

South Bristol Link Data Collection Report

April 2013



Notice

This document and its contents have been prepared and are intended solely for North Somerset's information and use in relation to South Bristol Link Planning Application.
ATKINS Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

Document history

Job number: 5103087			Document ref: HAM LMVR			
Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
Rev 1.0	Internal review	GB	GB	JH	JH	14/12/12
Rev 1.1	Final	HB	GB	GB	JH	30/04/13

Table of contents

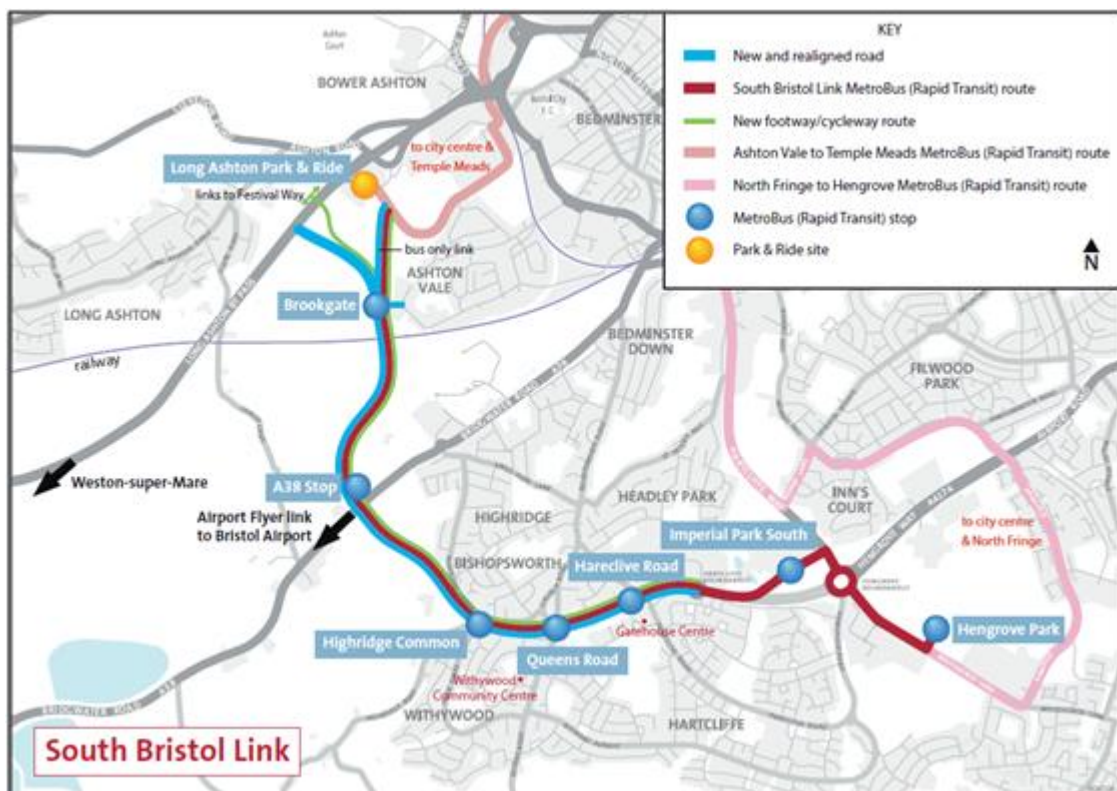
Chapter	pages
1. Introduction	3
Background	3
Scope and Contents of this Report	3
2. Road Side Interview Surveys	5
Introduction	5
Sample Rates and Distribution	7
3. Journey Time Surveys	12
4. Traffic Counts	14
Appendix	
A. Road Side Interview Data	22
B. Journey Time Data	27
C. Traffic Count Data	49

1. Introduction

Background

- 1.1. Bristol City Council and North Somerset Council in partnership are delivering the South Bristol Link (SBL), a major transport scheme to address current and future transport problems in the south Bristol area.
- 1.2. The proposed development comprises the construction of a section of highway 4.5 kilometres in length from the A370 Long Ashton bypass within North Somerset to the Hartcliffe (Cater Road) Roundabout within the Bishopsworth area of South Bristol. This incorporates the minor realignment of sections of existing highway at Highridge Green, King George's Road and Whitchurch Lane. The entire route is to be classed as an Urban All-Purpose Road (UAP) in accordance with TA 79/99.
- 1.3. The route includes the construction of new junctions with the A370, Brookgate Road, A38, Highridge Road, Queens Road and Hareclive Road. New bridges will be constructed to cross Ashton Brook, Colliter's Brook and to pass under the Bristol to Taunton Railway Line. The route corridor will incorporate a bus-only link to connect with the Ashton Vale to Temple Meads (AVTM) spur into the Long Ashton Park and Ride site, and dedicated bus lanes between the railway and the new A38 roundabout junction. New bus stops and shelters, and a continuous shared cycleway and footway will be provided along the route corridor. Associated proposals include drainage facilities, landscaping and planting.
- 1.4. The route will form part of the West of England rapid transit network (Metro Bus) and will be used by buses and other motorised vehicles. The route will link with the AVTM at the Long Ashton Park and Ride site, and within the South Bristol section, once buses have reached the Hartcliffe Roundabout, services will follow existing roads via Hengrove Way to Imperial Park and onwards to Whitchurch Lane and Hengrove Park.

Figure 1-1 – South Bristol Link



Scope and Contents of this Report

- 1.5. Network data, such as journey time surveys, are required to build a representative network structure and travel data, in particular Road Side Interview data and volume data, is required to build the demand matrices. The purpose of this report is to describe the above listed surveys and analysis of the data collected.

- 1.6. Following this Introduction, the remainder of the report is structured as follows:
- Chapter 1 provides the details of the Road Side Interview data collected in 2012 specifically for the scheme;
 - Chapter 2 provides the details of existing Road Side Interview survey data which ATKINS has access to due to the involvement with GBMF;
 - Chapter 3 deals with the TomTom journey time data and additional Journey Time surveys collected for verification; and
 - Chapter 4 presents the details of the various types of traffic count data collected for the study.
- 1.7. The appendices provided at the end portray the relevant details of the surveys mentioned in this report.

2. Road Side Interview Surveys

Introduction

- 2.1. Road side interviews (RSI) provide the main source of highway demand. The interview typically provides information relating to:
- Vehicle type;
 - Time of travel;
 - Origin and Destination; and
 - Purpose of trip.
- 2.2. For this study, 5 RSI Surveys were conducted for the development of the highway matrices. They were located in the immediate area around the proposed scheme and filled any gaps left by existing data. RSI locations are described in Table 1 and presented in Figure 1.

Figure 1. RSI Survey Locations

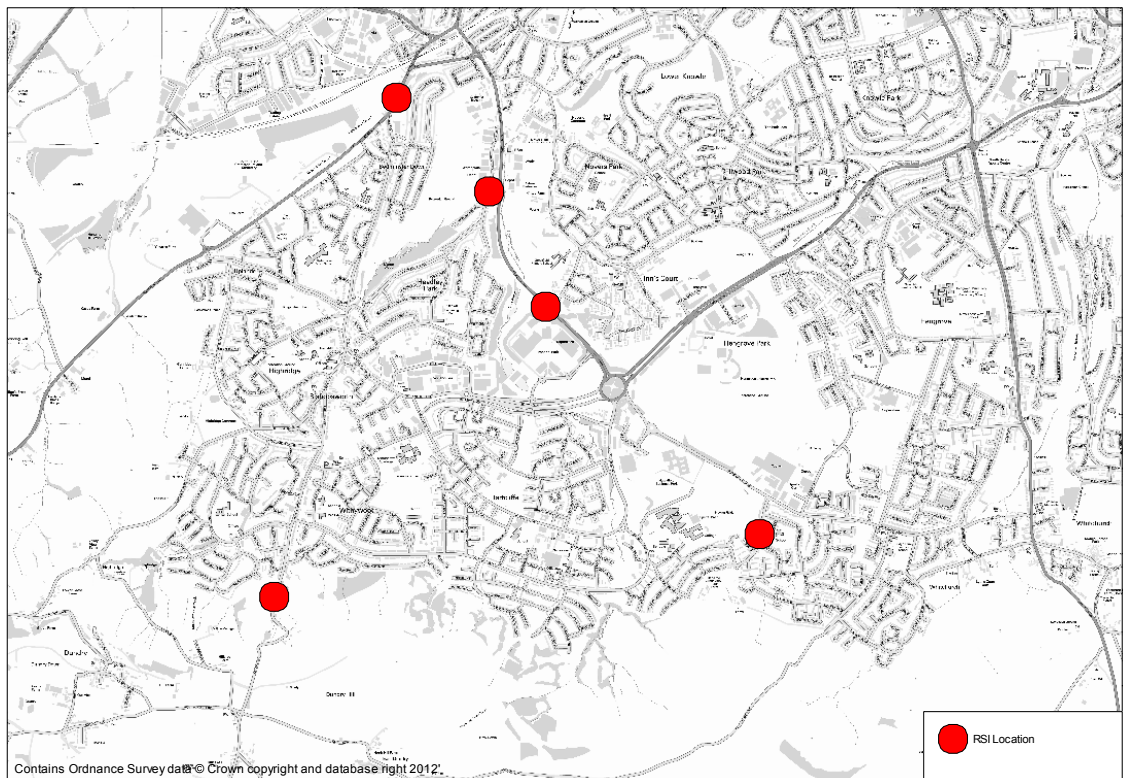


Table 1. RSI Survey Description

Site Ref	Road No	Road Name	Interview Direction	Date of Survey
Site 1	A38	Bedminster Down Road	Northbound	13/03/2012
Site 2	Unclassified	Headley Lane	Northbound	13/03/2012
Site 3a	A4174	Hartcliffe Way	North-westbound	14/03/2012
Site 6	Unclassified	Longway Avenue	Southbound	14/03/2012
Site 7	Unclassified	Queen's Road	Northbound	14/03/2012

- 2.3. The surveys were undertaken by Intelligent Data Collection (IDC) for twelve hours between 07:00 to 19:00 hours, to cover morning, inter-peak and evening peak periods. The survey questionnaire recorded information like vehicle type, vehicle occupancy, origin and destination of the trip, purpose of the trip. A copy of survey questionnaire is shown in Figure 2. In the event of it being

impractical to question the drivers postcards were issued for self completion and return, the postcard form is shown in Figure 3.

Figure 2. RSI Survey Form

INTERVIEWER:		SERIAL NUMBER		CODED BY		STATION NUMBER		DATE		TIME PERIOD START									
1		2		3		4		5		6									
VEHICLE TYPE	NO. OCC	WOULD YOU PLEASE TELL ME THE EXACT ADDRESS YOU HAVE JUST COME FROM? (YOUR LAST STOP PLEASE)				REASON FOR BEING THERE?	AND THE EXACT ADDRESS YOU ARE GOING TO NOW? (YOUR NEXT STOP PLEASE)				REASON FOR GOING THERE?	HOW OFTEN DO YOU MAKE THIS TRIP?							
1 Car/Taxi	1	1 Firm or	2	3	1 Home	Firm or	1 Home	1 Home	1 Daily										
2 Wheel MC	2	9 House Name	2	9	2 Hol Home	House Name	2 Hol Home	2 Hol Home	2 Weekly										
3 Light Goods	3	10 Number & Street	3	10	3 Work	Number & Street	3 Work	3 Work	3 Monthly										
4 HGV (2 Axle)	4	11	4	11	4 Empl Bus		4 Empl Bus	4 Empl Bus	4 Yearly										
5 HGV (3 Axle)	5	12 Town	5	12	5 Education	Town	5 Education	5 Education	5 Other 41										
6 HGV (4 Axle+)	6	13	6	13	6 Shopping		6 Shopping	6 Shopping											
7 Other :	7	14+ County	7	14+	7 Pes Bus	County	7 Pes Bus	7 Pes Bus											
		Postcode			8 Visit Friends		8 Visit Friends	8 Visit Friends											
					9 Rec/Leisure	Postcode	9 Rec/Leisure	9 Rec/Leisure											
					10 Other		10 Other	10 Other											
	19			23					31			32							40

Figure 3. RSI Postcard Survey Form

Information regarding survey

Time Starting (Office use only)	WHAT TYPE OF VEHICLE ARE YOU DRIVING?	NO. of OCCUPANTS in CAR (including driver)	PLEASE PROVIDE FULL ADDRESS YOU HAVE JUST COME FROM (incl. Postcode) (LAST STOP ON JOURNEY)	REASON FOR BEING THERE?	Site No.
07:00	1: CAR/TAXI	1	FIRM/HOUSE	1: HOME	
07:30	2: MOTORCYCLE	2	NAME, NO. & STREET	2: HOLIDAY HOME	
08:00	3: LIGHT GOODS VEHICLE	3	TOWN	3: WORK	
08:30	4: HGV (2 AXLE)	4	COUNTY	4: EMPLOYERS BUSINESS	
09:00	5: HGV (3 AXLE)	5	POSTCODE	5: EDUCATION	
09:30	6: HGV (4 + AXLE)	6		6: SHOPPING	
10:00	7: BUS/COACH	7		7: PERSONAL BUSINESS	
10:30	8: OTHER (PLEASE STATE)	8		8: VISIT FRIENDS	
11:00		9		9: RECREATION/ LEISURE	
11:30		10		10: OTHER (PLEASE STATE)	
12:00		11			
12:30		12+			
13:00					
13:30					
14:00	HOW OFTEN DO YOU MAKE THIS TRIP?		PLEASE PROVIDE FULL ADDRESS YOU ARE GOING TO (incl. Postcode) (NEXT STOP ON JOURNEY)	REASON FOR GOING THERE?	
14:30	1: DAILY		FIRM/HOUSE	1: HOME	
15:00	2: WEEKLY		NAME, NO. & STREET	2: HOLIDAY HOME	
15:30	3: MONTHLY		TOWN	3: WORK	
16:00	4: YEARLY		COUNTY	4: EMPLOYERS BUSINESS	
16:30	5: OTHER (PLEASE STATE)		POSTCODE	5: EDUCATION	
17:00				6: SHOPPING	
17:30				7: PERSONAL BUSINESS	
18:00				8: VISIT FRIENDS	
18:30				9: RECREATION/ LEISURE	
				10: OTHER (PLEASE STATE)	

- 2.4. At the same time as the survey a Manual Classified Count (MCC) was performed and Automatic Traffic Counts were collected for 2 weeks surrounding the survey day to help to eliminate any survey day variations.
- 2.5. The data for each site was geocoded and checked to ensure that the record was complete (or at the very least time, vehicle type, trip purpose, origin and destination were infilled), to see if the movement was logical through the RSI site, if the locations with a high number of origins or destinations were a high attractor or if there was a postcode to OSGR mismatch.

- 2.6. Records were discarded if:
- the record was missing any of time, vehicle type, trip purpose, origin or destination and hence was unable to be rectified;
 - origin and destination were stated as the same; or
 - both origin and destination purpose were stated as "home".
- 2.7. For site 1 there were no reported incidents with collection at this site and on receipt of the data only one record was discarded.
- 2.8. For site 2 again there were no reported incidents when collecting the data and all records were suitable for the development of the matrices.
- 2.9. For site 3a again there were no reported incidents with data collection, and this time only 18 records were discarded.
- 2.10. The original survey specification for site 6 stated that the survey would be conducted in the northbound direction but on day of the survey extensive parking (despite letters being issued warning that the survey would be taking place) meant that the survey was carried out in the southbound direction. Any ATC and MCC data received for this site was carried out in both directions. In total 10 records were discarded at this site.
- 2.11. On the survey day site 7 was moved to the north of Bearbridge Road under police instruction due to a limited holding area for vehicles. The ATC was moved on the survey day to capture the change of location. Analysis of the data on either side of the junction showed very little variation suggesting that this junction is minor and would not impact on the flows crossing the cordon.

Sample Rates and Distribution

- 2.12. The sample rates by time period and by vehicle type are provided in Table 2 Sample Rates.
- 2.13. Appendix A gives the distribution of the road side interviews (for each peak time period) carried out at each site at a 12 sector level. Figure 4 below shows the 12 sector detail.

Figure 4. 12 Sector Map

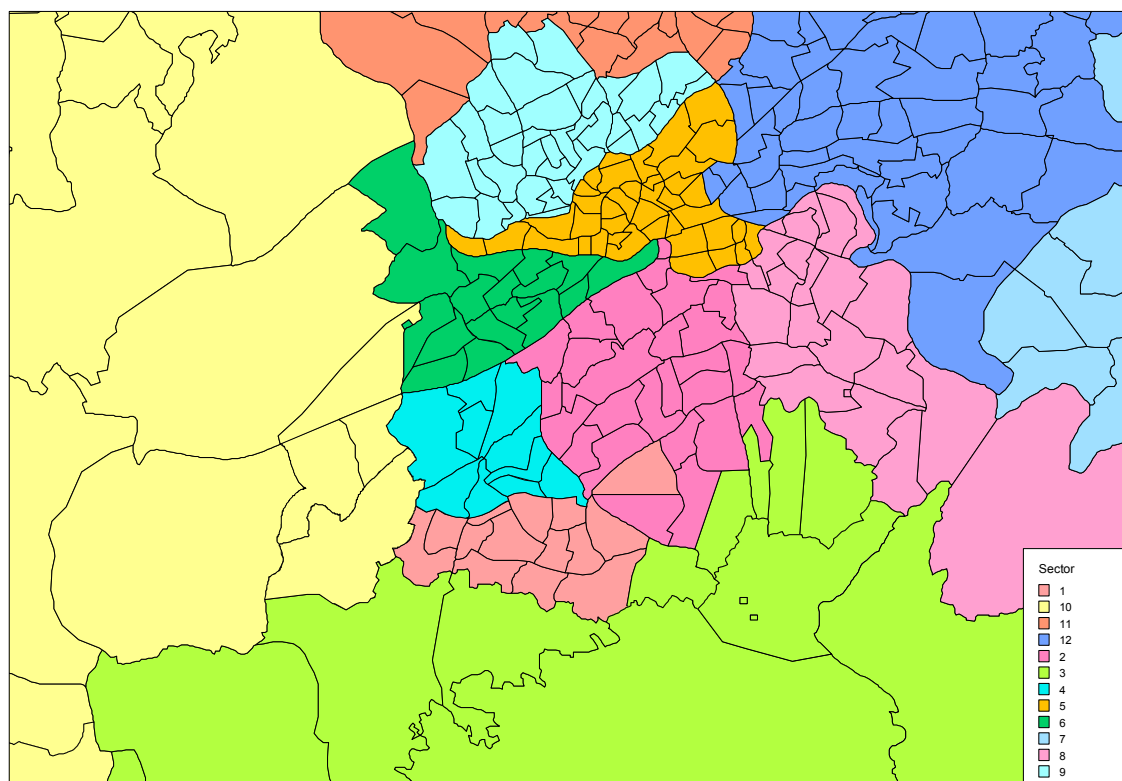


Table 2. RSI Sample Rates

Site	Location	AM	IP	PM
------	----------	----	----	----

		Car	LGV	HGV	Car	LGV	HGV	Car	LGV	HGV
1	Bedminster Down Rd	10%	6%	6%	12%	10%	4%	12%	7%	2%
2	Headley Lane	24%	8%	0%	44%	22%	13%	47%	23%	0%
3a	Hartcliffe Way	18%	12%	2%	17%	6%	2%	13%	4%	0%
6	Longway Avenue	53%	33%	33%	58%	49%	57%	64%	46%	0%
7	Queens Road	20%	15%	0%	31%	28%	0%	37%	21%	0%

3. Existing Road Side Interview Surveys

Introduction

- 3.1. Road side interviews existed from previous models and were re-used in this model update. The existing data consisted of:
- 7 2001 RSIs;
 - 2 2006 RSIs; and
 - 4 2009 RSIs.
- 3.2. In total, existing RSI data from 13 locations were used for this study. RSI locations are described in Table 3 and presented in Figure 5.

Figure 5. Existing RSI Survey Locations

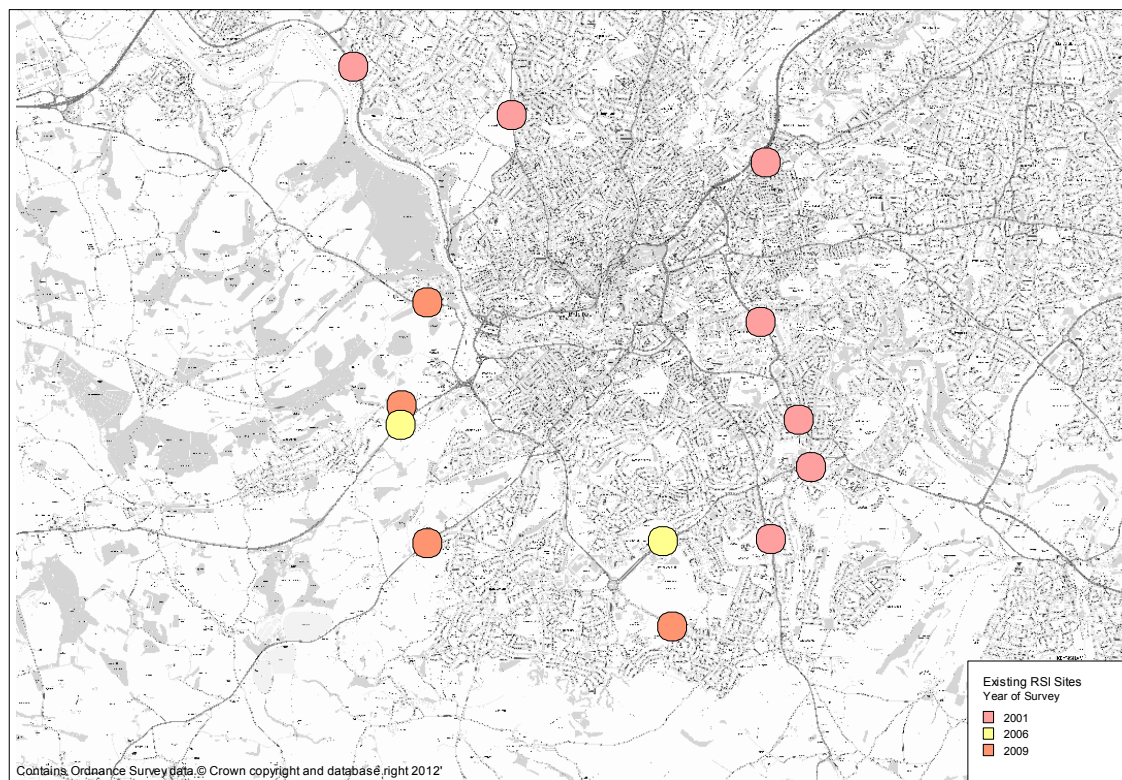



Table 3. Existing RSI Survey Description

Site Ref	Road No	Road Name	Interview Direction	Date of Survey
Site 14	Unclassified	Whitchurch Lane	Westbound	27/07/2009
Site 12	A38	Bridgwater Road	Southbound	04/07/2009
Site 29	B3128	Ashton Road	Eastbound	05/11/2009
Site 27	A369	Abbots Leigh Road	Eastbound	04/11/2009
Site 13	A4174	Hengrove Way	Southbound	28/07/2006
Site 6	A370	Long Ashton By-pass	Northbound	11/07/2006
Site 14	A4	Portway	Southbound	19/06/2001
Site 18	A4018	Westbury Road	Southbound	03/07/2001
Site 19	A432	Stapleton Road	Southbound	03/07/2001
Site 17	A4320	St Phillips Causeway	Northbound	28/06/2001
Site 27	A4	Bath Road	Northbound	17/07/2001

Site 21	A4174	Callington Road	Westbound	05/07/2001
Site 23	A37	Wells Road	Northbound	10/07/2001

- 3.3. The surveys were undertaken for twelve hours between 07:00 to 19:00 hours, the exceptions to this are Site 6 Long Ashton Bypass and Site 14 Whitchurch Lane where the surveys started later at 07:30. The survey form used for the 2012 RSIs was very similar to that used for the existing sites in order that all data sets could be compared and used. The survey form used for these older datasets is shown in Figure 6.

Figure 6. Old RSI Survey Form



Site	Date	Time Starting	Serial	Interviewer	Coded by
1 <input type="checkbox"/>	2 <input type="checkbox"/>	8 <input type="checkbox"/>	12 <input type="checkbox"/>		

Vehicle Type	Vehicle Occupancy	Vehicle Age	Origin	Origin Purpose	Destination	Destination Purpose	Frequency	Parking	Parking Location	Household Income
Car 1				Home 1		Home 1	Daily 1	On-street (free) 1		Less than £17,500 1
LGV 2				Work 2		Work 2	1-4 times 2	On-street (pay) 2		Between £17,500 and £35,000 2
OGV(1) 3				Emp Bus 3		Emp Bus 3	per week 3	Public Car Park 3		Greater than £35,000 3
OGV(2) 4				Shop 4		Shop 4	1-4 times 4	Private (free) 4		Greater than £35,000 2
				Education 4		Education 5	per month 3	Private (pay) 5		Greater than £35,000 3
				Other 5		Other 6	Less than once a month 4	Park & Ride 6		Greater than £35,000 3
								Other 7		Greater than £35,000 3
15 <input type="checkbox"/>	16 <input type="checkbox"/>	17 <input type="checkbox"/>	19 <input type="checkbox"/>	26 <input type="checkbox"/>	27 <input type="checkbox"/>	28 <input type="checkbox"/>	35 <input type="checkbox"/>	36 <input type="checkbox"/>	37 <input type="checkbox"/>	45 <input type="checkbox"/>

Vehicle Type	Vehicle Occupancy	Vehicle Age	Origin	Origin Purpose	Destination	Destination Purpose	Frequency	Parking	Parking Location	Household Income
Car 1				Home 1		Home 1	Daily 1	On-street (free) 1		Less than £17,500 1
LGV 2				Work 2		Work 2	1-4 times 2	On-street (pay) 2		Between £17,500 and £35,000 2
OGV(1) 3				Emp Bus 3		Emp Bus 3	per week 2	Public Car Park 3		Greater than £35,000 2
OGV(2) 4				Shop 4		Shop 4	1-4 times 3	Private (free) 4		Greater than £35,000 2
				Education 4		Education 5	per month 3	Private (pay) 5		Greater than £35,000 3
				Other 5		Other 6	Less than once a month 4	Park & Ride 6		Greater than £35,000 3
								Other 7		Greater than £35,000 3
15 <input type="checkbox"/>	16 <input type="checkbox"/>	17 <input type="checkbox"/>	19 <input type="checkbox"/>	26 <input type="checkbox"/>	27 <input type="checkbox"/>	28 <input type="checkbox"/>	35 <input type="checkbox"/>	36 <input type="checkbox"/>	37 <input type="checkbox"/>	45 <input type="checkbox"/>

Vehicle Type	Vehicle Occupancy	Vehicle Age	Origin	Origin Purpose	Destination	Destination Purpose	Frequency	Parking	Parking Location	Household Income
Car 1				Home 1		Home 1	Daily 1	On-street (free) 1		Less than £17,500 1
LGV 2				Work 2		Work 2	1-4 times 2	On-street (pay) 2		Between £17,500 and £35,000 2
OGV(1) 3				Emp Bus 3		Emp Bus 3	per week 2	Public Car Park 3		Greater than £35,000 2
OGV(2) 4				Shop 4		Shop 4	1-4 times 3	Private (free) 4		Greater than £35,000 2
				Education 4		Education 5	per month 3	Private (pay) 5		Greater than £35,000 3
				Other 5		Other 6	Less than once a month 4	Park & Ride 6		Greater than £35,000 3
								Other 7		Greater than £35,000 3
15 <input type="checkbox"/>	16 <input type="checkbox"/>	17 <input type="checkbox"/>	19 <input type="checkbox"/>	26 <input type="checkbox"/>	27 <input type="checkbox"/>	28 <input type="checkbox"/>	35 <input type="checkbox"/>	36 <input type="checkbox"/>	37 <input type="checkbox"/>	45 <input type="checkbox"/>

- 3.4. The existing RSIs had 2012 ATCs conducted in spring 2012 to enable them to be growthed to base year traffic levels. The survey day MCC was used.
- 3.5. A4 Portway and Bath Road sites were filtered to ensure that the trips expanded crossed the defined cordons where a 2012 ATC was conducted.

Sample Rates and Distribution

- 3.6. The sample rates by time period and by vehicle type are provided in Table 4 Sample Rates.

Table 4. Existing RSI Sample Rates

Site	Location	AM			IP			PM		
		Car	LGV	HGV	Car	LGV	HGV	Car	LGV	HGV
14	Whitchurch Lane	13%	3%	0%	17%	14%	2%	14%	21%	0%
12	Bridgwater Road	15%	58%	14%	12%	14%	13%	12%	9%	5%
29	Ashton Road	13%	7%	12%	26%	20%	11%	22%	30%	17%
27	Abbots Leigh Road	11%	9%	9%	16%	16%	5%	11%	10%	15%
13	Hengrove Way	16%	12%	4%	13%	13%	5%	12%	8%	5%
6	Long Ashton Bypass	6%	3%	0%	10%	8%	0%	10%	9%	0%
14	Portway	14%	12%	10%	18%	14%	11%	18%	17%	14%
18	Westbury Road	14%	9%	2%	16%	14%	1%	13%	13%	0%
19	Stapleton Road	25%	22%	28%	36%	31%	40%	33%	22%	73%

17	St Phillips Causeway	15%	17%	19%	16%	16%	17%	14%	14%	17%
27	Bath Road	15%	13%	19%	14%	11%	17%	4%	4%	8%
21	Callington Road	21%	23%	21%	25%	29%	22%	25%	28%	19%
23	Wells Road	19%	17%	8%	27%	28%	20%	17%	16%	11%

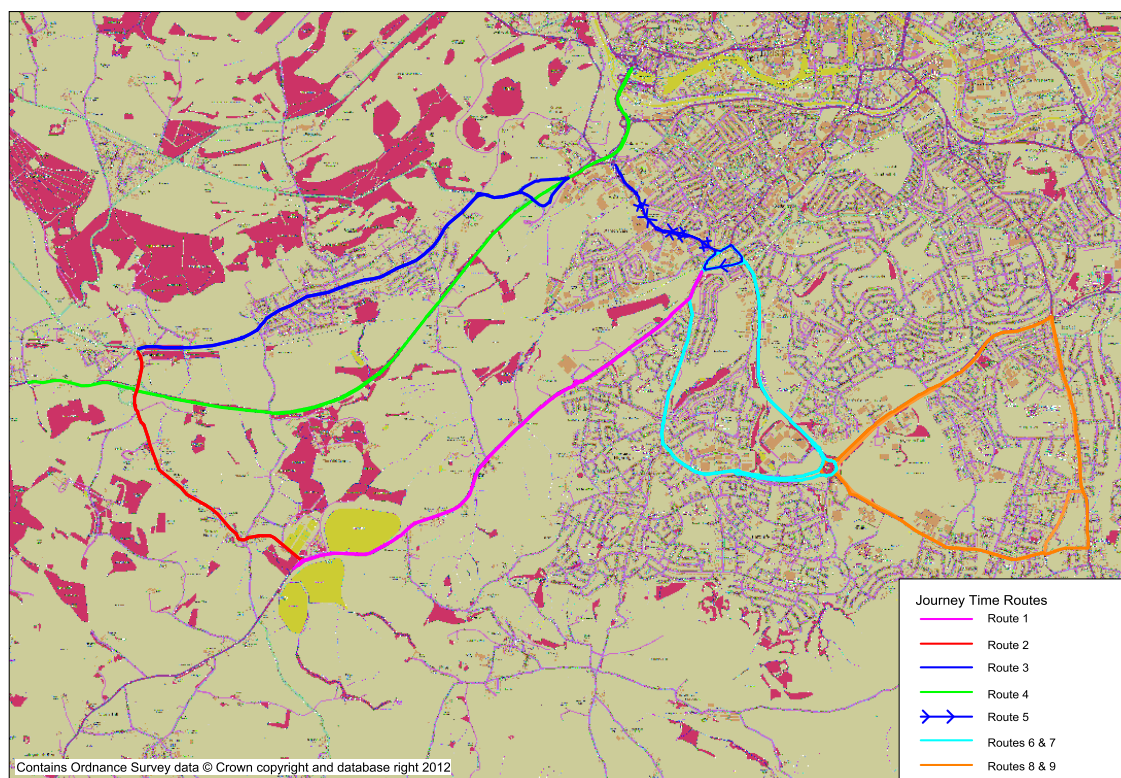
4. Journey Time Surveys

- 4.1. Journey time surveys provide a means of validating speeds within the highway model. It is a requirement of the model validation process that model speeds fall within an acceptable range of observed speeds.
- 4.2. JT data was obtained by the use of TomTom data for a collection of routes across South Bristol. The data was collected for Monday to Friday in the neutral months between April and November 2011 excluding school holidays. It was provided for the periods 8-9:00 10-16:00, 17-18:00 and 19-07:00. The latter was used to obtain the cruise speeds to which the network would be coded and the others used for model validation. The JT route are described in Table 5 and presented in Figure 7. Graphical representation of the journey time data can be seen in Appendix B

Table 5. Description of Journey Time Routes

Route	Description	Direction	Distance (km)
1	A38 Corridor	NB/SB	4.95/4.93
2	Barrow Gurney Corridor	NB/SB	2.90/2.92
3	Long Ashton Corridor	NB/SB	4.65/4.76
4	A370 Corridor	NB/SB	7.50/6.52
5	Winterstoke Road	Circular	3.45
6&7	Headley Park	CW/ACW	6.44/6.02
8&9	Hengrove	CW/ACW	7.84/7.18

Figure 7. Location of Journey Time Routes



- 4.3. The journey-time routes validated by using moving observer along a route between Long Ashton and the Cumberrland Basin. A number of runs were conducted in both directions along this route in all three time periods. This was then compared to the TomTom data for the same route, and it was found to differ by a maximum of 25 seconds as is shown in Table 6.

Table 6. Verification of TomTom Data

Time Period	Direction	TomTom (H:mm:ss)	Moving Observer (H:mm:ss)	Difference (m:ss)
Morning Peak	Inbound	0:06:43	0:06:44	0:01
	Outbound	0:02:46	0:02:36	-0:10
Inter-Peak	Inbound	0:02:38	0:02:44	0:06
	Outbound	0:02:50	0:02:25	-0:25
Evening Peak	Inbound	0:02:38	0:02:54	0:16
	Outbound	0:03:08	0:03:03	-0:05

5. Traffic Counts

- 5.1. Traffic counts provide a means of calibrating and validating the highway model. Traffic counts came from two sources; existing surveys conducted post 2008 and those commissioned as part of the model update by Intelligent Data Collection.

Conversion Factors

- 5.2. The model represents a single consistent point in time. Since the data used for GBATS3 SBL 2012 HAM were collected between 2008¹ and 2012, factors were needed to account for monthly and yearly variations between the sites. To do this there are sites on the A370 and A38 which are critical links along the scheme and where traffic levels are continuously monitored. Information from these sites enabled factors to be determined to normalise the data to the model base of March 2012. Table 7 **Error! Reference source not found.** lists the data from ATC locations used or this. The seasonal factors (SF) were used to adjust counts between months Table 8 whilst the growth factors (GF) were used to adjust counts between years Table 9.

Table 7. Long Term Monitoring Sites

Site Ref.	Locations	Start Date	End Date
1	A38 Bridgewater Road (east of Yanley Lane)	January 2008	December 2011
2	A370 Long Ashton Bypass (west of Yanley Lane)	January 2008	December 2011
3	A370 Main Road (east of B3129 Station Road)	January 2008	December 2011

Table 8. Seasonal (month to month) Factors

Month	Seasonal Factor (SF)
January	0.91
February	1.00
March	1.00
April	0.98
May	1.00
June	1.01
July	1.02
August	0.99
September	1.03
October	1.00
November	1.01
December	0.91

¹ It was necessary to use 2008 data for one location on the river screenline (Brunel Way) because the 2012 count data received was very low and when checked it was much lower than the old count, time did not allow the collection of more data to verify which was correct, It is believed that the 2012 count was low because it was collected using tubes placed across the road and this area is known to queue and hence would not accurately collect data.

Table 9. Growth (year to year) Factors

Year	Growth Factor (GF)
2012	1
2011	1.03
2010	1.01
2009	0.98
2008	0.98

- 5.3. The data were collected in vehicles and model assignment uses PCU so the factors in were applied.

Table 10. Vehicle to PCU conversion Factors

Vehicle Type	Equivalent PCUs	Comment
Car	1.0	Private cars
LGV	1.0	Goods vehicles using car-based chassis
HGV	2.3 ²	For both OGV1 & OGV2 vehicle types
PSV / Bus	3.0	Scheduled coach and local bus services

Data Availability

- 5.4. Existing data was obtained from Bristol City Council, North Somerset Council and surveys commissioned by Atkins for previous models, in addition to this 2 week ATCs were collected in Spring 2012. **Error! Reference source not found.** lists the data used, its source, and use.

Table 11. ATC Locations

Description	Year	Month	Number of Days	Source	Use
Whitchurch Lane (west of Longway Ave)	2012	March	10	IDC	Matrix Build
Longway Ave/Witch Hazel Rd	2012	March	10	IDC	Matrix Build
Queens Rd	2012	March	10	IDC	Matrix Build
Highridge Rd	2012	March	10	IDC	Matrix Build
A38 Bridgewater Rd, east of Yanley Lane	2012	March	7	NSC	Matrix Build
A38 Bedminster Down Rd	2012	March	10	IDC	Matrix Build
Headley Lane	2012	March	10	IDC	Matrix Build
Hartcliffe Way	2012	March	10	IDC	Matrix Build
Novers Lane	2012	March	10	IDC	Matrix Build
Hengrove Way westbound	2012	March	10	IDC	Matrix Build
Hengrove Way eastbound	2012	March	10	IDC	Matrix Build
A370 Long Ashton Bypass	2012	March	10	NSC	Matrix Build
B3128 Ashton Rd	2012	March	10	NSC	Matrix Build
Abbots Leigh Road	2012	April	8	IDC	Matrix Build
A4 Portway	2012	April	10	IDC	Matrix Build
Ladies Mile	2012	April	7	IDC	Matrix Build
Stoke Rd	2012	April	10	IDC	Matrix Build

² TAG Unit 3.19c provides two pcu values for HGVs: either 2.3 pcus for motorways and all-purpose dual carriageways or 2.0 pcus for all other road types. The motorway network around the Bristol conurbation influences the distribution of through movements on the local road network so the higher value was used throughout – only one value may be used within the model.

Westbury Rd (south of Pary's Lane)	2012	March	10	IDC	Matrix Build
Coldharbour Rd	2012	April	7	IDC	Matrix Build
Cranbrook Rd	2009	June	10	BCC	Matrix Build
Gloucester Rd	2012	April	10	IDC	Matrix Build
Cromwell Rd	2012	April	7	IDC	Matrix Build
Chesterfield Rd	2012	April	7	IDC	Matrix Build
Ashley Hill	2012	April	9	IDC	Matrix Build
Glenfrome Rd	2009	June	5	BCC	Matrix Build
M32	2009	June	1 (MCC)	BCC	Matrix Build
Stapleton Rd	2012	April	12	IDC	Matrix Build
Easton Rd	2012	April	10	IDC	Matrix Build
Lawrence Hill	2012	April	8	IDC	Matrix Build
Day's Rd	2012	April	10	IDC	Matrix Build
Feeder Rd	2012	January	10	BCC	Matrix Build
St Phillips Causeway (bridge)	2012	April	8	IDC	Matrix Build
Bath Rd	2012	April	10	IDC	Matrix Build
Talbot Rd	2012	April	10	IDC	Matrix Build
Callington Rd	2009	April	5	BCC	Matrix Build
W Town Lane	2012	April	10	IDC	Matrix Build
Wells Rd	2012	March	10	IDC	Matrix Build
New Fosseyway Rd	2012	April	10	IDC	Matrix Build
Oatlands Ave	2009	October	5	BCC	Matrix Build
Bamfield	2012	April	10	IDC	Matrix Build
Westbury Park	2012	April	7	IDC	Matrix Build
Longwood Lane	2011	March	10	NSC	Validation
Clarcken Coombe	2009	May	10	NSC	Validation
B3130 Clevedon Road	2012	March	10	NSC	Validation
A370 east of Flax Bourton	2012	March	10	NSC	Validation
Bedminster Down Rd	2012	March	9	IDC	Validation
South Liberty Lane	2012	April	6	IDC	Validation
Ashton Drive	2012	April	11	IDC	Validation
Winterstoke Rd	2009	July	5	BCC	Validation
Ashton Rd	2012	April	8	IDC	Validation
Clift House Rd	2012	April	9	IDC	Validation
Cumberland Rd	2012	April	10	IDC	Validation
Bath Rd	2009	April	10	BCC	Validation
St Lukes Rd	2009	May	3	BCC	Validation
St Johns Lane	2012	April	12	IDC	Validation
Yanley Lane	2011	March	1 (MCC)	NSC	Validation
A370 (Long Ashton Bypass)	2012	March	17	NSC	Validation
Wildcountry Lane	2009	June	1 (MCC)	NSC	Validation
B3130	2012	April	10	IDC	Validation
Parson St	2012	April	7	IDC	Validation
Highridge Green	2012	April	10	IDC	Validation
Highridge Rd	2012	March	9	IDC	Validation
Grange Rd	2012	April	10	IDC	Validation
Hareclive Rd	2009	November	3	BCC	Validation
Hawkfield Rd	2012	April	6	IDC	Validation
Creswicke Rd	2009	November	3	BCC	Validation
Salcombe Rd	2009	October	3	BCC	Validation
Wells Rd	2012	March	8	IDC	Validation
Bishport Ave	2012	April	11	IDC	Validation
Fulford Rd	2012	April	11	IDC	Validation
Whitchurch Lane	2012	April	11	IDC	Validation
Hengrove Way	2012	April	11	IDC	Validation
Hartcliffe Way	2012	March	10	IDC	Validation

Parson Street	2012	April	7	BCC	Validation
Marksbury Rd	2010	November	3	BCC	Validation
Bedminster Rd	2012	April	9	IDC	Validation
Four Acres	2011	July	2	BCC	Validation
King Georges Road	2012	April	10	IDC	Validation
Cutler Rd	2012	April	10	IDC	Validation
Vicarage Rd	2012	April	10	IDC	Validation
Kings Head Rd	2012	April	10	IDC	Validation
A38 Bridgewater Rd	2012	April	7	IDC	Validation
Cobhorn Drive	2012	April	10	IDC	Calibration
Bishport Ave	2012	March	11	BCC	Calibration
Gatehouse Ave	2012	April	10	IDC	Calibration
Whitchurch Rd	2012	April	6	IDC	Calibration
St Peters Rise	2009	July	7	BCC	Calibration
Clifton Bridge	2009	June	5	NSC	Calibration
Brunel Way (north of cliff house rd)	2008	October	4	BCC	Calibration
Prince St	2009	May	2	BCC	Calibration
Redcliff Hill	2012	April	10	IDC	Calibration
Redcliff Mead Lane	2012	April	10	IDC	Calibration
Temple Gate	2009	April	11	BCC	Calibration
Cattle Market Rd	2012	April	12	IDC	Calibration
Totterdown Bridge	2012	April	10	IDC	Calibration

The data was collected so that screenlines were formed across the model area. Figure 8 shows how the counts listed above can be grouped to form screenlines and Table 12 lists the counts used per screenline

Figure 8. Location of Screenlines and Counts

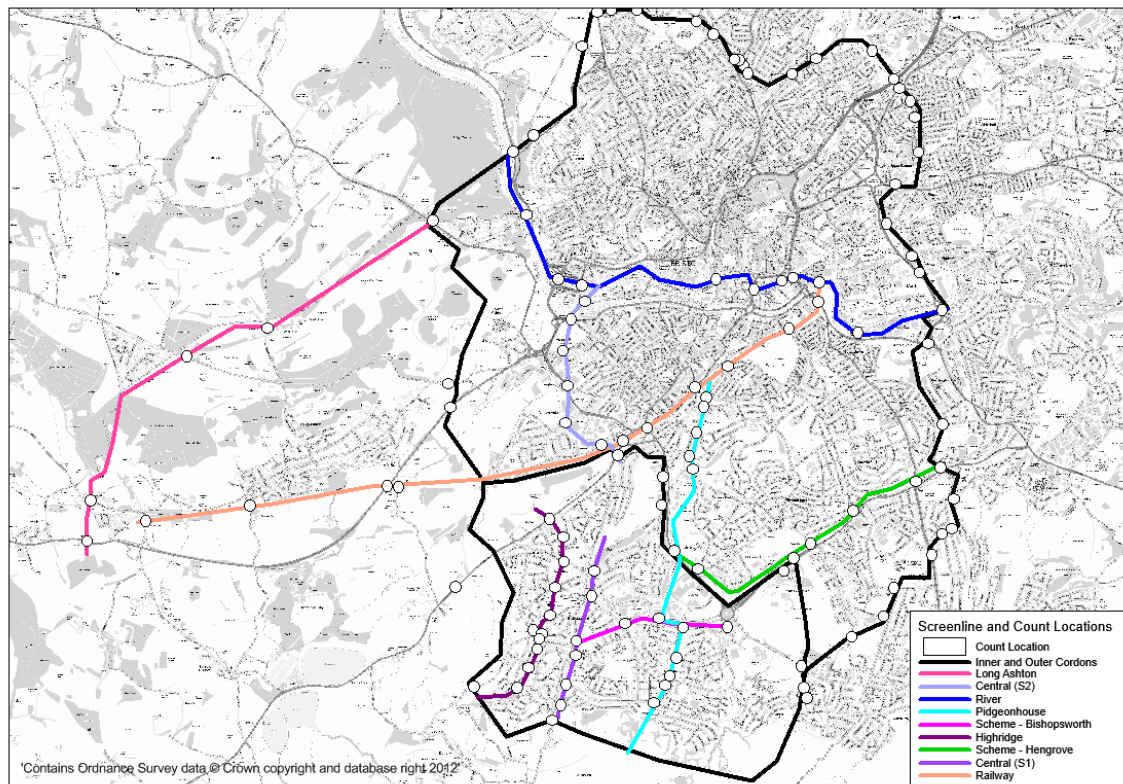


Table 12. Screenline Counts

Screenline	Count
Inner Cordon	Whitchurch Lane (west of Longway)

	Ave)
	Longway Ave/Witch Hazel Rd
	Goodwin Drive
	Queens Rd
	Highridge Rd
	A38 Bridgewater Rd, east of Yanley Lane
	A38 Bedminster Down Rd
	Vale Lane
	Headley Lane
	Hartcliffe Way
	Novers Lane
	Hengrove Way westbound
	Whitchurch Lane (west of Longway Ave)
	Longway Ave/Witch Hazel Rd
	Goodwin Drive
	Queens Rd
	Highridge Rd
	A38 Bridgewater Rd, east of Yanley Lane
	A370 Long Ashton Bypass
	B3128 Ashton Rd
	Abbots Leigh Road
	A4 Portway
	Ladies Mile
	Stoke Rd
	Westbury Rd (south of Pary's Lane)
	Westbury Park
	Coldharbour Rd
	Cranbrook Rd
	Kersteman Rd
	Elton Rd
	Gloucester Rd
	North Rd
	Cromwell Rd
	Chesterfield Rd
	Ashley Hill
	Mina Rd
	Glenfrome Rd
	M32
	Stapleton Rd
	St Marks Rd
	All Hallows Rd
	Easton Rd
	Lawrence Hill
	Day's Rd
	Feeder Rd
	St Phillips Causeway (bridge)
	Bath Rd
	Talbot Rd
	Callington Rd
	W Town Lane
	Hazelbury Rd
	Kinsale Rd
Outer Cordon	Wells Rd

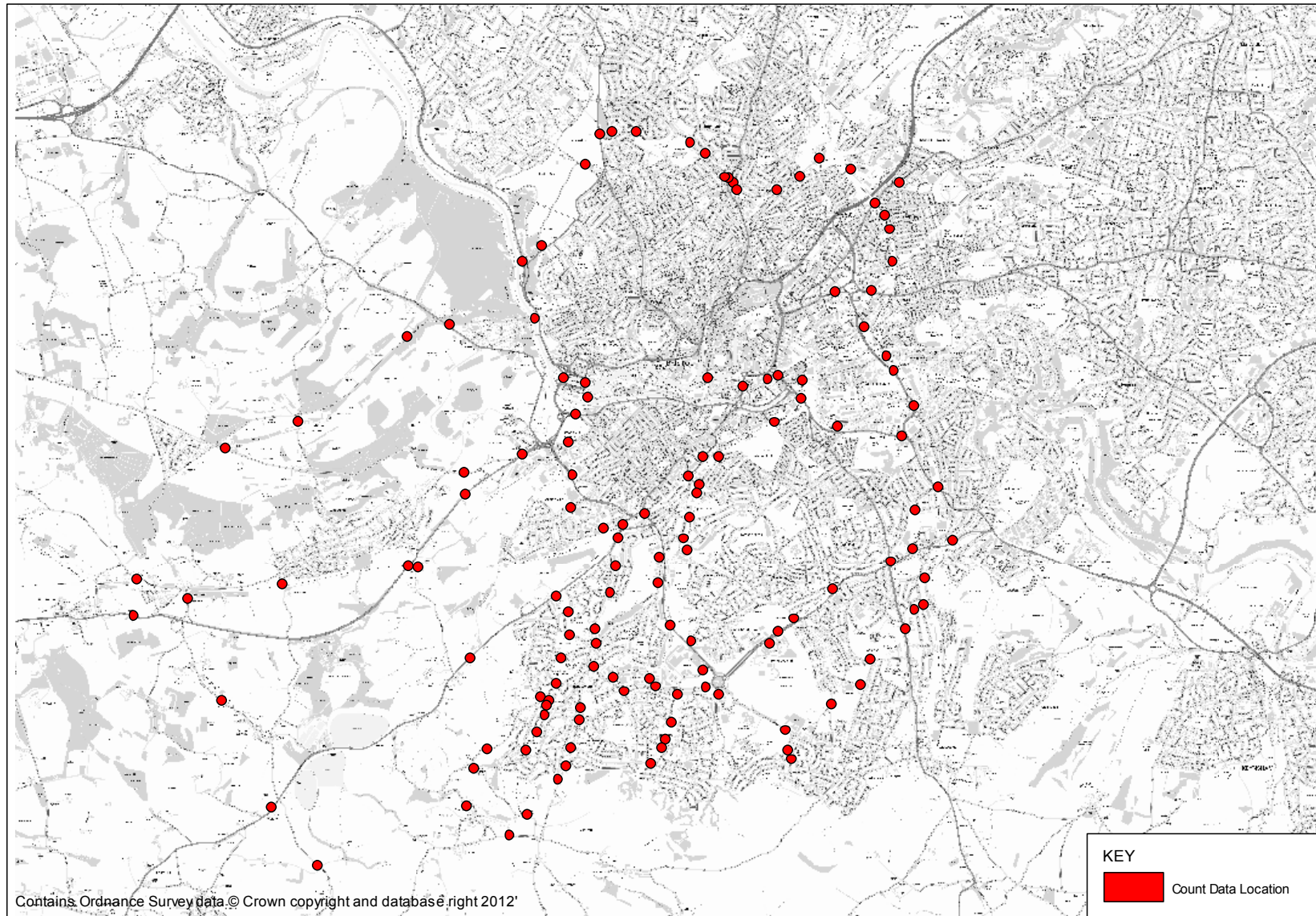
	New Fosseway Rd
	Oatlands Ave
	Bamfield
Long Ashton	Abbots Leigh Road
	Longwood Lane
	Clarken Coombe
	B3130 Clevedon Road
	A370 east of Flax Bourton
Central (S1)	Cobhorn Drive
	Bishport Ave
	Gatehouse Ave
	Whitchurch Rd
	St Peters Rise
	Vale Rd
	Ilchester Rd
Central (S2)	Bedminster Down Rd
	South Liberty Lane
	Ashton Drive
	Winterstoke Rd
	Ashton Rd
	Clift House Rd
	Cumberland Rd
River	Clifton Bridge
	Brunel Way (north of clift house rd)
	Cumberland Rd
	Prince St
	Redcliff Hill
	Redcliff Mead Lane
	Temple Gate
	Cattle Market Rd
	Totterdown Bridge
	St Phillips Causeway (bridge)
Railway	Cattle Market Rd
	Bath Rd
	St Lukes Rd
	Windmill Hill
	St Johns Lane
	Parson St
	Bedminster Down Rd
	Yanley Lane
	A370 (Long Ashton Bypass)
	Wildcountry Lane
	B3130
Scheme - Bishopsworth	Highridge Green
	Highridge Rd
	Grange Rd
	Hareclive Rd
	Hawkfield Rd
Scheme - Hengrove	Hartcliffe Way
	Novers Lane
	Creswicke Rd
	Salcombe Rd
	Wells Rd
Pidgeonhouse	Bishport Ave
	Kilmerson Rd
	Hareclive Rd

	Fulford Rd
	Whitchurch Lane
	Hengrove Way
	Hartcliffe Way
	Novers Hill Trading Estate
	Parson Street
	Marksbury Rd
	Bedminster Rd
Highridge	Four Acres
	Huntingham Rd
	Milground Rd
	King Georges Road
	Highridge Rd
	Cutler Rd
	Vicarage Rd
	Kings Head Rd
	Donald Rd
	A38 Bridgewater Rd

The data was collected for 2 weeks at majority of the locations and classified vehicles by light vehicles (car and LGV combined) and HGV (OGV1 and OGV2 combined). A few of the locations had less than 2 weeks (10 weekdays) data due to damaged tubes or parking on the ATC tubes, in these cases as there was little variation between the days and over 5 days data had been collected no re-survey was commissioned.

Some of the existing count data obtained from BCC and NSC was lacking complete 10 days ATC data, Table 11 lists the number of days data available. Since these locations were further from the scheme it was deemed suitable to use them without the need for a re-survey.

Figure 2 – ATC Count Locations



A. Road Side Interview Data

A.1 RSI Sites AM Peak hour Trip Distribution

Site 1 – Bedminster Down Road

S1	1	2	3	4	5	6	7	8	9	10	11	12
1	0	0	0	0	3	12	1	2	9	1	4	1
2	0	0	0	0	1	1	1	0	0	0	0	2
3	0	3	0	0	11	13	0	1	16	1	11	2
4	0	8	0	0	14	34	4	2	18	3	16	3
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	1	0	0	0	0	0	0
8	0	0	0	0	0	2	0	0	0	0	1	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	3	1	0	24	15	5	5	9	1	11	2
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0

Site 2 – Headley Lane

S2	1	2	3	4	5	6	7	8	9	10	11	12
1	0	2	0	1	4	12	1	1	2	2	4	1
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	4	0	4	15	6	1	1	5	0	1	2
4	1	22	0	8	31	36	3	5	18	6	10	7
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	1	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	7	0	0	1	2	0	0	0	0	0	1
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	1	0	0	0	0

Site 3a – Hartcliffe Way

S3a	1	2	3	4	5	6	7	8	9	10	11	12
1	0	3	0	6	2	8	2	0	12	4	6	1
2	1	0	0	10	3	10	2	1	6	14	11	1
3	0	6	0	7	7	21	7	0	12	9	15	0
4	0	2	0	0	2	3	1	0	2	1	1	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	1	0	0	0	0	0	0
7	0	1	1	0	0	3	0	0	3	3	1	0
8	0	1	0	3	1	14	1	0	6	9	0	1

9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	1	0	1	0	0	0	0	0	1	0	1

Site 6 – Longway Avenue

S6	1	2	3	4	5	6	7	8	9	10	11	12
1	2	0	0	0	0	0	0	0	0	0	0	0
2	5	0	6	0	0	0	0	0	0	0	0	0
3	20	0	5	2	0	0	0	1	0	1	0	0
4	2	0	4	0	0	0	0	0	0	0	0	0
5	0	0	1	0	0	0	0	0	0	0	0	0
6	1	0	2	0	0	0	0	0	0	0	0	0
7	3	0	1	1	0	0	0	0	0	0	0	0
8	16	0	2	0	0	0	0	0	0	0	0	0
9	1	0	1	0	0	0	0	0	0	0	0	0
10	1	0	1	0	0	0	0	0	0	0	0	0
11	1	0	0	0	0	0	0	0	0	0	0	0
12	4	0	2	0	0	0	0	0	0	0	0	0

Site 7 – Queens Road

S7	1	2	3	4	5	6	7	8	9	10	11	12
1	0	0	0	1	0	1	0	0	0	0	1	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	8	18	7	19	34	21	3	4	31	1	21	4
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	2	0	1	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	1	0	1	3	1	1	1	0	1	2	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0

A.2 RSI Sites Inter Peak hour Trip Distribution

Site 1 – Bedminster Down Road

S1	1	2	3	4	5	6	7	8	9	10	11	12
1	0	4	0	0	4	39	3	2	12	3	21	5
2	0	2	0	0	0	3	0	1	1	1	3	1
3	0	1	0	0	4	23	3	3	23	3	17	1
4	0	18	1	0	21	98	8	6	22	7	45	20
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	2	2	0	1	0	1	0
8	0	1	0	0	2	5	0	0	0	1	1	1
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	11	0	2	23	26	19	15	17	2	13	6
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0

Site 2 – Headley Lane

S2	1	2	3	4	5	6	7	8	9	10	11	12
1	0	14	1	1	15	17	1	1	4	1	3	2
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	2	1	3	3	3	0	1	3	0	0	0
4	2	49	3	15	28	72	4	6	25	10	22	16
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	1	0	0	0	0	0
8	0	0	0	0	0	2	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	5	2	4	3	5	1	1	0	0	3	3
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0

Site 3a – Hartcliffe Way

S3a	1	2	3	4	5	6	7	8	9	10	11	12
1	0	10	0	4	12	40	4	2	13	9	9	1
2	0	4	1	17	5	30	5	0	6	14	17	0
3	0	5	0	8	9	34	3	0	15	15	30	1
4	0	6	0	11	7	25	3	0	7	13	11	1
5	0	0	0	0	0	1	0	0	0	0	0	0
6	0	0	0	0	0	4	0	0	0	0	0	0
7	0	1	0	4	2	3	0	0	0	4	0	1
8	0	6	0	11	4	9	0	0	3	16	7	1
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	1	0
11	0	0	0	0	0	0	1	0	0	0	0	0
12	0	0	0	0	0	0	1	0	0	4	0	0

Site 6 – Longway Avenue

S6	1	2	3	4	5	6	7	8	9	10	11	12
1	2	0	5	1	0	0	0	0	0	0	0	0
2	30	1	17	4	0	0	0	0	0	1	0	0
3	32	1	15	3	0	0	0	0	0	0	0	0
4	2	0	4	1	0	0	0	0	0	0	0	0
5	2	0	2	0	0	0	0	0	0	0	0	0
6	4	0	2	1	0	0	0	0	0	0	0	0
7	4	0	1	0	0	0	0	0	0	0	0	0
8	10	0	4	0	0	0	0	0	0	0	1	0
9	1	0	5	0	0	0	0	0	0	0	0	0
10	2	1	1	0	0	0	0	0	0	0	0	0
11	4	0	6	0	0	0	0	0	0	0	0	0
12	7	0	4	0	0	0	0	0	0	1	0	0

Site 7 – Queens Road

S7	1	2	3	4	5	6	7	8	9	10	11	12
1	3	1	0	2	2	1	0	0	3	1	1	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	35	20	8	46	20	26	7	4	43	6	25	5

4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	1	0	0	0	1	0	0	0	0	0	2	0
8	0	1	0	0	0	0	1	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	4	1	0	1	1	0	0	2	0	2	1
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0

A.3 RSI Sites PM Peak hour Trip Distribution

Site 1 – Bedminster Down Road

S1	1	2	3	4	5	6	7	8	9	10	11	12
1	0	0	0	0	3	15	3	1	10	1	13	0
2	0	0	0	0	0	1	1	0	1	0	1	0
3	0	1	0	0	3	11	0	0	12	2	10	2
4	0	6	0	1	12	36	9	3	17	5	31	6
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	1	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	2	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	10	1	0	6	16	17	11	7	1	10	6
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0

Site 2 – Headley Lane

S2	1	2	3	4	5	6	7	8	9	10	11	12
1	0	11	1	0	2	2	1	0	1	1	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	6	0	0	2	3	0	0	0	0	1	0
4	2	31	3	3	10	29	4	6	9	6	13	14
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	1	0	0	0	0	1	0	0	0	0	0
8	0	1	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	3	1	0	1	2	0	0	1	1	1	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0

Site 3a – Hartcliffe Way

S3a	1	2	3	4	5	6	7	8	9	10	11	12
1	0	5	0	1	5	16	2	0	4	0	10	0
2	1	3	1	11	3	10	1	1	6	7	12	1
3	0	2	0	2	4	11	5	0	8	5	5	0
4	1	10	0	0	0	15	2	0	2	2	5	4
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	1	2	0	0	0	0	3	2	0

8	0	2	0	3	0	6	0	0	1	7	10	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	1	1	0	0	0	0

Site 6 – Longway Avenue

S6	1	2	3	4	5	6	7	8	9	10	11	12
1	0	0	1	0	0	0	0	0	0	0	0	0
2	28	0	8	1	0	0	0	0	0	0	0	0
3	16	0	11	0	0	0	0	0	0	0	0	1
4	3	0	4	0	0	0	0	0	0	0	0	0
5	2	0	7	0	0	0	0	0	0	0	0	0
6	5	0	3	0	0	0	0	0	0	0	0	0
7	5	0	1	1	0	0	0	0	0	0	0	0
8	10	0	5	0	0	0	1	0	0	0	0	0
9	1	0	4	0	0	0	0	0	0	0	0	0
10	2	0	2	0	0	0	1	0	0	0	0	0
11	3	0	5	0	0	0	0	0	0	0	0	0
12	4	0	1	0	0	0	0	0	0	0	0	0

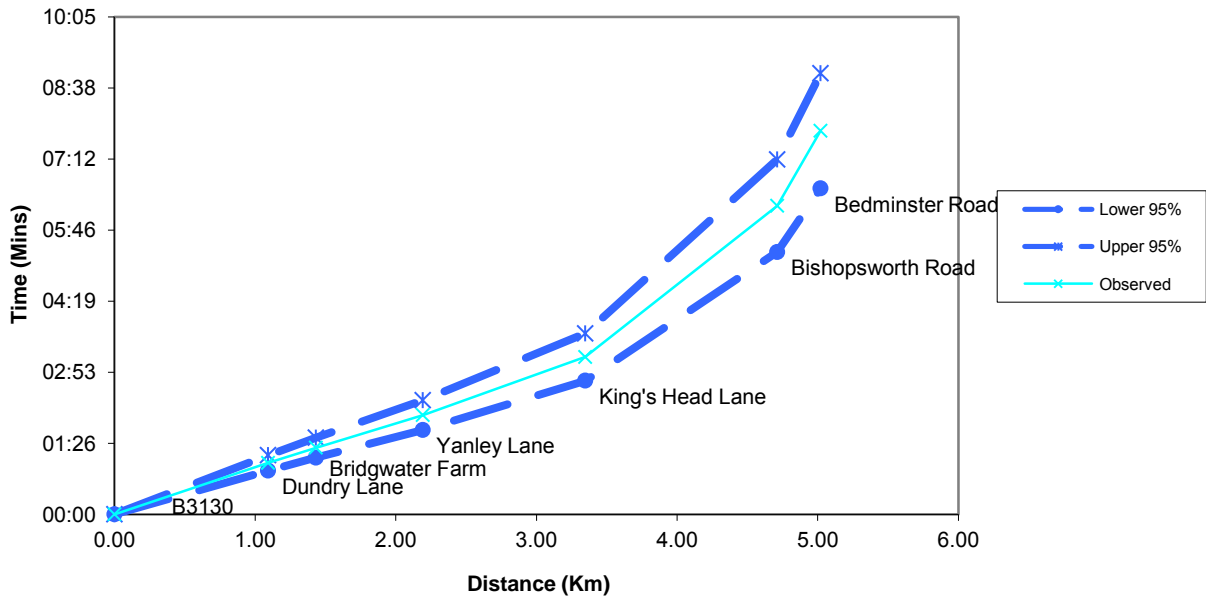
Site 7 – Queens Road

S7	1	2	3	4	5	6	7	8	9	10	11	12
1	1	1	0	0	0	0	0	2	0	0	0	2
2	0	0	0	0	0	0	0	0	0	0	0	0
3	27	19	3	29	5	32	3	3	15	2	15	4
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	1	1	0	1	0	1	0	0	0	1	0	0
8	0	1	0	2	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	2	2	0	2	0	1	1	0	1	0	2	2
11	0	0	0	0	0	0	0	0	0	1	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0

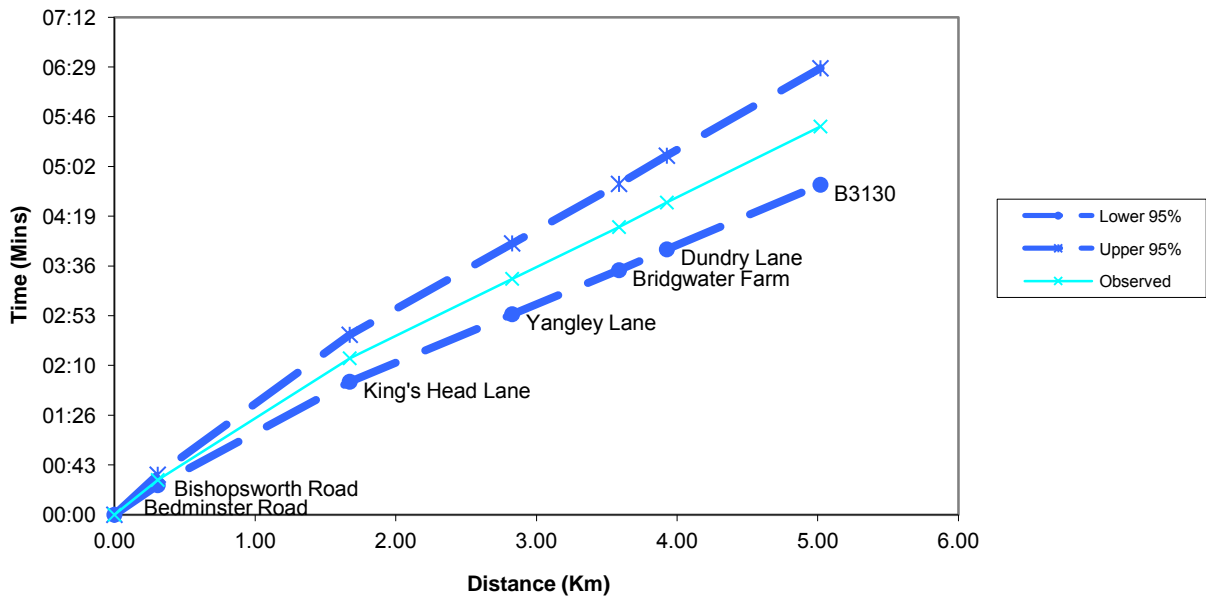
B. Journey Time Data

Route	Description	Direction	AM (hh:mm:ss)	IP (hh:mm:ss)	PM (hh:mm:ss)
1	A38 Corridor	NB	00:07:46	00:05:44	00:06:35
		SB	00:05:37	00:05:34	00:06:11
2	Barrow Gurney Corridor	NB	00:04:37	00:04:02	00:04:59
		SB	00:05:04	00:04:30	00:06:07
3	Long Ashton Corridor	NB	00:10:02	00:06:55	00:06:57
		SB	00:07:10	00:06:42	00:06:56
4	A370 Corridor	NB	00:10:02	00:06:19	00:06:23
		SB	00:05:11	00:05:11	00:05:34
5	Winterstoke Road	SB	00:03:47	00:03:22	00:04:15
		NB	00:06:57	00:04:12	00:05:48
6	Headley Park	CW	00:14:38	00:12:27	00:14:54
7		ACW	00:12:47	00:10:21	00:12:16
8	Hengrove	CW	00:16:47	00:15:03	00:18:12
9		ACW	00:16:32	00:14:29	00:18:22

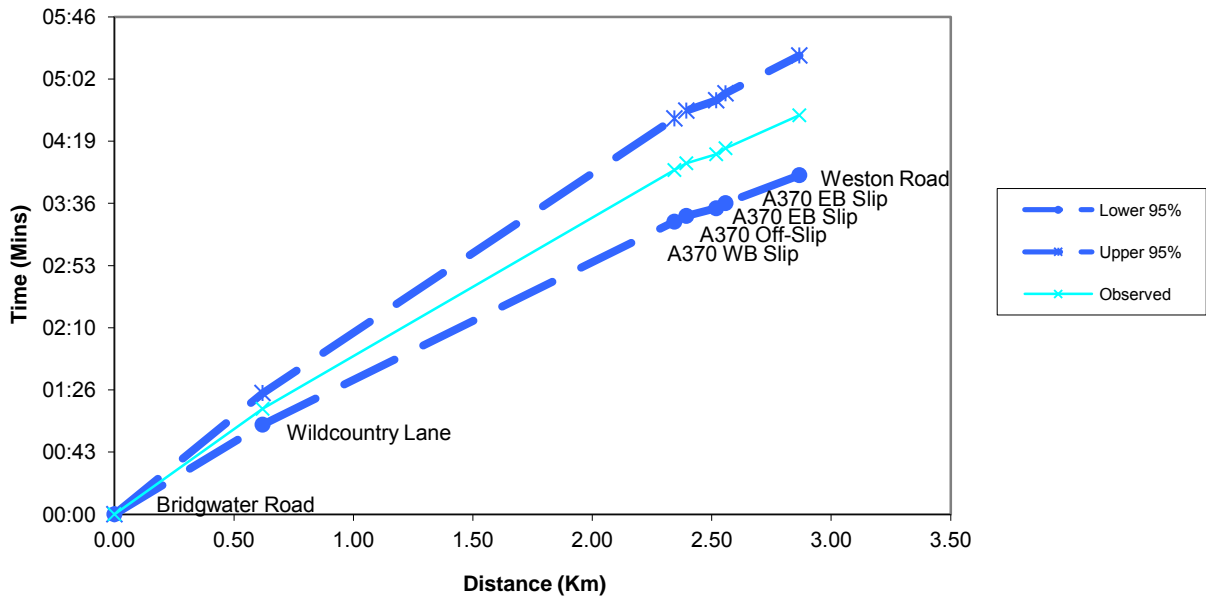
SBL: Comparison of Modelled and Observed Journey Times
Route 1: Northbound - AM



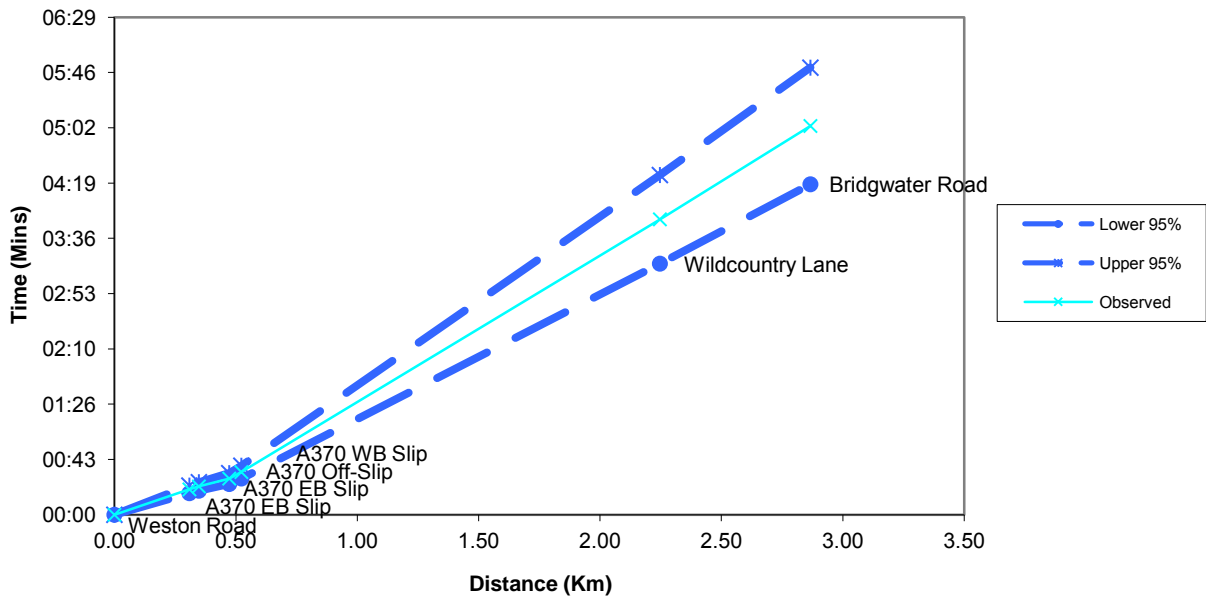
SBL: Comparison of Modelled and Observed Journey Times
Route 1: Southbound - AM



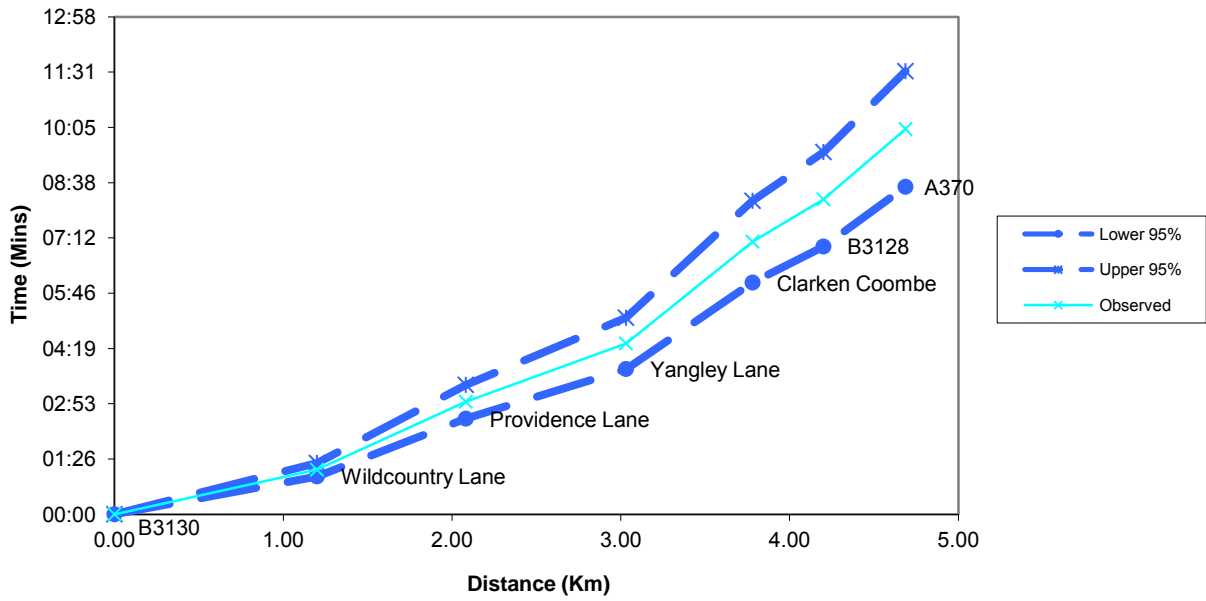
**SBL: Comparison of Modelled and Observed Journey Times
Route 2: Northbound - AM**



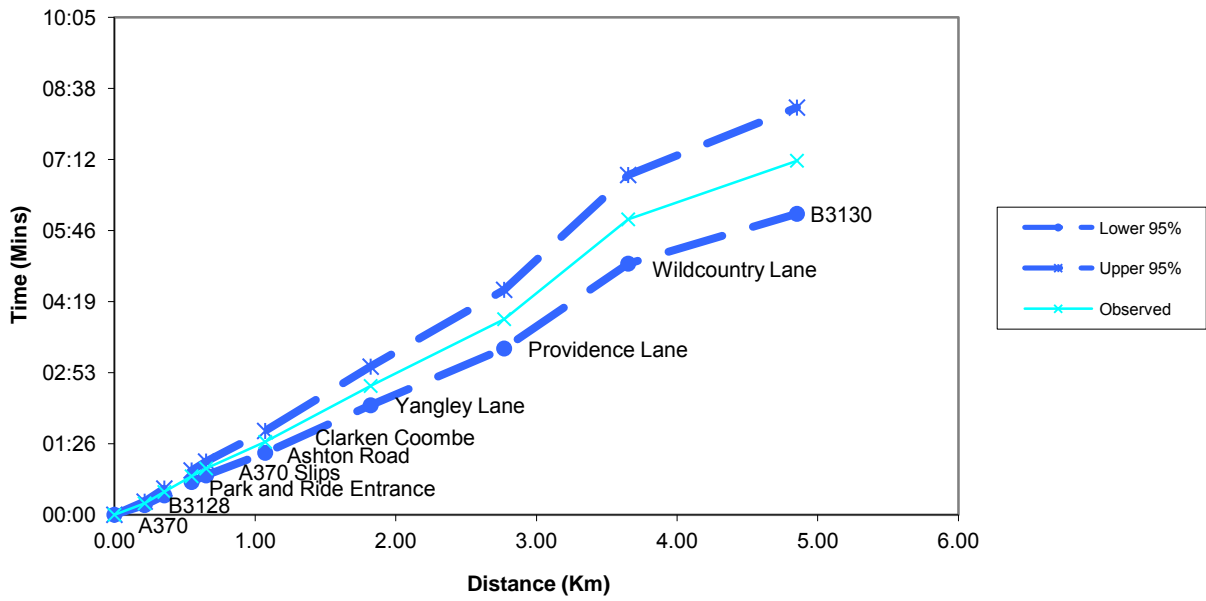
**SBL: Comparison of Modelled and Observed Journey Times
Route 2: Southbound - AM**



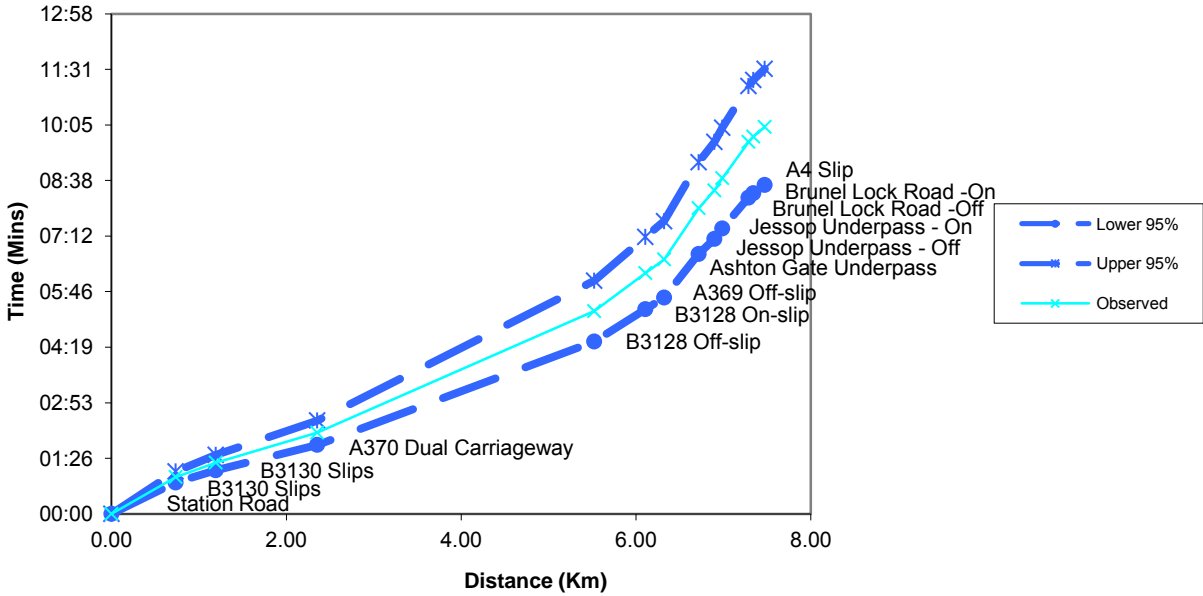
**SBL: Comparison of Modelled and Observed Journey Times
Route 3: Northbound - AM**



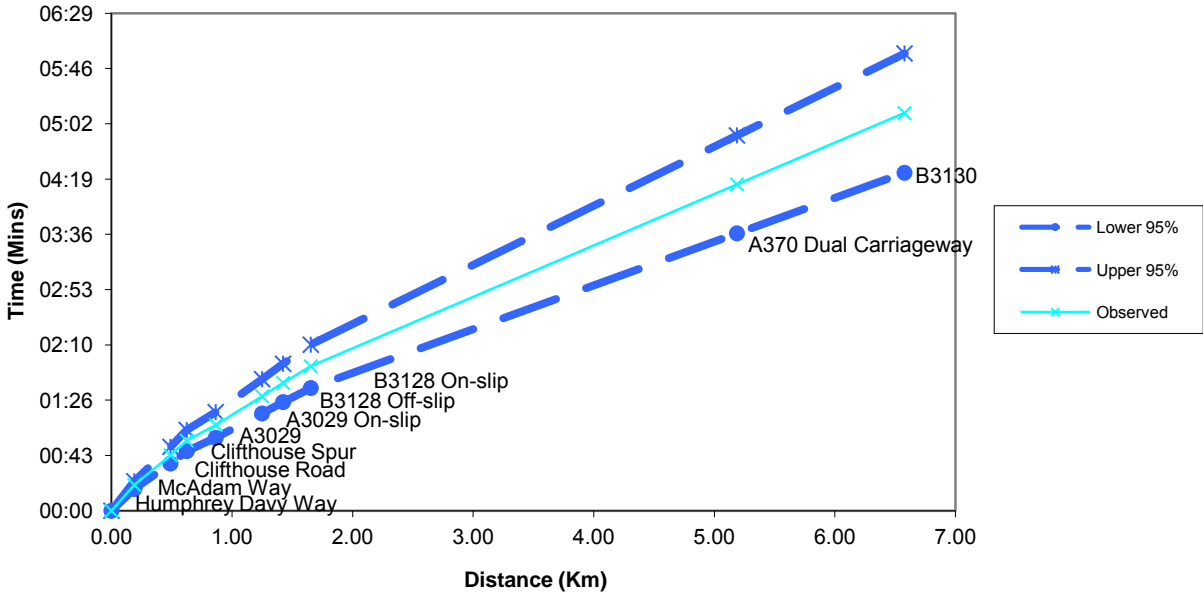
**SBL: Comparison of Modelled and Observed Journey Times
Route 3: Southbound - AM**



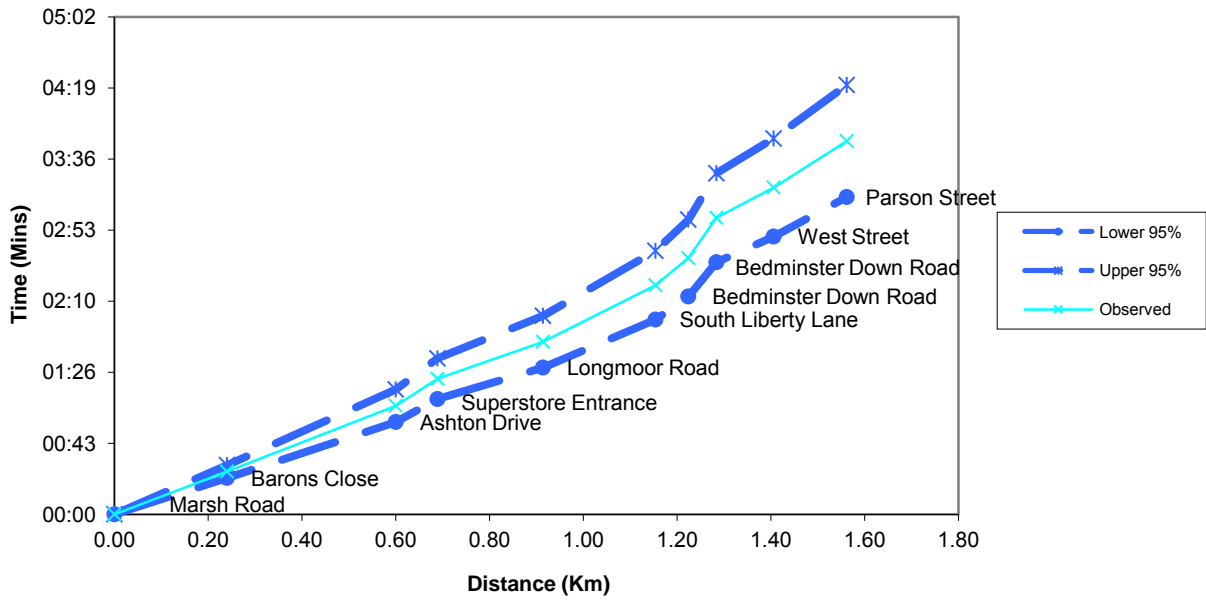
SBL: Comparison of Modelled and Observed Journey Times
Route 4: Northbound - AM



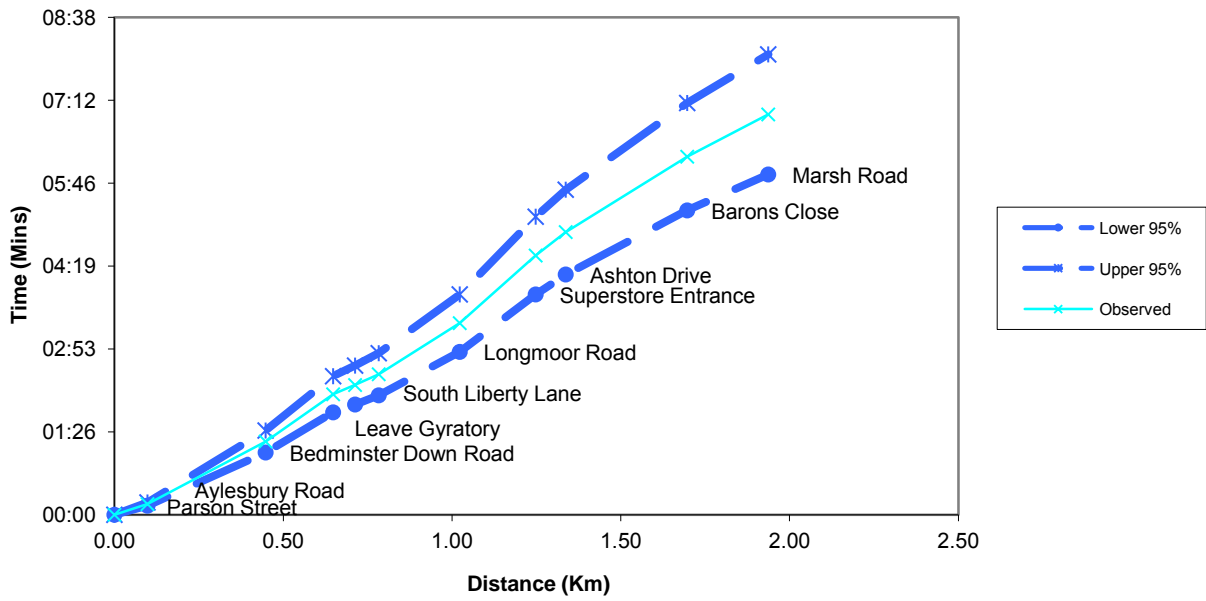
SBL: Comparison of Modelled and Observed Journey Times
Route 4: Southbound - AM



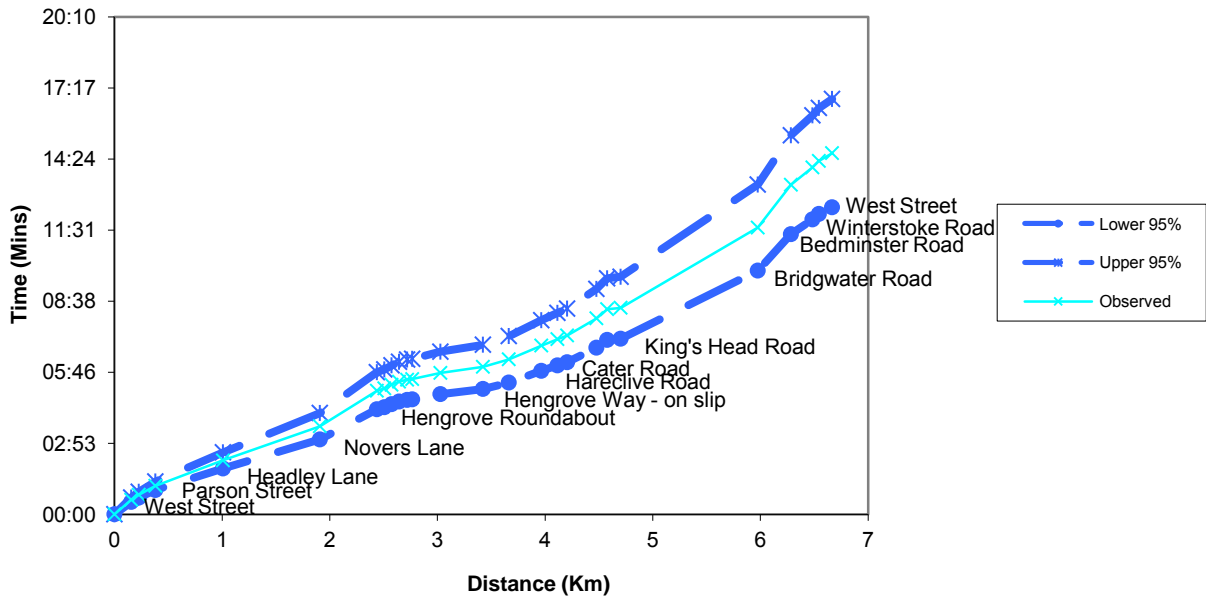
**SBL: Comparison of Modelled and Observed Journey Times
Route 5: Southbound - AM**



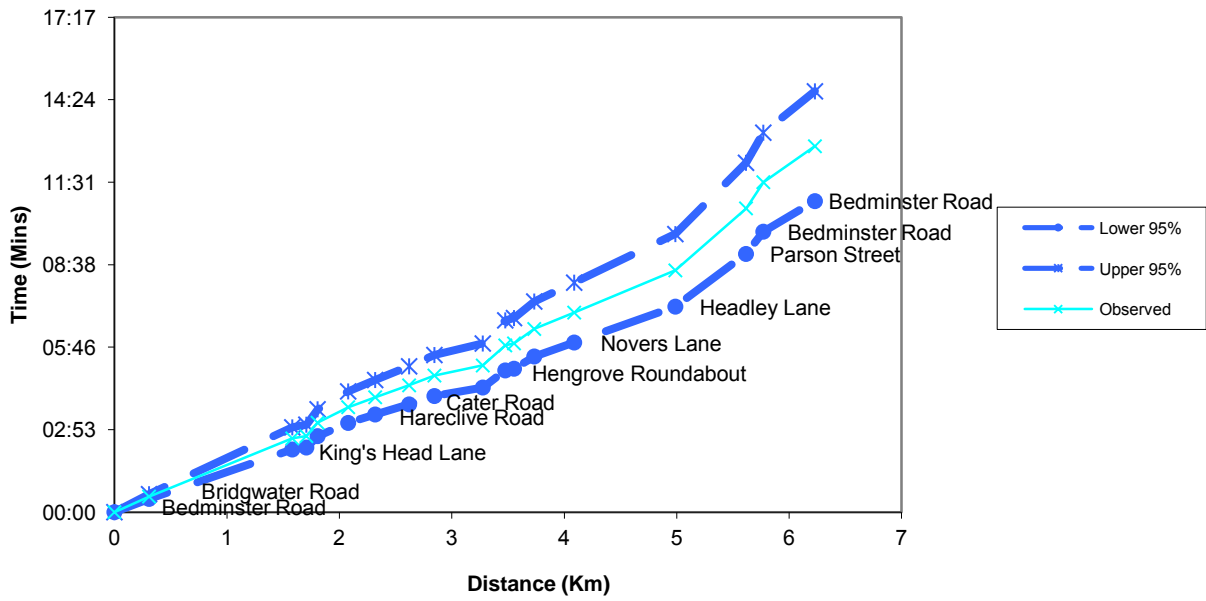
**SBL: Comparison of Modelled and Observed Journey Times
Route 5: Northbound - AM**



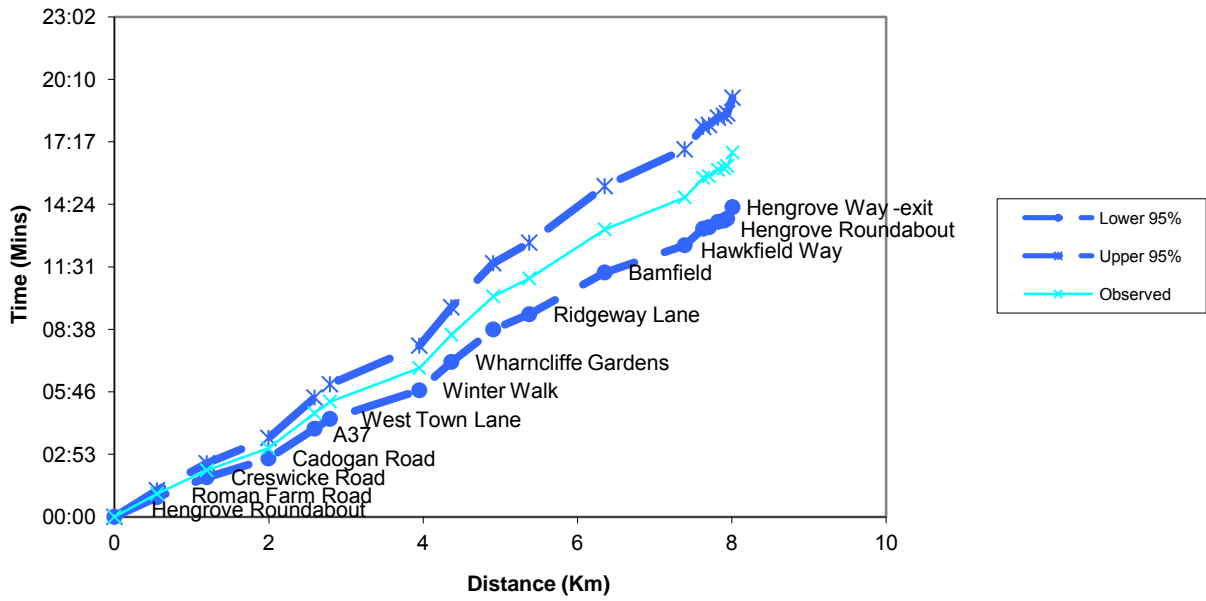
SBL: Comparison of Modelled and Observed Journey Times
Route 6: Clockwise - AM



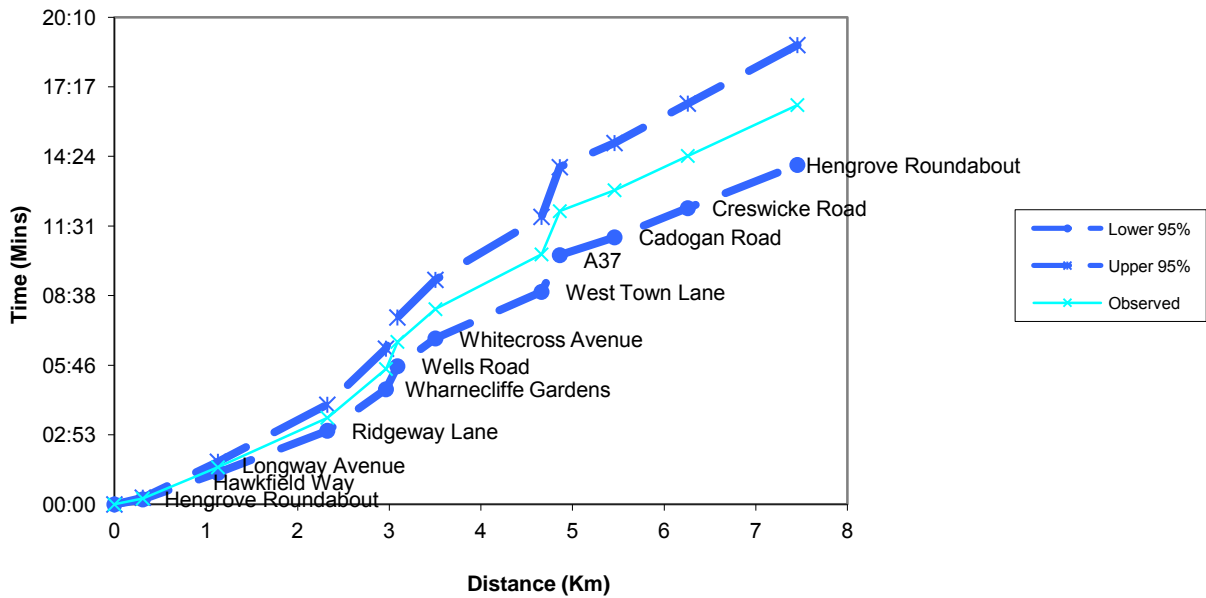
SBL: Comparison of Modelled and Observed Journey Times
Route 7: Anti-Clockwise - AM



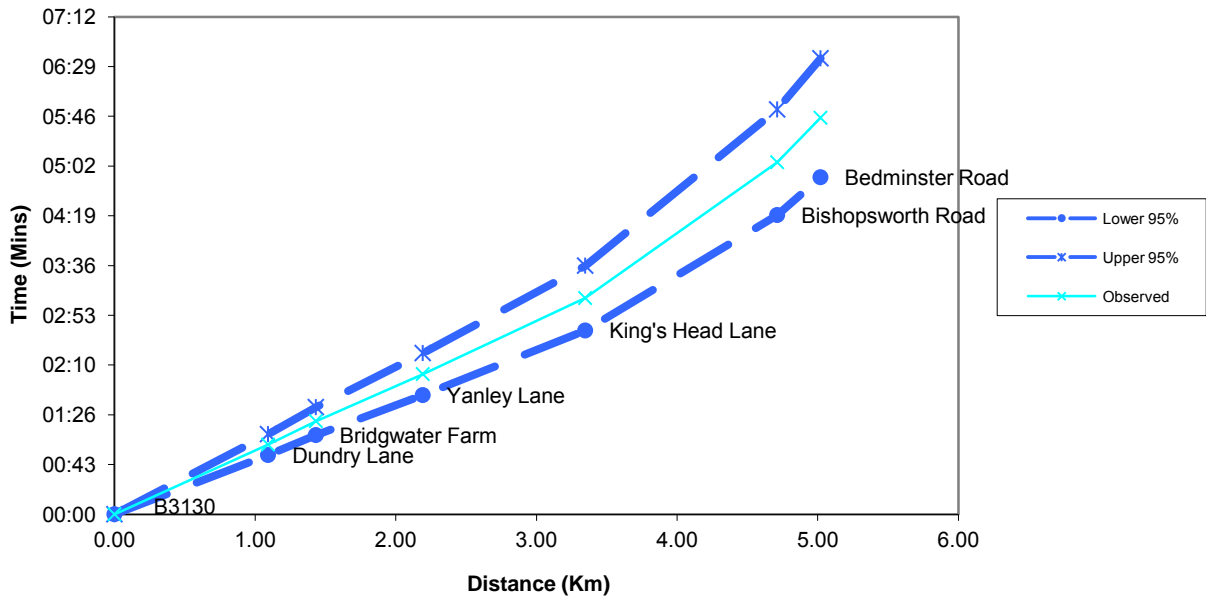
SBL: Comparison of Modelled and Observed Journey Times
Route 8: Clockwise - AM



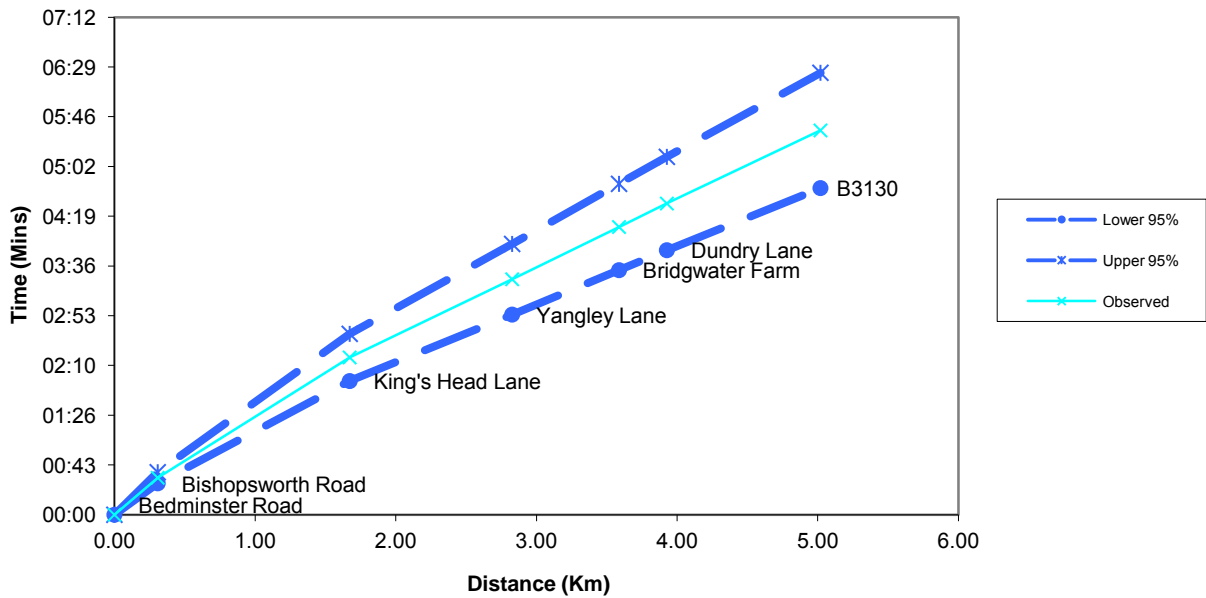
SBL: Comparison of Modelled and Observed Journey Times
Route 9: Anti-Clockwise - AM



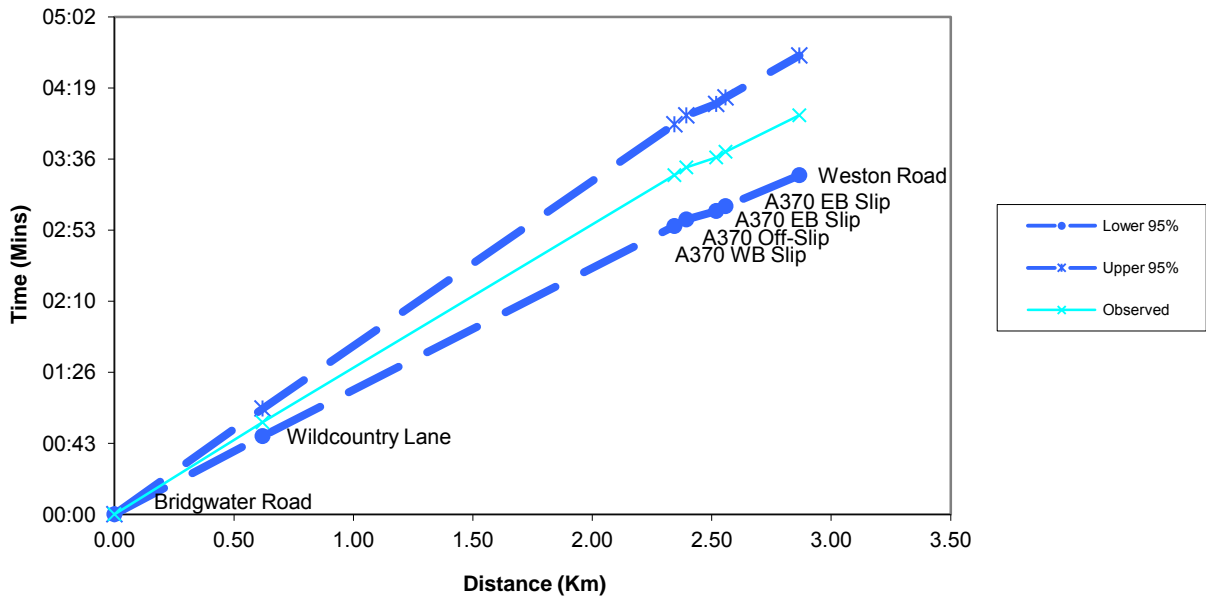
**SBL: Comparison of Modelled and Observed Journey Times
Route 1: Northbound - IP**



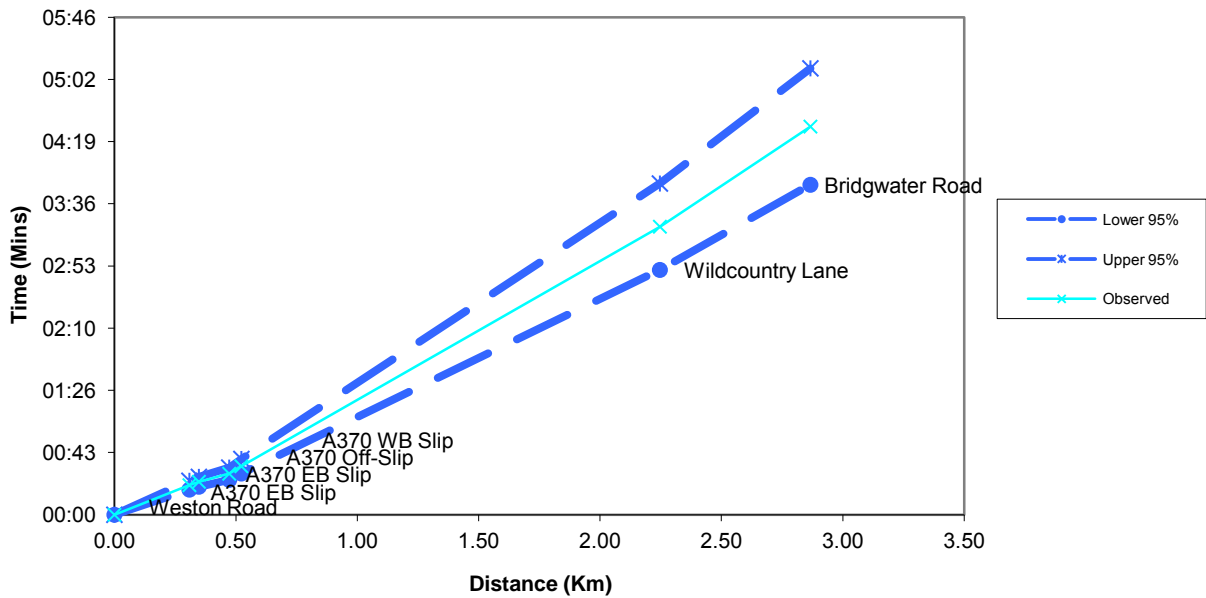
**SBL: Comparison of Modelled and Observed Journey Times
Route 1: Southbound - IP**



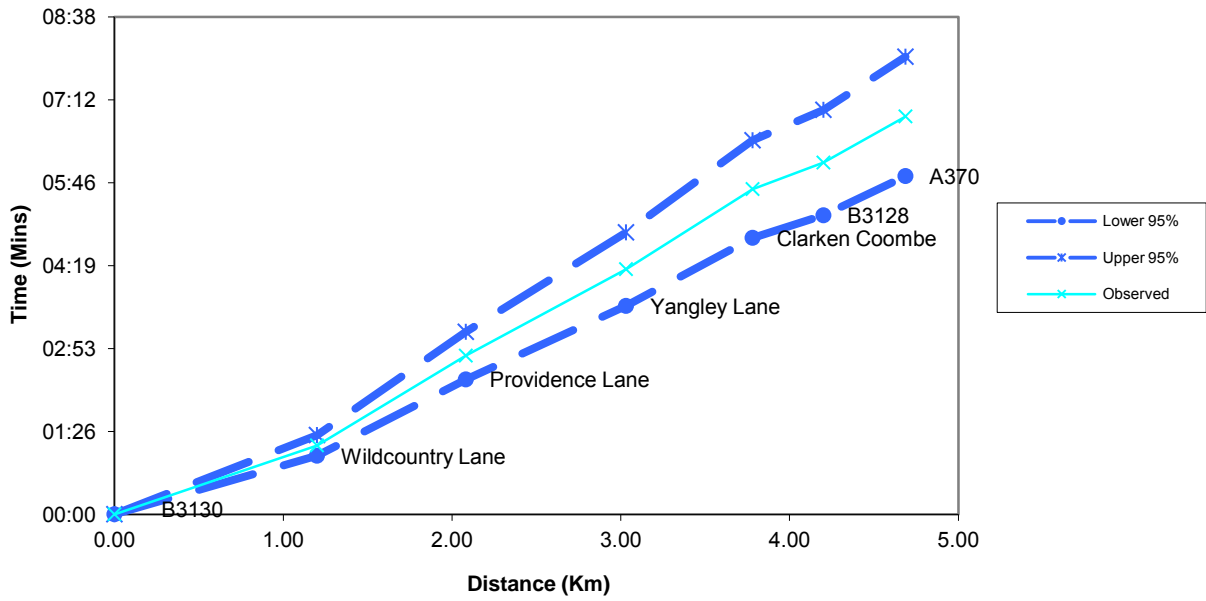
SBL: Comparison of Modelled and Observed Journey Times
Route 2: Northbound - IP



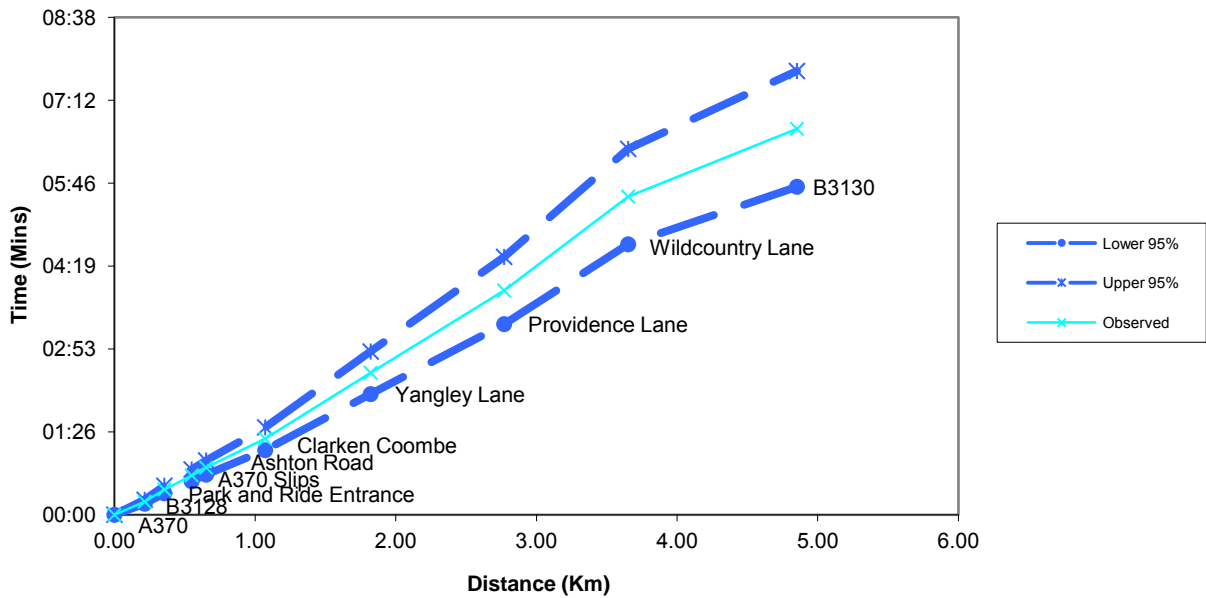
SBL: Comparison of Modelled and Observed Journey Times
Route 2: Southbound - IP



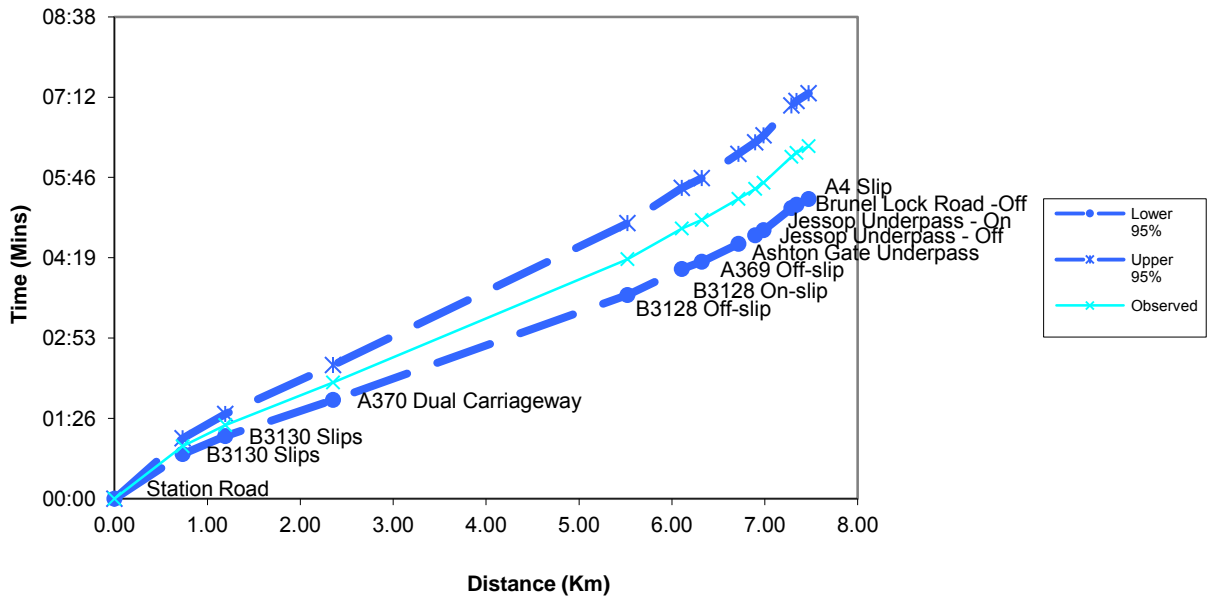
SBL: Comparison of Modelled and Observed Journey Times
Route 3: Northbound - IP



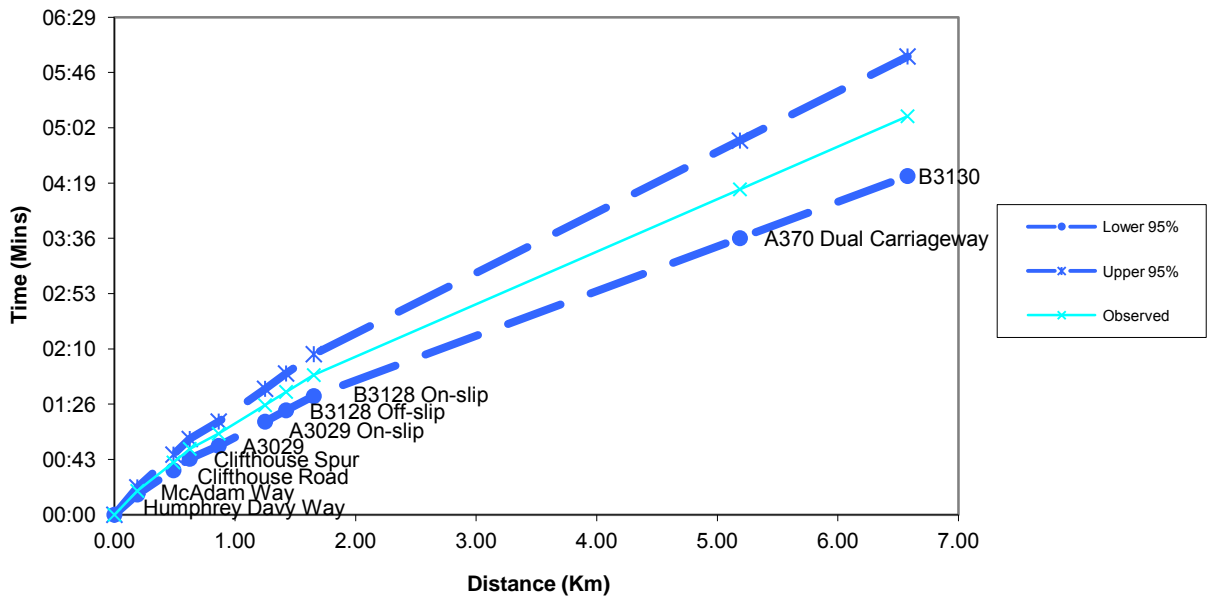
SBL: Comparison of Modelled and Observed Journey Times
Route 3: Southbound - IP



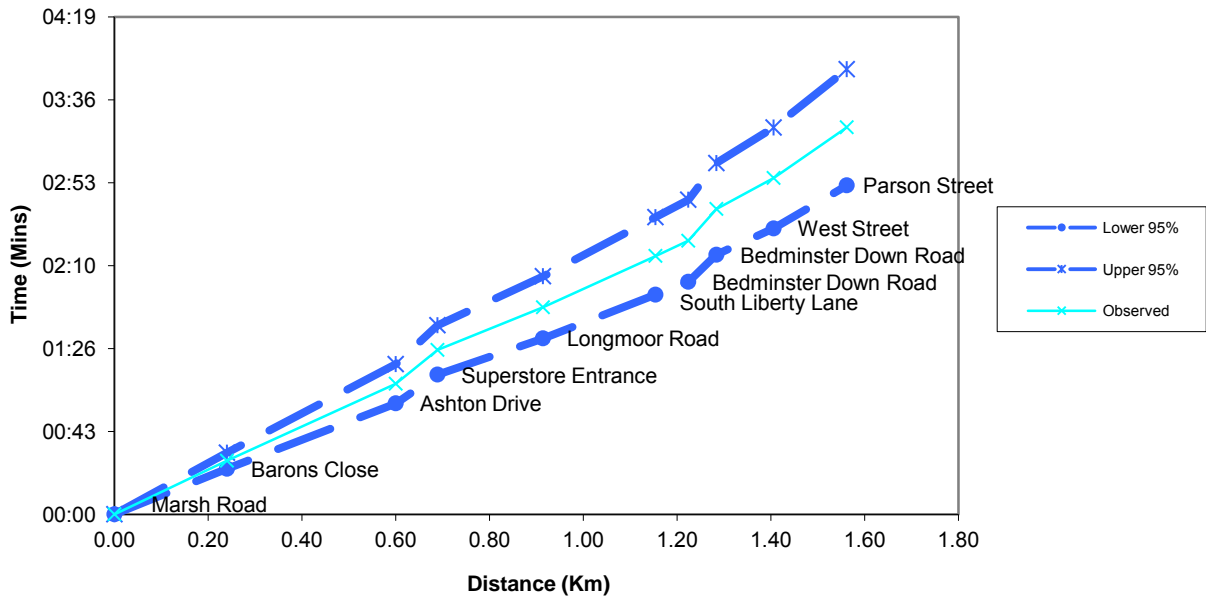
SBL: Comparison of Modelled and Observed Journey Times
Route 4: Northbound - IP



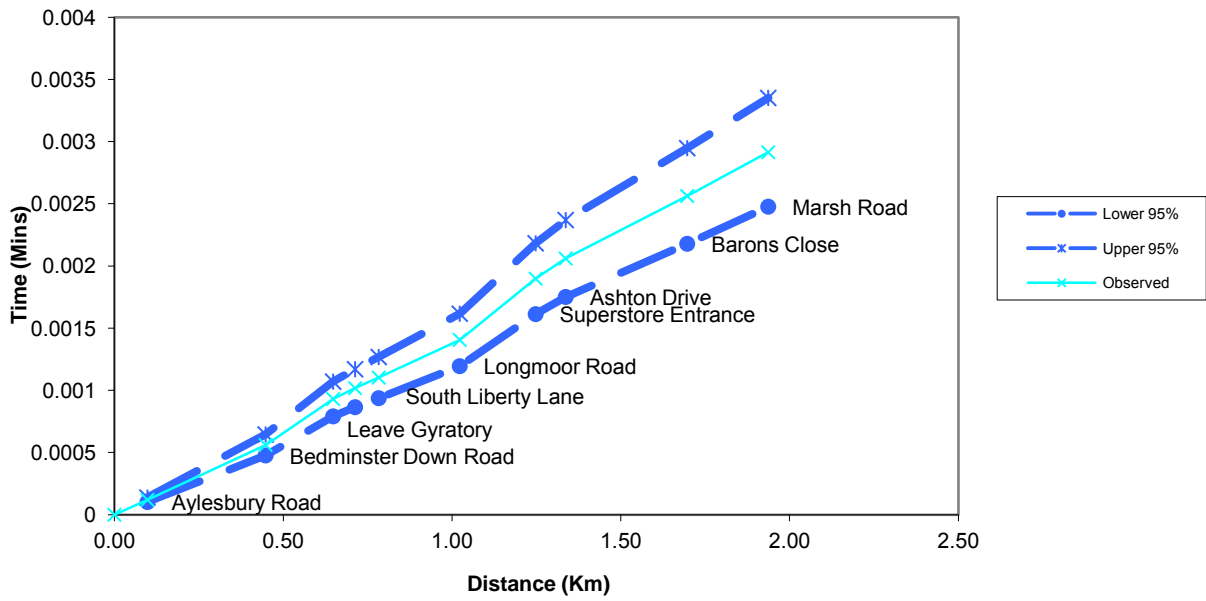
SBL: Comparison of Modelled and Observed Journey Times
Route 4: Southbound - IP



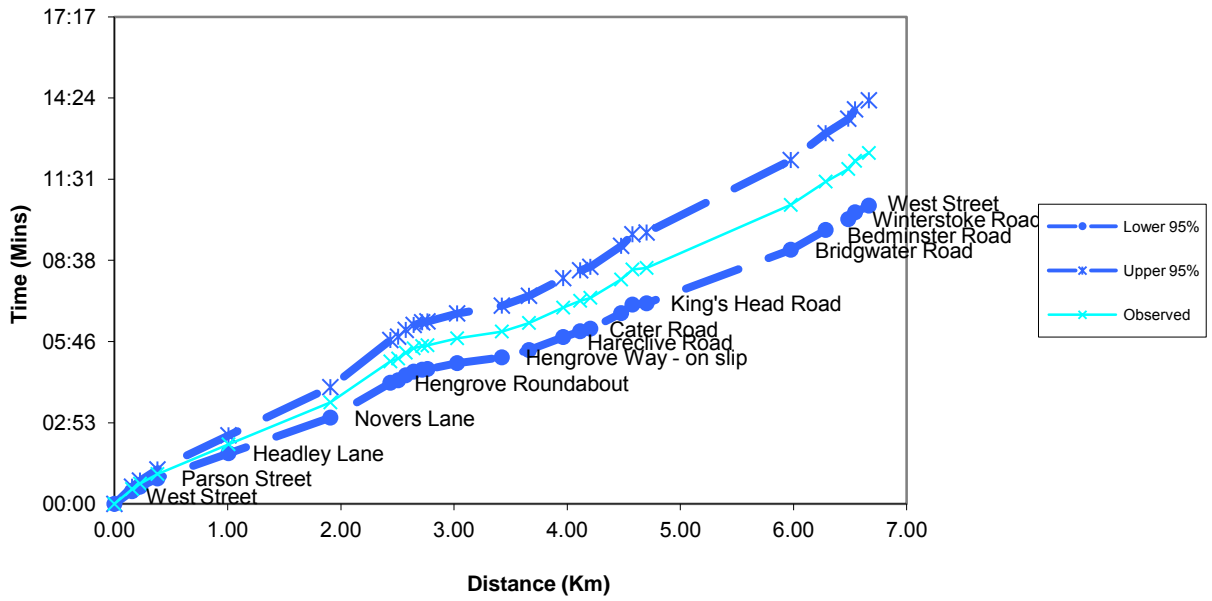
**SBL: Comparison of Modelled and Observed Journey Times
Route 5: Southbound - IP**



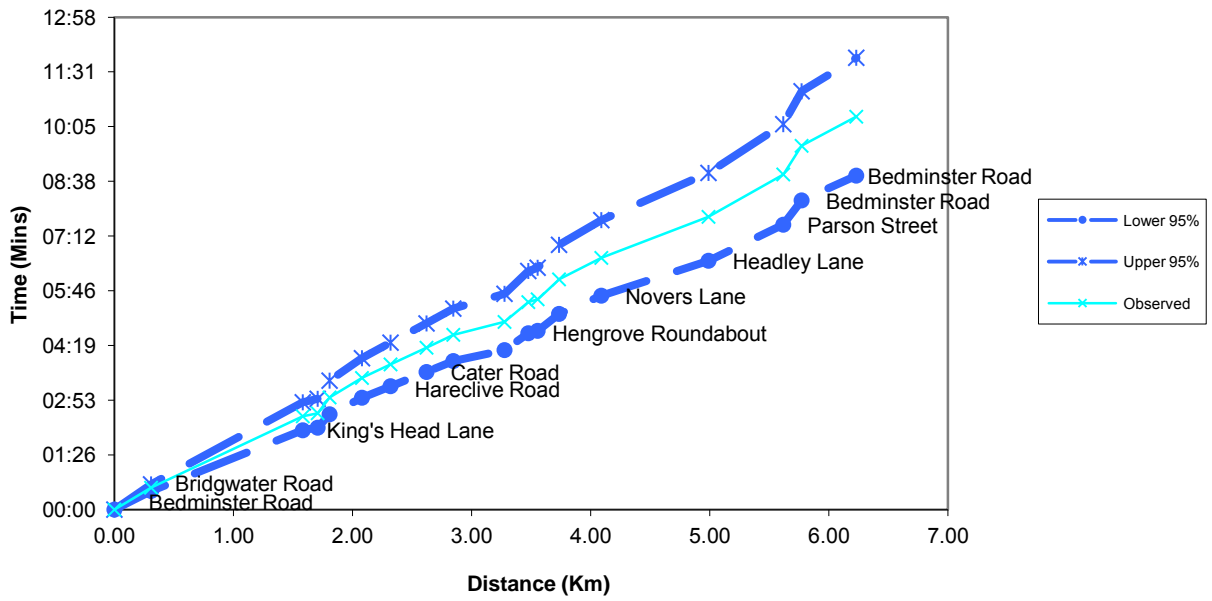
**SBL: Comparison of Modelled and Observed Journey Times
Route 5: Northbound - IP**



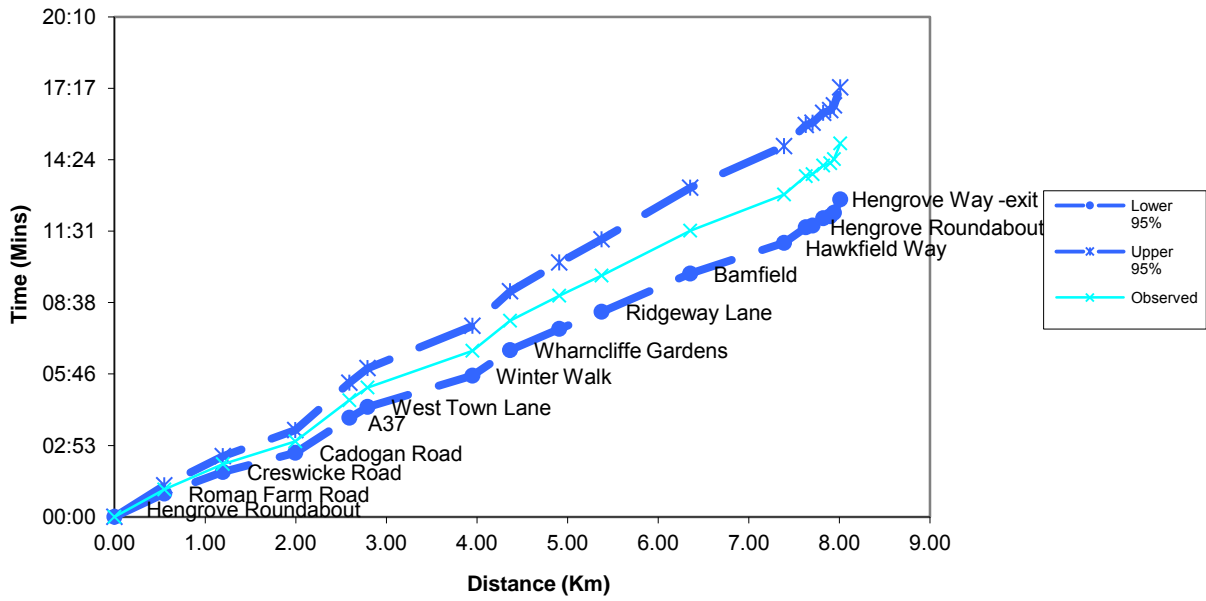
SBL: Comparison of Modelled and Observed Journey Times
Route 6: Clockwise - IP



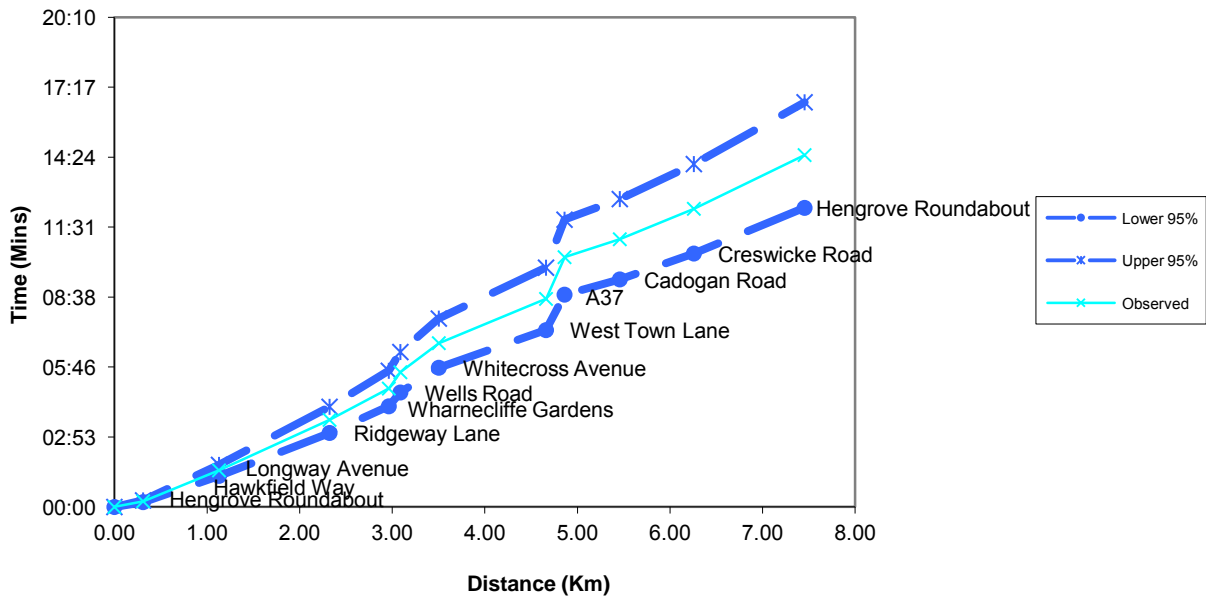
SBL: Comparison of Modelled and Observed Journey Times
Route 7: Anti-Clockwise - IP



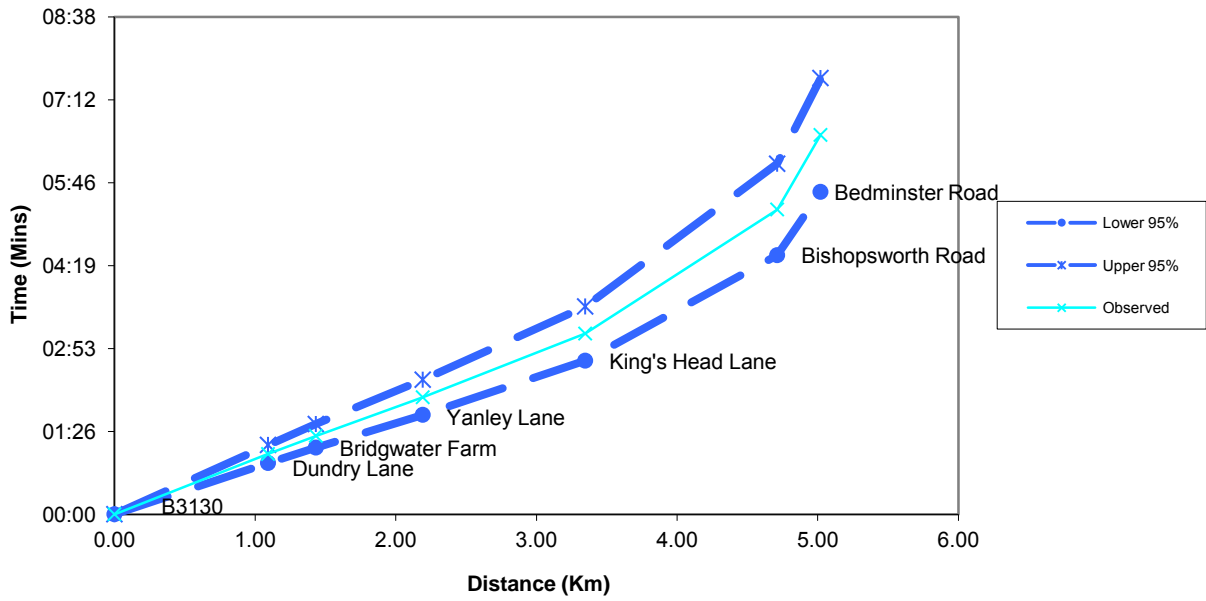
**SBL: Comparison of Modelled and Observed Journey Times
Route 8: Clockwise - IP**



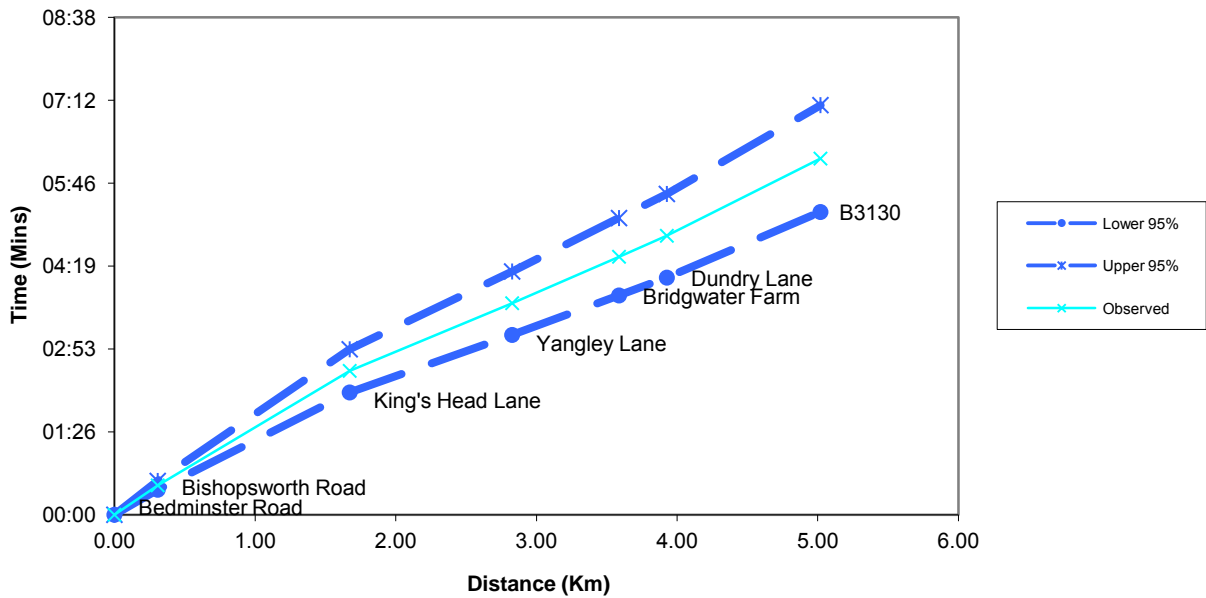
**SBL: Comparison of Modelled and Observed Journey Times
Route 9: Anti-Clockwise - IP**



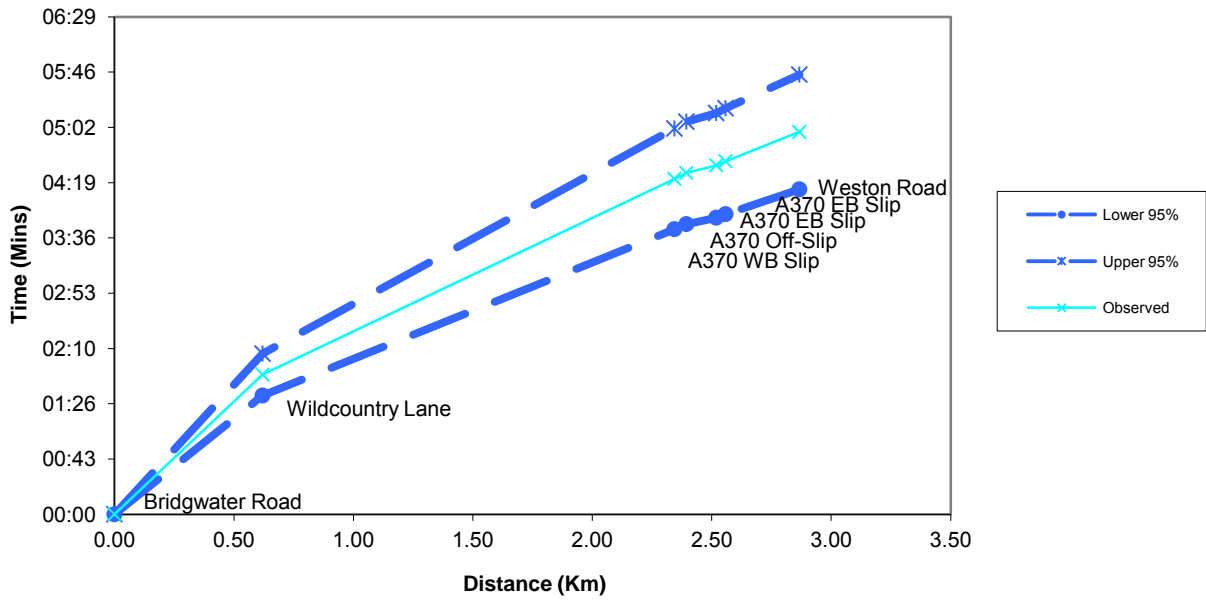
**SBL: Comparison of Modelled and Observed Journey Times
Route 1: Northbound - PM**



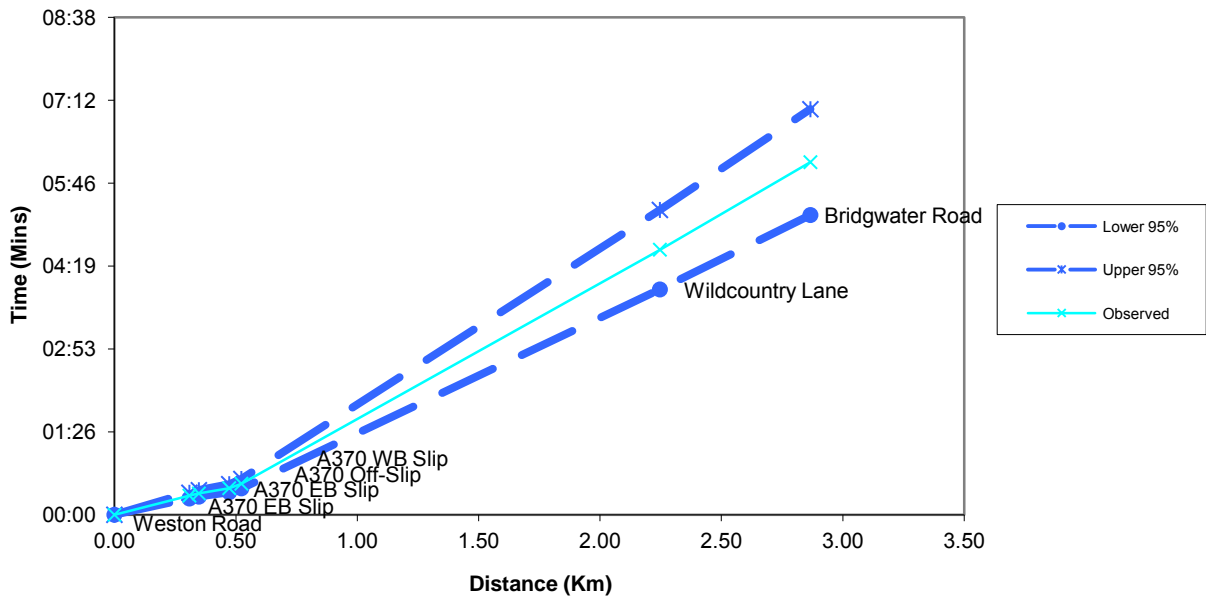
**SBL: Comparison of Modelled and Observed Journey Times
Route 1: Southbound - PM**



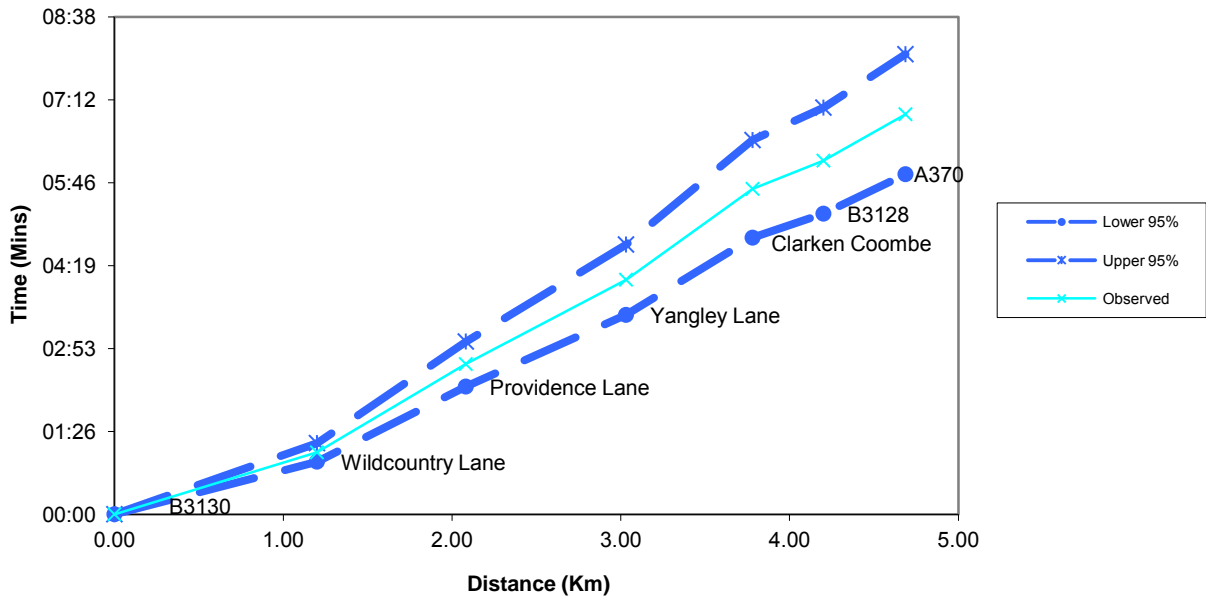
**SBL: Comparison of Modelled and Observed Journey Times
Route 2: Northbound - PM**



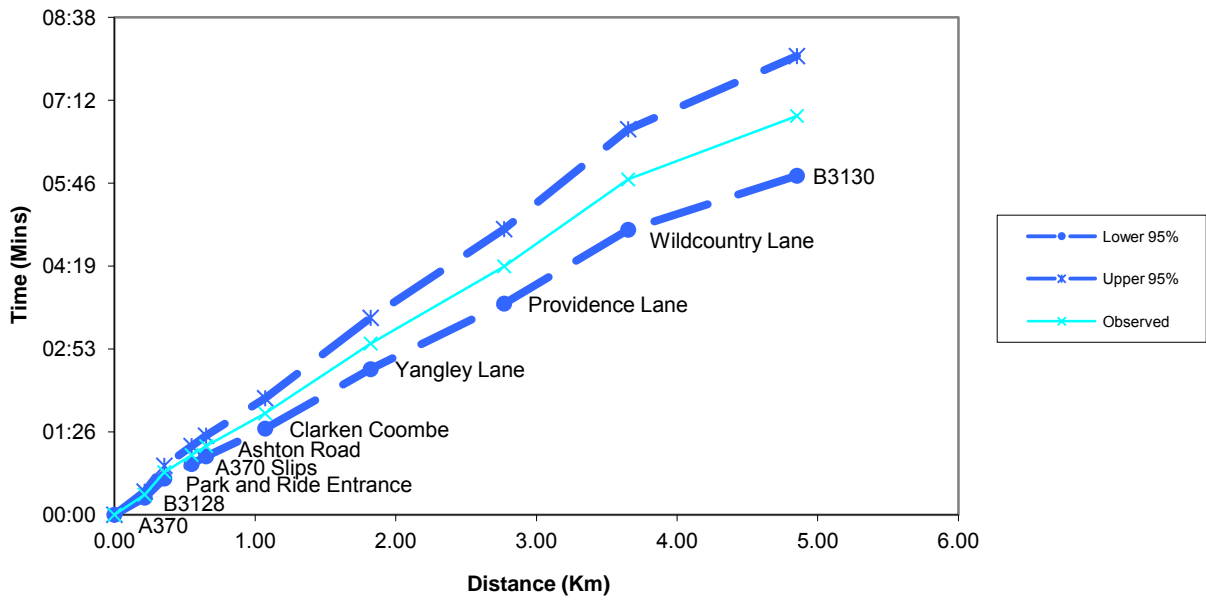
**SBL: Comparison of Modelled and Observed Journey Times
Route 2: Southbound - PM**



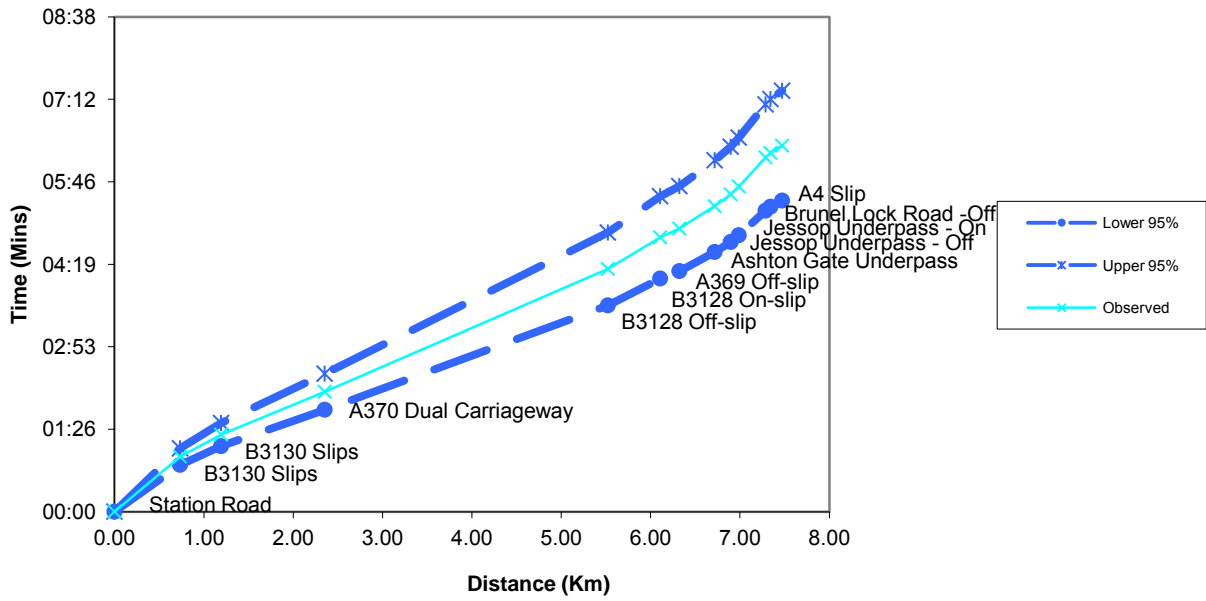
**SBL: Comparison of Modelled and Observed Journey Times
Route 3: Northbound - PM**



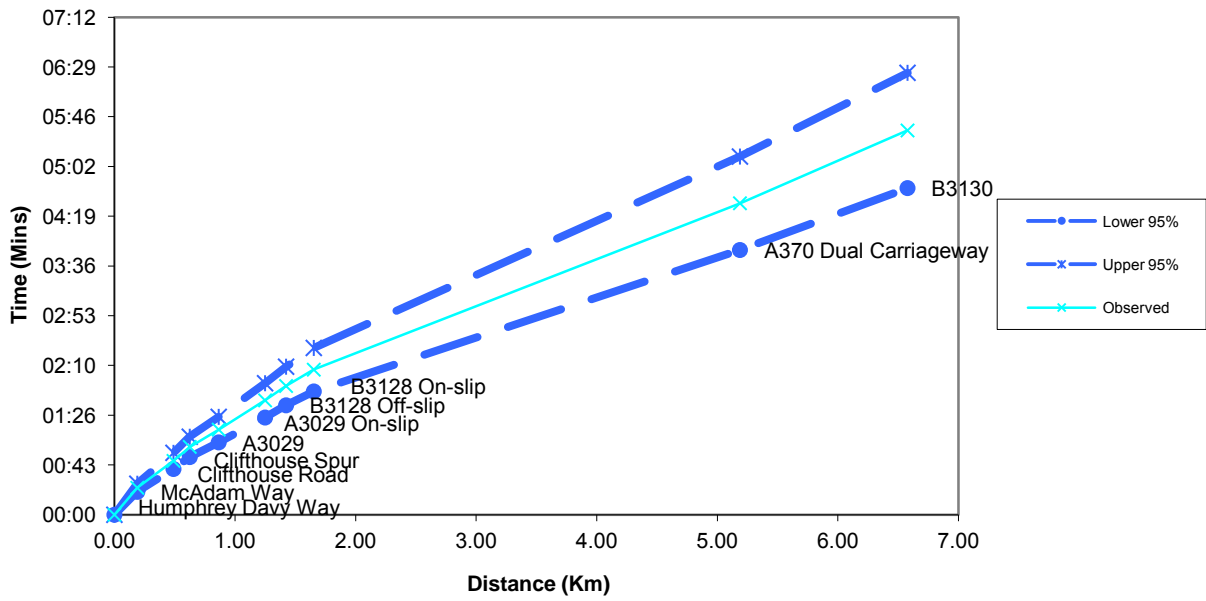
**SBL: Comparison of Modelled and Observed Journey Times
Route 3: Southbound - PM**



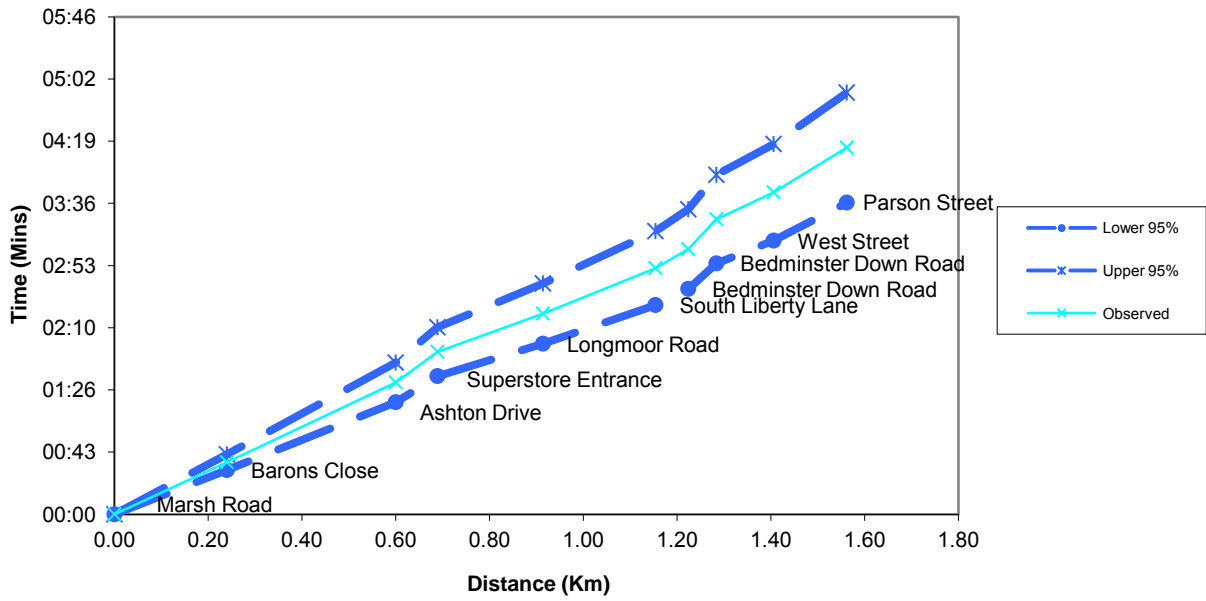
**SBL: Comparison of Modelled and Observed Journey Times
Route 4: Northbound - PM**



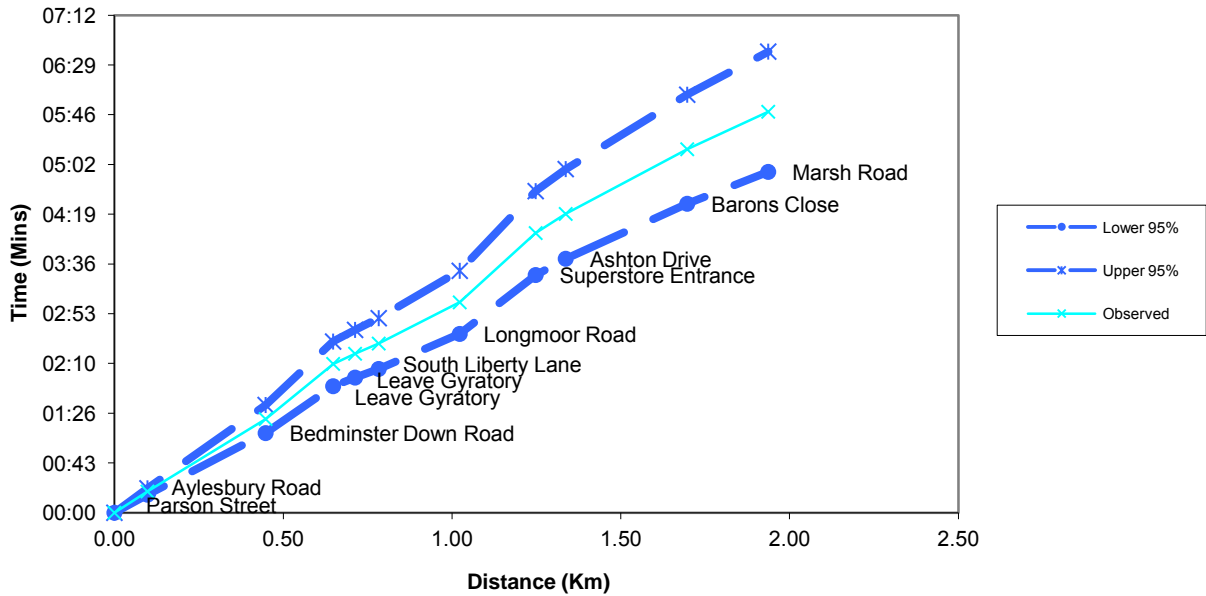
**SBL: Comparison of Modelled and Observed Journey Times
Route 4: Southbound - PM**



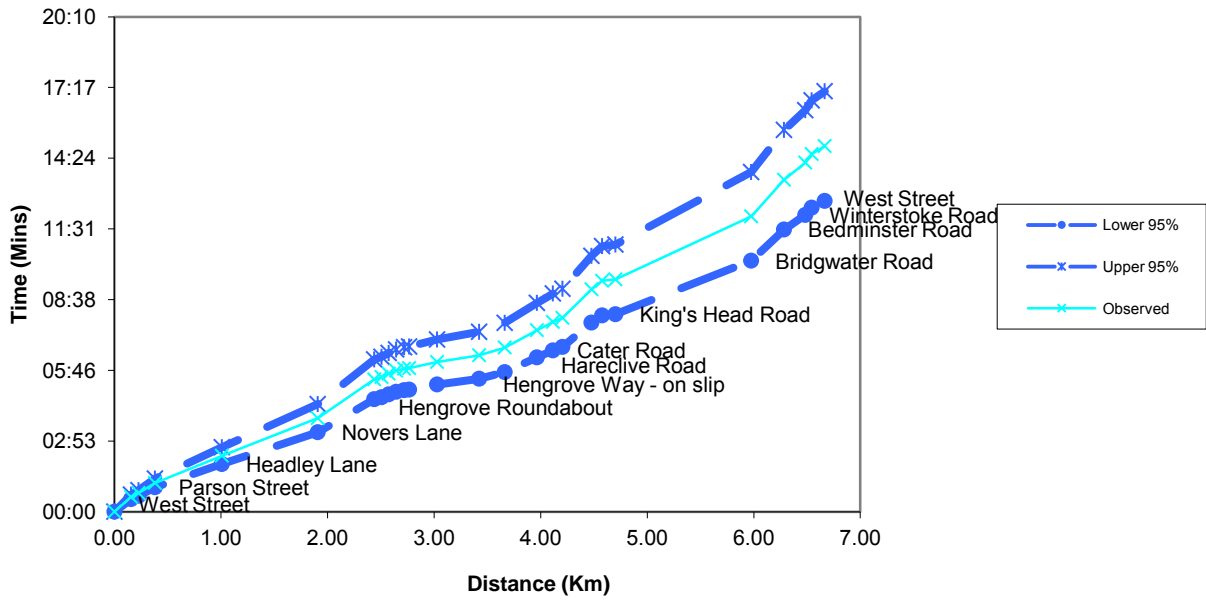
**SBL: Comparison of Modelled and Observed Journey Times
Route 5: Southbound - PM**



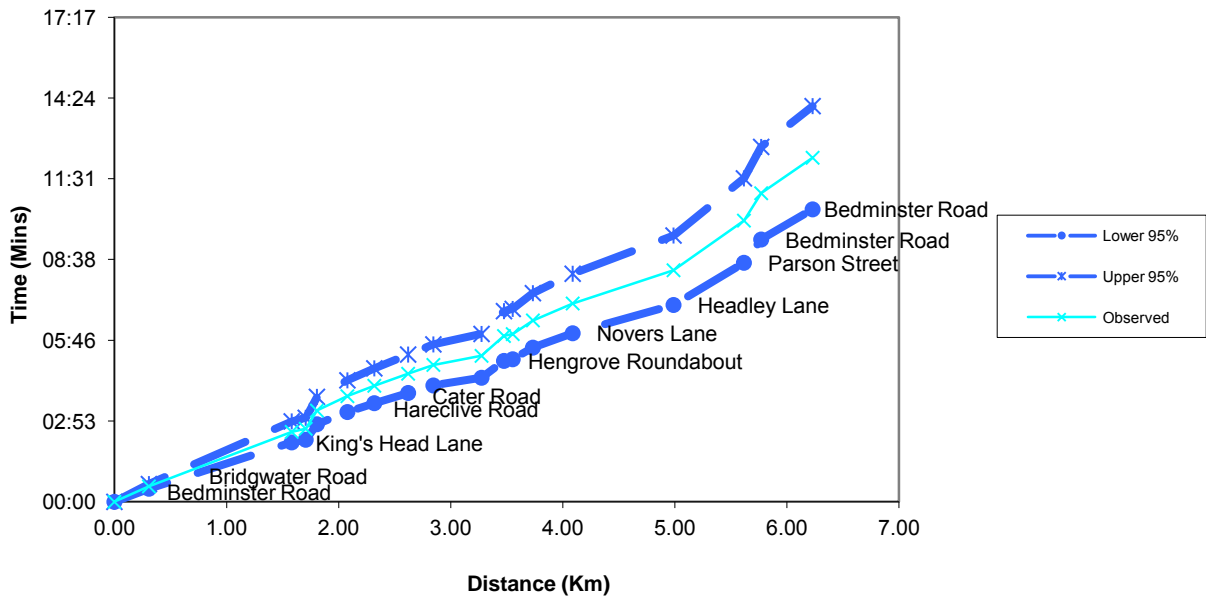
**SBL: Comparison of Modelled and Observed Journey Times
Route 5: Northbound - PM**



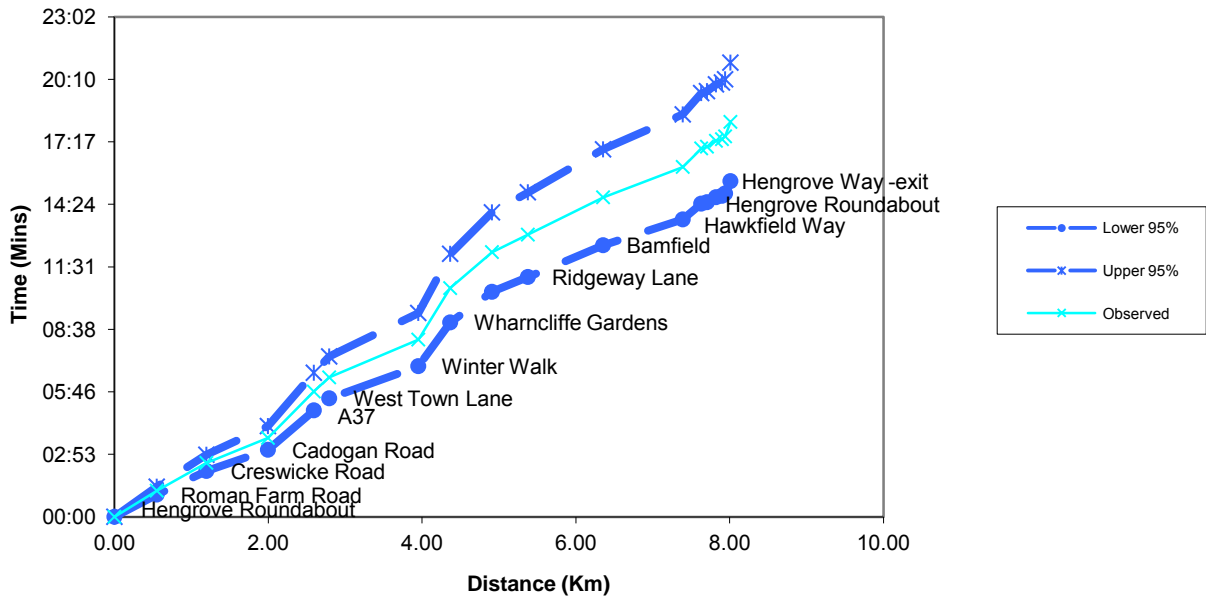
**SBL: Comparison of Modelled and Observed Journey Times
Route 6: Clockwise - PM**



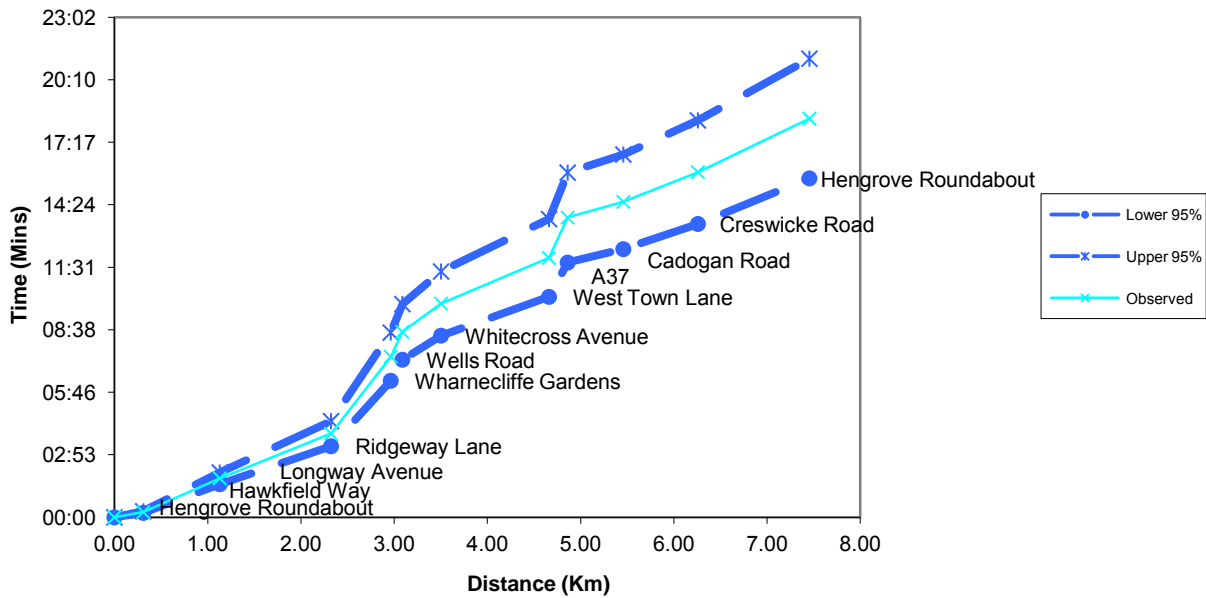
**SBL: Comparison of Modelled and Observed Journey Times
Route 7: Anti-Clockwise - PM**



**SBL: Comparison of Modelled and Observed Journey Times
Route 8: Clockwise - PM**



**SBL: Comparison of Modelled and Observed Journey Times
Route 9: Anti-Clockwise - PM**



C. Traffic Count Data

Description	Direction	AM (8-9:00)					IP (ave 10-16:00)					PM (17-18:00)				
		Car	LGV	HGV	PSV	Total	Car	LGV	HGV	PSV	Total	Car	LGV	HGV	PSV	Total
Longway Ave/Witch Hazel Rd	Inbound	64	13	0	0	77	65	12	1	0	78	112	13	1	0	127
Longway Ave/Witch Hazel Rd	Outbound	112	17	2	0	131	77	12	2	1	92	94	12	2	0	108
A38 Bedminster Down Rd	Inbound	688	124	23	10	844	682	146	36	12	876	1023	163	15	15	1215
A38 Bedminster Down Rd	Outbound	808	158	23	17	1006	657	142	39	13	851	836	112	11	15	974
Abbots Leigh Road	Inbound	705	117	15	5	843	470	84	18	6	578	759	88	8	5	860
Abbots Leigh Road	Outbound	469	78	26	9	582	430	77	23	7	537	704	81	8	6	799
A4 Portway	Inbound	635	106	58	20	819	630	113	50	16	809	743	86	12	8	848
A4 Portway	Outbound	575	96	48	17	735	615	110	53	17	796	698	81	14	10	803
Ladies Mile	Inbound	180	30	1	0	211	118	21	1	0	141	172	20	0	0	192
Ladies Mile	Outbound	137	23	2	1	162	125	22	1	0	149	254	29	1	0	284
Stoke Rd	Inbound	332	55	4	1	392	224	40	4	1	269	339	39	3	2	383
Stoke Rd	Outbound	212	35	4	1	252	203	36	6	2	247	329	38	5	3	375
Westbury Rd (south of Pary's Lane)	Inbound	615	102	15	5	738	442	79	18	6	546	714	83	7	5	808
Westbury Rd (south of Pary's Lane)	Outbound	851	141	22	8	1022	640	114	30	10	794	739	85	10	7	841
Coldharbour Rd	Inbound	491	82	6	2	581	290	52	6	2	351	435	50	3	2	491
Coldharbour Rd	Outbound	287	48	4	1	340	286	51	8	3	348	518	60	6	4	587
Cranbrook Rd	Inbound	276	46	13	4	340	221	40	15	5	281	285	33	5	4	327
Cranbrook Rd	Outbound	146	24	7	2	180	168	30	11	4	213	234	27	4	3	268
Gloucester Rd	Inbound	523	87	12	4	626	337	60	12	4	413	400	46	7	5	458
Gloucester Rd	Outbound	308	51	8	3	369	333	60	13	4	410	418	48	9	6	481
North Rd	Inbound	80	13	1	0	94	34	6	1	0	42	65	7	1	0	73
North Rd	Outbound	37	6	0	0	43	38	7	1	0	45	77	9	0	0	87
Cromwell Rd	Inbound	277	46	6	2	332	160	29	7	2	198	234	27	3	2	266
Cromwell Rd	Outbound	208	35	3	1	246	189	34	6	2	230	325	38	3	2	367
Chesterfield Rd	Inbound	80	13	1	0	94	34	6	1	0	42	65	7	1	0	73
Chesterfield Rd	Outbound	37	6	0	0	43	38	7	1	0	45	77	9	0	0	87
Ashley Hill	Inbound	791	132	11	4	937	478	86	12	4	580	730	84	5	3	822

Ashley Hill	Outbound	606	101	12	4	723	421	75	12	4	512	711	82	6	4	803
Glenfrome Rd	Inbound	332	70	5	5	413	264	51	4	7	326	300	51	1	4	357
Glenfrome Rd	Outbound	254	54	4	4	315	263	51	4	7	325	326	56	1	5	388
M32	Inbound	2929	319	112	16	3376	1750	354	121	19	2244	2798	274	40	29	3141
M32	Outbound	2979	467	103	30	3579	2032	398	124	22	2575	3805	301	64	27	4197
Stapleton Rd	Inbound	159	26	11	4	199	292	52	12	4	361	378	44	8	6	436
Stapleton Rd	Outbound	475	79	15	5	575	344	62	13	4	422	357	41	6	4	408
Easton Rd	Inbound	525	87	6	2	621	233	42	2	1	277	270	31	1	1	303
Easton Rd	Outbound	166	28	1	0	196	201	36	2	1	239	401	46	3	2	453
Lawrence Hill	Inbound	942	157	34	12	1145	579	104	29	9	721	711	82	7	5	806
Lawrence Hill	Outbound	510	85	17	6	617	531	95	28	9	663	770	89	17	12	887
Day's Rd	Inbound	160	27	6	2	195	222	40	5	2	269	368	43	2	2	414
Day's Rd	Outbound	572	95	9	3	679	267	48	6	2	322	187	22	2	1	211
Feeder Rd	Inbound	299	50	14	5	367	417	75	28	9	529	697	81	13	9	799
Feeder Rd	Outbound	743	124	35	12	913	391	70	26	9	496	383	44	7	5	440
St Phillips Causeway (bridge)	Inbound	1155	192	39	14	1399	727	130	39	13	908	851	98	21	14	984
St Phillips Causeway (bridge)	Outbound	611	102	20	7	740	808	145	36	12	1000	1624	188	40	27	1879
Bath Rd	Inbound	264	44	16	6	329	410	73	26	8	517	562	65	18	12	658
Bath Rd	Outbound	478	79	19	7	584	436	78	19	6	539	473	55	11	7	546
Talbot Rd	Inbound	188	31	1	0	221	131	23	3	1	158	206	24	1	1	232
Talbot Rd	Outbound	521	87	2	1	610	309	55	3	1	368	398	46	1	1	445
Callington Rd	Inbound	344	57	16	6	423	339	61	23	7	430	408	47	8	5	468
Callington Rd	Outbound	543	90	25	9	667	530	95	35	12	671	606	70	11	8	696
W Town Lane	Inbound	296	49	3	1	349	236	42	3	1	282	571	66	2	1	640
W Town Lane	Outbound	414	69	5	2	489	241	43	4	1	290	319	37	2	1	359
Wells Rd	Inbound	510	85	27	9	630	437	78	28	9	552	510	59	11	7	587
Wells Rd	Outbound	331	55	37	13	436	408	73	30	10	521	535	62	10	7	614
New Fosseyway Rd	Inbound	262	44	3	1	310	129	23	4	1	157	155	18	1	1	175
New Fosseyway Rd	Outbound	241	40	5	2	288	167	30	2	1	200	290	34	1	1	326
Oatlands Ave	Inbound	297	49	14	5	365	235	42	16	5	298	291	34	5	4	334
Oatlands Ave	Outbound	211	35	10	3	259	229	41	15	5	291	316	36	6	4	362
Bamfield	Inbound	147	24	3	1	176	142	25	2	1	170	221	26	1	0	247
Bamfield	Outbound	201	33	1	1	236	132	24	1	0	158	191	22	1	1	215
Westbury Park	Outbound	208	35	5	2	250	183	33	4	1	221	327	38	2	1	368
Longwood Lane	Inbound	43	3	0	0	46	55	6	1	0	62	129	7	2	0	138
Longwood Lane	Outbound	138	9	1	0	148	34	5	0	0	39	83	7	0	0	90

Clarken Coombe	Inbound	394	65	38	5	502	147	26	21	2	196	234	27	5	2	268
Clarken Coombe	Outbound	190	31	18	2	241	211	38	18	3	269	511	59	1	2	573
B3130 Clevedon Road	Inbound	405	67	19	7	498	257	46	17	6	325	501	58	9	6	574
B3130 Clevedon Road	Outbound	484	80	22	8	595	259	46	17	6	329	387	45	7	5	444
A370 east of Flax Bourton	Inbound	574	95	27	9	706	317	57	21	7	401	397	46	7	5	455
A370 east of Flax Bourton	Outbound	431	72	20	7	529	393	70	26	9	498	710	82	13	9	815

Contact name

Address

Email:

Telephone:

Direct telephone:

Fax:

