

## Healthy Neighbourhood – Monitoring Review

## Wembley & Tokyngton Area

London Borough of Brent

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## **Executive Summary**

London Borough of Brent (LBB) introduced five Healthy Neighbourhoods (HNs) on a trial basis in August / September 2020. HNs comprise a group of residential streets where vehicle traffic that isn't local to the area is either discouraged or removed by introducing modal filters in the form of signs, barriers and planters. The aim is to tackle drivers using the street as a short cut, to make it safer and easier to walk and cycle, restore quieter streets and improve air quality.

The HNs introduced were at Preston Road, Dollis Hill, Olive Road, Stonebridge & Harlesden, and Wembley and LBB commissioned Project Centre to undertake a review each location to determine the effect each HN had on the surrounding local road network. This report will focus on the area of Wembley and Tokyngton.

The review consists of analysis of a series of traffic counts, bus journey time data, collision data, air quality monitoring and consultation responses. Traffic counts were conducted prior to the schemes being introduced and further counts undertaken after installation to determine any changes in traffic flows.

The two traffic surveys conducted on boundary roads indicate an increase in volume on both roads (Wembley High Road and Harrow Road). Bus journey times across the period considered for the five routes around the HN typically show mixed results with reduced journey times on two routes and two increased, typically operating along Harrow Road. The fifth route saw reduced times in one direction and increase in the other.

For the internal roads surveyed all, with the exception of Bovingdon Avenue, saw reduced traffic volumes although flows were generally quite low and therefore may be susceptible to quite small changes in traffic movements locally.

The air quality monitoring indicates improvements in NO2 at all three test locations both over the duration of the monitoring and compared to the 2016 baseline figures (with the exception of Wembley High Road which saw an increase). The figures have not been adjusted and therefore can't be compared with UK limits.

Collision data indicates a reduction in the rate of collisions on the boundary roads. There was also al reduced collision rate seen in the roads within the HN with none recorded over the seven-month period. However, the period looked at after introduction of the HN measures is considerably shorter than would normally be considered and therefore further analysis may be necessary in the future to identify trends.

Response to the consultation from residents living within the zone was low (2%) and was predominantly not supportive of the HN measures (10% in favour, 90% against). Considering responses from roads where the restrictions were





implemented there was slightly more support although the majority against the scheme (22% supportive, 78% not supportive).

Similar types of schemes have been introduced across many parts of London, particularly to provide safer conditions for increased levels of cycling and walking during recovery from the Covid19 pandemic. It is recommended that consideration is given to undertaking further engagement with residents on a scheme incorporating enforcement (ideally using CCTV camera enforcement) so that the anticipated lower traffic volumes can be realised, and more active travel options adopted by residents.





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## 1. Introduction

- 1.1 London Borough of Brent commissioned Project Centre to review a variety of traffic data relating to the Dollis Hill, Olive Road, Stonebridge & Harlesden, and Wembley Healthy Neighbourhood (HN) areas. This report will focus on the area of Wembley Area.
- 1.2 A series of traffic counts were undertaken using Automated Traffic Counts (ATCs) to indicate changes to traffic volumes within the area and on the surrounding boundary roads. Air Quality monitoring diffusion tubes were deployed to measure air pollutants and iBus data was collected to record bus journey times and identify any effects on bus services.
- 1.3 Collision data was taken from TfL's Road Danger Reduction dashboard for the period before and after implementation of the scheme.



1.4 The analysis of these data sets is described in the following sections.

Fig. 1.1: Wembley Area Healthy Neighbourhood Modal Filters





## 2. Traffic Data Analysis

2.1 Data Collection

- 2.1.1 In order to identify any changes to traffic flows on the roads within the HN () and on the boundary roads (), a series of Automated Traffic Counts (ATCs) were undertaken. The ATC survey locations are shown on Fig 2.1 below and were carried out over a period of seven days on three separate periods:
  - 'Before' Survey September 2020
  - 'After' Survey February 2021
  - 'Final' Survey May 2021.

ATCs	Before	After (no. 1)	After (no. 2)
HN Boundary Road ATCs			
Wembley High Road	14/09/2020 -	13/02/2021 -	19/05/2021 -
Harrow Road	20/09/2020	19/02/2021	25/05/2021
HN Internal Road ATCs			
Bovingdon Avenue			
Tring Avenue	06/08/2020 -	06/02/2021 -	19/05/2021 -
Cecil Avenue	12/08/2020	12/02/2021	25/05/2021
London Road			





Table 2.1 - Traffic Survey Locations and Dates

2.1.2 However, due to the effect of vehicles parking on ATCs, there are some periods in the surveys where the data is empty. These will have to be considered when comparing some results, however it is believed that the surveys are complete enough to be considered an accurate representation of the overall traffic volumes. Table 1 below shows the dates the surveys were carried out.



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Fig 2.1: ATC Locations





#### 2.2 Considerations

- 2.2.1 The traffic surveys were conducted at various times during the COVID-19 pandemic and may not represent typical conditions due to restrictions about travel and public transport, etc. According to the Department for Transport (DfT), data regarding travel modes during the COVID-19 pandemic (Transport Use During the Coronavirus (COVID-19) Pandemic), indicates that traffic flows in August and September 2020 were at 93% and 95% respectively, when compared to those recorded in February 2020. Traffic flows in February 2021 were shown at 65% of those in February 2020, and May 2021 was at 95%.
- 2.2.2 These figures are national figures based on 275 ATCs around the UK road network, and that over the course of a year, normal traffic can vary by +/- 20%. A further DfT publication on traffic volumes in 2020 (Road Traffic Estimates: Great Britain 2020) indicates that London experienced the lowest decrease in traffic over the year of -18.1% compared to the highest, Wales, of -23.4%.
- 2.2.3 The effect of seasonality should also be considered, as the baseline before surveys were conducted in August / September 2020, typically among the highest three months for traffic flows (along with July). The second surveys were then undertaken in February 2021, typically among the lowest three months (along with December and January). Therefore, the traffic flows set out in the following analysis are relatively low during the February 2021 surveys.
- 2.2.4For the purposes of this monitoring analysis, the average mid-week (Monday to Friday) daily traffic volumes have been considered for the combined two-way flows for the following periods:
  - AM Peak: 07:00 10:00
  - PM Peak: 16:00 19:00
  - 12 Hour: 07:00 19:00 and
  - Whole Day: 00:00 00:00.
- 2.2.5 Speed data, including both mean and 85<sup>th</sup> percentile speeds are also shown in this report for the same periods as listed above.

#### 2.3 HN Boundary Road ATCs





- 2.3.1 Wembley High Road
- 2.3.1.1 The results of the traffic data analysis are shown in Table 2.2, showing the total traffic volume and speeds, compared for each survey period.
- 2.3.1.2 Wembley High Road sees decreases in volumes in the February 2021 survey for all periods compared to the September 2020. However, the May 2021 surveys indicate increases from the baseline surveys in September 2020 to the final surveys for all periods, rising 22% for the PM peak. Some of the increase may be attributable to the restrictions not being enforced and some motorists ignoring them. Decreases in Feb and increases in May are attributable to changes in lockdowns, being enforced in Feb and lifted in May.
- 2.3.1.3 Mean speed has decreased for both and surveys, with a larger drop of -8% (approx. 2mph) in Feb and a smaller drop of -4% (1mph) in May. Although the drop isn't as large in the May survey the continued reduction in speed compared to the September baseline as well as comparable drop in 85<sup>th</sup> percentile speed in the May period indicated a sustained drop in speed since the HN was introduced. 85<sup>th</sup> percentile speed increasing in the February surveys is likely partly due to lockdown but also as traffic volumes are low a few cars could change the results drastically in the 85<sup>th</sup> percentile speed.

Total	Before (Sep-20)	After (no. 1) (Feb-21)	% Change (Sep-20 to Feb-21)	After (no. 2) (May-21)	% Change (Sep-20 to May 21)
AM Peak	3513	215	-94%	3689	+5%
PM Peak	3307	784	-76%	4022	+22%
07:00 - 19:00	13245	2090	-84%	15140	+14%
24 Hours	20006	3507	-82%	22469	+12%
Mean Speed	18.9	17.3	-8%	18.0	-4%
85 <sup>th</sup> Percentile	23.2	24.4	+5%	22.2	-4%

Table 2.2: Wembley High Road ATC Results

#### 2.3.2 Harrow Road





- 2.3.2.1 The results of the traffic data analysis are shown in Table 2.3, showing the total traffic volume and speeds, compared for each survey period.
- 2.3.2.2 The February survey shows a decrease in overall traffic volumes with the largest period decrease in the AM peak (-13%) and a slight increase in the PM peak (+3%). February speeds follow the trend of some of the other roads as the traffic volumes are lower, the speeds have slightly increased, +5% (approx. 1mph) mean speed and +3% (approx. 1mph) 85<sup>th</sup> percentile speed.
- 2.3.2.3 The May surveys show overall increases in traffic volumes across all periods. The largest increases occurred in the 07:00-19:00 period and 24hr period showing overall daily increases. However, some of the increase may be attributable to the restrictions not being enforced and some motorists ignoring them. Decreases in Feb and increases in May are attributable to changes in lockdowns, being enforced in Feb and lifted in May. Additionally mean and 85<sup>th</sup> percentile speed has both decreased by approx. 1mph, although it is possible this is attributable to the increase in traffic volume.

Total	Before (Sep-20)	After (no. 1) (Feb-21)	% Change (Sep-20 to Feb-21)	After (no. 2) (May-21)	% Change (Sep-20 to May 21)
AM Peak	3337	2915	-13%	3490	+5%
PM Peak	3776	3884	+3%	4227	+12%
07:00 - 19:00	13920	13607	-2%	15786	+13%
24 Hours	20940	19586	-6%	23567	+13%
Mean Speed	24.4	25.5	+5%	23.3	-5%
85 <sup>th</sup> Percentile	28.6	29.5	+3%	27.4	-4%

Table 2.3: Harrow Road ATC Results



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Total	(Sep-20)	(Feb-21)	(Sep-20 to Feb-21)	(May-21)	(Sep-20 to May 21)
AM Peak	3337	2915	13%	3490	+5%
PM Peak	3776	3884	+3%	4227	+12%
07:00 - 19:00	13920	13607	-2%	15786	+13%
24 Hours	20940	19586	-6%	23567	+13%
Mean Speed	24.4	25.5	+5%	23.3	-5%
85 <sup>th</sup> Percentile	28.6	29.5	+3%	27.4	-4%

Table 2.3: Harrow Road ATC Results

Fig 2.2: Boundary Road ATC Results

## HN Internal Road ATCs

- 2.4.1 Cecile Road
- 2.4.1.1 The results of the traffic data analysis are shown in Table 2.4, showing the total traffic volume and speeds, compared for each survey period.
- 2.4.1.2 For Cecile Road there is no data for Sep-20, possibly because it had not been put in yet and so any comparisons made may not be a true representation of the traffic volumes and trends.





However, as there is data for the other two Surveys a comparison can be made.

- 2.4.1.3 Cecile Road saw significant decreases in traffic volumes for all periods during the May 2021 surveys compared to Feb-21, with the largest relative decrease in volume in the Am peak -32%. This decrease in the AM peak corresponds to almost 200 fewer vehicles. This decrease is despite increases in volumes overall in the UK due to lockdown restrictions being lifted.
- 2.4.1.3 Speeds, however, have increased, possibly because of the reduction in traffic volumes. Mean speed has increased 16% and 85<sup>th</sup> percentile speed 15% corresponding to approx. 2mph increase.

Total	After (no. 1) (Feb-21)	After (no. 2) (May-21)	% Change (Feb-21 to May-21)
AM Peak	625	427	-32%
PM Peak	852	619	-27%
07:00 – 19:00	3005	2158	-28%
24 Hours	4348	3091	-29%
Mean Speed	10.3	11.9	+16%
85 <sup>th</sup> Percentile	12.7	14.5	+15%

Table 2.4: Cecile Road ATC Results

#### 2.4.2 London Road

- 2.4.2.1 The results of the traffic data analysis are shown in Table 2.5, showing the total traffic volume and speeds, compared for each survey period.
- 2.4.2.2 For London Road there is no data for Sep-20, possibly because it had not been put in yet and so any comparisons made may not be a true representation of the traffic volumes and trends. However, as there is data for the other two Surveys a comparison can be made.
- 2.4.2.2 London Road sees large decreases in volumes in the May 2021 survey for all periods compared to the February 2021 despite overall nationwide trends of increasing traffic in May. The





largest decrease is in the PM peak, corresponding to a decrease of over 400 vehicles.

2.4.2.3 Mean and 85<sup>th</sup> percentile speed have changed very little with an increase and decrease in speeds of 0.1mph respectively.

Total	After (no. 1) (Feb-21)	After (no. 2) (May-21)	% Change (Feb-21 to May- 21)
AM Peak	618	348	-44%
PM Peak	992	531	-47%
07:00 – 19:00	3266	1959	-40%
24 Hours	4511	2638	-42%
Mean Speed	16.6	16.7	+1%
85 <sup>th</sup> Percentile	20.9	20.8	-1%

Table 2.5: London Road ATC Results

#### 2.4.3 Bovingdon Avenue

- 2.4.3.1 The results of the traffic data analysis are shown in Table 2.6, showing the total traffic volume and speeds, compared for each survey period.
- 2.4.3.2 Bovingdon Avenue has seen increases in traffic volumes for both surveys across almost all periods, apart from a very slight decrease in daily traffic volumes in Feb-21. The largest increase for both surveys was the AM peak +25% (approx. 30 vehicles) in Feb and +59% (approx. 70 vehicles) in May. This follows the pattern of lockdown that several of the other surveys follow.
- 2.4.3.3 There is no 85th percentile speed data for February and May 2021 surveys. The mean speed data, however, shows a decrease in average speeds across both survey periods -7% and -5% (approx. 1mph for both).

Total	Before (Sep-20)	After (no. 1) (Feb-21)	% Change (Sep-20 to Feb-21)	After (no. 2) (May-21)	% Change (Sep-20 to May 21)
AM Peak	121	152	+25%	193	+59%



PM Peak	173	202	+17%	228	+32%
07:00 - 19:00	642	694	+8%	837	+30%
24 Hours	950	928	-2%	1107	+17%
Mean Speed	16.9	15.8	-7%	16.1	-5%
85 <sup>th</sup> Percentile	22.2	N/A	N/A	N/A	N/A

Table 2.6: Bovingdon Avenue ATC Results

#### 2.4.4 Tring Avenue

- 2.4.4.1 The results of the traffic data analysis are shown in Table 2.7, showing the total traffic volume and speeds, compared for each survey period.
- 2.4.4.2 Tring Avenue followed the nationwide trend of reduced traffic volumes in February and increased again in May. The largest decrease in Feb was in the PM peak of -29% (approx. 60 vehicles). May however, saw increases in traffic volumes across all periods the largest in the AM peak +51% (approx. 70 vehicles).
- 2.4.4.3 Mean and 85<sup>th</sup> percentile speeds both decreased in Feb 2021 by approx. 7 and 9mph respectively. Although speeds remained lower in the May-2021 surveys they were much closer to the Sep-2021 baseline. Both mean and 85<sup>th</sup> percentile speed <1mph from baseline.

Total	Before (Sep-20)	After (no. 1) (Feb-21)	% Change (Sep-20 to Feb-21)	After (no. 2) (May-21)	% Change (Sep-20 to May 21)
AM Peak	126	123	-2%	190	+51%
PM Peak	218	155	-29%	231	+6%
07:00 – 19:00	686	572	-17%	782	+14%
24 Hours	983	777	-21%	1050	+7%





Mean Speed	17.7	10.9	-39%	17.0	-4%
85 <sup>th</sup> Percentile	22.8	13.5	-41%	22.4	-2%

Table 2.7: Tring Avenue ATC Results





		Total	After (no. 1) (Feb-21)	After (no. 2) (May-25)	K Change (Feb 21 to Max. 211
		AM Peel	625	427	+12%
		PM Peak	852	619	-27%
		07:00 = 19 mi	3005	2158	-28%
		34 Pierure	4348	3091	.79%
		Mean Speed	10.3	11.9	+16%
		80" Percentile Table 2.4: Cecile	12.7 Road ALC Results	14.5	+15%
		Second Second and Second			
	After (no. 1)	After (so. 2)	N Change		
	(Feb 21)	(May 21)	May 21)	1	-
AM PERS	910	431			LO-DCHROND /CC
87-00 + 18-00	3266	1959	-107	1	CIV:
14 Heurs	4511	2638	425		3
Mean loand	16.6	16.7	+1%	112	1
KV <sup>®</sup> Percentile	20.9	20.8	-15		110
able 2.5: London P	Road ATC Result	ts		-	199
			12		100
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				1	2.0
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Table 2.6: Bovington Road ATC Results

Fig 2.3: Internal Road ATC Results





## 3. iBus Data Analysis

- 3.1 In order to determine whether any changes to traffic movements have been experienced on roads outside the zone following introduction of the Wembley HN measures, bus journey times have been examined using iBus data from TfL. There are five routes which services operate on along roads around the HN as shown in Figs 3.1 and 3.2 (18 service), Fig 3.3 and 3.4 (440 service), Fig 3.5 and 3.6 (182 service), Fig 3.7 and 3.8 (204) and Fig 3.9 and 3.10 (223).
- 3.2 iBus data is collected via GPS technology to track bus movements and is reliant on a GPS fix between the bus stop and the London bus. The data is collected from one bus stop to another including dwell times, for each bus journey and used to indicate average bus journey runtimes.
- 3.3 The journey times represent the actual journey times taken between the following stops:

#### Route 18

North and West Bound (Fig 3.1): Stonebridge Park Station to Waverley Avenue and Cecil Avenue to Wembley Central Station East and South Bound (Fig 3.2): Wembley Central Station to Wembley Triangle and Waverley Avenue to Stonebridge Park Station

#### <u>Route 440</u>

North Bound (Fig 3.3):Stonebridge Park Station to Waverley Avenue South bound (Fig 3.4):Waverley Avenue to Wyld Way

#### <u>Route 182</u>

East Bound (Fig 3.5): Wembley Central Station to Wembley Triangle West Bound (Fig 3.6): Cecil Avenue to Wembley Central Station

#### <u>Route 204</u>

East Bound (Fig 3.6): Wembley Central Station to Park Lane West Bound (Fig 3.7): Wembley High Road to Wembley Central Station





<u>Route 223</u>

East Bound (Fig 3.8) Wembley Central Station to Wembley Triangle West Bound (Fig 3.9) Cecil Avenue to Wembley Central Station

3.4 The iBus data represents the periods for September 2019 and 2020, February 2020 and 2021 and May 2020 and 2021. The results for each route are set out in Table 3.1 (Route 18), Table 3.2 (Route 440), Table 3.3 (Route 182), Table 3.4 (Route 204) and Table 3.5 (Route 223).





### Route 18



Fig. 3.1: Route 18 North and West Bound



## Fig 3.2: Route 18 East and South Bound





<u>Route 440</u>



Fig. 3.3: Route 440 North bound



Fig 3.4: Route 440 South Bound





<u>Route 182</u>



Fig. 3.5: Route 182 East Bound



Fig 3.6: Route 182 West Bound





<u>Route 204</u>



Fig. 3.6: Route 204 East Bound



Fig. 3.7: Route 204 West Bound





Route 223



Fig. 3.8: Route 223 East Bound



Fig. 3.9: Route 223 West Bound





3.5 Journey times have been taken for periods corresponding to when the sets of traffic data were collected i.e., September 2020, February 2021 and May 2021. To give baseline periods for before the measures were implemented and pre-Covid effects on traffic flows, journey time data has also been shown for September 2019, February 2020 and May 2020. Journey times have been considered comparing similar months (to account for seasonal differences in traffic flows) for the mid-week morning peak period between 7 and 10am. The results are set out in Table 3.1, 3.2, 3.3, 3.4 and 3.5 (journey times are represented as decimals minutes - i.e., a journey time of 5.8 minutes equates to 5 minutes and 48 seconds).

Route	Direction			Journe	y Times			% Change	
Route	Direction	Sep-19	Feb-20	May-20	Sep-20	Feb-21	May-21	May 2021	
	North Bound	3.7	3.7	2.9	3.9	3.4	3.7	0%	
10	South Bound	4.8	4.5	3.4	4.4	4.0	4.6	-4%	
18	East Bound	3.1	3.1	2.2	3.2	2.4	2.9	-7%	
	West Bound	3.3	3.3	2.4	3.4	2.4	3.1	-5%	

#### 3.6 <u>Route 18</u>

Table 3.1: Route 18 Total Average Journey Times
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Fig 3.10: Route 18 Total Average Journey Times





- 3.6.1 Table 3.1 and Fig 3.10 shows the total average journey times for both direction of travel for the 18 service.
- 3.6.2 The north bound Route has slightly fluctuated between September 2019 and May 2021. However, comparing journey times In May 2021 to those in September 2019, shows <1% change corresponding to less than 1 second change in journey time.
- 3.6.3 The south bound route has seen similar fluctuations to the northbound route between September 2019 and May 2021. However, comparing the latest journey times in May 2021 to those in September 2019 shows a decrease in journey times of -4% equating to approx. 12 seconds.
- 3.6.4 For the east bound route (i.e., Wembley Central to Wembley Triangle) show slightly fluctuating journey times between September 2019 and May 2021. Comparing the latest journey times in May 2021 to those in September 2019 shows a decrease in journey times of -7% equating to approx. 12 seconds.
- 3.6.5 The west bound route (i.e., Cecil Avenue to Wembley Central Station) show also shows slightly fluctuating journey times between September 2019 and May 2021. Comparing the latest journey times in May 2021 to those in September 2019 shows a decrease in journey times of -5% equating to approx. 12 seconds.

Route	Direction		% Change					
Roule	Direction	Sep-19	Feb-20	May-20	Sep-20	Feb-21	May-21	May 2019 to
440	North Bound	3.2	3.5	2.5	3.4	3.4	3.9	23%
440	South Bound	3.4	3.4	2.3	2.9	3.2	3.5	4%

3.7 <u>Route 440</u>

Table 3.2: Route 440 Total Average Journey Times







Fig 3.11: Routes 440 Total Average Journey Times

- 3.7.1 Table 3.2 and Fig 3.11 show the total average journey times for both direction of travel for the 440 service.
- 3.7.2 For the north route (i.e., Stonebridge Park Station to Waverley Avenue) shows a small fluctuation between September 2019 and May 2012, particularly in May 2020 where the quickest journey times were seen. This is before traffic surveys were undertaken for the monitoring of the Wembley HN and therefore the cause for this is unknown although it was shortly after the first Covid19 lockdown commenced and therefore lower traffic levels may have had an influence. However, overall journey times have increased by 23% (approx. 42 seconds) between September 2019 and May 2021.
- 3.7.3 For the south bound route (i.e., Waverley Avenue to Wyld Way) shows similar fluctuations in journey times between September 2019 and May 2021. However, comparing the latest journey times in May 2021 to those in September 2019 shows an increase in journey times of 4% for the south bound route equating to approx. 6 seconds.
- 3.8 <u>Route 182</u>

Route	Direction			% Change				
Roule	Direction	Sep-19	Feb-20	May-20	Sep-20	Feb-21	May-21	May 2019 to
182	East Bound	2.9	3.0	2.1	3.0	2.9	3.1	5%





We	st Bound	3.4	3.5	2.5	3.7	3.1	3.4	0%
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Table 3.3: Route 182 Total Average Journey Times



Fig 3.12: Route 182 Total Average Journey Time

- 3.8.1 Table 3.3 and Fig 3.12 show the total average journey times for both direction of travel for the 182 service.
- 3.8.2 For the east bound route (i.e., Wembley Central Station to Wembley Triangle) show several fluctuations between September 2019 and May 2012. particularly in May 2020 where the fastest journey times were seen. This is before traffic surveys were undertaken for the monitoring of the Wembley HN and therefore the cause for this is unknown although it was shortly after the first Covid19 lockdown commenced and therefore lower traffic levels may have had an influence.
- 3.8.3 Comparing the latest journey times in May 2021 to those in September 2019 shows an increase in journey times of 5% for the east bound route equating to approx. 12 seconds.
- 3.8.3 For the west bound route (i.e., Cecil Avenue to Wembley Central Station) show similar fluctuations in journey times to the north bound route between September 2019 and May 2021.





Comparing the latest journey times in May 2021 to those in September 2019 shows no change in journey times.

#### 3.9 <u>Route 204</u>

Route	Direction			% Change				
	Direction	Sep-19	Feb-20	May-20	Sep-20	Feb-21	May-21	May 2021
204	East Bound	1.2	1.2	0.7	1.0	1.0	1.0	-15%
	West Bound	2.8	3.0	2.0	2.5	2.5	2.6	-8%

#### Table 3.4: Route 204 Total Average Journey Times



#### Fig 3.13: Route 204 Total Average Journey Time

- 3.9.1 Table 3.4 and Fig 3.13 show the total average journey times for both direction of travel for the 204 service.
- 3.9.2 For the east bound route (i.e., Wembley Central Station to Park Lane) shows fairly consistent journey times between September 2019 and May 2012, except for a drop in May 2020 where the fastest journey times were seen. This is before traffic surveys were undertaken for the monitoring of the Wembley HN and therefore the cause for this is unknown although it was shortly after the first





Covid19 lockdown commenced and therefore lower traffic levels may have had an influence.

- 3.9.3 Comparing the latest journey times in May 2021 to those in September 2019 shows a decrease in journey times of 15% for the east bound route equating to approx. 12 seconds.
- 3.9.4 For the west bound route (i.e., Wembley High Road to Wembley Central Station) the journey times are less consistent between September 2019 and May 2021. There is a larger drop in journey times in May 2020 which is likely for similar reasons of the first covid lockdown. Comparing the latest journey times in May 2021 to those in September 2019 shows a smaller decrease in journey times of 8% equating to approx. 12 seconds.
- % Change Journey Times Sep 2019 to Route Direction Sep-19 Feb-20 May-20 Feb-21 Sep-20 May-21 May 2021 East Bound 3.0 2.4 2.9 3.0 3.1 2.1 -3% 223 3.1 2.4 West Bound 3.0 3.2 2.9 3.1 3%
- 3.10 <u>Route 223</u>





Fig 3.14: Route 223 Total Average Journey Time





- 3.10.1 Table 3.5 and Fig 3.14 show the total average journey times for both direction of travel for the 223 service.
- 3.10.2For the east bound route (i.e., Wembley Central Station to Wembley Triangle) shows consistent journey times between September 2019 and May 2012, except for a large drop in May 2020 where the fastest journey times were seen. This is before traffic surveys were undertaken for the monitoring of the Wembley HN and therefore the cause for this is unknown although it was shortly after the first Covid19 lockdown commenced and therefore lower traffic levels may have had an influence.
- 3.10.3 Comparing the latest journey times in May 2021 to those in September 2019 shows a decrease in journey times of 3% for the east bound route equating to approx. 6 seconds.
- 3.10.4 For the west bound route (i.e., Cecil Avenue to Wembley Central Station) the journey times follow a similar pattern to the east bound route between September 2019 and May 2021. There is a large drop in journey times in May 2020 which is likely for similar reasons of the first covid lockdown. However, comparing the latest journey times in May 2021 to those in September 2019 shows a small increase in journey times of 3% equating to approx. 6 seconds.





## 4. COLLISION DATA ANALYSIS

- 4.1 Collision data has been gathered from TfL's online Road Danger Reduction Dashboard for the latest available three-year period on that site (01/01/2017 to 31/03/2021) for the HN boundary and internal roads for before and after implementation.
- 4.2 In the 'before' implementation period, as shown on Table 4.1 below, a total of 116 collisions were recorded resulting in 131 personal injuries. On the boundary roads 98 collisions were recorded resulting in 112 personal injuries being sustained. The HN internal roads show 18 collisions resulting in 19 personal injuries being sustained.
- 4.3 The majority of the collisions, 60 (52%), occurred on Harrow Road,
  46 of which were slight and 14 of which were serious. These resulted in 73 personal injuries being sustained.
- 4.4 Table 4.1 details the collisions recorded on each road and the monthly collision rates which shows the total number of collisions divided by the 'before' implementation period which covers a period of 44 months. For example, records show High Road experienced 31 collisions in the 44-month period therefore the monthly collision rate is 0.705 (31/44).

Pre-Implementation	Killed and Serious Injuries	Slight	Total	Personal Injuries	Collision Rate (collisions / month)				
HN Boundary Roads (ATCs)									
High Road	8	23	31	32	0.705				
Harrow Road	14	46	60	73	1.364				
North Circular Road (without major junction with harrow road)	3	4	7	7	0.159				
Argenta Way	0	0	0	0	0				
TOTAL	25	73	98	112	2.227				
HN Internal Roads	HN Internal Roads								
Point Place	0	1	1	1	0.023				





Tokyngton	0	1	1	1	0.023
Derek Avenue	0	0	0	0	0
Sylvia Gardens	0	0	0	0	0
Albury Avenue	0	0	0	0	0
Wigginton Avenue	0	0	0	0	0
Bovingdon Avenue	0	0	0	0	0
Flamsted Avenue	0	1	1	1	0.023
Nettleden Avenue	0	0	0	0	0
Tring Avenue	0	1	1	2	0.023
Northchurch Road	0	0	0	0	0
Gaddesden Avenue	0	0	0	0	0
Berkhamsted Avenue	0	0	0	0	0
Jesmond Avenue	0	0	0	0	0
Stanley Road	0	0	0	0	0
Clifton Avenue	0	0	0	0	0
Waverley Avenue	0	0	0	0	0
Chatsworth Avenue	0	1	1	1	0.023
Cecil Avenue	0	4	4	4	0.091
Rosemead Avenue	0	0	0	0	0
Beatrice Avenue	0	0	0	0	0
Walrond Avenue	0	0	0	0	0
Lonsdale Avenue	0	0	0	0	0
London Road	1	7	8	8	0.182
Rupert Avenue	0	1	1	1	0.023
TOTAL	1	17	18	19	0.296

Table 4.1: Collision & Casualty Data – Before HN Implementation

4.5 Table 4.2 details the collisions recorded on each road and the monthly collision rates, the 'after' period comprising 7 months.





- 4.6 In the 'after' implementation period, as shown on Table 4.2 below, a total of 10 collisions were recorded resulting in 12 personal injuries. All of these were on the HN boundary roads. The HN internal roads show no collisions and therefore no personal injuries. All of the collisions in the 'after' period were slight injuries.
- 4.7 The total 'after' collision rates for all the boundary roads is 1.428 collisions / month compared to 2.228 in the 'before' period, which equates to a decrease of 0.8 a month.
- 4.8 For internal roads the total monthly collision rates in the 'after' period is 0 compared to 0.296 in the 'before' period. This equates to a decrease of approximately 0.296 collisions a month.
- 4.9 TfL have indicated that they have provisional data up to the end of July 2021 although this is not currently available on the online dashboard.

Post Implementation	Killed and Serious Injuries	Slight	Total	Personal Injuries	Collision Rate (collisions / month)
HN Boundary Roads (ATCs)					
High Road	0	5	5	5	0.714
Harrow Road	0	5	5	7	0.714
North Circular Road (without major junction with harrow road)	0	0	0	0	0
Argenta Way	0	0	0	0	0
TOTAL	0	10	10	12	1.429
HN Internal Roads					
Point Place	0	0	0	0	0
Tokyngton	0	0	0	0	0
Derek Avenue	0	0	0	0	0
Sylvia Gardens	0	0	0	0	0
Albury Avenue	0	0	0	0	0





Wigginton Avenue	0	0	0	0	0
Bovingdon Avenue	0	0	0	0	0
Flamsted Avenue	0	0	0	0	0
Nettleden Avenue	0	0	0	0	0
Tring Avenue	0	0	0	0	0
Northchurch Road	0	0	0	0	0
Gaddesden Avenue	0	0	0	0	0
Berkhamsted Avenue	0	0	0	0	0
Jesmond Avenue	0	0	0	0	0
Stanley Road	0	0	0	0	0
Clifton Avenue	0	0	0	0	0
Waverley Avenue	0	0	0	0	0
Chatsworth Avenue	0	0	0	0	0
Cecil Avenue	0	0	0	0	0
Rosemead Avenue	0	0	0	0	0
Beatrice Avenue	0	0	0	0	0
Walrond Avenue	0	0	0	0	0
Lonsdale Avenue	0	0	0	0	0
London Road	0	0	0	0	0
Rupert Avenue	0	0	0	0	0
TOTAL	0	0	0	0	0

Table 4.2: Collision & Casualty Data – After HN Implementation





## 5. Air Quality Monitoring

- 5.1 As part of the monitoring of the Wembley HN air quality tests were undertaken at three locations using diffusion tubes to measure nitrogen dioxide (NO2). These sites are on Cecil Road, Harrow Road and Wembley High Road.
- 5.2 The Department for Environment Food and Rural Affairs (DEFRA) state that diffusion tubes are a useful low-cost method for indicative monitoring of ambient NO2 concentrations, but they are affected by several sources of interference, such as weather changes and fluctuations in background pollution, which can cause substantial under or overestimation (often referred to as "bias").
- 5.3 Any such bias is a problem in any situation where diffusion tube results are to be compared with air quality objectives. As a result, local authorities using NO2 diffusion tubes are required to quantify the bias of their diffusion tube measurements and apply an appropriate bias adjustment factor to the annual mean as necessary.
- 5.4 Once the results have been subject to this process that they can then be compared to UK national air quality objectives of the annual mean concentration of NO2 not exceeding 40 µg m-3, and the 1-hour mean to not exceeding 200 µg m-3.
- 5.5 The data supplied for the review of the HN monitoring, which covers the period between November 2020 and July 2021, indicates that the diffusion tube results have not been adjusted at this stage. Nonetheless, while the results might not be comparable with air quality objectives, they may give an indication of local trends over the course of the monitoring period.
- 5.6 Levels of NO2 before the HN was introduced are shown on the LB Brent's website regarding the Preston Park scheme and are included in Table 5.1. These 'before' figures are taken from the London Atmospheric Emissions Inventory 2016 which provides modelled annual mean concentrations for NO2. 2016 is the most recent year for which this data is available.
- 5.7 The results of the air quality testing at the three sites mentioned above are shown in Table 5.1 below. To repeat the statement





above, it must be stressed that these are the 'raw' unadjusted figures.

5.8 The results indicate that while levels have fluctuated over the nine months there appears to have been an overall reduction in the levels of NO2 recorded at each of the locations. Although Wembley's results have fluctuated greatly and the last result in July 21 is higher than the other locations, it is still lower than Nov 2020.

			Mont	hly Nitroန ၊	gen Dioxi RAW DA1	de Diffus ΓΑ (μg/m	ion Tube 3)	results		
Air Pollution Test Location	'before' (2016)	Nov 20	Dec 20	Jan 21	Feb 21	Mar 21	Apr 21	May 21	June 21	July 21
Cecil Avenue	37.56	44.84	36.25	41.48	37.84	32.51	28.71	26.16	26.56	26.93
Harrow Road	56.96	45.45	39.30	46.08	40.28	35.47	29.33	29.61	26.72	30.64
Wembley High Road	66.30	84.75	60.33	64.41	52.20	58.91	49.12	67.38	54.22	75.00

Table 5.1: NO2 Monitoring Results (Unadjusted)





## 6. Consultation Summary

- 6.1 An online consultation exercise was undertaken for residents both within and outside of the zone to submit their comments about the scheme and to indicate whether they supported the restrictions or not. In total (i.e., from residents inside and outside the HN) 81 responses were received, of which 26 (32.1%) indicated support for the scheme and 55 (67.9%) did not support the scheme.
- 6.2 The consultation material was delivered to the 2,124 properties within the HN and 47 (2%) responses were received. Of these 10 (21%) supported the proposal and 37 (79%) did not. Responses from roads where modal filters were installed (Cecil Avenue, London Road and Tokyngton Avenue) a total of 21 responses were received. Of these 6 (29%) supported the scheme and 15 (71%) did not. Tables 6.1, 6.2 and 6.3 below shows these response rates on a 'road by road' basis.
- 6.3 Numerous comments were received and the most common were those listed as 'Agreed' (17, 29.3%), those listed as 'General Comment' (17, 29.3%) and those regarding concerns about increased congestion and poorer air pollution (12, 20.7%).
- 6.4 Comments listed as 'agreed' were typically about the increased safety in using the area to travel and for children using it recreationally. Several residents did suggest that the scheme would be better if it was better enforced and extended to cover more streets in the surrounding area.
- 6.5 Those listed as 'General Comment' were generally about the inconvenience caused to local residents and the increase in journey time especially during a school run. There were however some comments about the necessity for traffic some mentioning it was necessary for the economy.
- 6.6 Those regarding increased congestion and pollution were typically either about displacement of traffic onto main roads creating congestion, bottlenecks and longer time spent travelling with many suggesting it increases pollution and disproportionately affects those living on main roads.



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Road Name	Yes	No	% Yes	% No	Road Name	Yes	No	% Yes	% No
Aldbury Ave	0	4	0	100	King Edward Court	0	1	0	100
All Souls Avenue	1	0	100	0	Lea Gardens	1	0	100	0
Armstrong Road	1	0	100	0	Lilburn Walk	0	1	0	100
Aylesbury Street	1	0	100	0	London Road	3	7	30	70
Beatrice Avenue	0	1	0	100	Lonsdale Avenue	1	1	50	50
Berkhamsted Avenue	1	3	25	75	Lordship Road	1	0	100	0
Bovingdon Avenue	0	1	0	100	Nettleden Avenue	1	1	50	50
Cecil Avenue	2	1	67	33	Priory Court	0	1	0	100
Central Square	0	3	0	100	Shoot up Hill	1	0	100	0
Dorchester Way	0	1	0	100	Stag Lane	1	0	100	0
Elvin Garden	1	0	100	0	Sudbury Croft	1	0	100	0
Empire Way	1	0	100	0	Sudbury Heights Avenue	1	0	100	0
Fordwych Road	2	0	100	0	Sylvia Gardens	0	3	0	100
Georgian Court	0	1	0	100	Tokyngton Avenue	1	7	13	87
Gladstone Park Gardens	0	1	0	100	Walrond Avenue	0	1	0	100
Harrow Road	0	2	0	100	Wiggington Avenue	0	1	0	100
High Road Wembley	1	0	100	0	Young Court	1	0	100	0
Honeypot Lane	0	1	0	100	No Road Name	1	11	8	92
Iverson Road	1	0	100	0	TOTAL	26	55	32%	68%
Jesmond Avenue	0	1	0	100					

Table 6.1: Consultation Responses by Road – ALL RESPONSES



# PROJECT CENTRE

Road Name	Yes	No	% Yes	% No
Aldbury Ave	0	4	0	100
Beatrice Avenue	0	1	0	100
Berkhamsted Avenue	1	3	25	75
Bovingdon Avenue	0	1	0	100
Cecil Avenue	2	1	67	33
Central Square	0	3	0	100
Harrow Road	0	2	0	100
High Road Wembley	1	0	100	0
Jesmond Avenue	0	1	0	100
London Road	3	7	30	70
Lonsdale Avenue	1	1	50	50
Nettleden Avenue	1	1	50	50
Sylvia Gardens	0	3	0	100
Tokyngton Avenue	1	7	13	87
Walrond Avenue	0	1	0	100
Wiggington Avenue	0	1	0	100
TOTAL	10	37	21%	79%

Table 6.2: Consultation Responses by Road – ROADS WITHIN HN

Road Name	Yes	No	% Yes	% No
Cecil Avenue	2	1	67	33
London Road	3	7	30	70
Tokyngton Avenue	1	7	13	87
TOTAL	6	15	29%	71%

Table 6.3: Consultation Responses by Road – ROADS WITH MODAL FILTERS

#### 7. EQUALITIES MONITORING

- 7.1 Respondents to the online consultation were invited to answer a series of equalities questions to indicate whether the responses were typically representative of the local community.
- 7.2 In relation to the Stonebridge & Harlesden areas the responses were broadly representative of the local community. The results are included in Appendix A.





#### 8 SUMMARY AND CONCLUSION

- 8.1 For the boundary roads (i.e., Wembley High Road and Harrow Road), the traffic surveys indicate reductions in overall traffic volumes during the first monitoring exercise (February 2021) across almost all time periods, compared to September 2020. However, consideration needs to be given to the possible effects of typical seasonal variations in February along with reduced flows due to Covid restrictions at that time. In the second monitoring period (May 2021) there was an increase in traffic flows which is likely due to covid restrictions ending and traffic returning close to previous levels. For both roads however there was also a reduction in mean and 85<sup>th</sup> percentile speeds for May 2021.
- 8.2 There were mixed results for the iBus bus journey time data. For routes 18 (-4%) and 204 (-11.5%) the data indicates that, journey times have improved. These routes both follow Wembley High Road. However, journey times on the 440 (+13.5%) and 182 (+2.5%) have increased, both routes use the junction between Harrow Road and Wembley Hill Road, however the 223 also uses this junction and its journey times averaged two ways, remain unchanged. It is possible however that the 223's journey times along the rest of the route have improved and just worsened at that junction. However due to the mixed results of the iBus data it is hard to draw any firm conclusions.
- 8.3 Collision data on boundary roads shows 'collisions / month' decreased by approximately 0.8, comparing the period before the scheme went live (44 months) to the period after implementation (7 months) for which data is available.
- 8.4 HN Internal roads showed that flows increased for Tring and Bovingdon Avenue Sep-20 to May-21 it is likely at least part of the increase in May due to the almost full lifting of lockdown restrictions which were still part in place in Sep-20 and very much in full lockdown in Feb-21. However, even though there isn't full data available for London and Cecile Road, both roads traffic flows decreased Feb-21 to May-21 which counters the general trend of lockdown and whose decreases were much larger than the increases of Bovingdon and Tring. Additionally, the traffic volumes on London and Cecile Road are much larger and





therefore the decreases represent a far larger reduction in traffic volumes than smaller increases elsewhere.

- 8.5 Collision data on those internal roads indicates collisions/month decreased by approximately 0.3, comparing the in the 'before' period (44 months) to the period after implementation (7-months) for which data is available.
- 8.6 The results of air quality testing, albeit un-adjusted, show improvements across all four test sites since introduction of the restrictions.
- 8.7 The vast majority of residents (70.7%) have indicated that they do not support the restrictions because of concerns about additional congestion, longer journeys, inconvenience, and impact on air pollution including some that felt the displacement of pollution onto main roads was unfair on those living there.
- 8.8 The lack of enforcement of the restrictions may have led to general flouting of the modal filters and therefore the objectives of providing generally lower traffic levels were not realised and consequently those who may have cycled or walked more were not encouraged to do so.
- 8.9 Similar types of schemes have been introduced across many parts of London, particularly to provide safer conditions for increased levels of cycling and walking during recovery from the Covid19 pandemic. It is recognised that a significant proportion of such schemes in London have not been supported by residents, or other roads users, but some schemes have been successful. It is recommended that consideration is given to undertaking further engagement with residents on a scheme incorporating enforcement (ideally using CCTV camera enforcement) so that the anticipated lower traffic volumes can be realised, and more active travel options adopted by residents.





## **APPENDIX A: EQUALITIES MONITORING RESPONSES**





## Wembley & Tokyngton Area Healthy Neighbourhood

Responses to this survey: 81

#### 7: Please state your ethnicity:

#### Ethnicity

There were 79 responses to this part of the question.



Option	Total	Percent
Asian or Asian British: Bangladeshi	2	2.47%
Asian or Asian British: Chinese	0	0.00%
Asian or Asian British: Indian	14	17.28%
Asian or Asian British: Pakistani	11	13.58%
Asian/Asian British/Other Asian Background	1	1.23%
Black or Black British: African	1	1.23%
Black or Black British: Caribbean	3	3.70%
Black or Black British: Somali	0	0.00%
Black/Black British/ Other Black Background	0	0.00%
Mixed/Dual Heritage: White & Asian	0	0.00%
Mixed/Dual Heritage: White & Black African	0	0.00%
Mixed/Dual Heritage: White & Black Caribbean	1	1.23%



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Mixed/Dual Heritage: Any Other Mixed Background	0	0.00%
Other Ethnic Groups: Afghan	0	0.00%
Other Ethnic Groups: Arabic	1	1.23%
Other Ethnic Groups: Turkish	0	0.00%
Other Ethnic Groups: Eastern European	0	0.00%
Other Ethnic Groups / Any other Groups	1	1.23%
White: British /English/ Welsh/ Scottish/ Northern Irish	8	9.88%
White: Irish	2	2.47%
White: Irish White: Traveller of Irish Heritage	2 0	2.47% 0.00%
White: Irish         White: Traveller of Irish Heritage         White: Gypsy/Roma	2 0 0	2.47% 0.00% 0.00%
White: Irish         White: Traveller of Irish Heritage         White: Gypsy/Roma         White: Other	2 0 0 12	2.47% 0.00% 0.00% 14.81%
White: IrishWhite: Traveller of Irish HeritageWhite: Gypsy/RomaWhite: OtherPrefer not to say	2 0 0 12 22	2.47% 0.00% 0.00% 14.81% 27.16%

## 8: Do you consider yourself to have a disability?

### Disability

There were 77 responses to this part of the question.



Option	Total	Percent
Yes	5	6.17%
No	59	72.84%
Prefer not to say	13	16.05%
Not Answered	4	4.94%





### 9: Please indicate your sex:

#### Gender

There were 77 responses to this part of the question.



Option	Total	Percent
Male	45	55.56%
Female	20	24.69%
Prefer not to say	12	14.81%
Not Answered	4	4.94%

### 10: What is your age?

Age

There were 77 responses to this part of the question.







Option	Total	Percent
0-15	1	1.23%
16-24	8	9.88%
25-34	17	20.99%
35-44	13	16.05%
45-54	12	14.81%
55-64	4	4.94%
65+	8	9.88%
Prefer not to say	14	17.28%
Not Answered	4	4.94%





## 11: What is your religion/belief?

#### Religion

There were 78 responses to this part of the question.



Option	Total	Percent
Agnostic	1	1.23%
Buddhist	0	0.00%
Christian	10	12.35%
Hindu	12	14.81%
Humanist	0	0.00%
Jewish	0	0.00%
Muslim	14	17.28%
Sikh	0	0.00%
No religious belief	16	19.75%
Prefer not to say	25	30.86%
Not Answered	3	3.70%





#### 12: What is your sexual orientation?

#### Sexuality

There were 77 responses to this part of the question.



Option	Total	Percent
Heterosexual / Straight	53	65.43%
Bisexual (an attraction to both men and women)	0	0.00%
Gay man	1	1.23%
Gay woman/Lesbian	0	0.00%
Prefer not to say	23	28.40%
Not Answered	4	4.94%





## Quality

It is the policy of Project Centre to supply Services that meet or exceed our clients' expectations of Quality and Service. To this end, the Company's Quality Management System (QMS) has been structured to encompass all aspects of the Company's activities including such areas as Sales, Design and Client Service.

By adopting our QMS on all aspects of the Company, Project Centre aims to achieve the following objectives:

- Ensure a clear understanding of customer requirements;
- Ensure projects are completed to programme and within budget;
- Improve productivity by having consistent procedures;
- Increase flexibility of staff and systems through the adoption of a common approach to staff appraisal and training;
- Continually improve the standard of service we provide internally and externally;
- Achieve continuous and appropriate improvement in all aspects of the company;

Our Quality Management Manual is supported by detailed operational documentation. These relate to codes of practice, technical specifications, work instructions, Key Performance Indicators, and other relevant documentation to form a working set of documents governing the required work practices throughout the Company.

All employees are trained to understand and discharge their individual responsibilities to ensure the effective operation of the Quality Management System.







#### **Award Winning**



#### Accreditations















#### Memberships



- , - -









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