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PROJECT CENTRE

Tower Hamlets 20mph Speed Limit – Interim Review

London Borough of Tower Hamlets

August 2016

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EXECUTIVE SUMMARY

Introduction

In November 2014, London Borough of Tower Hamlets (LBTH) commissioned Project Centre (PCL) to assist in the design of a borough wide 20mph speed limit, which became operational in April 2015 under an experimental Traffic Regulation Order.

Previous studies undertaken in the United Kingdom suggest that a correlation exists between reduced vehicle speeds and collision and casualty rates, which can also lead to economic benefits. In addition to road safety benefits, 20mph speed limits encourage a modal shift towards cycling and walking, which improves physical heath and accessibility.

LBTH wish to understand whether the introduction of a 20 mph speed limit in the borough has lead to any measurable benefits since its introduction. A review has therefore been undertaken and this report sets out the outcomes of that review. It is based on limited 'after implementation' data. As time goes on and more 'after' data becomes available, the results of this review will be further refined.

Data Analysis

Collision data analysis was undertaken for all roads within the borough over a thirty-six month period, from 1st April 2012 to 31st March 2015. This was the 'before' period, prior to implementation of the 20mph speed limit. 'After' collision data was available for a nine month period from 1st April 2015 to 31st December 2015. This was the latest available data at the time of this report's production.

Given that 'after' collision data is only available for a shorter nine month period than the 'before' base of 36 months, average annual collision rates have been calculated to provide direct comparison between data sets.

Collision rates for the shorter (9 month) period of available 'after' data were multiplied by a factor of twelve to calculate a factorised yearly average. This assumes that collisions during the 9 month 'after' period would continue to occur until the end of the 12 month period at the same rate of occurrence, e.g. 9 collisions over 9 month or one per month = 12 collisions over 12 months.

Prior to implementation vehicle speed was recorded at 54 locations using Automated Traffic Count (ATC) surveys, conducted in March 2015. 'After' ATC surveys were undertaken in March 2016 to provide a direct comparison.

Review Outcomes

Collisions are random events. The numbers of collisions that happen each year can vary considerably. Statistical variations can only be minimised by using a large sample size over many years, which is not currently available. All information provided by this review must therefore be read in context of the limited base data available and cannot be taken to be a definitive assessment of change. It does, however, provide an indication of the short-term outcome of the reduced speed limit. In summary, the analysis indicates that:

- The number of 'fatal' and 'serious' casualties has reduced by 20% and 22% respectively;
- The number of collisions at junctions has reduced by 13%; and
- The number of 'slight' injuries has increased by 24%, giving an overall increase of around 15% across the network.

Despite an overall increase in collision numbers, the occurrence of the severest forms of casualties, 'fatal or 'serious', have reduced. The high economic costs relating to severe collisions and associated casualties have reduced by 4%, resulting in an estimated £826,000 economic benefit (saving).

From an economic viewpoint, the costs associated with implementing the 20mph speed limit have brought benefits, and based on the analysis of 'after' casualty rates, have provided value for money.

In addition to the above, ATC data has shown that average vehicle speeds have fallen by 1.4 mph to 18.3 mph and; that the number of vehicles counted at survey sites has reduced by 17.5%. This reduction may be due to other factors, such as cycling growth in the borough, but may well be influenced strongly by a reduction in through traffic speeds.

Summary

This outline assessment of the 20 mph speed limit has shown mixed results. There have been some clear benefits in terms of reducing the most severe types of collision, along with average speed reductions and a notable decrease in traffic flows.

However, despite these successes, overall the numbers of slight injuries has increased and there are streets and areas where further engineering measures may be required to address high collision levels. Public perception of the scheme has also been eroded from the initial 80% support for its introduction. In a recent survey, less than 50% are now in favour of continuing the experimental order. Most of the survey respondents against the scheme were in the south of the borough, around the Isle of Dogs. It is important to note that this review does not provide a comprehensive and statistically robust assessment of change as it is based on limited post-implementation data. Ideally a full two or three year period after the introduction of the 20mph limit would be needed to provide more confidence in the 'before' and 'after' data.

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1. INTRODUCTION

1.1 Project Centre (PCL) has been commissioned by the London Borough of Tower Hamlets (LBTH) to undertake a full review of the 20mph borough wide speed limit that was implemented in April 2015 under an experimental Traffic Regulation Order.

1.2 The review assessed the effectiveness of the experimental 20mph speed limit through the analysis of 'before and after' collision and speed data. The analysis of data will enable the following to be determined.

- Identifying where change has been positive, negative or neutral;
- Identifying collision trends and patterns, particularly relating to 'slight' injuries;
- Identifying where mitigating solutions to reduce vehicle speeds would be most appropriate;
- Understanding the factors that contribute to collisions within the study area and identifying preventative measures;
- Identify where consideration might be advisable for reverting some of the roads back to a 30mph speed limit.

1.3 The analysis of traffic volumes, flow patterns, vehicle speeds and road safety data was undertaken through a desk top study exercise, using data supplied by LBTH.

1.4 To understand local resident's views following the implementation of the borough wide 20mph speed limit, LBTH undertook an online survey through the Council's website. In addition to the analysis of collision and speed data, LBTH have requested that PCL analyse and collate the survey data obtained from the consultation exercise with LBTH residents and others and report on the findings drawn. The survey closed on Monday 20th June 2016.

2. BACKGROUND

2.1 In November 2014, LBTH commissioned PCL to assist in the design of the 20mph borough wide speed limit. PCL provided a schedule containing signage and lining requirements and other infrastructure that was necessary for the implementation of the project, for the purposes of estimating and manufacturing. PCL drafted experimental traffic orders for all streets within the 20mph limit, excluding existing 20mph Zones, which were advertised and subsequently implemented.

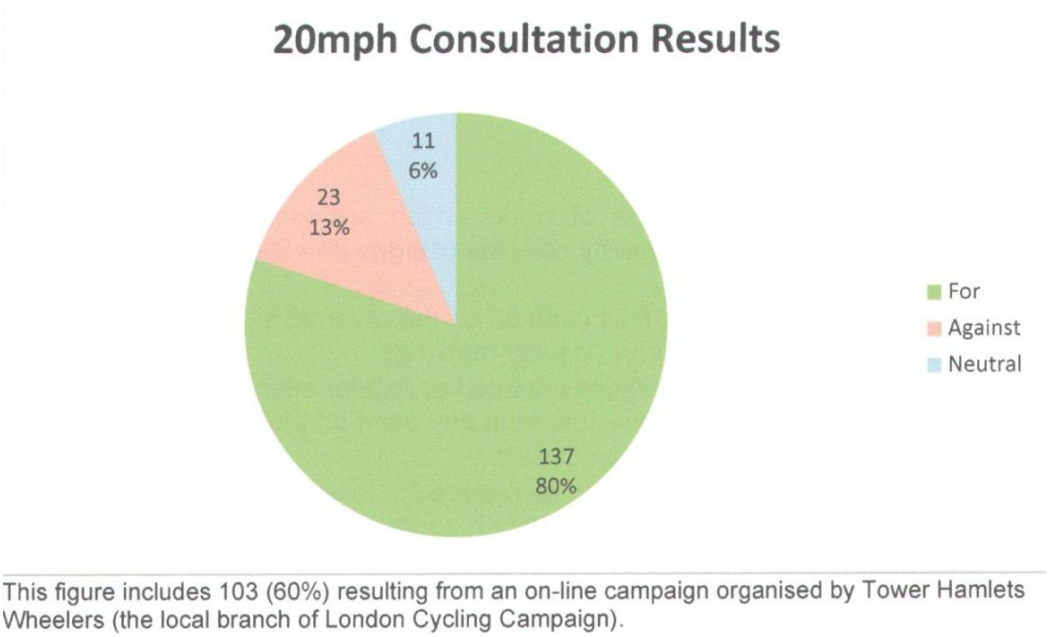
2.2 The implementation of a borough wide 20mph limit was consistent with the objectives outlined by the Mayor of Tower Hamlets. The 2014/15 Strategic Plan (Priority 1.3) includes a commitment to plan and develop proposals for a borough wide 20mph limit, including consultation with TfL. The implementation of the limit aimed to provide a consistent approach to managing vehicle speeds across the borough and to integrate with neighbouring boroughs that have or are planning to implement their own default limit.

2.3 Analysis of Members Enquiries received by Transport & Highways over a twelve month period considered in the 2012 Road Safety Review noted that 25% specifically mentioned vehicle speed as a concern, whilst 69% were related to vehicle speed in general.

2.4 Analysis of the 932 personal injury collisions recorded in 2013, identified that 65% of these involved vulnerable road users: cyclists (254), pedestrians (192) and motor powered two-wheelers (214). These groups would be the major beneficiaries of a reduction in average traffic speeds achievable through a 20mph limit.

2.5 Approximately 85% of the borough was already within local 20mph zones: the majority of these zones have experienced a reduction in the total number of casualties of up to 70% since implementation, although four have experienced an increase in those killed or seriously injured (Weavers, Campbell, Narrow and Antill zones).

2.6 In order to raise awareness amongst residents and drivers of the proposed borough wide 20mph limit, informal public consultation was carried out to set out the justification for the initiative and gauge opinion on the principle of such a scheme. In total the council received 171 responses to the consultation as follows overleaf:



This figure includes 103 (60%) resulting from an on-line campaign organised by Tower Hamlets Wheelers (the local branch of London Cycling Campaign).

2.7 Guidance provided by the Department for Transport (DfT Circular 01/2013 – Setting Local Speed Limits) states that 20 mph speed limits should only be considered on roads where the average speed is at or less than 24mph. Unlike 20mph Zones, which require traffic engineering measures to slow traffic, 20mph limits employ boundary signs, repeater signs and 20mph roundel road markings to remind motorists they are travelling through an area with a reduced speed limit.

2.8 Previous studies undertaken in the United Kingdom have suggested that a correlation exists between reduced vehicle speeds and collision and casualty rates. As well as the road safety benefits, reducing collision and casualty rates also has economic benefits. The most recent figures provided by the DfT (2014) states that the cost of a 'fatal' casualty is estimated to cost the economy £1.8million as opposed to a 'serious' casualty, which is estimated to cost £206,000, and a 'slight' casualty which is estimated to cost £16,000. It can be seen that casualty reduction brings significant economic benefits.

2.9 Based on the positive effect lower vehicle speed has on road safety, local authorities are encouraged by the DfT to introduce 20mph speed limits or zones on major streets in addition to residential streets where there are, or could be, significant numbers of journeys on foot, and / or where pedal cycle movements are an important consideration, and this outweighs the disadvantage of longer journey times for motorised traffic. (Department for Transport Circular 01/2013 – Setting Local Speed Limits).

2.10 In addition to benefits associated with road safety, 20mph limits provide public health benefits. Lower vehicle speeds encourage walking and cycling as alternate modes of travel by making it more pleasant, which improves physical health and air quality, thus reducing the likelihood of ill health through cardiovascular and respiratory diseases

(National Heart Forum 2010). Compared to 30mph roads, 20mph roads are a lot quieter, which improves the quality of sleep for residents living in these roads. Lower vehicle speeds enable the elderly, families with small children and those with mobility issues to cross the roads more easily, thus reducing isolation and feelings of loneliness. Slower vehicle speeds also improve accessibility to work, leisure and educational opportunities, especially for those with restricted mobility, vision, hearing or mental health (20's Plenty for Us 2012).

2.11 A survey undertaken by the road safety charity BRAKE found that 78% of respondents felt that a 20mph speed limit should be the norm around schools, on residential streets and in village, town and city centres. According to the charity, areas that have already introduced 20mph limits have seen "significant reductions in casualties", including Portsmouth where they fell by 22%, and Camden where collisions reduced by 54%.

3. METHODOLOGY

3.1 The impact of the 20mph speed limit has been assessed using 'before and after' data relating to collision occurrence and speeds.

3.2 Collision data was provided by TfL on a road by road basis for all roads within the LBTH borough for a thirty-six month period from 1st April 2012 to 31st March 2015. This time period is 'before' implementation of the 20mph speed limit and forms the baseline 'before' data.

3.3 Further collision data was obtained for a nine month period from 1st April 2015 to 31st December 2015, which is the latest available information post-scheme delivery, i.e. 'after' data.

3.5 The available collision data provided a nine month 'after implementation' snapshot of collisions. There is generally a minimum lead in time of three months for data to be processed by the Police; therefore 12 months post implementation data was not available at the time of this review.

3.6 Before data was averaged over three years to calculate an annual average rate of collisions and casualty severities by road and area before the scheme was introduced. To extrapolate an annual average collision figure post-implementation, the 9 months of data available was converted to an average monthly collision rate and then multiplied by 12 to give an annual figure. This process provides comparative annual averages before and after scheme delivery.

3.7 It is not ideal to extrapolate data in this way as collision rates are subject to considerable variances throughout the year, and over longer periods of time. However, given that only 9 months of information was available at the time of the review, this process provides a reasonably robust indicator of the likely average over a full 12 month period.

3.8 To draw more accurate conclusions from the data it is recommended that a complete 36 month period (or 1 year minimum) of data should be used for comparative purposes. It is worth noting however that changes being made to the borough's 20mph zones and other road network changes may cause random fluctuations in the collision data for the borough wide 20mph limit. These changes may see an increase on borough roads due to the offset of traffic volumes from other design changes on the TLRN (for instance) or could see a reduction due to improved driver behaviour. Although no 20mph speed limit changes have been installed on TLRN, the reported accident statistics include collisions that have occurred on the TLRN.

4. COLLISION ANALYSIS

4.1 The primary aim of the analysis is to ascertain the impact that the 20mph borough wide speed limit has had on the number of collisions occurring within the borough on both local roads and TLRN. Further to this, the analysis has looked to identify any changes that may have occurred in terms of the severity of collisions (slight, serious and fatal).

4.2 Figure 1 indicates that the overall number of collisions that have occurred throughout the borough has increased by 15%. The number of collisions at junctions has reduced by 13%, whereas collisions on links (lengths of road between junctions) and cells (streets within specific residential areas within the borough) have increased by 20% and 35% respectively.

4.3 Figure 2 presents the number of casualties by severity, before and after the implementation of the 20mph speed limit. It can be seen that the overall number of 'fatal' and 'serious' casualties involved in collisions after the implementation of the 20mph speed limit has reduced by 20% and 22% respectively. The number of 'slight' casualties has increased by 24%.

Total Annual Collisions (averaged)				
Junctions, links and cells				
Location	Before (avg)	After (1yr adjusted)	Difference (numbers)	Difference (%)
Junctions	109.3	94.7	-14.7	-13%
Links	246.3	296.0	49.7	20%
Cells	88.7	120.0	31.3	35%
Total	444.3	510.7	66.3	15%

Figure 1: Overall number of collisions 'before' and 'after' implementation by junction, link and cell

Total Annual Casualties (averaged)				
By Severity of injury				
Location	Before (avg)	After (1yr adjusted)	Difference (numbers)	Difference (%)
Fatal	1.7	1.3	-0.3	-20%
Serious	43.0	33.3	-9.7	-22%
Slight	453.7	564.0	110.3	24%
Total	498.3	598.7	100.3	20%

Figure 2: Overall number of casualties 'before' and 'after' implementation by severity type

4.4 Figures 3 and Figure 4 below illustrate the impacts of the 20mph speed limit at junctions and on links, respectively. With reference to Figure 3, it can be seen that there have been no recorded fatalities at junctions within LBTH since the implementation of the 20mph

speed limit (therefore an assumption that no fatalities will occur in the 3 months to Dec15 has been made in figure 3).

4.5 The number of recorded 'serious' collisions at junctions has decreased by 53% and the number of 'slight' collisions has decreased by 4%. Analysis by road user type has determined that the number of pedestrian collisions at junctions has reduced by 51%, whilst the number of cyclist collisions has increased by 2%; which is effectively the same value, as only increased by 1 collision (rounded up from 0.7).

Junctions				
Number of Casualties at junctions				
Total annual averages	Before (avg)	After (1 year adjusted)	Difference (numbers)	Difference (%)
Fatal	0.3	0	-0.3	-100%
Serious	11.3	5.3	-6	-53%
Slight	111.3	106.7	-4.7	-4%
Pedestrian	21.7	10.7	-11	-51%
Cycle	36.7	37.3	0.7	2%

Figure 3: Number of junction collisions 'before' and 'after' implementation of borough wide 20mph speed limit

Links				
Number of Casualties at links				
Total annual averages	Before (avg)	After (1 year adjusted)	Difference (numbers)	Difference (%)
Fatal	1	1.3	0.3	33%
Serious	22.7	22.7	0	0%
Slight	249	316	67	27%
Pedestrian	61.7	93.3	31.7	51%
Cycle	75	74.7	-0.3	0%

Figure 4: Number of link collisions 'before' and 'after' implementation of borough wide 20mph speed limit

4.6 Figure 4 shows the results observed on 'links'. Analysis shows an increase in the number of 'fatal' casualties post speed limit implementation due to the factorisation method, whereas in reality the 'before three year average" is 1 'fatal' casualty and the after is 1 'fatal' casualty in the 9 month since the 20mph speed limit's implementation. However due to the low number the factorisation appears substantial at 33% (increase). There has been no change in the number of 'serious' casualties and a 27% increase in 'Slight' casualties. An increase in pedestrian casualties on link roads of 51% is observed and a negligible decrease of 0.3 occurrences in cycle casualties since the implementation of the scheme.

4.7 Figure 5 below displays the roads with the highest number of collisions before and after the implementation of the 20mph limit, listed highest to lowest of 'after' actual (not factorised) recorded collisions. Eight of the ten roads show notable increases in collisions, whilst there is a reduction in collisions on Westferry Road and Grove Road. Differences between the recorded 'before' 1 year maximum figure (highest of the three years) and the 'after' 1 year adjusted figure show decreases on four of the ten roads, indicating that the assumed collision trend would not exceed the annual maximum previously recorded. Other roads show marginal increases.

	After (9 months)	Before					Averages			
Road Name	Apr 15 - Dec 15	Apr 14 - Mar 15	Apr 13 - Mar 14	Apr 12 - Mar 13	After (1 year adjusted)	Before (avg)	Difference	Difference (%)	1 year max before	Diff btn After 1yr adj vs 1 yr Max
Bethnal Green Road	28	31	18	43	37.3	30.7	6.7	22%	43	-5.7
Hackney Road	28	17	22	23	37.3	20.7	16.7	81%	23	14.3
Cambridge Heath Road	26	29	20	40	34.7	29.7	5	17%	40	-5.3
Roman Road	20	25	15	22	26.7	20.7	6	29%	25	1.7
Old Ford Road	14	14	12	7	18.7	11	7.7	70%	14	4.7
Cable Street	11	13	14	13	14.7	13.3	1.3	10%	14	0.7
Devons Road	11	4	12	11	14.7	9	5.7	63%	12	2.7
Prestons Road	11	9	5	9	14.7	7.7	7	91%	9	5.7
Westferry Road	11	25	17	17	14.7	19.7	-5	-25%	25	-10.3
Grove Road	8	16	12	6	10.7	11.3	-0.7	-6%	16	-5.3

Figure 5: Top ten sites with the highest number of collisions after the implementation of the 20mph limit.

4.8 This increase in collisions after the implementation of the 20mph could be attributed to TfL's RMP and the diversions created during the implementation of CS2. Figure 9 in para 5.10 shows that 50% of these streets have seen an increase in the volume of vehicles compared to prior to the implementation of the 20mph limit, therefore the increase in collisions could be attributed to the increase in the number of vehicles.

4.9 Based on the costs of collision and casualty using the values discussed in Section 2 relating to the cost to the economy, it is possible to identify the financial economic impact of the 20mph speed limit on the economy. Figure 6 below shows the costs to the economy of collisions and casualties before and after implementation of the limit.

Economic costs as a result of casualties					
Casualty severity	Before	After (1yr adjusted)	Difference	Difference (%)	% of Cost of Severity
Fatal	£3,000,000	£2,400,000	-£600,000	-20%	13%
Serious	£8,858,000	£6,866,667	-£1,991,333	-22%	38%
Slight	£7,258,667	£9,024,000	£1,765,333	24%	49%
Total	£19,116,667	£18,290,667	-£826,000	-4%	

Figure 6: Economic costs of collisions 'before' and 'after' implementation of borough wide 20mph speed limit

4.10 The economic costs relating to the effects of collisions and casualties have reduced by 4%, resulting in a £826,000 economic benefit. This suggests that the implementation of the 20mph limit scheme has demonstrated value for money.

5. TRAFFIC SPEED ANALYSIS

5.1 Automated traffic count surveys (ATC's) were undertaken at fifty-four sites within the borough during March 2015. Data from these sites has been reviewed and compared to a further set of ATC surveys undertaken at the same sites during March 2016.

5.2 The ATC data obtained during March 2016 provides a depiction of twenty four hours of traffic flows on the surveyed roads, as provided in the speed summary from PAX. It is our assumption that there are a few anomalies / data inaccuracies in the reporting of this data; therefore full twenty-four hour raw data has been requested from the supplier. At the time of writing this report not all of the data was available.

5.3 Six sites were removed from the data sets as they provided incomplete or partial data, which were affecting the accuracy of the results. The sites removed from the data were:

- Bonner Road
- Bromley High Street
- Bromley Street
- Byng Street
- Redmans Road
- Fairfield Road

5.4 85th percentile speed is a value that is used for establishing regulatory speed zones and is the speed at which 85% of all vehicles are travelling at or below under free flowing conditions. Since the implementation of the 20mph speed limit, there has been a reduction of approximately 1.9mph in the 85th percentile speed. It is currently 22.31mph, which compares to 24.24mph recorded in 2015.

5.5 There has also been a reduction in mean speeds across the forty-eight sites in the summary, which identified a 1.4mph reduction to 18.32mph in 2016 compared to 19.72mph recorded in 2015. This average speed across the sites is below the 24mph guidance that is set by the Department for Transport when considering a 20mph limit.

5.6 During the March 2015 survey, 5,736,307 vehicles were observed to travel through the count sites, compared to 4,733,957 vehicles during the March 2016 survey, a reduction of 17.5%. This reduction in vehicle numbers could be attributed to the implementation of the 20mph speed limit and other factors such as congestion arising from construction of TfL's Roads Modernisation Programme (RMP).

5.7 The implementation of 20mph zones and limits encourages the use of walking and cycling as a mode of transport. The reduction in the number of vehicles on the network could be attributed to more pedestrians and cyclists using the route, or more drastically

drivers seeking alternative routes around the borough rather than through it. This reduction is also likely to have been impacted by the introduction of Cycle Super Highway 2 (CS2).

5.8 Figure 7 displays the top twenty sites with the highest mean speeds recorded in 2016, all of which are 24mph or below. This speed indicates that they are within the guidelines to be included within a 20mph limit. The speeds recorded in 2016 across these sites averaged between 7mph and 24mph, compared to 2015 where the speeds ranged between 13mph and 27mph.

Site No	Street Name	Mean Average 2015	2016
54	Manchester Road	24.65	24.10
7	Bow Common lane (110)	24.25	23.65
51	Roman Road	25.75	23.30
28	Parnell Road	24.25	23.00
53	Westferry Road	25.00	23.00
49	Grove Road	23.60	22.90
26	Old Ford Road (110)	21.35	22.20
46	Chrisp Street	22.40	22.20
42	White Horse Lane (60)	20.45	21.80
19	East Ferry Road	27.85	21.75
33	Rhodeswell (109)	21.55	21.55
13	Campbell Road	22.30	21.15
50	Hackney Road	21.60	21.15
18	Devons Rd	22.55	20.95
27	Old Ford Road (293)	21.80	20.65
48	Globe Road	20.65	20.65
8	Bow Common lane (136)	19.95	20.45
23	Monier Road	19.40	20.00
38	Waping High Street	20.45	19.65
44	Bethnal Green Road	20.80	19.40

Figure 7 – Top twenty sites with the highest recorded mean speed in 2016.

5.9 An increase in mean vehicle speed was recorded at ten survey sites compared with the 2015 survey data (see Figure 8 overleaf). It is important to note that although these sites saw an increase in mean speed, all of these locations had a mean speed below 24mph, the threshold at which they can be considered to be included in a 20mph limit. Bazely Street recorded the highest increase in mean speed of 21.5% with a 3.25mph speed increase in 2016 to 18.35mph. Cable Street recorded the largest decrease in mean speed of 52% with a reduction of 14.75mph down to 13.65mph in 2016.

Site No	Street Name	Mean Average		Difference
		2015	2016	
4	Bazely Street	15.1	18.35	3.25
35	St Pauls Way (37)	16.8	18.4	1.6
42	White Horse Lane (60)	20.45	21.8	1.35
17	Cordellia Street	15.5	16.35	0.85
26	Old Ford Road (110)	21.35	22.2	0.85
36	Tarling Street	15.25	15.9	0.65
12	Campbell Road	18.7	19.3	0.6
23	Monier Road	19.4	20	0.6
8	Bow Common lane (136)	19.95	20.45	0.5
20	Ferry Street	14.95	15.05	0.1

Figure 8 – Ten sites that recorded an increase in mean speed compared with 2015 survey data

5.10 Although there was a general reduction in the number of vehicles surveyed across the forty-eight sites, there were thirteen sites which showed an increase in the number of vehicles (see Figure 9). It is believed that this increase in volume is attributed to external factors, primarily on the TLRN, causing traffic reassignment away from the TLRN and onto local roads.

Site No	Street Name	Total Volume		Difference
		2015	2016	
35	St Pauls Way (37)	121257	202323	81066
44	Bethnal Green Road	188498	269359	80861
34	St Pauls Way	126548	206030	79482
14	Cannon Street Road	37415	98631	61216
15	Cannon Street Road	95013	131715	36702
49	Grove Road	193170	225710	32540
7	Bow Common lane (110)	69374	87317	17943
45	Cable Street	38458	54239	15781
52	Vallance Road	171284	186208	14924
48	Globe Road	106710	117811	11101
50	Hackney Road	319698	328424	8726
26	Old Ford Road (110)	122862	129374	6512
1	Alie Street	29170	32670	3500

Figure 9 – Survey sites which recorded an increase in the number of vehicles

5.11 Campbell Road recorded the largest reduction in numbers of vehicles, from 218,247 observed vehicles in 2015 to 46,817 observed vehicles in 2016, this reduction is due to a closure at its junction with the A11 while works were undertaken on the A11. St Pauls Way recorded the largest increase in traffic volume with an additional 81,066 vehicles compared to 2015, this is understood to be due to traffic reassignment from the TLRN.

Note: these large recorded reductions in traffic volume could be attributed to TfL RMP (roads modernisation program), traffic reassignment on to the cycle superhighway

network. It can also cause large increases on other sections of the network as can be seen in figure 9 through traffic reassignment. The volumes of traffic will never return to the before scheme rate due to the major changes to the network.

5.12 Three locations have been identified where the mean speeds and volume of vehicles has increased in 2016. These locations are:

- Bow Common Lane
- Old Ford Road (110)
- St Pauls Way

These routes will require more detailed assessment to determine whether engineering measures could be justified to further reduce speeds and / or discourage further traffic growth.

5.13 **Appendix A** of this report contains a table that compares the 2015 and 2016 data for each ATC site. A red counter denotes that there has been an increase in vehicle speed on that particular road, whilst a green counter denotes a reduction in vehicle speed. This outlines the ACPO (Association of Chief of Police Officers) guidelines for enforcement and highlights the number of instances where the threshold speed was exceeded and where a Fixed Penalty Notice will be issued when education is not appropriate. It accepted that the threshold speed is 10% plus 2mph as can be seen from the below table.

Limit	Device tolerance	Fixed Penalty when education is not appropriate	Speed Awareness if appropriate From	To	Summons in all other cases and above
20 mph	22mph	24 mph	24 mph	31 mph	35 mph
30 mph	32 mph	35 mph	35 mph	42 mph	50 mph
40 mph	42 mph	46 mph	46 mph	53 mph	66 mph
50 mph	52 mph	57 mph	57 mph	64 mph	76 mph
60 mph	62 mph	68 mph	68 mph	75 mph	86 mph
70 mph	73 mph	79 mph	79 mph	86 mph	96 mph

All speeds identified above are those shown on the speed device, speedometer or other detection devices

5.14 LBTH has requested performance data from the LAS (London Ambulance Services) and LFB (London Fire Brigade) as there were concerns raised prior to the implementation about blue light response times. Unfortunately we are still awaiting a response from LAS. However Keith Wilson Station Manager at Bethnal Green Fire Station has confirmed that the experimental order has had no effect on the response times for London Fire Brigade in Tower Hamlets. They have also stated that "*We support the reduction in improving road safety*" and that from an emergency response point of view the 20mph limit has not affected their attendances.

6. ROADS TO RETURN TO 30MPH

6.1 Through LBTH officer observations and public perceptions, it was thought that there may be some locations where it is appropriate to revert some of the roads back to a 30mph speed limit. The roads which were considered for 30mph are listed below:

- Leamouth Road Roundabout
- Leamouth Road
- Cotton Street
- Prestons Road – up to the Blue Bridge
- Prestons Road Roundabout
- West India Dock Road
- Westferry Road (A126) – between West India Dock Road and West India Avenue

Collision Data

6.2 The below table outlines the number of collisions that occurred at the sites that were reviewed to be returned to a 30mph speed limit.

Road Name	Apr 15 - Dec 15	Apr 14 - Mar 15	Apr 13 - Mar 14	Apr 12 - Mar 13	After (1 year adjusted)	Before (avg)
Leamouth Road	1	0	2	2	1	1
Cotton Street	6	5	4	1	8	3
Prestons Road	11	9	5	9	15	8
West India Dock	2	7	6	4	3	6
Westferry Road	11	25	17	17	15	20
Leamouth Roundabout	-	-	-	-	-	-
Prestons Road Roundabout	-	-	-	-	-	-

Figure 10 - Number of collisions that occurred on roads proposing to retain 30mph speed limit.

6.3 On West India Dock and West Ferry Road there has been a reduction in the number of collisions. This would support the retention of the 20mph limit on these roads as it appears to have had a positive impact on driver behaviour. Reverting the speed limit back to 30mph may lead to an increase in the number of collisions.

6.4 No collision data was available for Prestons and Leamouth Roundabouts. Cotton Street was the only location that saw an increase in the number of collisions from the 'before' years, although none of these collisions identified speed as a contributory factor - the

majority were rear end shunts and lane change collisions. On Leamouth Road and Prestons Road there was no change in the average number of collisions.

ATC DATA

6.5 Of the seven locations identified for reverting back to 30mph, only one had been selected as an ATC survey site, this location was West Ferry Road. This location saw a 2mph reduction in speed from a mean speed of 25mph to 23mph. This speed data suggests that Westferry Road is suitable to retain as a 20mph speed limit, this also supports guidance provided by the Department for Transport (DfT Circular 01/2013 – Setting Local Speed Limits) as the speed is below 24mph.

6.6 We therefore assessed these locations against TfL's Roads Taskforce Classification to understand the movement type along the route and determine from this what we believe the most appropriate speed would be depending on their use and function. The diagram below illustrates how classifications are defined:

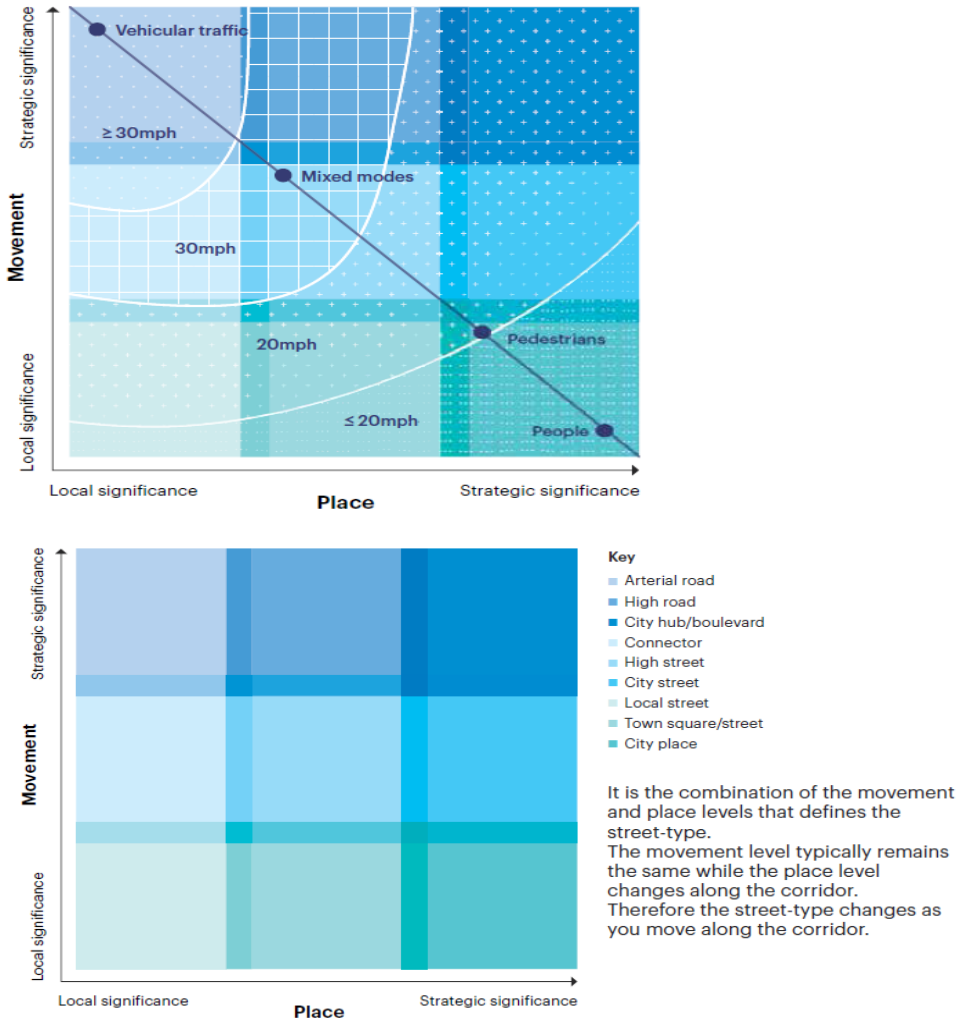


Figure 11 RTFC classification table

6.7 Leamouth Road (and Leamouth Road Roundabout) is a north-south link between the A13 East India Dock Road, A1261 Aspen Way and Lower Lea Crossing into the London Borough of Newham. The road is a 200m, two lane two way road with carriageway widths between 7 and 14m. The northbound approach is 4 lanes at the A13 junction. The nature of Leamouth Road is very straight with very low to no place value with a high strategic movement value. This layout does not usually tend to lend itself to a 20mph speed. Vehicles exiting the A1261 Aspen Way and Lower Lea Crossing have been travelling at 40mph and are likely to continue due to the nature of the road being very similar. These routes can all be described as arterial or connector routes under the roads task force classification system.

6.8 Cotton Street is a direct north-south link between A13 East India Dock Road and A1261 Aspen Way. The road is a 300m long two lane, two way road with a carriageway width of approximately 14-15m. The northern section of Cotton Street has a central reservation dividing the four traffic lanes, however south of the pedestrian crossing the road is four lanes wide without any pedestrian refuge area. The nature of the road does not lend itself to a 20mph speed limit due to its topographical layout as there are few trip generators or reasons to stop on this route. The local area is also bounded by the rail line to the west and the A102 to the west. There is a pedestrian crossing which facilitates east-west pedestrian movements, i.e. to Woolmore Primary School on Woolmore Street and local housing estates. The route can be defined as a connector road due to its low place significance and strategic movement significance. The road does not have any trip generators along the route nor does it have any side roads coming off the route. Given that the route links the 40mph A1261 and 30mph A13, it is envisaged that driver behaviour will not change on this connector route due to it having similar characteristics to an arterial route.

6.9 Prestons Road links the A1261 Aspen Way (at Prestons Road Roundabout) to the A1206 Manchester Road; the section under consideration is the link between the Prestons Roundabout and the Blue Bridge. It is very similar in nature and topographical layout to the Cotton Street. Pedestrian east-west movements are accommodated via the pedestrian facilities at the junction with Yabsley Street, and Baffin Way, near the roundabout. There is a signalised pedestrian crossing to the south of Lovegrove Walk. Much of Prestons Road is flanked by property boundary walls, particularly on the west side. Prestons Road is approx 650m in length, it is not recommended that this route retains the 20mph speed limit due to it being two lanes in each direction, at its northern section, and south of Yabsley Street, reducing to very wide single vehicle lanes in each direction including a bus lane northbound and a cycle lane southbound. The road has a wide central hatch marking running down its centre with left/right turn slip lanes. It is therefore very unlikely that drivers would adhere to a 20mph limit. Unfortunately we do not have any data to qualify this position.

6.10 West India Dock Road links the A13 Commercial Road to the A1261 Aspen Way. West India Dock Road is a 750m long, two lanes, two way A-Road; it is approximately 20-22m wide for the majority, whilst some locations increase to as wide as 30m. The nature of this

street does not lend itself to a 20mph speed limit as a result of the topographical nature; whilst there is a small parade of shops near the junction with the A13 it is designed to move people between places. There is also a police station on West India Dock Road which could be defined as a trip generator and Westferry DLR station is also in close proximity and could be used as a route to and from the A13 Commercial Road. West India Dock Road can be defined as an Arterial Road, a high capacity urban road. The primary function of an arterial road is to deliver traffic form connector roads at the highest level of service. A speed limit of 20mph does not match the characteristic of West India Dock Road as it forms a key link to Aspen Way and the Limehouse Link.

6.11 Westferry Road (between A1261 West India Dock Road and West India Avenue) links West India Dock Road and West India Avenue/ Marsh Wall. This section of Westferry Road is 450m long, two lanes, two way A-Road and is approximately 20m wide. It increases to 27m wide becoming 6 lanes at the Limehouse Link junction. There are also long extents of pedestrian guard railing along either or both sides of the road and complex road layouts, particularly at junctions. The nature of this street does not lend itself to a 20mph speed limit due to the topographical nature. Westferry Road can be defined as an Arterial Road, a high capacity urban road. The primary function of an arterial road is to deliver traffic from connector roads at the highest level of service. A speed limit of 20mph does not match the characteristic of Westferry Road as it forms a key link to the Limehouse Link. Although there was an overall reduction in average speed and collisions on this road it is believed that this may be attributed to increased congestion and Transport for London RMP works that have caused the data to show variance.

6.12 No additional locations were identified where the RTFC classification would require the speed limit to be returned to the 30mph limit.

7. PERCEPTION SURVEYS

7.1 LBTH undertook a perception survey; an online consultation exercise by means of a web based survey on the Council's website; to understand local residents (and others) views following the implementation of the borough wide 20mph speed limit. The perception survey closed on the 20th June 2016 and a sample copy of the survey has been included in **Appendix B** for reference. A postcode heat map plot and count marker have been collated from the consultation responses and included in **Appendix E**.

7.2 904 consultation responses were received. Question 2 of the survey asked *"Are you in favour of 20mph speed limits in general across London";* 39% (353 respondents) answered yes they are, 57% (514 respondents) answered no they are not in favour of 20mph limits. 4% (37 respondents) either did not know or did not answer this question.

7.3 53% (483 respondents) disagreed with the proposals to make the experimental 20mph limit on borough roads permanent (342 strongly disagree, 141 disagree). 40% (361 respondents) agreed with the proposals to make the experimental 20mph limit on borough roads permanent (278 strongly support, 83 support). 7% (60) of respondents either had no view or did not answer the question. See breakdown below.

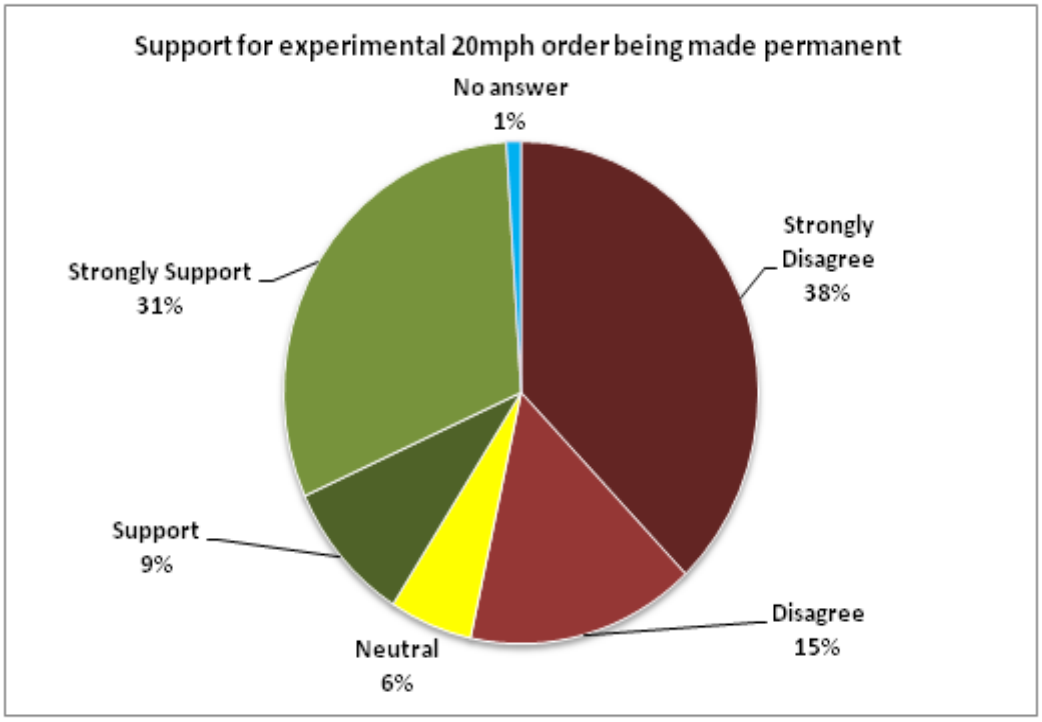


Figure 12 – Support for experimental order being made permanent

7.4 Question 4 asked if the following roads should be reverted back to a 30mph speed limit: Leamouth Road/ Roundabout, Cotton Street, Prestons Road (up to the blue bridge), Prestons Road Roundabout, West India Dock Road, Manchester Road/ Westferry Road and Cambridge Heath Road. The survey highlighted that the respondents felt that all of these locations should be reverted back to 30mph. Please see table below for results.

Figure 13 – LBTH roads to be returned to 30mph results

20mph limit?	Leamouth Roundabout/ Leamouth Road		Cotton Street		Prestons Road up to the blue bridge	
Yes	428	47%	426	47%	488	54%
No	255	28%	251	28%	220	24%
Don't Know	161	18%	167	18%	102	11%
No answer	60	7%	60	7%	94	10%

20mph limit?	Prestons Road Roundabout		West India Dock Road		Manchester Road /Westferry Road		Cambridge Heath Road	
Yes	435	48%	521	58%	511	57%	449	50%
No	281	31%	242	27%	289	32%	272	30%
Don't Know	113	13%	87	10%	71	8%	133	15%
No answer	75	8%	54	6%	33	4%	50	6%

7.5 A question was also asked to ascertain views associated with the proposal to introduce a 20mph limit on the following Transport for London Road Network (TLRN) roads: Commercial Road, Burdett Road, Mile End Road, Whitechapel Road, The Highway and Leman Street, also continuation of the existing 20mph limit on Commercial Street. The majority of respondents did not agree with these proposals and want the current limit to remain. Please see below table with the results.

Figure 14 – TLRN roads to become 20mph results

20mph limit?	Commercial Road		Burdett Road		Mile End Road		Whitechapel Road	
Yes	212	23%	221	24%	225	25%	234	26%
No	590	65%	557	62%	582	64%	568	63%
Don't Know	13	1%	79	9%	53	6%	54	6%
No answer	89	10%	47	5%	44	5%	48	5%

20mph limit?	The Highway		Leman Street		Commercial Street	
Yes	173	19%	232	26%	232	26%
No	599	66%	518	57%	518	57%
Don't Know	81	9%	103	11%	103	11%
No answer	51	6%	51	6%	51	6%

7.6 Question 4 asked respondents if they felt that more work was needed to increase the effectiveness of the 20mph limit. These responses have been ranked below in the order of popularity from the survey results:

1. Traffic Calming Measures
2. Police Enforcement
3. Driver Education
4. Driver Awareness

The table below sets out the results in three response categories for each question.

More work needed?	Agree		Disagree		Neutral/ No Answer	
Increase in the number of traffic calming measures	381	42%	36	4%	158	17%
Increase in police enforcement	471	52%	289	32%	144	16%
Increase in driver education	517	57%	203	22%	184	20%
A driver awareness campaign to promote the limit	466	52%	273	30%	165	18%

Figure 15 – requests for additional measures to improve effectiveness of the 20mph limit.

7.7 Respondents were also provided with a section to provide further comment if desired. The following items were recorded as common comments made:

- Increased enforcement with tougher punishment (i.e. larger fines);
- There is still a problem with young 'boy racer' types and the Police need to stop this;
- Speed cameras need to be installed to monitor and deter drivers from travelling in excess of the speed limit;
- Additional traffic calming in some places if the roads remain 20mph such as:
    - Pedestrian crossings
    - Lane narrowing
    - Barricades at certain points (road closures)
    - Increased and larger signage
    - Speed humps

- Young driver education.

7.8 The survey results indicate that there is a general dislike of the new 20mph limit; indicating that the scheme is not widely accepted by the sample group analysed.

7.9 The heat map in Appendix E demonstrates that although there is a general dislike by the sample group; it can be seen that a large proportion of these respondents reside in the southernmost point of the Isle of Dogs. This area is home to a small number of properties in comparison to the rest of the borough.

7.10 525 responses were received from an E14 postcode which is the area covered by the Isle of Dogs, and equates to 58% of respondents. Of this, 146 responses were in support of the 20mph limit and 340 respondents disagreed with the experimental scheme. 39 responses were left either blank or remained neutral.

7.11 It should be noted that if these responses were removed from the survey results; then the scheme actually has majority support for the 20mph experimental scheme; with 143 responses against it and 218 in support of it.

7.12 The table below highlights that although there is a general dislike for the scheme from the survey results, when broken-down across the postcodes that form the borough; there is acceptance and support for the scheme in areas E1, E2 and E3. It is only in E14 where there is a general dislike and little support for the scheme.

	Support	Disagree	Blank/ Neither	Total
E1	81	72	11	164
E2	39	25	5	69
E3	73	29	3	105
E14	146	340	39	525
				863

Figure 16 – Postcode breakdown of survey responses.

8. AIR QUALITY

8.1 The Mayor for London is working hard to improve London's air through their '*Clearing the air'* initiative. The aim is for London to be one of the cleanest and greenest cities in the world. This will help ensure everyone who lives here can enjoy a great quality of life.

8.2 One of the initiatives that align with this scheme is investment in new facilities to make cycling safer and more enjoyable. The reduction in speed limits and introduction of new cycling measures encourage a modal shift which in turn aid in the improvement of air quality.

8.3 An air quality evaluation of the impacts of vehicle emissions of a 20mph speed restriction in central London has been undertaken by Imperial College London. The report details research work undertaken in the first quarter of 2013 to address the question of the environmental impacts of 20mph restrictions in Central London.

8.4 The primary data was collated through detailed vehicle assessment via high grade GPS and collection of NO_X (Nitrogen Oxide), PM_{10} (Particulate Matter 10) and CO_2 (Carbon Dioxide) values. Six different routes across Central London were assessed in order to cover a range of Traffic Conditions.

8.5 The report found that:

- NO_X emission factors are higher for petrol vehicles over 20mph drive cycles compared to 30mph drive cycles; for diesel vehicles they are lower.
- PM_{10} emission factors are lower for both petrol and diesel vehicles over 20mph drive cycles compared to 30mph drive cycles; the exception is vehicles with engines over 2.0 litres in size.
- CO_2 emission factors follow the same pattern as NO_X, although with smaller percentage changes, demonstrating increased fuel consumption when travelling at lower speeds.
- It is concluded that it would be incorrect to assume a 20mph speed restriction would be detrimental to ambient local air quality, as the effects on vehicle emissions are mixed.

The development of London-specific 20mph speed restrictions were shown to be mixed, with particular benefit seen for emissions of particulate matter and for diesel vehicles. The methodology was validated by consideration of real-world exhaust pipe emissions test data. It was therefore concluded that air quality is unlikely to be made worse as a result of 20mph speed limits on streets in London. This analysis is suitable for per-vehicle emission rates, and does not consider secondary effects such as congestion. A full copy of this report can be found at the below address for reference. https://www.cityoflondon.gov.uk/business/environmental-health/environmental-protection/air-quality/Documents/speed-restriction-air-quality-report-2013-for-web.pdf

9. ANTI-SOCIAL BEHAVIOUR EVIDENCE

Overview

9.1 This section discusses instances of anti-social behaviour reported within the 20mph limit and comments on anecdotal evidence where provided. This can be used to identify the roads where motorists speed and/ or behave recklessly and to determine a strategy to deter this behaviour. At the time of writing any evidence of anti-social behaviour has yet to be supplied by the Metropolitan Police or the Council.

9.2 A number of community speed watch groups were created in 2015 by local councillors, concerned residents and Police officers, and have undertaken a number of events and enforcement activities to help reduce the number of vehicles travelling in excess of the speed limit. Involving the Councillors has allowed ward priorities to be a focus for these events such as ASB nuisance driving, vehicle speed and dangerous driving.

9.3 A recent event in March 2016 organised by the council, Metropolitan Police and public aimed to educate drivers travelling faster than the speed limit. Police officers stopped speeding drivers on Old Ford Road between Bonner Road and Approach Road to warn them of the dangers of speeding. Some of the worst offenders who were stopped were given warnings for their offences by the police and provided roadside education and training on the benefits and reasons behind a 20mph limit.

9.4 Approximately 80 drivers have been stopped and spoken to at events undertaken on Old Ford Road and Manchester Road. Events have been programmed to take place at Canary Wharf, Fairfield Road and Wick Lane this summer.

9.5 Two School Speed Awareness events have taken place, with others planned for after the summer break. The events with St Paul's with St Luke's Primary school on St Pauls Way and Manorfield Primary School on Zetland Street have both proved very successful and have been welcomed by staff, pupils and parents. Drivers stopped are grateful for the style of approach taken by police.

9.6 An event with the 'Safer Cycle Unit' and "Exchanging Places" programme, where cyclists get to sit in an HGV and experience the 'blind spots', took place on the 1st June 2016. 23 cyclists came through the Exchanging Places programme and 53 cyclists had their bikes registered with the Safer Cycle Unit.

9.7 All of these events have received a very positive response; been publicised on the MPS twitter account; and have received a positive social media response also.

9.8 The photographs below show some of the positive impacts these events are having on the local communities.

Photographs taken at events undertaken by the Community Speed watch groups

10. CONCLUSIONS

10.1 The purpose of this study was to assess the effectiveness of LBTH's borough wide 20mph speed limit and determine whether there was scope to make improvements. Based on the findings from the data analysis undertaken in Section's 4 and 5, this section discusses potential opportunities to effectively reduce vehicle speed throughout the borough. It also acknowledges that although the data supports that there have been no obvious negative impacts, there have been external stimuli that have affected these results such as the TfL's RMP and Cycle Superhighway which have had an effect on these results, causing a reduction in vehicle speeds and volumes.

10.2 The collision analysis identified that there has been a decrease in all casualty types other than 'slight' following the implementation of the 20mph speed limit. It would not be unreasonable to make the assumption that lower vehicle speeds have contributed to the reduction in the more serious casualty types and resulted in slight injuries due to reduced speeds, hence an increase in 'slight' casualties.

10.3 It is worth noting that a number of other London Boroughs have or are investigating the implementation of 20mph limits, including neighbouring Borough's: LB Hackney, LB Islington, City of London, LB Southwark, LB Greenwich. The only boroughs not looking into this at present are the LB Newham & LB Bromley. This is very important, as a high proportion of vehicles are making through/ cross boundary trips. This will create a driver behavioural change brought about by surrounding boroughs also supporting/ implementation of borough wide limits, and will aid in further reducing overall speeds and collisions within the Borough. TfL are also proposing experimental 20mph limits on TLRN routes. Please refer to Appendix C for a map produced in November 2014 depicting current and future 20mph limits in London by borough.

10.4 It is recommended that all roads proposed to return to 30mph are reverted back; as the nature of these roads and the classification of these roads is better suited to a 30mph speed limit. The number of collisions that are occurring on these roads has also not changed; the exception being Westferry Road; however this could be attributed to the reduction in vehicles that are using this route rather than a positive effect of the speed limit change.

10.5 The number of pedestrian casualties at junctions has decreased, which could be attributed to lower vehicle turning speed following the introduction of the 20mph speed limit. Collisions involving cyclists typically arise as a consequence of the cyclist being struck by a turning vehicle at a junction. The number of cyclist collisions has remained the same with an increase of approx. 1 collision. The number of pedestrian collisions has

decreased by 51% at junctions and increased by 51% on links. This suggests that despite a reduction in average vehicle speed, there may still be some instances of speed related collisions on some roads, there may also be other factors at play (i.e. space constraints) on a site by site basis and that physical intervention may be a mitigating solution. It may also point to the likelihood of increased walking and cycling as an activity, and encouraged by the lower speed limits on roads.

10.6 Analysing collision data on a road by road basis has indicated widely contrasting degrees of success in casualty reduction, with some roads achieving significant reductions, whilst some roads have recorded significant increases. This would suggest that the roads with a poor collision history could benefit from engineering measures, which would lower vehicle speeds throughout the local road network. However, the introduction of traffic engineering measures requires a holistic approach to ensure speeding traffic is not displaced onto neighbouring roads.

10.7 From an economic viewpoint, the costs associated with implementing the 20mph speed limit has brought benefits, and based on the analysis of 'after' casualty rates, the scheme has provided value for money.

10.8 Furthermore, a reduction in serious and fatal injuries has supported the safety benefits of introducing the scheme.

11. RECOMMENDATIONS

11.1 Following the findings of this study, this section makes recommendations for consideration of further works.

11.2 It is recommended that, based on the findings in this report that the 20mph limit scheme is retained due to the reasons outlined in the report; with the exception of roads previously listed to be reverted back to 30mph.

11.3 Despite the introduction of a borough wide 20mph speed limit, it would appear that there may be some issues with speeding vehicles on some of the roads in the borough. It is recommended that a further study is undertaken to determine the feasibility of introducing further traffic engineering measures within the existing zones to reinforce the message and create a wider behavioural shift.

11.4 The provision of traffic engineering measures on the local road network should be considered within an area, as opposed to individual basis, as this is likely to displace vehicle speeds onto neighbouring roads, as opposed to mitigating them.

11.5 It the scheme is not to be adopted it is recommended that the roads on the periphery of existing 20mph zones are prioritised and considered for a possible extension of a 20mph zone, as these roads may suffer from higher traffic speeds as vehicles wish to avoid the traffic calmed roads within the zones.

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.

APPENDIX A – VEHICLE ANALYSIS FROM 2015 & 2016 SURVEYS

APPENDIX B – SAMPLE PERCEPTION SURVEY

APPENDIX C – CURRENT AND FUTURE 20MPH LIMITS IN LONDON BY BOROUGH

APPENDIX D – PERCEPTION SURVEY COMMENTS

APPENDIX E – PERCEPTION SURVEY HEATMAP

Accreditations

Memberships