

# Progress Through Research

## A Study into 20mph Zones in Southwark

Report for Southwark Council

April 2009



## Document Control

Project Title: A Study into 20mph Zones in Southwark

MVA Project Number: C3768600

Document Type: Report

Directory & File Name: I:\Tep\Projects\Londonnational\C37686 - Southwark 20mph Zone\Reports2\Southwark 20mph Report\_Final Report\_140409.Doc

## Document Approval

Primary Author: Glenn Higgs

Other Author(s): Lorna Sewell

Reviewer(s): Paul Matthews

Formatted by: Lorna Sewell

## Distribution

Issue	Date	Distribution	Comments
1	17/02/2009	Paul Matthews	Internal Review
2	19/02/2009	Southwark Council	Draft Report
3	02/04/2009	Lorna Sewell	Report modifications
4	08/04/2009	Glenn Higgs	Final Internal Review
5	14/04/2009	Southwark Council	Final Report

# Contents

<b>1</b>	<b>Introduction</b>	<b>1.1</b>
1.1	Background	1.1
1.2	The Study Area	1.1
1.3	Aims and Objectives	1.1
1.4	Study Methodology	1.2
1.5	Scope of the Report	1.2
<b>2</b>	<b>Quantification of Effectiveness</b>	<b>2.1</b>
2.1	Introduction	2.1
2.2	Methodology	2.1
2.3	Pre and Post-Implementation Collisions Analysis	2.2
2.4	Traffic Speed	2.8
2.5	Perceptions of 20mph Zones in Southwark	2.8
2.6	Summary	2.10
<b>3</b>	<b>Contributory Factors</b>	<b>3.1</b>
3.1	Introduction	3.1
3.2	Primary Contributory Factors - Traffic Calming Type/Extent	3.1
3.3	Secondary Contributory Factors	3.3
3.4	Summary	3.6
<b>4</b>	<b>Monetary and Non-Monetary Costs</b>	<b>4.1</b>
4.1	Introduction	4.1
4.2	Monetary Costs	4.1
4.3	Summary	4.10
<b>5</b>	<b>Roll-Out of 20mph Zones</b>	<b>5.1</b>
5.1	Introduction	5.1
5.2	Design Considerations	5.1
5.3	Maintenance	5.5
5.4	Monitoring	5.5
5.5	Summary	5.6
<b>6</b>	<b>Conclusions</b>	<b>6.1</b>
6.1	Summary	6.1
6.2	Recommendations	6.2
6.3	Areas for Further Research	6.4

## Tables

Table 2.1 20mph Zones Implementation Dates and Available Collisions Data	2.1
Table 2.2 Total Number of Collisions Pre and Post-Implementation	2.3
Table 2.3 Post-Implementation Traffic Speed Data	2.8
Table 4.1 Scheme Costs	4.1

## Figures

Figure 1.1 Study Methodology	1.2
Figure 2.1 Total Collisions per Year	2.3
Figure 2.2 Post-Implementation - Collision Improvements	2.4
Figure 2.3 Post-Implementation – Collisions Severity	2.5
Figure 2.4 Collisions for Southwark and Average Collisions for Inner London	2.6
Figure 2.5 Comparison of Inner London & Southwark Pedestrian Collisions	2.7
Figure 2.6 Inner London and Southwark KSI Comparison	2.7
Figure 2.7 Impacts Following the Introduction of 20mph Zones	2.9
Figure 4.1 Collisions/km and Collisions Reduction/km	4.4
Figure 4.2 Collisions reduction value/km and Project Cost/km	4.4

## Appendices

Appendix A: Plan of 20mph Zones, TLRN and SRN
Appendix B: Questionnaire Summary Note
Appendix C: Workshop Summary Note
Appendix D: Collision Analyses Data Tables
Appendix E: Collisions Plot
Appendix F: Land-use Plot
Appendix G: FYRR/Cost per km Analysis Data Tables
Appendix H: Annotated Photographs of Streetscape Impacts

# Executive Summary

## Background

To ensure that the Council continues to deliver effective 20mph zones, as part of their Road Safety Plan review, the Council commissioned MVA Consultancy to investigate the effectiveness of the current 20mph zones and inform Southwark Council's Road Safety Plan on how to implement 20mph zones in the future.

**The aim of the study was to identify the strengths and weaknesses of the existing zones and identify what makes the most effective zone in terms of collision reduction.**

## Methodology

The study was undertaken in three main stages: quantification of the success of the 20mph zones; examination of the zone characteristics to understand how they may have contributed to this success; and assessment of the monetary costs and non-monetary impacts of the 20mph zones.

**STATS 19 collisions data** was obtained from the TfL London Road Safety Unit (LRSU) for: three years pre-implementation and for up to three years post-implementation where records were available. Furthermore, analysis of traffic speed data and a questionnaire survey with residents and businesses was undertaken. A stakeholder workshop also informed this stage of the study.

Consideration was given to the type and extent of **traffic calming** measures that have been used to reduce traffic speeds within the zones as well as **land-use** mix, parking density and carriageway width.

A **First Year Rate of Return** (FYRR) analysis was undertaken to assess the cost effectiveness and collision savings for zones. A **non-monetary cost analysis** included a detailed assessment of the impacts of 20mph zones on the streetscape, environment, pedestrians and cyclists, the knock-effects on other roads, emergency services and the maintenance effects.

## Results

Detailed analysis of the collisions data showed a collisions reduction for all but one zone post-implementation. The proportion of pedestrian collisions increased slightly post-implementation. This is 1% below the average for Inner London for the period 1999 to 2008. On average, serious and fatal collisions decreased post-implementation of the 20mph zones.

Data for pre and post-implementation ATC traffic surveys were obtained for two of the 20mph zones. Analysis showed that there was a 2 to 3mph decrease in traffic speed.

Results from consultation with residents, businesses and stakeholders has shown that road safety and ease of crossing the road have improved significantly, with general agreement that the 20mph zones have been successful. There is however concern regarding the level of

## Summary

street clutter from traffic signs and the increase in car journey times since the 20mph zones have been implemented.

There is a wide variation in the numbers and types of traffic calming measure within the 20mph zones. Further research would be required to determine the effect of spacing between traffic calming features or the severity of vertical measures, both of which are likely to have a significant influence on traffic speeds.

There is significant variation in land-use mix within zones, which will have had an impact on the volume and type of on-street activity and vehicles that use the areas. There was a lack of correlation between land-use and collisions reduction, which is likely to be due to the influences of localised factors.

To varying degrees, other secondary contributory factors (including parking, carriageway width and traffic volume) will have had an influence on traffic speeds within the zones, but it is prohibitively difficult to quantify their individual or collective impacts due to the high number of variables involved.

The **total value of the collision reductions is £5.9m** across ten zones for which we had cost information on. This represents a 475% FYRR on the total project cost, demonstrating across the zones that overall casualty savings are good value for money.

In general, there is relatively **minimal clutter** in the 20mph zones, but the clutter and maintenance issues are more evident for the older schemes. The majority of traffic calming features are designed to a high standard, particularly the raised entries. However, there is excessive road markings and coloured surfacing at some locations.

Care has been taken in the design of the 20mph zones to facilitate the crossing needs of pedestrians and the disabled. In general, it is considered that cyclists benefit from a safer environment due to the introduction of the 20mph zones.

The impact on the response times of the **emergency services** is considered to be modest when compared to delays due to congestion and there is no evidence to suggest that traffic calming causes damage to vehicles that obey the speed limit.

## Recommendations

The Council should continue to use a **variety of traffic calming measures** (but predominantly speed humps and cushions) to maximise cost effectiveness, meet the needs of different road users, attenuate traffic speeds, minimise the loss of kerbside parking and avoid the issue of driver intolerance.

Where possible, **sinusoidal humps** should be used over other round-topped humps and consideration should be given to quantifying the speed reduction benefits of informal traffic calming measures. The Government are getting closer to approving camera technology for measuring average traffic speeds and Southwark may consider it beneficial to participate in the trials currently being undertaken in London.

As officer time is often taken up responding to enquiries from the public regarding environmental impacts, the Council should consider working with the DfT/TfL to undertake research to quantify these impacts.

## Summary

The Council should be commended for adopting a 'clean-sheet' approach to design. However, there is still scope to improve clutter, especially for older schemes. The schemes would benefit from establishing a 'quality audit' programme to review issues regarding clutter and maintenance.

It is important to set out at an early stage the **maintenance requirements** for 20mph zones and consideration should be given to whether 20mph zones should form a sub-set of Southwark's character areas. They could be identified as distinct elements, which would help to form a maintenance programme for 20mph zones, through which they could be reviewed periodically.

In order to restrict speeds to below 20mph across the borough the Council would need to use 20mph zones, and a combination of enforcement, selective use of traditional traffic calming and other speed reduction measures for main roads. This exercise would need to be completed through close consultation with the Metropolitan Police, and where necessary with Transport for London.

The Council should review the current monitoring programme and take a view as to whether future (routine) surveys should be supplemented by additional surveys such as traffic speed and traffic flow data. This additional data would help determine the success of the zones / traffic calming measures and ensure compliance with the speed limit.

We recommend that additional research is completed to quantify the environmental impacts of 20mph zones in terms of noise, vibration and emissions. We also recommend the Council consider undertaking further research into the speed reduction impacts of informal traffic calming measures and the suitability/feasibility of introducing average speed camera technology.

# 1 Introduction

## 1.1 Background

- 1.1.1 Southwark Council has been delivering 20mph zones for the past 10 years with the intention of reducing road speeds and road user casualty rates and, currently, 60% of the borough's roads are contained within 20mph zones. In accordance with the objectives identified in their Road Safety Plan, the Council plans to be London's first 20mph borough.
- 1.1.2 To ensure that the Council continues to deliver effective 20mph zones, as part of their Road Safety Plan review, the Council commissioned MVA Consultancy in November 2008 to investigate the effectiveness of the current 20mph zones and inform the Road Safety Plan on how to implement 20mph zones in the future. This report summarises the approach undertaken and the findings of this study.

## 1.2 The Study Area

- 1.2.1 Southwark contains a diverse mix of business, industry, education and residential land-uses, with a total borough area of 29.81km<sup>2</sup>. Upon commencement of this study there were 19 20mph zones in operation, with a combined area of 13.7km<sup>2</sup>. Within the borough, there are 30km of roads on the Transport for London Road Network (TLRN) and 9km of roads on the Strategic Route Network (SRN). The 20mph zones, TLRN and SRN are identified in **Appendix A**.

## 1.3 Aims and Objectives

- 1.3.1 As outlined in Southwark's project brief, to inform the Road Safety Plan review and consequently the future delivery of Southwark's 20mph zone programme the ultimate objective of the study is as follows:

**"Identify the strengths and weaknesses of the existing zones and identify what makes for the most effective zone in terms of collisions reduction".**

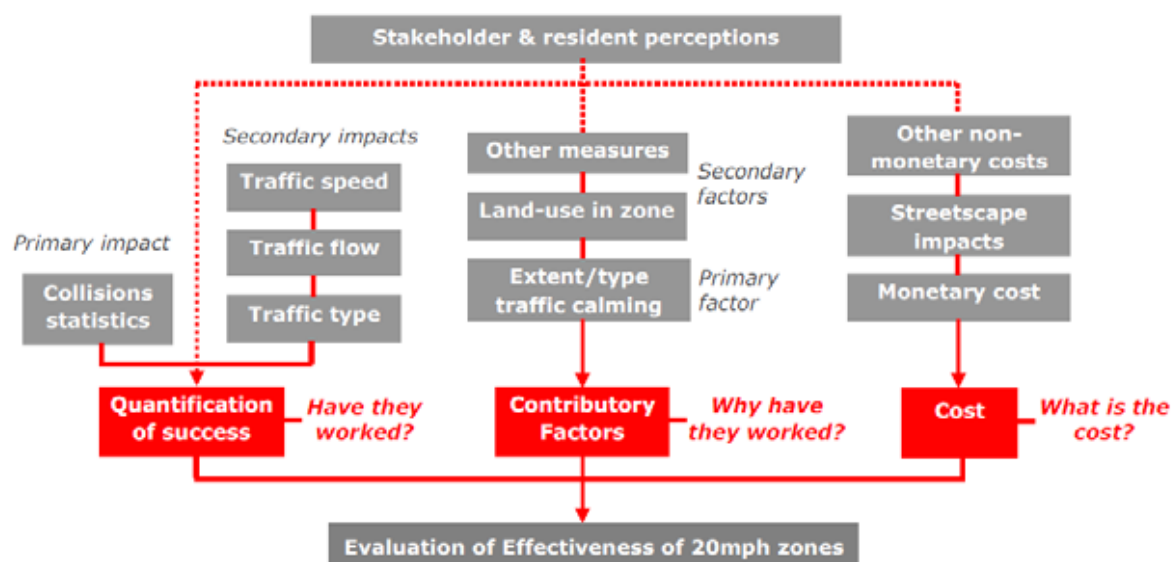
- 1.3.2 The specific aims of the study are as follows:

- carry out a quantitative and qualitative assessment of existing zones;
- investigate what makes for an effective zone;
- examine land-use and 20mph zones;
- consider perceptions of 20mph zones; and
- take regard of other areas of interest.



## 1.4 Study Methodology

1.4.1 As shown in **Figure 1.1** the study was undertaken in three main stages. Firstly, we undertook analyses of collisions and traffic survey data in order to quantify whether/to what extent the 20mph zones have succeeded in improving road safety. Secondly, we examined the characteristics of the zones to understand how they may have contributed to this success. Finally, we made an assessment of the monetary costs and non-monetary impacts of the 20mph zones. All three stages were informed by consultation with residents, businesses and stakeholders.



**Figure 1.1 Study Methodology**

## 1.5 Scope of the Report

1.5.1 Following this introductory chapter the report is structured as follows:

- Chapter 2 quantifies the success of the current 20mph zones in terms of: collisions data pre and post-implementation; traffic speed and flow data; and key stakeholder and public opinion.
- Chapter 3 explores the contributory factors to the success of 20mph zones, including the primary factors of traffic calming type/extent and secondary factors such as land-use mix.
- Chapter 4 considers the monetary and non-monetary costs associated with the implementation of 20mph zones in Southwark. This part of the study includes examination of scheme costs, First Year Rate of Return (FYRR) and consideration of streetscape impacts.
- Chapter 5 discusses issues regarding the future design, maintenance and monitoring of 20mph zones.
- Chapter 6 summarises the main findings of this study and makes recommendations for further research.

## 2 Quantification of Effectiveness

### 2.1 Introduction

2.1.1 An assessment of the current 20mph zones was undertaken to determine whether they have been successful in improving road safety. This part of the study involved quantitative and qualitative analysis of the following aspects:

- collisions data (pre and post-implementation);
- traffic flow and vehicle speed data (pre and post-implementation); and
- public and stakeholder perceptions of the current 20mph zones.

2.1.2 This chapter summarises the approach for and outcomes of the quantitative and qualitative analysis.

### 2.2 Methodology

2.2.1 STATS 19 collisions data was obtained from the **TfL London Road Safety Unit (LRSU)** for:

- three years **pre-implementation (Year 1 to 3)**; and
- for up to **three years post-implementation (Year 4 to 6)** where records were available.

2.2.2 **Table 2.1** shows the implementation dates for the 20mph zones and the collisions data that was available for each zone. As shown in Table 2.1 there are four zones for which there is no post-implementation collisions data as the schemes were implemented recently (July 2008). For three zones there is only one year's post implementation data and for two zones only two year's worth of data (i.e. Year 4 to 5).

2.2.3 The three-year post-implementation collisions data was obtained for seven zones. Implementation dates were not available for three zones and, therefore, they were excluded from this part of the study.

**Table 2.1 20mph Zones Implementation Dates and Available Collisions Data**

Zone Name	Implementation Date	Available Collisions Data (Years)
<b>Bermondsey 2</b>	July 2008	1 to 3
<b>Camberwell West 1</b>	July 2008	1 to 3
<b>East Dulwich 2</b>	July 2008	1 to 3
<b>Livesey</b>	July 2008	1 to 3
<b>East Walworth</b>	March 2007	1 to 4
<b>Bermondsey 1</b>	February 2007	1 to 4
<b>Peckham North-West</b>	January 2007	1 to 4
<b>Harper Road</b>	December 2005	1 to 5
<b>Peckham West</b>	November 2005	1 to 5

<b>Barset</b>	March 2005	1 to 6
<b>East Dulwich</b>	March 2004	1 to 6
<b>Peckham Park</b>	February 2004	1 to 6
<b>Southwark Park</b>	December 2003	1 to 6
<b>Sydenham Hill</b>	March 2004	1 to 6
<b>Waverly</b>	March 2005	1 to 6
<b>West Walworth</b>	November 1994	1 to 6
<b>Newington</b>	No date available	Not applicable
<b>The Hamlets</b>	No date available	Not applicable
<b>Borough</b>	No date available	Not applicable

2.2.4 Secondary sources of data included traffic speed and traffic flow data. However, traffic flow data was excluded from the study due to its insufficient geographic coverage. It is also worth noting that traffic speed data was only available for two of the 20mph zones, Peckham North-West and East Walworth.

2.2.5 A questionnaire was distributed to a sample of residents and businesses in Southwark in order to understand how effective they think their zone has been and if/how they would change it. The methodology and results for this survey have been summarised in a Technical Note which is contained in **Appendix B**. A half-day workshop was held with key stakeholders, which focussed on exploring the strengths and weaknesses of the current 20mph zones. A summary of the workshop discussion is shown in **Appendix C**. Relevant results and information from the questionnaire and workshop have been included in this chapter.

### 2.3 Pre and Post-Implementation Collisions Analysis

2.3.1 This section summarises the collisions analysis that was undertaken for the 20 mph zones, which was sub-divided into the following areas:

- collision reduction;
- pedestrian collisions;
- severity of collisions; and
- a comparison of collisions for Southwark and other Inner London boroughs.

#### Collision Reduction

2.3.2 **Figure 2.1** shows the total number of collisions per zone per year, where **Years 1 to 3 are pre-implementation and Years 4 to 6 are post-implementation**. Whilst it can be seen that there is an overall downward trend in the number of collisions post-implementation there is significant variation for some of the zones in the number of collisions for Years 4 to 6. This highlights the importance of, wherever possible, taking a three-year average of the post-implementation data. The analysis for all of the collisions data reported in this section is tabulated in **Appendix D**. A plot showing the collisions pre and post-implementation is contained in **Appendix E**.

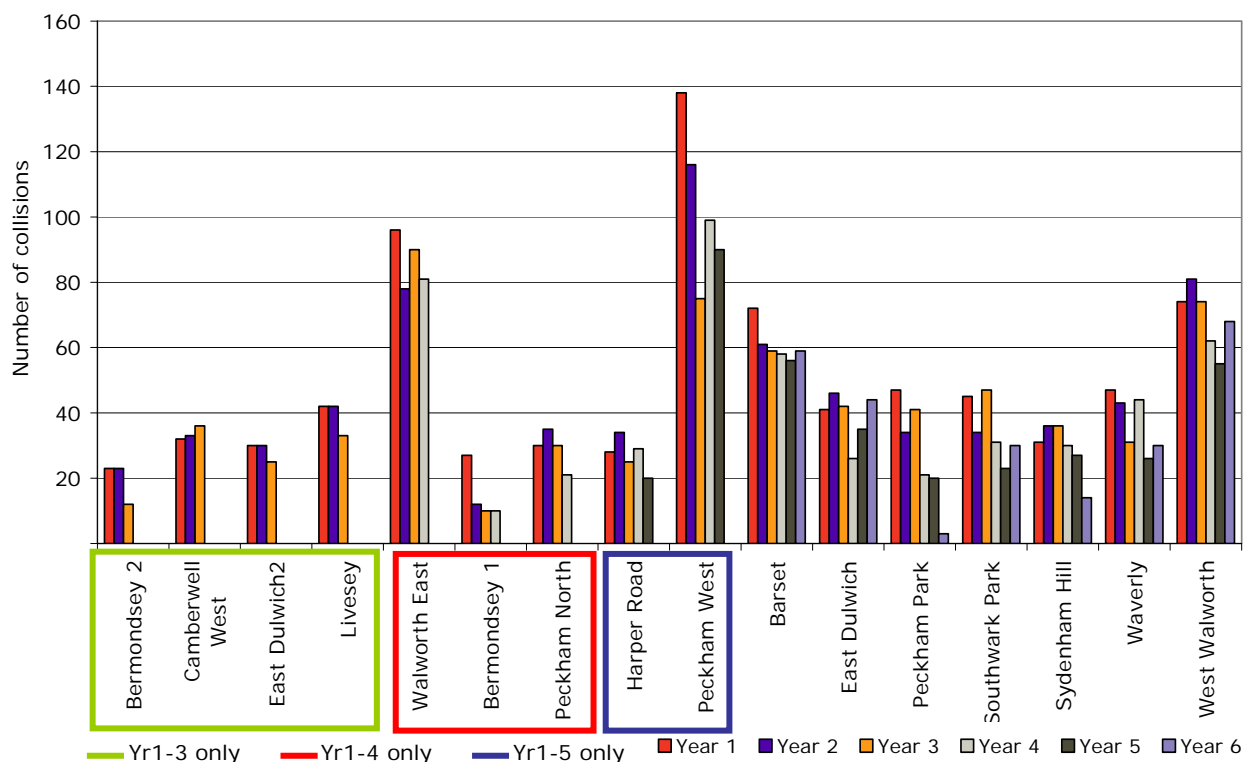


Figure 2.1 Total Collisions per Year

2.3.3 Figure 2.2 shows that for all but one of the 20mph zones there has been reduction in collisions post-implementation. For the Bermondsey1 zone, the number of collisions remained static during the year following implementation. On average there has been a 28% decrease in collisions across the seven zones where there are three-year's post-implementation data. For ease of understanding, Table 2.2 summarises the total number of collisions and percentage change for the seven zones for which three years post-implementation data was available.

Table 2.2 Total Number of Collisions Pre and Post-Implementation

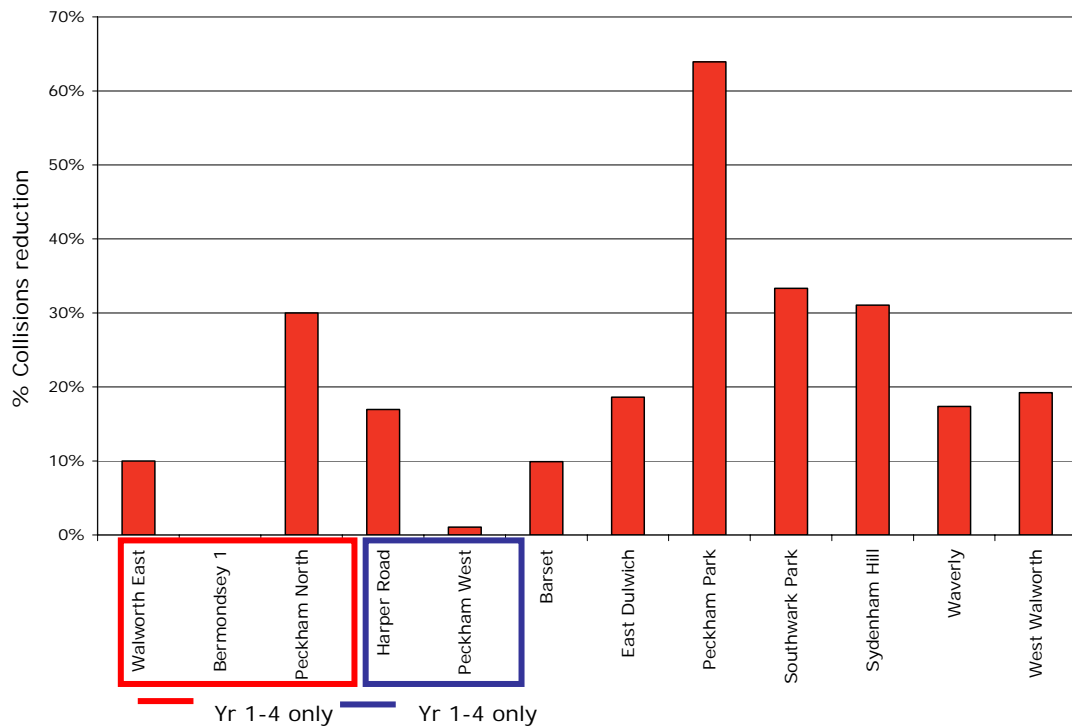
Zone	Pre Implementation (Yr 1-3)	Post-Implementation (Yr 4-6)	% Change
Barsest	192	173	-10
East Dulwich	129	105	-19
Peckham Park	122	44	-64
Southwark Park	126	84	-33
Sydenham Hill	103	71	-31
Waverly	121	100	-17
West Walworth	229	185	-19

2.3.4 A study<sup>1</sup> completed by the LRSU in 2003 for 20mph zones in London showed that following the introduction of 20mph zones during 1991 and 2001 the frequency of collisions reduced by 43% per year. During this period within non-20mph zones the number of collisions per year reduced by 1%.

<sup>1</sup> LRSU : Safety Research Report No. 2 – Review of 20mph zones in London Boroughs 2003.

## 2 Quantification of Effectiveness

2.3.5 Peckham Park has seen by far the largest decrease in the number of collisions (64%), whilst for the other zones with 3 year's post-implementation data there has been a reduction of between 10% and 33%. Whilst the collisions rate for Bermondsey 1 remained static, it should be noted that there were relatively few collisions in this zone to begin with (16 collisions on average for Years 1 to 3).



**Figure 2.2 Post-Implementation – Collisions Reduction**

### Pedestrian Collisions

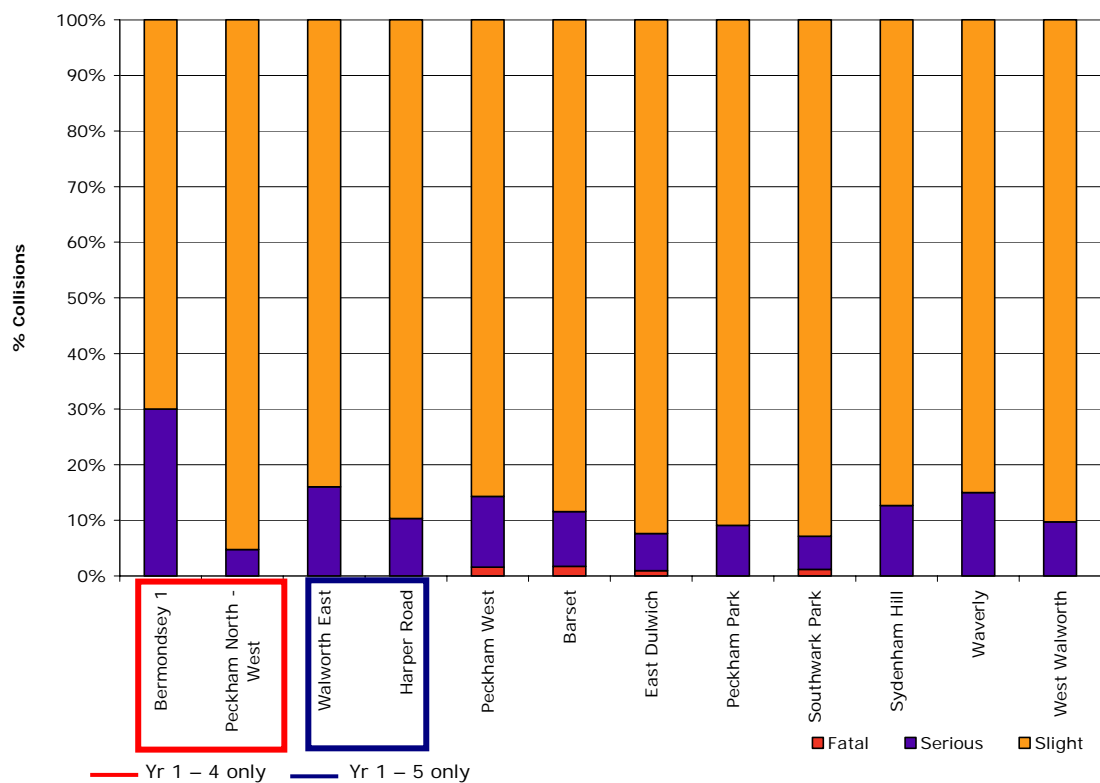
2.3.6 Across the seven zones with three year post-implementation data 27% of the collisions involved pedestrians. The total number of accidents involving pedestrians decreased from 323 pre-implementation to 314 post-implementation across the 12 zones and 230 pre-implementation to 218 post-implementation across the seven zones. However, across the seven zones, the proportion of pedestrian accidents increased by 7% post-implementation of the 20mph zones (5% for the seven zones with data for Years 1 to 6). The proportion of pedestrian collisions only decreased in one zone - Peckham West (by 1%).

### Severity of Collisions

2.3.7 Slight, serious and fatal collisions represent 87%, 12% and 1% of all collisions respectively prior to implementation of the 20mph zones. There is little change in the severity of collisions post-implementation, with slight, serious and fatal representing 88%, 11% and 1% respectively.

2.3.8 **Figure 2.3** shows the severity of collisions post-implementation of the 20mph zones. The proportion of fatal collisions remained largely constant in each zone. The decrease in the proportion of serious collisions was matched by an increase in slight collisions.

2.3.9 In Peckham West and Barseet there has been a 1% increase in fatal accidents following the implementation of these zones. Serious collisions increased by 10% and 6% in Bermondsey1 and East Walworth zones respectively, however slight collisions decreased by 10% in Bermondsey 1 and 5% in East Walworth.



**Figure 2.3 Post-Implementation – Collisions Severity**

2.3.10 Whilst the reduction in overall collisions, pedestrian collisions and severity of collisions for 20mph zones in Southwark is a positive result, the figures need to be benchmarked against those for all Inner London boroughs. This analysis is described in the following section.

**Comparison of Collisions for Southwark with other Inner London Boroughs**

2.3.11 STATS 19 data was obtained for London boroughs from TfL’s LRSU for the period 1994 to 2008. In **Figure 2.4**, we have plotted the annual collisions for Southwark together with the average for the Inner London Boroughs (not including City of London).

2.3.12 Between 1994 and 2008 the annual number of collisions for Southwark is between 6% and 20% higher than the average for Inner London boroughs. In terms of total collisions over this period, Southwark is 10<sup>th</sup> highest overall, behind Lambeth and Westminster.

2.3.13 However, whilst in the years leading up to 1999 the annual increase in collisions in Southwark was advancing at a greater rate than for Inner London, the trend reversed in 2000. Apart from in 2000 and 2006, there has been a sustained reduction in the annual collisions. The cumulative increase in collisions for Southwark and Inner London from 1994 to 1998 is 126 and 40 respectively, however since 1999 the cumulative decrease is 908 and 806 respectively. Therefore, from 1994 to 1999 for Southwark there was a higher than average (for Inner London) increase in the number of collisions and since 1999 a higher than average decrease. This may be in part due to the establishment of the 20mph zone programme in Southwark.

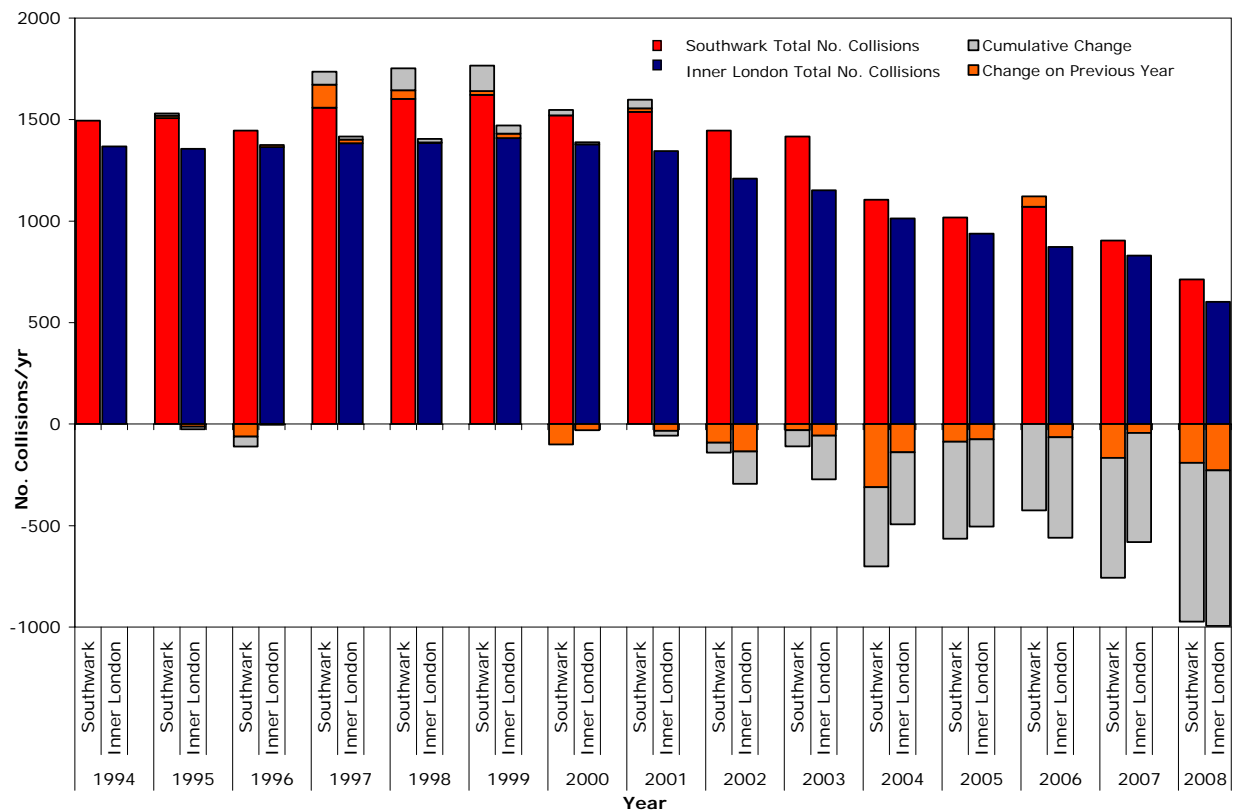
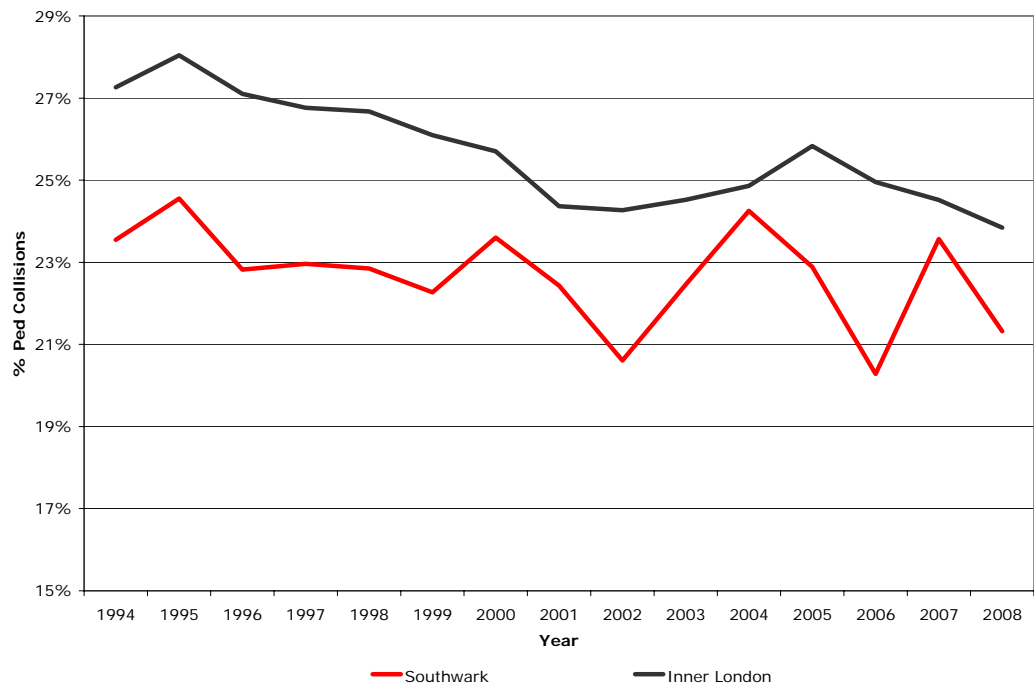


Figure 2.4 Collisions for Southwark and Average Collisions for Inner London

2.3.14 Whilst the average reduction in collisions following introduction of the 20mph zones in Southwark is 21%, the average annual reduction in collisions across Southwark from 1999 to 2008 is 8% (varying between 22% reduction and 5% increase). The average annual reduction for Inner London during this period is also 8%.

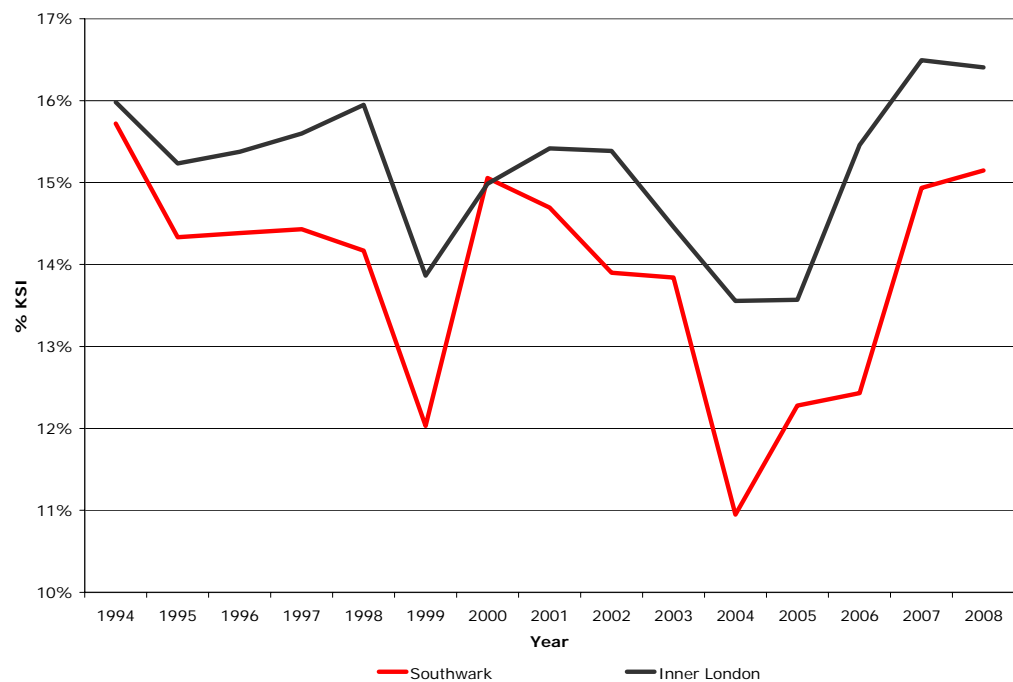
2.3.15 It would have been useful to compare the collisions rate for Southwark against those for boroughs or areas within boroughs for which 20mph zones or traffic calming measures have not been introduced. LRSU is undertaking research in this area, however results from this work are not available at present.

2.3.16 **Figure 2.5** provides a comparison between the pedestrian collisions for Inner London and Southwark. The chart shows that the proportion of pedestrian collisions in Southwark has remained between 20 and 25%, which is 3% below the average for Inner London.



**Figure 2.5 Comparison of Inner London & Southwark Pedestrian Collisions**

2.3.17 **Figure 2.6** provides a comparison of collisions for Southwark and Inner London in which there was someone killed or seriously injured (KSI). The chart shows that KSI collisions make up between 11 and 16% of total accidents in Southwark, which is 1% below the average for Inner London.



**Figure 2.6 Inner London and Southwark KSI Comparison**



## 2.4 Traffic Speed

- 2.4.1 Traffic speed data were obtained for two zones: Peckham North-West; and East Walworth. The Automatic Traffic Count data (ATC) was recorded at 30 sites in Peckham North-West in December 2006 prior to the implementation of the 20mph zone, then post-implementation in July 2007. **Table 2.2** summarises the traffic speed data for both sites.

**Table 2.3 Post-Implementation Traffic Speed Data**

Zone	85 <sup>th</sup> ile Post-Implementation Speed (mph)	Speed Change	
		Mph	%
Peckham North-West	18.3	-3	-13%
East Walworth	20.3	-2	-7%

- 2.4.2 **Table 2.2** shows there has been a decrease in the 85<sup>th</sup> percentile speed in both zones of between 2 and 3 mph since their implementation. It is likely that some of the reduction in traffic speed in the East Walworth zone may be due to the increase in traffic flow as a consequence of the displacement of vehicles that took place during the major carriageway works on Walworth Road between 2007/08.

## 2.5 Perceptions of 20mph Zones in Southwark

- 2.5.1 This section summarises the results of the questionnaire and workshop discussions that relate to the success of 20mph zones in Southwark.

### Questionnaire Survey

- 2.5.2 The survey included a section which asked respondents to rate from 1 to 5 (1: a lot better and 5: a lot worse) what effect (if any) they felt the introduction of their 20mph zone has had. **Figure 2.7** summarises the responses to this question.

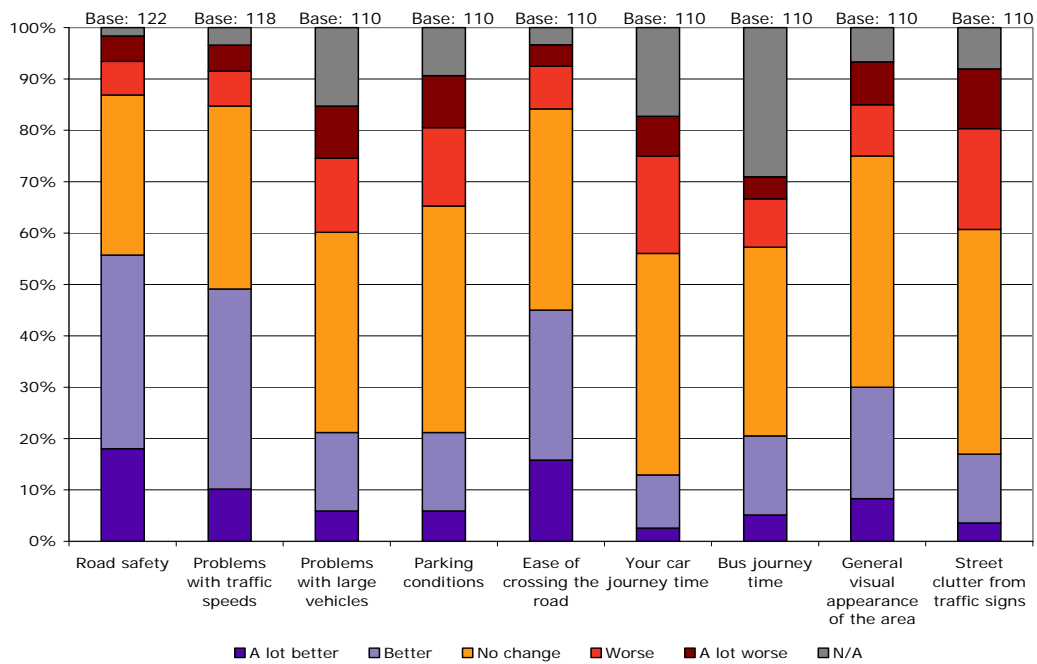


Figure 2.7 Questionnaire Survey 'Impacts of the 20mph Zones'

- 2.5.3 Overall approximately 40% of respondents feel there has been no change following the introduction of the 20mph zone, 30% feel that the situation is better, whilst 20% feel that it has made the situation worse. Figure 2.7 shows that 56% of respondents feel that road safety is better. 49% of respondents feel that problems with traffic speeds is better, whilst 45% and 30% of respondents feel that the ease of crossing the road and the general visual appearance of the area are better. In contrast, about 32% of respondents think that street clutter from traffic signs and car journey times have been made worse.
- 2.5.4 In comparison, in a survey conducted by Ealing Council for six of its 20mph zones, about 45% of residents felt that the zones have been effective in reducing speeds, 33% considered that traffic volumes have reduced and 34% felt that walking is now safer.
- 2.5.5 In a research study undertaken in 2002 for the 20mph zones within Hull, residents were asked to comment on the success of the zone within which they live. 25% of residents said that they walk or cycle more, 80% think that the zones are a good idea, 78% think that traffic speeds have reduced and 50% think it is a more pleasant place to live.
- 2.5.6 From the general comments received for the Southwark survey, it is interesting to note that some respondents said that they are unaware that they live in a 20mph zone. Respondents commented on the types of traffic calming measures used within their zones, mainly referring to their dissatisfaction at the use of road humps due to their visual impact and due to the discomfort for drivers.
- 2.5.7 A detailed summary of the questionnaire is given in **Appendix B**.

### Stakeholder Workshop

- 2.5.8 A workshop was held with key stakeholders to understand their views and opinions on the effectiveness of Southwark's current 20mph zones and also on how they can be improved. A full summary and list of attendees can be found in **Appendix C**.
- 2.5.9 The general feedback from the attendees was that the 20mph zones have more than satisfied their objectives, and they feel that the results of the questionnaire are particularly reassuring as they show that residents support their introduction. The discussion largely focussed on the secondary (i.e. non-road safety) impacts that the 20mph zones have had, and also on specific design issues. These comments are included in subsequent chapters.

## 2.6 Summary

- 2.6.1 The analysis of the collisions data; traffic speed and flow data; questionnaire and stakeholder workshop is summarised as follows:

### Collisions Data Analysis

#### Collisions Reductions

- Reduction in collisions post-implementation for all but one zone (for which there was no change).
- For the seven zones with 3 years post-implementation data, there has been between a 10% and 33% reduction in collisions for six zones, and 64% reduction for the seventh zone.
- Average 28% reduction across seven zones which have three years post-implementation data.

#### Pedestrian Collisions

- Total number of accidents involving pedestrians decreased from 323 pre-implementation to 314 post-implementation across the 12 zones and 230 pre-implementation to 218 post-implementation across the seven zones.
- Increase of 5% in proportion of pedestrian collisions post-implementation for the seven zones with three year's post-implementation data, and 7% average increase for all 12 zones.

#### Severity of Collisions

- Slight, serious and fatal represent 88%, 11% and 1% respectively post-implementation.

#### Comparison with Inner London Boroughs

- Annual collisions 6% to 20% higher in Southwark than Inner London boroughs from 1994 to 2008.
- Higher than average increase in collisions in Southwark than Inner London before 1999, but higher than average decrease since 1999.

- Average 8% annual decrease in collisions since 1999 in Southwark (varying between 5% increase and 22% decrease). Average decrease for Inner London also 8%. Note: 21% average decrease in collisions in Southwark following implementation of zones.
- Southwark pedestrian collisions average 3% below Inner London average for 1994 to 1998.
- Southwark KSI collisions 1% below Inner London average for 1994 to 2008.
- A LRSU study showed that following the introduction of 20mph zones there frequency of collisions reduced by 43% per year, while for non-20mph zones the number of collisions per year reduced by 1% between 1991 and 2001.

### Traffic Speed

- Between 2 and 3mph decrease in traffic speed for the two sites analysed.

### Questionnaire Survey

- 56%, 45% and 30% of respondents feel that road safety, ease of crossing the road and visual appearance have improved.
- 32% of respondents feel that street clutter from traffic signs and car journey times have worsened.

### Stakeholder Workshop

- General agreement from attendees that the 20mph zones have been successful and attendees encouraged by the support of residents and business for their zones.

## 3 Contributory Factors

### 3.1 Introduction

- 3.1.1 In Chapter 2 we described how effective the 20mph zones have been in reducing collisions and traffic speeds. Therefore, in terms of satisfying the ultimate objective of achieving an improvement in road safety, we were able to quantify the success of the 20mph zone programme that has been achieved to date.
- 3.1.2 However, in order to inform the future implementation of 20mph zones in Southwark, and the ways in which existing zones may be improved it is important to try and understand the factors which have contributed to the programme's success i.e. what makes for the most effective zone. The factor of primary importance is the type and extent of traffic calming measures that have been used to reduce traffic speeds within the zones. The secondary factors that are considered within this chapter include land-use mix, parking density and carriageway width.

### 3.2 Primary Contributory Factors - Traffic Calming Type/Extent

- 3.2.1 GIS data was provided by Southwark Council identifying the type and location of traffic calming within the borough. The data provides details of the locations of eighteen different types of traffic calming measure, which we have grouped into the following categories:

- Speed humps;
- Speed cushions;
- Other vertical measures (including raised entries and tables);
- Horizontal measures (including chicanes and pinch-points); and
- Other traffic calming measures (including speed cameras and vehicle-activated slow/speed signs).

- 3.2.2 Speed humps and speed cushions have been categorised separately from the other types of vertical traffic calming because within Southwark they have been used in far greater numbers than other types of traffic calming measures.
- 3.2.3 As shown in **Table 3.1**, for each zone we have derived the aggregate number of traffic calming measures within each of the five categories. The table shows that there is a wide variation in the numbers and types of traffic calming measure within the 20mph zones. For example: of the traffic calming measures in the Bermondsey 1 zone only 11% are vertical measures, of which 2% are humps or cushions. Conversely, the Peckham West zone contains 84% vertical measures, 80% of which are cushions and humps.

Table 3.1 Traffic Calming Measures used in the 20mph Zones

Zone	Date	% Reduction Collisions	% Traffic Calming Measures				
			Horiz	Vert	Other	Cushions	Humps
Barset	Mar-05	10	28	9	4	53	6
Bermondsey 1	Feb-07	0	8	11	79	0	2
Bermondsey 2	Jul-08	n/a	6	11	6	59	19
Borough	-	n/a	10	23	27	34	6
Camberwell West	Jul-08	n/a	17	6	40	19	17
East Dulwich	Mar-04	19	7	6	2	75	10
East Dulwich 2	Jul-08	n/a	21	4	4	71	0
East Walworth	Mar-07	10	18	12	27	41	2
Harper Road	Dec-05	17	13	7	29	30	20
Livesey	Jul-08	n/a	12	26	53	8	2
Newington	-	n/a	11	4	33	53	0
Peckham NW	Jan-07	30	11	21	20	46	3
Peckham Park	Feb-04	64	5	1	19	25	50
Peckham West	Nov-05	1	14	4	2	64	16
Southwark Park	Dec-03	33	12	6	12	70	0
Sydenham Hill	Mar-04	31	26	2	15	14	43
The Hamlets	-	n/a	13	2	7	34	44
Waverly	Mar-05	17	23	6	6	48	16
West Walworth	Nov-94	19	15	9	4	47	26

3.2.4 As reported by the DfT<sup>2</sup>, the average mean speed for 75mm flat top humps with gradients of 1:10 to 1:15 is 12.8 mph and mean crossing speeds for 75mm high round top humps are on average 14.7 mph. A further DfT study<sup>3</sup> confirmed that whilst speed cushions can reduce and control vehicle speeds, they do not match the effect of flat or round top road humps. The overall average mean and 85th percentile speeds at the cushions monitored were 17 mph and 22 mph respectively. As speed humps provide a greater attenuation of traffic speeds than cushions it can be implied that there will be a commensurate reduction in the rate of collisions.

3.2.5 Table 3.1 shows that Peckham Park has the highest reduction in collisions and has the highest proportion of road humps (50%). Whilst Sydenham Hill (31% reduction) has 43% road humps, Southwark Park (33% reduction) and Peckham North-West (30% reduction) have 0% and 3% road humps respectively. Within the scope of this study, we have not been able to determine the spacing between traffic calming features or the severity of vertical measures, both of which are likely to have a significant influence on traffic speeds.

<sup>2</sup> DfT Traffic Advisory Leaflet 02/96 – 75mm high road humps

<sup>3</sup> DfT Traffic Advisory Leaflet 1/98 – Speed Cushions Schemes

### 3 Contributory Factors

- 3.2.6 Using the information in Table 3.1, we have tried to establish whether there is a correlation between the reduction rate of collisions (as observed for up to 3 years post-implementation) and the type of traffic calming measure within each zone. It is likely that the relatively poor correlation between the type of traffic calming and incidence of collisions can be attributed to the localised variation in the height and severity of vertical features, as well as the spacing and positioning of the traffic calming measures. Other factors, including parking capacity and traffic volume are discussed in the following section.

#### 3.3 Secondary Contributory Factors

- 3.3.1 Whilst traffic calming will have had the greatest impact on reducing speeds and therefore collisions within the 20mph zones, several other factors will have had a bearing on the level of success that has been achieved regarding road safety, including:

- land-use mix;
- parking demand;
- actual/effective carriageway width;
- vertical and horizontal sightlines;
- road signs and markings; and
- volume of traffic/type of traffic.

##### Land-Use Mix

- 3.3.2 The Council supplied GIS data that identified the land-use within the borough, which we categorised as follows:

- Education;
- Industrial;
- Office;
- Residential; and
- Retail.

- 3.3.3 A map showing the land-use is provided in **Appendix F. Table 3.2** provides a summary of the land use split for each of the 20mph zones which we have based on the aggregate plan area (i.e. all buildings assumed to be single-storey).

Table 3.2 Land-Use Mix within the 20mph Zones

Zone	Date	% Reduction Collisions	% Land-use				
			Edu	Ind	Office	Res	Retail
Barset	Mar-05	10	16	12	0	64	7
Bermondsey 1	Feb-07	0	13	23	2	58	4
Bermondsey 2	Jul-08	n/a	36	19	0	41	4
Borough	-	n/a	8	28	11	42	11
Camberwell West	Jul-08	n/a	33	9	1	50	8
East Dulwich	Mar-04	19	1	6	1	84	8
East Dulwich 2	Jul-08	n/a	9	1	0	88	2
East Walworth	Mar-07	10	21	4	1	65	10
Harper Road	Dec-05	17	25	15	5	47	7
Livesey	Jul-08	n/a	4	75	1	19	1
Newington	-	n/a	8	1	7	82	3
Peckham NW	Jan-07	30	21	12	1	62	3
Peckham Park	Feb-04	64	26	32	1	48	7
Peckham West	Nov-05	1	18	4	1	71	6
Southwark Park	Dec-03	33	8	10	2	78	2
Sydenham Hill	Mar-04	31	31	0	0	68	1
The Hamlets	-	n/a	12	1	0	86	1
Waverly	Mar-05	17	15	7	0	76	2
West Walworth	Nov-94	19	15	9	3	68	5

- 3.3.4 **Table 3.2** shows that there is a significant variation in the land-use across the 20mph zones within the borough. Residential, industrial and education land accounts for between 19% and 88%, between 1% and 75% and between 1% and 36% of the 20mph zones respectively. Office and retail land each constitute between 1% and 11% of 20mph zones. The majority of the zones with the highest proportion of residential land are those located in the southern half of the borough.
- 3.3.5 The type of land-use will have an impact on the volume and type of on-street activity and also on the volume and type of vehicles that use an area. For example, a 20mph zone which is made up predominately of retail land is more likely to have concentrations of high pedestrian footfall than a zone containing a high proportion of industrial land use. The latter is more likely to generate an above average volume of HGVs and a lower than average volume of public buses.
- 3.3.6 When plotting land-use against the reduction in collisions there appears to be a lack of correlation, and this is again likely to be as a result of the localised factors that affect traffic speeds and road user behaviour. To be able to undertake a more robust analysis, it would be necessary to define the before/after collisions reduction rate for the different land-use areas within each zone (e.g. within catchment areas for schools and within buffer zones of retail



properties). This would help in identifying whether particular road users (e.g. child-pedestrians) have benefited more than others from the improvements in road safety.

#### Parking Demand

- 3.3.7 There is a high demand for parking in Southwark, which is demonstrated by the fact that nearly 40% of the borough is covered by Controlled Parking Zones (CPZs). Almost 50% of the areas within the 20mph zones are also covered by CPZs. The density of kerbside parking is likely to have made a significant contribution to the attenuation of traffic speeds. This is because of the reduction in the effective carriageway width and also because of implied safety concerns associated with passing traffic/pedestrian activity and parked vehicles. However, depending on the formal/informal crossing provisions for pedestrians, the kerbside parking may also lead to an increase in collisions, particularly those involving child pedestrians. However, the introduction of the 20mph zones will not have had a significant impact on the parking demand, as this will have been influenced more heavily by the CPZs which have been installed over a period of 19 years.

#### Other Secondary Measures

- 3.3.8 To varying degrees, the other factors bulleted in paragraph 3.3.1 will have had an influence on traffic speeds within the 20mph zones. However, it has become evident that it would be difficult to quantify their impacts because of the high number of variables involved and because it would be necessary to identify when the measures were introduced and/or when any changes were made to the road layout (affecting sightlines, carriageway width etc).
- 3.3.9 Research<sup>4</sup> has indicated that the speed reduction achieved with the use of 20mph signs alone is likely to be only about 1mph, therefore signs are not singularly likely to have had a significant impact on road safety and would not normally be used on their own where 85<sup>th</sup> percentile speeds are above 24mph.

---

<sup>4</sup> Mackie A (1998). *Urban speed management methods*. TRL Report 363.

#### 3.4 Summary

##### Primary Contributory Factors

- Wide variation in number and type of traffic calming measures used within zones but lack of correlation between type of measure and reduction in collisions (albeit some correlation between road humps and collisions reduction).
- Lack of correlation likely to be due to localised variation in height, severity, spacing and position of traffic calming measures.

##### Secondary Contributory Factors

- Significant variation in land-use mix within zones, which will have had an impact on volume and type of on-street activity and vehicles that use the areas.
- Lack of correlation between land-use and collisions reduction, again likely to be due to localised factors.
- To varying degrees, other secondary contributory factors (including parking, carriageway width and traffic volume) will have had an influence on traffic speeds within the zones, but it is prohibitively difficult to quantify their individual or collective impacts due to the high number of variables involved.

## 4 Monetary and Non-Monetary Costs

### 4.1 Introduction

4.1.1 This element of the study concerns the following monetary and non-monetary costs associated with the implementation of the 20mph zones in Southwark:

#### Monetary Costs

- combined scheme design, consultation and implementation costs;
- First Year Rate of Return (FYRR); and
- collisions cost saving per kilometre.

#### Non-Monetary Costs

- streetscape effects;
- environmental effects;
- effects on pedestrians and cyclists;
- knock-on effects on other roads;
- effects on emergency services; and
- maintenance effects.

### 4.2 Monetary Costs

#### Scheme Costs

4.2.1 The combined costs for design, consultation and implementation of the 20mph zones are shown in **Table 4.1** together with the scheme cost per km of road within the zones. Information on costs was not available for four of the 20mph zones, which included: Borough; Newington; The Hamlets; and West Walworth.

**Table 4.1 Scheme Costs**

20mph zone	Cost (£)	Cost/km (£)	20mph zone	Cost (£)	Cost/km (£)
Barset	175,000	17,553	Livesey	200,000	22,988
Bermondsey 1	135,000	24,311	Peckham North-West	115,000	13,749
Bermondsey 2	160,000	26,667	Peckham Park	180,000	44,335
Camberwell West 1	160,000	30,189	Peckham West	155,000	7,052
East Dulwich	150,000	26,553	Southwark Park	50,000	10,774
East Dulwich 2	160,000	13,115	Sydenham Hill	95,000	14,733
East Walworth	110,000	6,482	Waverly	175,000	11,840
Harper Road	90,000	43,145			

## 4 Monetary and Non-Monetary Costs

- 4.2.2 The cost of the 20mph zones ranges from £50,000 to £200,000. Comparatively, there is an even greater variation in the cost per km of road (£6,482 to £44,335). The Livesey 20mph zone was the most expensive scheme (£200,000) but the Peckham Park scheme was the most expensive to introduce per km of road (£44,335).
- 4.2.3 Whilst Peckham Park and Peckham West are similar in their overall cost, they vary significantly in the cost per km. These zones have a similar proportion of horizontal and vertical features but Peckham Park has half the number of measures, despite being a seventh of the size. So there is a higher level of treatment in Peckham Park and fewer economies of scale due to its comparatively small size.
- 4.2.4 Whilst it is useful to know the cost of schemes, it is important that the schemes are also assessed on their cost-benefit, and this aspect is discussed in the following sections.

### First Year Rate of Return for 20mph Zones

- 4.2.5 **Table 4.2** shows the First Year Rate of Return (FYRR) for the ten zones for which we have cost information. This has been calculated by multiplying the reduction in collisions by the average value of prevention per collision<sup>5</sup> and dividing this by the scheme cost. The values were derived from the DfT's Highway Economics Note and are: £1.4m for a fatal collision; £159k for a serious collision; and £15.9k for a slight collision. The project costs were discounted to a base year of 2002. The results are shown in more detail in **Appendix G**.
- 4.2.6 The total value of collision reductions is **£5.9m** across the ten zones for which we have cost information, which is a 475% FYRR on the total project cost, demonstrating across the zones that the overall casualty savings are good value for money.

**Table 4.2. First Year Rate of Return**

20mph Zone	Total First Year Value of Collisions Reduction (£)	Project cost (£)	First Year Rate of return (%)
East Walworth	189,040	99,141	191
Bermondsey 1	-91,657	121,673	-75
Harper Road	192,040	83,312	231
Peckham West	1,543,427	143,482	1076
Waverly	212,013	166,964	127
Barset	1,454,420	166,964	871
East Dulwich	-192,720	147,155	-131
Southwark Park	2,091,860	49,100	4260
Sydenham Hill	116,693	93,198	125
Peckham Park	407,737	176,586	231
<b>Total</b>	<b>5,922,853</b>	<b>1,247,576</b>	

<sup>5</sup> Table 4a, p8, Highways Economics Note No. 1:2002

## 4 Monetary and Non-Monetary Costs

4.2.7 Where the FYRR is greater than 100% this indicates that the project costs have been recovered within the first year. All but two schemes have a FYRR greater than 100%, with Southwark Park and Peckham West being substantially more successful than the other zones in cost-benefit terms. The project costs for the Bermondsey 1 and East Dulwich zones are greater than the values associated with the reduction in collisions for the first year following implementation, therefore give a negative FYRR.

4.2.8 As shown in Appendix G, for the Bermondsey 1 zone the number of slight collisions has fallen from 14.7 (averaged over 3 years pre-implementation) to 7 collisions in the first year post-implementation. However, there has been an increase from 1.7 to 3.0 in the number of severe collisions. The values associated with slight and severe collisions are £159,880 and £15,850 respectively, and as such this means that there has been a net decrease in the value of collisions for this zone, despite the fact that this zone has the lowest incidence of collisions both before and after implementation.

4.2.9 For East Dulwich there has been a significant reduction in slight and serious collisions, but a slight increase in the rate of fatalities (0.3-1.0 fatalities). As the value that is attributed to each fatality is £1,357,240 this means that there is a negative overall value of collisions.

### Collisions Cost Saving per Kilometre

4.2.10 To provide context to the reduction in collisions that has been achieved it is important to take in account the extent of the 20 mph zones in terms of road length. Therefore, another way of assessing the cost-benefit of the 20mph zones is to calculate the cost saving and project cost per km of road within the 20mph zones. This information has been set out in **Table 4.3** and is shown in **Figure 4.1** and **Figure 4.2**. Appendix G expands on the detail provided in Table 4.3.

**Table 4.3. Collisions/km and Costs/km**

Zone Name	Road length (km)	'After' Collisions /km	Collisions reduction /km	% Collisions reduction	Value/km (£)	Project cost/km (£)	FYRR (%)	FYRR/km (%)
East Walworth	17	5	1	10	11,140	5,842	191	11
Bermondsey 1	6	2	0	0	-16,506	21,911	-75	-14
Harper Road	2	10	4	30	92,061	39,939	231	111
Peckham West	22	2	0.5	17	70,223	6,528	1076	49
Waverly	15	7	1	17	14,345	11,297	127	9
Barset	10	17	2	10	145,880	16,747	871	87
East Dulwich	6	19	4	19	-16,414	26,050	-131	-23
Southwark Park	5	18	9	33	450,735	10,569	4260	918
Sydenham Hill	6	11	5	31	18,098	14,454	125	19
Peckham Park	4	11	19	64	100,428	43,494	231	57

4.2.11 As shown in Table 4.3 and Figure 4.1, Peckham Park has almost twice the collisions reduction of any other zone, but is even more successful when assessed on the collisions reduction/km. Harper Road has a collisions reduction rate of 30% but as this only represents nine collisions and there are only 2km of roads in this zone, the reduction per km is quite low.

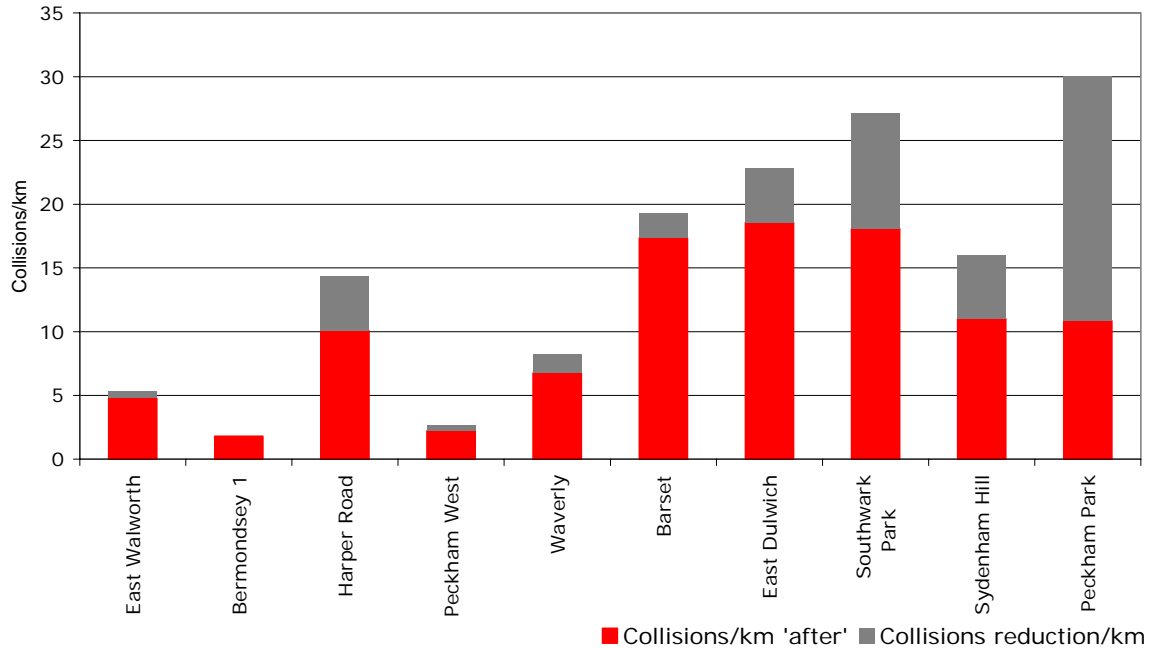


Figure 4.1 Collisions/km and Collisions Reduction/km

4.2.12 As shown in Figure 4.2, Southwark Park gives a collisions reduction value per km of over £450,000, whilst East Walworth provides a value of just over £10,000 per km. Table 4.3 shows that whilst Peckham West and Barsest have the second and third highest rates of return, Peckham West has more than twice the length of roads as Barsest and as such Barsest has a higher rate of return per km.

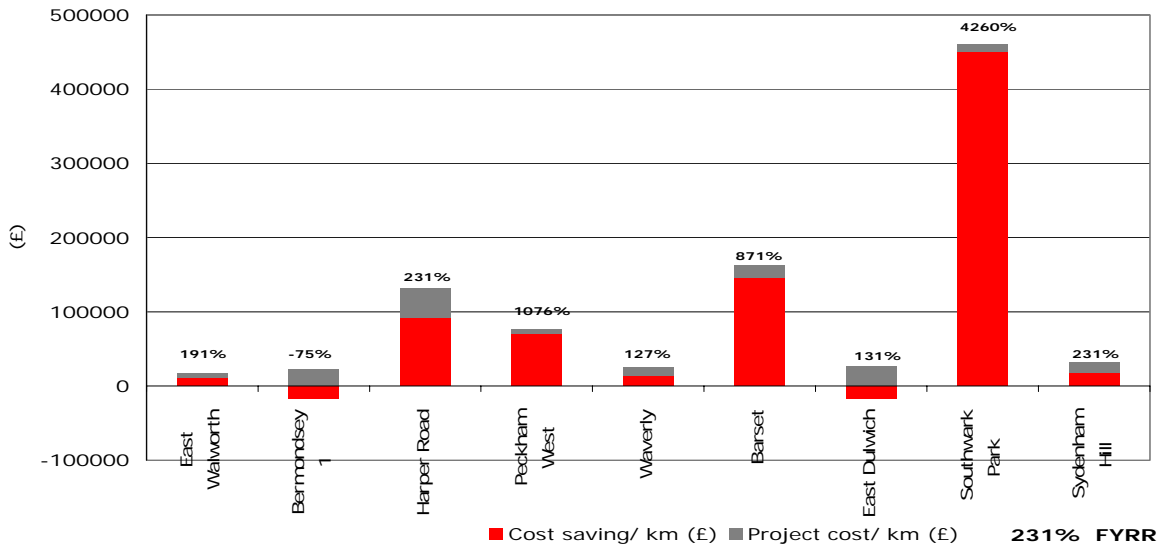


Figure 4.2 Collisions reduction value/km and Project Cost/km

### Streetscape Impacts

- 4.2.13 20mph zones are often introduced in order to formalise and consolidate existing traffic calming measures, thus providing an increased awareness that drivers should modify their behaviour. Most traffic calming measures should have road markings and should be accompanied by signs. When a 20mph zone is created around existing traffic calming then the only additional signs that are required are those that indicate the entrance/exit to/from the zone.
- 4.2.14 However, when traffic calming is formalised through the creation of a 20mph zone it means that road humps and cushions do not have to be signed (and therefore the signs illuminated) or road hump (triangle) markings used. Therefore if traffic calming already exists or it is deemed necessary anyway, then there is likely to be a net decrease in signs and road markings through introducing a 20mph zone.
- 4.2.15 However, street clutter is not created just from signs and road markings, there are many forms of paraphernalia that are often introduced with traffic calming, including: bollards; tactile paving; illuminated bollards etc. all of which can have a detrimental visual impact on the streetscape. Also, depending on the location and scale of traffic calming and the quality of materials and workmanship, the measures may also detract from the surrounding streetscape.
- 4.2.16 Not only can clutter and poor design lead to a poor quality streetscape, it can also lead to driver confusion, which in some circumstances can reduce road safety.
- 4.2.17 To establish whether, in general, the current 20mph zones have had a positive or negative impact on the streetscape a sample of the zones were selected for site visits. The sample zones were East Dulwich, Peckham West and West Walworth.
- 4.2.18 Figures 4.3 to 4.9 show examples of features in the sample zones that have positive or negative impacts on the streetscape. Such features are catalogued in more detail in **Appendix H**.

#### East Dulwich

- 4.2.19 The East Dulwich scheme was introduced about 5 years ago and speed reduction is achieved in this zone mainly through the use of speed cushions. Many of the entrances to the zone have raised surfaces and kerb build outs have been used at junctions inside the zone to reduce the crossing distance and to denote kerbside parking areas. The area consists largely of two-storey Victorian terraced houses which are located on relatively wide streets.
- 4.2.20 Figure 4.3 shows an example of a raised entry, terminal 20mph zone signs and associated markings in East Dulwich. The entry is built using blocks, laid in an attractive herringbone pattern with a different colour block denoting the ramps. One of the 20mph signs is fixed on a lamp column to reduce clutter from sign poles and the sign does not have an accompanying bottom place-name panel.
- 4.2.21 Whilst it is common practice to have two signs at the entrance to a zone, if within 20m of a junction then it is only necessary to use one sign. Again, it is common practice but not a requirement to have a 20mph roundel at the entrance to or within a zone. The tactile paving

is well designed and not excessive. Unfortunately, given the high parking density at this location it has been necessary to use bollards to dissuade drivers from parking on the entry.

- 4.2.22 Figure 4.4 shows another entrance to the zone where coloured surfacing has been used rather than a raised entry, probably because it is more cost effective and/or because there are low pedestrian flows. The coloured surfacing covers a large area in order to emphasize to drivers that they are entering a 20mph zone. In such circumstances it is difficult to get the right balance between awareness for drivers and visual subtlety. There is a redundant sign post located to the right of the entry.



**Figure 4.3 Raised entry treatment**



**Figure 4.4 Coloured surfacing at zone entry**

### **Peckham West**

- 4.2.23 This scheme was introduced about 4 years ago and like East Dulwich is also made up mainly of speed cushions. However, this zone is much larger than the East Dulwich scheme, has a less regular street pattern and a greater variety of traffic calming measures. The zone consists mainly of Victorian/Edwardian terraced housing but is broken up more with industrial, retail and education buildings and newer residential properties.
- 4.2.24 Figure 4.5 shows an example of a road narrowing with a raised table. As with the adjacent carriageway, the table is surfaced in tarmac and the use of bollards has been minimised, hence it blends well in with its surroundings.
- 4.2.25 Figure 4.6 is an example of 20mph roundels which have been used in Peckham Park. The roundels are larger than standard repeater markings and in this location detract from what is an attractive residential street. Consideration should be given as to whether repeater roundels are necessary. If they are then care should be taken to minimise their use and to locate them in areas where they have the most impact for drivers, but also the least negative visual impact.





Figure 4.5 Road narrowing and raised table



Figure 4.6 20 mph roundels

**West Walworth**

4.2.26 The traffic calming in West Walworth was introduced in 1994 and the zone was formalised with entry signs about 10 years later. The zone uses a combination of speed cushions, road humps and horizontal measures. As with the other two zones, the area is predominantly residential, but the housing is mainly high-density estate blocks. The streets are relatively narrow and the area has more of an urban character than the other two zones.

4.2.27 Figure 4.7 and Figure 4.8 are examples of pinch-points/chicanes with vehicle priority operation. Both are retro-fit measures, but the example on the left is more visually subtle and contains less clutter. These measures may have been introduced to mitigate particular issues regarding traffic speeds and road safety, but it is arguable as to whether it would be better to replace them with more aesthetically sensitive alternatives such as tables, cushions, a pedestrian refuge, or narrowings with planting/trees.



Figure 4.7 Pinch-point with priority operation



Figure 4.8 Chicane with priority operation

- 4.2.28 Figure 4.9 is an example of sign clutter at the entrance to this 20mph zone. The signs in the foreground obscure the 20mph zone sign and would benefit from being consolidated onto one sign pole/column or the 20mph sign should be located further down the street.



Figure 4.9 Sign clutter

- 4.2.29 Overall, from the site visits to all three zones it was observed that the streetscape impacts were largely non-intrusive. This was particularly evident for newer schemes, which have been designed with greater consideration to the surrounding environment. Many of the older measures would benefit from 'quality audits', particularly to identify issues with maintenance and clutter. The removal of unnecessary signage and street clutter would help to aid driver understanding.

#### Environmental Impacts

- 4.2.30 We are not aware of any research that has been carried out in Southwark on the noise, vibration or air quality impacts of 20mph zones, or on the effects of traffic calming in general. At the workshop it was noted that issues regarding perceived environmental impacts are often raised by residents at the consultation stage. However, very few complaints have been received following the implementation of 20mph zones, and those that have been received tend to relate to issues at specific locations which are probably attributable to poor workmanship or poor maintenance.
- 4.2.31 Research work has been undertaken on the environmental impacts of traffic calming and 20mph zones for other areas around the country and this is discussed in the following chapter.

#### Impacts on Pedestrians and Cyclists

- 4.2.32 When designed carefully, the implementation of 20mph zones and traffic calming measures can offer an opportunity to improve conditions for pedestrians and cyclists and thereby encourage walking and cycling. Benefits can include: quieter, safer and more legible routes; shorter, more direct, more frequent and disabled friendly crossing facilities; seating and cycle facilities (including cycle stands).
- 4.2.33 Care has been taken in the design of most of the Southwark 20mph zones to correctly align crossing facilities and to provide tactile paving. Most entrances onto busy roads are raised and at many junctions there are kerb build-outs, which reduce the crossing distances and maximises footway space. Clutter from signs and street furniture is generally kept to a minimum within the zones, maximising the effective footway width.
- 4.2.34 The Council's preferred traffic calming measure for 20mph zones is road humps, although at present there are actually more cushions than humps. Humps are considered to reduce traffic speeds more than cushions which would provide greater benefits for cyclists. While

cyclists can generally negotiate cushions more easily, manoeuvring around cushions can cause cars to swerve, potentially increasing the risk of danger for cyclists. Pinch-points and chicanes can compromise the safety of cyclists, but are used in moderation in the Southwark 20mph zones. Occasionally they are designed with cycle-bypasses, but unless well maintained they can fill with debris which may result in ponding and other hazards for cyclists.

### Knock-on Impacts on other Roads

- 4.2.35 Within the scope of our study, we have not been able to take account of the degree to which the traffic volume has changed on the roads surrounding the 20mph zones. However, anecdotal information suggests that there has been a negligible impact in terms of traffic displacement. The adjacent roads are mostly busy distributor roads or strategic routes, which suffer from congestion anyway. It is more likely that traffic which previously took rat-runs through the pre-20mph zone streets is now more widely dispersed within the zones, rather than using adjacent routes.
- 4.2.36 A study<sup>6</sup> completed by the LRSU in 2003 for 20mph zones in London concluded that concerns that accidents may be migrating away from 20mph zones into the surrounding areas appear to be unfounded.

### Impact of Emergency Services

- 4.2.37 It is recognized that traffic-calmed roads can impact on the response times of emergency vehicles, however there have only been limited trials conducted in the UK to fully realise this impact. It is believed that this impact is modest compared with the severe delays incurred on non-traffic-calmed roads due to traffic congestion<sup>7</sup>.
- 4.2.38 There is evidence<sup>8</sup> that certain traffic calming features cause damage to low clearance emergency vehicles when travelling at speeds above 20mph, however it is difficult to determine the exact number of vehicle hours lost or total cost implications of this damage. Following trials and extensive testing of road humps<sup>9</sup>, the DfT found no evidence that there was damage caused by road humps and cushions to any of the vehicles tested (car, ambulance, London taxi, single deck bus and mini-bus) provided the humps conform to the Highways (Road Hump) regulations.
- 4.2.39 Southwark use a variety of traffic calming methods within their 20mph zones. For routes which are trafficked by bus services or are identified as blue light corridors then speed cushions are the preferred method of speed reduction.

### Maintenance

- 4.2.40 Traffic calming measures require a relatively high degree of maintenance to ensure that they continue to comply with design regulations, do not unduly discomfort drivers and are clearly visible to all road users.

---

<sup>6</sup> LRSU: *Safety Research Report No. 2 – Review of 20mph Zones in London Boroughs 2003*

<sup>7</sup> GLA *Scrutiny of Speed Humps – Response from the London Health Observatory, LHO, 2004*

<sup>8</sup> GLA *Scrutiny of Speed Humps – Response from Metropolitan Police Service*

<sup>9</sup> *Traffic Calming (Road Humps), DfT, 2007*

- 4.2.41 Southwark Council does not have a maintenance programme in place specifically for 20mph zones but routinely maintains the road network on a periodic basis. It is evident from site visits that there has been little or no maintenance for some of the zones since implementation (or for the traffic calming measures that pre-date the zones). The issues that exist are generally related less to road safety but more about pedestrian/driver discomfort and visual detraction. Our observations highlighted: degradation of surface materials and road markings, damaged and/or redundant signage and guard railing.

### 4.3 Summary

#### Monetary Costs

##### Scheme Costs

- The total cost of introducing the ten zones for which we have cost data is £1.2m.
- Scheme costs vary between £50,000 and £200,000. Comparatively, there is a greater variation in the cost per km (£6,482 - £44,335).
- The Livesey scheme is the most expensive (£200,000) but Peckham Park is the most costly per km (£44,335), mainly due to the high level of treatment of traffic calming and because of the lower economies of scale (attributed to its small size).

##### First Year Rate of Return

- The total value of collision reductions is £5.9m across the ten zones, demonstrating that the schemes are good value for money.
- Eight out of the ten zones have a FYRR greater than 100% meaning that they have recovered their project costs within the first year.
- Three of the schemes have a significantly high FYRR (871%, 1076% and 4260%).
- Bermondsey 1 has a negative FYRR as the number of severe collisions has increased slightly (from 1.7 to 3.0). East Dulwich has a negative FYRR as the rate of fatalities increased slightly from 0.3 to 1.0. However, it should be noted that there is only one year's post-implementation data.

##### Collisions Cost Saving per km

- The total collision savings per km is £870k.
- Peckham Park has almost twice the collisions reduction rate of any other zone, but is even more successful when assessed in terms of collisions per km.
- Southwark Park has the highest FYRR (four times more than the next highest FYRR) but as it is a relatively small zone, the FYRR per km is nine times higher than the next highest zone.

## Non-monetary Costs

### Streetscape Impacts

- In general, there is relatively minimal clutter in the 20mph zones, but the clutter and maintenance issues are more evident for the older schemes.
- Raised entries used on majority of main road junctions. Entries are well constructed using good quality materials.
- Excessive use of roundels and coloured surfacing at some locations.
- Traffic calming measures generally designed in sympathy with their surroundings, but there is scope for improvement for some of the older horizontal measures.
- Some street clutter, mainly redundant signs and sign poles.

### Environmental Impacts

- No research exists for Southwark on environmental impacts of 20mph zones or traffic calming.
- Perceived impacts raised by residents at consultant stage, but few complaints received post-implementation.

### Impacts on Pedestrians and Cyclists

- Care has been taken in the design of the 20mph zones/traffic calming to facilitate the crossing needs of pedestrians and the disabled.
- Effective footway width maximised through minimising clutter.
- The Council generally prefer humps as they are easier for cyclists to negotiate and unlike cushions reduce the potential for vehicles to swerve when passing cyclists.
- 20mph zones considered a better environment in general due to the reduction in vehicle speed.

### Knock-on Impacts on other Roads

- Anecdotal information suggests negligible impact in terms of traffic displacement.
- Likely that previous rat-running traffic more widely dispersed within the zones rather than using adjacent routes.

### Impacts on Emergency Services

- Impacts on response times considered to be modest compared to delays due to congestion.
- Evidence to suggest that traffic calming can cause danger to vehicles but only above 20mph.
- DfT research suggests that no evidence of vehicle damage if humps conform to regulations.
- Southwark uses a variety of traffic calming measures, including cushions on busier roads where there is a high proportion of large and/or public service vehicles.

### Maintenance Impacts

- No maintenance plan in place specifically for 20mph zones. The 20mph zones would benefit from the introduction of a 'quality audit' programme.
- Evidence that little or no maintenance for some zones since implementation.
- Maintenance issues related more to pedestrian/driver discomfort and visual detraction rather than road safety.
- Observations highlighted degradation of surface materials and road markings and/or damaged signs and guard railing.

# 5 Roll-Out of 20mph Zones

## 5.1 Introduction

- 5.1.1 In this chapter, based on the analysis, observations and background research that we have documented in earlier chapters we have made recommendations on the aspects of design, maintenance and monitoring of 20mph zones that the Council should focus on in the future.

## 5.2 Design Considerations

### Traffic Calming

- 5.2.1 Our research has shown that there is a reasonable correlation between the number of road humps and the reduction in collisions. Other research<sup>10</sup> has more conclusively shown that vertical measures provided an average speed reduction of 8.4mph, giving a reduction in accidents of 44%. The research also showed that horizontal measures give between a 7% and 8% reduction in collisions for every 1mph speed reduction. Therefore, both measures are proven to provide a significant reduction in speed and an implied commensurate improvement in road safety.
- 5.2.2 The Council's default traffic calming measure in 20mph zones is full width road humps, which when designed properly achieve the necessary speed reduction and do not create undue discomfort for motorised vehicles or cyclists. This is the most cost effective measure that can be used in large numbers within a 20mph zone. Sinusoidal humps can be difficult to implement in accordance with design details but they minimise discomfort more than standard humps and are more likely to even out the acceleration/deceleration that is often created by using standard humps.
- 5.2.3 Using humps and cushions as the primary means of traffic calming minimises the impact on parking capacity, as horizontal measures generally result in a loss in kerbside parking space.
- 5.2.4 In introducing 20mph zones there is a requirement to install 'formal' traffic calming measures every 50m, therefore there is no scope to use 'informal' (or psychological) traffic calming (e.g. staggered parking layouts). However, if such measures were proven to consistently reduce speeds elsewhere in Southwark (or in a similar setting) then there may be a case for approaching the DfT to introduce these measures within a 20mph zone for a trial period.
- 5.2.5 However, the Council may wish to concentrate their efforts on participating in the trials of technology currently taking place in London for average speed cameras. A new camera system has recently successfully completed the testing phase necessary for Government approval. Using such a system is likely to negate the requirement to use traffic calming measures.

---

<sup>10</sup> Cutting our speed: what really works? Research Intelligence: November 94

- 5.2.6 The Council should continue to give due consideration to the needs of pedestrians and cyclists when designing 20mph zones and traffic calming measures, notably: more legible shorter and direct routes; seating; and cycle facilities.
- 5.2.7 Southwark uses a variety of traffic calming measures which are selected according to the type and volume of vehicles that use the roads. Cushions or other horizontal traffic calming measures should be used on roads served by public buses and/or on major response routes for the fire and ambulance services. Vehicles used by the police are usually narrower (i.e. cars) and don't carry public passengers and as such there is minimal advantage in using cushions over humps.
- 5.2.8 The DfT set out a code of practice for dealing with the emergency services when installing traffic calming. They advised that a strategic route system should be agreed when determining the types and combinations of traffic calming measures. Hull City Council has managed to implement the largest length of traffic-calmed roads in the country without any significant problems for emergency services, which was mainly achieved through early consultation.
- 5.2.9 From the workshop discussions it was apparent that Southwark Council currently employ a holistic approach to the design of 20mph zones; involving residents; cyclist and pedestrian lobby groups; and the emergency services at an early stage in the design process, thus increasing the likelihood of success. Southwark created stakeholder 'forums', which came together to help inform the development of 20mph zones. There is less enthusiasm now for these groups, partly due to the difficulties in engaging with the emergency services. However, the idea of forums should be revisited to help inform the design of future zones.
- 5.2.10 Using a variety of traffic calming methods also helps to avoid the increasingly common issue of driver intolerance. As Southwark moves closer towards being a 20mph borough greater care will need to be taken to ensure this is mitigated at the design stage. However, it is unlikely that as more zones are introduced that additional repeater signs and road markings will be needed to reinforce the message that drivers still need to adhere to the 20mph limits - as the traffic calming will continue to ensure speeds are attenuated.
- 5.2.11 One of the other types of traffic calming used within Southwark are vehicle-activated slow/speed signs. However, there are concerns over their reliability and the degree to which compliance deteriorates over time for static sites. Mobile signs may be more useful; however the cost-benefit for this measure may be marginal.

### Design Recommendations from Public Consultation

- 5.2.12 A part of the residents and business survey, respondents were asked: if they could improve the design of their 20mph zone, what would they like more of, less of or no change in for the following measures:

- 20mph signs and road markings;
- road humps/cushions to slow traffic;
- raised tables at junctions to slow traffic; and
- any other changes?



5.2.13 The survey results showed that half of respondents would like to see more signs and markings and raised tables. This is an unusual response, as in the preceding question 20% of respondents said that street clutter has been made worse. Respondents are less in favour of road humps and cushions and are divided on the benefits of using pinch points and road narrowings. It should be noted that a large number of respondents felt that no changes are required to the 20mph zones.

5.2.14 Some respondents indicated that they would also like to see more of the following:

- pedestrian facilities;
- police enforcement/speed cameras;
- signalised junctions;
- specific vehicle bans/road closures; and
- improved environments (trees, etc).

5.2.15 The full survey methodology and results can be found in Appendix B.

### Use of 20mph Speed Limits

5.2.16 20mph speed limits are generally applied on roads where the 85<sup>th</sup> percentile speeds is already below 24mph. If the speeds are higher than this then the DfT recommends that traffic calming should be used. Only TfL has the authority to make changes to TLRN and SRN routes, however the Council is lobbying TfL to introduce 20mph restrictions wherever possible on these roads.

5.2.17 The majority of the main roads outside the current 20mph zones suffer from congestion in the peak periods. As such, average speeds on these links are likely to be below 24mph. However, outside the peak periods the speeds may be well in excess of 24mph. Given the high volume of traffic on these roads and the high proportion of large vehicles, including public buses, it is not practical to introduce traffic calming measures at regular intervals to regulate speeds. In addition, the costs would be prohibitively expensive.

5.2.18 Therefore, in order to restrict speeds to below 20mph across the borough would require the use of 20mph zones, and a combination of enforcement, selective use of traditional traffic calming and other speed reduction measures (such as speed cameras and psychological traffic calming) for main roads. However, there may be some areas where speeds are relatively low throughout the day already and the provision of a 20mph speed limit (indicated by terminal and repeater signs alone), without extensive police enforcement, will be sufficient to bring down speeds to 20mph. The length of road will have a bearing on the suitability of this. In considering the most appropriate and workable solutions for achieving 20mph limits on main roads it is essential that the Metropolitan Police are consulted.

### Streetscape

- 5.2.19 Southwark use their Streetscape Design Guide when designing 20mph zones ensuring that aesthetic qualities are considered whilst maintaining the primary aim of 20mph zones to improve road safety. The Plan makes reference to the need to reduce clutter, consider the context of the local area, coordinate street furniture, ensure pedestrian routes are accessible etc. Southwark is divided into character areas, for which there are different palettes of materials. However the character areas do not necessarily to coincide with the 20mph zones.
- 5.2.20 Although the Council considers streetscape issues when designing 20mph zones the level/quality of treatment is subject to funding. The priority is to ensure that the zones are functional, and then if the budget permits consideration can then be given to the level of treatment that can be afforded for the streetscape.
- 5.2.21 The Council adopts a 'clean-sheet' approach to design, starting with identifying the minimal legal requirements for signs/road markings. This is the approach that is recommended in the recently published DfT Local Transport Note 1/08 'Traffic Management & Streetscape'. The Council should be commended for taking this forward thinking approach. However, there is still scope to improve clutter in the zones, especially for older schemes.
- 5.2.22 Consolidation of 20mph zones is likely to have a positive impact in that a reduction can be made in the number of signs and road markings that are required to denote the boundaries of the 20mph zones.
- 5.2.23 For some of the 20mph zones the entry signs have already been consolidated with CPZ signs onto a single sign face. This has helped to reduce clutter and reduce confusion for drivers. However, there are difficulties when it comes to consolidation for zones that are cross boundary.

### Environment

- 5.2.24 Whilst the primary purpose of 20mph zones is to reduce speeds and accidents, the environmental effects of such schemes should also be taken into consideration. In order to limit adverse noise or excessive emissions, the objective should be to discourage harsh acceleration and deceleration, and encourage smooth traffic flow. This may be achieved by minimising the 'speed difference' which is defined as the difference between the mean speed at the hump, and the mean speed between humps. The closer the spacing, the smaller the speed difference is.
- 5.2.25 For example, spacing in the region of 50m to 60m will generally result in a speed difference of around 5mph. Round top 75mm high humps appear to result in speeds of 2mph higher at the hump than 75mm high flat top humps using gradients between 1:10 to 1:15. Therefore, for a given hump spacing, round top humps have a smaller speed difference. The benefits of reducing possible adverse environmental effects need to be balanced against the public acceptability of providing a larger number of humps, and the cost of providing these.
- 5.2.26 After the installation of road humps and speed cushions, research<sup>11</sup> has shown that the maximum noise levels from light vehicles (cars) are reduced, as is the

---

<sup>11</sup> *The Effects of Traffic Calming Measures on Vehicles and Traffic Noise, TRL, 1997*

overall traffic noise level when light vehicles form most of the traffic stream. However, the effect on noise from large vehicles is more complex.

- 5.2.27 The limited available research indicates that levels of noise and pollution are much more closely linked with traffic volume than with the presence of traffic calming measures. The research has indicated that emissions from individual vehicles may increase with the implementation of traffic calming measures, due to increased driver acceleration and deceleration. However, the reduction in the volume of traffic within traffic calming schemes usually means that the overall changes in air quality are roughly neutral.
- 5.2.28 It is beyond the scope of this study to undertake research into the environmental effects of 20mph zones. It was reported at the workshop that officer time is often taken up in responding to enquiries from the public regarding environmental impacts, and it was said that it would be useful to have the relevant facts and figures to hand, and this would also help to reassure the public. Southwark should give consideration to the benefits of working with the DfT/TfL to undertake research to quantify these impacts.

### 5.3 Maintenance

- 5.3.1 In considering the introduction of new 20mph zones it is important to set out at an early stage the maintenance requirements in order to ensure that the functionality, consistency and visual quality of the zones can be maintained. The fact that Southwark is divided into character areas (for which there are design codes) will help in terms of maintenance.
- 5.3.2 As discussed in Chapter 4, many of the older measures would benefit from 'quality audits', particularly to identify issues regarding maintenance. Consideration should be given to the overlap between the character areas and 20mph zones, and whether the zones could form a sub-set of the character areas. In this way, the zones could be identified as distinct elements in a 20mph maintenance programme, which could be reviewed/audited on a periodic basis.

### 5.4 Monitoring

- 5.4.1 The current TfL requirement is that before/after speed/collision data should be monitored for selected LIP schemes. However, with the LIP reforms the requirements for monitoring are likely to become more stringent.
- 5.4.2 Whilst it is clear that the rate of collisions has reduced significantly following the implementation of the 20mph zones, there was insufficient survey information to be able to draw comparisons between speed reduction and collision reduction in Southwark. This would help to determine the success of the zones in ensuring compliance with the speed limit and help to determine the success of certain types of traffic calming.
- 5.4.3 As more of the borough is covered by 20mph zones it will be increasingly important to monitor the impacts on adjacent zones and roads outside the zones. However, because the zones will become more widespread any traffic counts that are routinely undertaken (for new developments etc) are likely to be located with a zone and can be used to assess the extent to which traffic speed, flow and classification may have changed. Based on previous ATC records, the Council should take a view as to whether future (routine) surveys need to be supplemented by additional surveys to fill in the gaps (geographically or temporally).

## 5.5 Summary

### Design Considerations

#### Traffic Calming

- Humps and cushions both adequately reduce traffic speeds and should continue to be used in combination.
- Humps are the more cost effective measure but cushions are more suitable for routes used by buses and the ambulance and fire services.
- Humps and cushions also help to minimise the loss of kerbside parking more than horizontal measures.
- Where possible, sinusoidal humps should be used over other round-topped humps to even out acceleration/deceleration.
- Consideration should be given to quantifying the speed reduction benefits of informal traffic calming measures.
- Average speed camera technology is likely to negate the need for traffic calming and as such Southwark should consider participating in the trials currently taking place in London.
- When designing 20mph zones, due consideration should continue to be given to the needs of pedestrians.
- Early consultation with the emergency services will help to minimise issues with approval and post-implementation concerns. Southwark should consider revisiting the idea of using forums for consultation.
- Using a variety of traffic calming measures can help to avoid the issue of driver intolerance.
- Consideration should be given to the benefits of using vehicle activated slow/speed signs in 20mph zones.

#### Design Recommendations from Public Consultation

- The public said that they would like to see more: signs and markings but fewer road humps and cushions; pedestrian facilities; police enforcement/speed cameras; signalised junctions; specific vehicle bans/road closures; and improved environments (trees, etc).

#### Use of 20mph Speed Limits

- To restrict speeds to below 20mph across the borough would require the use of 20mph zones, and a combination of enforcement, selective use of traditional traffic calming and other speed reduction measures for main roads.
- Solutions for main roads should be developed in close consultation with the Metropolitan Police (and TfL where appropriate).

### Streetscape

- The level of consideration that is given to streetscape is largely subject to budget constraints.
- The Council should be commended for adopting a 'clean-sheet' approach to design. However, there is still scope to improve clutter, especially for older schemes.
- Consolidation of schemes is likely to reduce the required number of signs and road markings.

### Environment

- Minimising the 'speed difference' will help to reduce negative environmental impacts.
- The benefits of reducing adverse environmental effects need to be balanced against the public acceptance of using more humps and the additional cost.
- Following the installation of humps and cushions, research shows that noise from light vehicle reduces.
- Research indicates that levels of noise and pollution are more closely linked to traffic volume than the presence of traffic calming.

### Maintenance

- It is important to set out, at an early stage, the maintenance requirement for 20mph zones.
- Consideration should be given to whether 20mph zones should form a sub-set of character areas, enabling them to be identified as distinct elements in a 20mph maintenance programme.

### Monitoring

- With the LIP reforms, monitoring requirements likely to become more stringent.
- As more of the borough is covered by 20mph zones, it will become increasingly important to monitor the impacts on adjacent zones and on main roads.
- As more zones are introduced, ATCs routinely undertaken are more likely to be located within 20mph zones, so they can be used to help assess their impacts. Southwark should review their existing ATC records to understand whether additional surveys need to be undertaken to fill the gaps.

## 6 Conclusions

### 6.1 Summary

- 6.1.1 As outlined in the project brief the ultimate objective of this study was to “identify the strengths and weaknesses of the existing zones and identify what makes for the most effective zone in terms of collisions reduction”.
- 6.1.2 The study was undertaken in three main stages: quantification of the success of the 20mph zones; examination of the zone characteristics to understand how they may have contributed to this success; and assessment of the monetary costs and non-monetary impacts of the 20mph zones.

#### Quantification of Effectiveness

- 6.1.3 Upon commencement of the study there were 19 zones in operation. Implementation dates were available for 16 of the zones and project costs for 15 zones. Several of the zones have been completed within the last three years and such it was not possible to get complete post-implementation STATS 19 collisions data for all 16 zones.
- 6.1.4 For the seven zones where a complete set of pre and post-implementation data was collected (Year 1 to 6), total collisions reduced from 1022 to 762, representing a 25% decrease in total collisions post-implementation of the zones. 27% of these collisions involved pedestrians. For the seven zones, total pedestrian collisions declined from 230 to 218 however, the proportion of pedestrian accidents increased by 5% post-implementation. The proportion of pedestrian collisions only decreased in one zone – Peckham West (by 1%). There is a slight change in the severity of collisions post-implementation, with slight, serious and fatal representing 88% (↑1%), 11% (↓1%) and 1% respectively.
- 6.1.5 Whilst in the years leading up to 1999 there was a higher than average (for Inner London) increase in the number of collisions, since 1999 there has been a higher decrease. This may be due in part to the establishment of the 20mph zone programme in Southwark. Whilst the average reduction in collisions following introduction of the 20mph zones in Southwark is 21%, the average annual reduction in collisions across Southwark since 1999 is 8%, which is also the average reduction for Inner London.
- 6.1.6 A LRSU study (2003) showed that following the introduction of 20mph zones there frequency of collisions reduced by 43% per year (between 1991 and 2001), while for non-20mph zones the number of collisions per year reduced by 1% for the same period.
- 6.1.7 Data for pre and post-implementation ATC traffic surveys were obtained for two of the 20mph zones. Analysis showed that there was a 2-3mph decrease in traffic speed.
- 6.1.8 From the questionnaire survey 40%, 29% and 22% of respondents said they feel that road safety, ease of crossing the road and visual appearance has improved. 20% of respondents said they consider that street clutter from traffic signs and car journey times have worsened.
- 6.1.9 Therefore, we consider that the 20mph zones have been a success and this conclusion was generally echoed by those that attended the stakeholder workshop.

### Contributory Factors

- 6.1.10 Through extensive GIS analysis we quantified the number and type of traffic calming measures in each zone and the land-use area. There is a wide variation in the type of traffic calming used and in the land-use mix for each zone. However, there was a poor correlation between the type of traffic calming used and reduction in collisions, which we consider is due to the localised variation in the height, severity, spacing and positioning of traffic calming features. There was also a poor correlation between land-use and collisions, again likely to be due to localised factors.
- 6.1.11 To varying degrees, other secondary contributory factors will have had an influence on traffic speed within the zones, but it is prohibitively difficult to quantify their individual or collective impacts due to the high number of variables involved.

### Monetary and Non-Monetary Costs

#### Monetary Costs

- 6.1.12 The total cost of implementing the zones for which we have cost data is £1.2m. The total value of collision reductions is £5.9m, which is a 475% FYRR on the total project cost, demonstrating that the overall casualty savings are good value for money.
- 6.1.13 Eight out of the ten zones considered have a First Year Rate of Return (FYRR) greater than 100%, and three schemes have a significantly high FYRR (871%, 1076% and 4260%). Two zones had a negative FYRR, but for one of there was only one year's post-implementation collisions data.

#### Non-Monetary Costs

- 6.1.14 In general, there is relatively minimal clutter in the 20mph zones, but the clutter and maintenance issues are more evident for the older schemes. The majority of traffic calming features are designed to a high standard, particularly the raised entries. However, there is excessive road markings and coloured surfacing at some locations.
- 6.1.15 Care has been taken in the design of the 20mph zones to facilitate the crossing needs of pedestrians and the disabled. In general, it is considered that cyclists benefit from a safer environment due to the introduction of the 20mph zones.
- 6.1.16 The impact on the response times of the emergency services is considered to be modest when compared to delays due to congestion and there is no evidence to suggest that traffic calming causes damage to vehicles that obey the speed limit.

## 6.2 Recommendations

- 6.2.1 A detailed set of recommendation are identified in Chapter 5, and these have been summarised below.
- 6.2.2 The Council should continue to use a variety of traffic calming measures (but predominantly speed humps and cushions) to maximise cost effectiveness, meet the needs of different road

users, attenuate traffic speeds, minimise the loss of kerbside parking and avoid the issue of driver intolerance.

- 6.2.3 Where possible, sinusoidal humps should be used over other round-topped humps and consideration should be given to quantifying the speed reduction benefits of informal traffic calming measures. The Government are getting closer to approving camera technology for measuring average traffic speeds and Southwark may consider it beneficial to participate in the trials currently being undertaken in London.
- 6.2.4 As officer time is often taken up in responding to enquiries from the public regarding environmental impacts, the Council should consider working with the DfT/TfL to undertake research to quantify these impacts.
- 6.2.5 The Council should be commended for adopting a 'clean-sheet' approach to design. However, there is still scope to improve clutter, especially for older schemes. The schemes would benefit from establishing a 'quality audit' programme to review issues regarding clutter and maintenance.
- 6.2.6 It is important to set out at an early stage the maintenance requirements for 20mph zones and consideration should be given to whether 20mph zones should form a sub-set of Southwark's character areas. In this way they could be identified as distinct elements, which would help to form a maintenance programme for 20mph zones, through which they could be reviewed periodically.
- 6.2.7 In order to restrict speeds to below 20mph across the borough the Council would need to use 20mph zones, and a combination of enforcement, selective use of traditional traffic calming and other speed reduction measures for main roads. This exercise would need to be completed through close consultation with the Metropolitan Police, and where necessary with TfL.
- 6.2.8 As more of the borough is covered by 20mph zones it will become increasingly important to monitor the impacts of adjacent zones and on main roads, and with the LIP reforms monitoring requirements are likely to become more stringent.
- 6.2.9 The council should review the current monitoring programme and take a view as to whether future (routine) surveys should be supplemented by additional surveys such as traffic speed and traffic flow data. This additional data would help determine the success of the zones / traffic calming measures and ensure compliance with the speed limit.



### 6.3 Areas for Further Research

6.3.1 Throughout this report, we have made recommendations on areas for further research that should be considered by the Council. These are summarised as follows:

- Quantify the environmental impacts of 20mph zone in terms of noise, vibration and emissions.
- Obtain further traffic survey data to quantify the impact on traffic speed, traffic flow and traffic displacement.
- Research into the speed reduction impacts of informal traffic calming measures.
- Suitability/feasibility of introducing average speed camera technology.
- Review the findings/recommendations of this report once the LRSU 20mph zones research work has been completed.

**MVA Consultancy provides advice on transport and other policy areas, to central, regional and local government, agencies, developers, operators and financiers.**

**A diverse group of results-oriented people, we are part of a 550-strong team worldwide. Through client business planning, customer research and strategy development we create solutions that work for real people in the real world.**

**For more information visit [www.mvaconsultancy.com](http://www.mvaconsultancy.com)**

#### **Abu Dhabi**

Suite 118  
The Avenue Business Centre, Emirates Tower  
P.O. Box 33763, Abu Dhabi, UAE  
T: +971 (0)2 412 4118

#### **Birmingham**

Second Floor, 37a Waterloo Street  
Birmingham B2 5TJ United Kingdom  
T: +44 (0)121 233 7680 F: +44 (0)121 233 7681

#### **Dubai**

Office 402, Building 49, Dubai Healthcare City  
PO Box 123166, Dubai, UAE  
T: +971 (0)4 433 0530 F: +971 (0)4 423 3613

#### **Dublin**

First Floor, 12/13 Exchange Place  
Custom House Docks, IFSC, Dublin 1, Ireland  
T: +353 (0)1 542 6000 F: +353 (0)1 542 6001

#### **Edinburgh**

Stewart House, Thistle Street, North West Lane  
Edinburgh EH2 1BY United Kingdom  
T: +44 (0)131 220 6966 F: +44 (0)131 220 6087

#### **Glasgow**

Seventh Floor, 78 St Vincent Street  
Glasgow G2 5UB United Kingdom  
T: +44 (0)141 225 4400 F: +44 (0)141 225 4401

#### **London**

Second Floor, 17 Hanover Square  
London W1S 1HU United Kingdom  
T: +44 (0)20 7529 6500 F: +44 (0)20 7529 6556

#### **Lyon**

11, rue de la République, 69001 Lyon, France  
T: +33 (0)4 72 10 29 29 F: +33 (0)4 72 10 29 28

#### **Manchester**

25th Floor, City Tower, Piccadilly Plaza  
Manchester M1 4BT United Kingdom  
T: +44 (0)161 236 0282 F: +44 (0)161 236 0095

#### **Marseille**

76, rue de la République, 13002 Marseille, France  
T: +33 (0)4 91 37 35 15 F: +33 (0)4 91 91 90 14

#### **Paris**

12-14, rue Jules César, 75012 Paris, France  
T: +33 (0)1 53 17 36 00 F: +33 (0)1 53 17 36 01

#### **Woking**

Dukes Court, Duke Street, Woking  
Surrey GU21 5BH United Kingdom  
T: +44 (0)1483 728051 F: +44 (0)1483 755207

**Email: [info@mvaconsultancy.com](mailto:info@mvaconsultancy.com)**

#### **Offices also in**

Bangkok, Beijing, Hong Kong, Shenzhen and Singapore

**mvaconsultancy**