

Bath's Clean Air Zone

Appendix 2



Bath & North East
Somerset Council

Improving People's Lives

Appendix 2: Investigating traffic displacement concerns

The purpose of Bath's Clean Air Zone is to reduce air pollution and improve vehicle compliance in line with minimum emission standards, while minimising the impact of the CAZ on normal traffic flows in and around Bath.

Traffic flows have been substantially impacted by the Covid-19 lockdowns in 2020 and are now returning to pre-pandemic levels¹ and in the case of LGV's and HGV's, exceeding pre-pandemic levels. Data gathered from permanent automatic traffic counts in and around the zone tell us that in 2021, general traffic flows across a 7-day week were down by 12% in the urban area outside of the zone, and down by 15% in the wider B&NES area, compared with 2017/2018 (our baseline years).

Additionally, as published within the Central Evaluation Report produced by Ipsos UK, it was further found that *there is no significant deviation in the weekday traffic flow trends (incrementally increasing January to July 2021) at any of the eight ATC sites, whether outside the CAZ (three sites) or within (five sites). This suggests the CAZ launch had a minimal impact on the aggregate level of traffic inside and outside the CAZ area^{2*}.*

A key commitment for the council is to monitor any concerns arising from the introduction of the CAZ, so we are investigating 17 discrete locations where the public has expressed concern over a perceived increase in traffic in their communities since the zone's launch. In addition, we have provided extra permanent ANPR cameras to monitor traffic flows and fleet composition through Bathampton where the community expressed concerns about potential displacement during the development of the Full Business Case.

Traffic modelling was completed at the Full Business Case stage of the CAZ. This modelling provided a forecast on how the scheme may affect the volumes of traffic in Bath once a charging CAZ was introduced. Where applicable within this appendix, we refer to the modelling forecast when making comments about monitoring outcomes. The Transport Modelling Forecast Report can be accessed using the following link: https://beta.bathnes.gov.uk/sites/default/files/2020-10/appendix_evi_674726.br_042.fbc-17_t4_transport_model_forecast_draft.pdf

The areas of concern, and what we're doing to log, investigate and monitor these are listed in the figures and table below. The work is ongoing and will be updated in subsequent reports.

In terms of air quality, we report the nearest diffusion tube data for the area in question, to understand the local air quality situation. The legal limit for annual average NO₂ pollution is 40 µg/m³. To ensure compliance with the Ministerial Direction, we are generally concerned with any site where NO₂ concentrations are currently over 36 µg/m³, to ensure that they don't breach the 40 µg/m³ limit as an annual mean.

Throughout this report we mention the traffic volumes during AM-peak, PM-peak, and inter-peak times. The AM peak refers to the hour where the highest volume of traffic occurs during the morning. The PM-peak refers to the hour where the highest volume of traffic occurs during the evening, the inter-peak period is between these two times.

¹ Office for National Statistics. Economic activity and social change in the UK, real-time indicators, 2021. <https://www.ons.gov.uk/economy/economicoutputandproductivity/output/bulletins/economicactivityandsocialchangeintheukrealttimeindicators/23september2021>

² Department for Environment, Food and Rural Affairs. Evaluation of local NO₂ plans, 2022. <http://randd.defra.gov.uk/Default>.

Additionally, traffic volumes are often averaged using both a 5-day and 7-day average. A 5-day average has been calculated using the volumes recorded Monday-Friday (weekday). A 7-day average has been calculated using all seven days of the week.

Throughout this report we also reference a range of monitoring methods, the following bullet points outline these methods and the data that they provide.

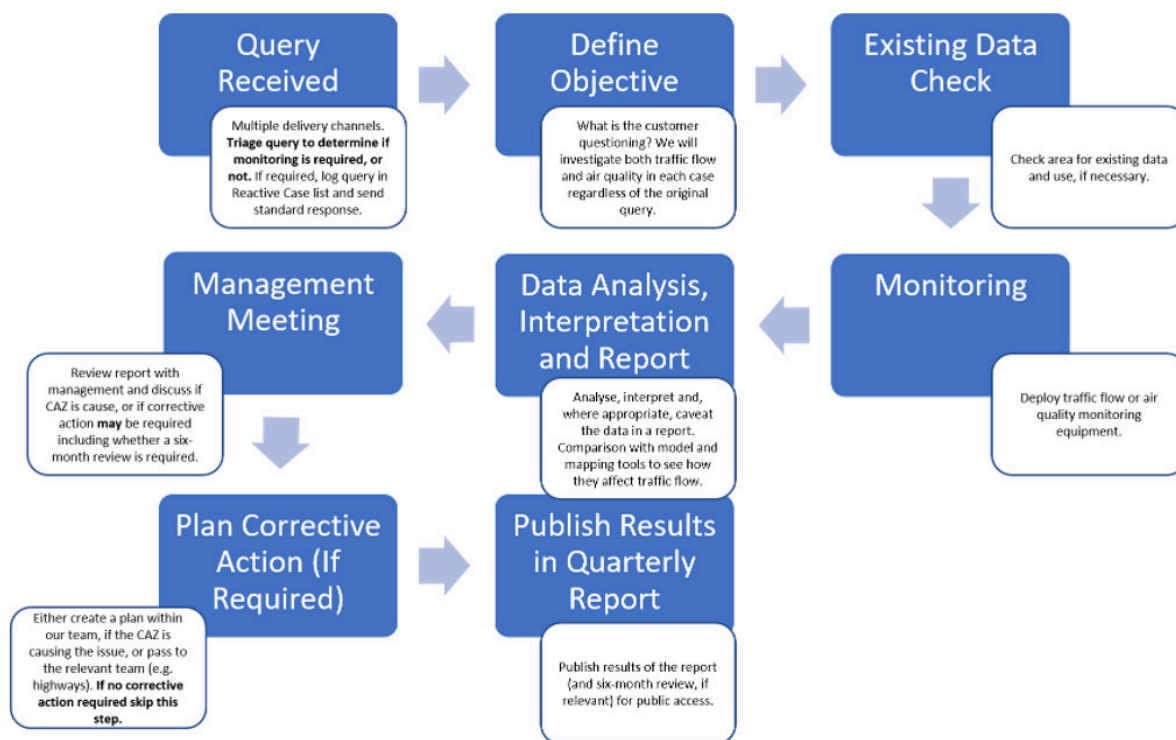
- **Temporary Radar Counter**- Records the volume of traffic only. No speed or classification data is available.
- **Temporary Automatic Traffic Counters (ATC)**- Records the volume and speed of vehicles. The classification is also recorded however, this is based on axle-distance so is not always accurate, particularly when classifying cars/vans and small HGVs
- **Temporary automatic number plate recognition camera (ANPR)**- ANPR cameras can accurately record the volume and classification of vehicles. In addition, the compliance status of the vehicle can also be determined by the vehicle's registration number., i.e. whether a vehicle is of Euro 6 diesel or Euro 4 petrol standard.

*Traffic flow data is published in the CAZ Annual Performance Report 2021 accompanying this appendix. Due to unprecedented changes in travel behaviour during the Covid-19 lockdowns, we are discounting data from 2020 for comparison purposes. In 2019 there was insufficient data collected for comparison purposes, and 2017 has also been used where months within 2018 were unavailable.

How we're investigating possible traffic displacement

Since the launch of the CAZ in March 2021, we have logged and investigated comments from residents about potential CAZ-related impacts. Figure 1 shows the process for following up and investigating these queries.

Figure 1: Process for following up and investigating traffic displacement concerns



The following summary table provides an update on the locations of concern that are within this appendix and the status of the case regarding the monitoring we have completed.

Location of Concern	Status of case
Whiteway Road	Ongoing monitoring required
Lansdown Lane	Ongoing monitoring required
Oldfield Park (Lyndhurst Road)	Ongoing monitoring required
Charlcombe Lane	Ongoing monitoring in progress
Upper Camden Place	Review required after the full reopening of Cleveland Bridge
Southdown Road	Monitoring complete- no displacement issues confirmed
Old Newbridge Hill	Monitoring complete- no displacement issues confirmed
Twerton High Street	Ongoing monitoring in progress
Shophouse Road	Ongoing monitoring required
Rosemount Lane	Monitoring complete- no displacement issues confirmed
Sham Castle Lane	Monitoring complete- no displacement issues confirmed
Prior Park Road	Monitoring complete- no displacement issues confirmed
Bradford Road and Brassknocker Hill	Review required after the full reopening of Cleveland Bridge
Penn Hill Road	Monitoring complete- no displacement issues confirmed
Englishcombe Lane	Ongoing monitoring required
Norton St Philip	Monitoring complete- no displacement issues confirmed
Cavendish Road	Ongoing monitoring required

Locations in the vicinity of Whiteway Road, Lansdown Road and Oldfield Park have been regularly monitored in response to concerns about potentially displaced traffic since the launch of the CAZ in March 2021. Within this appendix, we have provided detailed information on the recent temporary ANPR monitoring which took place in these locations, the outcomes of this monitoring and how it compares to our previous investigations.

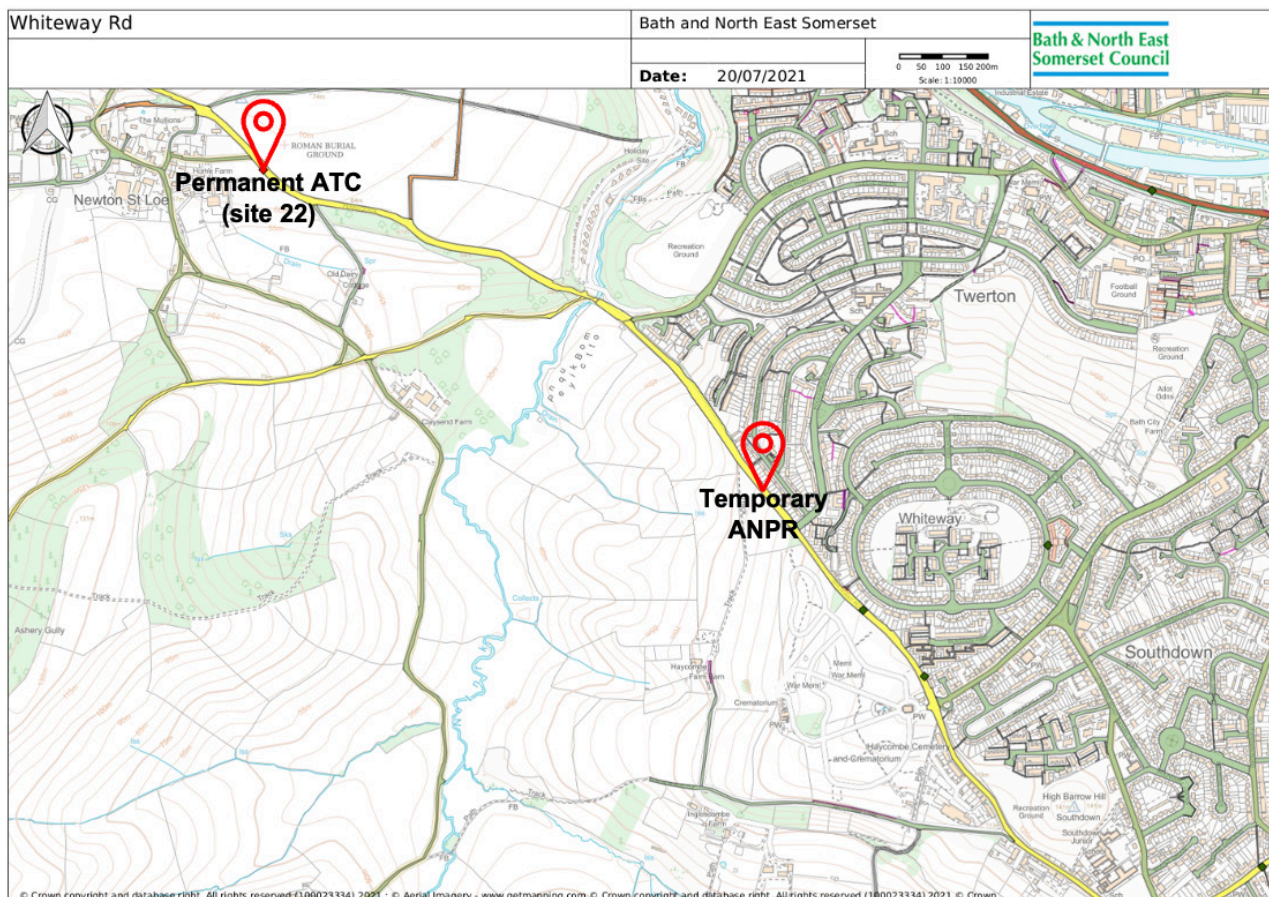
1. Whiteway Road ANPR report

Site Locations

Figure 2 shows the permanent ATC location on Pennyquick Hill along with the temporary ANPR location on Whiteway Road. Temporary ANPR surveys were deployed, and data used in this analysis were from the following dates:

- 2021 ANPR Survey- 25/09 – 1/10
- 2022 ANPR Survey- 25/04 – 01/05

Figure 2



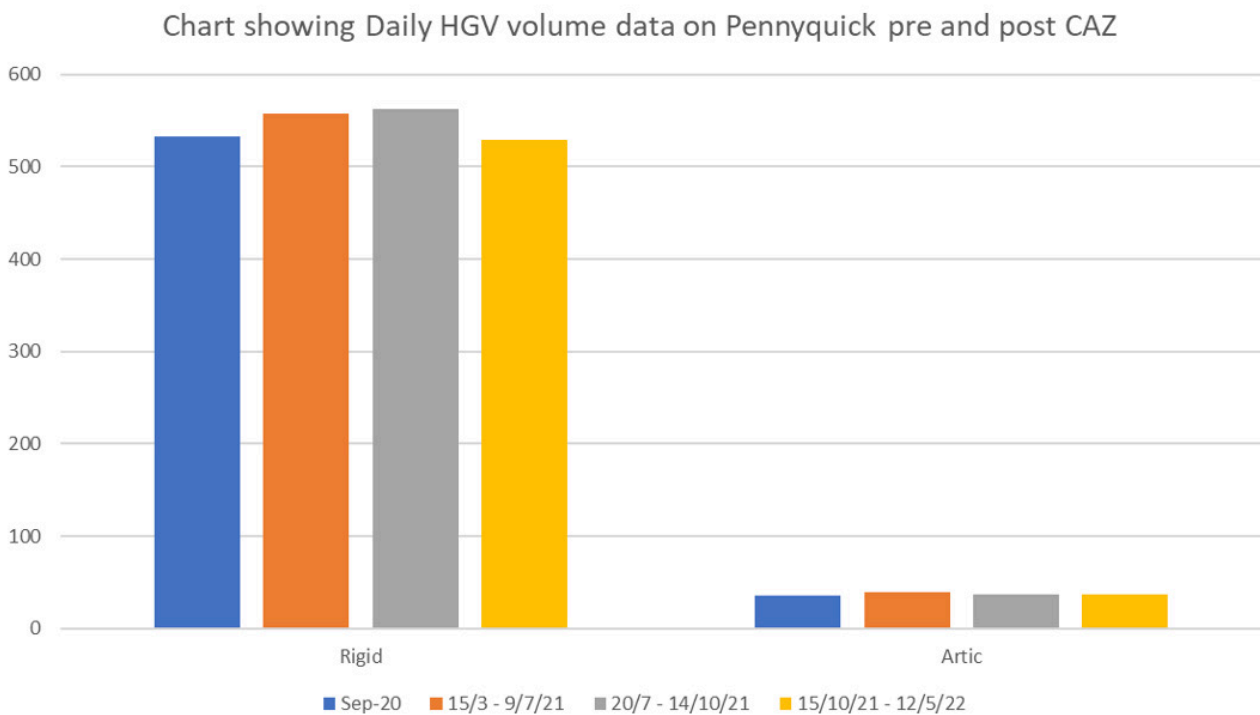
HGV Analysis

Vehicle classification data from Site 22 has been analysed from the following time periods:

- September 2020- this has been used as a pre-CAZ implementation baseline for HGVs. National data has shown that HGV volumes are at or exceeding pre-pandemic volumes.
- 15th March to 19th July 2021- used within first survey
- 20th July to 14th October 2021- used within second survey
- 15th October to 12th May 2022- used within the latest survey

Figure 3 presents the findings of analysis from the permanent ATC on Pennyquick Hill, note that September 2020 is the baseline period.

Figure 3



When compared to July-October 2021, the data for October-May 2022 has shown a 6% decrease in rigid HGVs, with articulated HGVs remaining the same. Furthermore, overall HGV volumes in the most recent survey period are very similar to the September 2020 baseline. This indicates that there has been no increase in HGV volumes on Whiteway Road as a result of the CAZ.

In addition, the data shows that as a percentage of overall traffic volumes, HGVs accounted for 4.5% of all traffic in September 2020, compared to 4.2% in the two most recent monitoring periods.

Analysis of compliant and non-compliant vehicles

Using the following categorisation method, we have been able to determine whether vehicles travelling along Whiteway Road are classified as compliant or non-compliant. Note that cars are not charged within CAZ, therefore are not included in the below.

Compliant vehicles:

- Diesel and Euro 6 or newer
- Petrol and Euro 4 or newer
- Electric & hybrid

Non-compliant & Exempt vehicles:

- Diesel and Euro 5 or older
- Petrol and Euro 3 or older

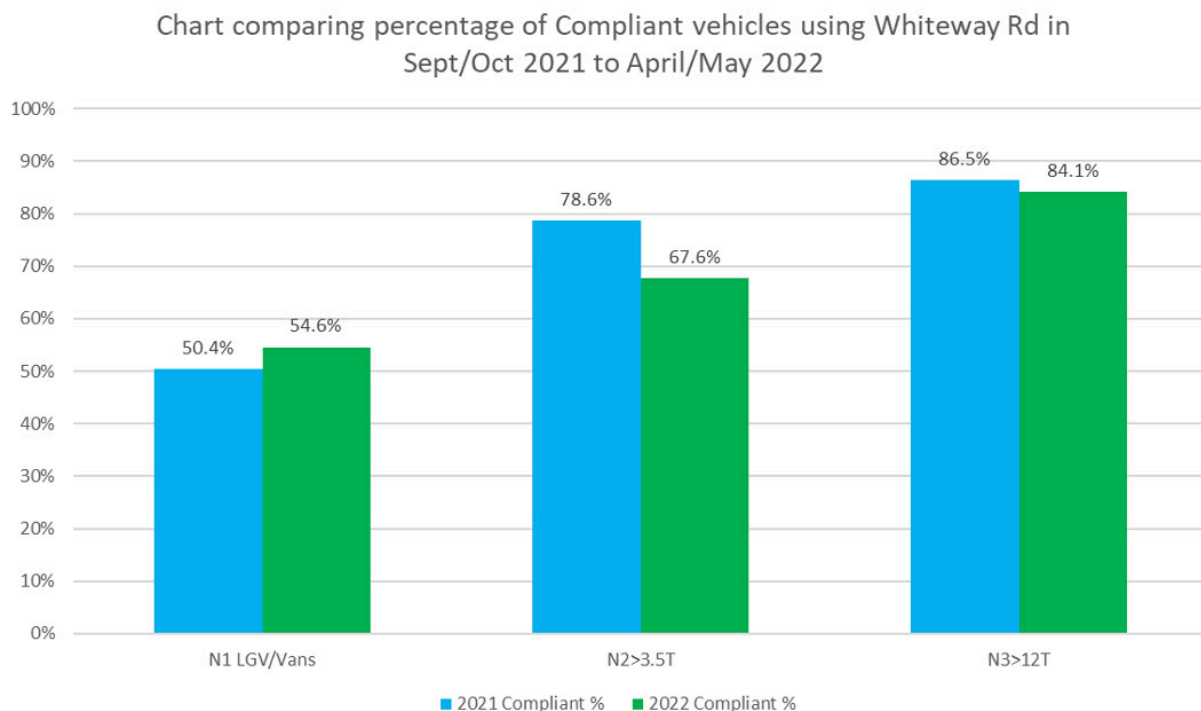
Table 1 shows the split of compliant and non-compliant vehicles seen on Whiteway Road throughout the 7-day temporary ANPR survey that was deployed in April 2022. Note that bus/coach data is not shown within this dataset as the DVLA data does not include information regarding retrofit treatments, therefore, the compliance status would be inaccurate.

Table 1

	Total number of vehicles seen in the 7 day survey period	Not Compliant or Exempt				Compliant				
		Diesel & Euro Status 1-5	Petrol & Euro 1-3	Total Not Compliant or Exempt	2022 Not Compliant or Exempt %	Diesel & Euro 6	Petrol & Euro 4 or newer	Electric	Total Compliant	2022 Compliant %
N1 LGV/Vans	16466	7357	26	7383	44.8%	8861	117	9	8987	54.6%
N2>3.5T	717	229	0	229	31.9%	485	0	0	485	67.6%
N3>12T	912	144	0	144	15.8%	767	0	0	767	84.1%

Figure 4 shows the percentage of compliant vehicles travelling along Whiteway Road in the 2021 and 2022 temporary ANPR surveys. As seen within the graph, the compliance rate of light goods vehicles has increased by just over 4%, whilst HGV compliance has decreased slightly.

Figure 4



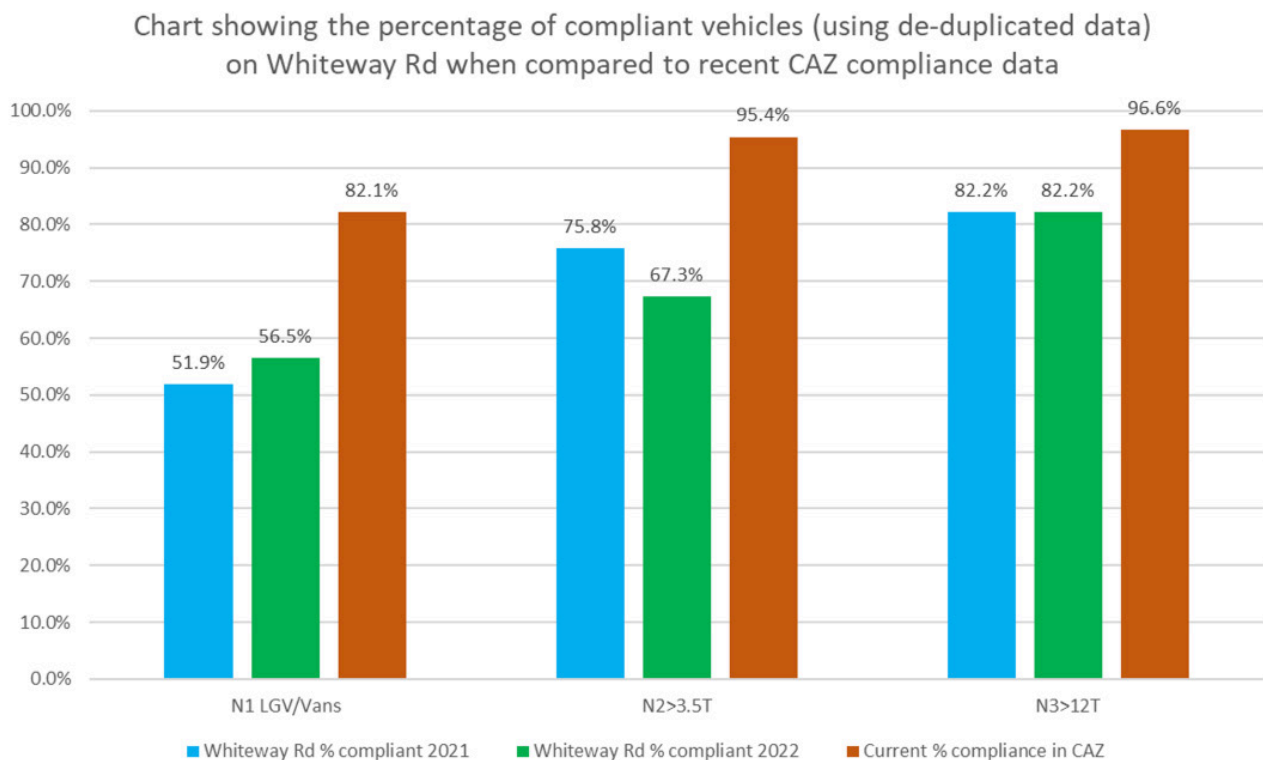
Comparison of compliance between Whiteway Road and the CAZ

The traffic data recorded within the CAZ is de-duplicated before being used for analysis. This means that only one entry per vehicle per 24-hour is retained and any other entries from that vehicle within the same period would be removed (00:00 – 23:59hrs). To ensure that the same type of data is being compared, de-duplication has also been carried out on the data recorded along Whiteway Road.

For example, if an LGV with the VRN 'A123 ABC' travelled along Whiteway Road on three occasions during a 24-hour period (00:00 to 23:59hrs), only one trip is retained, and the others are deleted.

Figure 5 shows a comparison of vehicle compliance between Whiteway Road and the CAZ. Note that cars are not charged within the CAZ and are therefore not included in this analysis.

Figure 5



The key objective of these monitoring surveys was to determine whether there has been an increase in non-compliant, chargeable vehicles using Whiteway Road because of the CAZ. As there is no compliance data available pre-CAZ it is difficult to draw conclusions, however, Figure 5 does show that the general compliance of vehicles travelling along Whiteway Road is less than those travelling within the CAZ.

Prior to the implementation of the CAZ, small increases in traffic flow along Whiteway Road were modelled due to the additional traffic management measures along Queen Square. These additional measures around Queen Square may cause traffic to divert through other routes, therefore, modelling predicated an increase in the inter-peak flows along Whiteway Road (between 10:00-16:00)³.

Additionally, it was modelled that this potential increase in traffic may result in a small net increase in NO₂ concentrations in the vicinity of Twerton⁴. However, NO₂ concentrations at both sites located along Whiteway Road have decreased when compared to the 2019 baseline.

While compliance rates do remain lower than within the CAZ, we are encouraged by the improvements along Whiteway Road and will continue to monitor traffic and air quality trends. Furthermore, an additional ANPR survey will be scheduled for September 2022 to provide a direct comparison with 2021 and allow us to understand any emerging trends.

³ Jacobs. T4 Transport Modelling Forecast Report, 2020. https://beta.bathnes.gov.uk/sites/default/files/2020-10/appendix_evi_674726.br_042.fbc-17_t4_transport_model_forecast_draft.pdf

⁴ Jacobs. Distribution and Equalities Impact Analysis, 2019. https://beta.bathnes.gov.uk/sites/default/files/2020-10/appendix_g_674726.br_042.fbc-19_social_distributional_impacts.pdf

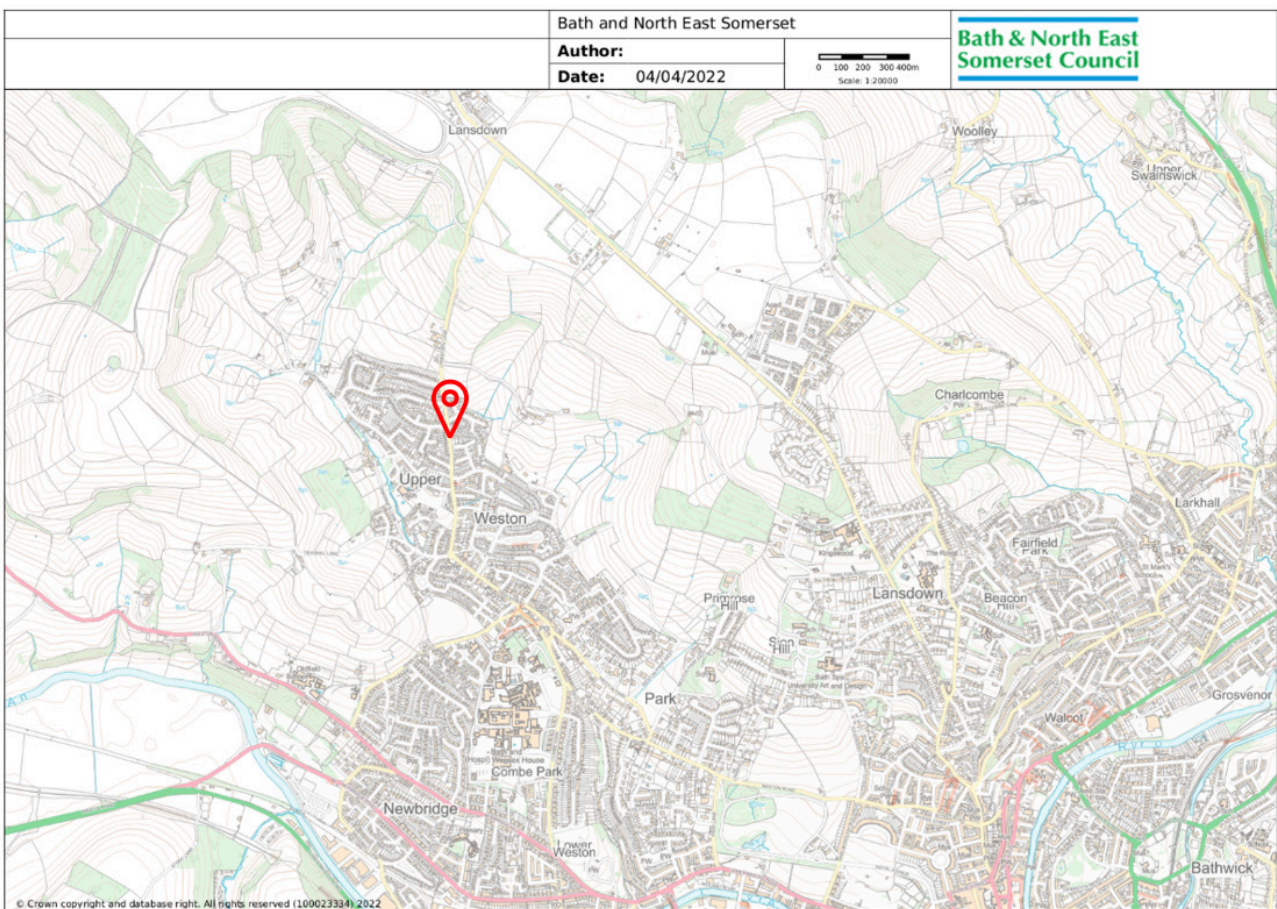
2. Lansdown Lane ANPR report

Site Locations

Figure 6 shows the site locations of the temporary ATC and ANPR surveys that took place on Lansdown Lane, the same location was used for both sets of surveys. Temporary ATC surveys were carried out in 2018, 2019 and 2021. The ANPR surveys were deployed on the following dates:

- 2021 survey- 20/08 – 26/08
- 2022 survey- 26/04 – 01/05

Figure 6



Overall Vehicle Volume

Figure 7 shows the average total number of vehicles traveling along Lansdown Lane in both a 5-day and 7-day average. When compared to the baseline years, the April 2022 survey shows traffic volumes to be similar with 2019, and slightly lower than 2018. When compared to October 2021, traffic volumes were on average 9% lower in 2022 along Lansdown Lane.

Figure 7

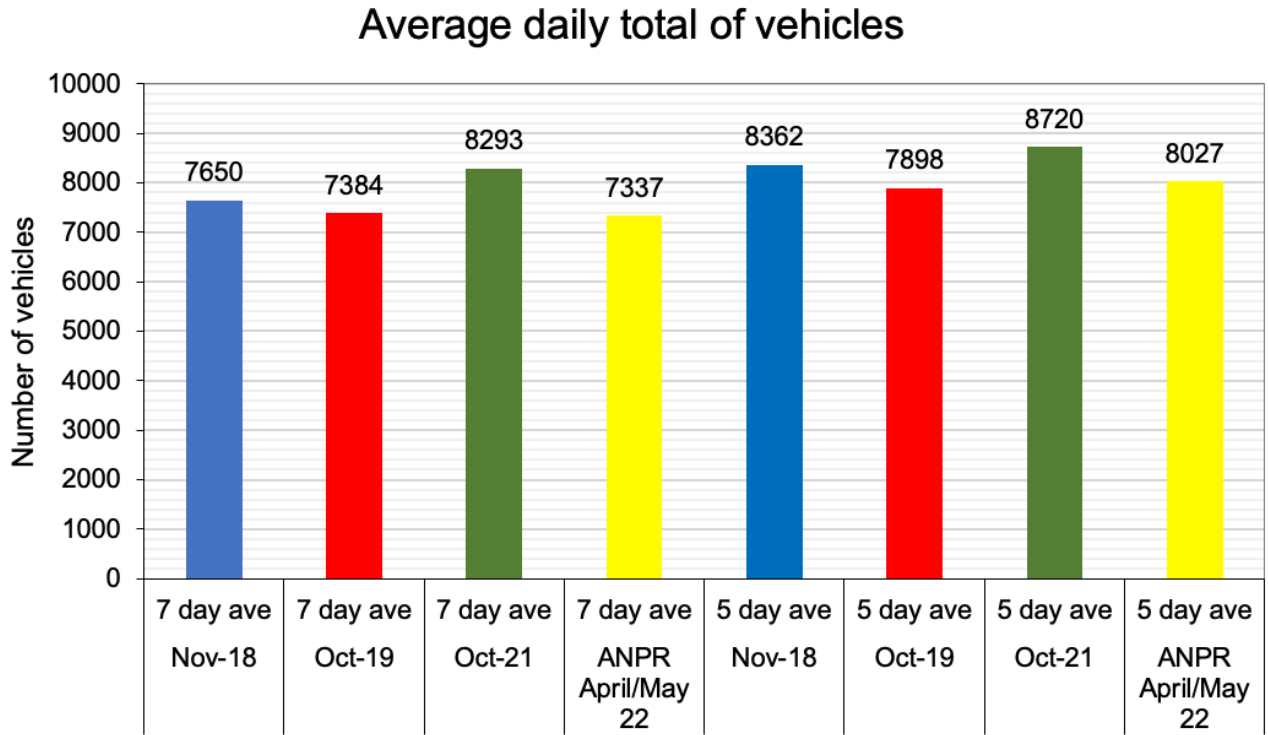
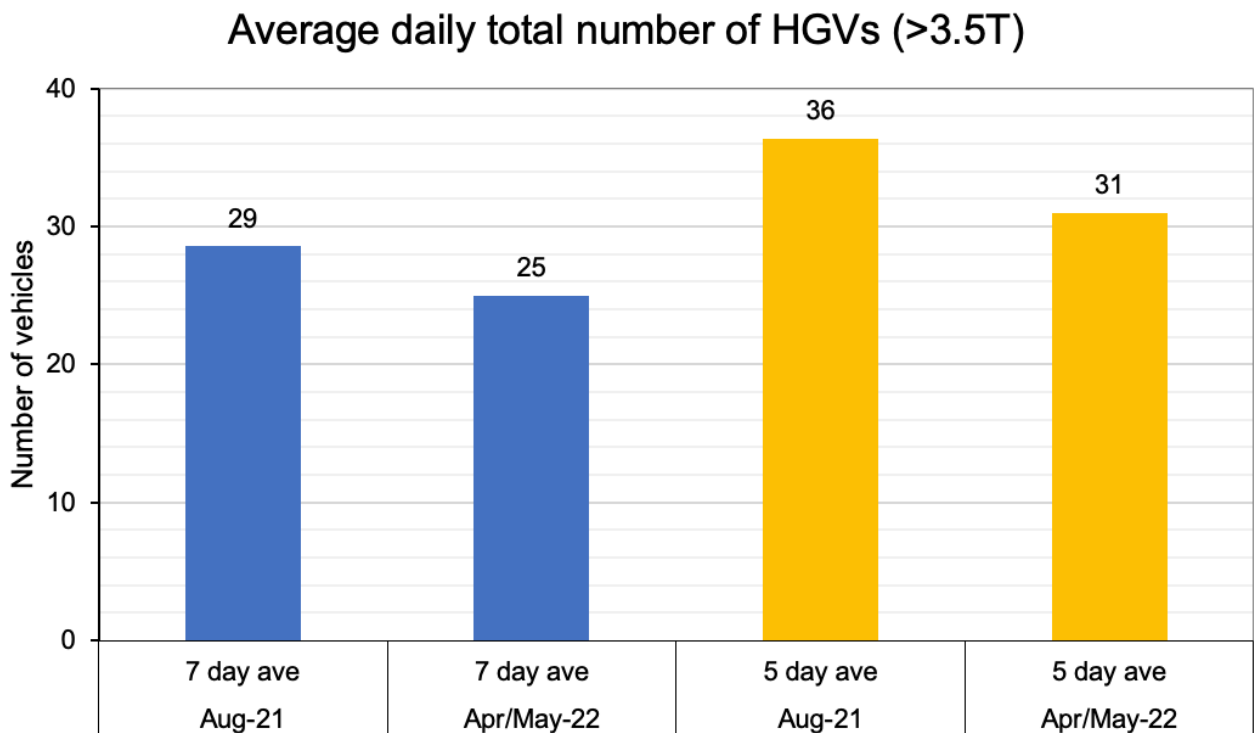


Figure 8



HGV volumes along Lansdown Lane

In 2018 and 2019 the temporary ATC surveys along Lansdown Lane used tube counters to gather classification data. These surveys use axle-distance to classify the vehicles, and as a result it cannot reliably differentiate between some larger cars, LGVs and small HGVs. Therefore, the pre-CAZ and post-CAZ ANPR surveys cannot be meaningfully compared.

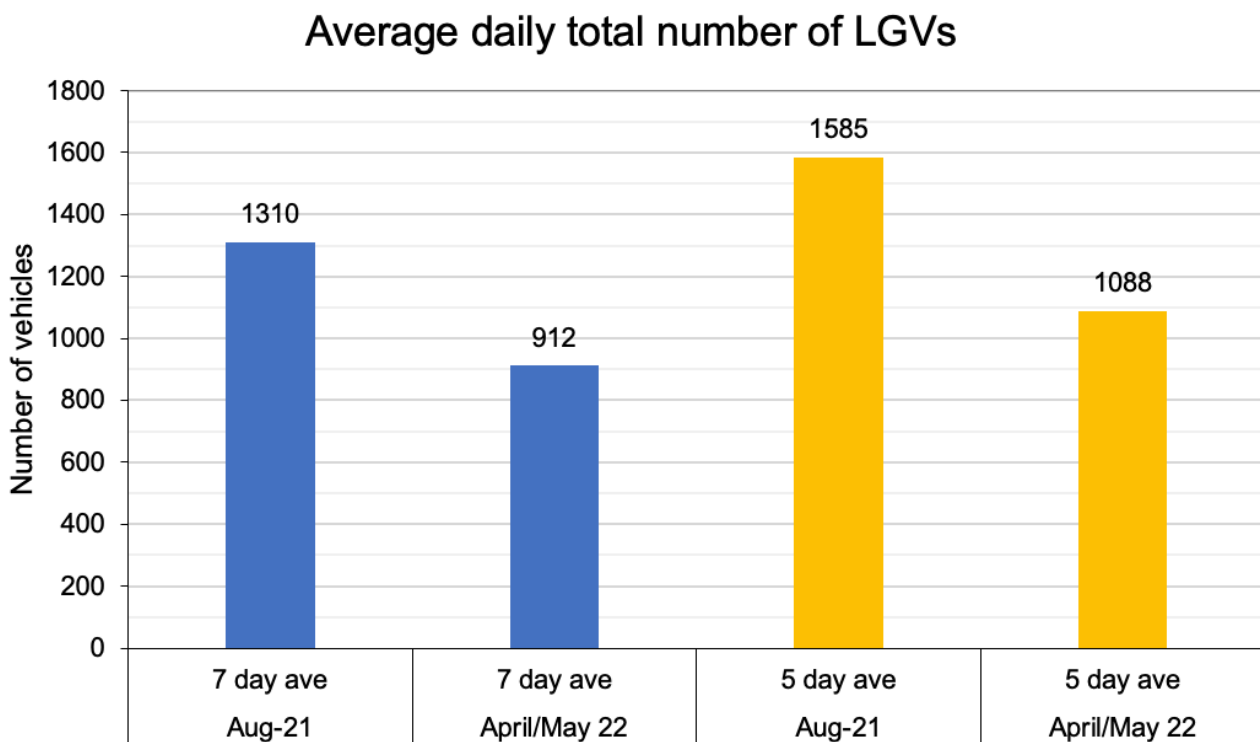
However, a comparison can be made between the 2021 and 2022 ANPR surveys, as this method of classification is far more accurate. In April 2022, the survey found a 14% reduction in HGVs (greater than 3.5 tonnes) along Lansdown Lane when compared to August 2021. A further breakdown on the numbers of HGVs can be seen in Figure 8.

LGV volumes

In 2018 and 2019 the temporary ATC surveys along Lansdown Lane used tube counters to gather classification data. As stated above, this method cannot be used to accurately classify vehicles, therefore, a comparison can only be made between the 2021 and 2022 ANPR surveys.

When compared to August 2021, the April 2022 survey has shown at least a 30% reduction in the number of LGVs travelling along Lansdown Lane. A further breakdown of LGVs can be seen below in figure 9.

Figure 9



Analysis of compliant and non-compliant vehicles

By using the categorisation following method, we have been able to determine whether vehicles travelling along Lansdown Lane are classified as compliant or non-compliant. Note that cars are not charged within the CAZ, therefore are not included in the below.

Compliant vehicles:

- Diesel and Euro 6 or newer
- Petrol and Euro 4 or newer
- Electric & hybrid

Not Compliant & Exempt vehicles:

- Diesel and Euro 5 or older
- Petrol and Euro 3 or older

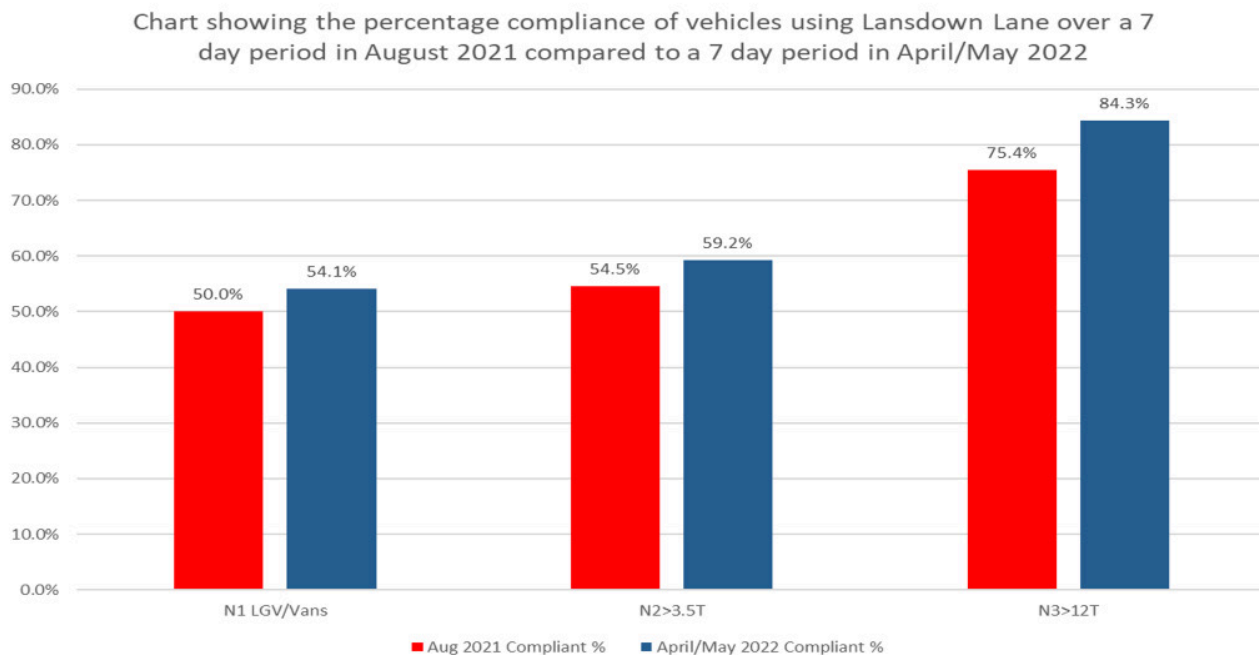
Table 2 shows the split of compliant and non-compliant vehicles seen on Lansdown Lane throughout the 7-day temporary ANPR survey that was deployed in April 2022. Note that bus/coach data is not shown within this dataset as the DVLA data does not include information regarding the retrofit treatments, therefore, the compliance status would be inaccurate.

Table 2

April/May 2022	Total number of vehicles seen in the 7 day survey period	Not Compliant or Exempt				Compliant				
		Diesel & Euro Status 1-5	Petrol & Euro 1-3	Total Not Compliant & Exempt	Not Compliant & Exempt %	Diesel & Euro 6	Petrol & Euro 4 or newer	Electric	Total Compliant	Compliant %
N1 LGV/Vans	6385	2925	8	2933	45.9%	3394	40	18	3452	54.1%
N2>3.5T	125	51	0	51	40.8%	73	0	1	74	59.2%
N3>12T	51	8	0	8	15.7%	43	0	0	43	84.3%

Figure 10 shows the percentage of compliant vehicles travelling along Lansdown Lane in the 2021 and 2022 temporary ANPR survey. It can be seen that compliance has increased throughout the LGV and HGV categories.

Figure 10



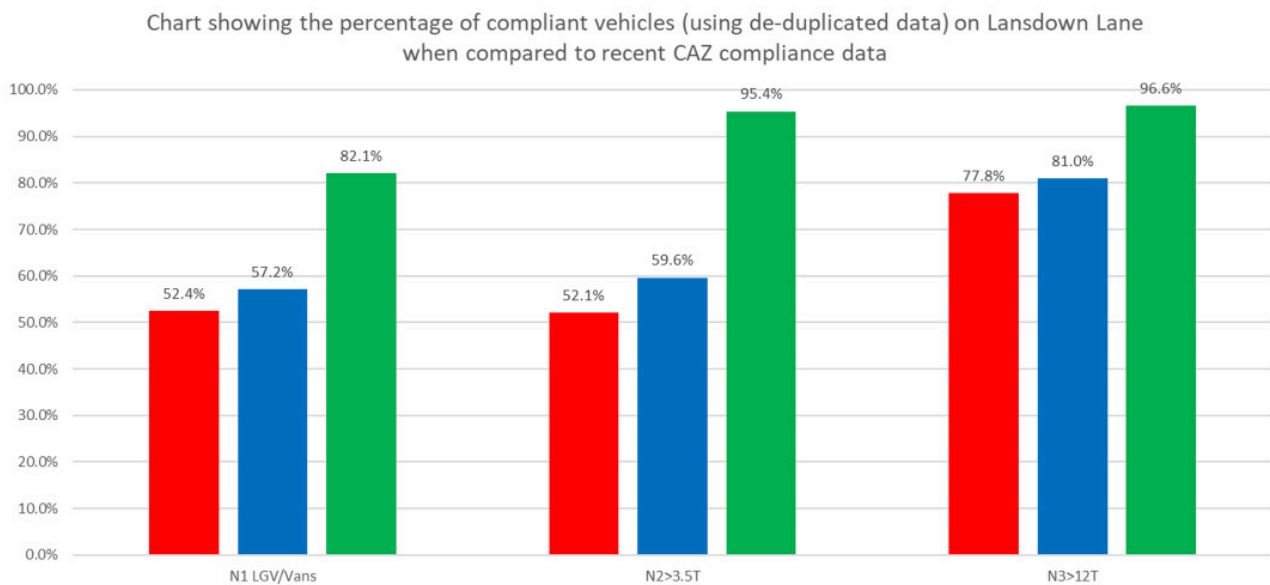
Comparison of compliance between Lansdown Lane and the CAZ

The traffic data recorded within the CAZ is de-duplicated before being used for analysis, this means that the only one entry per vehicle per 24-hour is retained and any other entries from that vehicle within the same period would be removed (00:00 – 23:59hrs). To ensure that the same type of data is being compared, de-duplication has also been carried out on the data recorded along Lansdown Lane.

For example, if an LGV with the VRN 'A123 ABC' travelled along Lansdown Lane on three occasions during a 24-hour period (00:00 to 23:59hrs), only one trip is retained, and the others are deleted.

Figure 11 shows a comparison of vehicle compliance between Lansdown Lane and the CAZ. Note that cars are not charged within the CAZ and are therefore not included in this analysis.

Figure 11



The key objective of these monitoring surveys was to determine whether there has been an increase in non-compliant vehicles using Lansdown Lane as a result of the CAZ. As there is no compliance data available pre-CAZ launch it is difficult to draw conclusions, however, figure 11 does show that the general compliance of vehicles travelling along Lansdown Lane is less than those travelling within the CAZ.

However, we are encouraged by the increase in compliance and will continue to monitor any changes in traffic volumes and air quality. We will look to re-monitor this location in September 2022 so a direct comparison can be drawn with the September 2021 survey, this will allow us to understand any emerging trends.

3. Oldfield Park Area ANPR report

Site locations

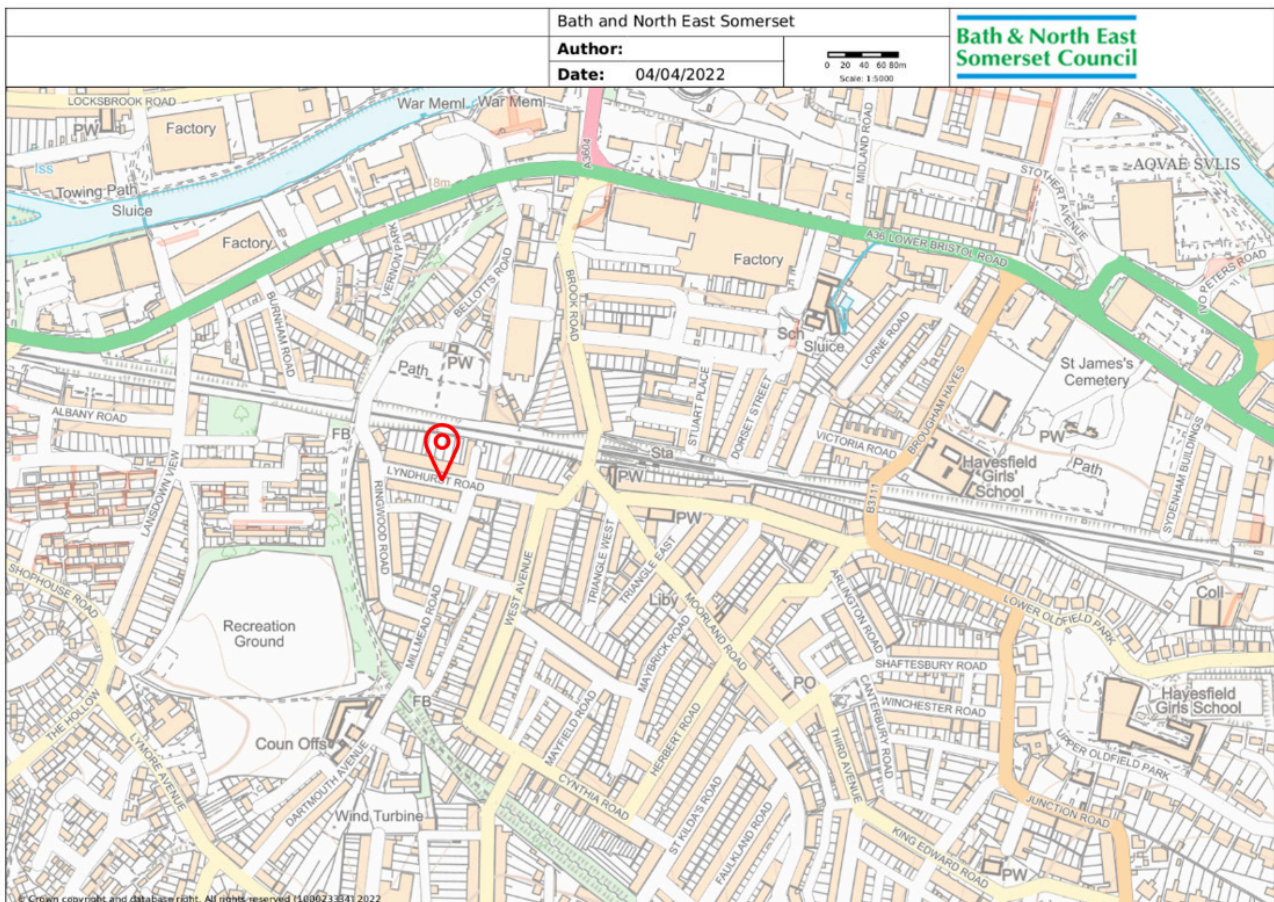
In response to perceived increases in HGVs along Lyndhurst Road as a result of the CAZ, a temporary ATC (pneumatic tube survey) was carried out along Triangle North onto Lyndhurst Road in July 2021 that indicated around 311 HGVs were using this route per week. This was thought to be potentially caused by vehicles using Lyndhurst Road to reach the A36 Lower Bristol Road instead of Livingstone Road/Brougham Hayes to reach the Moorland Road shopping area and avoid entering the CAZ.

ANPR cameras were then deployed to obtain a more accurate breakdown of vehicle types using the route westbound, and to understand whether these vehicles would be compliant with the CAZ.

Figure 12 shows the site locations of the temporary ANPR surveys that took place on Lyndhurst Road, the same location was used for both sets of surveys. The surveys took place on the following dates:

- 2021 survey- 20/08 – 26/08
- 2022 survey- 25/04 – 01/05

Figure 12



Classification of vehicles travelling westbound towards Lower Bristol Rd

In July 2021, the temporary ATC recorded far more HGVs/buses than the reality that is shown by the ANPR cameras, the data from the surveys can be seen below in table 3. When compared to the ANPR survey in August 2021, data collected in April 2022 has shown a 5% decrease in LGV volumes. The number of HGVs (over 3.5t but not exceeding 12t) has remained consistent, with 7 of these vehicles travelling westbound per weekday. The number of HGVs exceeding 12t has increased when compared to 2021, to 7 vehicles per weekday, however, these vehicles are 94% compliant so do not appear to be avoiding the CAZ.

Table 3

Total volume as a weekday average travelling westbound on Lyndhurst Rd towards Lower Bristol Rd					
April/May-22 ANPR		Aug-21 from ANPR		July-21 from tube counter	
M1 car	1899	M1 car	1621	Car and light van	1338
N1 LGV/Vans	315	N1 LGV/Vans	332		
M2 Minibus	0	M2 Minibus	0	Two axle truck/bus or larger	311
M3 Coach/Bus	0	M3 Coach/Bus	0		
N2>3.5T	7	N2>3.5T	6		
N3>12T	7	N3>12T	1		
Total	2228	Total	1961	Total	1649

Analysis of compliant and non-compliant vehicles

By using the following method, we have been able to determine whether vehicles travelling along Lyndhurst Road are classified as compliant or non-compliant. Note that cars are not charged within the CAZ, therefore are not included in the below.

Compliant vehicles:

- Diesel and Euro 6 or newer
- Petrol and Euro 4 or newer
- Electric & hybrid

Not Compliant & Exempt vehicles:

- Diesel and Euro 5 or older
- Petrol and Euro 3 or older

Table 4 shows the split of compliant and non-compliant vehicles seen on Lyndhurst Road throughout the 7-day temporary ANPR survey that was deployed in April 2022. Note that bus/coach data is not shown within this dataset as the DVLA data does not include information regarding the retrofit treatments, therefore, the compliance status would be inaccurate.

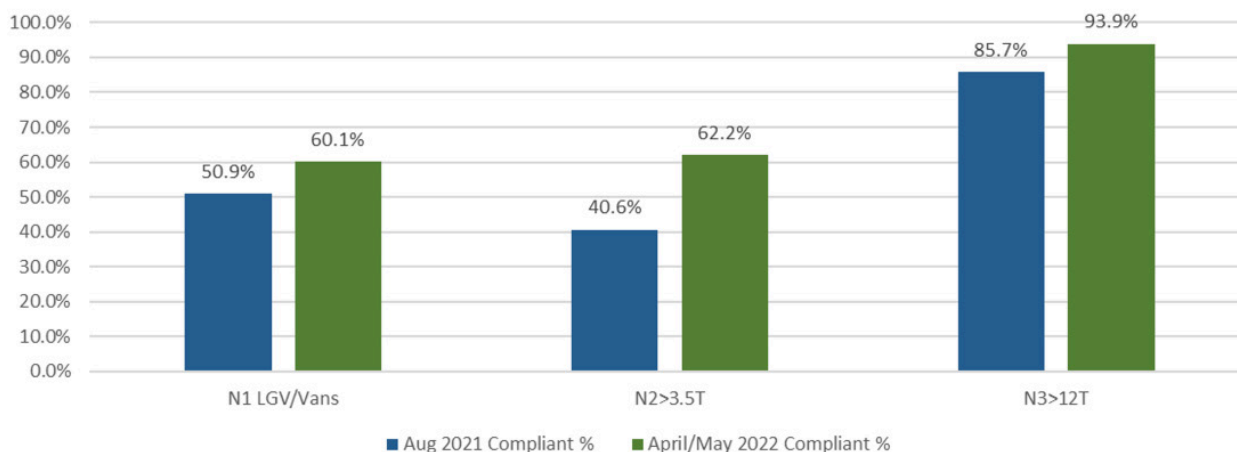
Table 4

April/May 2022	Total number of vehicles seen in the weekday period travelling westbound	Not Compliant or Exempt				Compliant				
		Diesel & Euro Status 1-5	Petrol & Euro 1-3	Total Not Compliant & Exempt	Not Compliant & Exempt %	Diesel & Euro 6	Petrol & Euro 4 or newer	Electric	Total Compliant	Compliant %
N1 LGV/Vans	1575	618	4	622	39.5%	921	12	14	947	60.1%
N2>3.5T	37	14	0	14	37.8%	23	0	0	23	62.2%
N3>12T	33	2	0	2	6.1%	31	0	0	31	93.9%

Figure 13 below shows the percentage of compliance along Lyndhurst Road in August 2021 and April 2022. It can be seen that compliance has increased throughout the LGV and HGV categories.

Figure 13

Chart showing the percentage compliance of vehicles using Lyndhurst Rd (westbound) over a 5 weekday period in August 2021 when compared to a 5 weekday period April/May 2022



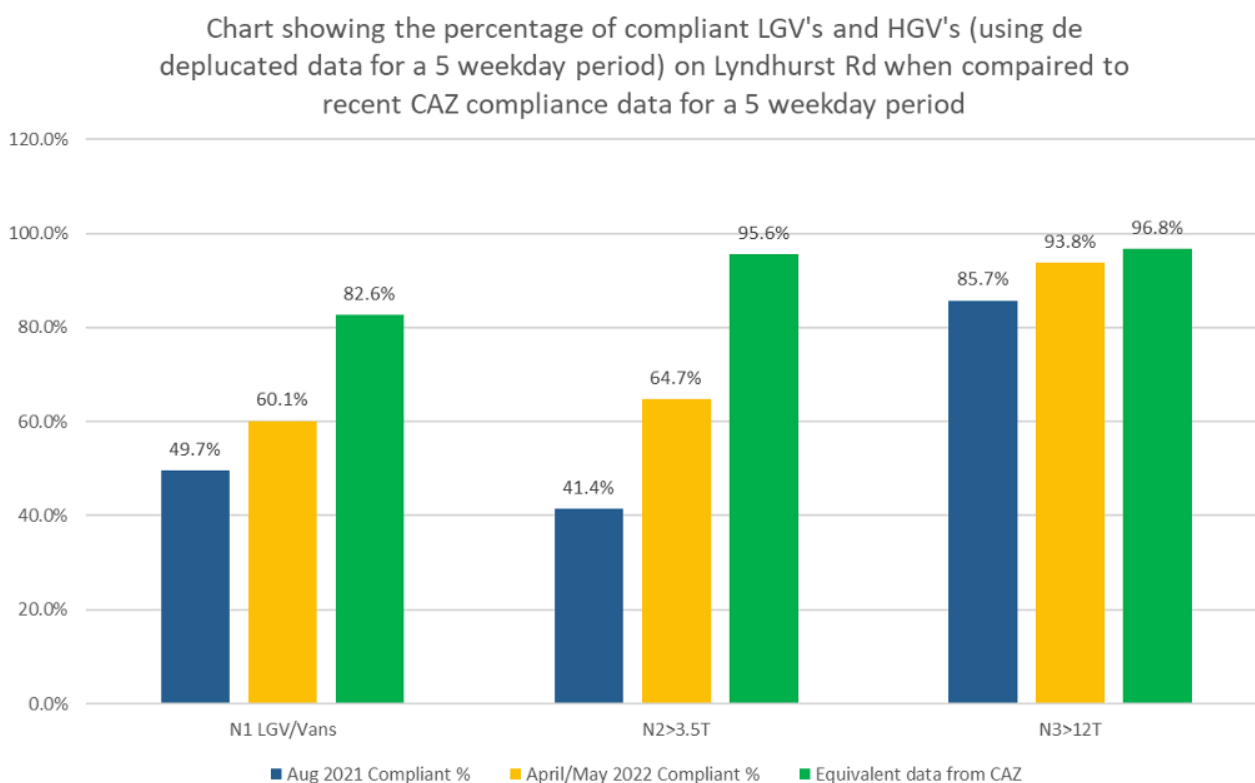
Comparison of compliance between Lyndhurst Road and the CAZ

The traffic data recorded within the CAZ is de-duplicated before being used for analysis, this means that the only one entry per vehicle per 24-hour is retained and any other entries from that vehicle within the same period would be removed (00:00 – 23:59hrs). To ensure that the same type of data is being compared, de-duplication has also been carried out on the data recorded along Lyndhurst Road.

For example, if an LGV with the VRN 'A123 ABC' travelled along Lyndhurst Road on three occasions during a 24-hour period (00:00 to 23:59hrs), only one trip is retained, and the others are deleted.

Figure 14 shows a comparison of vehicle compliance between Lyndhurst Road and the CAZ. Note that cars are not charged within the CAZ and are therefore not included in this analysis.

Figure 14



The key objective of these monitoring surveys was to determine whether there has been an increase in non-compliant HGVs using Lyndhurst Road as a result of the CAZ. As there is no compliance data available pre-CAZ launch it is difficult to draw conclusions, however, figure 14 does show that the general compliance of vehicles travelling along Lyndhurst Road is less than those travelling within the CAZ.

Conclusions

The pneumatic tube counter used in July 2021 registered far more vehicles as HGVs than the ANPR surveys in 2021 and 2022. The pneumatic tubes counters used in July 2021 classify vehicles by wheelbase and number axles, and is therefore, not always accurate. Whereas an ANPR camera uses the type approval classification of the vehicle provided by the DVLA. In July 2021, 258 of the 311 vehicles registered as HGVs/buses were recorded as a 3-axle HGV and 44 were recorded as a 2-axle HGV with a wheelbase >3.2m. If these are removed from the HGV numbers, this leaves 9 HGVs per day, which is a similar number to those captured by the ANPR. This may suggest that the pneumatic tube counters find it difficult to differentiate between vans and smaller HGVs and may incorrectly categorise a van as an HGV.

Overall, we are encouraged by this increase in compliance and will continue to monitor any changes in traffic volumes and air quality. We will look to re-monitor this location in September 2022 so a direct comparison can be drawn with the September 2021 survey, this will allow us to understand any emerging trends.

The areas of investigation presented below in Table 5, are areas which have not been subject to temporary ANPR surveys, instead, other methods of monitoring have been used.

Table 5: Further Locations of investigation.

Area for investigation	Status	Initial monitoring undertaken	Traffic monitoring results	Air quality monitoring results	Secondary monitoring (if required)	2022 review
Charlcombe Lane	Further monitoring complete.	<p>Three temporary radar automatic traffic counters for a 7-day period in July 2021.</p> <p>Singular diffusion tube air quality monitoring.</p>	<p>The 5-day average shows that the morning and after-noon peak flows are significantly lower in 2021 than compared with 2019. Interpeak traffic flows are slightly higher than in 2019, however, this is replicated on other roads since the pandemic, with lower morning peak flows and higher interpeak flows.</p>	<p>The post-CAZ NO₂ concentration at Charlcombe Lane measured at 10 µg/m³ in 2021 compared to 14 µg/m³ in 2019.</p>	<p>At the request of the Parish Council, this location was re-monitored in October 2021.</p> <p>Monitoring found a weekday decrease of 19-23% and a 7-day average decrease of 13-17% when compared to the 2019 baseline period.</p> <p>Average speed was at or below the 20mph limit.</p> <p>Note: the results above may have been impacted by a partial road closure so this location will be re-monitored. However, it is collectively acknowledged that there is unlikely to be displacement related to the CAZ in this location.</p>	<p>Monitoring surveys in May 2022 were carried out along Charlcombe Lane, however, issues with the monitoring equipment meant the data recorded was inaccurate.</p> <p>These temporary ATC surveys were therefore repeated and deployed on 6th June 2022 for a 7-day period. An update will be provided once the data has been received and analysed.</p>

Upper Camden Place	Further monitoring complete.	<p>One temporary radar automatic traffic counter deployed in July 2021 for a period of 7-days.</p> <p>Singular diffusion tube air quality monitoring.</p>	<p>The volume of traffic on Camden Road is down 25% in July 2021 compared to June 2021.</p> <p>On average 2021 daily total volumes on Camden Road are 12% lower compared to 2017.</p> <p>However, traffic in general was still 8% down on pre-pandemic levels in B&NES when monitoring was carried out.</p>	The post-CAZ NO ₂ concentration at Up-per Camden Place measured at 19 µg/m ³ in 2021 compared to 25 µg/m ³ in 2019.	<p>No further monitoring required at this stage, due to no discernible increase in traffic volumes.</p> <p>This will be reviewed in 6 months.</p>	<p>A further radar ATC survey was carried out in April 2022. When compared to July 2021, traffic volumes had increase 30% across a 5-day and 7-day average. However, as mentioned traffic was still down 8% on pre-pandemic levels in this base-line period.</p> <p>When compared to 2017, 2022 volumes were down 23% across a 5-day average and 22% across a 7-day average.</p> <p>It is possible that this location may be affected by dis-placing traffic as a result of the partial Cleveland Bridge Closure. Therefore, it will be re-monitored after the full reopening.</p>
Southdown Road	Further monitoring complete.	<p>One temporary radar automatic traffic counter deployed in July 2021 for a period of 7-days.</p> <p>Singular diffusion tube air quality monitoring.</p>	<p>Comparing 2021 data to 2019 the traffic levels on Southdown Road have dropped 13.4% (5-day average) and 11.4% (7-day average).</p> <p>The AM peak has significantly reduced whilst the PM peak has reduced slightly.</p>	The nearest available monitoring site from South-down Road was Coronation Avenue. The NO ₂ concentration at this location in 2021 was 15 µg/m ³ compared to 20 µg/m ³ in 2019.	<p>No further monitoring required at this stage, due to no discernible increase in traffic volumes.</p> <p>This will be reviewed in 6 months.</p>	<p>A further ATC survey was carried out in April 2022. When compared to the 2019 baseline period traffic levels on Southdown Road have de-created by 1% across both a 5-day and 7-day average.</p> <p>The AM peak re-mains marginally lower than the baseline with the PM peak slightly higher at an earlier time in the evening.</p>

Old Newbridge Hill	Monitoring complete.	Neo Traffic Data using one automatic tube counter plus one Miovision camera for turning count analysis for a 7-day period during July 2021. Singular diffusion tube air quality monitoring.	Overall traffic volume is lower in 2021 compared to 2019; further analysis is required to understand whether the proportion of HGVs, out of the total traffic using the road, has changed.	The post-CAZ NO ₂ concentration at Old Newbridge Hill measured at 25 µg/m ³ in 2021 compared to 29 µg/m ³ in 2019 Q3.	New weight limit restriction being explored for this location together with further monitoring, if necessary. This will be reviewed in 6 months.	Upon reviewing Old Newbridge Hill there have been no further concerns regarding traffic displacing as result of the CAZ. However, the Traffic Regulation Order surrounding a new weight restriction is being developed with Highways.
Twerton High Street	Initial monitoring in progress.	Singular diffusion tube installed in August 2021 for a period of at least 3-months.	N/A	As this diffusion tube was installed mid-way through 2021 there is not a 2019 baseline, however, in 2021 NO ₂ was recorded at 31 µg/m ³ .	Monitoring will be continued at this site until we can understand the trends.	Upon reviewing this location in 2022, diffusion tube monitoring along Twerton High Street will remain in place until we can fully understand emerging trends.
Shophouse Road	Further monitoring complete.	Neo Traffic Data using one tube counter (speed and classification) for a 7-day period in July 2021. Singular diffusion tube air quality monitoring.	Overall vehicle numbers are higher than in 2019. HGV numbers are also higher when compared with the 2019 baseline however, in 2019 HGVs accounted for 8% of all vehicles on Shophouse Road and in 2021 they accounted for 7%.	The nearest available monitoring site from Shophouse Road was The Hollow. The NO ₂ concentration at this location in 2021 was 21 µg/m ³ compared to 24 µg/m ³ in 2019 Q3.	Whilst modelling predicted a slight increase in traffic volumes in this location, monitoring will be reviewed after the full reopening of Cleveland Bridge. This will be reviewed in 6 months.	A further ATC survey was carried out in May 2022. When compared to July 2021 there has been a 5% drop in HGVs and a small decrease in total traffic volumes. However, both the 2021 and 2022 surveys do remain higher than the 2019 baseline. Some of the increase may be accounted for due to the modelled increase in interpeak traffic along The Hollow. Additionally, the occasional full road closure along Jews Lane may also cause traffic to divert along Shophouse Road. However, this location will be re-viewed in 6-months' time so the trends can be further understood.

Rosemount Lane	Monitoring complete.	One temporary radar automatic traffic counter deployed for a 7-day period in July 2021. Singular diffusion tube air quality monitoring.	During July 2021, data collected shows a reduction in traffic volumes of 56% over a 7-day period when compared to a 2016 baseline. Data shows that most vehicles use the route east (downhill) but very few travel up the steep hill.	The nearest available monitoring site is at Greenway Lane. The NO ₂ concentration at this location in 2021 was 11 µg/m ³ compared to 16 µg/m ³ in 2019 Q3.	No further monitoring required at this stage, due to no discernible increase in traffic volumes. This will be reviewed in 6 months.	Upon reviewing Rosemount Lane there have been no further concerns regarding traffic volumes and air quality. This case will be removed from the appendix in the following quarter.
Sham Castle Lane	Monitoring complete.	One temporary radar automatic traffic counter deployed for a 7-day period in July 2021. Singular diffusion tube air quality monitoring.	There is no pre-CAZ baseline for Sham Castle Lane, however, by analysing the traffic volumes during peak times an indication of overall volumes can be understood. The peak of traffic appeared between 1600-1700hr where 21 vehicles were recorded within the hour. The next highest volume was 14 vehicles within an hour.	The nearest available monitoring site from Sham Castle Lane was North Road. The NO ₂ concentration at this location in 2021 was 13 µg/m ³ compared to 17 µg/m ³ in 2019.	No further monitoring required at this stage, due to no discernible increase in traffic volumes. This will be reviewed in 6 months.	Upon reviewing Sham Castle Lane there have been no further concerns regarding traffic volumes and air quality. This case will be removed from the appendix in the following quarter.
Prior Park Road	Monitoring complete.	Neo Traffic Data using one automatic tube counter for a 7-day period in July 2021. Singular diffusion tube air quality monitoring.	Monitoring along Prior Park Road during June/July 2021 showed an increase of 14% in weekday traffic volumes when compared to 2017.	The post-CAZ NO ₂ concentration at Prior Park Road measured at 23 µg/m ³ in 2021 compared to 33 µg/m ³ in 2019.	A 6-month review will be carried out after the full reopening of Cleveland Bridge.	Upon reviewing Prior Park Road there have been no further concerns regarding traffic volumes and air quality. This case will be removed from the appendix in the following quarter.

Bradford Road/ Brassknocker Hill	Initial monitoring complete.	<p>One permanent automatic traffic counter located on both Bradford Road and Brassknocker Hill.</p> <p>Singular diffusion tube air quality monitoring at both locations.</p>	<p>Data from the permanent ANPR camera at Bradford Road between the months April-September 2021 has shown a 4% increase west-bound and a 1% increase east-bound in HGVs when compared to a September 2020 baseline (7-day average). HGVs were back to pre-pandemic levels at this baseline period (Department of Transport).</p> <p>Data from the permanent ANPR camera at Brassknocker Hill between the months April-September 2021 has shown a potential increase of 19% north-bound and 6% south-bound in HGVs when compared to a September 2020 baseline (7-day average).</p>	<p>The post-CAZ NO₂ concentration at Bradford Road measured at 21 µg/m³ in 2021 compared to 28 µg/m³ in 2019.</p> <p>The post-CAZ NO₂ concentration at Brassknocker Hill measured at 26 µg/m³ in 2021 compared to 37 µg/m³ in 2019.</p>	<p>A 6-month review will be carried out after the full re-opening of Cleveland Bridge, as well as investigating those vehicles which are breaking the 7.5t weight restriction on Brassknocker Hill.</p>	<p>Upon reviewing Brassknocker Hill it is likely that the increase in HGVs can be associated with the closure of Cleveland Bridge, therefore, this location will be re-viewed after its re-opening.</p> <p>Additionally, the issues surrounding those vehicles breaching the 7.5t weight restriction on Brassknocker Hill is an enforcement issue which be investigated further by the Trading Standards team.</p>
Penn Hill Road	Further monitoring complete.	<p>One temporary radar automatic traffic counter deployed in August 2021 for a 7-day period.</p> <p>Singular diffusion tube air quality monitoring.</p>	<p>Monitoring in August 2021 showed a weekday average of 6938 vehicles per day, and a 7-day average of 6399 vehicles per day.</p> <p>Whilst there is no pre-CAZ baseline at this location, comparing this data to surrounding areas suggests these volumes are as expected. However, this site will be reviewed in 6-months' time.</p>	<p>The nearest available monitoring site from Penn Hill Road was Weston High Street. The NO₂ concentration at this location in 2021 was 18 µg/m³ compared to 22 µg/m³ in 2019.</p>	<p>This will be reviewed in 6 months.</p>	<p>A further ATC survey was carried out in April 2022. When compared to the August 21 baseline period traffic levels had increased less than 1% across a 5-day and 7-day average. However, numbers do remain low.</p> <p>The AM peak in 2022 is much more pronounced when compared to the 2021 baseline period, this is likely to be linked to people returning to work post-pandemic. The PM peak remains the same.</p>

Englishcombe Lane	Further monitoring complete.	<p>Two temporary radar automatic traffic counters deployed in September 2021 for a period of 7-days.</p> <p>Singular diffusion tube air quality monitoring.</p>	<p>Monitoring along Englishcombe Lane during September 2021 showed a potential increase in average weekday traffic volumes when compared to a January 2021 baseline. However, this baseline will have seen significantly lower traffic volumes due to the national lockdown.</p>	<p>The post-CAZ NO₂ concentration at Englishcombe Lane measured at 11 µg/m³ in 2021 compared to 14 µg/m³ in 2019.</p>	<p>A 6-month review will be carried out after the full reopening of Cleveland Bridge to establish whether the non-compliant vehicles are seeking to avoid zonal chargers.</p>	<p>2 further radar ATC surveys were carried out in May 2022. When compared to September 2021 monitoring has shown on average an 19% increase in weekday traffic.</p> <p>In addition, the AM-peak and PM-peak have shown a 15% increase when compared to September 2021. However, there was a modelled increase at Englishcombe Lane in the PM peak hour.</p> <p>However, at the time this survey was completed, roadworks along Moorland Road diverted a bus route, and potentially other traffic onto Englishcombe Lane. Therefore, this location will be re-monitored in July to help us understand any emerging trends.</p>
Norton St Philip	Monitoring complete.	<p>One permanent automatic traffic counter located on the B3110 northwest of Midford.</p> <p>Singular diffusion tube air quality monitoring.</p>	<p>Monitoring at Norton St Phillip has shown a decrease of 16% in weekday car and light good vehicle volumes when compared to 2017.</p> <p>Heavy vans and minibuses have decreased by 4%, with HGVs and articulated lorries also decreasing by 10% when compared to a 2017 baseline.</p>	<p>The nearest available monitoring site from the permanent automatic traffic counter on the B3110 was Bradford Road. The NO₂ concentration at this location in 2021 was 21 µg/m³ compared to 28 µg/m³ in 2019.</p>	<p>No further monitoring required at this stage, due to no discernible increase in traffic volumes.</p> <p>This will be reviewed in 6 months.</p>	<p>Upon reviewing the case surrounding Norton St Phillip there have been no further concerns regarding traffic volumes and air quality.</p> <p>This case will be removed from the appendix in the following quarter.</p>

Cavendish Road	Further monitoring complete.	<p>One temporary radar automatic traffic counter deployed for a 7-day period in October 2021.</p> <p>Triplicate diffusion tube air quality monitoring.</p>	Monitoring of traffic volumes along Cavendish Road during October 2021 showed a potential increase of 17% in weekday traffic volumes when compared to 2017.	The post-CAZ NO ₂ concentration at Cavendish Road measured at 14 µg/m ³ in 2021 compared to 17 µg/m ³ in 2019.	A 6-month review will be carried out after the full reopening of Cleveland Bridge.	<p>A further ATC survey was carried out in May 2022. When compared to October 2021, traffic volumes have decreased by 4% as a weekday average.</p> <p>Additionally, there was a 2% reduction in the weekday AM-Peak and a 7% reduction in the PM-Peak.</p> <p>However, volumes of traffic do still show a potential increase of 13% when compared to the 2017 baseline period.</p> <p>Mean speed was recorded at 24mph.</p> <p>As modelled at the Full Business Case stage of the CAZ, additional traffic using Cavendish Road as a route back to Lansdown Road was a potential outcome associated with the Queen Square Traffic Management Scheme⁵. This location will therefore be re-viewed and re-monitored in 6-months' time to understand any emerging trends.</p>
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⁵ Jacobs. Queen Square Traffic Management Scheme, 2020.

https://beta.bathnes.gov.uk/sites/default/files/2020-10/appendix_cii_674726.br_.42.fbc-09_queen_square_traffic_management_scheme.pdf