year 2022 trial, for which more data is available. The scheme was introduced on 29 May 2022 and consists of a one-way northbound vehicle lane between Bankside Student Living and the turning facility south of the Royal Mail Delivery Office as well as an advisory cycle lane northbound and a segregated contraflow cycle lane southbound. Figure 1.1 shows the location and layout of the trial.



Source: excerpt from General Arrangement SCCWTCEC-ATK-HML-S1_XS-DR-CH-000311

Figure 1.1: Trial Location and Layout

1.2 Scope of Analysis

The local area, A322 Woodbridge Road and A320 Stoke Road are the key areas of concern for residents and are the focus of the traffic analysis. It should be noted that there are alternative routes available, and a wider the area of redistribution leads to less impact on any particular link. Figure 1.2 shows these alternative routes.

Construction works on Walnut Tree Close appear to have been ongoing for some time, both at the station and near the trial area. In combination with temporary road closures in 2022 prior to the introduction of the trial, drivers may have sought long-term alternative routes to avoid the works before the one-way restriction was even imposed.

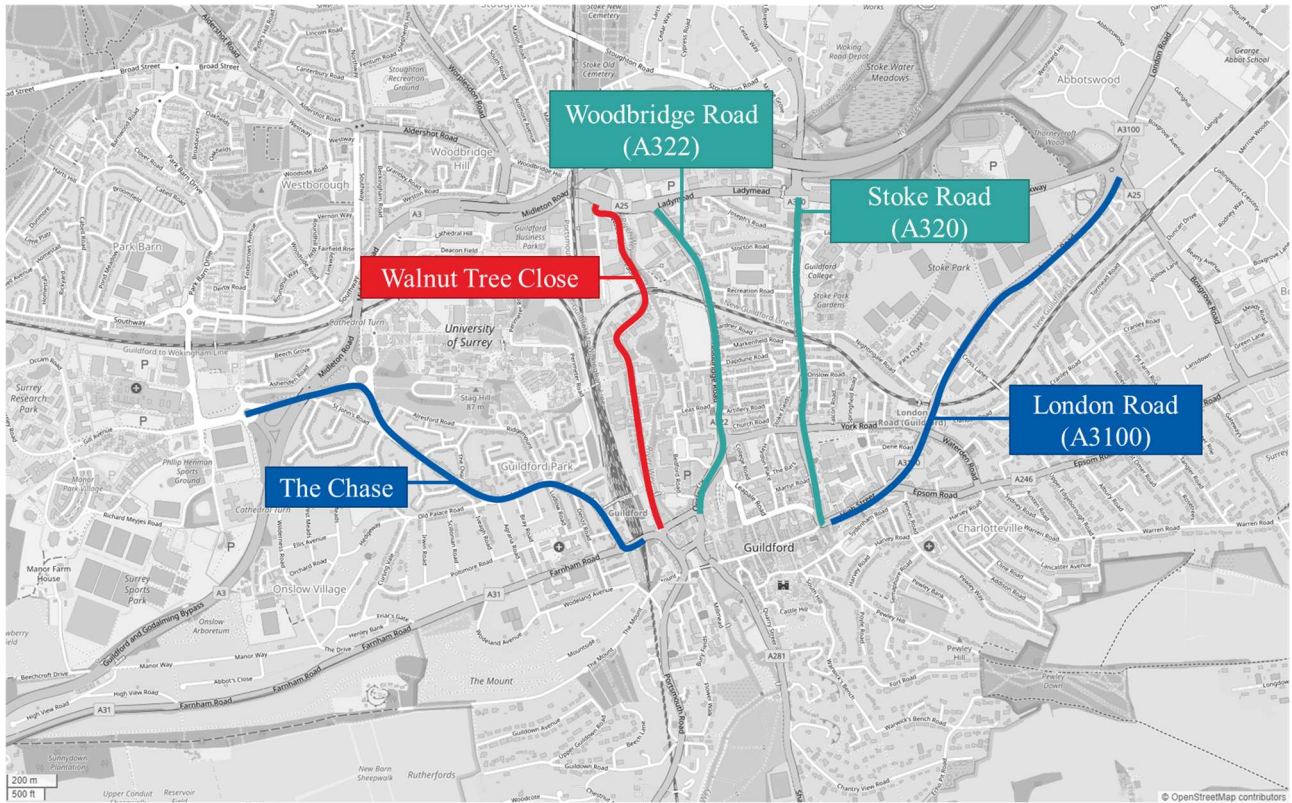


Figure 1.2: Alternative Routes for Southbound Traffic

2. Incoming Data

2.1 Count Data

Surrey County Council provided a range of traffic data across the road network comprising automatic traffic counts (ATCs) including induction loops and manual traffic counts (MCCs). Figure 2.1 shows the location of the count points in relation to the wider Guildford transport network. The numbering for the locations on Walnut Tree Close is unique to this report and does not reflect how the locations may have been classified at the time the surveys were undertaken.

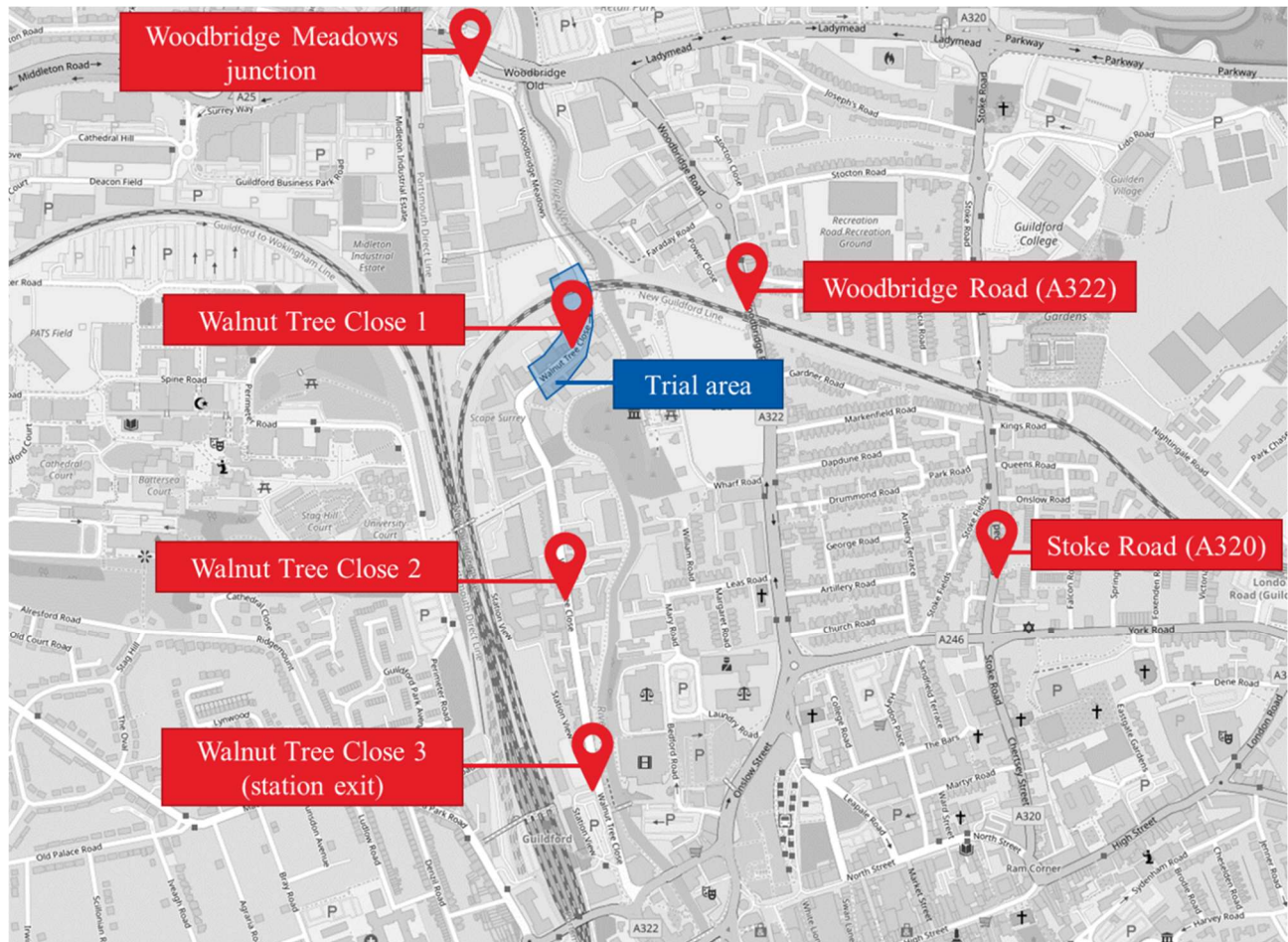


Figure 2.1: Count Locations

Table 2.1 summarises the location, type and extent of traffic count data. The data for Walnut Tree Close generally covers four periods: prior to the covid-19 pandemic, year 2022 before the scheme was implemented, two months after implementation and four months after. For clarity, data that corresponds to the trial period is highlighted in blue. The induction loop data covers the wider road network beyond Walnut Tree Close and covers years 2018 to 2022.

Table 2.1: Received Count Data

Count Location*	Count Type	Date Range
Woodbridge Meadows junction (with A25 Woodbridge Rd)	Manual classified count (MCC)	12 hr/day data for: 19/07/22 21/07/22 13/09/22 15/09/22
Walnut Tree Close 1 (between Riverview and Woodbridge Meadows)	Pedestrian and cycle count (MCC)	24/10/19 - 30/10/19 (24 hr/day) 09/05/22 - 15/05/22 (24 hr/day) 14/07/22 - 20/07/22 (24 hr/day) 13/09/22 - 18/09/22 (12 hr/day)
	Automatic traffic count (ATC)	24 hr/day data for: 19/06/19 - 25/06/19 09/05/22 - 16/05/22 14/07/22 - 24/07/22 14/09/22 - 19/09/22
Walnut Tree Close 2 (near Rectory Court)	Automatic traffic count (ATC)	24 hr/day data for: 19/06/19-25/06/19
Walnut Tree Close 3 (junction with Station View, i.e. station exit and access to/from station car park)	Manual classified count (MCC)	12 hr/day data for: 10/05/22
		19/07/22 21/07/22 13/09/22 15/09/22
Woodbridge Road (A322) (between Recreation Road and the railway bridge)	Induction loop	24hr/day data for: 01/01/2018 - 05/07/2018; 27/07/2018 - 31/12/2018; 2019-2020; 01/01/21 - 03/08/21;
		05/07/22 - 09/10/22
Stoke Road (A320) (between Stoke Mews and Onslow Road)	Induction loop	24hr/day data for: 2018 - 2021 01/01/22 - 09/10/22
*See Figure 2.1		

The Walnut Tree Close 1 data is incomplete because the pedestrian and cycle counts for September 2022 were carried out over a six-day period, excluding Monday, whereas other pedestrian and cycle counts were carried out over a seven-day period. There is also insufficient data for the Sunday because pedestrian and cycle count footage is missing for the afternoon.

The MCC data is for year 2022 only and does not include pre-pandemic counts. For Walnut Tree Close 3, May 2022 count, the survey company noted that: “Due to roadworks and the camera view, we are not able to view the junction directly.” This may affect the reliability of data provided. Furthermore, construction on Station View concluded between July and September 2022, resulting in a noticeable change in turning movements for the September datasets.

The dataset for the A322 does not include pre-trial counts for May 2022, and as such it is not possible to carry out a direct comparison of traffic on the A322 between the pre-trial period and other periods.

2.2 External Influences

Analysis of the pedestrian and cycle data suggests the potential presence of external influences. Firstly, during the July 2022 survey, a heatwave caused peak temperatures close to 40°C¹, which may have discouraged people to walk and cycle. Nationally, a reduction in cycle traffic during the count week recorded an average of 7% fewer trips compared preceding four weeks². During the two hottest days (18-19 July 2022), 22% fewer trips were recorded. In contrast, vehicle traffic by only reduced 2% across the week and by 7% on the hottest days.

Secondly, the last day of term for state schools was 22 July 2022, which may have had an impact on the traffic counts on 23 July and 24 July. School was back in session for the September count.

Furthermore, the University of Surrey revision week took place between 16 May and 20 May 2022 and the summer break between 13 June and 16 September 2022³. The trial area is near the university and several student residences lie along Walnut Tree Close. The university semester was nearing revision week when the May count took place, and it was not in session during the July count and only partially in September. Additionally, several student residences opened on Walnut Tree Close during the trial, with students moving in during the September count, which may have had an impact on walking and cycling numbers.

Construction works on Walnut Tree Close - both at the station and near the trial area - in combination with temporary road closures in 2022 prior to the introduction of the trial may have led drivers to look for a long-term alternative route to avoid the works before the one-way restriction was even imposed.

Lastly, the covid-19 pandemic continues to affect the way people work and how they travel to work. To limit the impact of these changes on the data analysis, the average weekday for all modes within this report is calculated using data for Tuesday to Thursday. This ensures a robust analysis that takes account of less commuting on Mondays and Fridays when people are more inclined to work from home.

2.3 Traffic Flow Diagrams

The following figures show the recorded data in years 2019 and 2022 that inform the analysis in this report. Weekday flows are illustrated for cycle and vehicle flows for 12-hour (7AM-7PM) and 24-hour periods, and turning movements at junctions for a 12-hour period.

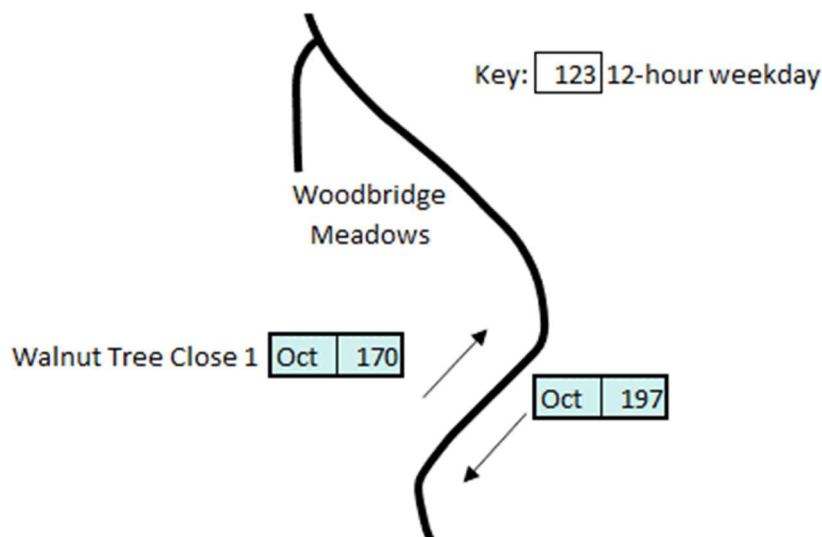


Figure 2.2: 12-Hour Cycle Flows, 2019

¹ National Climate Information Centre Monthly Summary July 2022 ([metoffice.gov.uk](https://www.metoffice.gov.uk))

² Daily domestic transport use by mode (www.gov.uk)

³ Important dates | University of Surrey

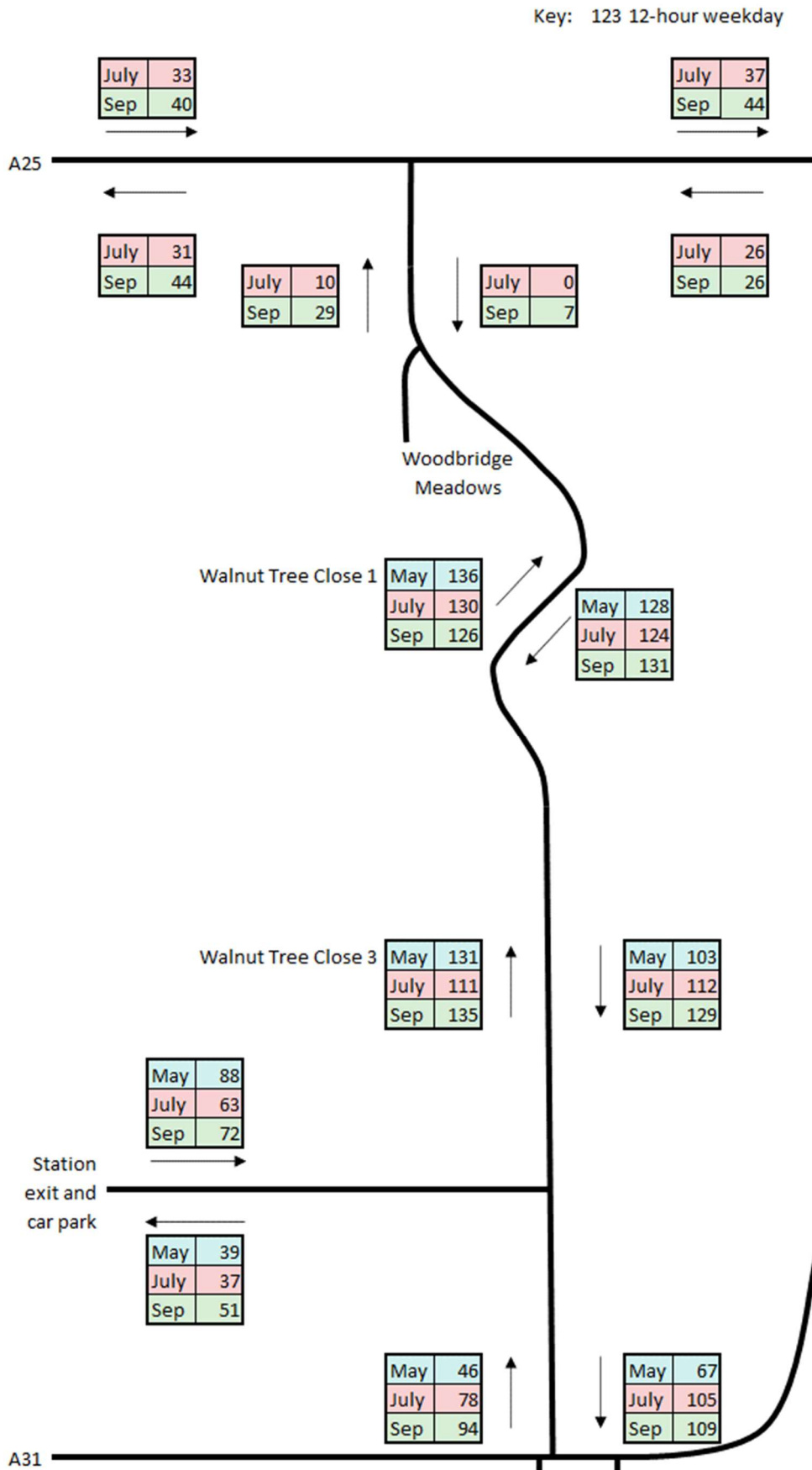


Figure 2.3: 12-Hour Cycle Flows, 2022

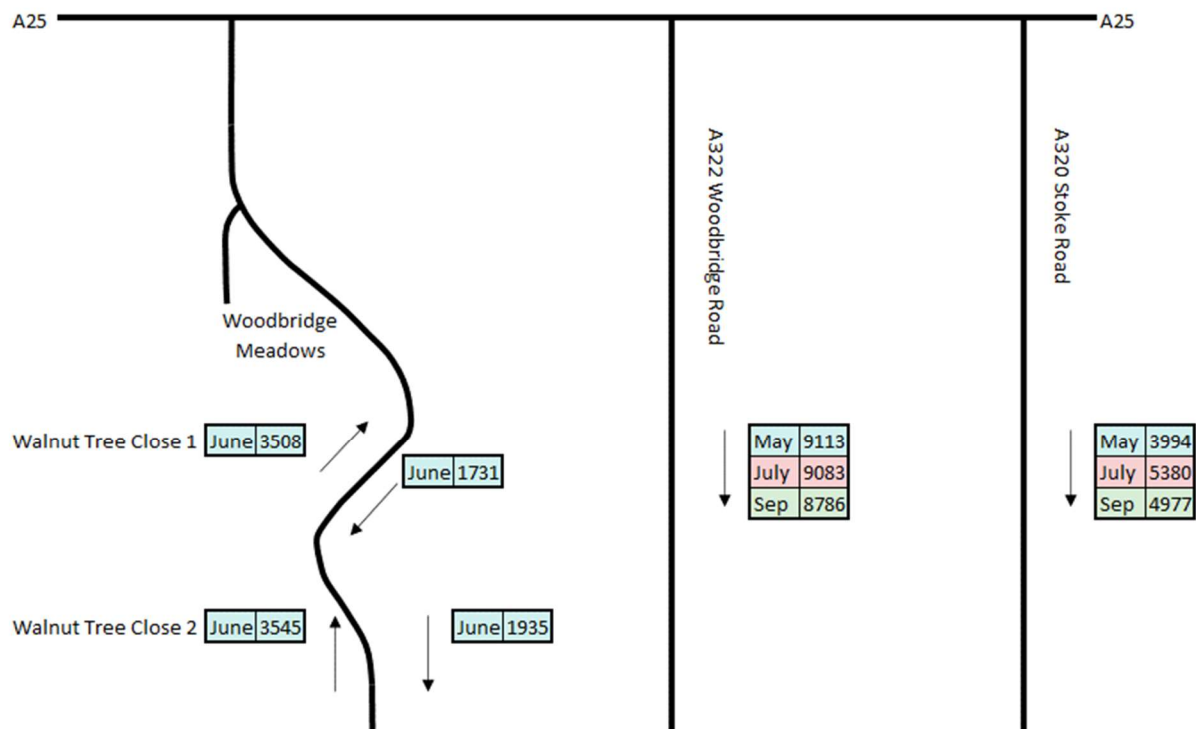


Figure 2.4: 12-Hour Link Flows, 2019

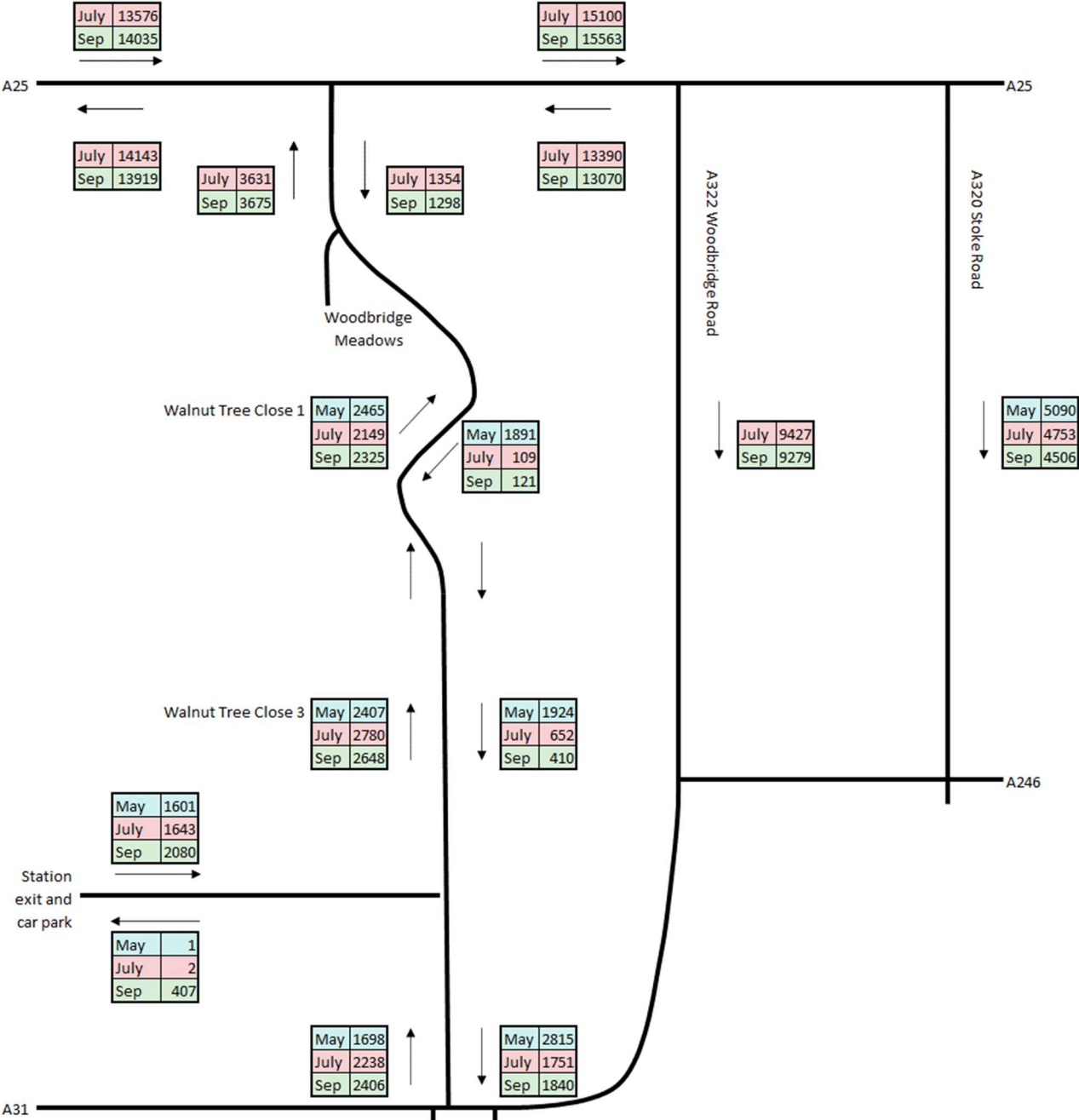


Figure 2.5: 12-Hour Link Flows, 2022

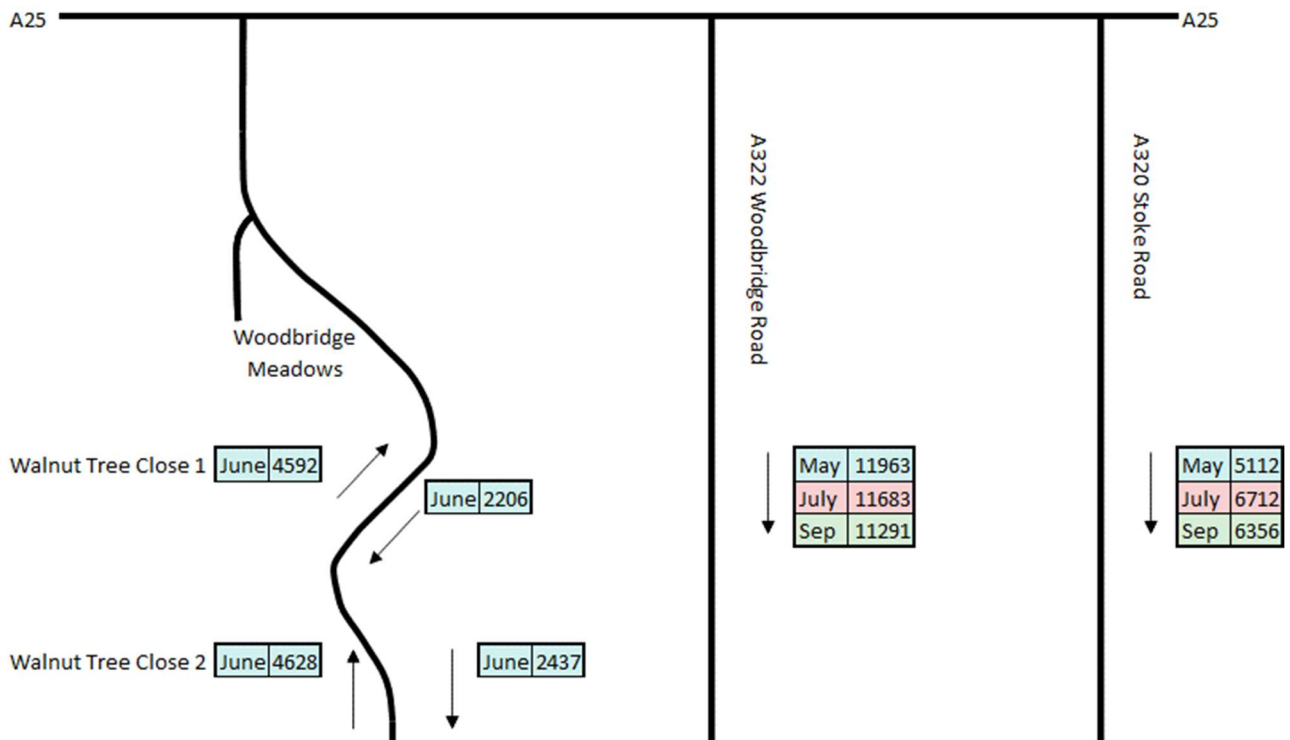


Figure 2.6: 24-Hour Link Flows, 2019

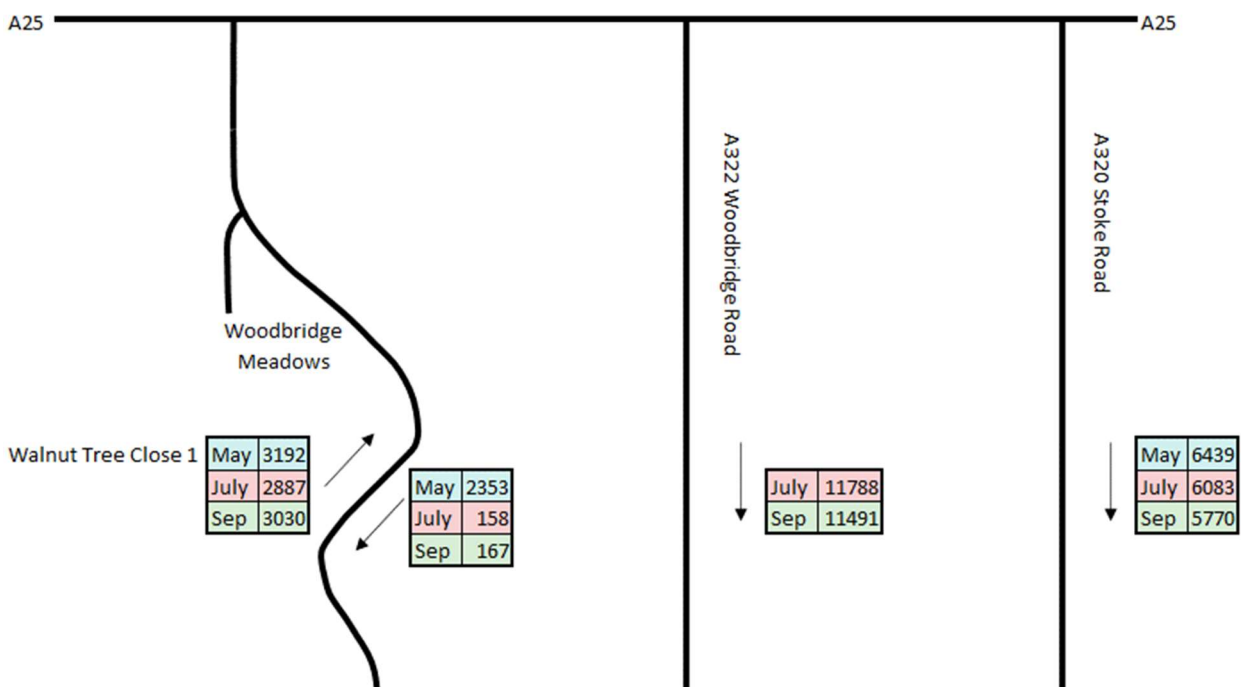


Figure 2.7: 24-Hour Link Flows, 2022

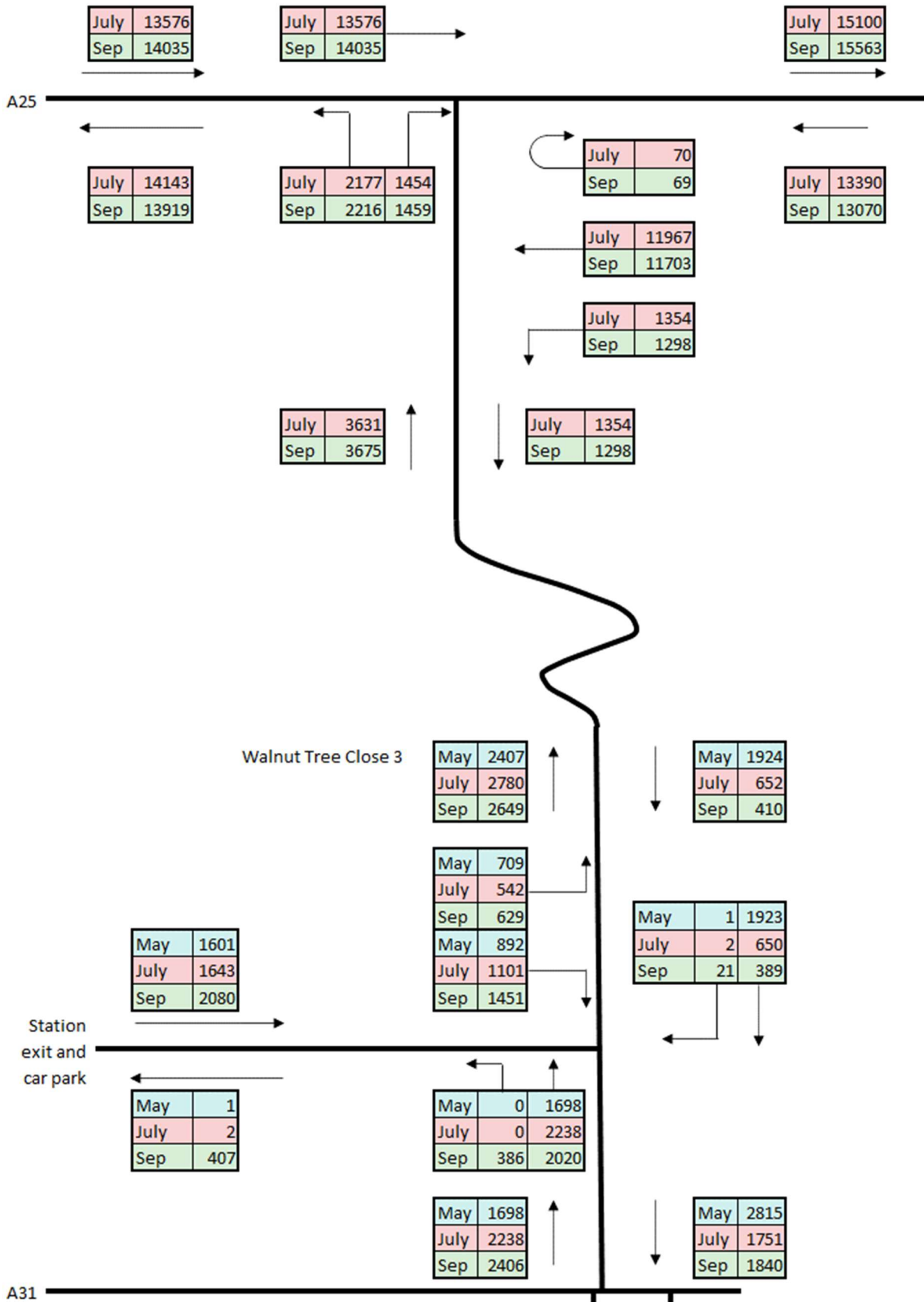


Figure 2.8: Junction Turning Movements, 2022

3. Pedestrians and Cyclists

3.1 Walking

Pedestrian numbers were significantly higher in October 2019 compared to the May 2022 survey. During the 2019 survey, the university was fully in session whereas the semester was nearing revision week in 2022. Pedestrian numbers drop between the May and July 2022 survey. Considering that the trial did not change the walking environment (width of footways, crossing provision), we assume that the decrease in walking rates was due to external factors, such as the university being on leave and the heatwave. The numbers rose again in September but with fewer pedestrians on a weekday compared to July and more on a Saturday.

Table 3.1 provides details for the pedestrian numbers and compares these to the 2019 baseline, with data that corresponds to the trial period highlighted in blue. Figure 3.1 shows the profile of pedestrians across the assessed weeks. It should be noted that the September count period did not include a Monday and that there is no data for the Sunday because pedestrian and cycle count footage is missing for the afternoon.

Table 3.1: 12-Hour Pedestrian Numbers by Month

Month	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
October 2019	1,995	742	903	100%	100%	100%
May 2022	1,545	1,233	818	-23%	+66%	-9%
July 2022	1,045	863	863	-48%	+16%	-4%
September 2022	1,227	1,399	N/A	-38%	+89%	N/A

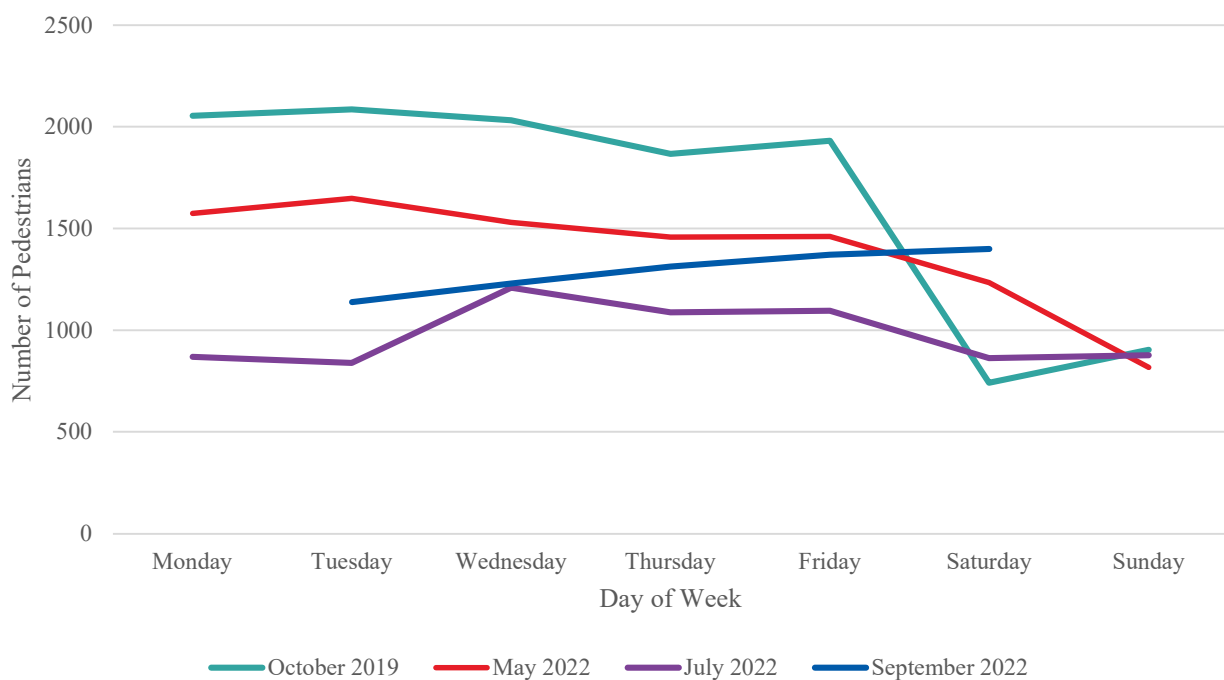


Figure 3.1: 12-Hour Pedestrian Numbers by Day of Week

3.2 Cycling

As with the pedestrian counts, cycling numbers decreased between October 2019 and May 2022. Cycling numbers on a typical weekday stayed consistent before and during the trial period in 2022 with approximately 265 cyclists between 7AM and 7PM. Recordings show fewer cyclists on the Saturday in July, compared to May and September. The lowest cycling activity occurs on Sundays, although this day sees an increase in numbers after the introduction of the trial. Table 3.2 provides details on the cycling numbers and compares these to the 2019 baseline with data that corresponds to the trial period highlighted in blue. Figure 3.2 shows the profile of cyclists across the assessed weeks. As before, there is no data for the Monday and Sunday in September.

Table 3.2: 12-Hour Cyclists by Month

Month	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
October 2019	366	94	168	100%	100%	100%
May 2022	264	229	108	-28%	+144%	-36%
July 2022	254	205	172	-31%	+118%	+2%
September 2022	257	238	N/A	-30%	+153%	N/A

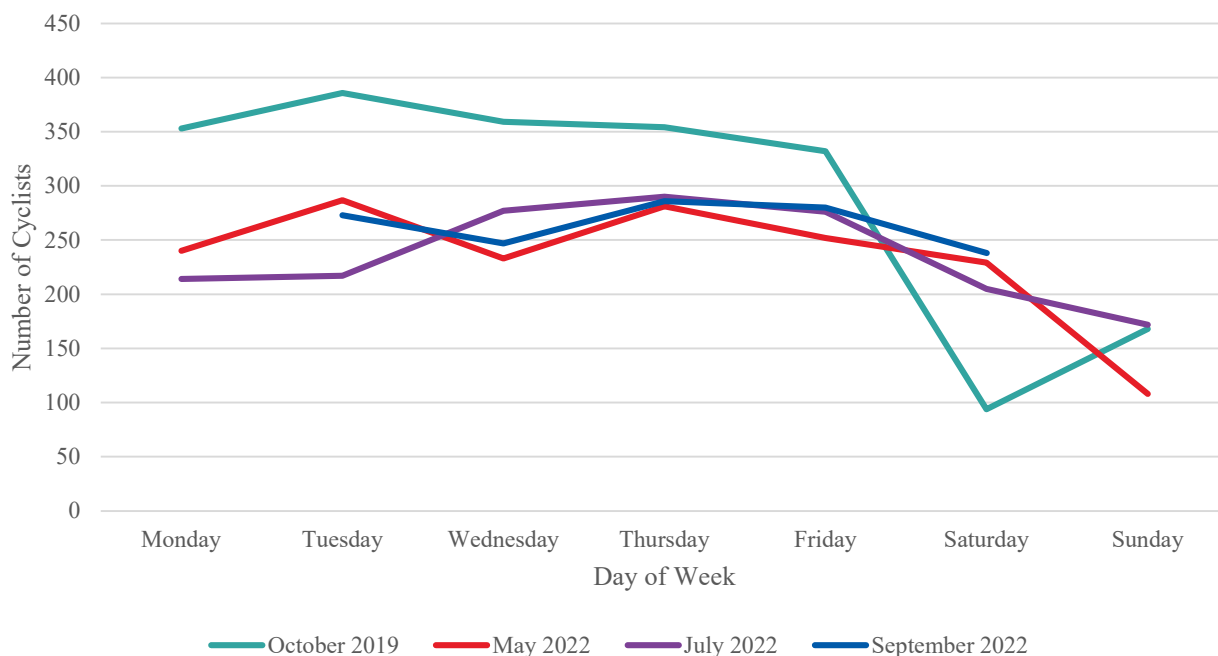


Figure 3.2: 12-Hour Cycling Numbers by Day of Week

3.3 Peak Hours

The introduction of the trial did not affect peak hour behaviour of pedestrians and cyclists on Walnut Tree Close. The AM peak hour typically took place between 8-9AM on a weekday, with a slightly earlier peak of 7.30-8.30AM in September. The PM peak hour varied with a later peak in July, but this may have been due to the high temperatures, as discussed previously. Table 3.3 details the peak hours for the months' counts and Figure 3.3 shows the average profile of users across a 24-hour weekday period.

Table 3.3: Weekday Peak Hours - Combined Pedestrians and Cyclists

Month	AM	PM
October 2019	8:00-9:00	17:00-18:00
May 2022	8:00-9:00	17:30-18:30
July 2022	8:00-9:00	18:00-19:00
September 2022	7:30-8:30	17:00-18:00

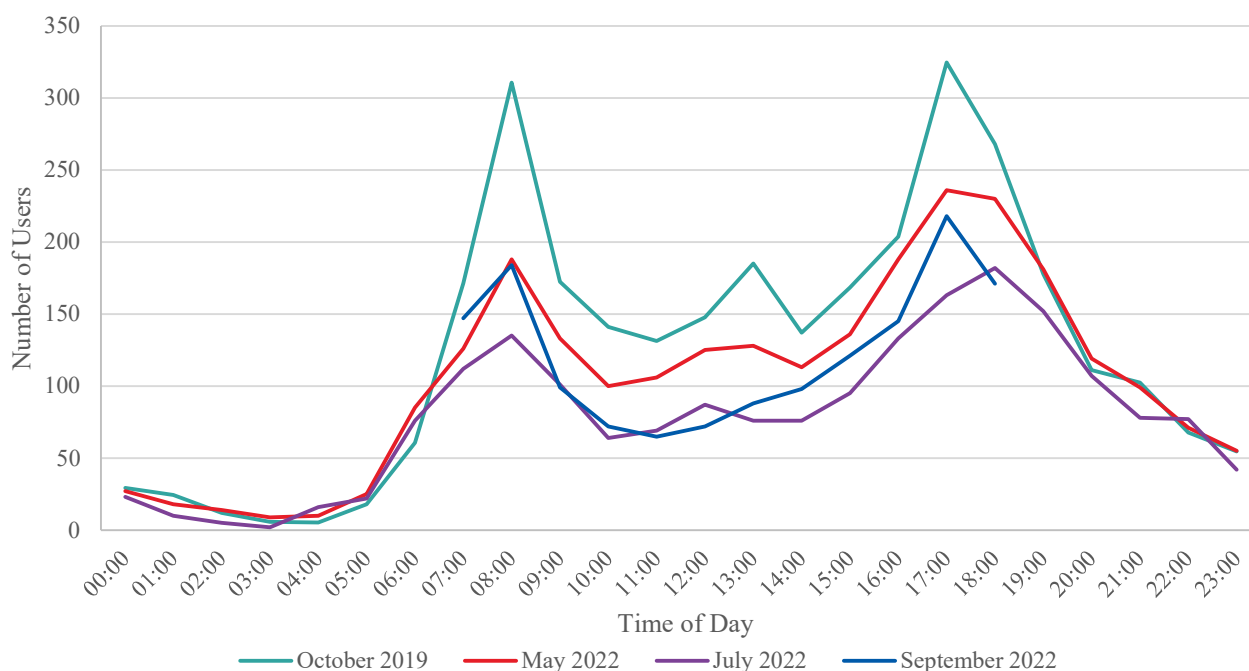


Figure 3.3: 24-Hour Weekday Profile - Combined Pedestrians and Cyclists

The weekday peak hours had a clear tidality, with users in the morning mostly traveling south towards central Guildford and those in the evening traveling north. This was especially evident for cyclists but was also the case for pedestrians. Across all months, the ratio of northbound to southbound trips was approximately 50:50 across the 24-hour period.

Saturdays and Sundays do not exhibit peak hours, as shown in Figure 3.4 and Figure 3.5. Behaviour remained consistent between 2019 and 2022, as well as before and during the trial in 2022, with the lower July numbers caused by the drop in pedestrian numbers discussed above.

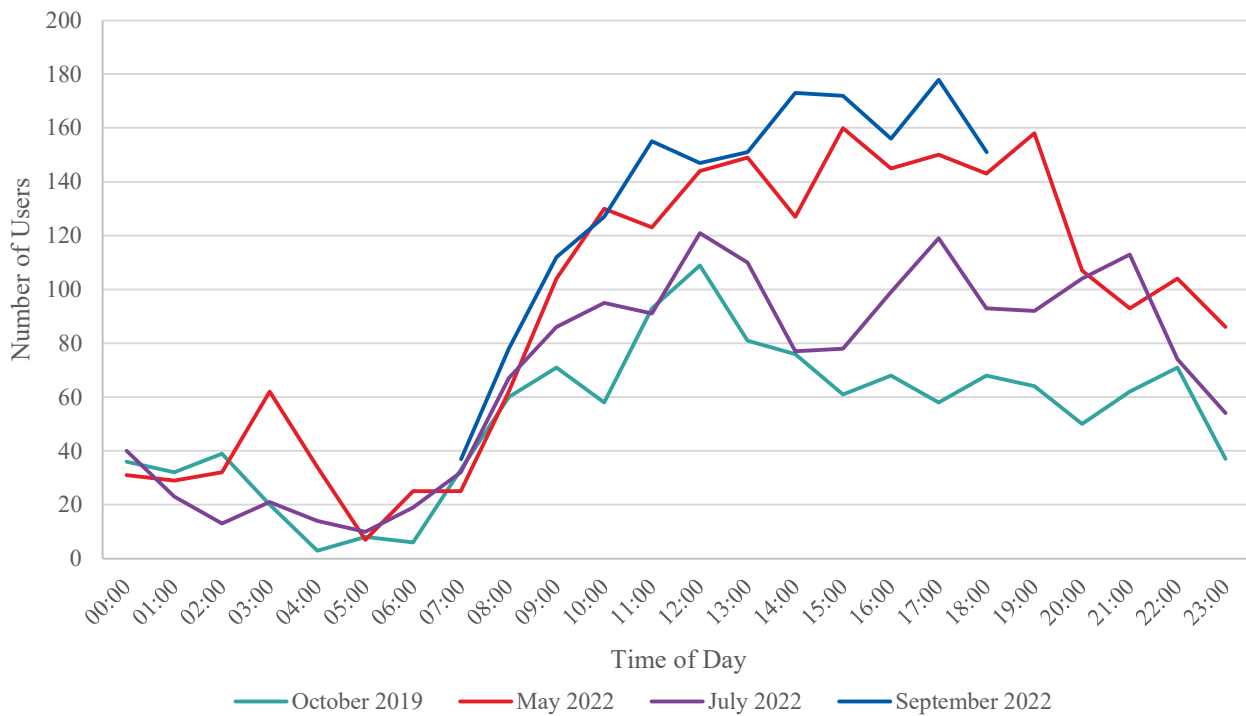


Figure 3.4: 24-Hour Saturday Profile - Combined Pedestrians and Cyclists

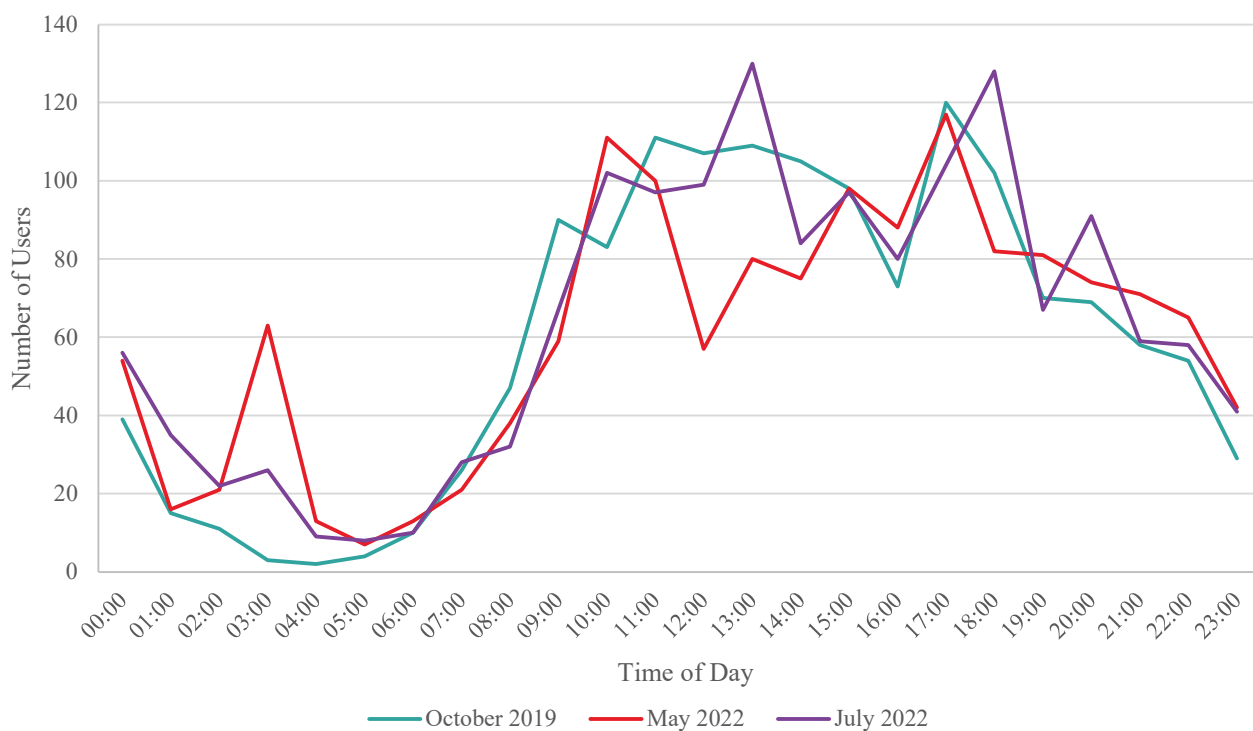


Figure 3.5: 24-Hour Sunday Profile - Combined Pedestrians and Cyclists

Historically, pedestrians and cyclists comprise approximately 30% of all movements on Walnut Tree Close. Figure 3.6 shows the composition of traffic on Walnut Tree Close before and during the trial. The proportion of pedestrians and cyclists is likely to be higher now than in 2019 because of the new student accommodation that has been constructed in the meantime. After the introduction of the trial, pedestrians and cyclists increased to 38% due to the removal of southbound vehicle traffic. Considering the proximity to the university campus, and that the July and September surveys occurred outside of term time, Walnut Tree Close is likely a key walking and cycling route. It is expected that the pedestrian and cyclist share could make up more than half movements on the road during term time.

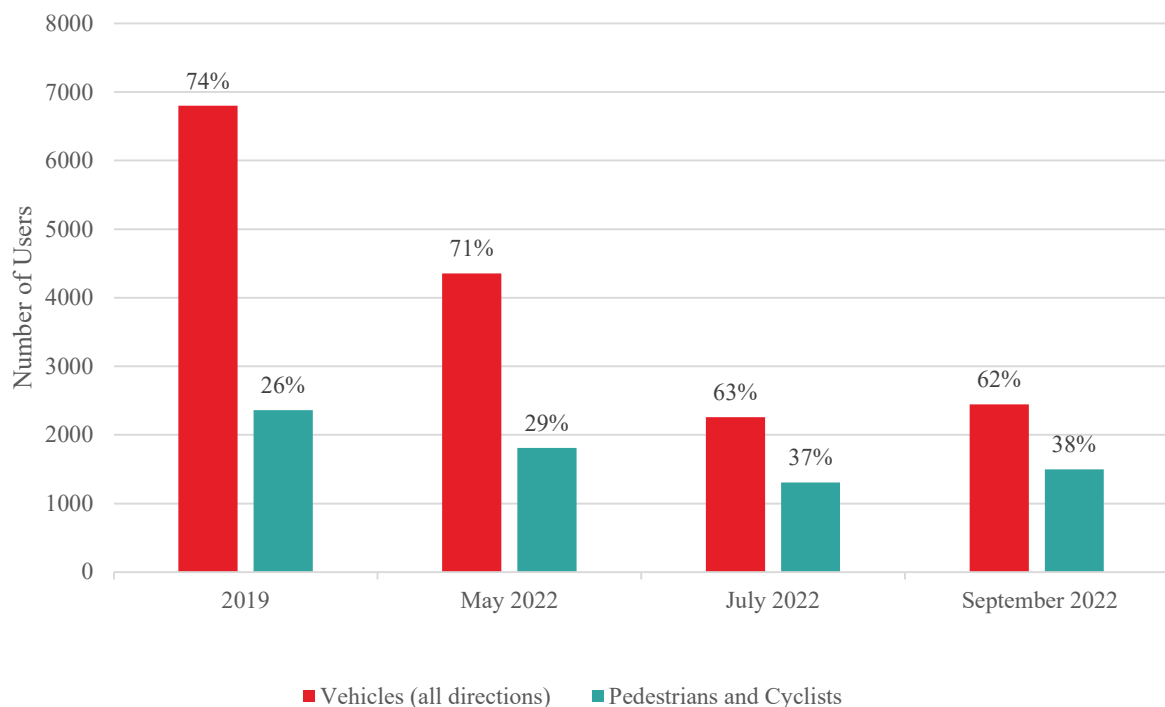


Figure 3.6: Composition of Traffic on Walnut Tree Close

3.4 Impact of the Trial

Table 3.4 shows the fluctuations in northbound vehicles compared to pedestrians and cyclists, based on pre-trial flows in May 2022.

- Pedestrian numbers in July on a weekday and Saturday fall more than both cyclists and vehicles. Numbers on a weekday in September remain fewer than in May and to a greater extent than vehicles. On a Saturday, pedestrian numbers rise above May levels although vehicle numbers are fewer.
- Numbers of cyclists on a weekday and Saturday in July do not fall as much as vehicles, and show a substantial rise on a Sunday. In September, cycling increases although vehicle numbers are fewer.

Table 3.4: Trial Area 12-Hour Traffic Fluctuations

	Pedestrians			Cyclists			Vehicles		
	W'day	Sat	Sun	W'day	Sat	Sun	W'day	Sat	Sun
May 2022	100%	100%	100%	100%	100%	100%	100%	100%	100%
July 2022	-32%	-30%	6%	-4%	-10%	59%	-13%	-17%	-3%
September 2022	-21%	13%	N/A	-3%	4%	N/A	-6%	-1%	17%

On balance, it seems likely that the trial one-way scheme on Walnut Tree Close has led to an increase in walking and cycling activity because numbers of people generally increase whereas the numbers of vehicles fall. However, the outcome is inconclusive due to the timing of the surveys, particularly in the context of university term times, extreme weather conditions and gaps in data.

4. Walnut Tree Close

4.1.1 Northbound Traffic

Northbound traffic on Walnut Tree Close reduced between June 2019 and May 2022. In 2022, northbound vehicle travel remained at similar levels before and during the trial, with slightly lower numbers in July. Table 4.1 shows the total northbound vehicle counts between 7AM-7PM for the four survey periods and relates these to the 2019 baseline. Data that corresponds to the trial period is highlighted in blue.

Table 4.1: 12-Hour Northbound Vehicles on Walnut Tree Close

	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
June 2019	3,508	2,588	2,219	100%	100%	100%
May 2022	2,465	2,051	1,471	-30%	-21%	-34%
July 2022	2,149	1,702	1,432	-39%	-34%	-35%
September 2022	2,325	2,039	1,714	-34%	-21%	-23%

The AM and PM peak hours stayed consistent with a weekday AM peak between 7.15-8.15AM and a PM peak between 5-6PM. Saturday and Sunday typically peak periods occurred between 11.15AM-6.15PM and 12.00-4.00PM, respectively. June 2019 experienced a more defined Sunday peak behaviour with a peak between 12-1PM and a second one between 5-6PM. Figure 4.1 to Figure 4.3 show the 24-hour profiles for weekdays, Saturdays and Sundays across the four survey dates.

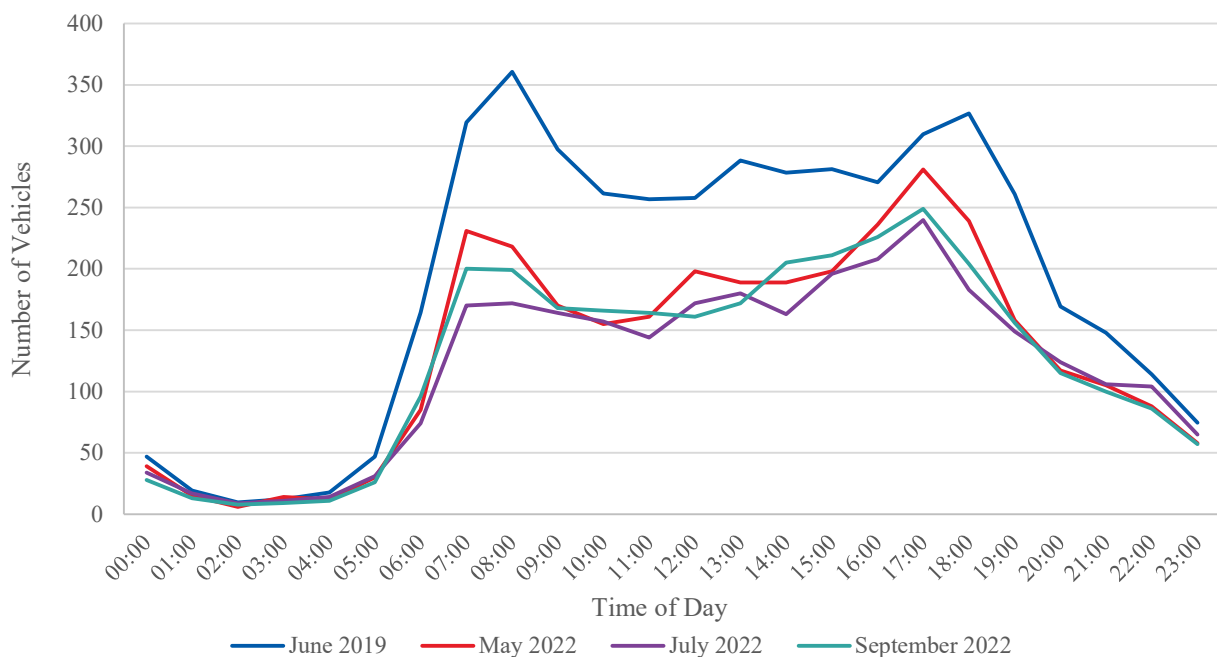


Figure 4.1: 24-Hour Northbound Weekday Vehicle Profile on Walnut Tree Close

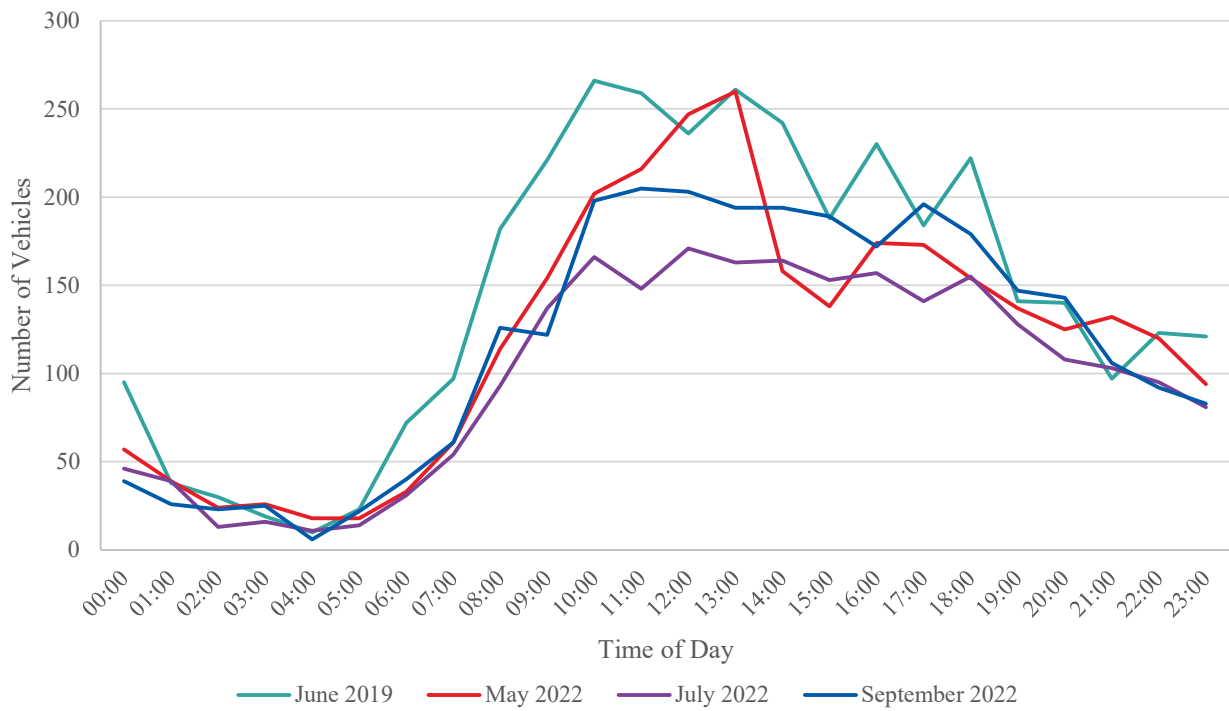


Figure 4.2: 24-Hour Northbound Saturday Vehicle Profile on Walnut Tree Close

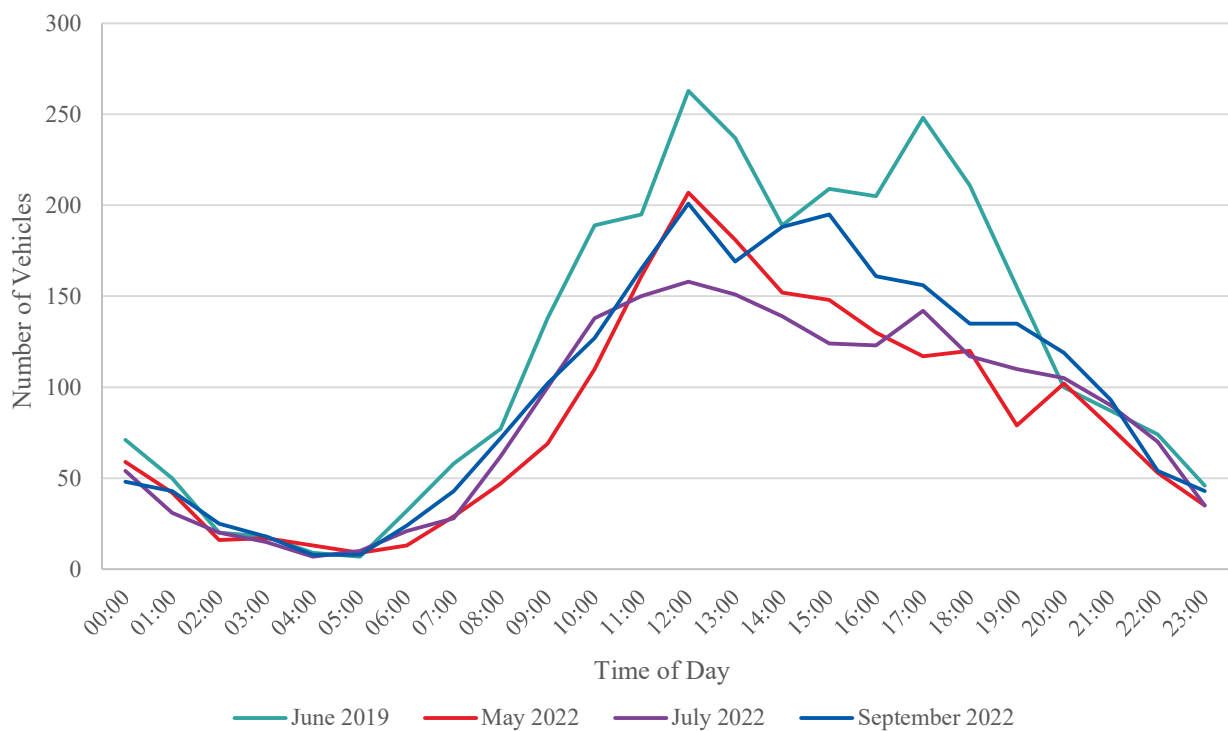


Figure 4.3: 24-Hour Northbound Sunday Vehicle Profile on Walnut Tree Close

4.1.2 Southbound Traffic

Southbound traffic increased between June 2019 and May 2022, both during the week as well as at weekends. The introduction of the northbound one-way as part of the trial prohibited southbound vehicle movements, which resulted in a significant reduction in overall vehicle traffic. Table 4.2 shows the total southbound vehicle counts between 7AM-7PM for the four survey periods and relates these to the 2019 baseline.

It should be noted that the ATC classified a majority of the remaining July and September 2022 southbound movements as motorcycles. As no video footage is available, it could not be confirmed if these were in fact motorcycles or if the system incorrectly classified pedal cycles.

Table 4.2: 12-Hour Southbound Vehicles on Walnut Tree Close

	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
June 2019	1,731	1,146	802	100%	100%	100%
May 2022	1,891	1,590	1,012	+9%	+39%	+26%
July 2022	109	90	70	-94%	-92%	-91%
September 2022	121	86	52	-93%	-92%	-94%

Figure 4.4 shows the average profile of southbound vehicles across a 24-hour weekday period. The AM and PM peak hours stayed relatively consistent between June 2019 and May 2022. The weekday peak in June 2019 took place between 8-9AM with a slightly earlier peak of 7.30-8.30AM in May 2022 and a PM peak between 5-6PM. Weekends did not exhibit peak hours, apart from a May 2022 Saturday peak between 10AM-1PM, as shown in Figure 4.5 and Figure 4.6.

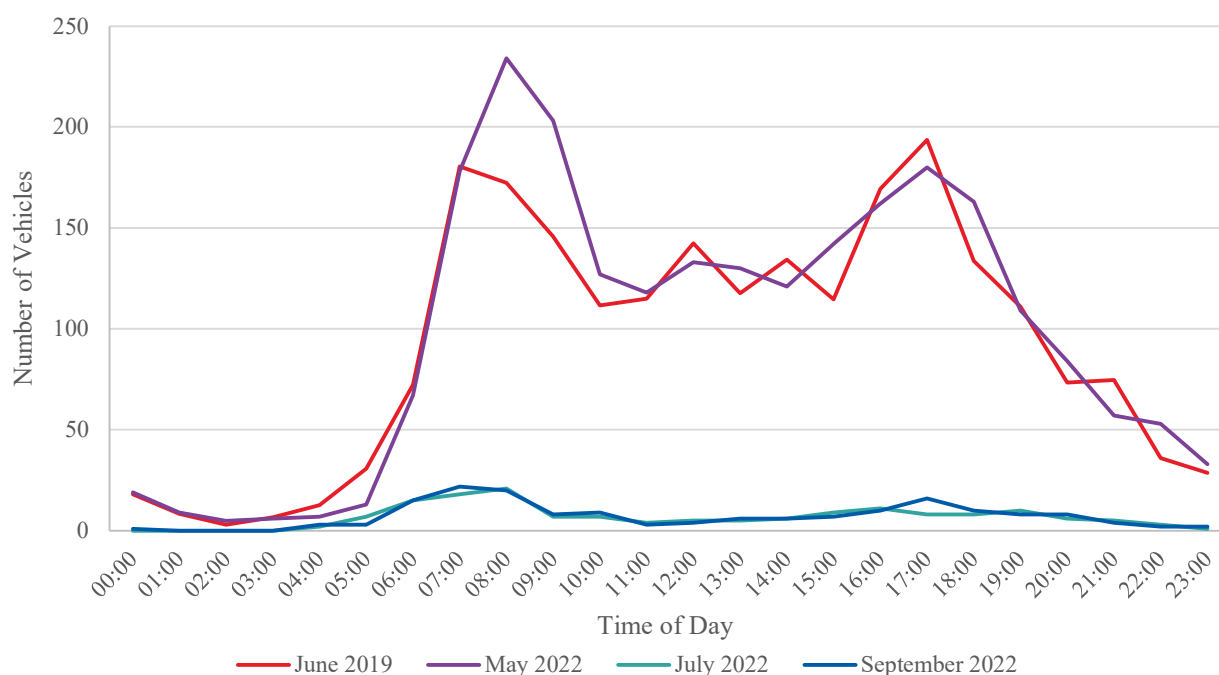


Figure 4.4: 24-Hour Southbound Weekday Vehicle Profile on Walnut Tree Close

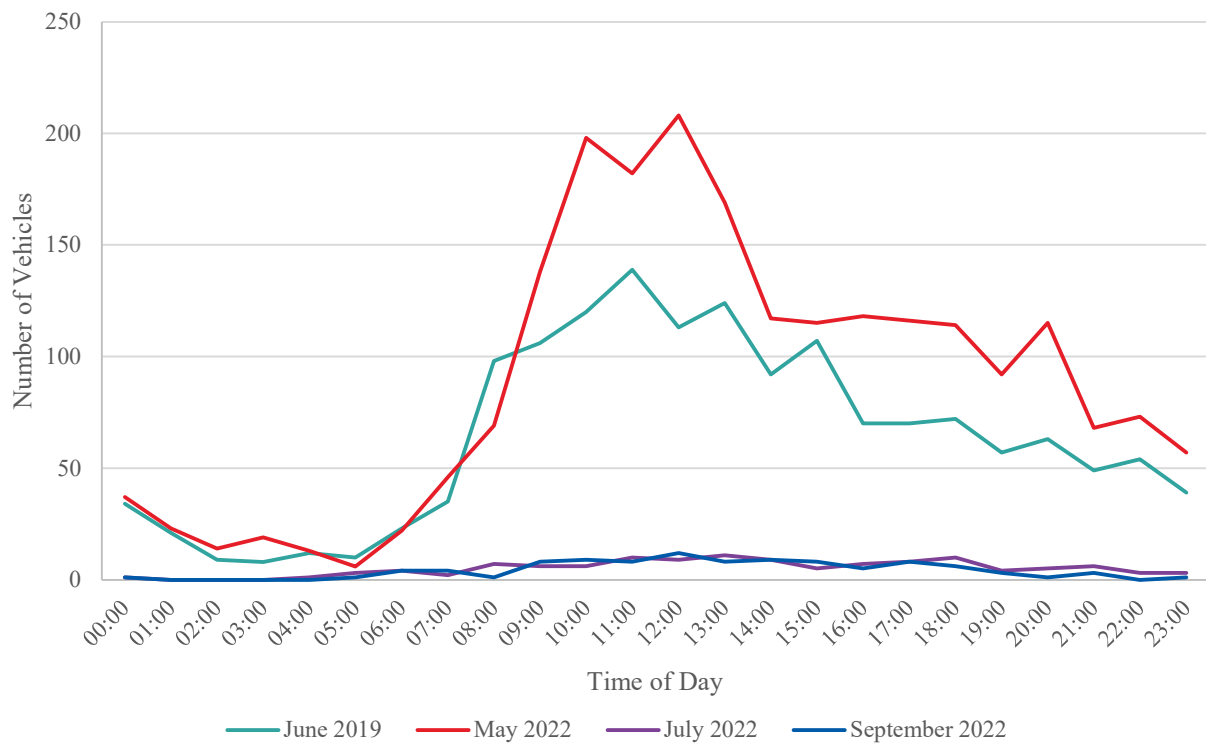


Figure 4.5: 24-Hour Southbound Saturday Vehicle Profile on Walnut Tree Close

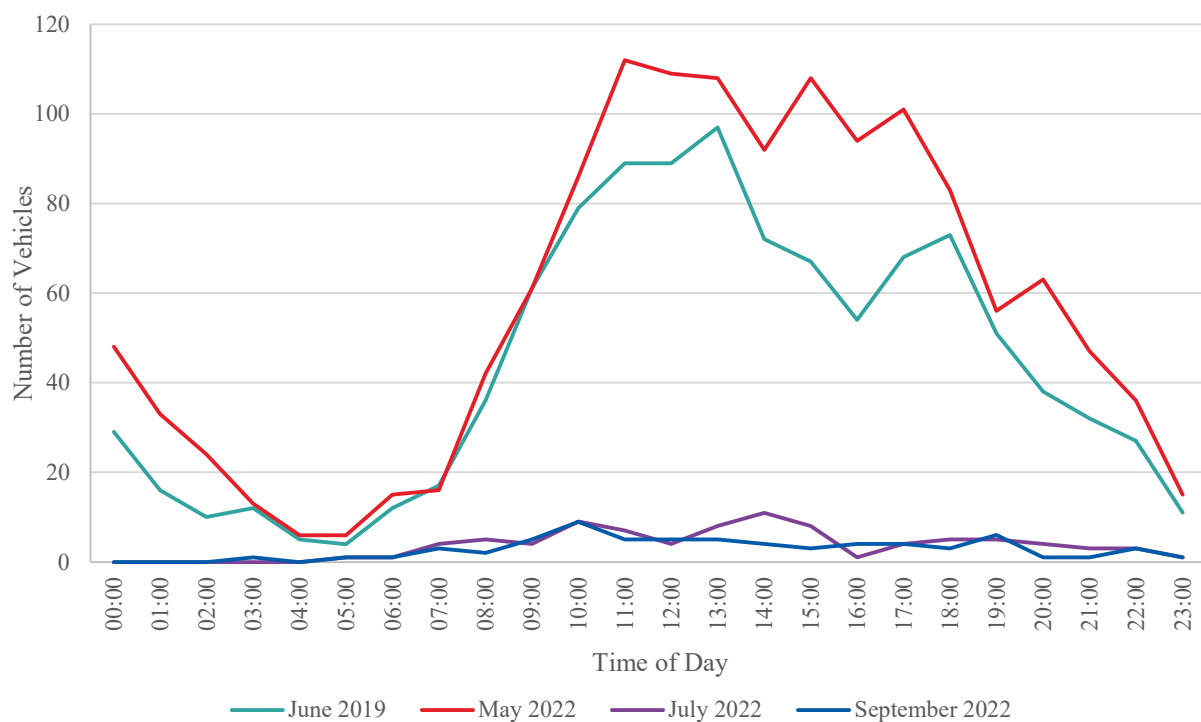


Figure 4.6: 24-Hour Southbound Sunday Vehicle Profile on Walnut Tree Close

The split of traffic on Walnut Tree Close prior to the introduction of the trial is biased northbound rather than southbound. In June 2019, southbound traffic made up 32% of vehicle traffic on Walnut Tree Close, which increased to 42% by May 2022, as shown in Table 4.3. Taking an average southbound split of 37%, approximately 1,700-1,800 vehicles would have travelled south in July and September 2022 respectively, if the one-way restriction had not been in place. This estimate is summarized in Table 4.3 and sections 5 and 6 discuss the redistribution in further detail.

Table 4.3: Estimated 24-Hour Weekday Redistributed Southbound Traffic from Walnut Tree Close

Month	Northbound		Southbound on Walnut Tree Close		Southbound Redistributed	
June 2019	4,592	68%	2,206	32%		
May 2022	3,192	58%	2,353	42%		
Average				37%		
July 2022	2,887	63%			1,728	37%
September 2022	3,030	63%			1,813	37%

5. A322 Woodbridge Road

The trial may have caused an increase in traffic on the A322. However, as identified in Table 2.1, the dataset for the A322 is incomplete, which makes a direct comparison of before and during the trial difficult. Figure 5.1 shows the evolution of traffic on the A322 between May 2018 and September 2022, based on the three count time periods. The covid-19 pandemic caused a significant drop in vehicle volumes in May 2020, but volumes have recovered and stayed consistent with pre-pandemic levels. A small increase in total traffic occurred in September 2022. This was more pronounced on Saturdays and Sundays.

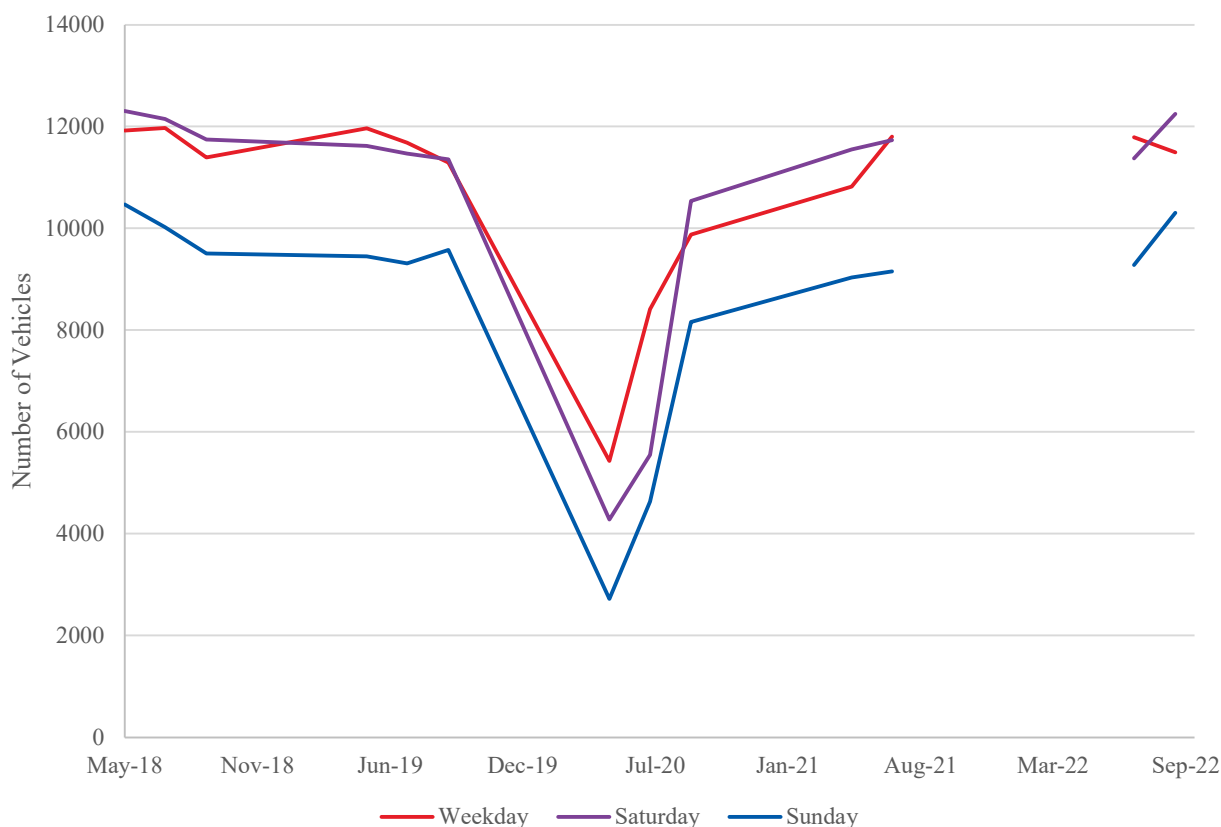


Figure 5.1: Historical 24-Hour Southbound Traffic Volumes on the A322

Note: data missing for a few months in 2021/2022

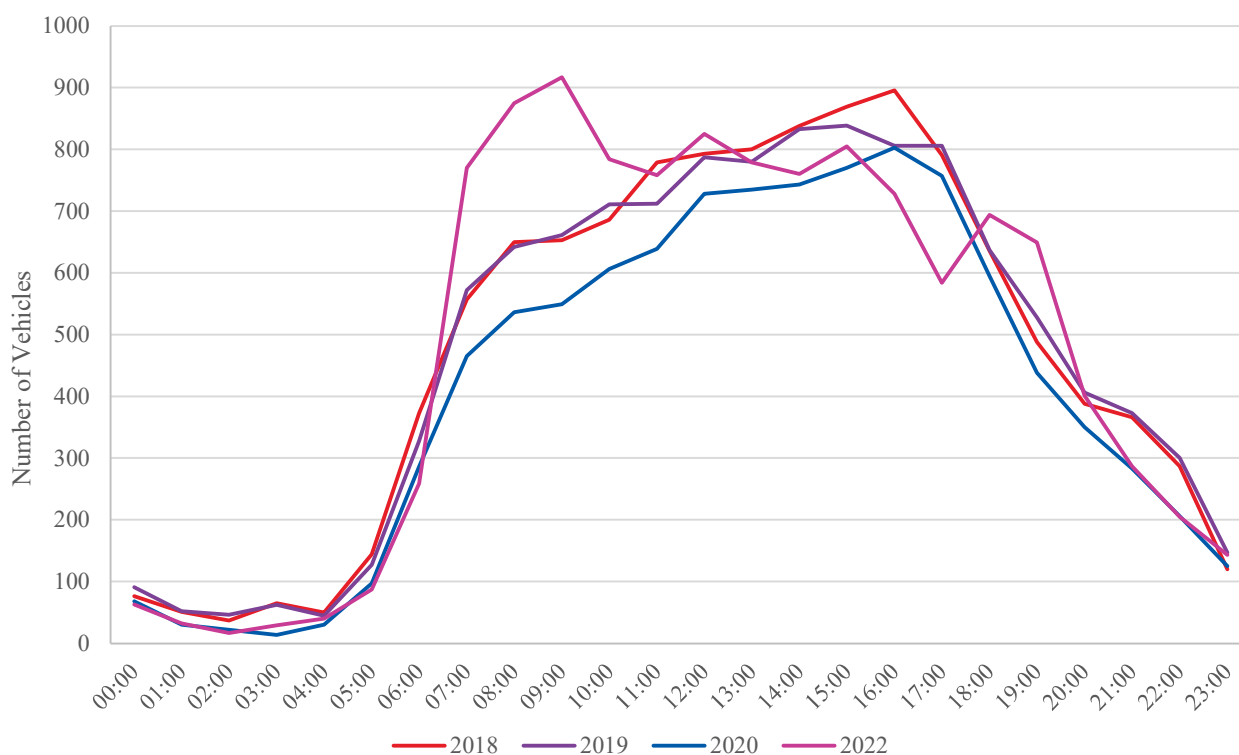
Table 5.1 details the differences in traffic volumes between 2019 and 2022. Overall, traffic behaviour remained consistent across the different time periods, with the trial period (September 2022) recording 2% more southbound vehicles on an average weekday than September 2019. Due to the lack of data, the July and September data could not be compared to a May 2022, pre-trial baseline.

Weekday flows for the A322 show an 8% increase in traffic in September 2022 compared to the 2019 baseline. Further investigation of the data indicates that the northbound flow increased by 23%, so the 8% increase southbound is an anomaly and not due to redistribution from Walnut Tree Close. Initial thoughts were that car free Sunday on 25 September 2022 may have affected traffic but the data is mid-month and does not include the 25th.

Table 5.1: Evolution of 24-Hour Southbound Traffic between 2019 and 2022 on the A322

Weekday	May	July	September	May	July	September
2019	11,963	11,683	11,291	100%	100%	100%
2022	N/A	11,788	11,491	N/A	1%	+2%
Saturday	May	July	September	May	July	September
2019	11,618	11,469	11,352	100%	100%	100%
2022	N/A	11,372	12,249	N/A	-1%	+8%
Sunday	May	July	September	May	July	September
2019	9,449	9,310	9,573	100%	100%	100%
2022	N/A	9,281	10,301	N/A	0%	+8%

Figure 5.2 shows the average September weekday profile for the southbound lane of the A322 over the past five years. The graph does not include September 2021, due to the gap in data. Overall, traffic behaviour remained consistent across the different time periods, with the trial period (September 2022) recording 2% more southbound vehicles on an average weekday than September 2019. September 2022 exhibits a more significant morning peak between 8-10AM, compared to the previous years. However, it also records lower volumes during the evening peak. A similar higher morning peak also occurs on Saturdays and Sundays as shown in Figure 5.3 to Figure 5.4. Due to the lack of data, the July and September data could not be compared to a March 2022, pre-trial baseline.

**Figure 5.2: Average Southbound 24-Hour Weekday Profile on the A322**

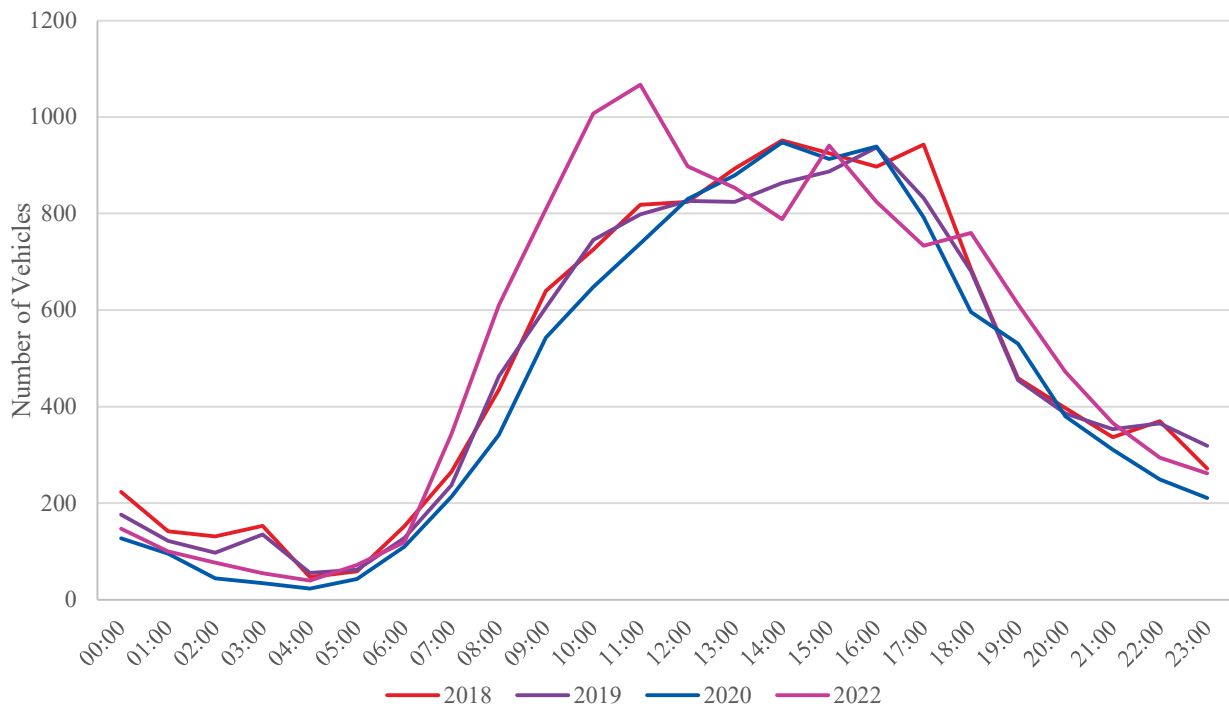


Figure 5.3: Average Southbound 24-Hour Saturday Profile on the A322

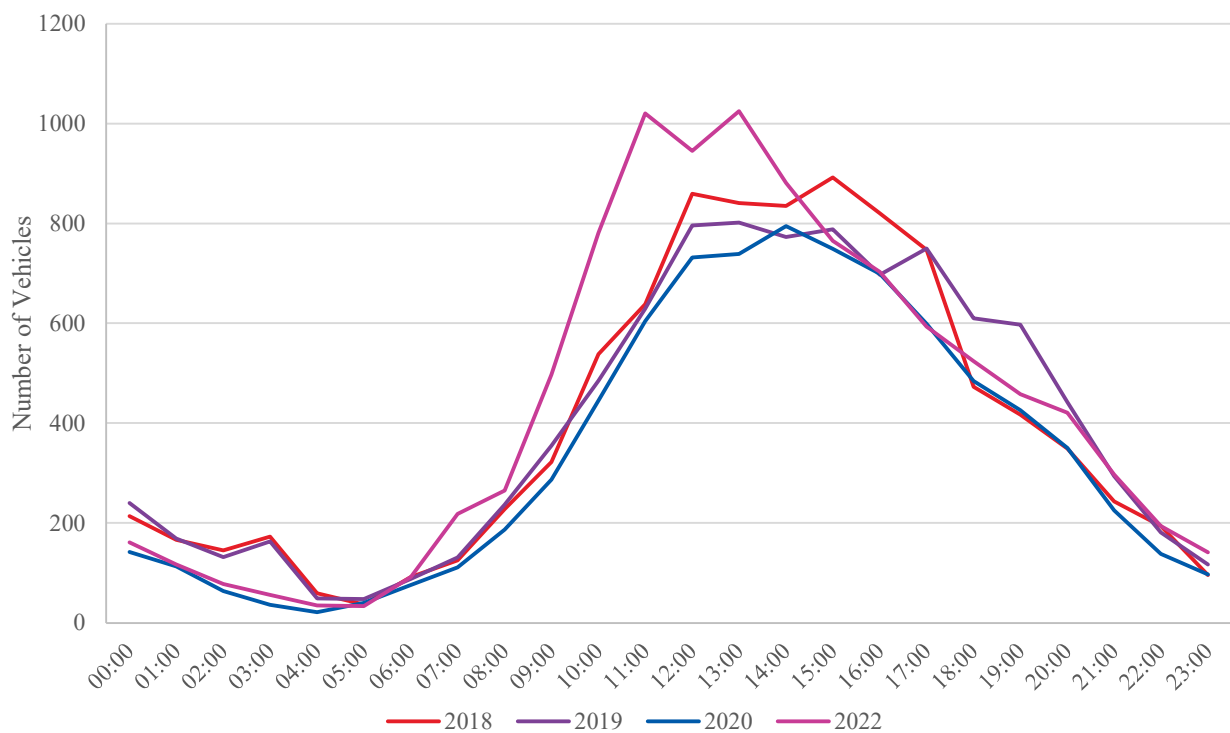


Figure 5.4: Average Southbound 24-Hour Sunday Profile on the A322

On an average weekday, 100-200 more vehicles used the southbound lane of the A320 after the implementation of the trial. This is a small proportion of the estimated 1,700-1,800 redistributed trips from Walnut Tree Close (section 4.1.2 refers).

6. A320 Stoke Road

The trial did not cause an increase in southbound traffic volumes on the A320. Figure 6.1 shows the evolution of traffic on the southbound lane of the A320 between May 2018 and September 2022, based on the three count time periods of May, July and September. As with the A320, the covid-19 pandemic caused a significant drop in vehicle volumes in May 2020, but volumes have recovered and have stayed consistent with pre-pandemic levels. Table 6.1 details the differences in traffic volumes between 2019 and 2022. Southbound weekday traffic volumes decreased by 9% after the introduction of the trial, compared to the 2019 baseline. Saturday volumes decreased by 13-15% and those on Sunday by 26-29%.

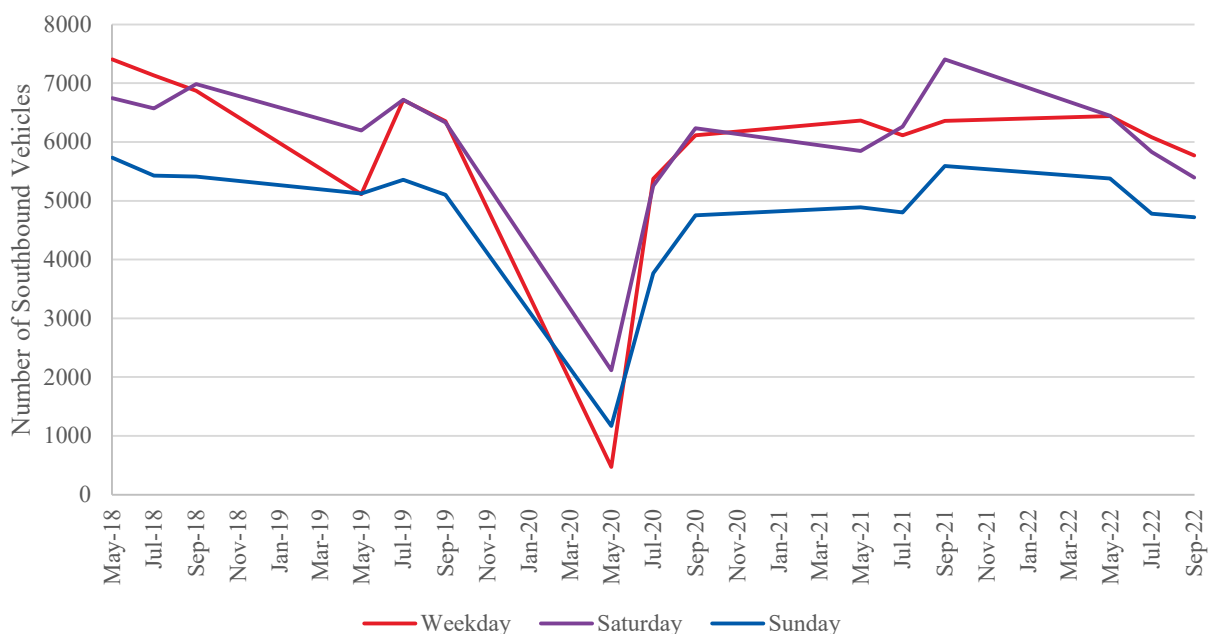


Figure 6.1: Historical 24-Hour Southbound Traffic Volumes on the A320

Table 6.1: Evolution of 24-Hour Southbound Traffic between 2019 and 2022 on the A320

Weekday	May	July	September	May	July	September
2019	5,112	6,712	6,356	100%	100%	100%
2022	6,439	6,083	5,770	+26%	-9%	-9%
Saturday	May	July	September	May	July	September
2019	6,198	6,721	6,334	100%	100%	100%
2022	6,444	5,829	5,394	+26%	-13%	-15%
Sunday	May	July	September	May	July	September
2019	5,125	5,357	5,103	100%	100%	100%
2022	5,376	4,781	4,719	+5%	-29%	-26%

Figure 6.2 shows the average southbound September weekday profile for the A320 over the past five years. September was selected as the comparative month because this experienced the least covid-19 impact in 2020 and because traffic patterns are expected to have settled after the introduction of the trial in 2022. Overall, traffic behaviour remained consistent across the different time periods, with the trial period (September 2022) recording slightly fewer vehicles than the previous years.

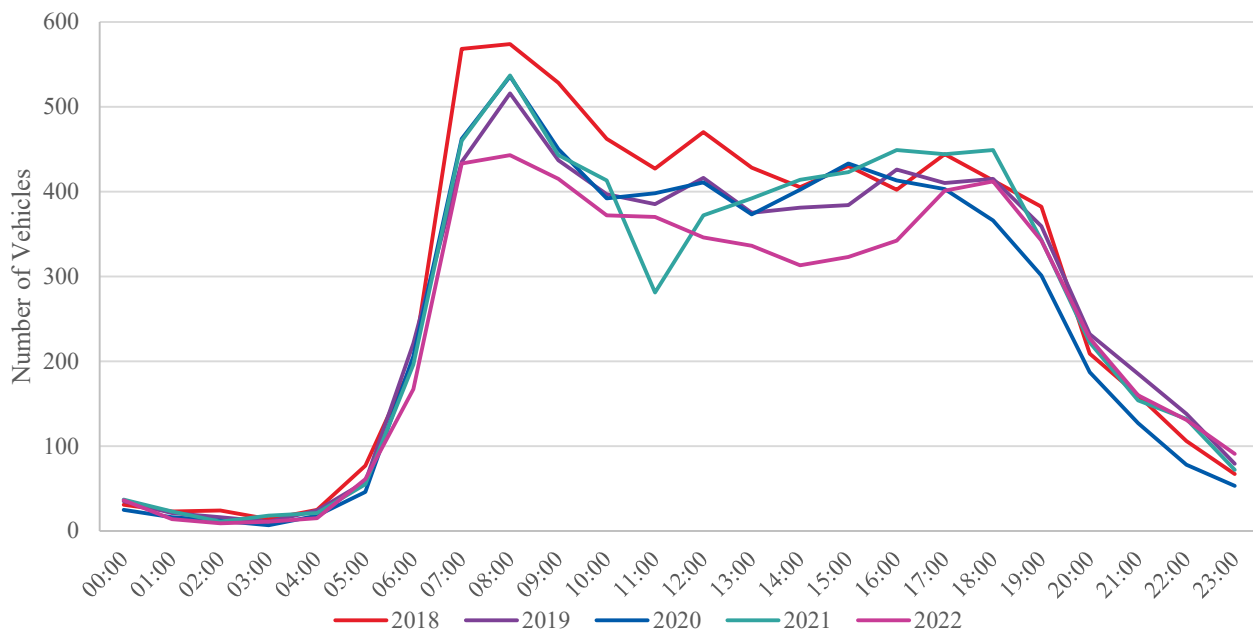


Figure 6.2: Average Historical 24-Hour Southbound Weekday Profile on the A320

Table 6.2 compares the three count periods in May, July and September 2022 and shows that the A320 had slightly lower vehicle counts after the introduction of the trial on Walnut Tree Close. Traffic reduced by up to 10% on weekdays and up to 16% on weekends, compared to May 2022. Figure 6.3 shows the average profile of southbound vehicles across a 24-hour weekday period, which reflects the reduction of overall southbound traffic.

Table 6.2: Evolution of Southbound Traffic Volumes on the A320

Month	Weekday	Saturday	Sunday
May 2022	100%	100%	100%
July 2022	-6%	-10%	-11%
September 2022	-10%	-16%	-12%

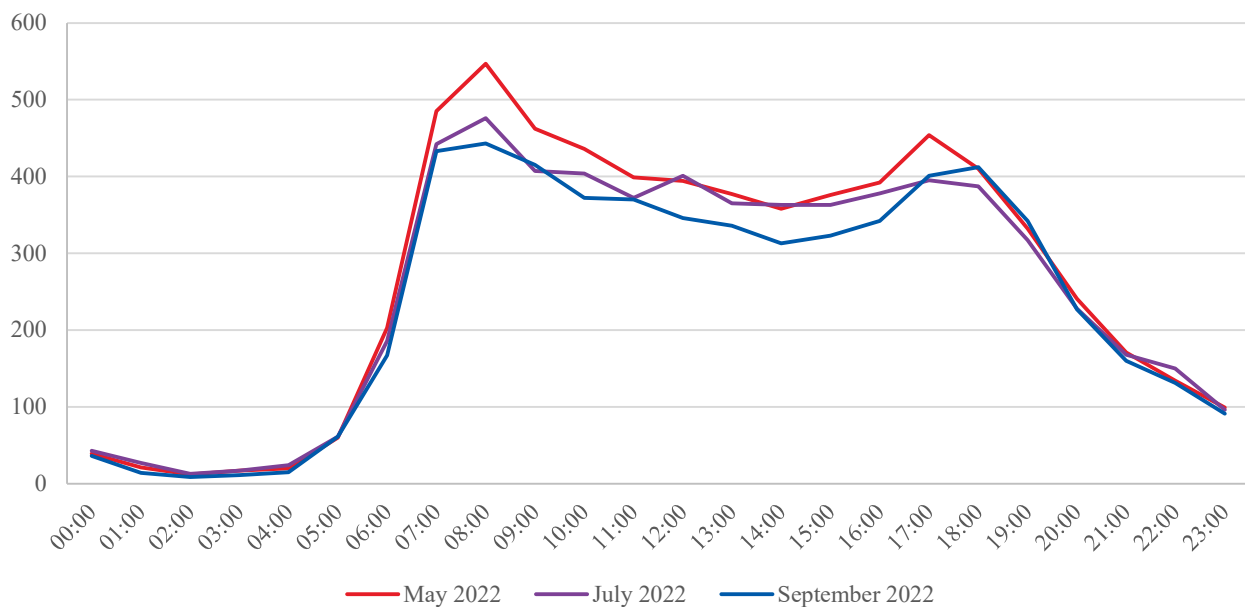


Figure 6.3: Average Southbound 24-Hour Weekday Profiles May-September 2022 on the A320

7. Junctions

7.1 Station View

Overall, movements at the Station View junction with Walnut Tree Close decreased after the introduction of the trial. Figure 7.1 outlines the junction arrangement and the turning movements for the three survey dates.

Southbound movements on Walnut Tree Close (arm A to arm B) decreased during the trial, due to the introduction of the one-way restriction. Movements in the northbound direction (arm B to arm A) were 32% higher in July 2022 and 19% higher in September 2022, both compared to the May 2022 baseline. The increase northbound may be local traffic that ends somewhere off Walnut Tree Close, which has redistributed from a southbound direction to northbound.

Comparing May and July 2022, the reduction in vehicles turning left from Station View (arm C to arm A) matches the increase in vehicles turning right (arm C to arm B). The overall exit volume stayed similar at 1,601 vehicles in May 2022 and 1,643 in July 2022.

Construction on the access to/from the station car park concluded between July and September 2022, which opened up arm D, as shown in Figure 7.2. For comparability, turning movements from arm D are summed to arm C in Figure 7.1, as both arms turn onto Walnut Tree Close. However, the addition of arm D increased traffic turning out onto Walnut Tree Close. Additionally, this also enabled in-turning movements from Walnut Tree Close towards Station View.

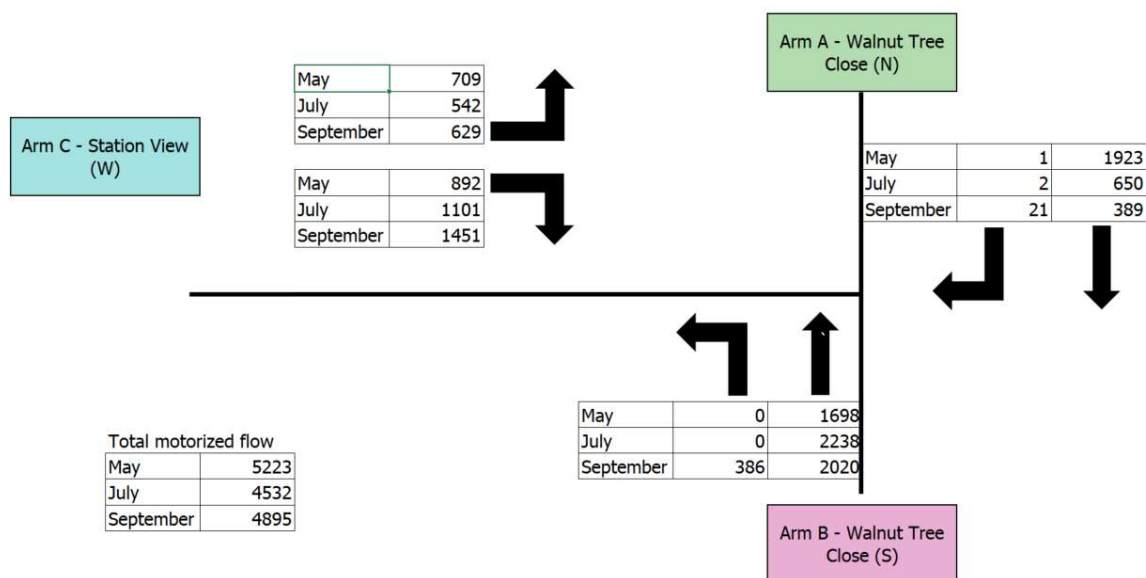


Figure 7.1: Turning Movements at the Station View Junction, May to September 2022

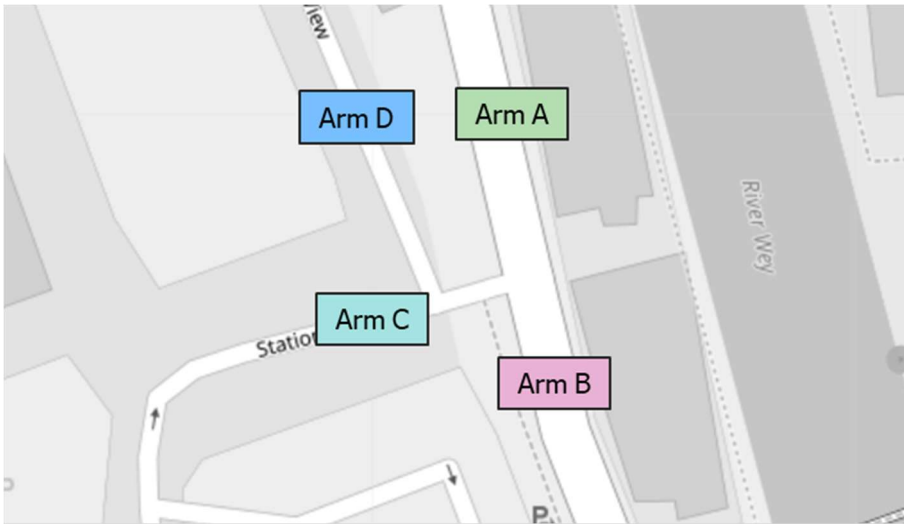


Figure 7.2: Updated Station View Junction Arrangement, September 2022

7.2 A25/Woodbridge Meadows

Data for the A25/Woodbridge Meadows junction is for July and September 2022 only. Hence, it is not possible to compare turning movements to the pre-trial state. Figure 7.3: shows the turning movements which stayed consistent between July and September.

We attempted to use the trial area ATC data as a proxy for the pre-trial in- and out-turns from Woodbridge Meadows. However, the presence of busy industrial units including the Royal Mail Delivery Centre means that the trial area data would not be representative as these units are likely predominantly accessed from the north via the A25. The trial area data would subsequently not capture these trips.

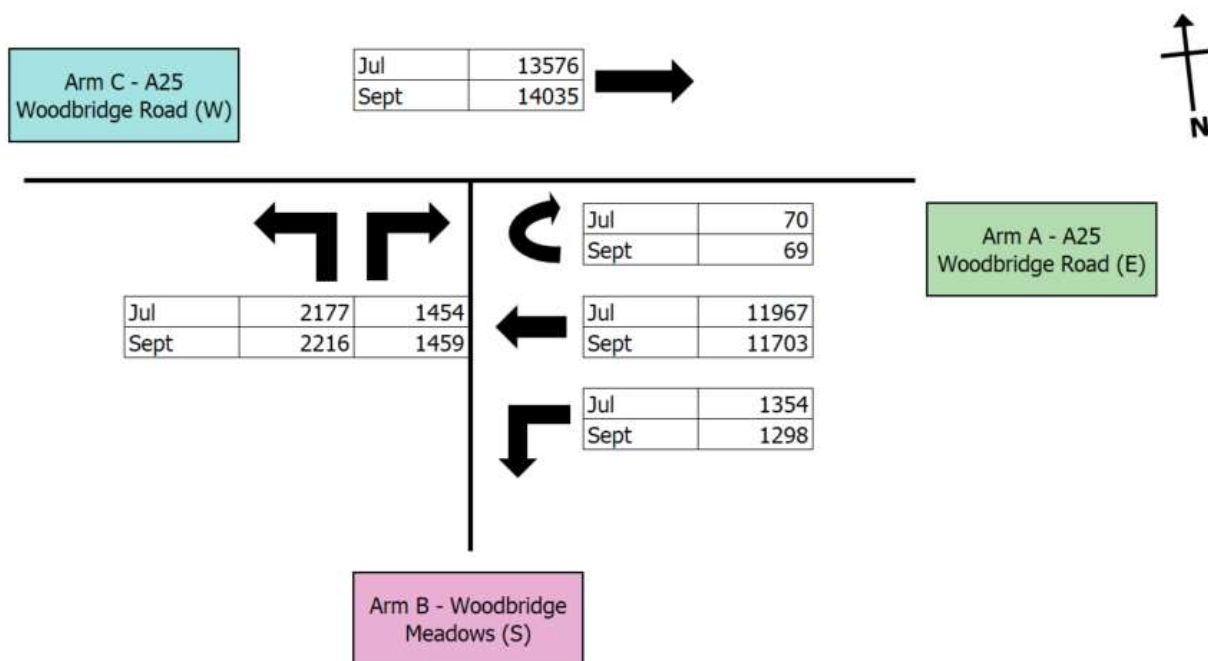


Figure 7.3: Turning Movements at the Woodbridge Meadows Junction, July to September 2022

8. Conclusions

This report assesses the impact of the Walnut Tree Close one-way trial on walking, cycling and vehicle flows. The assessment compares traffic data for four periods: prior to the covid-19 pandemic, year 2022 before the scheme was implemented, two months after implementation and four months after.

On balance, it seems likely that the trial one-way scheme on Walnut Tree Close has led to an increase in walking and cycling activity. This is because the walking and cycling flows generally increase between May and September whereas the numbers of vehicles fall. However, the outcome is inconclusive due to the timing of the surveys, and particularly in the context of university term times, extreme weather and gaps in data.

Peak hour behaviour remained consistent across all months and types of users on Walnut Tree Close. Cyclist peak behaviour showed a strong tidality, with most cyclists travelling south in the mornings and north in the evenings.

Northbound vehicles numbers within the trial area did not change because of the trial. It is estimated that approximately 1,700-1,800 vehicles in a 24-hour period on a typical weekday redistributed from Walnut Tree Close to other roads within the network because of the trial.

In the wider area beyond Walnut Tree Close, southbound traffic on the A322 increased by 100-200 cars between 2019 and 2022 over 24 hours on weekdays. Attributing this solely to the trial is difficult, as 2022 data prior to the trial is not available. The increase in traffic on the A322 only accounts for about 10% of the redistributed Walnut Tree Close traffic. The impact on the A322 is only 2%, which is within the limits of typical daily fluctuation and would not be discernible to other road users.

The data does not show an increase in southbound traffic on the A320 because of the trial. Vehicle volumes during the trial decreased in comparison to the 2019 and May 2022 baselines. The typical weekday flow fell by 586-629 vehicles compared with 2019, and by 356-669 compared to May 2022.

The analysis does not show an increase in traffic on the A322 and A320 because of the one-way trial on Walnut Tree Close. Figure 8.1 summarises the vehicle volumes on all three roads and shows the difference in volumes between the 2019 baseline and July 2022. It is likely that the remaining traffic that can't be accounted for redistributed via The Chase. It may be appropriate to assess traffic flows on The Chase, subject to the availability of historical traffic count data.

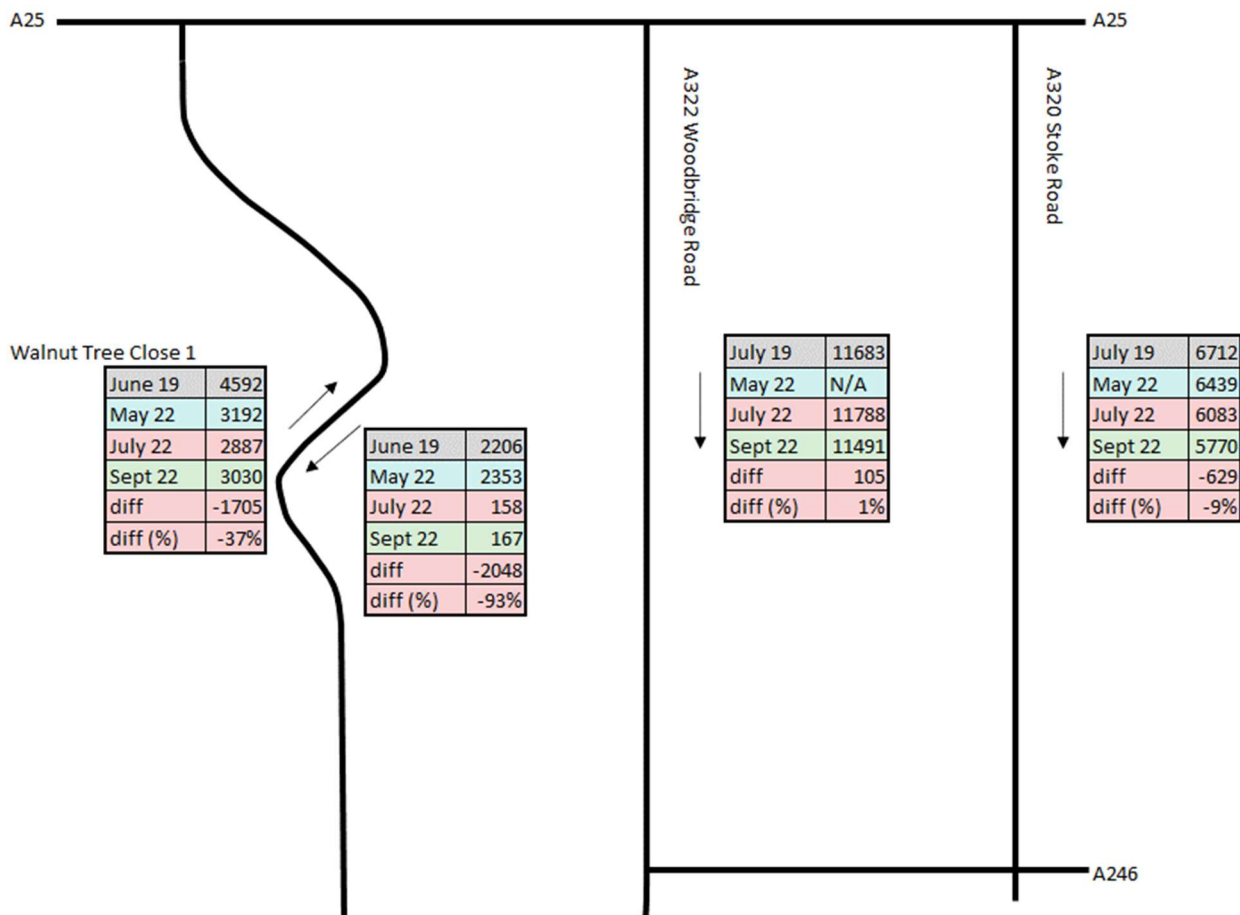


Figure 8.1: Summary of Scheme Impact

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