Contents

Glossary

Below are the meanings of some words used throughout this report that you may be unfamiliar with, or which may have a specific meaning in the report context:

85th Percentile Speed - The 85th percentile is used in transport monitoring to gauge changes in speeds and speeding behaviour. It is the speed at which 85% of traffic will be travelling at, or below, along a street (15% of traffic will be travelling faster than this speed). For example, if the 85th percentile speed is 20mph, then 85% of vehicles will be travelling at 20mph or less.

AM Peak – In this report, "AM peak" refers to the hours between 07h00 and 10h00.

Automatic Number Plate Recognition (ANPR) cameras – Automatic Number Plate Recognition (ANPR) cameras – ANPR cameras are used to read vehicle registration plates and the information used to inform a traffic management and for enforcement. In the context of this report, ANPR cameras are used to enforce some traffic filters within the LTN's in Haringey so that only those with exemptions or the emergency services can pass through them. It is important to note that some filters have a 'no entry' sign on one side which means they are not accessible from that direction for any vehicles, regardless of status.

Automatic Traffic Counters – "Automatic Traffic Counters" (ATCs) measure traffic volumes and speeds using two thin tubes that run across the street and are connected to a sensor. When wheels pass over the tubes, the pressure impact is interpreted by the sensor to identify the type of vehicle passing over, and the speed at which it passed. ATCs are considered to be extremely accurate. (See Appendix 1 for more details).

Boundary roads – For the purpose of this report, the "boundary roads" of the Bruce Grove trial area are, in a clockwise direction, Lordship Lane (A109) to the north, High Road (A10) to the east, Philip Lane (B153) to the southeast, West Green Road (A504) to the south, Green Lanes (A105) to the south/southwest and Westbury Avenue (A1080) to the west.

Cell or 'sub cell' – A neighbourhood within a Low Traffic Neighbourhood (LTN) is often referred to as a cell or sub cell. Cells are a group of residential streets bordered by a boundary road as defined above.

Experimental Traffic Management Order (ETO) – An "Experimental Traffic Management Order" (ETO) is similar to a permanent Traffic Management Order in that it is a legal document that imposes traffic and parking restrictions. However, unlike a Traffic Management Order, an Experimental Traffic Order can only stay in force for a maximum of 18 months while the effects are monitored and assessed, the first six months being a statutory consultation period during which time formal objections can be raised. An ETO also allows for changes to be made to the relevant scheme during the first twelve months of the trial period, this may trigger another six-month statutory consultation period. An Experimental Traffic Order is made under Sections 9 and 10 of the Road Traffic Regulation Act 1984.

Internal Roads – These are roads which fall in between two or more boundary roads in low traffic neighbourhoods. For the purposes of this report, "internal roads" are local roads in the Bruce Grove West Green LTN trial area on which the project aims to reduce the amount of traffic through the introduction of traffic filters, although some will still lie on through routes in the scheme area. These roads are generally narrower than boundary roads. Traffic counts have been collected on some, but not all, of the internal roads in the Bruce Grove West Green LTN area.

Low Traffic Neighbourhood – A "low traffic neighbourhood" (LTN) is an area where a number of traffic filters are strategically placed to make it impossible or very difficult to cut through the area by motor vehicle. This stops drivers using local streets as shortcuts and makes it safer and easier to walk and cycle. In this report, the Bruce Grove West Green Phase 1 LTN (Phase 1 LTN) trial refers to a low traffic neighbourhood implemented in Haringey under an Experimental Traffic Management Order (ETO). The position of the traffic filters means that drivers (including residents, delivery workers and businesses) are still able to reach any part of the neighbourhood whilst using a vehicle but the route they need to take to reach their destination may change.

Normalised – In this report, "normalising" means to adjust traffic count figures to consider the impact of COVID-19 and other macro-scale factors on traffic patterns. This methodology is explained below in more detail, but in simple terms it means that the traffic count figures have been increased to project what traffic counts may have looked like if traffic levels were at pre-Covid levels.

Observed – In this report, "observed" means the data that was collected, which has not been adjusted to consider the impact of COVID-19 on traffic patterns. This is the actual data that was supplied by the data collection company used.

Patched sites /data – As it is not uncommon for there to be problems with data surveys (broken equipment, cars parked on ATC bands etc.) as well as anomalous readings from surveys resulting from one-off events (waterworks, gas leaks, accidents etc.), all data has been thoroughly checked by hand and cleaned or "patched" (i.e. blank data or significantly anomalous data has been substituted by more

representative data from the site/wave in question), which is a necessary task in order to maintain comparable data.

PM Peak – In this report, "PM peak" refers to the hours between 16h00 and 19h00.

Traffic Filters - "Traffic filters" are restrictions in the street to prevent motor vehicles passing through, either by presenting a physical barrier, such as bollards or planters, or by camera enforcement. Camera enforcement is used to enable buses and emergency vehicles to access the area. People are legally able to walk, cycle and wheel though filters (and use non-motorised scooters).

Video Surveys – Video surveys utilise cameras mounted onto telescopic masts to enable capture of traffic movements, including vehicle classes. Analysts count the traffic from the video surveys to a very high level of >98-100% accuracy.

Introduction – Bruce Grove LTN Post-implementation Report

Haringey Council's 'Streets for People' initiative aims to reclaim local streets for the people living on them, making them safe, welcoming and liveable places. The introduction of measures under the ambitious 'Streets for People' project is aimed at cutting road traffic and pollution, as well as improve the walkability and cyclability of local areas, all whilst developing active travel corridors between local amenities.

Following an extensive listening and engagement exercise, Haringey Council has introduced three people-friendly Low-Traffic Neighbourhoods (LTNs) across the borough. These schemes use filters, such as bollards or ANPR cameras, to stop motor traffic taking shortcuts along local roads, creating a safer, cleaner and quieter neighbourhood for the people living there.

The borough's Phase 1 Low Traffic Neighbourhoods comprise the following, which can be seen on Map 1 on the following page:

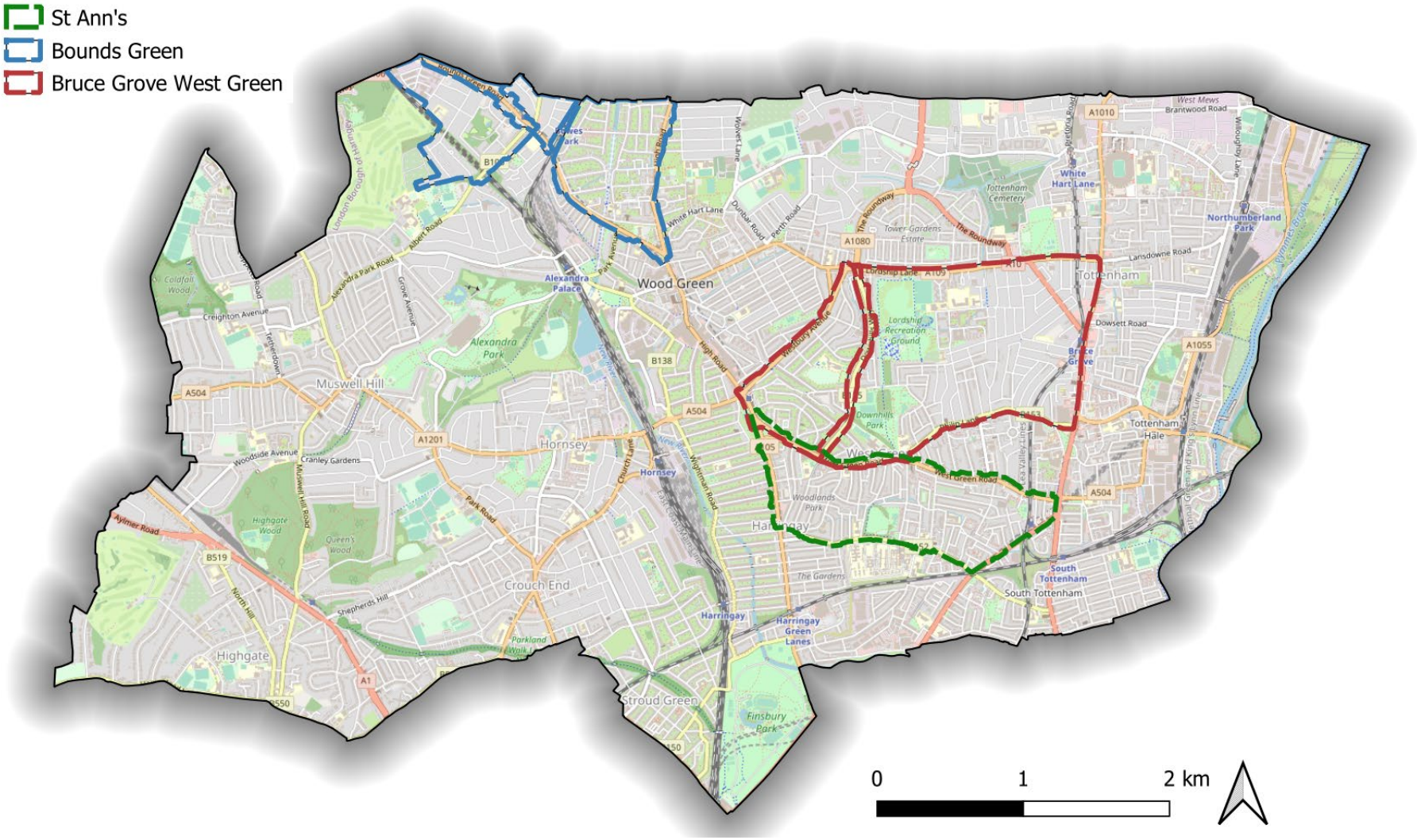
- Bounds Green LTN (introduced 15 August 2022)
- St Ann's LTN (introduced 22 August 2022)
- Bruce Grove West Green LTN (introduced 1 November 2022)

Scheme Context

For the Bruce Grove West Green LTN, the council has installed 21 new traffic filters in the Bruce Grove West Green trial area to prevent motor vehicles from cutting through the local area. Camera enforcement is being used so that emergency vehicles, refuse vehicles and where relevant buses can still pass through some of the traffic filters.

Camera filters also enable those that are eligible for exemptions to pass through the traffic filters without incurring a Penalty Charge Notice (PCN). More details on the range of exemptions available for LTN's in Haringey can be found via this link:

Map 1 : Location of Haringey Stage 1 LTNs Within the Borough



Introduction – Monitoring Report

This monitoring report provides data and insights relating to the Bruce Grove West Green LTN trial. The trial went live in November 2022 following a two week 'discretionary' period during which warning letters were issued instead of Penalty Charge Notices (PCN'S), so the analysis compares data from before and after that date. The pre-implementation ("before") traffic counts were collected in November 2021, before the LTN was put in place. The post-implementation monitoring traffic counts were collected in January 2023, two months after it was installed.

Traffic Counts Approach

The count data presented in this report is not traffic modelling, but actual observed traffic, comparing traffic flows in November 2021 to those collected in January 2023.

Dates of Traffic Counts

Pre-implementation counts: 1st November 2021 – 7th November 2021

Bruce Grove West Green scheme went live: 1st November 2022

Post-implementation counts: 10th January 2023 – 2nd February 2023 (start dates varied across sites during this period to account for roadworks and other disruptions)

The council uses various traffic counting methods to understand traffic volumes and speeds within and around the LTN to assess if the scheme is having the desired impact and to respond (if required) with mitigating actions.

Automatic Traffic Counts (ATCs) are used at most sites for the Bruce Grove West Green area. ATCs measure motorised and cycle traffic volumes and motorised traffic speeds and classify the traffic by type and are able to collect data for all vehicles regardless of their speed of travel (including those traveling at <10kph). For this scheme, one video camera site was used, on Bruce Grove just southwest of the junction with The Avenue. More information about the different types of counts and which type was used at each site is detailed in Appendix 1.

A map of the count sites is presented on the following page. It is noted that some locations presented in the map have been slightly shifted from their on-street locations to assist with legibility.

Map 2: Bruce Grove West Green LTN and monitoring sites

Analysis and Normalisation Methodology Overview

All of the counts in this analysis were undertaken in full awareness of COVID implications and post-COVID working patterns, as well as ongoing national trends such as the cost-of-living crisis – and were therefore processed with results interpreted in a way that accounts for these (and other) background changes to how people travel in London.

Daily volumes of motorised traffic have been drawn from a range of 11 permanent traffic counters managed by Transport for London across Haringey and used to establish monthly averages in 2019 and 2020. The percentage difference between the same month across the two different years has been used to adjust the counts to normalise for COVID-19 disruption between the months in which counts have been taken. The methodology is set out in greater detail in Appendix 2. Using normalisation methodologies using TfL count locations across types of typologies (only within 2km of scheme, only on trunk routes etc.) has been considered in studies for other Boroughs and has not been shown to make a notable difference in results, particularly following the lifting of COVID-related regulations.

For context, the difference based on this dataset was greatest in April 2020, where motorised traffic was approximately 58% of what it had been in April 2019.

Using the months of the Bruce Grove West Green counts, in November 2021 motorised traffic was approximately 1% lower than in November 2019 and in January 2023 motorised traffic was approximately 5% lower than in January 2019.

Table 1: Normalisation factors since March 2020 for traffic in Haringey

Month	Impact
Mar-20	83.52%
Apr-20	58.28%
May-20	76.78%
Jun-20	90.56%
Jul-20	95.61%
Aug-20	98.61%
Sep-20	96.28%
Oct-20	99.45%
Nov-20	91.98%
Dec-20	89.47%
Jan-21	82.03%
Feb-21	84.69%
Mar-21	89.79%
Apr-21	92.65%
May-21	93.80%
Jun-21	96.76%
Jul-21	97.83%
Aug-21	96.95%
Sep-21	97.43%
Oct-21	101.60%
Nov-21	98.94%
Dec-21	94.96%
Jan-22	94.94%
Feb-22	95.95%
Mar-22	94.32%
Apr-22	93.70%
May-22	95.53%
Jun-22	94.88%
Jul-22	94.56%
Aug-22	93.44%
Sep-22	94.18%
Oct-22	99.69%
Nov-22	98.25%
Dec-22	92.49%
Jan-23	95.16%

Interpreting Count Results

Unless specified otherwise, the seven-day daily average has been used and discussed in traffic volumes analysis in this report. Full data and flow profiles for each site are provided in Appendix 5.

Raw data has been analysed and compared to give the observed results. The observed results have then undergone the normalisation process described in the previous section to give the normalised results. Both the normalised results and the observed results can be found in the results tables in this report and in the appendices. The figures given for changes in volumes of traffic in this report are normalised, and percentages have been drawn from the differences between normalised results.

A negative number or percentage indicates a decrease between the two counts, while a positive number or percentage indicates an increase.

Please note that traffic flows fluctuate daily (generally up to 10%), and background impacts on traffic flows cannot be consistently accounted for in the normalisation on a day-to-day and location-by-location basis. As such, changes within -10% to +10% are considered insignificant (i.e. no or negligible change).

In addition, it must be noted that as vehicles travelling through the LTN/on boundary roads may go through multiple counter sites, it is certain that the summed number of vehicles counted across all monitored roads is higher than the actual number of trips taken. As such, a drop/increase in total volumes of vehicles counted across multiple individual roads does not represent the same drop/increase in total unique vehicle journeys, although this figure can be useful in understanding the magnitude and direction of the scheme's impact. It is important to note, however, that this methodology of recording traffic volumes is consistent across both pre and post implementation periods. It is also important to note that this methodology is consistent with the analysis of LTN schemes in other London boroughs.

External Factors

It is important to consider all these results in the context of other external factors that could be impacting the data. Whilst broader trends occurring over longer timescales and larger geographies are likely addressed through normalisation, more local or short-term impacts may also be present. It is not possible to adjust for these in calculations. There are five main external factors which could be influencing results, as follows:

Nearby Low Traffic Neighbourhoods – As can be seen in Map 1, Bruce Grove West Green LTN borders the St Ann's LTN trial area, which lies south of West Green Road on a shared boundary. Bounds Green LTN is approximately 1.7km to the northeast of the scheme. There are a range of schemes with similar objectives as LTNs in neighbouring boroughs, including in Waltham Forest to the east, Islington/Hackney to the south and Enfield to the north, but all such schemes are relatively far away and were in place well before the Haringey schemes were introduced. These are therefore unlikely to have impacted on flows in the study area.

Weather – Weather can have a significant impact on travel choices, especially cycling, as well as on air pollution. During the month in which pre-implementation counts were conducted (November 2021), the average temperature in Greater London was 9°C, with average highs of 11°C and average lows of 7°C. Post-implementation counts, taken in January 2023, show an average temperature of 6°C, with average highs of 9°C and average lows of 4°C – although it is noted that counts were taken in the first half of the month, which was considerably warmer than the second half. This indicates that generally, temperatures in the post-implementation data collection period were similar or slightly cooler to those collected in the pre-implementation period.

COVID-19 Impacts – In the pre-implementation period (November 2021), most legally enforced COVID-19 restrictions had already been dropped across the UK. However, infection rates and hospitalisation rates were high throughout the autumn of 2021, peaking with the arrival of the Omicron variant in December of that year. Alongside the fact that masks were still required on Transport for London services until February 2022, it is likely that many individuals were still working entirely or mostly from home during the time this data was collected.

In contrast, post-implementation counts conducted in January 2023 were conducted long after all COVID-19 restrictions had been dropped and most London residents had settled into a consistent working pattern, whether at home, at workplaces or in hybrid setups.

However, given that these trends did not change on a day-to-day basis, is it considered that most of this background behaviour should have been captured by the normalisation methodology.

Cost of Living Crisis – In January 2023, during the post-implementation counts, rising inflation had significantly increased the price of petrol and other critical items such as heating, with the cost of driving and taking public transportation increasing compared to previous years and the affordability of travel decreasing. This may have reduced the number of discretionary journeys taken by paid modes (both public and private), with some level of increase in walking and cycling likely despite the cold weather. Related to this is the high number of strikes (both on public transport and otherwise) that have disrupted patterns of behaviour – whilst care was taken not to collect data during strikes, it is possible that the uncertainty they generated has impacted more general travel behaviour as well. Again, it is considered that most of this background behaviour should have been captured by the normalisation methodology.

ULEZ Extension – In October 2021, directly before the pre-implementation counts were taken, the ULEZ (Ultra Low Emission Zone) was extended to the North and South Circular Roads, encompassing the entirety of the Borough of Haringey whereas previously none of the Borough was included. Given the pre-implementation counts occurred soon after this, it is possible that there was still some lag in driver behaviour as motorists became more familiar with this restriction.

In July 2022 Transport for London published the *Expanded Ultra Low Emission Zone – Six Month Report Including Low Emission Zone – One Year Report*. The report estimates that the new ULEZ reduced traffic by 21,000 vehicles in the zone on an average day, a reduction of 2 per cent of traffic flow compared to the weeks before the expanded ULEZ was implemented. Whilst it is expected that this broad change in cost of driving in the borough has been reflected in normalised data via TfL ATCs, it is possible that more localised effects exist. It is important to note that the ULEZ is expanding to the M25 boundary and covering all London Boroughs from August 2023.

Data Patching

For this report, data was processed using SYSTRA's proprietary automated data processing tools, which draw together raw data from all reporting periods and apply formulae-based calculations to produce the following charts, tables and appendices.

However, as it is not uncommon for there to be problems with data surveys (broken equipment, cars parked on ATC bands etc.) as well as anomalous readings from surveys resulting from one-off events (waterworks, gas leaks, accidents etc.), all data has been thoroughly checked by hand and "patched" (i.e. blank data or significantly anomalous data has been substituted by more representative data from the site/wave in question), which is a necessary task in order to maintain comparable data.

Analysis of Vehicle Volumes

All Motorised Vehicle Volumes (7-Day Daily Average)

This section outlines the changes in observed and normalised traffic volumes for all motorised vehicles, including cars (both private cars and taxis/company-owned cars) and goods vehicles ranging from delivery vans to large articulated lorries. The total number of such motorised vehicles counted in the monitored week has been summed and divided by seven to create a daily average. If roads are less heavily used on weekends, it is possible that seven-day averages are slightly lower than five-day (weekday) averages – however, as usage patterns are expected to be similar between data collection rounds, this factor is not likely to materially impact the net and percentage changes in flows between pre- and post-implementation.

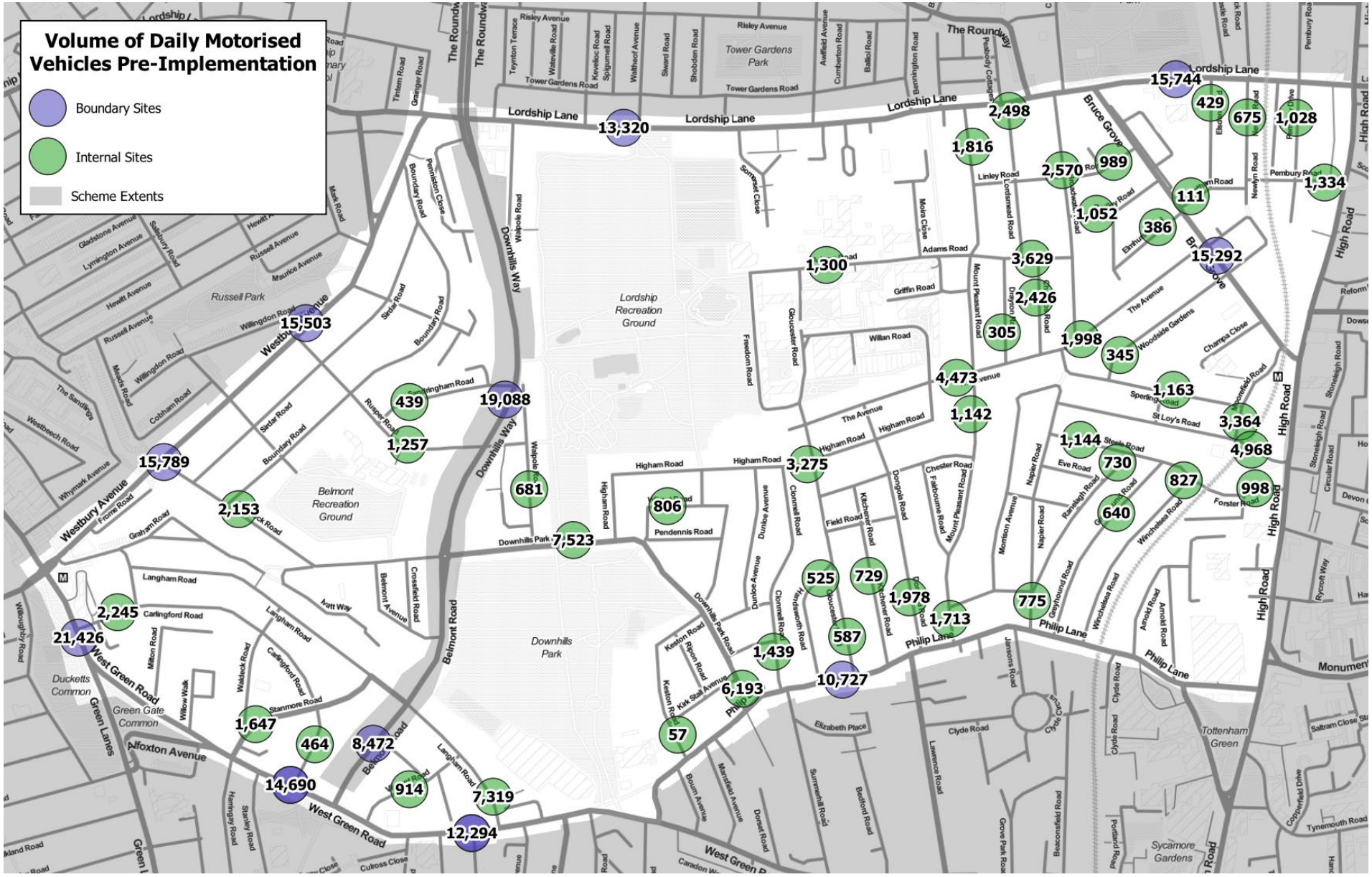
The numbers presented have been rounded to the nearest whole number and raw/percentage changes calculated accordingly. It is noted that the number of cycles counted is not included in this analysis.

Map 3 below shows the total volume of vehicles recorded during the pre-implementation period (November 2021) on both boundary and internal roads, whilst Map 4 on the following page shows the same data for the post-implementation period (January 2023).

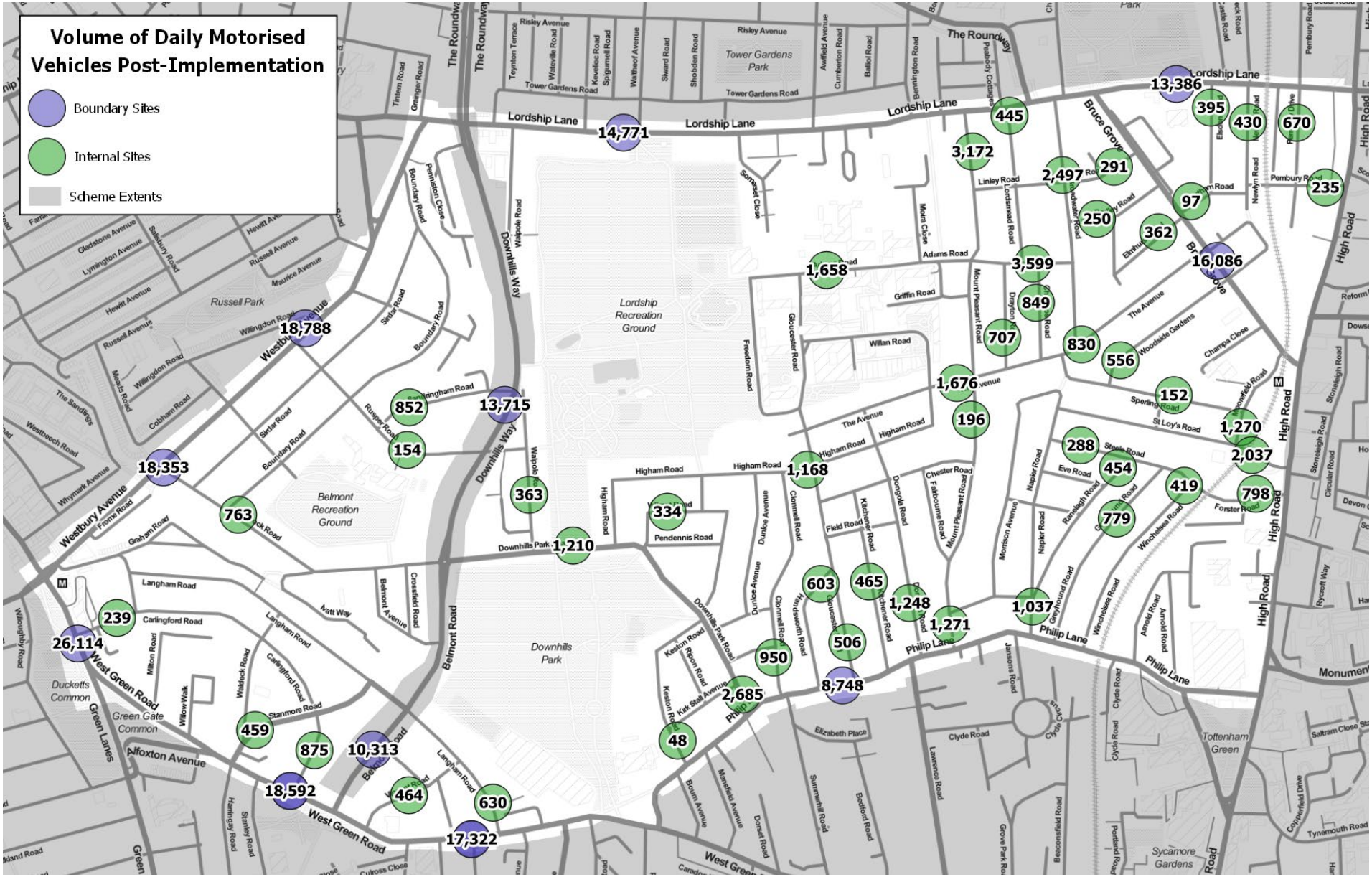
Map 5 then presents the percentage change in motorised vehicle volumes between the pre-implementation data (November 2021) and post-implementation data (January 2023). It is important that percentage change figures are considered in the context of raw changes, as presented in the tables, as a large percentage change could indicate a relatively minor change in actual vehicles counted on a particularly quiet road. Conversely, a busy road could see a small percentage change even if there the number of vehicles counted is quite different between the two monitored periods. In such cases, it is useful to compare data in Maps 3 & 4, or to refer to the tables for full context.

Further context for each site can be found in Appendix 5, which outlines the observed and normalised figures for all periods, as well as average flow profiles across the day.

Map 3: Pre-Implementation Motorised Vehicles Volumes



Map 4: Post-Implementation Motorised Vehicle Volumes



Map 5: Percentage Change in Motorised Vehicle Volumes

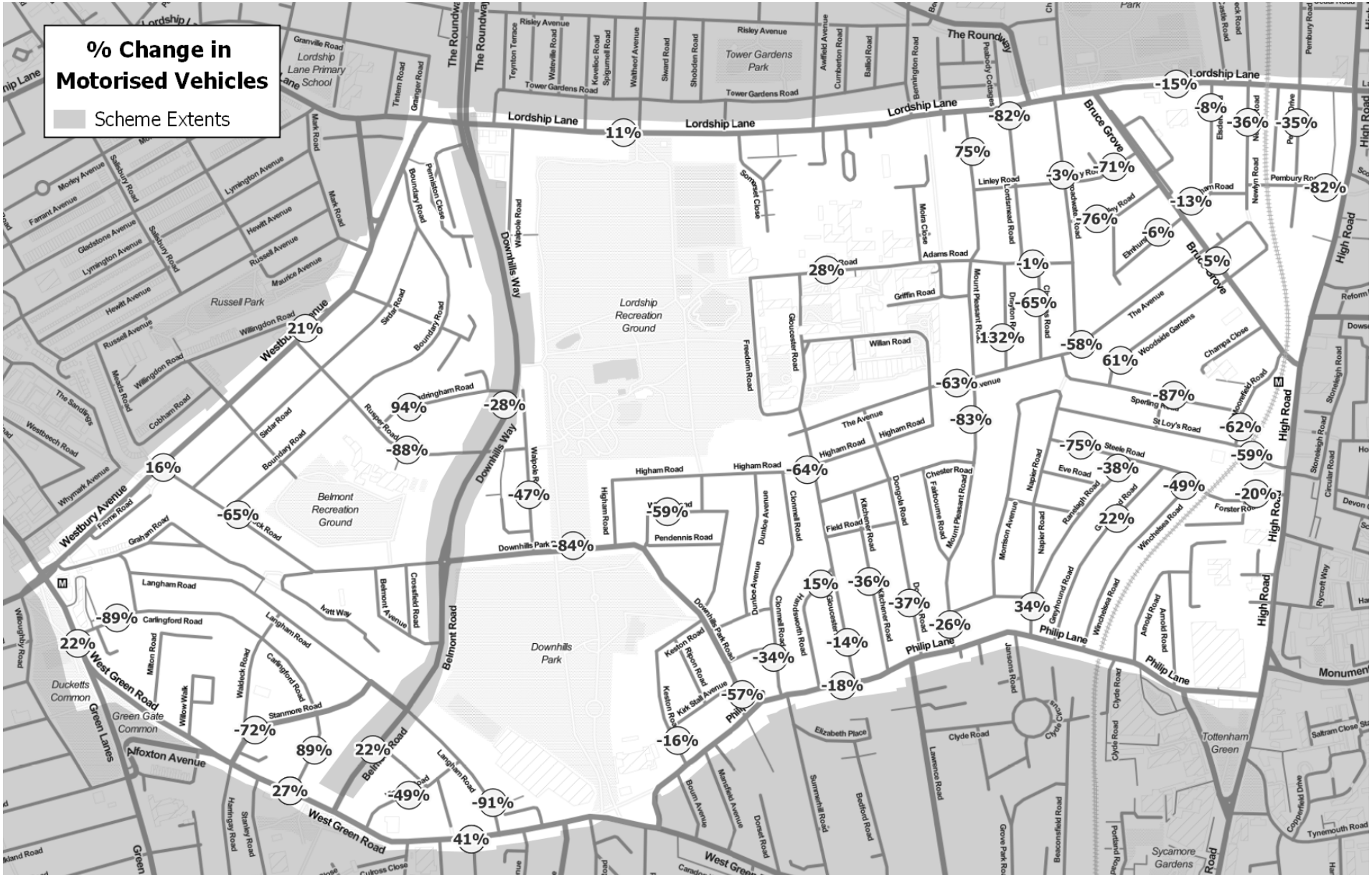


Table 2: Motorised Traffic Volumes on Internal Roads

	Pre-Observed: Nov-21	Pre-Normalised: Nov-21	Post-Observed: Jan-23	Post-Normalised: Jan-23	Difference Post- vs. Pre-(Observed)	Difference Post- vs. Pre-(Normalised)	% Difference Post- vs. Pre-(Observed)	% Difference Post- vs. Pre-(Normalised)
Adams Road	1,287	1,300	1,577	1,658	290	358	23%	28%
Broadwater Road	2,542	2,570	2,375	2,497	-167	-73	-7%	-3%
Carlingford Road (@West Green Road)	460	464	833	875	373	411	81%	89%
Carlingford Road (@Crescent Road/Green Lanes)	2,221	2,245	227	239	-1,994	-2,006	-90%	-89%
Chandos Road	2,400	2,426	808	849	-1,592	-1,577	-66%	-65%
Clonmell Road	1,425	1,439	905	950	-520	-489	-36%	-34%
Dongola Road	1,957	1,978	1,187	1,248	-770	-730	-39%	-37%
Downhills Park Road (@Kirkstall Avenue/Philip Lane)	6,127	6,193	2,555	2,685	-3,572	-3,508	-58%	-57%
Downhills Park Road (@Lordship Park Forest)	7,444	7,523	1,152	1,210	-6,292	-6,313	-85%	-84%
Drayton Road	301	305	674	707	373	402	124%	132%
Elmhurst Road	383	386	343	362	-40	-24	-10%	-6%
Elsden Road	425	429	377	395	-48	-34	-11%	-8%
Forster Road	988	998	760	798	-228	-200	-23%	-20%
Gloucester Road	581	587	482	506	-99	-81	-17%	-14%
Greyhound Road	634	640	741	779	107	139	17%	22%
Handsworth Road	520	525	573	603	53	78	10%	15%
Hartham Road	109	111	92	97	-17	-14	-16%	-13%
Higham Road	3,241	3,275	1,111	1,168	-2,130	-2,107	-66%	-64%
Keston Road	57	57	46	48	-11	-9	-19%	-16%
Kitchener Road	721	729	443	465	-278	-264	-39%	-36%
Langham Road	7,241	7,319	598	630	-6,643	-6,689	-92%	-91%

Linley Road	979	989	277	291	-702	-698	-72%	-71%
Lordsmead Road	2,471	2,498	424	445	-2,047	-2,053	-83%	-82%
Mannock Road	2,130	2,153	725	763	-1,405	-1,390	-66%	-65%
Moorefield Road	3,329	3,364	1,208	1,270	-2,121	-2,094	-64%	-62%
Mount Pleasant Road (#145/The Avenue)	1,129	1,142	186	196	-943	-946	-84%	-83%
Mount Pleasant Road (#316/Lordship Lane)	1,797	1,816	3,018	3,172	1,221	1,356	68%	75%
Mount Pleasant Road (#5/Philip Lane)	1,695	1,713	1,209	1,271	-486	-442	-29%	-26%
Napier Road	768	775	987	1,037	219	262	29%	34%
Newlyn Road	668	675	411	430	-257	-245	-38%	-36%
Pembury Road (#1/High Road)	1,319	1,334	223	235	-1,096	-1,099	-83%	-82%
Pembury Road (#59/Lordship Lane)	1,017	1,028	637	670	-380	-358	-37%	-35%
Radley Road	1,041	1,052	239	250	-802	-802	-77%	-76%
Ranelagh Road	722	730	431	454	-291	-276	-40%	-38%
Rusper Road	1,244	1,257	148	154	-1,096	-1,103	-88%	-88%
Sandringham Road	434	439	811	852	377	413	87%	94%
Sperling Road	1,150	1,163	145	152	-1,005	-1,011	-87%	-87%
St. Loys Road	4,916	4,968	1,938	2,037	-2,978	-2,931	-61%	-59%
Stanmore Road	1,629	1,647	436	459	-1,193	-1,188	-73%	-72%
Steele Road	1,132	1,144	274	288	-858	-856	-76%	-75%
The Avenue (@Broadwater Road)	1,976	1,998	790	830	-1,186	-1,168	-60%	-58%
The Avenue (@Mount Pleasant Road/Marden Road)	4,427	4,473	1,595	1,676	-2,832	-2,797	-64%	-63%
Vincent Road	904	914	440	464	-464	-450	-51%	-49%
Walpole Road	673	681	345	363	-328	-318	-49%	-47%
Wilmot Road	798	806	319	334	-479	-472	-60%	-59%
Wimborne Road	3,591	3,629	3,424	3,599	-167	-30	-5%	-1%
Winchelsea Road	820	827	399	419	-421	-408	-51%	-49%
Woodside Gardens	342	345	529	556	187	211	55%	61%
Total Internal Road	**84,165**	**85,059**	**39,427**	**41,436**	**-44,738**	**-43,623**	**-53%**	**-51%**

*As detailed on page 17 it is important to note that vehicles travelling through the LTN may go through multiple counter sites (roads where traffic volumes have been counted), so the total number of vehicle journeys counted is certain to be higher than the actual number of trips taken.

Table 3: Motorised Traffic Volumes on Boundary Roads

	Pre-Observed: Nov-21	Pre-Normalised: Nov-21	Post-Observed: Jan-23	Post-Normalised: Jan-23	Difference Post- vs. Pre-(Observed)	Difference Post- vs. Pre-(Normalised)	% Difference Post- vs. Pre-(Observed)	% Difference Post- vs. Pre-(Normalised)
A10 Bruce Grove (@The Avenue/Woodside Gardens)	15,130	15,292	15,308	16,086	178	794	1%	5%
A105 Green Lanes (@Carlingford Road)	21,200	21,426	24,848	26,114	3,648	4,688	17%	22%
A1080 Westbury Avenue (@Mannock Road)	15,623	15,789	17,465	18,353	1,842	2,564	12%	16%
A1080 Westbury Avenue (@Willingdon Road)	15,341	15,503	17,879	18,788	2,538	3,285	17%	21%
A109 Lordship Lane (@Elsden Road)	15,578	15,744	12,738	13,386	-2,840	-2,358	-18%	-15%
A109 Lordship Lane (@Waltheof Avenue)	13,180	13,320	14,055	14,771	875	1,451	7%	11%
A504 West Green Road (@Carlingford Road)	14,535	14,690	17,691	18,592	3,156	3,902	22%	27%
A504 West Green Road (@Etherley Road)	12,164	12,294	16,482	17,322	4,318	5,028	35%	41%
B153 Philip Lane	10,614	10,727	8,324	8,748	-2,290	-1,979	-22%	-18%
B155 Belmont Road	8,382	8,472	9,814	10,313	1,432	1,841	17%	22%
B155 Downhills Way	18,886	19,088	13,050	13,715	-5,836	-5,373	-31%	-28%
Total Boundary Road	**160,633**	**162,345**	**167,654**	**176,188**	**7,021**	**13,843**	**4%**	**9%**

*As detailed on page 17 it is important to note that vehicles travelling through the LTN may go through multiple counter sites (roads where traffic volumes have been counted), so the total number of vehicle journeys counted is certain to be higher than the actual number of trips taken.

Table 4: Motorised Traffic Volumes on Key Internal Roads, By Direction

	Direction A	Nov-21 Daily Flow	Jan-23 Daily Flow	Absolute Difference	% Difference	Direction B	Nov-21 Daily Flow	Jan-23 Daily Flow	Absolute Difference	% Difference
Downhills Park Road (@Lordship Park Forest)	Eastbound	3,670	608	-3,061	-83%	Westbound	3,853	601	-3,252	-84%
Langham Road	Northbound	3,421	312	-3,109	-91%	Southbound	3,896	316	-3,580	-92%
Downhills Park Road (@Kirkstall Avenue/Philip Lane)	Northbound	3,551	1,302	-2,249	-63%	Southbound	2,642	1,383	-1,259	-48%
St. Loys Road	Eastbound	2,198	1,157	-1,040	-47%	Westbound	2,770	879	-1,890	-68%
The Avenue (@Mount Pleasant Road/Marden Road)	Eastbound	3,202	1,185	-2,019	-63%	Westbound	1,271	493	-778	-61%
Adams Road	Eastbound	465	527	62	13%	Westbound	834	1,130	296	35%

Table 5: Motorised Traffic Volumes on Boundary Roads, By Direction

	Direction A	Nov-21 Daily Flow	Jan-23 Daily Flow	Absolute Difference	% Difference	Direction B	Nov-21 Daily Flow	Jan-23 Daily Flow	Absolute Difference	% Difference
A10 Bruce Grove (@The Avenue/Woodside Gardens)	Northbound	6,901	7,548	647	9%	Southbound	8,391	8,538	147	2%
A105 Green Lanes (@Carlingford Road)	Northbound	10,761	13,342	2,581	24%	Southbound	10,665	12,772	2,107	20%
A1080 Westbury Avenue (@Mannock Road)	Northbound	8,196	9,219	1,023	12%	Southbound	7,593	9,134	1,542	20%
A1080 Westbury Avenue (@Willingdon Road)	Northbound	7,668	9,214	1,546	20%	Southbound	7,835	9,574	1,739	22%
A109 Lordship Lane (@Elsden Road)	Eastbound	7,279	6,402	-877	-12%	Westbound	8,465	6,984	-1,481	-17%
A109 Lordship Lane (@Waltheof Avenue)	Eastbound	6,295	7,191	896	14%	Westbound	7,025	7,580	555	8%
A504 West Green Road (@Carlingford Road)	Eastbound	7,653	9,219	1,566	20%	Westbound	7,037	9,373	2,336	33%
A504 West Green Road (@Etherley Road)	Eastbound	6,628	9,345	2,717	41%	Westbound	5,666	7,977	2,310	41%
B153 Philip Lane	Eastbound	4,717	3,977	-740	-16%	Westbound	6,010	4,771	-1,239	-21%
B155 Belmont Road	Northbound	3,310	3,680	370	11%	Southbound	5,162	6,633	1,471	28%
B155 Downhills Way	Northbound	8,567	4,670	-3,897	-46%	Southbound	10,521	9,045	-1,475	-14%

Insights: All Motorised Vehicle Volumes

When comparing normalised flows between the November 2021 pre-implementation and January 2023 post-implementation surveys, total motorised vehicle volumes have declined for most internal roads within the Bruce Grove LTN area, with limited percentage increase on scheme boundary roads.

Overall, around 43,600 fewer vehicles were counted across internal roads, equating to an overall drop of 51% in such volumes, whilst the number of vehicles counted on boundary roads increased by over 13,800, a 9% rise from the 2021 pre-implementation counts. However, it must be noted that as vehicles travelling through the LTN and boundary roads are likely to go through multiple counter sites, it is certain that the number of vehicles counted across all internal/boundary roads is higher than the actual number of trips taken. As such, a drop/increase in total volumes of vehicles counted across multiple individual roads does not represent the same drop/increase in total unique vehicle journeys, although can be useful in understanding the magnitude and direction of a change.

It is important to note that this methodology of recording traffic volumes is consistent across both pre and post implementation periods. It is also important to note that this methodology is consistent with the analysis of LTN schemes in other London boroughs.

On internal roads, Langham Road experienced the largest reduction in normalised traffic flows, decreasing by approximately 6,700 daily vehicles, a difference of -91% when compared to pre-implementation normalised flows at the same site. As the traffic filter on Langham Road no longer permits through-traffic (explaining much of the large drop), some vehicles still accessing this sub-cell are now continuing via Belmont Road, which has seen an increase of around 1,800 daily vehicles (+22%). Elsewhere, Downhills Park Road (@Lordship Park Forest) also saw a substantial decrease in daily motorised vehicles, of around 6,300, which is equivalent to -84%. Although some of these flows may now also be contributing to additional traffic on Belmont Road, it is considered that most such vehicles are no longer transiting the LTN cell, given that the section of Belmont Road south of the Downhills Park Road junction also sees a reduction in vehicle flows (it would see an increase if vehicles from Downhills Park Road were just rerouting south to access Philip Road/West Green Road via Belmont Road).

There are a range of streets with even higher percentage changes, although the raw change in vehicle numbers is somewhat lower on these. Carlingford Road (@Crescent Road/Green Lanes), for example, saw a -89% decrease, which equates to around 2,000 fewer daily vehicles when normalised. A large proportion of the other internal roads also experienced decreases of at least 70%, with 16 such roads seeing drops of over 1,000 daily vehicles.

In contrast to this, traffic increased on several internal roads between November 2021 and January 2023. Most notably, Mount Pleasant

Road (#316/Lordship Lane), saw an increase in daily vehicles of approximately 1,300 (75%), likely because this is the only remaining access to this sub-cell of the LTN. Drayton Road also experienced the most significant percentage increase of 132%, although this only accounts for around 400 more motor vehicles when normalised. The council will continue to monitor the traffic volumes at these locations.

For boundary roads, there has been a slight increase in traffic flows post-implementation, of 9% when compared with normalised flows pre-implementation – this equates to a total increase of 13,843 vehicles counted. The most significant increase by volume was experienced on West Green Road (@Etherley Road) where daily traffic was 41% higher in January 2023 than in November 2021, amounting to 5,000 more vehicles – this was also the highest percentage change on a road. Several other sites saw notable increases in traffic levels, for example Green Lanes (@Carlingford Road) with an increase of around 4,700 daily vehicles (+22%) and West Green Road (@Carlingford Road) with an increase of just over 3,900 daily vehicles (+27%). For the latter of these sites, the westbound increase was notably larger than the eastbound increase. As mentioned, when discussing internal roads above, Downhills Way saw a decrease of nearly 5,400 daily vehicles, with the bulk of this decrease being northbound traffic.

Trends on boundary roads generally indicate that there is a joint increase in traffic on West Green Road, with the Bruce Grove West Green scheme to the north and St. Ann's scheme to the south – as well as at the northern section of Green Lanes (@ Carlingford Road) directly to the west of the scheme area. Westbury Avenue also sees increases in traffic. However, increases on Lordship Lane and Bruce Grove show a more mixed picture, and Philip Lane shows a moderate decrease in overall traffic.

Ultimately, whilst these findings indicate that the total volume of traffic on internal roads has decreased considerably since the Bruce Grove LTN trial, a number of boundary roads have seen increases over the same time period and merit further monitoring by the council.

Goods Vehicles Volumes (5-Day Daily Average)

This section outlines the changes in normalised traffic volumes for Light Goods Vehicles and Heavy Goods Vehicles.

LGV stands for Light Goods Vehicle. This is defined, for the purposes of this report (which may differ from other traffic monitoring reports) as a rigid two-axle van, such as the type of van commonly used for deliveries. HGV stands for Heavy Goods Vehicle, which is a goods vehicle larger than the type of van described above.

The results shown are for 5-day average weekday volumes, excluding weekends. This is because goods vehicle traffic is generally lower at weekends, therefore the weekday data gives a better impression of actual impacts by not masking this. Similarly, the % numbers given are percentages of total motorised traffic, rather than all vehicles counted, so the comparison to cycles is not considered. Changes in the proportion of LGV/HGV compared to total motorised traffic (or ”prevalence” of such vehicles) is presented as a percentage point difference, although the actual percentage change for vehicles is also presented.

Table 6: Normalised Goods Vehicle Volumes on Internal Roads

	LGV Volume: Nov-21	LGV Prop: Nov-21	LGV Volume: Jan-23	LGV Prop: Jan-23	LGV Change in Prop.	LGV Change in Volume	HGV Volume: Nov-21	HGV Prop: Nov-21	HGV Volume: Jan-23	HGV Prop: Jan-23	HGV Change in Prop.	HGV Change in Volume
Adams Road	124	9%	111	6%	-3%	-10%	31	2%	63	4%	2%	103%
Broadwater Road	225	9%	195	8%	-1%	-13%	92	3%	14	1%	-2%	-85%
Carlingford Road (@West Green Road)	50	11%	17	2%	-9%	-66%	4	1%	43	5%	4%	975%
Carlingford Road (@Crescent Road/Green Lanes)	238	10%	5	2%	-8%	-98%	21	1%	19	8%	7%	-10%
Chandos Road	174	7%	92	11%	4%	-47%	10	0%	3	0%	0%	-70%
Clonmell Road	71	5%	74	8%	3%	4%	18	1%	5	1%	0%	-72%
Dongola Road	31	2%	27	2%	0%	-13%	59	3%	4	0%	-3%	-93%
Downhills Park Road (@Kirkstall Avenue/Philip Lane)	501	8%	245	9%	1%	-51%	80	1%	103	4%	3%	29%
Downhills Park Road (@Lordship Park Forest)	477	6%	288	22%	16%	-40%	222	3%	45	3%	0%	-80%
Drayton Road	17	5%	73	11%	6%	329%	14	4%	6	1%	-3%	-57%
Elmhurst Road	26	7%	48	14%	7%	85%	5	1%	2	1%	0%	-60%
Elsden Road	25	5%	36	9%	4%	44%	13	3%	4	1%	-2%	-69%
Forster Road	64	6%	47	6%	0%	-27%	4	0%	9	1%	1%	125%
Gloucester Road	49	8%	14	3%	-5%	-71%	8	1%	38	8%	7%	375%
Greyhound Road	24	4%	74	10%	6%	208%	29	5%	5	1%	-4%	-83%
Handsworth Road	37	7%	5	1%	-6%	-86%	11	2%	67	11%	9%	509%
Hartham Road	0	0%	1	1%	1%	N/A	1	1%	4	4%	3%	300%
Higham Road	177	5%	88	7%	2%	-50%	247	7%	92	7%	0%	-63%
Keston Road	3	4%	1	2%	-2%	-67%	1	1%	-	0%	-1%	-100%
Kitchener Road	36	5%	28	6%	1%	-22%	6	1%	21	5%	4%	250%
Langham Road	465	6%	78	12%	6%	-83%	175	2%	6	1%	-1%	-97%
Linley Road	104	10%	23	8%	-2%	-78%	10	1%	8	3%	2%	-20%

Lordsmead Road	184	7%	32	7%	0%	-83%	54	2%	17	4%	2%	-69%
Mannock Road	140	6%	40	5%	-1%	-71%	16	1%	16	2%	1%	0%
Moorefield Road	106	3%	88	7%	4%	-17%	175	5%	58	5%	0%	-67%
Mount Pleasant Road (#145/The Avenue)	83	7%	19	9%	2%	-77%	3	0%	3	1%	1%	0%
Mount Pleasant Road (#316/Lordship Lane)	68	4%	341	11%	7%	401%	73	4%	9	0%	-4%	-88%
Mount Pleasant Road (#5/Philip Lane)	145	8%	121	9%	1%	-17%	9	1%	7	1%	0%	-22%
Napier Road	58	8%	46	4%	-4%	-21%	7	1%	45	4%	3%	543%
Newlyn Road	69	10%	65	15%	5%	-6%	3	0%	1	0%	0%	-67%
Pembury Road (#1/High Road)	99	7%	4	2%	-5%	-96%	11	1%	11	4%	3%	0%
Pembury Road (#59/Lordship Lane)	80	8%	70	11%	3%	-13%	20	2%	5	1%	-1%	-75%
Radley Road	152	13%	23	9%	-4%	-85%	33	3%	18	7%	4%	-45%
Ranelagh Road	40	6%	43	9%	3%	8%	9	1%	2	0%	-1%	-78%
Rusper Road	95	7%	5	3%	-4%	-95%	9	1%	8	5%	4%	-11%
Sandringham Road	50	11%	95	11%	0%	90%	1	0%	6	1%	1%	500%
Sperling Road	68	6%	16	10%	4%	-76%	8	1%	4	3%	2%	-50%
St. Loys Road	341	6%	300	15%	9%	-12%	118	2%	26	1%	-1%	-78%
Stanmore Road	223	12%	56	12%	0%	-75%	12	1%	2	0%	-1%	-83%
Steele Road	97	9%	32	11%	2%	-67%	4	0%	4	1%	1%	0%
The Avenue (@Broadwater Road)	268	14%	159	19%	5%	-41%	25	1%	36	4%	3%	44%
The Avenue (@Mount Pleasant Road/Marden Road)	222	5%	125	7%	2%	-44%	224	5%	76	4%	-1%	-66%
Vincent Road	87	9%	54	11%	2%	-38%	2	0%	2	0%	0%	0%
Walpole Road	66	9%	49	13%	4%	-26%	2	0%	1	0%	0%	-50%
Wilmot Road	167	20%	134	39%	19%	-20%	2	0%	1	0%	0%	-50%
Wimborne Road	136	4%	205	6%	2%	51%	12	0%	265	7%	7%	2108%
Winchelsea Road	38	5%	30	7%	2%	-21%	2	0%	1	0%	0%	-50%
Woodside Gardens	34	10%	65	12%	2%	91%	2	1%	3	1%	0%	50%
Total/Average Internal Road	**6,034**	**7%**	**3,787**	**9%**	**2%**	**-37%**	**1,897**	**2%**	**1,188**	**3%**	**1%**	**-37%**

Table 7: Normalised Goods Vehicle Volumes on Boundary Roads

	LGV Volume: Nov-21	LGV Prop: Nov-21	LGV Volume: Jan-23	LGV Prop: Jan-23	LGV Change in Prop.	LGV Change in Volume	HGV Volume: Nov-21	HGV Prop: Nov-21	HGV Volume: Jan-23	HGV Prop: Jan-23	HGV Change in Prop.	HGV Change in Volume
A10 Bruce Grove (@The Avenue/Woodside Gardens)	1,376	9%	1,256	8%	-1%	-9%	175	1%	137	1%	0%	-22%
A105 Green Lanes (@Carlingford Road)	1,354	6%	885	3%	-3%	-35%	797	4%	934	4%	0%	17%
A1080 Westbury Avenue (@Mannock Road)	1,356	9%	2,175	12%	3%	60%	366	2%	226	1%	-1%	-38%
A1080 Westbury Avenue (@Willingdon Road)	1,192	8%	1,280	7%	-1%	7%	478	3%	727	4%	1%	52%
A109 Lordship Lane (@Elsden Road)	521	3%	1,193	8%	5%	129%	353	2%	488	3%	1%	38%
A109 Lordship Lane (@Waltheof Avenue)	1,569	11%	1,546	10%	-1%	-1%	217	2%	306	2%	0%	41%
A504 West Green Road (@Carlingford Road)	1,065	7%	951	5%	-2%	-11%	511	3%	773	4%	1%	51%
A504 West Green Road (@Etherley Road)	425	3%	728	4%	1%	71%	810	7%	635	4%	-3%	-22%
B153 Philip Lane	905	8%	554	6%	-2%	-39%	250	2%	359	4%	2%	44%
B155 Belmont Road	141	2%	404	4%	2%	187%	440	5%	604	6%	1%	37%
B155 Downhills Way	1,749	9%	525	4%	-5%	-70%	184	1%	411	3%	2%	123%
Total/Average Boundary Road	**11,653**	**7%**	**11,497**	**6%**	**-1%**	**-1%**	**4,581**	**3%**	**5,600**	**3%**	**0%**	**22%**

*As detailed on page 17 it is important to note that vehicles travelling through the LTN may go through multiple counter sites (roads where traffic volumes have been counted), so the total number of vehicle journeys counted is certain to be higher than the actual number of trips taken.

Insights: Goods Vehicles Volumes

The volume of goods vehicles during weekdays would generally be expected to decrease significantly on internal roads and increase slightly on boundary roads, in line with broader trends for motorised vehicles (although noting motorised vehicle trends above are for full, seven-day weeks).

On internal roads, whilst the volumes of both LGVs and HGVs decreased by the same percentage (-37%), the proportion of these vehicles compared to total motorised vehicles increased slightly. This indicates that routing choices for these vehicles are less flexible than for general traffic, likely because a higher percentage of LGVs and HGVs need to drop off or pick up at specific households within the LTN area than is seen for general traffic.

For individual internal roads, changes in vehicle flows often translate to large percentage changes (based on low initial volumes), so it is generally more useful to look at changes in actual vehicles instead of percentage changes. Against this metric, roads such as Langham Road (-387 LGVs), Downhills Park Road (-256 LGVs near to Philip Road, -189 LGVs at Lordship Park Forest), and Carlingford Road (@Crescent Road/Green Lanes) saw decreases of over 200 daily vehicles. The Lordship Park Forest site for Downhills Park Road also saw a 16 percentage-point drop prevalence of LGVs vs. other vehicle types. In contrast, the Mount Pleasant Road site closest to Lordship Lane saw the largest increase (+273 daily LGVs), likely because this is the only entrance to this LTN sub-cell.

For HGVs, Langham Road, Downhills Park Road (only the Lordship Park Forest location), The Avenue (at Mount Pleasant Road), Moorefield Road and Higham Road all saw decreases of over 100 daily vehicles. In contrast, the biggest change was seen on Wimborne Road, where HGV volumes increased dramatically from 12 to over 200 daily vehicles. Work to improve Broadwater Farm Estate has been taking place which may have contributed to increased HGV volumes in this location due to increased construction activity.

Boundary roads saw different trends for LGVs and HGVs. The total volume of LGVs decreased slightly, even whilst the total number of motorised vehicles increased, meaning that such vehicles also ended up comprising a smaller proportion of total vehicles. However, there was a wide range of trends on individual roads, with Westbury Avenue seeing a 60% increase in LGV numbers (+819 daily) and Belmont Road seeing a near three-fold increase in such vehicles (+187%, +263 daily vehicles). Lordship Lane (@Elsden Road) also saw more than a doubling in LGVs. These were balanced by large decreases elsewhere, such as on Downhills Way (north of Downhills Park Road), where LGV volumes dropped 70% (-1,224 daily vehicles) – as well as on Green Lanes (@Carlingford Road) and Philip Lane, both of which saw drops nearing 40% or 400 daily vehicles.

For HGVs, total boundary volumes increased by 22%, although due to the low proportional representation of these vehicles, this metric

did not shift from a rounded 3%. Most boundary roads saw an increase in daily HGVs, with West Green Road (@Carlingford Road), Downhills Way and Westbury Avenue (@Willingdon Road) all seeing increases of over 200 daily HGVs – for Downhills Way, this represented more than a doubling in the flows of such vehicles. In contrast, sites elsewhere on Westbury Avenue (@Mannock Road) and on West Green Road (@Etherely Road) saw decreases of over 100 daily HGVs.

Overall, the data on goods vehicles indicates that on internal roads the volumes of such vehicles have dropped considerably, although by a slightly lower margin than has general traffic – whilst on boundary roads, LGV volumes and prevalence are lower than would be expected, but HGV volumes are higher (somewhat more so than might be expected).

It must be noted that as vehicles travelling through the LTN and boundary roads are likely to go through multiple counter sites, it is certain that the number of vehicles counted across all internal/boundary roads is higher than the actual number of trips taken. As such, a drop/increase in total volumes of vehicles counted across multiple individual roads does not represent the same drop/increase in total unique vehicle journeys, although can be useful in understanding the magnitude and direction of a change.

It is important to note however that this methodology of recording traffic volumes is consistent across both pre and post implementation periods. It is also important to note that this methodology is consistent with the analysis of LTN schemes in other London boroughs.

Motorcycle Volumes (7-Day Daily Average)

Motorcycle volumes are considered separately from other vehicles as they are occasionally able to travel through neighbourhood blocks using filters and streets in manners that cars and lorries cannot (for example by illegally using cycle filters). Similarly, on average, they create more noise than general traffic and are therefore of particular concern during the overnight period, especially as a result of the significant increase in their prevalence following COVID-19 and the spike in deliveries made by motorcycle in London.

Motorcycles are distinguished from pedal cycles in ATC counters by the weight and spacing of the vehicle tyres.

Table 8: Normalised Motorcycle Volumes on Internal Roads

	Motorcycle Volume: Nov-21	Motorcycle Prop: Nov-21	Motorcycle Volume: Jan-23	Motorcycle Prop: Jan-23	Motorcycle Change in Proportion	Motorcycle Change in Volume
Adams Road	46	4%	52	3%	-1%	12%
Broadwater Road	136	5%	115	5%	0%	-15%
Carlingford Road (@West Green Road)	72	16%	38	4%	-12%	-48%
Carlingford Road (@Crescent Road/Green Lanes)	286	13%	34	14%	1%	-88%
Chandos Road	52	2%	56	7%	5%	8%
Clonmell Road	126	9%	73	8%	-1%	-42%
Dongola Road	91	5%	118	9%	4%	29%
Downhills Park Road (@Kirkstall Avenue/Philip Lane)	299	5%	225	8%	3%	-25%
Downhills Park Road (@Lordship Park Forest)	336	4%	111	9%	5%	-67%
Drayton Road	22	7%	49	7%	0%	129%
Elmhurst Road	25	6%	26	7%	1%	2%
Elsden Road	36	8%	52	13%	5%	44%
Forster Road	93	9%	77	10%	1%	-18%
Gloucester Road	39	7%	41	8%	1%	6%
Greyhound Road	56	9%	78	10%	1%	40%
Handsworth Road	30	6%	39	6%	0%	30%
Hartham Road	87	78%	71	73%	-5%	-19%
Higham Road	188	6%	75	6%	0%	-60%
Keston Road	14	25%	10	21%	-4%	-29%
Kitchener Road	47	6%	59	13%	7%	26%
Langham Road	213	3%	54	9%	6%	-75%
Linley Road	54	5%	22	7%	2%	-60%
Lordsmead Road	109	4%	31	7%	3%	-72%
Mannock Road	185	9%	90	12%	3%	-52%

Moorefield Road	255	8%	108	9%	1%	-58%
Mount Pleasant Road (#145/The Avenue)	44	4%	24	12%	8%	-45%
Mount Pleasant Road (#316/Lordship Lane)	79	4%	164	5%	1%	107%
Mount Pleasant Road (#5/Philip Lane)	108	6%	139	11%	5%	29%
Napier Road	65	8%	129	12%	4%	98%
Newlyn Road	76	11%	47	11%	0%	-38%
Pembury Road (#1/High Road)	124	9%	36	15%	6%	-71%
Pembury Road (#59/Lordship Lane)	99	10%	63	9%	-1%	-36%
Radley Road	45	4%	14	6%	2%	-68%
Ranelagh Road	57	8%	53	12%	4%	-7%
Rusper Road	120	10%	29	19%	9%	-76%
Sandringham Road	49	11%	49	6%	-5%	1%
Sperling Road	134	12%	26	17%	5%	-81%
St. Loys Road	417	8%	187	9%	1%	-55%
Stanmore Road	73	4%	40	9%	5%	-45%
Steele Road	61	5%	31	11%	6%	-49%
The Avenue (@Broadwater Road)	136	7%	73	9%	2%	-47%
The Avenue (@Mount Pleasant Road/Marden Road)	212	5%	113	7%	2%	-47%
Vincent Road	47	5%	30	6%	1%	-37%
Walpole Road	65	9%	27	7%	-2%	-58%
Wilmot Road	42	5%	14	4%	-1%	-65%
Wimborne Road	76	2%	187	5%	3%	145%
Winchelsea Road	63	8%	47	11%	3%	-25%
Woodside Gardens	23	7%	42	8%	1%	80%
Total/Average Internal	**5,113**	**6%**	**3,269**	**8%**	**2%**	**-36%**

Table 9: Normalised Motorcycle Volumes on Boundary Roads

	Motorcycle Volume: Nov-21	Motorcycle Prop: Nov-21	Motorcycle Volume: Jan-23	Motorcycle Prop: Jan-23	Motorcycle Change in Proportion	Motorcycle Change in Volume
A10 Bruce Grove (@The Avenue/Woodside Gardens)	988	6%	1,213	8%	2%	23%
A105 Green Lanes (@Carlingford Road)	993	5%	1,112	4%	-1%	12%
A1080 Westbury Avenue (@Mannock Road)	756	5%	753	4%	-1%	0%
A1080 Westbury Avenue (@Willingdon Road)	626	4%	666	4%	0%	6%
A109 Lordship Lane (@Elsden Road)	508	3%	612	5%	2%	20%
A109 Lordship Lane (@Waltheof Avenue)	794	6%	968	7%	1%	22%
A504 West Green Road (@Carlingford Road)	841	6%	953	5%	-1%	13%
A504 West Green Road (@Etherley Road)	717	6%	901	5%	-1%	26%
B153 Philip Lane	538	5%	611	7%	2%	14%
B155 Belmont Road	219	3%	311	3%	0%	42%
B155 Downhills Way	429	2%	410	3%	1%	-4%
Total/Average Boundary	**7,408**	**4%**	**8,510**	**5%**	**1%**	**15%**

*As detailed on page 17 it is important to note that vehicles travelling through the LTN may go through multiple counter sites (roads where traffic volumes have been counted), so the total number of vehicle journeys counted is certain to be higher than the actual number of trips taken.

Insights: Motorcycle Volumes

As with goods vehicles, it would be expected that motorcycle flows broadly reflect the trends in overall motor vehicle traffic, for example large decreases on internal roads and slight increases on boundary roads.

As with goods vehicles, motorcycle volumes decreased across most internal roads, but not to the same extent as general traffic – so with a 36% drop in motorcycles (-1,844 per day) came an increase in proportional representation from 6% to 8%, perhaps indicating less flexibility for motorcycles (and motorcycle-based deliveries) than for general traffic in terms of routing options. The only individual road with a notable change in motorcycle prevalence was Carlingford Road (@West Green Road), but a range of roads saw substantial reductions in motorcycle volumes – for example, Carlingford Road (@Crescent Road/Green Lanes), Downhills Park Road (@Lordship Park Forest), and St. Loy's Road all saw reductions of over 200 daily motorcycles. In contrast, only Wimborne Road saw an increase of over 100 daily motorcycles (+111 per day).

For boundary roads, it appears that motorcycles have increased at a slightly higher rate than has total motorised traffic, with an increase of 15% or around 1,100 daily vehicles – shifting the proportion of motorcycles on boundary roads from 4% to 5%. Motorcycle volumes increased across nearly all roads, with Bruce Grove seeing the largest increase (+225 daily vehicles or +23%). Belmont Road saw the largest % increase in motorcycles (42%), although this accounted for a smaller increase in daily vehicles (<100). Downhills Way was the only site that saw a decrease of more than a percentage point (-4%, -19 daily vehicles).

However, it must be noted that as vehicles travelling through the LTN and boundary roads are likely to go through multiple counter sites, it is certain that the number of vehicles counted across all internal/boundary roads is higher than the actual number of trips taken. As such, a drop/increase in total volumes of vehicles counted across multiple individual roads does not represent the same drop/increase in total unique vehicle journeys, although can be useful in understanding the magnitude and direction of a change.

It is important to note however that this methodology of recording traffic volumes is consistent across both pre and post implementation periods. It is also important to note that this methodology is consistent with the analysis of LTN schemes in other London boroughs.

Overall, it appears that motorcycle volumes tend to follow the general trend of motorised vehicles (decrease for internal roads and increase for boundary roads) but in both cases show a slightly higher degree of prevalence.

Cycle Volumes (7-Day Daily Average)

We have not normalised cycling figures for COVID-19 due to the lack of an available source that provides continuous month-to-month cycling levels encompassing all types of cycling trips (commute and leisure) and is at a sufficiently local geographic scale to form a meaningful and robust benchmark.

Unlike motorised traffic trends, cycling levels are significantly impacted by seasonal weather change including temperature and rainfall; for example, there is normally much more cycling participation in July than in January, and therefore there are significantly more cycle trips completed in July than January. There are several interlinked factors when it comes to the impact seasonal weather variation has on cycling levels, while weather can still vary within a season, a month or even a day. As an indication of the impact weather can have, one 2011 study found a doubling in temperature could lead up to a 50% increase in cycling levels, before having a negative impact if too high (Study by Miranda-Moreno and Nosal, 2011).

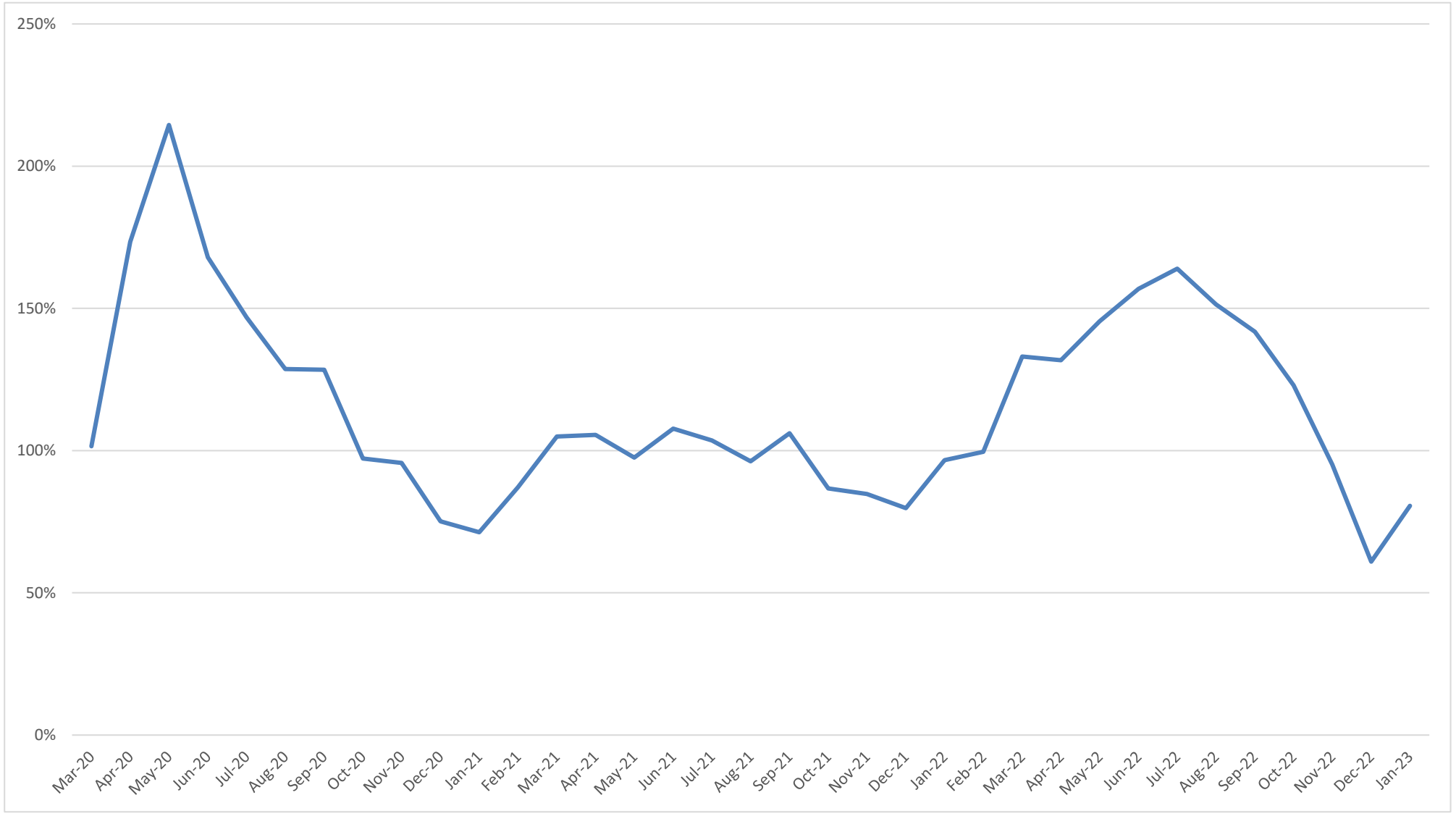
Between pre-implementation and post-implementation data collection periods (taken in November 2021 and January 2023 respectively), average climate data indicates that post-implementation weather was slightly colder, with an average temperature of 6°C vs. 9°C in November 2021 – although as was noted previously, post-implementation data was collected during the slightly warmer first half of January 2023.

Considering these caveats, it is also important to note that government regulations and guidance surrounding COVID-19, as well as the impact of the cost-of-living crisis in 2022/2023, have significantly impacted wider cycling trends since March 2020 (data from DfT's Official Statistics). Graph 1 on the next page shows, on a national basis, the number of cycle trips completed as compared to the same month pre-pandemic (i.e. June 2021 compared to June 2019), indicating that whilst the first few months of the pandemic (i.e. early summer 2020) saw very high levels of cycling, levels since then have been driven by a range of factors (for example, higher flows during the summer of 2022 and low flows over the winter spanning 2022/2023.

Route choices made by people cycling will also be impacted by the availability of nearby protected cycle infrastructure and less traffic dominated neighbourhoods, particularly in relation to any new infrastructure within or nearby the scheme that was installed between waves of data collection.

Graph 1 below outlines nationwide cycling trends, with the following maps and tables outlining the pre-implementation cycling levels and how these have changed between data collection phases.

Graph 1: National Cycling Levels - % of Comparison Month in Pre-Covid 2019/2020*



*For example, January 2023 cycling levels are 81% of the January 2020 average.

Map 6: Pre-Implementation Volume of Cycles

Map 7: Post-Implementation Volume of Cycles

Map 8: Percentage Change in Cycle Volumes

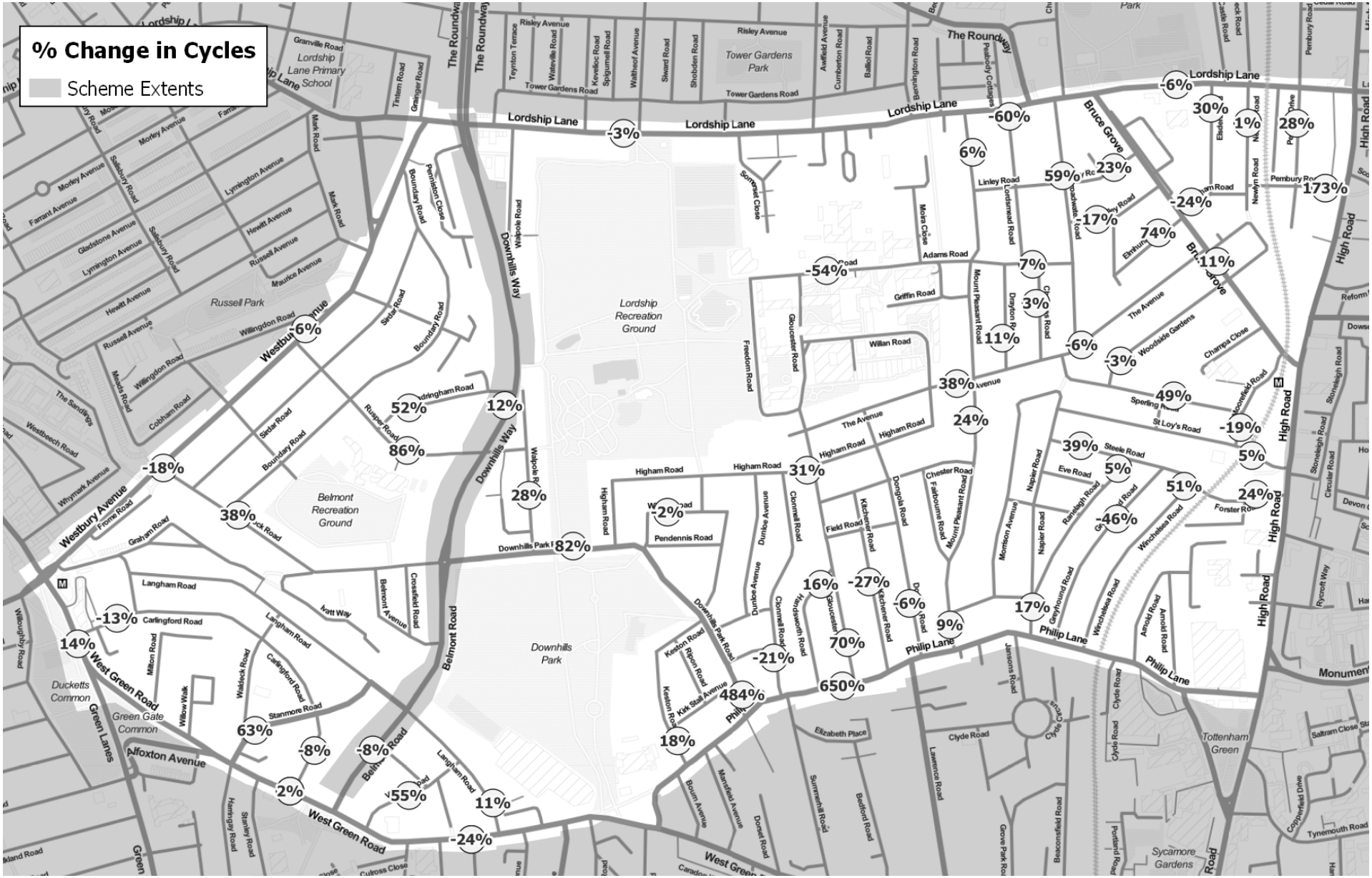


Table 10: Cycling Volumes on Internal Roads

	Pre-Implementation Observed: Nov-21	Post-Implementation Observed: Jan-23	Difference Post-Implementation vs. Pre-Implementation	% Difference Post-Implementation vs. Pre-Implementation
Adams Road	97	45	-52	-54%
Broadwater Road	43	69	26	59%
Carlingford Road (@West Green Road)	30	28	-2	-8%
Carlingford Road (@Crescent Road/Green Lanes)	33	29	-4	-13%
Chandos Road	33	34	1	3%
Clonmell Road	46	37	-9	-21%
Dongola Road	338	318	-20	-6%
Downhills Park Road (@Kirkstall Avenue/Philip Lane)	9	51	42	484%
Downhills Park Road (@Lordship Park Forest)	34	62	28	82%
Drayton Road	86	96	10	11%
Elmhurst Road	14	25	11	74%
Elsden Road	42	55	13	30%
Forster Road	58	73	15	24%
Gloucester Road	29	49	20	70%
Greyhound Road	150	81	-69	-46%
Handsworth Road	180	209	29	16%
Hartham Road	15	12	-3	-24%
Higham Road	9	12	3	31%
Keston Road	24	28	4	18%
Kitchener Road	46	34	-12	-27%
Langham Road	34	38	4	11%
Linley Road	138	170	32	23%
Lordsmead Road	66	27	-39	-60%
Mannock Road	147	203	56	38%
Moorefield Road	211	171	-40	-19%
Mount Pleasant Road (#145/The Avenue)	39	48	9	24%

Mount Pleasant Road (#316/Lordship Lane)	93	99	6	6%
Mount Pleasant Road (#5/Philip Lane)	246	269	23	9%
Napier Road	85	100	15	17%
Newlyn Road	171	172	1	1%
Pembury Road (#1/High Road)	30	81	51	173%
Pembury Road (#59/Lordship Lane)	19	24	5	28%
Radley Road	39	32	-7	-17%
Ranelagh Road	62	66	4	5%
Rusper Road	48	89	41	86%
Sandringham Road	135	205	70	52%
Sperling Road	41	61	20	49%
St. Loys Road	76	80	4	5%
Stanmore Road	89	144	55	63%
Steele Road	68	95	27	39%
The Avenue (@Broadwater Road)	25	23	-2	-6%
The Avenue (@Mount Pleasant Road/Marden Road)	35	49	14	38%
Vincent Road	79	123	44	55%
Walpole Road	92	117	25	28%
Wilmot Road	101	99	-2	-2%
Wimborne Road	115	123	8	7%
Winchelsea Road	27	41	14	51%
Woodside Gardens	94	91	-3	-3%
Total Internal	**3,722**	**4,183**	**461**	**12%**

*As detailed on page 17 it is important to note that cycles travelling through the LTN may go through multiple counter sites (roads where traffic volumes have been counted), so the total number of cycle journeys counted is certain to be higher than the actual number of trips taken.

Table 11: Cycling Volumes on Boundary Roads

	Pre-Implementation Observed: Nov-21	Post-Implementation Observed: Jan-23	Difference Post-Implementation vs. Pre-Implementation	% Difference Post-Implementation vs. Pre-Implementation
A10 Bruce Grove (@The Avenue/Woodside Gardens)	167	185	18	11%
A105 Green Lanes (@Carlingford Road)	290	332	42	14%
A1080 Westbury Avenue (@Mannock Road)	206	169	-37	-18%
A1080 Westbury Avenue (@Willingdon Road)	825	773	-52	-6%
A109 Lordship Lane (@Elsden Road)	167	157	-10	-6%
A109 Lordship Lane (@Waltheof Avenue)	120	116	-4	-3%
A504 West Green Road (@Carlingford Road)	353	361	8	2%
A504 West Green Road (@Etherley Road)	481	364	-117	-24%
B153 Philip Lane	75	560	485	650%
B155 Belmont Road	211	195	-16	-8%
B155 Downhills Way	69	77	8	12%
Total Boundary	**2,963**	**3,289**	**326**	**11%**

*As detailed on page 17 it is important to note that cycles travelling through the LTN may go through multiple counter sites (roads where traffic volumes have been counted), so the total number of cycle journeys counted is certain to be higher than the actual number of trips taken.

Insights: Cycling Volumes

Based on Graph 1, cycling levels on a national basis were around 85% during the pre-implementation monitoring period and closer to 80% during the post-implementation period, indicating that there was likely not a significant difference in baseline conditions for cycling between the two periods.

Given this, it appears that cycling levels have slightly increased across both internal roads and boundary roads between the two monitoring periods, with both sets of roads seeing summed increases of just over 10% (+12% for internal roads and +11% for boundary roads). Internal roads saw an increase of around 460 daily cycles counted, and boundary roads saw an increase of around 330 such cyclists, with the majority of roads contributing to the overall increase. However, it must be noted that as bicycles travelling through the LTN and boundary roads are likely to go through multiple counter sites, it is certain that the number of bicycles counted across all internal/boundary roads is higher than the actual number of trips taken. As such, a drop/increase in total volumes of bicycles counted across multiple individual roads does not represent the same drop/increase in total unique vehicle journeys, although can be useful in understanding the magnitude and direction of a change.

It is important to note however that this methodology of recording traffic volumes is consistent across both pre and post implementation periods. It is also important to note that this methodology is consistent with the analysis of LTN schemes in other London boroughs.

On internal roads, no change of more than 100 daily cycles counted was noted, with the largest change being +70 (+52%) on Sandringham Road – notable as it indicates that cyclists are not deterred from using this street even though motorised traffic has nearly doubled here. Pembury Road (close to the High Road junction) and Stanmore Road also saw increases of >50 daily cycles counted. Greyhound Road saw the largest decrease in cycles counted (-69), followed by Adams Road (-52).

Cycle count changes on boundary roads were dominated by figures from Philip Lane, which increased nearly seven-fold from 75 to 560 (+485 daily cycles), which were only partially offset by a drop of 117 daily cycles on West Green Road (@Etherley Road). For other streets, there were slightly more locations with decreases than increases.

Analysis of Vehicle Speeds

Speeding is a major contributing factor to road danger, so reducing speeding is vital to making roads safer for all.

Traffic counters measure motorised traffic speeds as well as volumes. Details about the dates and locations of the traffic volume and speed monitoring are in Appendix 5. The speed limit is 20mph on all roads in the Borough, with the exception of the following:

Table 12: Borough Speed Limit Exceptions

LB Haringey Road	Postcode	Speed Limit
Boreham Road	N22	30mph
Bounds Green Road (between Braemar Avenue & A406)	N22	30mph
Ferry Lane	N17	30mph
Fortis Green	N2	30mph
Great North Road	N2	30mph
Hale Road	N17	30mph
High Road (between Bounds Green Road and Borough boundary)	N22	30mph
Lordship Lane	N17 & N22	30mph
Muswell Hill	N10	30mph
Priory Road	N8	30mph
The Roundway (Western arm)	N17	30mph
Westbury Avenue (between Frome Road & Lordship Lane)	N22	30mph
Watermead Way	N17	40mph

Speed monitoring results have not been normalised as they are not considered to have been impacted by COVID-19 in the same way and to the same extent as traffic volumes, though speeds may settle into new patterns post-COVID-19. The results presented here are seven- day averages. The 85th percentile is used in transport monitoring to gauge changes in speeds and speeding behaviour. It is the speed at or below which 85% of traffic will be travelling along a street (and therefore 15% of traffic will be travelling faster than this speed).

Cycles and their speeds have been removed from calculations relating to vehicle speeds as including such counts would skew averages down.

Map 9: Pre-implementation average Vehicle Speed in mph (seven-day daily averages)

Map 10: Post-implementation average Vehicle Speed in mph (seven-day daily averages)

Map 11: Percentage Change in Motorised Vehicle Average Speed (seven-day daily averages)

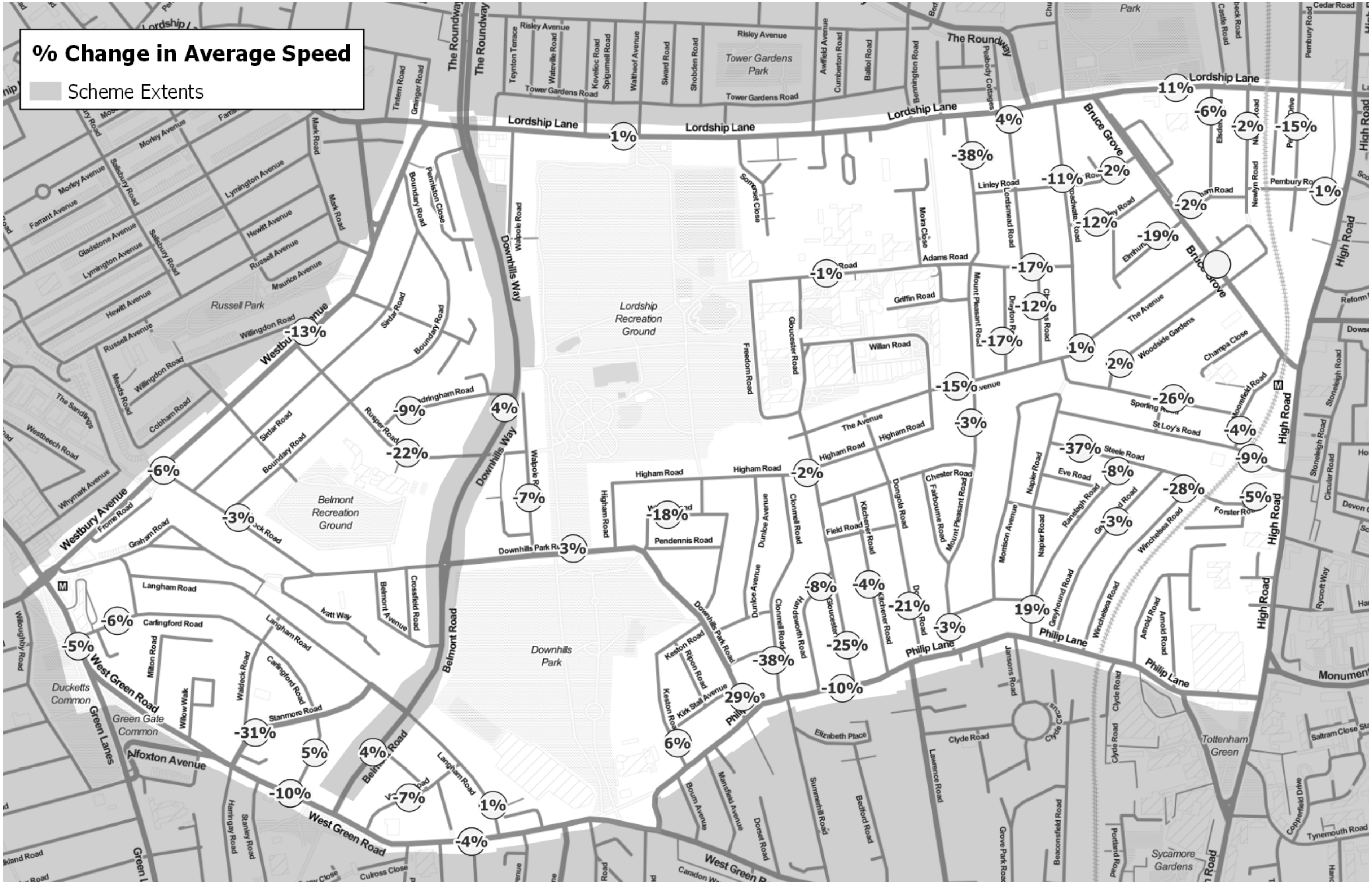


Table 13: Speeds of Motorised Vehicles on Internal Roads

	Pre-Con Average Speed (mph)	Average Speed Diff. vs. Pre- (mph)	Average Speed Diff. vs. Pre- (%)	85th Pct. Speed Pre-Con (mph)	85th Pct. Diff. vs. Pre- (mph)	85th Pct. Diff. vs. Pre- (%)	% Speeding Pre-Con	% Speeding Diff vs. Pre- (% pt.)
Adams Road	13.9	-0.2	-1%	17.2	-0.2	-1%	4%	2%
Broadwater Road	13.7	-1.7	-11%	17.4	-1.4	-7%	4%	-3%
Carlingford Road (@West Green Road)	16.3	0.8	5%	19.3	-1.1	-5%	16%	-1%
Carlingford Road (@Crescent Road/Green Lanes)	13.0	-0.9	-6%	17.2	0.1	1%	4%	0%
Chandos Road	18.3	-2.5	-12%	23.3	-1.9	-8%	34%	-22%
Clonmell Road	11.0	-6.7	-38%	13.8	-8.0	-37%	0%	-28%
Dongola Road	11.2	-2.9	-21%	13.8	-4.3	-24%	0%	-9%
Downhills Park Road (@Kirkstall Avenue/Philip Lane)	16.5	3.7	29%	20.7	3.7	22%	19%	13%
Downhills Park Road (@Lordship Park Forest)	11.8	0.3	3%	14.1	-0.1	-1%	0%	0%
Drayton Road	13.4	-2.7	-17%	16.0	-4.8	-23%	6%	-14%
Elmhurst Road	11.5	-2.7	-19%	14.9	-2.0	-12%	0%	-4%
Elsden Road	16.3	-1.0	-6%	19.4	-2.1	-10%	15%	-11%
Forster Road	13.2	-0.7	-5%	16.9	2.9	21%	9%	-2%
Gloucester Road	11.0	-3.6	-25%	13.4	-4.8	-26%	0%	-4%
Greyhound Road	15.1	-0.4	-3%	18.5	-0.4	-2%	6%	-3%
Handsworth Road	18.1	-1.5	-8%	22.9	-1.1	-5%	29%	-14%
Hartham Road	16.5	-0.3	-2%	21.1	-0.5	-2%	21%	-3%
Higham Road	15.3	-0.3	-2%	19.0	-0.2	-1%	11%	1%
Keston Road	14.9	0.8	6%	18.4	-0.1	-1%	7%	1%
Kitchener Road	10.7	-0.4	-4%	14.0	-0.6	-4%	2%	-2%
Langham Road	13.8	0.1	1%	17.2	0.3	2%	3%	0%
Linley Road	14.0	-0.3	-2%	17.3	-0.6	-3%	3%	-1%
Lordsmead Road	14.6	0.5	4%	18.6	0.4	2%	9%	2%
Mannock Road	16.2	-0.5	-3%	20.2	-0.4	-2%	16%	-3%

Moorefield Road	13.7	-0.5	-4%	17.0	-0.9	-5%	4%	-2%
Mount Pleasant Road (#145/The Avenue)	17.2	-0.5	-3%	23.2	0.1	0%	28%	-6%
Mount Pleasant Road (#316/Lordship Lane)	15.5	-0.1	-1%	19.1	-0.2	-1%	11%	-1%
Mount Pleasant Road (#5/Philip Lane)	16.1	-0.5	-3%	20.5	-0.9	-4%	17%	-3%
Napier Road	14.7	2.3	19%	18.7	3.6	24%	8%	7%
Newlyn Road	14.9	-0.3	-2%	18.3	-0.9	-5%	7%	-4%
Pembury Road (#1/High Road)	14.5	-0.1	-1%	18.1	0.1	1%	5%	0%
Pembury Road (#59/Lordship Lane)	13.9	-2.4	-15%	15.8	-4.2	-21%	8%	-8%
Radley Road	16.9	-2.3	-12%	22.4	-2.7	-11%	27%	-17%
Ranelagh Road	12.9	-1.1	-8%	16.6	-1.5	-8%	6%	0%
Rusper Road	13.1	-3.6	-22%	14.0	-6.1	-30%	5%	-11%
Sandringham Road	13.5	-1.3	-9%	16.5	-1.8	-10%	2%	-3%
Sperling Road	12.9	-4.5	-26%	14.1	-7.1	-33%	3%	-19%
St. Loys Road	16.2	-1.6	-9%	21.0	-1.5	-7%	16%	-13%
Stanmore Road	11.0	-4.9	-31%	13.2	-6.3	-32%	0%	-13%
Steele Road	10.2	-6.1	-37%	13.1	-7.6	-37%	0%	-19%
The Avenue (@Broadwater Road)	19.0	0.2	1%	23.8	-0.6	-2%	41%	1%
The Avenue (@Mount Pleasant Road/Marden Road)	15.6	-2.8	-15%	20.1	-3.2	-14%	14%	-22%
Vincent Road	12.8	-0.9	-7%	15.6	-1.2	-7%	1%	-1%
Walpole Road	15.2	-1.2	-7%	19.2	-0.4	-2%	11%	-2%
Wilmot Road	12.5	-2.7	-18%	15.8	-3.1	-16%	3%	-7%
Wimborne Road	10.4	-2.2	-17%	13.3	-3.1	-19%	0%	-3%
Winchelsea Road	11.7	-4.6	-28%	14.0	-5.5	-28%	1%	-10%
Woodside Gardens	10.2	0.2	2%	13.0	0.2	2%	0%	0%
Weighted Average	**14.3**	**-1.4**	**-9%**	**17.8**	**-1.7**	**-9%**	**9%**	**-6%**

Table 14: Speeds of Motorised Vehicles on Boundary Roads

	Pre-Con Average Speed (mph)	Average Speed Diff. vs. Pre- (mph)	Average Speed Diff. vs. Pre- (%)	85th Pct. Speed Pre-Con (mph)	85th Pct. Diff. vs. Pre- (mph)	85th Pct. Diff. vs. Pre- (%)	% Speeding Pre-Con	% Speeding Diff vs. Pre- (% pt.)
A10 Bruce Grove (@The Avenue/Woodside Gardens)	No speed data available for video site							
A105 Green Lanes (@Carlingford Road)	17.5	-1.0	-5%	22.8	-1.0	-4%	34%	-5%
A1080 Westbury Avenue (@Mannock Road)	21.6	-1.4	-6%	27.2	-1.3	-5%	7%	-4%
A1080 Westbury Avenue (@Willingdon Road)	19.1	-2.8	-13%	22.9	-3.3	-13%	1%	-4%
A109 Lordship Lane (@Elsden Road)	23.1	2.2	11%	27.8	2.5	10%	8%	3%
A109 Lordship Lane (@Waltheof Avenue)	22.0	0.3	1%	26.6	-0.2	-1%	7%	0%
A504 West Green Road (@Carlingford Road)	17.6	-2.0	-10%	22.4	-2.1	-9%	34%	-13%
A504 West Green Road (@Etherley Road)	17.4	-0.8	-4%	21.3	-1.5	-7%	26%	-8%
B153 Philip Lane	18.9	-2.0	-10%	22.8	-2.1	-8%	37%	-19%
B155 Belmont Road	14.2	0.5	4%	17.8	1.9	12%	7%	5%
B155 Downhills Way	25.1	0.9	4%	29.4	0.5	2%	88%	7%
Weighted Average	**17.8**	**-0.9**	**-5%**	**21.9**	**-1.0**	**-4%**	**22%**	**-6%**

Insights: Vehicle Speeds

In general, vehicle speeds across internal and boundary roads have decreased across key metrics between the November 2021 pre-implementation and January 2023 post-implementation survey periods, although in all cases by <10% when weighted averages are calculated.

On internal roads, there are a wide range of changes for vehicle speeds, although it is noted that the low volumes of traffic on many roads in the post-implementation stage means that values during this stage of data collection are quite easily skewed. However, it appears that in general, average vehicle speeds across these roads decreased by about 1.4mph or 9% of pre-implementation values, with the largest changes seen on Clonmell Road (-6.7mph), Steele Road (-6.1mph), Stanmore Road (-4.9mph), Sperling Road (-4.5mph) and Winchelsea Road (-4.2mph), most of which also saw double-digit decreases in the percentage of vehicles speeding. In contrast, the internal road location with the largest increase in average speeds was Downhill Park Road (near the Philip Road junction), where speeds were up by 3.6mph on average, making it the only internal road with a double-digit percentage point increase in speeding vehicles. Lordship Lane (@Elsdon Road) also saw an increase of 2.2mph.

On boundary roads, average speeds decreased by 0.9mph or 5%, whilst the proportion of vehicles speeding decreased by 6 percentage points. Westbury Avenue (@Willingdon Road) saw the largest decrease in vehicle speeds, of -2.8mph, and West Green Road (@Carlingford Road) and Philip Lane both saw decreases of -2.0mph. It is noted that on some of these roads, congestion may play a role in reduced average speeds.

In contrast, average speeds increased by 2.2mph on Lordship Lane (@Elsden Road), whilst 85th percentile speeds on Belmont Road increase by 1.9mph, indicating a large spread in vehicle speeds in this location.

Overall, vehicle speed data indicates that, with some exceptions, vehicle speed metrics on both internal and boundary roads have slightly decreased.

Bus Journey Times on Boundary Roads

TfL monitors bus journey times across its network, which can add an additional layer of understanding about the impacts of transport schemes, particularly levels of congestion along roads and at junctions.

Bus journey time monitoring focused on the four main boundary road corridors below, which are used by the bracketed main bus routes. A map of these corridors is presented on the following page.

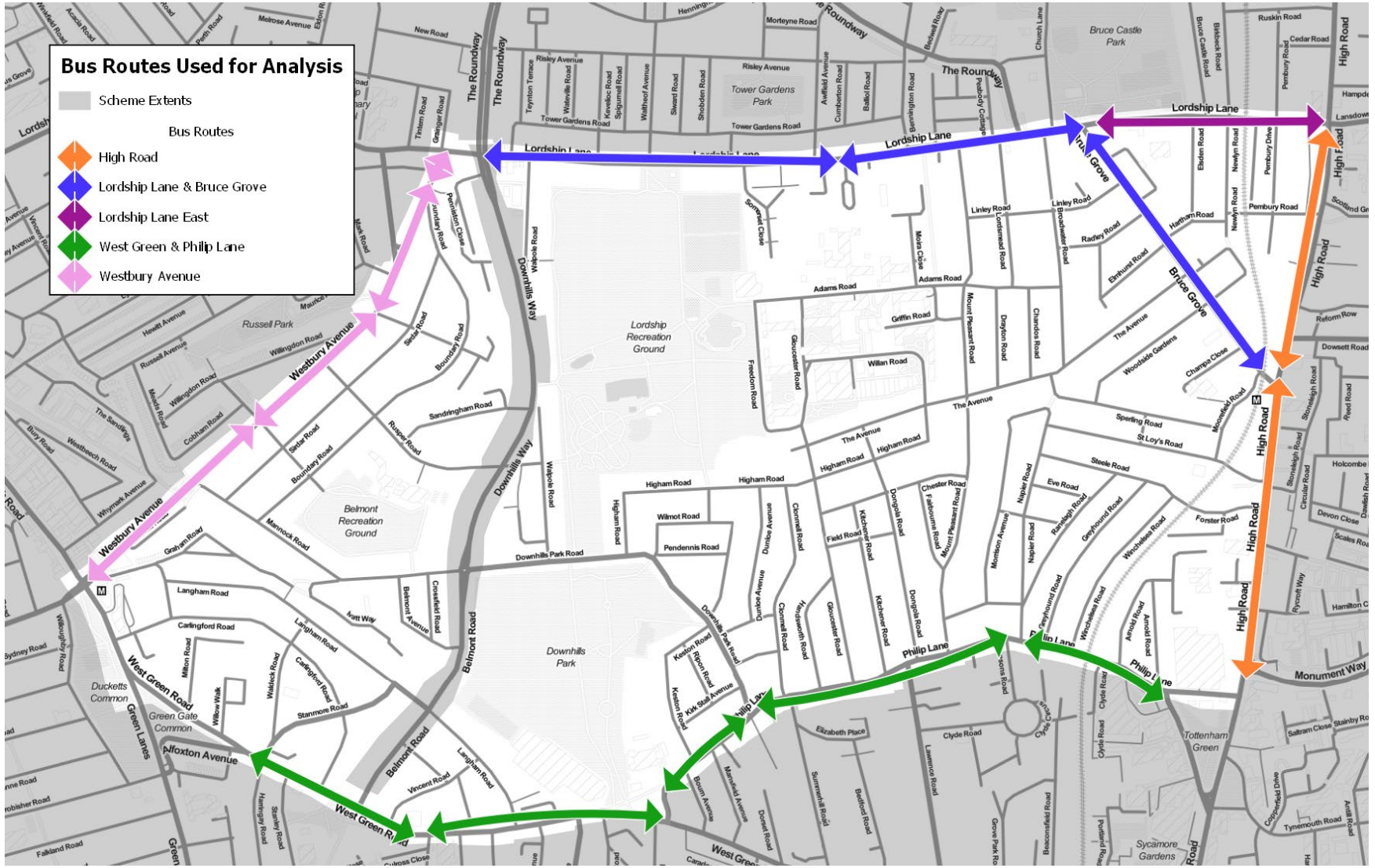
- **High Road, N17** (Routes 123, 149, 243, 259, 279, 318, 341, 349, 476, N279, W4)
- **Lordship Lane & Bruce Grove A10** (Routes 123, 243, W4)
- **Lordship Lane East** (Route 318)
- **West Green Road & Philip Lane** (Routes 41, 67, 230, 341, N41)

Weekly iBus data provided by TfL has been used for analysis on these routes. This gives weekday (Monday to Friday, excluding bank holidays) average journey times by route, stop-to-stop link and peak periods. These journey times exclude dwell times at stops.

TfL's methodology has been used to analyse the results of the iBus data. Journey time results have first been summarised by route, by taking the total journey time across stop-to-stop links along the corridor and dividing by the length of these links, to give a minutes per kilometre figure. Corridor level figures have been found by taking a weighted average across the route level figures, weighted by the route frequency.

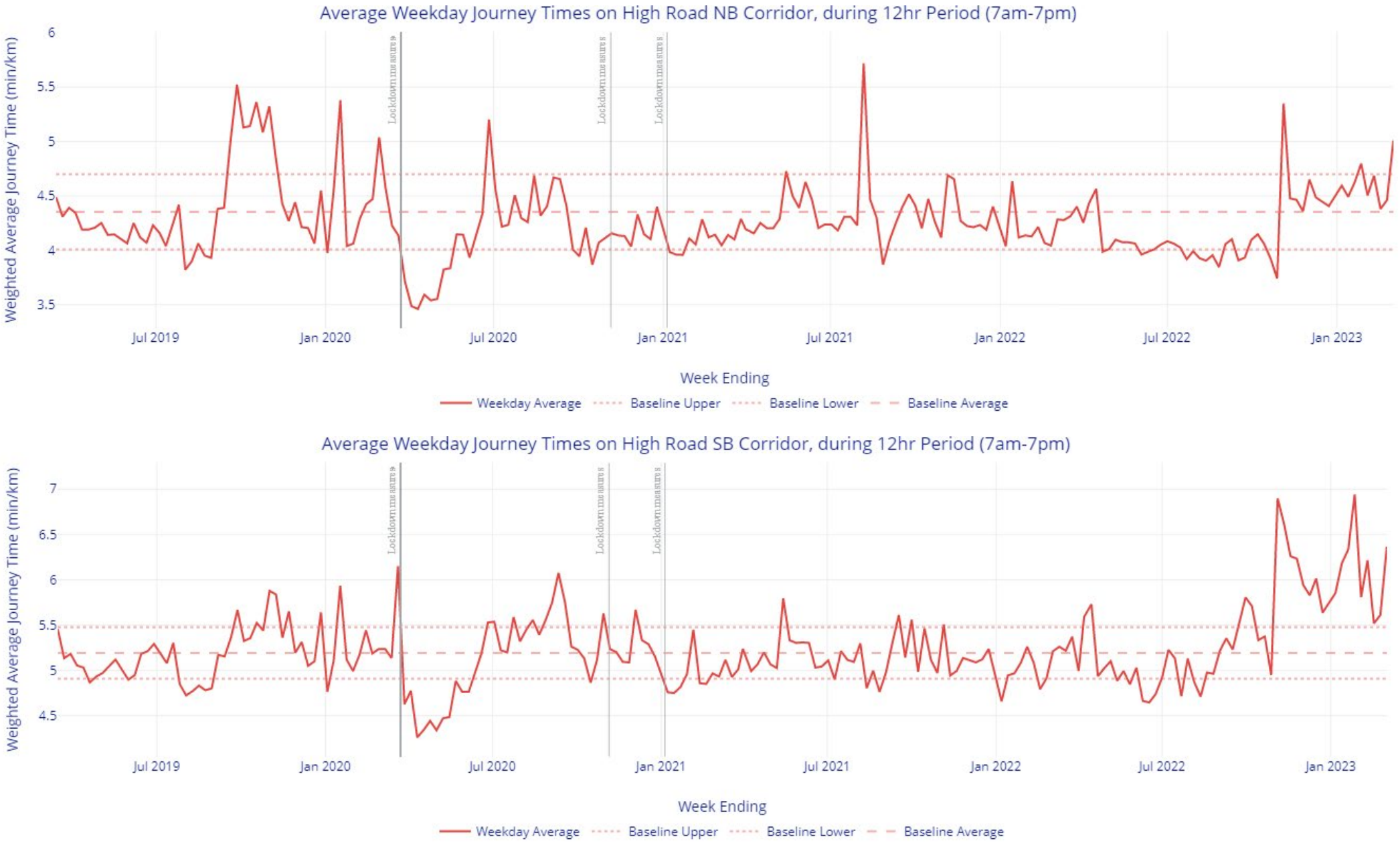
The data shows the corridor averages each week but also shows thresholds ('Baseline Upper' & 'Baseline Lower'). These thresholds have been found by taking the mean journey time plus or minus one standard deviation during the pre-COVID-19 baseline period (11 March 2019 – 13 March 2020). This allows for a reasonable amount of week-to-week variation but gives a threshold above which minutes per km figures would be deemed above "normal".

Map 12: Corridors Analysed Using iBus Data

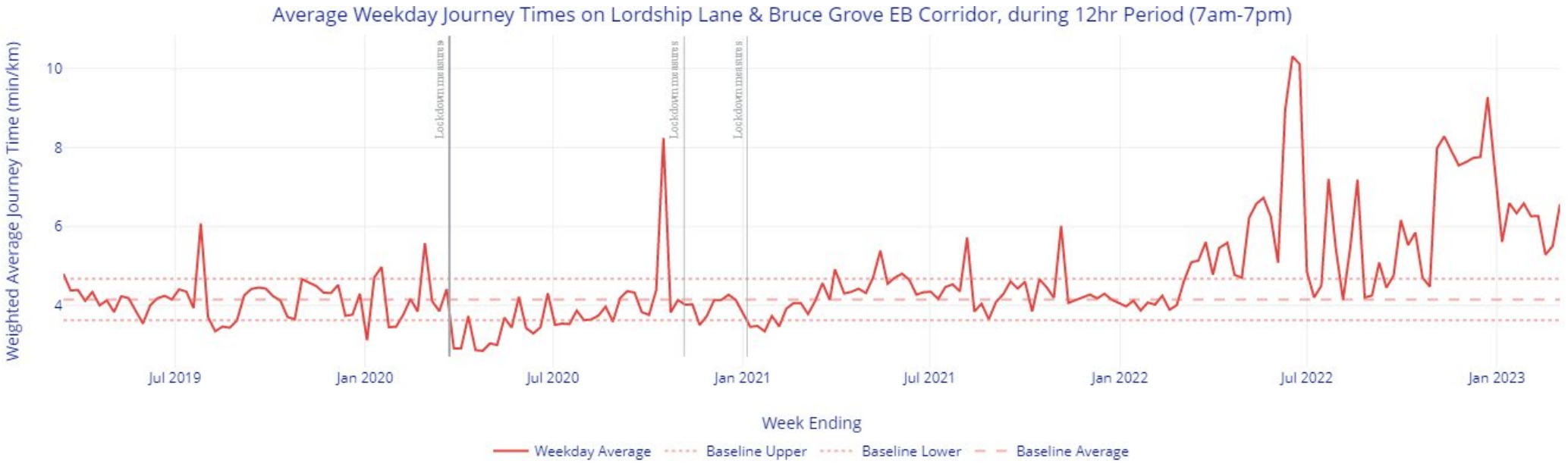


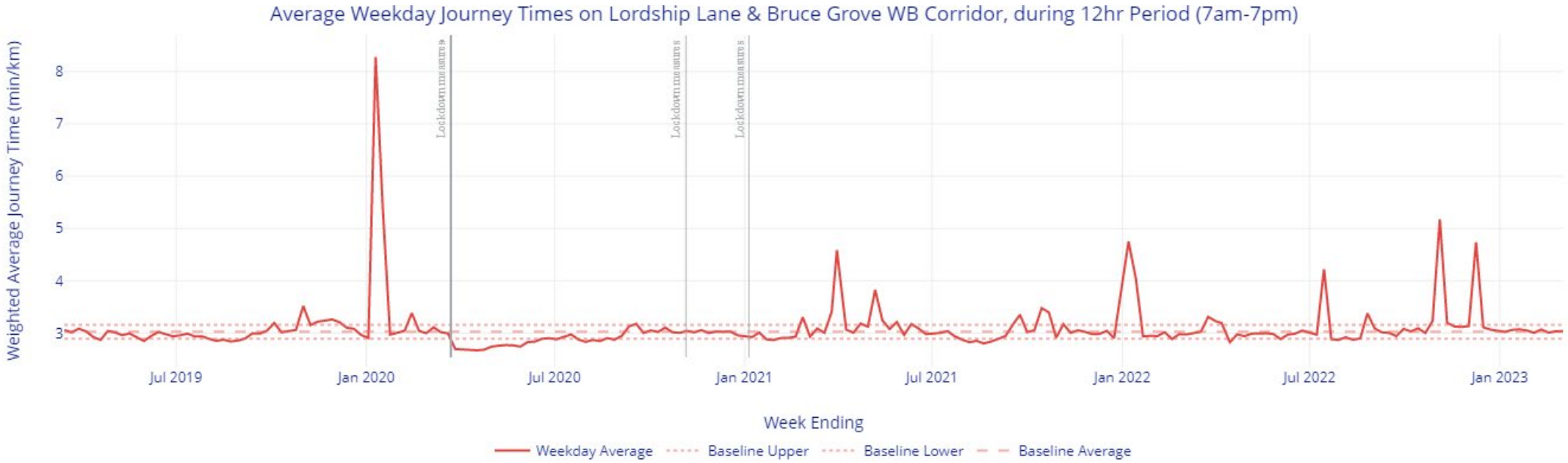
The results are shown in Graph 2 to Graph 5 on the following pages. The dashed red lines indicate the baseline threshold and the red line indicates the average journey times, on a three-week basis.

Graph 2: High Road, N17 Corridor

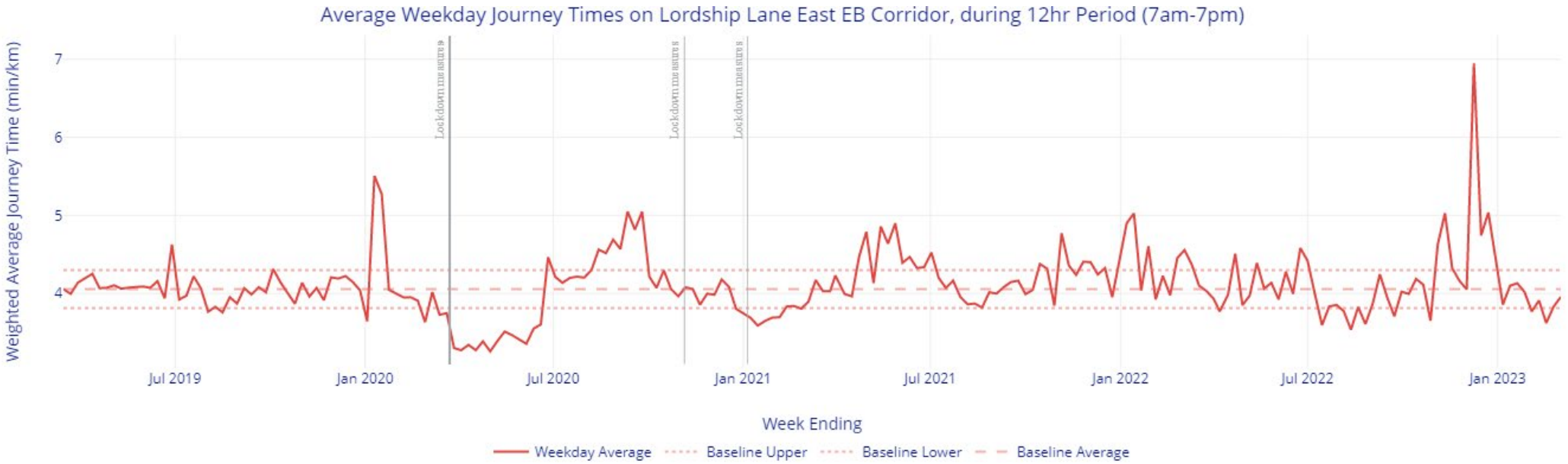


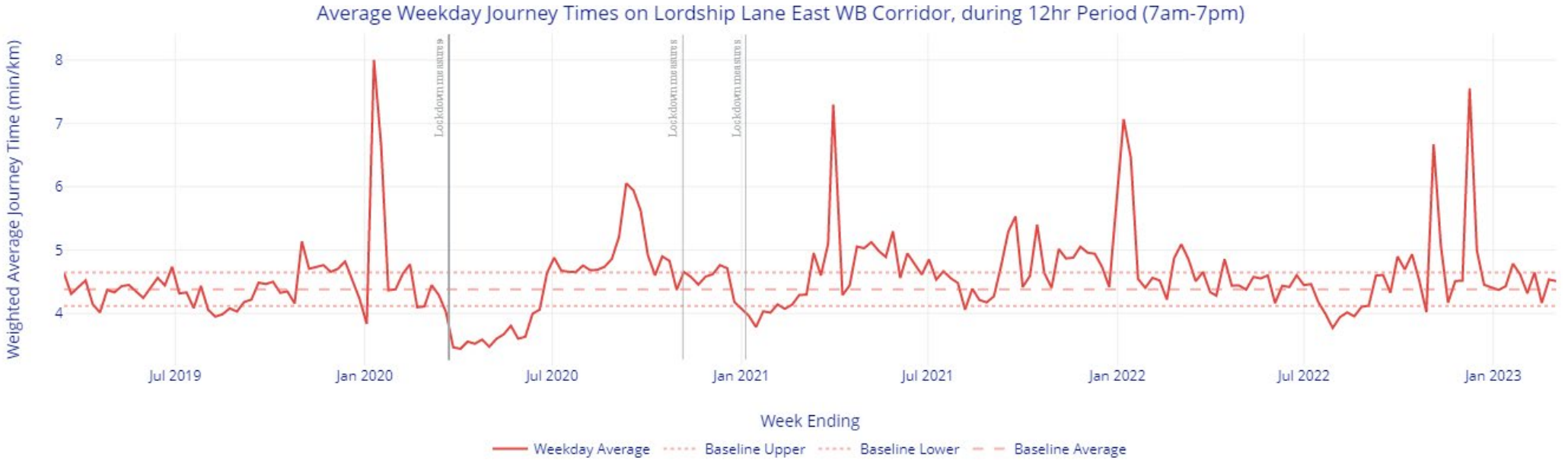
Graph 3: Lordship Lane & Bruce Grove Corridor



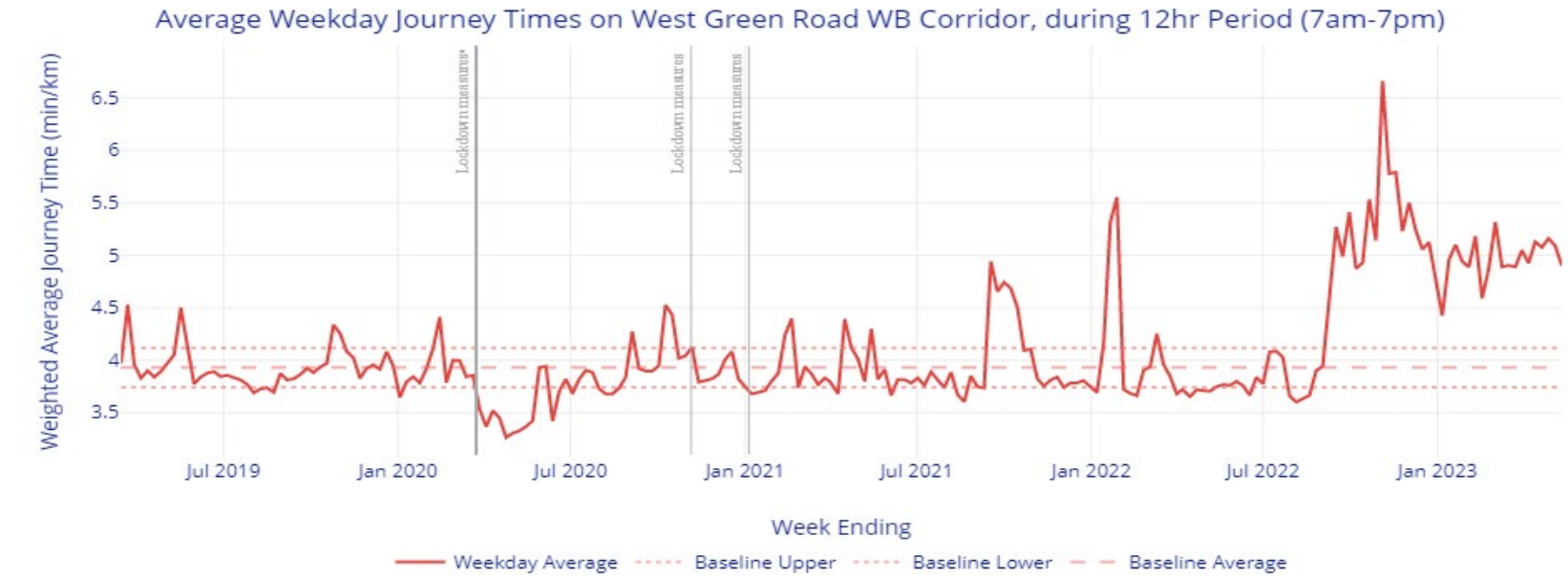


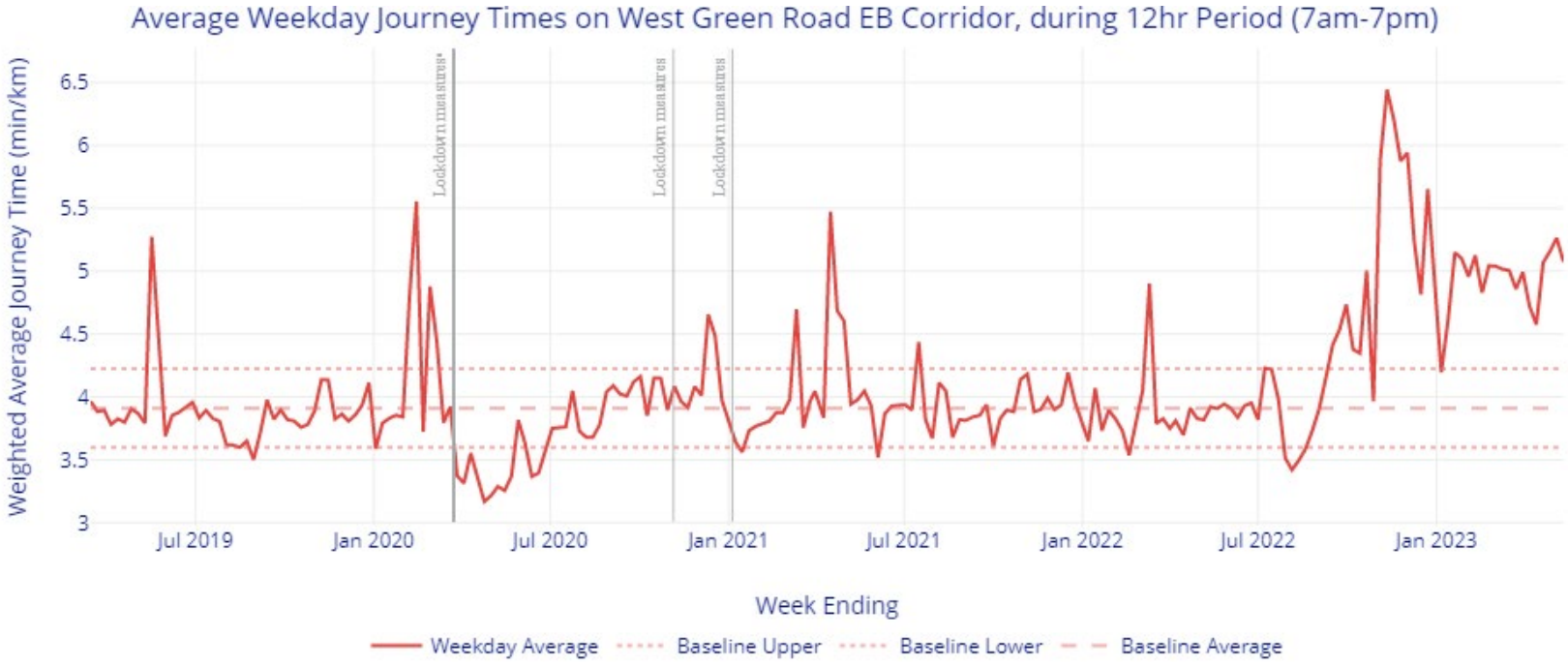
Graph 4: Lordship Lane East Corridor



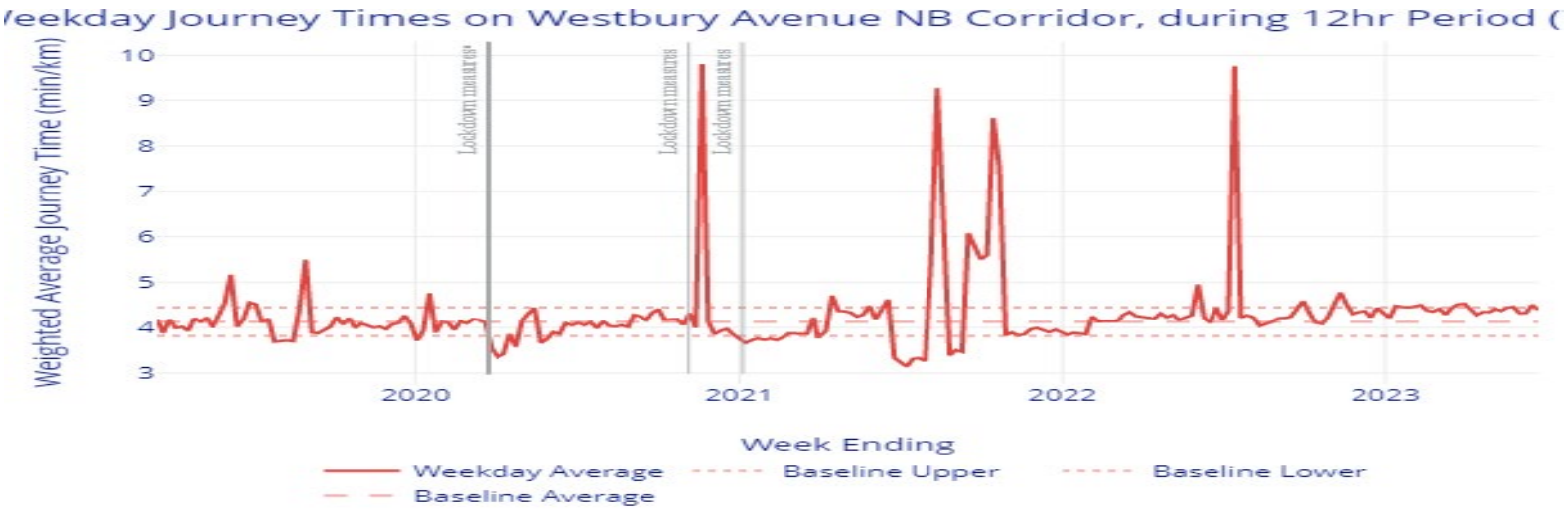


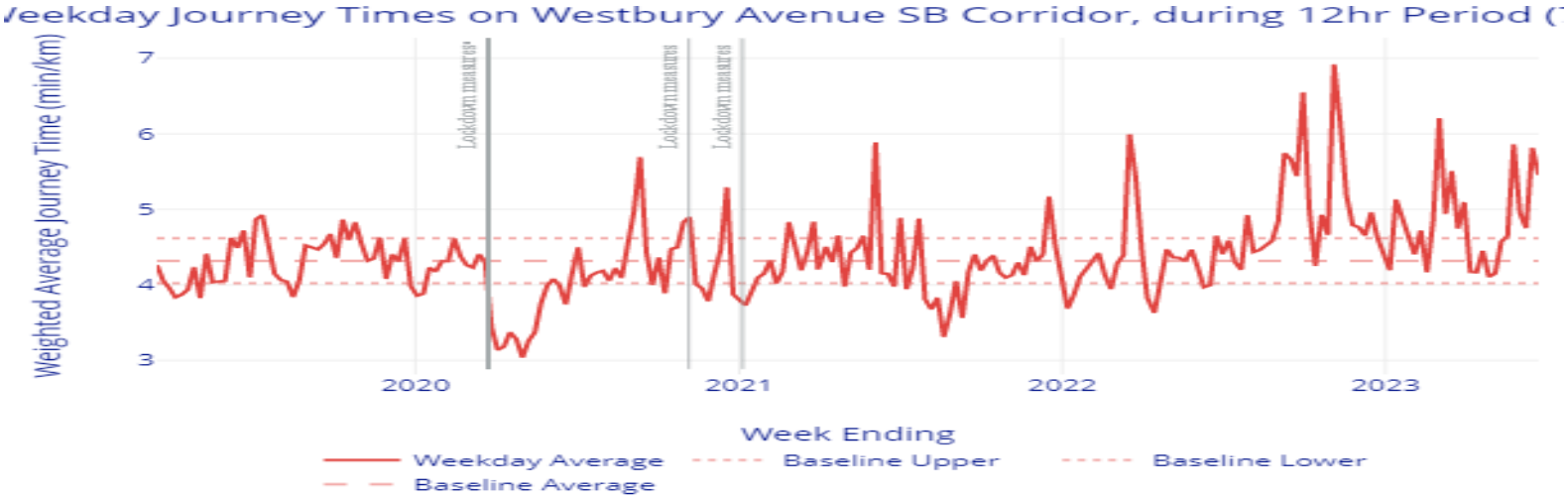
Graph 5: West Green Road Corridor





Graph 6: Westbury Avenue Corridor





Insights: Bus Speeds on Boundary Roads

High Road Corridor– Bus Journey Times

Bus speeds and times along the High Road corridor in both directions have fluctuated significantly throughout the assessed period. For northbound traffic, there have been spikes in journey times both above (October 2020, August 2021) and below (April 2020) the standard deviations for speed, with values ranging from 3.5min/km to nearly 6min/km. Southbound traffic has seen similar fluctuations, although since the Bruce Grove West Green scheme was implemented, there has been a clearer increase in bus journey times, particularly just after the scheme was implemented (November 2022) as well as in February 2023, which saw vehicle speeds nearing 6.5min/km during several weeks.

Lordship Lane & Bruce Grove – Bus Journey Times

The data for the Lordship Lane & Bruce Grove corridor shows a considerable difference in the evolution of bus speeds when comparing the data for eastbound and westbound vehicles. For westbound vehicles, except for a number of isolated spikes in journey times (that appear throughout the dataset with no clear correlation to outside events), journey speeds are very stable around the pre-COVID average of 3min/km. In contrast, journey speeds in the eastbound direction have fluctuated significantly along this corridor from around March 2022, before the Bruce Grove West Green scheme was introduced – and have since had two periods of considerably slower journey times (early summer 2022 and winter 2022/23). Whilst it is possible that the scheme has contributed to some of this change, it is likely that some other confounding factors are affecting bus journey times along this section of road.

Lordship Lane East – Bus Journey Times

Bus journey speeds on the eastern section of Lordship Lane, between the Bruce Grove and High Road,N17 junctions, have fluctuated above and below the baseline standard deviations for both directions of travel. Before the Bruce Grove scheme was introduced, bus speeds in the eastbound direction peaked several times at about 5min/km, although were around 3min/km during the COVID-19 peak of spring 2020, but increased to 7min/km shortly after the scheme went live (although these figures have since dropped again to below the pre-COVID average). Westbound speeds fluctuated as well, although the slowest speeds have consistently reached around 7.5min/km both before and after scheme introduction, with periods of slow travel being short lived and typically resolving within a few weeks.

West Green Road & Philip Lane Corridor– Bus Journey Times

On the West Green Road and Philip Lane corridor, bus journey speeds in the eastbound direction have generally stayed within the pre-COVID range at or faster than 4min/km, although there have been several periods where speeds slowed to above 5min/km both before and after scheme introduction. It is a similar picture in the westbound direction with a spike to above 6min/km around scheme implementation before speeds again settled back down to around 5min/km.

Westbury Avenue Corridor– Bus Journey Times

Bus journey times along Westbury Avenue corridor have spiked over several periods on the northbound direction to above 9min/km before the implementation of the trial scheme but have since consistently remained at under 5min/km and appear to be continuing this trend into 2023. Whilst the picture is more mixed along the southbound corridor, the spikes have not exceeded 7min/km but do appear to have increased slightly post-implementation of the LTN.

Air Quality

Air quality refers to the air around us, how clean it is and how many pollutants (harmful chemicals or substances) it contains. The more pollutants the air contains the more air pollution there is and the worse the air quality is. Poor air quality is a concern as air pollution can impact health. The main pollutant of concern that we monitor is nitrogen dioxide (NO_2) – one of a group of gases called nitrogen oxides. NO_2 is toxic gas that can be very harmful on the human respiratory system.

The analysis conducted focuses on outputs from diffusion tubes, which provide monthly readings of NO_2. Whilst not as accurate as other types of monitors (i.e. automatic monitors), diffusion tubes can be more widely deployed to provide trends over a larger area and time period, and such tubes are a nationally approved monitoring technique. These tubes measure the air's concentration of nitrogen dioxide (NO_2). The tubes are replaced and analysed on a monthly basis. Research suggests that at urban roadside locations in the UK up to 80% of the nitrogen dioxide measured comes from road transport.

Haringey's air quality sites are classified based on their location using Defra guidance**,** but are referred to in these LTN monitoring reports using LTN terminology. According to Defra, "Roadside sites" are those within one to five metres of a busy road. In the LTN monitoring reports, roadside monitoring equates to boundary road sites. According to Defra, "Urban background sites" are those in an urban location but more distanced from traffic sources, and in the reports these are the internal sites within the LTN

The analysis has been conducted across two sets of monitors for purposes of comparison – those within LTN cells or on their boundary roads, or those that are elsewhere in the borough. The sites not in LTNs have been treated as a control group, as well as to show the longer trend of air quality in the borough. Continuous data from some wider-borough sites exists from 2018 onwards, whilst the LTN-focused monitors first started collecting data in June 2021. The wider-borough sites used for Haringey are those that are not within or on the direct boundary of LTN cells and consist of 12 roadside diffusion tubes and 16 background urban diffusion tubes.

The air quality monitoring sites for the Bruce Grove West Green LTN are listed in Appendix 3, with details about type and location. The wider-borough sites that are being used for comparison work in this report consist of eight boundary road diffusion tubes, six internal road diffusion tubes and four urban background tubes. For the Bruce Grove West Green scheme, there are four boundary road diffusion tubes and six urban background tubes.

Methodology

Air quality varies naturally over time due to a variety of factors, including seasonal variations, weather and other non-transport factors. It is therefore important to look at trends over a longer period of time, ideally for a year, to identify real changes in air quality that could be attributed to the scheme. The ultimate goal of our air quality strategy is to reduce air pollution as much as possible, and certainly to within legal limits.

In the case of this report, there has not been a full year's worth of data between scheme implementation and today (data is only available to January 2023 due to a lag in the review time for this). Only two months' data is available, meaning data for individual sites is easily skewed, particularly if further months are missing in the datasets – this is quite common, as when tubes are replaced each month they may be missing or presenting other clear issues (guidance set by the Mayor of London indicates how such situations are to be treated in the data). Ultimately, the above means that making comparisons between short periods of time before and after scheme implementation is unlikely to yield meaningful results, and that presenting air quality data on a site-by-site basis would be misleading.

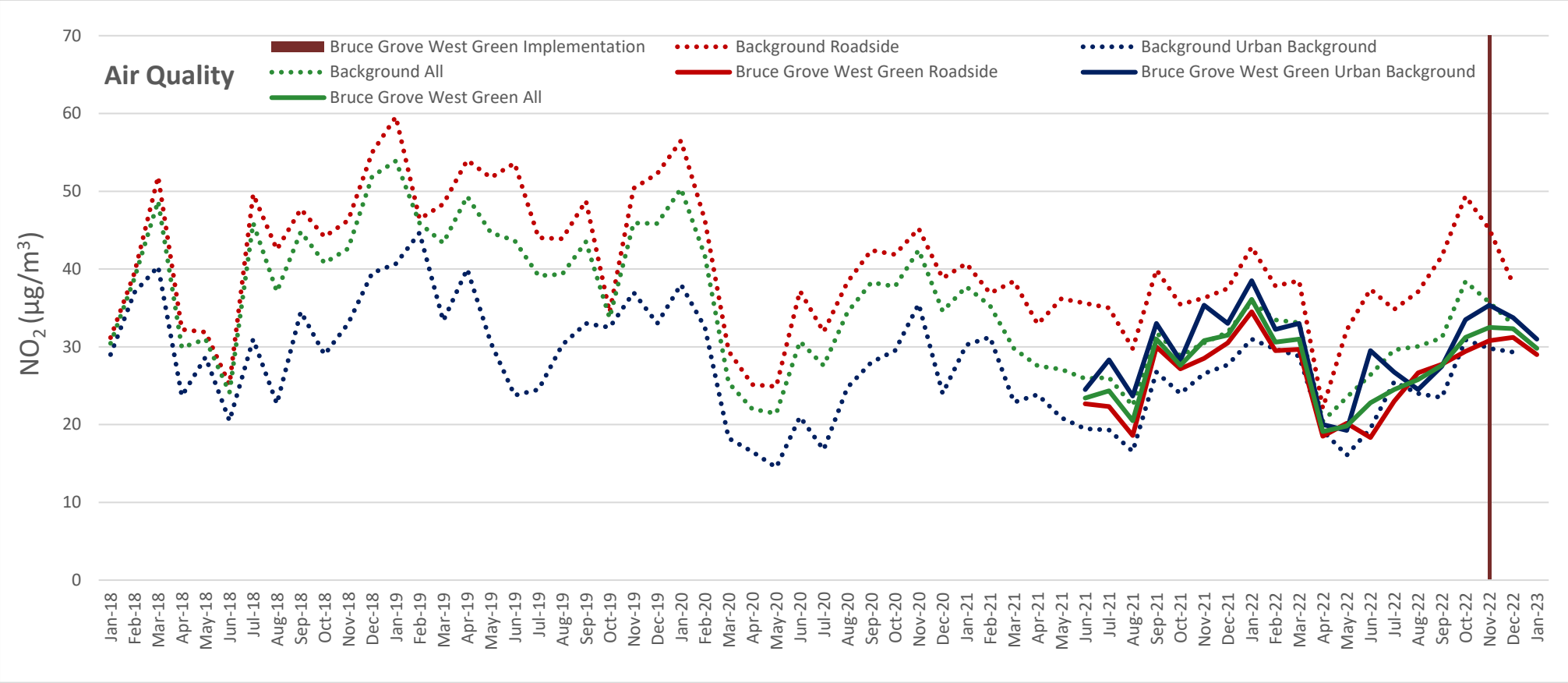
Instead, based on the above, the overall trend of NO_2 levels (as an average across all site types) has been considered to show how air quality has changed over time.

It is noted that to improve accuracy levels of diffusion tubes it is necessary to bias correct the results based upon local or national collocation studies with more accurate reference monitors. It is also necessary to calculate the data capture, and if this is less than 75%, the results should be annualised. More information on this process can be found in the council's annual air quality report. The results from 2022 have yet to be published, therefore the 2022 data presented here is in "raw" format and may be subject to change once the bias adjustment values are made available.

Results: Air Quality Diffusion Tubes

The results shown below show a longer-term picture of air quality, mostly for sites across the borough, but also for LTN sites since they were installed in June 2021. Data for each set of sites has been split by roadside sites (boundary/major roads), urban background sites (internal/residential roads), as well as an average of all sites reported on.

Graph 3: Average NO_2 Levels in Bruce Grove West Green LTN Compared to Long-Term Borough-Wide Sites from Diffusion Tubes



Insights: Air Quality

As can be seen in the chart, there are considerable seasonal impacts on NO_2 levels, with typically lower levels recorded in warmer months and higher levels in colder months. Still, the impact of COVID-19 on air quality was very clear during the most restrictive lockdowns in 2020 and 2021, with lower-than-average NO_2 levels recorded during this period. From around the time LTN-specific monitors were installed in June 2021, COVID-era improvements in air quality began to flatten and, as many returned to work and more active daily routines commenced in 2022, this began to increase slightly. Broadly the same trend can be seen for borough wide, non-LTN monitors as for monitors inside the LTN – both before and after the schemes were implemented.

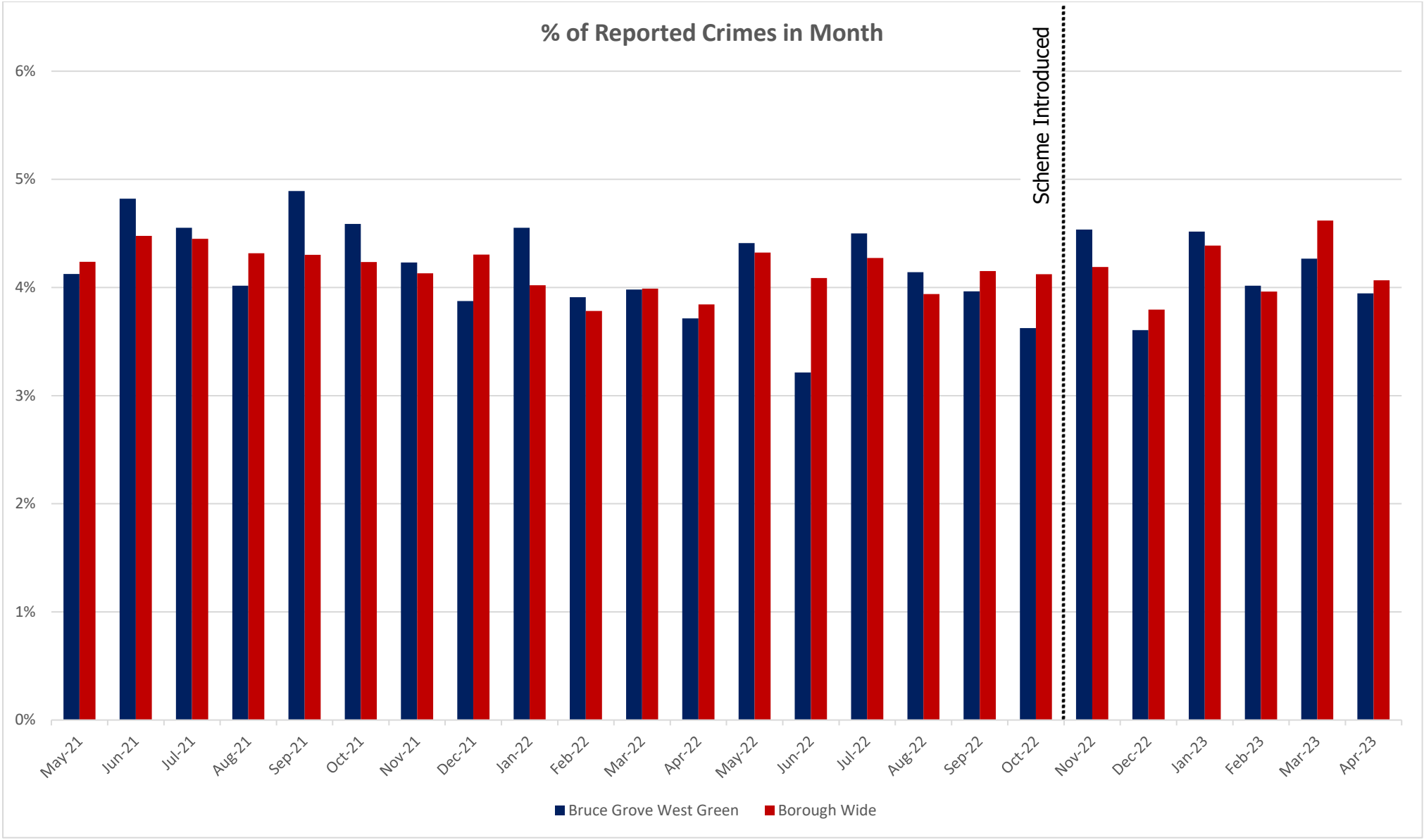
Based on the full calendar year data available at background sites, average NO_2 levels fell from an average 44 $\mu g/m^3$ in the 2019 peak to 30 $\mu g/m^3$ in 2021, before increasing slightly to 31 $\mu g/m^3$ for 2022, a total 30% reduction from peak levels. LTN sites, appreciating that 2021 data only began in June of that year, saw the same trend for 2021/2022 (i.e. a slight increase), so it is likely that air quality in these areas broadly followed the same borough wide trends.

Crime Patterns within the LTN

Crime data has been drawn from the London datastore for the 16 Lower Super Output Areas included within the Bruce Grove West Green area, as well as for the entirety of Haringey, for a period covering May 2021 to April 2023. The dataset includes an indication of all criminal activity as reported to the police, including a wide range of offences including public order offences, theft, drug offences and burglary, among others.

Data has been drawn from the Bruce Grove West Green LTN area and the whole of Haringey, with the number of crime reports summed by month and presented as a proportion out of the total number of such reports across the two years of data presented.

Table 15: Proportional Breakdown of Calls and Crimes in Bruce Grove West Green LTN area and Haringey



Insights: Anti-Social Behaviour and Crime Patterns

Whilst there is only six months of crime data following from the introduction of the scheme, there is so far no indication based on the data that crime patterns within the Bruce Grove West Green LTN area have changed following the scheme's introduction. The number of criminal activity reports in the scheme area and in the borough-at-large are broadly similar, both before and after the scheme's introduction.

The council will continue to follow this metric to see if any changes are reflected over time as the scheme further beds-in.

Concluding Remarks

This interim monitoring report demonstrates that, in general, the Bruce Grove West Green LTN is delivering the intended local impacts in terms of a reduction in motorised traffic volumes on internal roads without significant impact to most boundary roads.

In numerical terms, internal roads have seen a 51% drop in such counts (-43,600 vehicles), compared to a 7% rise on boundary roads (+17,600). As described in the introduction, these figures do include instances where vehicles journeys have been counted multiple times, but it considered that these totals are accurate in their magnitude and direction of change – indicating that the scheme is performing well against its strategic objectives, and will help reclaim local streets for the people that live on them by making them safer and more welcoming for those choosing to walk wheel, scoot or cycle for their local journeys.

More specifically, many internal roads such as Langham Road and Downhill Park Road have seen reductions, of 91% and 84% respectively, since the introduction of local modal filters. Internal roads that have seen increases such as Mount Pleasant Road and Sandringham Road can likely be explained by the fact that they are now the primary entry or exit points into their respective LTN 'cells', and these increases tend to be smaller in magnitude than the decreases elsewhere. Sites such as these will need to be monitored closely to understand if these trends are short term or will need to be addressed.

Boundary roads present a more mixed picture between the two monitoring periods and will need to continue to be monitored as the LTN schemes continue to 'bed in' and people adapt their journeys accordingly. West Green Road (at both Carlingford and Etherley Road) and Belmont Road, in particular, have seen significant increases in traffic volumes ranging between 22% and 41%.

Cycling volumes within the scheme have increased slightly on both internal and boundary roads between the two monitoring periods. Several roads have seen increases of more than 50 cyclists a day with Sandringham Road seeing the biggest increase with 70 additional cyclists recorded which equates to a 52% increase on pre-implementation. Boundary roads present a more mixed picture for cycling levels with Philip Lane seeing a large increase whilst West Green Road saw a significant drop. It should be noted that the weather conditions in the pre-consultation vs. post-consultation months were broadly comparable and should have had similar impacts on cycling levels.

Goods vehicles and motorcycle trends mirror the overall picture for general traffic, with most internal roads seeing significant drops in numbers with a more mixed picture on boundary roads. There are, however, some specific outliers in relation to HGV traffic that will need to

be monitored and require further investigation. Wimborne Road, for example, has seen a significant increase in HGV traffic, which may be linked to redevelopment of the Broadwater Farm Estate – the council will continue to monitor this to understand the dynamics of this trend.

At this early stage, it is difficult to analyse the impact of the Bruce Grove West Green LTN on air quality due to a limited amount of data availability since the scheme was introduced. The identification of trends in air quality is recommended over longer periods of time due to the number of external factors that can influence air quality such as seasonality. Haringey will continue to monitor the air quality across the borough and within all LTN scheme areas.

The Bruce Grove West Green LTN has been in place for approximately six months at the time of writing this monitoring report but can be broadly seen to be achieving its main objectives of reducing traffic volumes on internal roads which in turn makes them safer, more pleasant, and more attractive for people to walk and cycle. There has been an overall reduction in traffic volumes across the entire scheme area but some increased volumes on boundary roads such as Belmont and West Green Road and a small number of internal roads. The council is continuing to monitor any potential issues at these locations and engaging with residents and businesses throughout the ETO period.

Appendices

Appendix 1: Bruce Grove Traffic Count Locations and Type

Haringey-commissioned traffic count sites and type

Site	Latitude	Longitude	Site Type
A105 Green Lanes (@Carlingford Road)	51.589335	-0.102431	ATC
A10 Bruce Grove (@The Avenue/Woodside Gardens)	51.595731	-0.071721	Video
A1080 Westbury Avenue (@Mannock Road)	51.592278	-0.100123	ATC
A1080 Westbury Avenue (@Willingdon Road)	51.594604	-0.096296	ATC
A109 Lordship Lane (@Elsden Road)	51.598689	-0.072492	ATC
A109 Lordship Lane (@Waltheof Avenue)	51.597876	-0.087721	ATC
A504 West Green Road (@Carlingford Road)	51.58687	-0.096709	ATC
A504 West Green Road (@Etherley Road)	51.586062	-0.091819	ATC
Adams Road	51.595579	-0.082249	ATC
The Avenue (@Broadwater Road)	51.594336	-0.075375	ATC
The Avenue (@Mount Pleasant Road/Marden Road)	51.593689	-0.078736	ATC
B153 Philip Lane	51.588632	-0.08182	ATC
B155 Belmont Road	51.58756	-0.094476	ATC
B155 Downhills Way	51.593325	-0.090923	ATC
Broadwater Road	51.597166	-0.075889	ATC
Carlingford Road	51.587112	-0.096376	ATC
Carlingford Road (@Crescent Road/Green Lanes)	51.589762	-0.101374	ATC
Chandos Road	51.595032	-0.076603	ATC
Clonmell Road	51.588729	-0.083542	ATC
Dongola Road	51.589315	-0.079692	ATC
Downhills Park Road (@Kirkstall Avenue/Philip Lane)	51.588482	-0.084519	ATC
Downhills Park Road (@Lordship Park Forest)	51.590971	-0.08908	ATC
Drayton Road	51.594449	-0.077514	ATC
Elmhurst Road	51.59621	-0.073307	ATC
Elsden Road	51.598602	-0.071889	ATC
Forster Road	51.591838	-0.070678	ATC

Gloucester Road	51.589354	-0.081688	ATC
Greyhound Road	51.591425	-0.074426	ATC
Handsworth Road	51.590331	-0.082406	ATC
Hartham Road	51.596729	-0.072421	ATC
Higham Road	51.59224	-0.082769	ATC
Keston Road	51.587711	-0.086262	ATC
Kitchener Road	51.589157	-0.080603	ATC
Langham Road	51.586672	-0.09124	ATC
Linley Road	51.5973044	-0.0745005	ATC
Lordsmead Road	51.598159	-0.077318	ATC
Mannock Road	51.591488	-0.098107	ATC
Moorefield Road	51.592955	-0.07114	ATC
Mount Pleasant Road (#145/The Avenue)	51.593542	-0.078256	ATC
Mount Pleasant Road (#316/Lordship Lane)	51.5976676	-0.0784272	ATC
Mount Pleasant Road (#5/Philip Lane)	51.589489	-0.078922	ATC
Napier Road	51.589952	-0.076697	ATC
Newlyn Road	51.598049	-0.070895	ATC
Pembury Road (#1/High Road)	51.596959	-0.068804	ATC
Pembury Road (#59/Lordship Lane)	51.598042	-0.069576	ATC
Radley Road	51.596435	-0.07496	ATC
Ranelagh Road	51.592269	-0.074393	ATC
Rusper Road	51.59257	-0.093552	ATC
Sandringham Road	51.593284	-0.093499	ATC
Sperling Road	51.593486	-0.072888	ATC
St. Loys Road	51.592485	-0.070784	ATC
Stanmore Road	51.587887	-0.097652	ATC
Steele Road	51.592649	-0.075167	ATC
Vincent Road	51.586797	-0.093505	ATC
Walpole Road	51.591821	-0.090268	ATC
Wilmot Road	51.591538	-0.086537	ATC
Wimborne Road	51.595684	-0.076693	ATC

Winchelsea Road	51.591972	-0.072608	ATC
Woodside Gardens	51.594069	-0.074326	ATC

TfL permanent traffic sites and coordinates (all ATCs)

Site	**Latitude**	**Longitude**	**Site Type**
A1055 Great Cambridge Road NB	51.609531	-0.085715	Permanent ATC
A1055 Great Cambridge Road SB	51.609111	-0.0854853	Permanent ATC
Bruce Grove	51.597282	-0.0735916	Permanent ATC
Great Cambridge Road NB	51.617411	-0.0864079	Permanent ATC
Great Cambridge Road SB	51.618248	-0.0855269	Permanent ATC
Green Lanes	51.572252	-0.0968812	Permanent ATC
High Road Tottenham	51.579888	-0.0728362	Permanent ATC
NCR Bowes Road	51.612497	-0.1189113	Permanent ATC
NCR Stirling Way EB	51.614228	-0.0778041	Permanent ATC
NCR Stirling Way WB	51.614483	-0.0778925	Permanent ATC
Seven Sisters Road	51.575750	-0.0849741	Permanent ATC
A1055 Great Cambridge Road NB	51.609531	-0.0857153	Permanent ATC

ATCs measure traffic volumes and speeds using two thin tubes that run across the street and are connected to a sensor. When wheels pass over the tubes, the pressure impact is interpreted by the sensor to identify the type of vehicle passing over, and the speed with which it passed. They are considered to be extremely accurate. Inaccuracies can arise when, for example, two vehicles pass at the same time they may be counted as one, or if a car and bicycle pass at the same time, it may be read as one car. However, the same method was used before and after and the method is considered a good industry standard. ATCs have been used as a standard in monitoring transport schemes.

Appendix 2: Traffic Count Normalisation Methodologies

To calculate the normalised percentage differences, the November 2021 traffic count volumes have been divided by 0.9894 and the January 2023 traffic counts by 0.9516 to give normalised volumes. In other words, in order to account for the fact that there was (generally) less traffic on Haringey streets from March 2020 onwards, we have provided adjusted figures that provide an estimate for what the traffic would have been if there had not been disruptions from broad events such as COVID-19 or the cost-of-living crisis. This allows us to analyse the impacts of the LTN scheme rather than the impacts of current events / central government policy.

To calculate the percentage change, the difference between the two has been taken and divided by the normalised baseline volume to arrive at a normalised percentage change.

The normalisation figure for each month is reached by calculating the daily average percentage difference between the 'baseline' month (pre-COVID-19 impact) and the corresponding 'impacted' month (i.e. November 2021 and January 2023) across all the permanent TfL counter sites around Haringey, and taking an average difference for the whole month.

Appendix 3: Air Quality Monitoring

The London Borough of Haringey's air quality strategy has been outlined in the borough's 2019-2024 Air Quality Action Plan. The document introduces a range of actions to improve air quality, such as reducing emissions from developments and buildings, incentivising cleaner transport and greening servicing and freight operations.

Part of the air quality strategy remains to improve the breadth of air quality monitoring in the borough. Haringey has been using diffusion tubes for air quality monitoring since before 2018, and now have 37 long-term monitoring sites, with more being added over time. A further set of diffusion tubes within or on the boundary of LTNs were added specifically to understand the impact of air quality of LTNs, 10 of which were within the bounds of the Bruce Grove West Green scheme.

The air quality monitoring sites in the Bruce Grove LTN area are listed below, with details about type and if they have been added as part of the Phase 1 LTN programme or were pre-existing.

Bruce Grove West Green LTN air quality monitoring sites type and period of installation (all diffusion tubes)

Location	**Postcode**	**Defra Classification**
Harris Primary Academy, Philip Lane	N15 4AE	Roadside
Bruce Grove Primary School, Sperling Road	N17 6UL	Urban Background
471 High Road	N17 6QA	Roadside
87 Bruce Grove	N17 6UZ	Roadside
Park View Academy, Langham Road, London	N15 3RA	Urban Background
104 Westbury Ave	N22 6RT	Roadside
85 Downhills Way	N17 6AL	Roadside
6 Green Lanes	N15 3EA	Roadside
The Grove School, Downhills Park Road	N17 6AR	Urban Background
73 Broadwater Road	N17 6EP	Urban Background

Data quality control

To ensure data is as accurate as possible, national guidance for monitoring air quality (in terms of both deployment and results analysis), is followed – for example, such guidance requires the use of accredited monitors, personnel and laboratories or correction of diffusion tube data based on annual comparisons to automatic monitors.

Air quality in Haringey is monitored using diffusion tubes. The existing monitoring stations currently measure the concentration of Nitrogen Oxides (NOx) in the atmosphere.

Overall monitoring for Particulate Matter (PM) across London shows that the current objective values are largely met, therefore, monitoring for PM10 (up to 10µm across) and PM2.5 (up to 2.5µm across) ceased in Haringey in 2014 and 2016 respectively. Monitoring for both started again in May 2021 at our Wood Green monitoring site, locally funded by the borough.

Under Part IV on the Environment Act 1995, local authorities are required to periodically review and assess air quality in their area and identify areas where the air quality objectives are not likely to be met. The air quality objectives are set out for the seven pollutants in the Air Quality (England) Regulations 2000. The objectives are based on the health effects of air pollution. For areas where the air quality objectives are not likely to be achieved, local authorities have to declare Air Quality Management Areas (AQMA) and produce Air Quality Action Plans (AQAP) detailing measures to work towards the achieving the air quality objectives. Following extensive review and assessment of all seven pollutants, Haringey Council declared the whole borough an AQMA for the pollutants of PM10 and NO2 in July 2001.

Haringey, like all authorities with AQMAs, has to produce annual reports for both Defra and the Greater London Authority (GLA) to show trends in air pollution and progress towards achievement of the air quality objectives for the pollutants concern. The most recent status report can be found on the Haringey website by following the link below.

https://www.haringey.gov.uk/sites/haringeygovuk/files/air_quality_annual_status_report_for_2021.pdf

Pollution levels are impacted by a range of local and wider sources, which can have national or even international origins. Therefore, it can be very hard to pick up on local changes caused by schemes such as the LTNs.

Pollution also varies significantly over time due to a range of external factors (such as weather) for which this study has not corrected. Therefore, ideally, a longer period of study would be required to analyse these results more fully. This would also allow further quality control of data that has not been possible with these results. There is also further uncertainty in recent results and whether these will represent longer term trends due to COVID-19. Studies of the first lockdown in March, for example by the Greater London Authority,

show a decrease in overall motorised traffic and NO_2 levels but no consistent change in PM due to weather impacts.

Appendix 4: SYSTRA Statement

SYSTRA has been commissioned to prepare this report in partnership with the London Borough of Haringey.

SYSTRA is a global leader in mass transportation and mobility, employing over 7,000 global employees across 80 countries. SYSTRA has the unique advantage of being not only a Transport Consultancy, but also Social and Market Research Consultancy. Their team members have an in-depth understanding of both the transport sector and of social and market research techniques, providing expert support in monitoring and evaluation both direct to clients and also in a peer review capacity. They provide a wealth of experience in conducting both qualitative and quantitative transport research with stakeholders to help understand their priorities and to inform options for future investment and policy development.

Neither SYSTRA nor LB Haringey can be held accountable for errors in the data provided by third parties, where these errors have not been identified through normal checking processes.

Appendix 5: Individual Site Volumes & Speeds

The following section provides detail for each monitored site including a breakdown of flows and speeds by monitoring period and by vehicle class.

As noted in the main report, data was processed using SYSTRA's proprietary automated data processing tools, which draw together raw data from all reporting periods and apply formulae-based calculations to produce the charts and tables shown in the following pages and appendices. However, as it is not uncommon for there to be problems with data surveys (broken equipment, cars parked on ATC bands etc.) as well as anomalous readings from surveys resulting from one-off events (waterworks, gas leaks, accidents etc.), all data has been thoroughly checked by hand and "patched" (i.e. blank data or significantly anomalous data has been substituted by more representative data from the site/wave in question), which is a necessary task in order to maintain comparable data.

It is also noted that data for goods vehicles is presented as seven-day averages in the appendix (vs. weekday averages in the report).