

LBPN Lambeth

Review of Clapham Park Road
Eastbound Bus Lane

May 2007

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1. Introduction

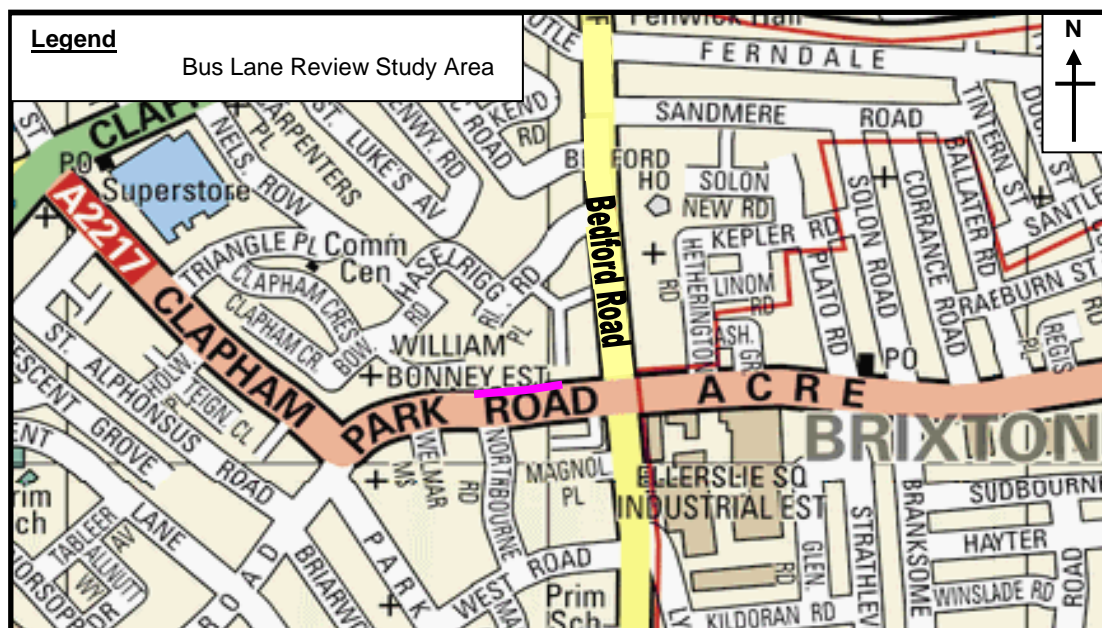
BACKGROUND

- 1.1 The City of London Corporation, in conjunction with the London Borough of Lambeth (LB Lambeth) have commissioned Atkins to undertake a review of the eastbound bus lane on Clapham Park Road between Northbourne Road and the approach to Bedford Road.
- 1.2 The study involved an investigation into the effectiveness of the bus lane and included an assessment of the current loading facilities.

OBJECTIVES

- 1.3 The objectives of the project are to:
- ◆ Ascertain if the bus lane is legal and enforceable;
 - ◆ Measure the effectiveness of the bus lane;
 - ◆ Propose methods to improve the effectiveness of the bus lane;
 - ◆ Assess the impact of the bus lane on the performance of the corridor;
 - ◆ Propose methods to improve the performance of the corridor without significantly reducing benefits to buses; and
 - ◆ Assess the benefits of the bus lane for bus passengers and operators.
- 1.4 A location plan showing the extent of the bus lane is shown below in Figure 1.1.

Figure 1.1 – Location Plan of Eastbound Clapham Park Road Bus Lane



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DESCRIPTION OF BUS LANE

- 1.5 The bus lane is currently located on Clapham Park Road in an eastbound direction between Northbourne Road and the approach to Bedford Road. The bus lane, first introduced in March 1986, is approximately 55 metres long and operates on Monday to Saturday between 7am and 7pm. Buses that utilise this bus lane include Routes 35, 37, 137 and 417.
- 1.6 The bus lane incorporates one bus stop and has a 'No Waiting and No Loading At Any Time' restriction indicated over the full length.
- 1.7 Both pedal cycles and taxis are permitted to use the bus lane.
- 1.8 A general view of the approach to the bus lane is shown in Figure 1.2 below.

Figure 1.2 – View of the Approach to the Bus Lane



2. Site Information

SITE ASSESSMENT

- 2.1 A site assessment was undertaken in December 2006. Details of all linemarking and signage were recorded in both directions on-site between Northbourne Road and Bedford Road.
- 2.2 An existing layout is shown on drawing number 4411274/514/001 in Appendix A.
- 2.3 There is an inset parking bay downstream of the bus lane which enables parking, without causing delays to buses.
- 2.4 The site assessment identified that a section of red surface marking within the bus cage was missing. Part of the solid white line demarcating the bus lane, of approximately 4.3 metres long, has been removed after the bifurcation arrow linemarking and bus cage, however, it is still partially visible. The red surface continues for the 4.3 metres. These issues are highlighted in Figure 2.1 and Figure 2.2.

Figure 2.1 – View of the Missing Red Surface within the Bus Cage



Figure 2.2 – View of the Removed Linemarking at the End of the Bus Lane**EXISTING DOCUMENTATION OF BUS LANE**

- 2.5 The eastbound bus lane was made permanent in July 2000 and extended from 25 metres east of 173/175 Clapham Park Road to 2/3 Ascot Parade. The operational hours were 'Monday–Friday, 7–10am and 4–7pm'.
- 2.6 In 2003 Atkins undertook a review of the bus lane as part of a London Bus Initiative (LBI) Study along Route 35 including both sides of Acre Lane and Clapham Park Road. The study covered all stages of the scheme including waiting and loading reviews, interim design, consultation and detailed design.
- 2.7 This study proposed the following changes:
- ◆ Extension of operational hours to 'Monday to Saturday, 7am–7pm' for the bus lane along eastbound Clapham Park Road;
 - ◆ Changes to the waiting and loading restrictions to correspond with the proposed changes to the bus lane operational hours; and
 - ◆ Relocation of parking along eastbound Clapham Park Road and the introduction of inset parking.
- 2.8 As a result of this study, changes to the eastbound Clapham Park Road bus lane have been implemented.
- 2.9 These changes were first introduced as an experimental scheme in April 2003 before being made permanent in June 2004.
- 2.10 Furthermore, the bus lane was reduced in length by 21 metres from the eastern end and the TMO was made permanent in September 2005. It is likely that this was to

enable vehicles to access the inset parking bays located towards the end of the bus lane.

TRAFFIC ORDERS

- 2.11 All Traffic Management Orders (TMOs) relating to the bus lane and waiting and loading along Clapham Park Road between Abbeville Road/ Park Hill and Bedford Road were obtained from LB Lambeth.
- 2.12 The extent of the TMOs are outlined on the existing layout drawing shown in Appendix A. Tables showing the detailed extent and exact locations of each of the individual orders are shown in Appendix B.

Bus Lane Traffic Orders

- 2.13 The signing, linemarking and TMO location is shown in Drawing 4411274/514/001 in Appendix A.
- 2.14 The current Bus Lane Traffic Order indicates that the bus lane is located between 28 metres east of the eastern wall of properties 173/175 Clapham Park Road and 24 metres west of the boundary between properties 191 to 215 and 1 to 11 Ascot Parade. The bus lane is operational 'Monday–Saturday, 7am–7pm' This order was made permanent on 19th September 2005.
- 2.15 The solid white line road markings indicate that the bus lane ends approximately three metres short of the location prescribed in the TMO. Transport for London's (TfL) Traffic Enforcement Camera Operations' (TECO) tolerances for bus lanes state that bus lane linemarking 'should not be more than 5m outside the exact location specified in the TMO and not more than 15m inside'. Therefore, although there is a slight difference in the TMO location and bus lane linemarking, the bus lane is enforceable.
- 2.16 The bus lane signage is consistent with the TMO.

Waiting and Loading Traffic Orders

- 2.17 The waiting and loading signage and linemarkings are provided in Drawing 4411274/514/001 in Appendix A.
- 2.18 The TMOs were compared with the on-site assessment of the signage and linemarking.
- 2.19 Along the eastbound lane, between the inset parking bay and the junction of Clapham Park Road/ Bedford Road, the TMO prohibits waiting and loading at all times. There is one sign related to this restriction as well as appropriate linemarkings (double yellow lines) along this section. The double yellow linemarking however overlaps with the TMO that applies to the adjacent inset parking area by approximately four metres.
- 2.20 Between the inset parking bay and the eastern end of the bus lane, the TMO prohibits waiting and loading between 'Monday-Saturday, 7-10am and 4-7pm'. Two signs present in the recessed bay state that pay and display parking is permitted

here between 'Monday to Friday, 10am-4pm'. Although the parking TMOs were not consulted, these signs are consistent with the waiting and loading TMOs for this area. There is approximately a one metre overlap between the waiting and loading restrictions for this section and the double yellow line marking and bus cage surfacing at the eastern end of the bus lane.

- 2.21 The traffic order states that there is 'No Waiting and No Loading At Any Time' for the full length of the bus lane. Although there are no signs in the vicinity of the bus lane, there are double yellow lines and traverse linemarkings at the kerb edge indicating 'No Waiting and No Loading At Any Time', excluding the clearway within the bus cage.
- 2.22 In the westbound lane, between Northbourne Road and the junction of Clapham Park Road/ King's Avenue, there are a number of inconsistencies between the TMOs and existing signage and linemarkings.
- 2.23 For the majority of the section between Northbourne Road to property number 178 Clapham Park Road, the TMO prohibits waiting and loading between 'Monday-Saturday, 8am-6:30pm'. The signage is correct in this section however the extent of the linemarking (single yellow lines) does not match up on either side.
- 2.24 There is also an inconsistency between the TMO and signage concerning two dedicated parking bays located in this section. In both instances the TMO states there is 'No Waiting and No Loading, Monday-Friday, 8am-6:30pm' while the signage indicates 'Parking, Monday-Friday, 8:30am-6:30pm'.

BUS SERVICES

- 2.25 Buses which utilise this bus lane include Routes 35, 37, 137 and 417. A summary table of the frequency of each of the buses is shown in Table 2.1 .

Table 2.1 – Frequency of Bus Services Eastbound along Clapham Park Road

Route	From	To	Frequency (mins)		Approx Buses Per Hour		Operator
			AM	PM	AM	PM	
35	Clapham Common	Shoreditch	8 - 12	8 - 12	6	6	London Central
37	Putney	Peckham	8 - 12	8 - 12	6	6	London Central
137	Oxford Circus	Streatham Hill	8 - 11	5 - 8	6.3	9.2	Arriva London
417	Clapham Common	Crystal Palace	8 - 12	8 - 12	6	6	Arriva London
Total					24.3	27.2	

BUS LANE ENFORCEMENT

- 2.26 A meeting with TECO was held at Kings Buildings on 7th December 2006. From this meeting Atkins was informed that TECO had handed over camera enforcement of bus lanes to the boroughs.

- 2.27 Bus lane enforcement is currently undertaken by LB Lambeth. There is one CCTV camera which enforces the eastbound bus lane. This camera (Camera 130) is located outside No. 2 Ascot Parade and has been in operation since 2nd August 2003. This camera is also used to enforce parking on Acre Lane.
- 2.28 Data provided by LB Lambeth indicates there was a total of 1969 Penalty Charge Notices (PCNs) issued between October 2005 and September 2006 for vehicles along the eastbound bus lane on Clapham Park Road. A breakdown of PCNs issued each month is shown in Table 2.2.
- 2.29 Approximately 59% of the PCNs recorded along Clapham Park Road were for vehicles travelling in the bus lane. The remainder included vehicles stopped illegally along the bus lane. There is an overall decline in the number of PCNs issued during the year, indicating that enforcement is having some effect. In addition to these, there were 20 PCNs issued for parking along Acre Lane which is also monitored by the camera.
- 2.30 LB Lambeth was unable to provide any indication of 'hotspots' where large numbers of PCNs were issued. However, a waiting and loading survey undertaken as part of this study indicated where parking violations took place.

Table 2.2 – Number of PCNs Issued (Oct 05 – Sept 06)

Month	Clapham Park Road			Acre Lane			Total		
	On Street Parking	Bus Lane	Total	On Street Parking	Bus Lane	Total	On Street Parking	Bus Lane	Total
Oct-05	85	65	150	3	0	3	88	65	153
Nov-05	88	124	212	2	0	2	90	124	214
Dec-05	104	201	305	3	0	3	107	201	308
Jan-06	82	164	246	1	0	1	83	164	247
Feb-06	80	89	169	0	0	0	80	89	169
Mar-06	62	138	200	2	0	2	64	138	202
Apr-06	75	118	193	2	0	2	77	118	195
May-06	60	104	164	1	0	1	61	104	165
Jun-06	58	79	137	0	0	0	58	79	137
Jul-06	48	40	88	2	0	2	50	40	90
Aug-06	35	7	42	2	0	2	37	7	44
Sep-06	29	34	63	2	0	2	31	34	65
Total	806	1163	1969	20	0	20	826	1163	1989

STAKEHOLDER MEETINGS

- 2.31 Issues relating to the bus lane were raised at the Transport Liaison Meeting on the 15th December 2006 which was attended by LB Lambeth, London Buses, Transport for London (Bus Priority) and various bus operators. There was no particular issue that was of concern to any of these stakeholders.

- 2.32 Monthly progress meetings were also undertaken with Bob Alker and Gillian Cadd on 19th December 2006 and 24th January 2007. LB Lambeth was invited to attend these meetings however were unable to.

3. Traffic Surveys

ACCIDENT DATA

3.1 For the purpose of accident analysis, the scheme extents were divided into the following two sections:

- ◆ Clapham Park Road/ Bedford Road/ King's Avenue/ Acre Lane Junction (Node 166); and
- ◆ Clapham Park Road, between Bedford Road and Northbourne Road (Link 164 to 166).

3.2 Accident data was provided by TfL that gave the three year accident history over the route.

3.3 Detailed tables of each link and node and comments regarding accidents involving each of the key categories are provided in Appendix C.

Route Summary

3.4 There were 28 accidents that occurred within the three year period between 1st September 2003 and 31st August 2006 within the scheme extents. Table 3.1 below identifies the accident history in terms of severity.

Table 3.1 – Summary of Three Year Accident History

Year	Slight	Serious	Fatal	Total	% of Total
Sept 2003 to Aug 2004	8	1	0	9	32.1%
Sept 2004 to Aug 2005	6	1	0	7	25.0%
Sept 2005 to Aug 2006	11	1	0	12	42.9%
Total	25	3	0	28	

3.5 The above data shows that the total number of accidents has varied over the past three years however the ratio of casualties to accidents is not significant.

3.6 The total number of accidents was divided into the two nodes/ links referred to in paragraph 3.1. This is shown in Table 3.2.

Table 3.2 – Accident Location Summary

Node/Link	Location	No. of Accidents	% of Total
Node 166	Clapham Park Road/ Bedford Road junction	23	82.2%
Link 164 to 166	Clapham Park Road	5 (1)	17.8%
	Total	28	

Note: The figure in brackets represents the number of accidents which occurred in the vicinity of the bus lane, involving an eastbound vehicle.

Summary of Accidents along Clapham Park Road in the Vicinity of the Eastbound Bus Lane

- 3.7 Of the five accidents that were reported along Clapham Park Road, none occurred in the bus lane itself. The accident to occur closest to the bus lane took place on Clapham Park Road eastbound, near the junction with Northbourne Road. The accident took place outside of bus lane operating hours and concerned a pedestrian crossing in front of a car during the hours of darkness.
- 3.8 A further two accidents occurred near the junction with Northbourne Road, in the westbound lane. These included:
- ◆ A motorcycle that received a side swipe from a car travelling in the same direction; and
 - ◆ A drunk driver colliding with another car.
- 3.9 The final two accidents took place between the bus lane and the junction with King's Avenue. These included:
- ◆ A nose to tail shunt during the hours of darkness. This accident took place on Clapham Park Road (eastbound) outside of bus lane operating hours; and
 - ◆ A passenger falling on a bus due to a driver braking too hard. The accident occurred on Clapham Park Road (westbound) during bus lane operating hours.
- 3.10 In all instances, victims received only slight injuries.

Accident Analysis Findings

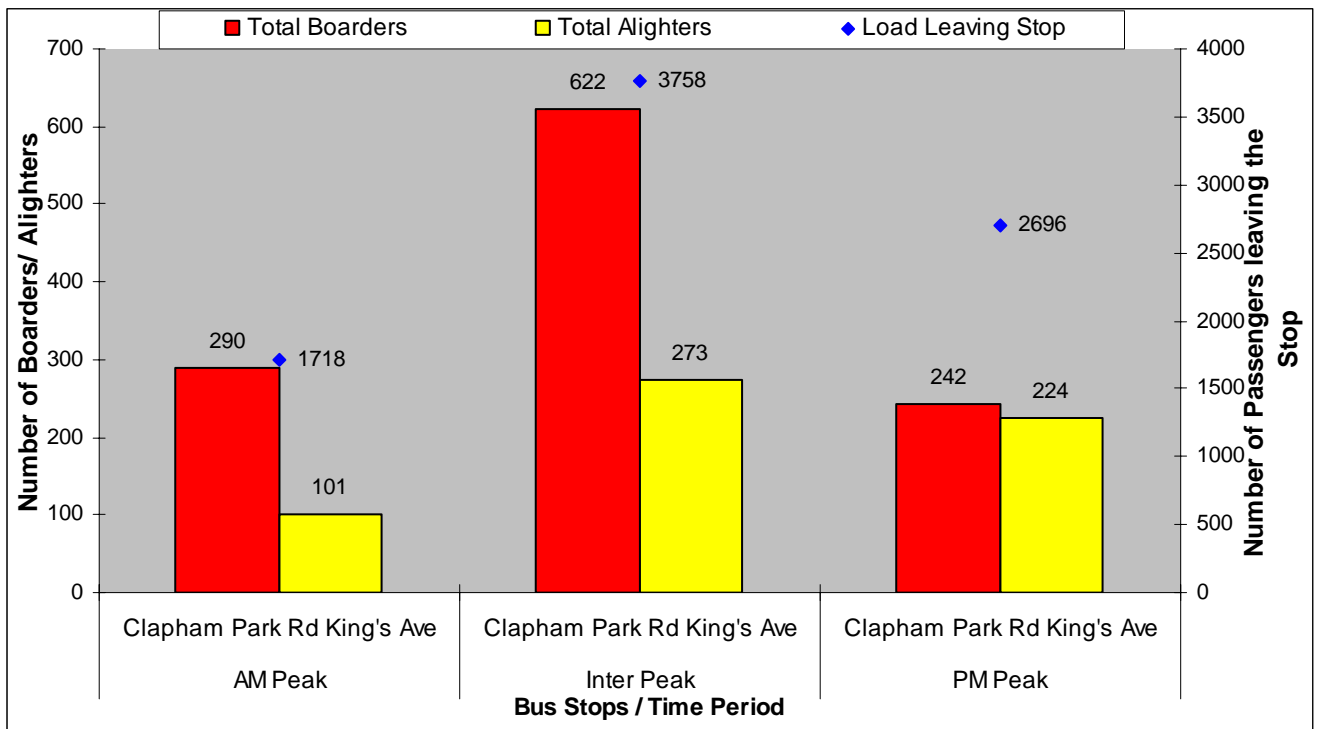
- 3.11 There is no evidence to suggest that the eastbound bus lane contributed to any accidents along Clapham Park Road. No accidents were reported to have taken place within the bus lane itself and the two accidents that occurred along Clapham Park Road (eastbound) took place outside of operating hours.
- 3.12 Consideration of remaining accidents remains valid as should an accident occur it may impact upon the efficiency of a bus route's operation. For this reason a detailed analysis of all accidents can be found in Appendix C.

BUS OCCUPANCY DATA SURVEY

- 3.13 Bus Occupancy Data Survey (BODS) for each route utilising the bus lane was obtained from TfL. This included passenger volumes at the bus stop including boarders and alighters. The surveys were divided into three time periods including AM Peak (7–10am), Inter-Peak (10am–4pm) and PM Peak (4–7pm).
- 3.14 BODS were undertaken on the following dates:
- ◆ Route 35 – 26th May 2004;
 - ◆ Route 37 – 20th May 2003;
 - ◆ Route 137 – 16th May 2002; and
 - ◆ Route 417 – 27th May 2002.

- 3.15 All surveys have been factored up to 2006 values based on passenger journeys provided by TfL¹.
- 3.16 A summary of passengers boarding, alighting and leaving the bus stop within the bus lane is shown in Figure 3.1. The results show that there are more boarders than alighters in all peak periods, with the Inter-Peak period having the greatest number. The particularly high number of boarders during the Inter-Peak suggests that these routes are serving the local residents well outside the peak hours.
- 3.17 It is significant that during the Inter-Peak the load leaving is relatively higher along the route than during the peak periods. This could indicate that this route is better serving the local community undertaking shorter daytime journeys rather than longer commuter trips to work.

Figure 3.1 – Summary of the Passenger Activity at the Bus Stop in the Bus Lane



JOURNEY TIME SURVEYS

- 3.18 Atkins undertook a series of journey time surveys for both buses and cars between Abbeville Road/ Park Road and Bedford Road.
- 3.19 To undertake the surveys a specialist package, TravTime™ GPS/GIS Travel Time and Delay Software with Geostats hardware for accurate data recording was used. A car equipped with a GeoLogger™ Global Positioning System (GPS) data recording device was used for the collection. This permits efficient and precise GPS based travel time, speed and delay studies. It accurately identifies problem areas and the underlying traveller/ driver behaviour that are not detectable using other

¹ Table 2.3.1 London Travel Report 2006

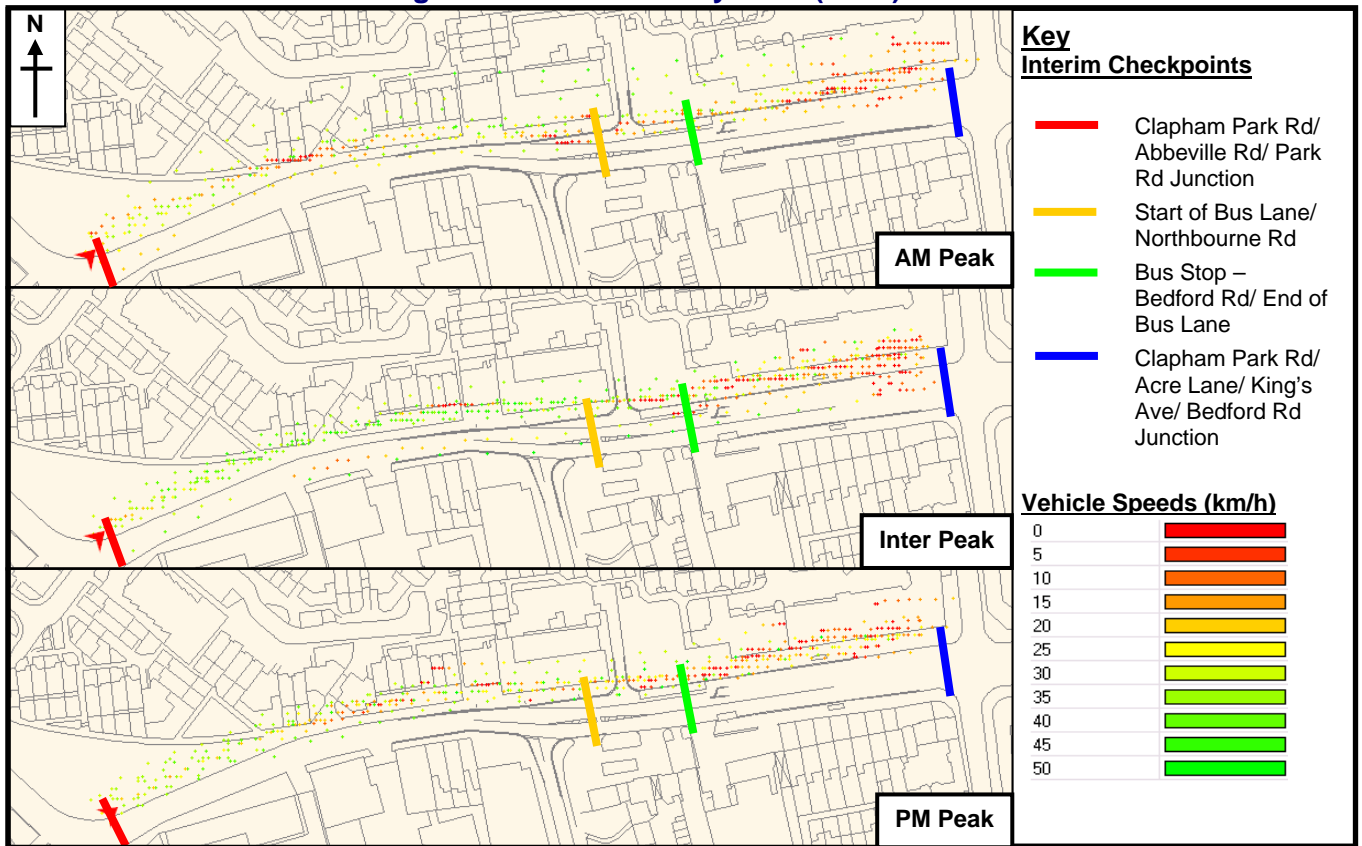
methodologies. A similar device was initially intended for use for the bus journey time surveys, however, the recording of data was inconsistent owing to satellite signal interference from the bus roof, and therefore manual data was recorded at key locations.

- 3.20 A minimum of ten runs were recorded for both car and bus journeys between the junction with Abbeville Road/ Park Road and Bedford Road within the AM Peak (7–10am), Inter-Peak (11am–3pm) and PM Peak (4–7pm).
- 3.21 The dwell time surveyed is the time at bus stops taken for passengers to board and alight. Junction and crossing delays indicate the delays experienced at junctions and pedestrian crossings respectively (when the bus was stopped).

Car Journey Time Surveys

- 3.22 Car journey times were undertaken on Tuesday 5th December 2006. They were conducted along the general traffic lane alongside the bus lane during the same time periods and day as the bus journey time surveys. There were 11 runs undertaken in the AM Peak, 17 runs in Inter-Peak and 11 runs in PM Peak.
- 3.23 The car journey times were analysed with TravTime™ which is the proprietary software for the GeoStats GeoLogger™ GPS data.
- 3.24 Figure 3.2 depicts the vehicles average speed at each section of the road between the Clapham Park Road/ Abbeville Road/ Park Road and Clapham Park Road/ Bedford Road junctions. This has been separated into peak periods to highlight the variation in vehicle speeds. Each of the colour points indicates the precise speed of the vehicle at that spatial location. Unfortunately, the presentation of the dots is not as accurately portrayed as is recorded. However, the travel pattern of the vehicle is quite distinctive, showing where delays, stopping and queuing occur. It must be noted that the average stopped time is the time vehicle speed falls below 5km/h. Greater interrogation of the raw data is possible and is summarised in Table 3.3 and Table 3.4.
- 3.25 Figure 3.2 indicates that delays occur in all peak periods on the eastbound approach to the Bedford Road junction. Queues extend back alongside the bus lane. The approach to the bus lane is relatively free flowing in all peaks with some delays in the AM and PM Peaks.

Figure 3.2 – Car Journey Time (km/h)



3.26 Figure 3.2 is a route summary of the vehicle journey times between the Clapham Park Road/ Abbeville Road/ Park Road and Clapham Park Road/ Bedford Road junctions. For ease of comparison, a TravTime checkpoint was also included at the location of the bus stop, although the vehicle did not stop at the bus stop.

Table 3.3 – Average Car Journey Times (min:sec)

Link	AM Peak			Inter-Peak			PM Peak		
	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max
Before the Bus Lane - Abbeville Road/ Park Road Junction to Start of Bus Lane									
Clapham Park Road/ Abbeville Road/ Park Road Junction to Start of Bus Lane/ Northbourne Road	0:21	0:12	0:59	0:16	0:11	0:28	0:17	0:12	0:29
Extent of Bus Lane									
Start of Bus Lane/ Northbourne Road to Bus Stop (Bedford Road)	0:04	0:02	0:07	0:07	0:02	0:58	0:09	0:02	0:41
Between the Bus Lane and Clapham Park Road/ Bedford Road Junction									
Bus Stop (Bedford Road) to Clapham Park Road/ Bedford Road Junction	0:32	0:06	1:21	0:40	0:10	1:36	0:53	0:08	1:47
Total Journey Time along the Link (includes delays)	0:57	0:27	2:23	1:02	0:27	1:55	1:20	0:41	2:02

3.27 The results in Table 3.3 indicate that the total journey time increases throughout the day with the quickest journey in the AM Peak to the longest in the PM Peak. The average journey time between the bus lane and Clapham Park Road/ Bedford Road junction is on average five times longer than the journey time along the length of the bus lane and approximately double the journey time to before the bus lane.

Table 3.4 – Average Car Delay Times (min:sec)

Link	AM Peak		Inter-Peak		PM Peak	
	<5km/h	<20km/h	<5km/h	<20km/h	<5km/h	<20km/h
Before the Bus Lane - Abbeville Road/ Park Road Junction to start of Bus Lane						
Clapham Park Road/ Abbeville Road/ Park Road Junction to Start of Bus Lane/ Northbourne Road	0:03	0:07	0:00	0:01	0:01	0:02
Extent of Bus Lane						
Start of Bus Lane/ Northbourne Road to Bus Stop (Bedford Road)	0:00	0:01	0:04	0:04	0:04	0:07
Between the Bus Lane and Clapham Park Road/ Bedford Road Junction						
Bus Stop (Bedford Road) to Clapham Park Road/ Bedford Road Junction	0:19	0:26	0:28	0:34	0:40	0:47
Total Delay from Abbeville Road/ Park Road to Clapham Park Road/ Bedford Road junction	0:22	0:34	0:31	0:39	0:45	0:56

3.28 Table 3.4 shows the average time which the vehicle spent stopped (travelling below 5km/h) or delayed in congested traffic (travelling below 20km/h). The results indicate that the greatest delays occur between the bus lane and Clapham Park Road/ Bedford Road junction. This concurs with the journey time results discussed in paragraphs 3.25 and 3.27.

Bus Journey Time Surveys

3.29 Bus journey time surveys were conducted on Tuesday 5th December 2006 between 7am and 7pm. As insufficient data was collected for the bus journey time surveys a number of subsequent surveys were taken on Wednesday 6th December 2006. Key locations which were recorded during the surveys included:

- ◆ Clapham Park Road/ Abbeville Road/ Park Road Junction;
- ◆ Northbourne Road Bus Stop;
- ◆ Start and end of the Bus Lane; and
- ◆ Clapham Park Road/ Bedford Road/ King's Avenue/ Acre Lane Junction.

3.30 A total of 11 runs were completed during the AM Peak and ten runs for each of the Inter-Peak and PM Peak time periods.

3.31 A summary of the bus travel times is shown in Table 3.5. Bus stop dwell times and time spent queuing at the junction approach are not included within the run time, but the junction delays are included in the total journey time.

Table 3.5 – Average Bus Run and Journey Times (min:sec)

Link	AM Peak			Inter-Peak			PM Peak		
	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max
Before the Bus Lane - Abbeville Road/ Park Road Junction to start of Bus Lane									
Clapham Park Road/ Abbeville Road/ Park Road Junction to Start of Bus Lane/ Northbourne Road	0:20	0:00	0:30	0:21	0:17	0:31	0:23	0:17	0:32
Extent of Bus Lane									
Start of Bus Lane/ Northbourne Road to Bus Stop (Bedford Road)	0:07	0:03	0:10	0:07	0:01	0:09	0:07	0:06	0:09
Between the Bus Lane and Clapham Park Road/ Bedford Road Junction									
Bus Stop (Bedford Road) to Clapham Park Road/ Bedford Road Junction	0:14	0:00	0:28	0:10	0:01	0:17	0:13	0:05	0:26
Total Run Time (excludes delays and dwell times)	0:42	0:27	0:55	0:39	0:31	0:46	0:43	0:33	1:01
Total Journey Time (includes delays but excludes dwell times)	0:59	0:27	2:17	1:06	0:41	2:22	1:04	0:48	1:56

3.32 The average total journey time indicates that the Inter-Peak and PM have similar journey times with the AM Peak being the quickest. The average journey time for the extent of the bus lane is consistent in all three periods at seven seconds.

Table 3.6 – Average Bus Stop Dwell Times or Junction Delays (min:sec)

Location	AM Peak			Inter-Peak			PM Peak		
	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max
Bus Stop (Bedford Road) Dwell Time	0:23	0:12	0:37	0:22	0:09	0:38	0:25	0:00	0:49
Clapham Park Road/ Acre Lane/ King's Avenue/ Bedford Road Junction Delay Time	0:17	0:00	1:34	0:27	0:00	1:44	0:22	0:00	0:55

3.33 From Table 3.6, the average dwell time at the bus stop is relatively consistent with an average of 22-25 seconds for all three periods, showing no undue impedance.

3.34 The average delay at the Clapham Park Road/ Bedford Road junction varies between 17 and 27 seconds, indicating a relatively good level of service, even if the queue occasionally extends some length.

Bus and Car Journey Time Survey Comparison

3.35 Table 3.7 below, shows the comparison between the bus and vehicle journey times. These figures include delays on the approach to the Clapham Park Road/ Acre Lane/ King's Avenue/ Bedford Road junction however, bus stop dwell times are not included in the bus journey times.

Table 3.7 – Bus and Car Journey Time Comparison (min:sec)

Link	AM Peak		Inter-Peak		PM Peak	
	Car	Bus	Car	Bus	Car	Bus
Before the Bus Lane - Abbeville Road/ Park Road Junction to start of Bus Lane						
Clapham Park Road/ Abbeville Road/ Park Road Junction to Start of Bus Lane/ Northbourne Road	0:21	0:20	0:16	0:21	0:17	0:23
Extent of Bus Lane						
Start of Bus Lane/ Northbourne Road to Bus Stop (Bedford Road)	0:04	0:07	0:07	0:07	0:09	0:07
Between the Bus Lane and Clapham Park Road/ Bedford Road Junction						
Bus Stop (Bedford Road) to Clapham Park Road/ Bedford Road Junction	0:32	0:14	0:40	0:10	0:53	0:13
Total Journey Time (includes delays but excludes dwell times)	0:57	0:59	1:02	1:06	1:20	1:04

- 3.36 It can be seen from the comparison that in the PM Peak the total car journey time is greater than the total bus journey time by 16 seconds. During the AM and Inter-Peaks, the total journey time is consistent for both bus and car, while the shortest journey time is in the AM Peak.
- 3.37 This indicates that the bus lane is markedly benefiting the buses, as it would be expected that buses travel slower than cars, owing to their deceleration and acceleration at bus stops.
- 3.38 There is a 40 second difference between the car and bus journey time in the PM Peak between the bus stop and Clapham Park Road/ Bedford Road junction. This may be attributed to vehicles attempting to merge from the straight ahead lane to enter the left turn lane and therefore causing delays to the straight ahead general traffic flows.
- 3.39 This may also cause some delays to buses however, since they are already in the lane, the delay is not as significant. The delay could also be attributed to right turning vehicles as there is no dedicated lane for this movement. However as no traffic counts were conducted the proportion of vehicles undertaking this movement is unknown.

WAITING AND LOADING SURVEY

- 3.40 A parking beat survey was undertaken for the full extent of the bus lane between 7am and 7pm on Tuesday 5th December 2006 to coincide with the other traffic surveys. This survey was undertaken by subcontractor Count-on-Us. Details of vehicles which were stopped within the bus lane were recorded at 15 minute intervals.
- 3.41 While there is no signage, there are double yellow lines and corresponding traverse linemarking along the kerb edge to indicate that there is 'No Waiting and No Loading At Any Time'. This is consistent with the traffic order for the extent of the bus lane.

- 3.42 There were a total of four vehicles recorded as stationary, two of the vehicles, both HGVs, were seen undertaking loading activities and two cars were waiting. All of the vehicles were stopped alongside a double yellow line and left within 15 minutes.
- 3.43 A summary of the results is shown in Table 3.8 below.

Table 3.8 – Results of Parking Beat Survey

Location	Restriction	Type	Class	Time	Length Of Stay
Start of Bus Lane Taper	Double Yellow	Loading	HGV	8am	Less Than 15 minutes
Start of Bus Lane Taper	Double Yellow	Waiting	Car	2:15pm	Less Than 15 minutes
End of Bus Lane Taper	Double Yellow	Loading	HGV	1pm	Less Than 15 minutes
Between access to flats and bus stop	Double Yellow	Waiting	Car	9:45am	Less Than 15 minutes

- 3.44 This survey was only able to record vehicles identified during each of the 15 minute beats. Other vehicles may have parked for short periods of time between beats which were not recorded however it shows violation of the bus lane.

QUEUE LENGTH SURVEY

- 3.45 A queue length survey was undertaken along Clapham Park Road on the eastbound approach to Bedford Road. This survey was undertaken by subcontractor Count-on-Us on Tuesday 5th December 2006 between 7am and 7pm. The results were divided into three peak periods as follows: AM Peak (7–10am), Inter-Peak (11am–3pm) and PM Peak (4–7pm).
- 3.46 The maximum queue length, initially measured in Passenger Car Units (PCUs), was recorded in five minute intervals over each of the two lanes on the approach to the junction. The average, minimum and maximum queue lengths for each of the lanes are shown in Table 3.9. It should be noted that one PCU is calculated to be approximately five metres long.

Table 3.9 – Queue Length on Eastbound Approach to Bedford Road (metres)

Lane ²	AM Peak (7am - 10am)			Inter Peak (11am - 3PM)			PM Peak (4pm - 7pm)		
	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max
Lane 1	40	10	100	43	10	85	52	15	80
Lane 2	70	10	230	44	10	165	91	10	205
Total	109	25	285	87	25	220	143	25	285

² Lane 1 is the kerb-side traffic lane and Lane 2 is next to the centreline on the road.

- 3.47 The end of the bus lane is approximately 60 metres from Clapham Park Road/ Bedford Road junction stop line. The bus stop is approximately 22 metres long and located towards the end of the bus lane. The start of the bus lane is approximately 100 metres from the Clapham Park Road/ Bedford Road junction.
- 3.48 Table 3.9 shows that the queue for the left turn and straight ahead lane (Lane 1), on average, does not extend the 60 metres to the bus lane during all three survey periods, although the maximum queue could extend into the bus lane during all three peak periods.
- 3.49 The maximum queue in the straight ahead lane (Lane 2) extended up to 230 metres, which is beyond the start of the bus lane at 100 metres. The average queues are greatest in the PM Peak at 91 metres. The maximum queue length indicates that buses may experience difficulties entering the bus lane. It was observed that the queue extended past the start of the bus lane seven times in the AM Peak, once in the Inter-Peak and 14 times in the PM Peak.

OCCUPANCY RATES SURVEY

- 3.50 Occupancy survey data of vehicles legally using the bus lane was collected along Clapham Park Road on the eastbound approach to Bedford Road. This survey was undertaken by subcontractor Count-on-U's on Tuesday 5th December 2006 between 7am and 7pm. The results were divided into three peak periods as follows: AM Peak (7–10am), Inter-Peak (11am–3pm) and PM Peak (4–7pm).
- 3.51 The survey was divided into the number of taxis, 9+ passenger people carriers (excluding London Buses) and pedal cycles. This was to identify the number of vehicles and proportion of different types of vehicles utilising the bus lane. The survey was undertaken at the end of the bus lane on the approach to Bedford Road.
- 3.52 A summary of the results is shown in Table 3.10. The results indicate that the highest occupancy rate occurred in the PM peak, mostly due to the presence of people carriers. Furthermore, the bus lane is well used by cyclists, but not by taxis.

Table 3.10 – Occupancy of Vehicles Legally Using Clapham Park Road Eastbound Bus Lane

		Taxi			People Carriers			Cycles		
		Total Veh	Total Pass	Ave Pass / Veh	Total Veh	Total Pass	Ave Pass / Veh	Total Veh	Total Pass	Ave Pass / Veh
AM Peak	Total	1	1	1	2	9	4.5	96	96	1
	Hr Ave	0.3	0.3	1	0.7	3	4.5	32	32	1
Inter Peak	Total	6	10	1.7	3	3	1	33	33	1
	Hr Ave	1.5	2.5	1.7	0.8	0.8	1	8.3	8.3	1
PM Peak	Total	9	15	1.7	6	59	9.8	90	90	1
	Hr Ave	3	5	1.7	2	19.7	9.8	30	30	1

4. Conclusions and Recommendations

CONCLUSIONS

- 4.1 The existing bus lane markings terminate three metres short of that defined in the TMO however, the bus lane is still enforceable. There is red surfacing and a faintly visible solid linemarking which extends for 4.3 metres beyond the existing bus lane marking. There is also a section of red surfacing that is missing in the middle of the bus lane.
- 4.2 There is an advance bus lane warning sign and a bus lane sign at the start of the bus lane advising drivers of the bus lane operational times. There are however, no repeater signs along the bus lane, although due to the short length of the bus lane this is not deemed necessary. An 'End of Bus Lane' sign terminates the bus lane.
- 4.3 There have been a high number of PCNs which have been issued within the 12 month period up to September 2006, although the overall number decreased significantly in the last four months. On average, six PCNs were issued per day. The limited amount of signage in this area may contribute to the violations.
- 4.4 Waiting and loading restrictions are enforced by a CCTV camera however, there is limited on-site signage to confirm the Traffic Orders. There is only one sign after the bus lane that states that waiting and loading is prohibited in this area at all times. Although signage may not be required owing to the presence of double yellow lines, the high number of PCNs indicate that increased signage may aid to reinforce the restrictions. There are also a number of inconsistencies with regards to the waiting and loading signage and linemarking on the westbound kerbside that should be amended.
- 4.5 Accident data was provided by TfL for the three year period up to August 2006. In that time, no accidents occurred within the bus lane itself, and only two took place along the eastbound general traffic lane of Clapham Park Road (outside of bus lane operating hours). A further three accidents occurred along Clapham Park Road within the vicinity of the bus lane (westbound). There is no evidence to suggest that the bus lane contributed to any of these accidents.
- 4.6 The high volume of cyclists, up to 96 in the AM Peak and 90 in the PM Peak, which use the bus lane benefit from not having to negotiate the general traffic and should continue to be protected within the bus lane. This is also reflected by the low accident rate for cyclists being 3.4%.
- 4.7 The length of the bus lane enables buses and other permitted vehicles to access the bus lane and to bypass the queues on the approach to Bedford Road. Although at times the queues extend past the entrance to the bus lane, this occurs randomly throughout the peaks with the longest queues in the PM Peak, and does not appear to have a significant impact on the bus lane.
- 4.8 Bus journey times along the bus lane are consistent compared to vehicle journey times. This indicates that the bus lane markedly benefits the buses, as they generally

are expected to travel slower than cars, owing to their deceleration and acceleration at the bus stop.

- 4.9 The setback of the bus lane of 60 metres, from the junction stop line, adequately caters for the existing average queue length for left turning and straight ahead movements during the majority of the day.
- 4.10 Finally, it is concluded that the length and hours of operation of the bus lane is effective and benefits passengers, particularly local residents making shorter trips during the day and therefore, the bus lane should be retained and enhanced by the following recommendations which would also benefit general traffic.

RECOMMENDATIONS

- 4.11 It is recommended that signage and linemarking be improved generally along Clapham Park Road within the scheme extents to ensure consistency with TMOs for waiting and loading.
- 4.12 Although the bus lane is currently enforceable, it is recommended that the faded solid linemarkings at the end of the bus lane be permanently removed by sandblasting and the additional 1.3 metres of red surface dressing be removed. This will eliminate any confusion at the end of the bus lane.
- 4.13 It is recommended that the inconsistencies identified in the TMOs should be amended to remove the overlap in waiting and loading restrictions which have different operational hours to the bus lane.
- 4.14 The TMOs on the westbound lane should also be modified to coincide with the existing signage and linemarking and remove overlapping areas.
- 4.15 To improve capacity through the junction and alleviate queuing, a junction review is recommended. A number of elements should be included in the review such as the operation of the signals, street lighting and skid resistance. These will address the key factors of accidents which were higher than the average within the borough of Lambeth.
- 4.16 It is also suggested that other recommendations regarding the accident findings contained in Appendix C should be progressed, although they do not directly impact on the bus lane.

APPENDICES

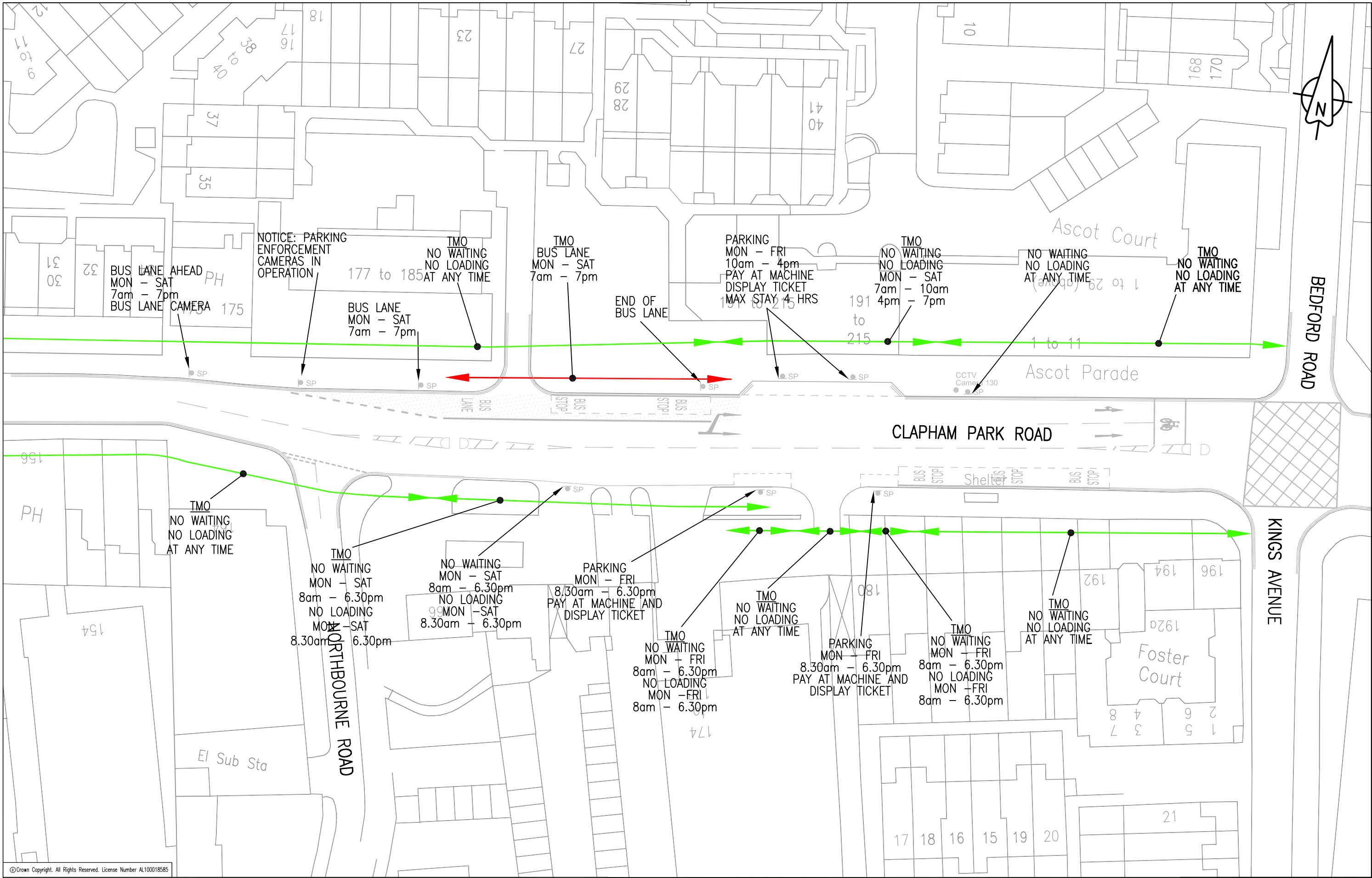
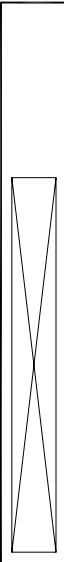
Appendix A

Existing Layout and TMOs along Clapham Park Road Eastbound Bus Lane (Northbourne Road to Bedford Road)

◆ **Drawing No. 4411274/514/001**

DO NOT SCALE

A3



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	EXISTING		BUS LANE TMO
	WAITING AND LOADING TMO		SP SIGN POLE
	SIGN PANEL		APPROXIMATE LOCATION OF CCTV CAMERA
	EXISTING SURFACE DRESSING		

A UPDATED LAYOUT MARKINGS		AA 05.07 SAH ST	
Rev	Description	By	Date Cnk'd Auth

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Client	LBPN - LB LAMBETH
Project	LBPN BUS LANE REVIEW

Title		EXISTING LAYOUT AND TMOs CLAPHAM PARK ROAD BUS LANE			
Original Scale	1:500	Designed/Drawn	Checked	Authorised	
Status	P	Date	28/11/06	Date	02/03/07
Drawing Number	4411274/514/001	Rev			
					A

Appendix B

Description of TMOs along Clapham Park Road (Northbourne Road to Bedford Road)

Table B.1 – Bus Lane Traffic Orders along Eastbound Clapham Park Road

From	To	Effective Date	TRO Type	Hours	Note
25m east of eastern wall of No173/175	Opposite No's 2 & 3 Ascot Parade	24 Jul 00	Permanent	Mon-Fri 7-10am, 4-7pm	
25m east of eastern wall of No173/175	Opposite No's 2 & 3 Ascot Parade	21 Apr 03	Permanent	Mon-Fri 7-10am, 4-7pm	TMO replaced
28m east of eastern boundary wall of No's 173/175	3m west of the boundary between 191-215 Clapham Park Road and No's 1-11 Ascot Parade	28 Apr 03	Experimental	Mon-Sat 7am-7pm	Bus Lane extended either ends, hours changed.
28m east of eastern boundary wall of No's 173/175	3m west of the boundary between 191-215 Clapham Park Road and No's 1-11 Ascot Parade	23 Jun 04	Permanent	Mon-Sat 7am-7pm	Changes Made permanent
28m east of eastern boundary wall of No's 173/175	24m west of the boundary between 191-215 Clapham Park Road and No's 1-11 Ascot Parade	19 Sep 05	Permanent	Mon-Sat 7am-7pm	TMO replaced, Bus Lane reduced

Table B.2 – Waiting TMOs along Clapham Park Road

From	To	Ref	Hours
Eastbound Lanes			
A point 3.5 metres north-west of the party wall of No's 13 and 15 Clapham Park Road	A point 26 metres west of a point opposite the party wall of No's 191-215 Clapham Park Road and No's 1-11 Ascot Parade	2005/41 (1) / 2005/56 (3), Item 221 (a) (i)	No Waiting, At Any Time
A point 26 metres west of a point opposite the party wall of No's 191-215 Clapham Park Road and No's 1-11 Ascot Parade	A point 45 metres west of the western kerb-line of Bedford Road	2005/41 (1) / 2005/56 (3), Item 221 (a) (ii)	No Waiting, Mon–Sat, 7–10am, 4–7pm
The western kerb-line of Bradford Road	A point 45 metres west of the western kerb-line of Bedford Road	2005/41 (1) / 2005/56 (3), Item 221 (a) (iii)	No Waiting, At Any Time
Westbound Lanes			
A point 11 metres north-west of the north-western kerb-line of the vehicular entrance to Abbeville Mews, Clapham Park Road	A point 13 metres east of the eastern kerb-line of Northbourne Road	2005/41 (1) / 2005/56 (3), Item 221 (b) (iii)	No Waiting, At Any Time
A point 13 metres east of the eastern kerb-line of Northbourne Road	A point 62 metres east of the eastern kerb-line of Northbourne Road	2005/41 (1) / 2005/56 (3), Item 221 (b) (iv)	No Waiting, Mon–Sat, 8am–6:30pm
A point 23 metres west of the common boundary of No's 180 and 182 Clapham Park Road	A point 13 metres west of the common boundary of No's 180 and 182 Clapham Park Road	2005/41 (1) / 2005/56 (3), Item 221 (b) (v)	No Waiting, Mon–Fri, 8am–6:30pm
A point 13 metres west of the common boundary of No's 180 and 182 Clapham Park Road	A point 3 metres west of the common boundary of No's 180 and 182 Clapham Park Road	2005/41 (1) / 2005/56 (3), Item 221 (b) (vi)	No Waiting, At Any Time
A point 3 metres west of the common boundary of No's 180 and 182 Clapham Park Road	A point 3 metres east of the common boundary of No's 180 and 182 Clapham Park Road	2005/41 (1) / 2005/56 (3), Item 221 (b) (vii)	No Waiting, Mon–Fri, 8am–6:30pm
A point 3 metres east of the common boundary of No's 180 and 182 Clapham Park Road	Western kerb-line of Kings Avenue	2005/41 (1) / 2005/56 (3), Item 221 (b) (viii)	No Waiting, At Any Time

Table B.3 – Loading TMOs along Clapham Park Road

From	To	Ref	Hours
Eastbound Lanes			
A point 3.5 metres north-west of the party wall of No's 13 and 15 Clapham Park Road	A point 26 metres west of a point opposite the party wall of No's 191-215 Clapham Park Road and No's 1-11 Ascot Parade	2005/41 (1) / 2005/56 (3), Item 221 (a) (i)	No Loading, At Any Time
A point 26 metres west of a point opposite the party wall of No's 191 - 215 Clapham Park Road and No's 1-11 Ascot Parade	A point 45 metres west of the western kerb-line of Bedford Road	2005/41 (1) / 2005/56 (3), Item 221 (a) (ii)	No Loading, Mon–Sat, 7–10am, 4–7pm
The western kerb-line of Bradford Road	A point 45 metres west of the western kerb-line of Bedford Road	2005/41 (1) / 2005/56 (3), Item 221 (a) (iii)	No Loading, At Any Time
Westbound Lanes			
A point 11 metres north-west of the north-western kerb-line of the vehicular entrance to Abbeville Mews, Clapham Park Road	A point 13 metres east of the eastern kerb-line of Northbourne Road	2005/41 (1) / 2005/56 (3), Item 221 (b) (iii)	No Loading, At Any Time
A point 13 metres east of the eastern kerb-line of Northbourne Road	A point 62 metres east of the eastern kerb-line of Northbourne Road	2005/41 (1) / 2005/56 (3), Item 221 (b) (iv)	No Loading, Mon–Sat, 8am–6:30pm
A point 23 metres west of the common boundary of No's 180 and 182 Clapham Park Road	A point 13 metres west of the common boundary of No's 180 and 182 Clapham Park Road	2005/41 (1) / 2005/56 (3), Item 221 (b) (v)	No Loading, Mon–Fri, 8:30am–6:30pm
A point 13 metres west of the common boundary of No's 180 and 182 Clapham Park Road	A point 3 metres west of the common boundary of No's 180 and 182 Clapham Park Road	2005/41 (1) / 2005/56 (3), Item 221 (b) (vi)	No Loading, At Any Time
A point 3 metres west of the common boundary of No's 180 and 182 Clapham Park Road	A point 3 metres east of the common boundary of No's 180 and 182 Clapham Park Road	2005/41 (1) / 2005/56 (3), Item 221 (b) (vii)	No Loading, Mon–Fri, 8:30am–6:30pm
A point 3 metres east of the common boundary of No's 180 and 182 Clapham Park Road	Western kerb-line of Kings Avenue	2005/41 (1) / 2005/56 (3), Item 221 (b) (viii)	No Loading, At Any Time

Appendix C

Accident Analysis

Between September 2003 and August 2006 there were a total of 23 accidents at the junction of Clapham Park Road/ King's Avenue/ Bedford Road/ Acre Lane. A breakdown of the key details is shown in Table C.1. Five accidents also occurred along Clapham Park Road between Northbourne Road and Bedford Road, including the junction of Northbourne Road which have been summarised in Table C.2 and described in detail within Section 3 of the report.

Table C.1 – Accident Summary of Clapham Park Road/ King's Avenue/ Bedford Road/ Acre Lane Junction (Node 166)

Description	No. and Severity of Accidents
Rear end shunt	4 Slight, 3 KSI
Side swiped	1 Slight
Swerve to avoid an accident	1 Slight
Head on Collision	2 Slight
Pedestrian crossing in front of vehicle	4 Slight
Passenger fell on bus	1 Slight
Changing lanes	3 Slight
Reversing manoeuvre	2 Slight
Right Turn	1 Slight
Left turn	1 Slight
TOTAL	20 Slight, 3 KSI

Table C.2 – Accident Summary of Clapham Park Road, between Northbourne Road and King's Avenue/ Bedford Road/ Acre Lane (Link 164 to 166)

Description	No. and Severity of Accidents
Nose to tail shunt	1 Slight
Passenger fell in bus	1 Slight
Side swipe same direction	1 Slight
Intoxicated driver	1 Slight
Pedestrian crossing in front of vehicle	1 Slight
TOTAL	5 Slight

Collision categories on the corridor that are significantly higher than the Strategic Road Network (SRN) within Lambeth are highlighted in bold type in Table C.3. The following subsections are based on this analysis, in addition to further analysis of Clapham Park Road. Due to the small numbers of accidents along the link, closer analysis of the nature of individual accidents is required when comparing percentages along the SRN.

Table C.3 – Accident Analysis Comparison along Clapham Park Road and its Junction with Kings Avenue¹

Collision Category	No. of Accidents at Node/ Link		Comparative Collision Rate (%)		
	Along Clapham Park Road	King's Avenue Junction	Along Clapham Park Road	King's Avenue Junction	SRN Lambeth ²
Killed or Seriously Injured (KSI)	-	3	-	13.0	14.6
Dark	2	6	40.0	26.1	29.7
Non-dry	-	5	-	21.7	11.5
Pedestrian	1	3	20.0	13.0	22.3
Bus or Coach	1	3	20.0	13.0	10.4
Powered 2 wheeled vehicles	1	3	20.0	13.0	31.2
Pedal cycle	-	2	-	8.7	12.2
Right turning	-	1	-	4.3	22.1

¹ TfL Collision categories on the corridor that are significantly higher than the SRN within LB Lambeth are highlighted in bold type

² Data source: Table 2.1.10, Levels of Accident Risk in Greater London 2004 (Issue 10), TfL

ANALYSIS OF ACCIDENTS

Accidents Occurring During the Hours of Darkness

Two of the five accidents (40%) occurring along Clapham Park Road, took place during hours of darkness. Although the proportion of these accidents is higher than the SRN average of 29.7% this is due to the low total number of accidents along this link.

Accidents Occurring During Wet Carriageway Conditions

There were 21.7% of the accidents at junction of Clapham Park Road/ King's Avenue during wet carriageway conditions. This is nearly twice the average percentage of 11.5% for non-dry accidents within LB Lambeth.

Accidents Involving a Bus

Four of the 29 accidents that occurred within the study area involved a bus. The percentage of accidents involving a bus within an inner London borough is 10.4%. The proportion of this type of accident occurring on Clapham Park Road is higher at 20.0% however this may be attributed to the low total number of accidents along this link. The proportion of accidents of this type occurring at the junction (13.0%) is still marginally above the SRN average.

Three of the four accidents which involved a bus, were the result of a bus braking suddenly, causing a passenger to fall. No further trends were identified between the accidents involving a bus.

It is not suggested that any accidents involving a bus occurred within the bus lane.

CONCLUSIONS AND RECOMMENDATIONS FROM THE ACCIDENT ANALYSIS

The accident analysis identified a number of key areas of concern however these do not directly relate to the bus lane operation and management. These include:

- ◆ A possible lighting assessment along Clapham Park Road, within the scheme extents, due to the high percentage of accidents reported during the hours of darkness;
- ◆ A Sideways Coefficient Routine Inspection Machine (SCRIM) test is recommended at the junction of King's Avenue as a result of the five accidents that occurred here during wet carriageway conditions. Should SCRIM values fall below the investigatory level, carriageway maintenance works should be undertaken; and
- ◆ Possible assessment of the conspicuity of signals, signal timings, signal phases, and existing anti-skid surface dressing at the junction, in order to address the number of accidents involving sudden braking causing rear end shunts and passengers falling on buses. In addition, sudden braking may be discussed with bus operators in order to highlight this issue.

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