Better Bus Areas Programme

Impact Evaluation Baseline Data Report

September 2015

Document Control Sheet

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2-1	BBA Baseline Data Report		NG	NA	NA
2-0	BBA Baseline Data Report		NG	NA	NA
1-0	BBA Baseline Data Report		NG	NA	NA

Notice

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1   INTRODUCTION

1.1   The Better Bus Areas (BBA) fund is an innovative programme whereby Bus Service Operators Grant (BSOG) payable in defined geographic locations is progressively devolved from bus operators to local authorities. Over a five year period, the aim is for the five BBA local authorities appointed to date to work in partnership with local bus operators to use that funding to implement schemes that encourage greater bus use. In theory, these should be better value for money than conventional BSOG arrangements.

1.2   This Baseline Data Report is part two of the second deliverable of ITP's contract with the DfT to carry out an evaluation of the BBA programme. In September 2014 the first deliverable, the Evaluation Plan, was published that presented each scheme that each BBA intends to implement. In December 2014, part one of the second deliverable – the process evaluation report – was presented to DfT, and this report completes the second deliverable by presenting the baseline data for the impact evaluation.

1.3   As presented within the Evaluation Plan, the study team and DfT identified specific schemes across three BBAs where the impacts of those schemes can be measured and evaluated. The schemes identified by DfT for the impact evaluation are as follows:

- ❑ Housing estate and bus stop improvements
- ❑ Active traffic management infrastructure

  Liverpool City Region

- ❑ AVL signal priority
- ❑ Smartcard retail network
- ❑ CCTV feed to operators' control centres
- ❑ AV equipment on NCT services

  Nottingham

- ❑ Sheffield city centre improvements
- ❑ On-bus audio-visual equipment

  Sheffield

1.4   The role of this report is to present the baseline data that has been collected to evaluate the impact of BBA schemes noted above. This report should be read in conjunction with the Final Report to enable the reader to fully understand the data that has been collected from BBAs and other sources.

1.5   All of the raw (and processed) baseline data contained in this report is also provided on an accompanying folder of files contained on a USB memory stick. This memory stick systematically files each data file against the scheme for which it is to be used for the evaluation. Where the same file is required for more than one scheme, then it is replicated. This report states the file location for each dataset for ease of reference.

2   LIVERPOOL CITY REGION

2.1   This chapter presents the baseline data collected for the Liverpool City Region. There are two schemes agreed with DfT during the Evaluation Plan phase that should be evaluated:

- ❑ Housing estate and bus stop improvements
- ❑ Active traffic management infrastructure

2.2   This chapter sets out the baseline data collected for each of these schemes.

Housing estate and bus stop improvements

2.3   The key indicators to evaluate the impacts of these interventions are:

- ❑ Changes in bus patronage (% and number of passengers)
- ❑ Changes to PVR requirements related to headway on affected routes
- ❑ Change in level of user satisfaction (% of users satisfied or very satisfied with different aspects of service)
- ❑ Changes to carbon emissions

2.4   The data requested to present baseline evidence for these indicators are as follows:

- ❑ Bus patronage on routes operating through each of the four housing estates (and appropriate comparator routes), with boardings at the bus stops within the housing estates disaggregated by passenger type (fare payer / concessionary pass holder). Where possible, data will be collected directly from bus operators for up to three years to show medium-long term patronage trends.

- ❑ User satisfaction survey outputs. Booster survey samples will be carried out on routes that operate through the four housing estates (e.g. routes 17, 17a, 33, 89, 89a), but will not specifically be carried out with passengers boarding at the housing estates. Surveys will also ask specific questions relating to some of the schemes implemented, such as RTI, bus stop infrastructure etc.

- ❑ PVR and headway information for routes operating through the four housing estates.

2.5   The evidence received for these four data sources is set out below.

Bus patronage

2.6   Table 2.1 presents indexed data for passenger boardings on all Arriva North West bus services that served each of the defined housing estates between January 2012 and October 2014. Passenger boardings are all indexed to the number of boardings in January 2012 for each estate. For example, there were 7.31% more journeys in June 2012 compared to January 2012 within the Australia estate.

2.7   Also presented is the indexed control group. This data is indexed against January 2012 and represents all bus services which operate for all or part of their journey within the Liverpool City Region, excluding the following services: 32, 32A, 32E, 32M, 33, 33A, 33E, 33M, 33S, 89, 89A (which are the services that serve the housing estates).

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Table 2.1 Indexed bus patronage at boarding stages within the housing estates

File Location: LCR – Housing Estates – Bus Patronage Data

	Australia	Four Acre	Portico	Sutton Manor	Control Group
Jan-12	1	1	1	1	1
Feb	1.031024	1.054722	1.04633	0.964517	0.998043
Mar	1.137424	1.099141	1.080734	1.115088	1.150705
Apr	1.013673	0.954207	0.941284	0.877507	0.969871
May	1.216017	1.118145	1.040826	1.126196	1.151453
Jun	1.073078	0.955467	1.080275	0.90651	1.023929
Jul	1.137769	1.068804	1.219266	1.020981	1.085181
Aug	1.113754	1.054608	1.203211	0.972848	1.060318
Sep	0.623348	1.021523	1.24633	0.955261	1.102276
Oct	0.671378	1.151689	1.307798	1.095649	1.217387
Nov	0.6623	1.080595	1.280275	1.041345	1.190452
Dec	0.546938	0.876245	1.090367	0.779389	1.017336
Jan-13	0.572102	0.945278	1.017431	0.896637	1.03656
Feb	0.540733	0.908987	1.043578	0.869793	1.016218
Mar	0.599334	0.956955	1.108716	0.899414	1.077366
Apr	0.553717	0.892845	1.111009	0.884295	1.001755
May	0.56176	0.92822	1.177982	0.872879	1.085723
Jun	0.568195	0.918947	1.17156	0.854057	1.040106
Jul	0.605768	0.917916	1.312385	0.879358	1.077148
Aug	0.555326	0.869033	1.292202	0.765504	1.024082
Sep	0.517867	0.983286	1.271101	0.920703	1.113965
Oct	0.587958	1.03984	1.306422	0.978093	1.231232
Nov	0.581868	1.080252	1.317431	0.913607	1.22247
Dec	0.517867	0.91597	1.15367	0.788954	1.061679
Jan-14	0.521659	0.979737	1.276147	0.858686	1.11562
Feb	0.50408	0.892616	1.211009	0.812095	1.041311
Mar	0.634124	1.066285	1.288073	0.951558	1.203129
Apr	0.517611	0.862393	1.24633	0.808701	1.089239
May	0.652511	0.982141	1.371101	0.924098	1.193543
Jun	0.591716	1.007785	1.347706	0.94045	1.18606
Jul	0.640853	0.911963	1.404587	0.934897	1.196383
Aug	0.55067	0.843274	1.374312	0.773218	1.063457
Sep	0.338999	1.065255	1.444954	1.030238	1.241464
Oct	0.376536	1.118489	1.406881	1.113854	1.299899

<u>User satisfaction surveys</u>

2.8   User satisfaction data was provided by Merseytravel from surveys undertaken by Passenger Focus in the autumn of 2014. Satisfaction data was provided for services operating within the BBA (LCR BBA) alongside other services within the region (LCR - the counterfactual), excluding routes within the BBA.

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2.9   Satisfaction data is presented for passenger perceptions of the bus stop environment (which should be impacted by the housing estate improvements), overall satisfaction levels and the outputs from an audit of bus stop infrastructure both within the BBA and within the wider region.

Table 2.2 At bus stop user perceptions

File location: LCR – Housing Estates – User Satisfaction

AT THE BUS STOP

General condition/std of maintenance	Very Sat	Fairly sat	Neither/nor	Fairly dissat	Very dissat	All sat
LCR	46%	34%	12%	4%	3%	81%
LCR BBA	34%	35%	19%	6%	5%	70%

Freedom from graffiti/vandalism	Very Sat	Fairly sat	Neither/nor	Fairly dissat	Very dissat	All sat
LCR	53%	32%	8%	3%	4%	85%
LCR BBA	41%	34%	12%	6%	7%	75%

Freedom from litter	Very Sat	Fairly sat	Neither/nor	Fairly dissat	Very dissat	All sat
LCR	46%	31%	13%	6%	3%	78%
LCR BBA	35%	35%	15%	8%	7%	70%

Information provided at the stop	Very Sat	Fairly sat	Neither/nor	Fairly dissat	Very dissat	All sat
LCR	46%	35%	11%	4%	3%	81%
LCR BBA	33%	34%	17%	6%	10%	67%

Personal safety at stop	Very Sat	Fairly sat	Neither/nor	Fairly dissat	Very dissat	All sat
LCR	50%	32%	15%	1%	2%	83%
LCR BBA	42%	34%	17%	4%	4%	76%

Overall sat - bus stop	Very Sat	Fairly sat	Neither/nor	Fairly dissat	Very dissat	All sat
Not Mersey Special (432)	43%	40%	10%	4%	2%	84%
Mersey Special (681)	35%	43%	12%	7%	4%	78%

Table 2.3 User perceptions of overall journey

File location: LCR – Housing Estates – User Satisfaction

Overall journey satisfaction	Very Sat	Fairly sat	Neither/nor	Fairly dissat	Very dissat	All sat
Not Mersey Special (444)	56%	34%	7%	1%	1%	90%
Mersey Special (672)	48%	39%	9%	2%	1%	87%

Table 2.4 Passenger focus audit of bus stops within BBA and LCR

File location: LCR – Housing Estates – User Satisfaction

Bus stop has	LCR	BBA
A shelter	82%	81%
Seating	66%	60%
Next bus display	8%	13%
A timetable	73%	68%
Fare info	2%	2%
Ticket type info	3%	1%
A route map	9%	10%
Lighting	18%	18%
Code for mobile	12%	13%

PVR and headway information

2.10 Table 2.5 presents the bus services that operate within the four defined housing estates, their headways and peak vehicle requirement as of Autumn 2014.

Table 2.5 Headways and PVR information for those routes impacted by the housing estate and bus stop improvement schemes

File location: LCR – Housing Estates – PVR

Service	Operator	Headway	PVR
33	Arriva	10 minutes	9
17/17A	Halton Transport	30 minutes	3
32/32A	Arriva	15 minutes	6
265	Ace Travel	90 minutes	1
920	Arriva	3 journeys per direction per day	1
89	Arriva	20 minutes	8
97	Hattons	Hourly (Sat only)	1
297	Comfybus	Hourly	2
10	Arriva	15 minutes	8
10A	Arriva & Stagecoach	6 minutes	27

Active traffic management infrastructure

2.11 The key indicators to evaluate the impacts of these interventions are:

❑ Absolute and % change in average bus journey times on the relevant routes

❑ Absolute and % change in bus journey time difference from timetabled journey times

❑ Changes in bus patronage (% and number of passengers)

❑ Changes to PVR requirements related to headway on affected routes

❑ Change in level of user satisfaction (% of users satisfied or very satisfied with different aspects of service)

❑ Changes to carbon emissions

❑ Changes to car journey time/journey speed on the relevant routes.

2.12 The data requested from Merseytravel to present baseline evidence for these indicators are:

- ❑ AVL-based bus journey time data for a period of one month for buses travelling through the treated junctions.

- ❑ Bus patronage on services operating through each of the 26 treated junctions (and appropriate comparator routes), with boardings at the bus stops disaggregated by passenger type (fare payer / concessionary pass holder). Where possible, data will be collected directly from bus operators for up to three years to show medium-long term patronage trends.

- ❑ User satisfaction survey outputs. Surveys will also ask specific questions relating to some of the schemes implemented, such as RTI, bus stop infrastructure etc.

- ❑ PVR and headway information for routes operating through the four housing estates.

- ❑ Car journey time/journey speed data in each direction by period.

2.13 The evidence received for these five data sources is set out below.

Bus journey times

2.14 Bus journey time data was provided by Merseytravel between two locations either side of numerous AVL treated junctions. Merseytravel extracted data from their RTI system.

2.15 Data provided was for November 2014 and is contained within the accompanying folder of files. Location maps are provided alongside the raw and processed data. The following tables present the following data for each direction of travel:

- ❑ Sample size

- ❑ Planned journey time (based on timetables contained within the RTI system)

- ❑ Average (mean) journey time

- ❑ Slowest journey time

- ❑ Fastest journey time

2.16 Tables 2.6 to 2.9 are the junctions along the Marshalls Cross corridor. Tables 2.11 to 2.14 are those along the A58 Prescott Road and Tables 2.15 to 2.17 are those AVL treated junctions in Rainhill.

Table 2.6 Pleasley Cross – Sherdley Road

File location: LCR – ATMI – Bus Journey Times

Direction	Southbound	Northbound
Sample Size	2436	2581
Planned Time	0:01:00	0:02:00
Average Time	0:01:00	0:00:56
Slowest	0:06:21	0:09:01
Fastest	0:00:13	0:00:21

Table 2.7 Lea Green Station – Elton Head Road

File location: LCR – ATMI – Bus Journey Times

Direction	Southbound	Northbound
Sample Size	934	671
Planned Time	0:00:00	0:00:00
Average Time	0:01:05	0:00:32
Slowest	0:03:02	0:02:57
Fastest	0:00:21	0:00:14

Table 2.8 Four Acre Lane – Clock Face Road

File location: LCR – ATMI – Bus Journey Times

Direction	Southbound (all along Clock Face Rd)	Northbound (Four Acre Ln - Clock Face Rd)	Southbound (Four Acre Ln - Clock Face Rd)
Sample Size	440	753	837
Planned Time	0:10:00	0:01:00	0:02:00
Average Time	0:05:52	0:01:08	0:01:11
Slowest	0:10:06	0:04:46	0:03:12
Fastest	0:03:09	0:00:21	0:00:13

Table 2.9 Leach Lane – Clock Face Road

File location: LCR – ATMI – Bus Journey Times

Direction	Southbound	Northbound
Sample Size	645	464
Planned Time	0:01:00	0:01:00
Average Time	0:00:34	0:01:27
Slowest	0:02:34	0:06:30
Fastest	0:00:21	0:00:22

Table 2.10 A58 Westfield Street – Eccleston Street

File location: LCR – ATMI – Bus Journey Times

Direction	Northbound	Southbound
Sample Size	3631	2068
Planned Time	0:01:00	0:01:00
Average Time	0:00:37	0:01:22
Slowest	0:05:09	0:06:04
Fastest	0:00:13	0:00:11

Table 2.11 A58 Prescott Road – Portico Lane

File location: LCR – ATMI – Bus Journey Times

Direction	Eastbound	Westbound
Sample Size	695	746
Planned Time	0:01:00	0:00:00
Average Time	0:00:35	0:00:42
Slowest	0:03:40	0:03:18

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| Fastest | 0:00:21 | 0:00:21 |

Table 2.12 A58 Prescott Road – Lugsmore Lane

File location: LCR – ATMI – Bus Journey Times

Direction	Eastbound	Westbound
Sample Size	635	737
Planned Time	0:01:00	0:01:00
Average Time	0:00:39	0:00:58
Slowest	0:02:32	0:04:26
Fastest	0:00:09	0:00:14

Table 2.13 A58 Prescott Road – Dunriding Lane

File location: LCR – ATMI – Bus Journey Times

Direction	Northbound	Southbound
Sample Size	2952	1241
Planned Time	0:01:00	0:01:00
Average Time	0:00:45	0:01:02
Slowest	0:06:58	0:05:26
Fastest	0:00:12	0:00:20

Table 2.14 A58 Prescott Road – Central Avenue

File location: LCR – ATMI – Bus Journey Times

Direction	Eastbound	Westbound
Sample Size	669	840
Planned Time	0:00:00	0:01:00
Average Time	0:00:32	0:01:05
Slowest	0:02:34	0:07:20
Fastest	0:00:21	0:00:14

Table 2.15 Rainhill – Elton Head Road

File location: LCR – ATMI – Bus Journey Times

Direction	Northbound	Southbound
Sample Size	2118	2319
Planned Time	0:01:00	0:01:00
Average Time	0:00:41	0:00:50
Slowest	0:03:55	0:06:07
Fastest	0:00:14	0:00:05

Table 2.16 Rainhill – Tasker Terrace

File location: LCR – ATMI – Bus Journey Times

Direction	Northbound	Southbound
Sample Size	2292	2341
Planned Time	0:01:00	0:01:00

Average Time	0:01:01	0:00:58
Slowest	0:05:17	0:06:29
Fastest	0:00:13	0:00:13

Table 2.17 Warrington Road – Rainhill Road / Old Lane

File location: LCR – ATMI – Bus Journey Times

Direction	Westbound	Eastbound
Sample Size	2357	2415
Planned Time	0:01:00	0:01:00
Average Time	0:01:18	0:01:34
Slowest	0:08:31	0:31:58
Fastest	0:00:14	0:00:10

Bus patronage

2.17 Two operators have provided bus patronage data for the period January 2012 - October 2014 and that data is presented below. Data has been provided from January 2012, disaggregated by month and by passenger type. The data has been indexed based on the number of bus passengers recorded in January 2012.

Table 2.18 Bus patronage for service 17/17A (indexed to January 2012 patronage)

File location: LCR – ATMI – Bus Patronage

	Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	Commercial	1.00	0.99	1.21	0.88	1.09	0.92	0.93	1.04	1.58	1.83	2.02	1.79
	ENCTS	1.00	1.02	1.29	1.00	1.14	1.04	1.12	1.07	2.00	2.44	2.43	1.96
	Total	1.00	1.01	1.25	0.95	1.12	0.99	1.04	1.06	1.82	2.18	2.25	1.89
2013	Commercial	1.94	1.88	1.97	1.92	1.96	2.02	1.97	2.00	1.97	2.11	2.18	1.90
	ENCTS	2.11	2.18	2.16	2.39	2.38	2.50	2.60	2.57	2.35	2.52	2.51	2.03
	Total	2.04	2.05	2.08	2.19	2.20	2.29	2.33	2.32	2.19	2.34	2.37	1.98
2014	Commercial	1.96	1.83	2.06	1.80	1.96	2.10	1.92	1.75	2.40	2.46		
	ENCTS	2.37	2.12	2.42	2.24	2.36	2.38	2.34	2.23	2.43	2.50		
	Total	2.19	2.00	2.26	2.05	2.19	2.26	2.16	2.02	2.42	2.48		

Table 2.19 Collective indexed bus patronage on services 32, 33 and 89 (plus variants)

File location: LCR – ATMI – Bus Patronage

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	Commercial	1.00	0.99	1.10	1.35	1.64	1.44	1.32	1.02	1.19	1.27	1.25	1.03
	Concessions	1.00	1.04	1.17	0.56	0.60	0.54	0.90	1.22	1.07	1.15	1.08	0.92
	Total	1.00	1.01	1.13	0.99	1.16	1.03	1.13	1.11	1.13	1.21	1.17	0.98
2013	Commercial	1.11	1.07	1.12	1.12	1.11	1.07	1.07	0.92	1.13	1.20	1.19	1.02
	Concessions	0.92	0.87	0.98	0.81	0.96	0.97	1.07	1.07	1.01	1.09	1.07	0.96
	Total	1.02	0.98	1.06	0.98	1.05	1.02	1.07	0.99	1.08	1.15	1.13	0.99
2014	Commercial	1.11	0.98	1.16	0.97	1.09	1.10	1.02	0.90	1.22	1.21	0.00	0.00
	Concessions	1.01	0.94	1.10	1.04	1.08	1.08	1.16	1.08	1.12	1.11	0.00	0.00
	Total	1.06	0.96	1.13	1.00	1.09	1.09	1.08	0.98	1.18	1.16	0.00	0.00

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<u>User satisfaction surveys</u>

2.18 User satisfaction data was provided by Merseytravel from surveys undertaken by Passenger Focus in the autumn of 2014. Satisfaction data was provided for services operating within the BBA (LCR BBA) alongside other services within the region (LCR - the counterfactual), excluding routes within the BBA.

2.19 Satisfaction data is presented for:

❑ Overall satisfaction

❑ Value for money (fare payers only)

❑ Waiting for the bus

❑ On bus journey time

❑ Actual journey time v expected journey time

❑ Journey – affected by different factors

Table 2.20 User perceptions of overall journey

File location: LCR – ATMI – User Satisfaction

Overall journey satisfaction	Very Sat	Fairly sat	Neither/nor	Fairly dissat	Very dissat	All sat
LCR	56%	34%	7%	1%	1%	90%
BBA	48%	39%	9%	2%	1%	87%

Table 2.21 User satisfaction value for money

File location: LCR – ATMI – User Satisfaction

Satisfaction with VFM (fare payers only)	Very Sat	Fairly sat	Neither/nor	Fairly dissat	Very dissat	All sat
LCR	25%	35%	18%	16%	6%	60%
BBA	32%	33%	14%	11%	10%	65%

Table 2.22 User satisfaction waiting for bus

File location: LCR – ATMI – User Satisfaction

Sat with waiting time	Very Sat	Fairly sat	Neither/nor	Fairly dissat	Very dissat	All sat
LCR	53%	32%	7%	5%	3%	85%
BBA	46%	29%	11%	8%	7%	75%

Table 2.23 User satisfaction of bus punctuality

File location: LCR – ATMI – User Satisfaction

Sat with punctuality	Very Sat	Fairly sat	Neither/nor	Fairly dissat	Very dissat	All sat
LCR	52%	33%	7%	3%	4%	86%
BBA	42%	28%	13%	9%	8%	70%

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Table 2.24 User satisfaction with on bus journey time

File location: LCR – ATMI – User Satisfaction

Satisfaction with on bus journey time	Very Sat	Fairly sat	Neither/nor	Fairly dissat	Very dissat	All sat
LCR	65%	26%	5%	2%	1%	91%
BBA	56%	33%	8%	3%	1%	88%

Table 2.25 Actual journey time versus expected journey time

File location: LCR – ATMI – User Satisfaction

Actual vs expected	LCR	BBA
Much longer	4%	13%
A little longer	12%	12%
About expected	56%	48%
A little less	15%	14%
Much less	9%	9%
Not stated	3%	3%

Table 2.26 Journey time affected by different factors

File location: LCR – ATMI – User Satisfaction

Journey affected by	LCR	BBA
Congestion/traffic jams	9%	14%
Road works	10%	11%
Bus driver driving too slowly	2%	6%
Poor weather conditions	2%	3%
Waiting too long at stops	6%	7%
The time it took passengers to board	11%	15%

Car journey times

2.20 Trafficmaster data for the period September – November 2014 was obtained from the Congestion Stats team at the DfT. Journey time data was obtained for all links along each road where AVL technology will be implemented in each direction. The data presented within the tables below represents the journey times for all vehicle types between the two locations stated within the table titles.

2.21 The data provided below are the processed outputs to measure car journey times along the treated corridors before the implementation of AVL technology. The data is also available in its original form and has been supplied to DfT in both formats.

Table 2.27 A58 (Prescott Road) St Helens, Westfield Street - A58 Roundabout at Eccleston Lane Ends

File location: LCR – ATMI – Car Journey Times

	Outbound (A)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	5439	40520.3706
	Oct	6078	41621.2907
	Nov	5960	43259.4224
IP	Sept	24787	42373.2476

	Oct	24142	41373.402
	Nov	26448	41565.8142
PM	Sept	6917	46500.346
	Oct	7553	46054.8556
	Nov	8375	45163.4079

	Inbound (B)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	5310	47175.7988
	Oct	4666	43976.1392
	Nov	5579	49204.3838
IP	Sept	23606	45499.7499
	Oct	23830	47673.3006
	Nov	25896	44774.7468
PM	Sept	7485	57421.0296
	Oct	7935	50340.4165
	Nov	8532	55684.7018

Table 2.28 Thatto Heath Road (B5413) junction with Elephant Road - via Elephant road to junction between Sutton Heath Road and Elton Head Road

File location: LCR – ATMI – Car Journey Times

	Outbound (A)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	1040	18681.1526
	Oct	1255	19160.8468
	Nov	1187	17781.1698
IP	Sept	5918	20502.3611
	Oct	6787	19969.9624
	Nov	6997	21041.0033
PM	Sept	1517	21341.08
	Oct	1593	23648.9512
	Nov	1948	21661.0816

	Inbound (B)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	379	21481.9973
	Oct	514	22321.5485
	Nov	731	23470.0337
IP	Sept	5014	21872.5423
	Oct	5799	22969.7638
	Nov	5994	22901.2575
PM	Sept	1671	25799.782
	Oct	2249	25134.2458
	Nov	2356	26887.827

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Table 2.29 Rainhill Road (from junction with Elton Head Road) - A57 Warrington Road (Junction with Delph Lane

File location: LCR – ATMI – Car Journey Times

	Outbound (A)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	996	10536.891
	Oct	890	10671.995
	Nov	648	10551.906
IP	Sept	3144	10296.411
	Oct	3580	9986.706
	Nov	3489	10170.067
PM	Sept	932	10805.998
	Oct	906	10367.179
	Nov	879	11285.131

	Inbound (B)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	457	14536.227
	Oct	552	15925.987
	Nov	464	15273.787
IP	Sept	3211	13893.355
	Oct	3861	13888.142
	Nov	3522	13728.927
PM	Sept	1121	19818.055
	Oct	1108	18487.059
	Nov	978	19323.567

Table 2.30 B5204 junction with Sherdley Road - Clock Face Road junction with Leach Lane

File location: LCR – ATMI – Car Journey Times

	Outbound (A)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	4017	35401.6869
	Oct	4742	32315.4909
	Nov	4305	33789.7867
IP	Sept	15992	30452.4051
	Oct	18917	28674.8172
	Nov	18074	29658.4029
PM	Sept	5528	30987.3849
	Oct	5765	31093.878
	Nov	5367	30996.8577

	Inbound (B)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	5187	27249.5713

	Oct	5083	28644.3455
	Nov	5454	28793.6834
IP	Sept	17729	23724.7689
	Oct	20214	23901.048
	Nov	19610	23812.474
PM	Sept	5241	26099.4809
	Oct	5281	26323.2987
	Nov	5253	29600.5683

Table 2.31 From M62 junction 7 roundabout, south east bound along A57 to Tibbs Cross Lane

File location: LCR – ATMI – Car Journey Times

	Outbound (A)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	375	24745.677
	Oct	320	22238.933
	Nov	305	15919.486
IP	Sept	1325	24390.91
	Oct	1406	23393.602
	Nov	1502	15697.459
PM	Sept	328	29838.827
	Oct	385	31508.763
	Nov	452	17875.891

	Inbound (B)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	414	28360.812
	Oct	356	21773.359
	Nov	362	16199.559
IP	Sept	1464	21886.228
	Oct	1380	18576.801
	Nov	1565	15204.335
PM	Sept	377	26867.178
	Oct	470	24240.234
	Nov	415	15489.558

Table 2.32 Cronton Road A5080 Bridgwater Way - Wilson Road

File location: LCR – ATMI – Car Journey Times

	Outbound (A)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	867	7220.128
	Oct	1047	7390.2
	Nov	980	7029.6185
IP	Sept	1858	6280.601
	Oct	2342	6082.7651
	Nov	2238	6453.3652
PM	Sept	570	7558.383
	Oct	747	6787.498
	Nov	617	9152.311

	Inbound (B)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	538	9451.783
	Oct	625	9160.54
	Nov	554	10828.955
IP	Sept	2001	6896.925
	Oct	2291	7045.662
	Nov	2169	7038.033
PM	Sept	768	10115.285
	Oct	951	12530.647
	Nov	696	12581.892

Table 2.33 A5080 Cronton Road from Wheatfield Road - Hampton Drive

File location: LCR – ATMI – Car Journey Times

	Outbound (A)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	143	4641.68
	Oct	177	4962.35
	Nov	179	4997.82
IP	Sept	438	4710.71
	Oct	472	4393.85
	Nov	388	5074.05
PM	Sept	203	4926.72
	Oct	211	4812.1
	Nov	209	5010.18

	Inbound (B)	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	143	5338.34
	Oct	100	5202.89
	Nov	150	4881.06

IP	Sept	419	4788.44
	Oct	420	4669.04
	Nov	388	4631.53
PM	Sept	84	4754.5
	Oct	147	5233.73
	Nov	160	5042.53

Air Quality

2.22   Merseytravel has a local tool called the Merseyside Atmospheric Emissions Inventory (MAEI) to monitor pollutants from transport. Merseytravel uses this tool rather than the DfT carbon tool for monitoring carbon reductions across the BBA. The baseline data has now been collected for 2014 and is presented below in Table 2.34. MAEI values are disaggregated by each bus service that operates within the BBA.

Table 2.34 2014 MAEI model outputs for each bus service within the BBA

File location: LCR – ATMI – Carbon Emissions

Operator	Service	MF 0200_0659	MF 0700_0959	MF 1000_1459	MF 1500_1759	MF 1800_1959	MF 2000_0159	WEEKDAY TOTAL	SAT 0200_07	SAT 0800_11	SAT 1200_17	SAT 1800_01	SAT TOTAL	SUN 0200_08	SUN 0900_11	SUN 1200_17	SUN 1800_01	SUN TOTAL	WEEKLY TOTAL Journeys	DISTANCE Metres	AVG SPEED (KPH)	NOx (t) Per Year	PM10 (t) Per Year	CO2 (t) Per Year
Halton Transport	2	3	18	40	22	0	0	415	2	25	44	0	71	0	0	0	0	0	486	31060.339	24	1.437517	0.040912	194.7742
Arriva Merseyside	6	1	0	0	0	0	0	5	1	0	0	0	1	0	0	0	0	0	6	5680.9843	24	0.013033	0.000371	1.765945
Arriva Merseyside	6E	0	0	0	0	1	0	5	0	0	1	0	1	0	0	0	0	0	6	6244.2547	24	0.014326	0.000408	1.941038
Arriva Merseyside	7	2	6	10	5	2	3	140	2	4	7	4	17	1	3	6	4	14	171	61316.006	24	2.153303	0.061283	291.7586
Arriva Merseyside	7E	0	0	0	0	0	1	5	0	0	0	1	1	0	0	0	1	1	7	8336.4019	24	0.022313	0.000635	3.023284
Arriva Merseyside	10	0	2	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	10	6292.535	24	0.024061	0.000685	3.260077
Arriva Merseyside	10A	11	15	25	14	4	6	375	6	19	24	10	59	6	9	16	10	41	475	23351.581	24	4.241249	0.120706	574.6616
Stagecoach Merseyside	10A	10	15	26	14	4	5	370	7	18	25	9	59	6	8	17	9	40	469	53591.155	24	4.153904	0.11822	562.8269
Halton Transport	14	3	2	0	0	0	1	30	0	0	0	1	1	0	0	0	1	1	32	29837.238	24	0.107935	0.003072	14.62449
Halton Transport	14A	0	2	0	2	1	0	25	0	2	2	1	5	0	0	0	0	0	30	49020.618	24	0.184609	0.005254	25.01338
Halton Transport	14C	0	13	39	23	0	0	375	4	23	45	0	72	0	0	0	0	0	447	24816.084	24	1.382208	0.039338	187.2802
Halton Transport	17	1	4	10	3	0	0	90	2	6	8	0	16	0	0	0	0	0	106	29821.144	24	0.608067	0.017306	82.38908
Halton Transport	17A	0	5	10	7	0	0	110	1	8	12	0	21	0	0	0	0	0	131	28919.912	24	0.720685	0.020511	97.64807
Halton Transport	26	0	1	0	1	0	0	10	1	0	0	0	1	0	0	0	0	0	11	12955.219	24	0.054491	0.001551	7.383117
Halton Transport	26A	0	3	5	3	1	0	60	0	4	6	0	10	0	0	0	0	0	70	34681.363	24	0.529731	0.015076	71.77507
Arriva Merseyside	33	6	36	59	33	4	0	690	11	32	48	2	93	3	12	22	0	37	820	143473.02	24	4.14663	0.118013	561.8414
Halton Transport	61	1	21	32	18	2	0	370	2	23	33	2	60	0	2	10	0	12	442	509276.91	24	7.56489	0.215297	1024.993
Halton Transport	61A	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3	59690.569	24	0.03963	0.001128	5.369539
Halton Transport	61D	3	3	1	0	0	0	35	0	0	0	0	0	0	0	0	0	0	35	80402.826	24	0.459862	0.013088	62.30833
Halton Transport	61E	0	1	0	1	0	0	10	0	0	0	0	0	0	0	0	0	0	10	15031.273	24	0.028738	0.000818	3.89375
Arriva North West	79C	3	4	0	1	0	1	45	2	2	1	1	6	0	0	0	1	1	52	59948.064	24	0.399156	0.01136	54.0831
Arriva North West	82A	4	13	20	11	7	7	310	8	16	23	14	61	7	12	24	14	57	428	116854.47	24	6.450778	0.183589	874.0384
Huyton Travel	166	0	3	5	3	2	4	85	1	4	6	6	17	0	3	6	6	15	117	22707.844	24	1.015888	0.028912	137.6461
Stagecoach Merseyside	197	1	6	10	5	0	0	110	1	8	11	0	20	0	0	0	0	0	130	35550.409	24	0.578751	0.016471	78.41695
Stagecoach Merseyside	198	1	6	10	5	0	0	110	0	7	11	0	18	0	0	0	0	0	128	33570.916	24	0.486274	0.013839	65.88692
Stagecoach Merseyside	217	1	12	20	12	2	0	235	1	8	12	1	22	0	0	0	0	0	257	76492.12	24	1.355101	0.038566	183.6074
Stagecoach Merseyside	227	1	10	20	12	1	0	220	1	8	12	1	22	0	0	0	0	0	242	74480.44	24	1.208989	0.034408	163.8101
Huyton Travel	258	0	0	0	1	0	0	5	0	0	1	0	1	0	0	0	0	0	6	6115.5072	24	0.01403	0.000399	1.901017
Huyton Travel	266	0	3	5	2	0	0	50	0	4	6	0	10	0	0	0	0	0	60	43774.157	24	0.508784	0.01448	68.93688
Arriva North West	X1	4	10	20	12	5	1	260	5	16	24	6	51	0	0	0	0	0	311	69427.1	24	4.127948	0.117482	559.3101

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3   NOTTINGHAM

3.1   This section presents the key datasets that set out the pre-implementation baseline against which post-implementation evidence can be compared.

AVL signal priority

3.2   Nottingham City Council intends to implement signal priority for buses using AVL data at six junctions across Nottingham to give late running buses greater levels of priority.

3.3   The six junctions receiving the AVL signal priority intervention are listed below and further presented in Figure 3.1.

1. A60 Mansfield Road / Haydn Road, Sherwood

2. A60 Mansfield Road / Winchester Street

3. A60 Mansfield Road / Magnus Road

4. A611 Hucknall Road / Arnold Road

5. Derby Road / Lenton Boulevard

6. A611 Hucknall Road / Perry Road

Figure 3.1 Six junctions due to receive AVL intervention
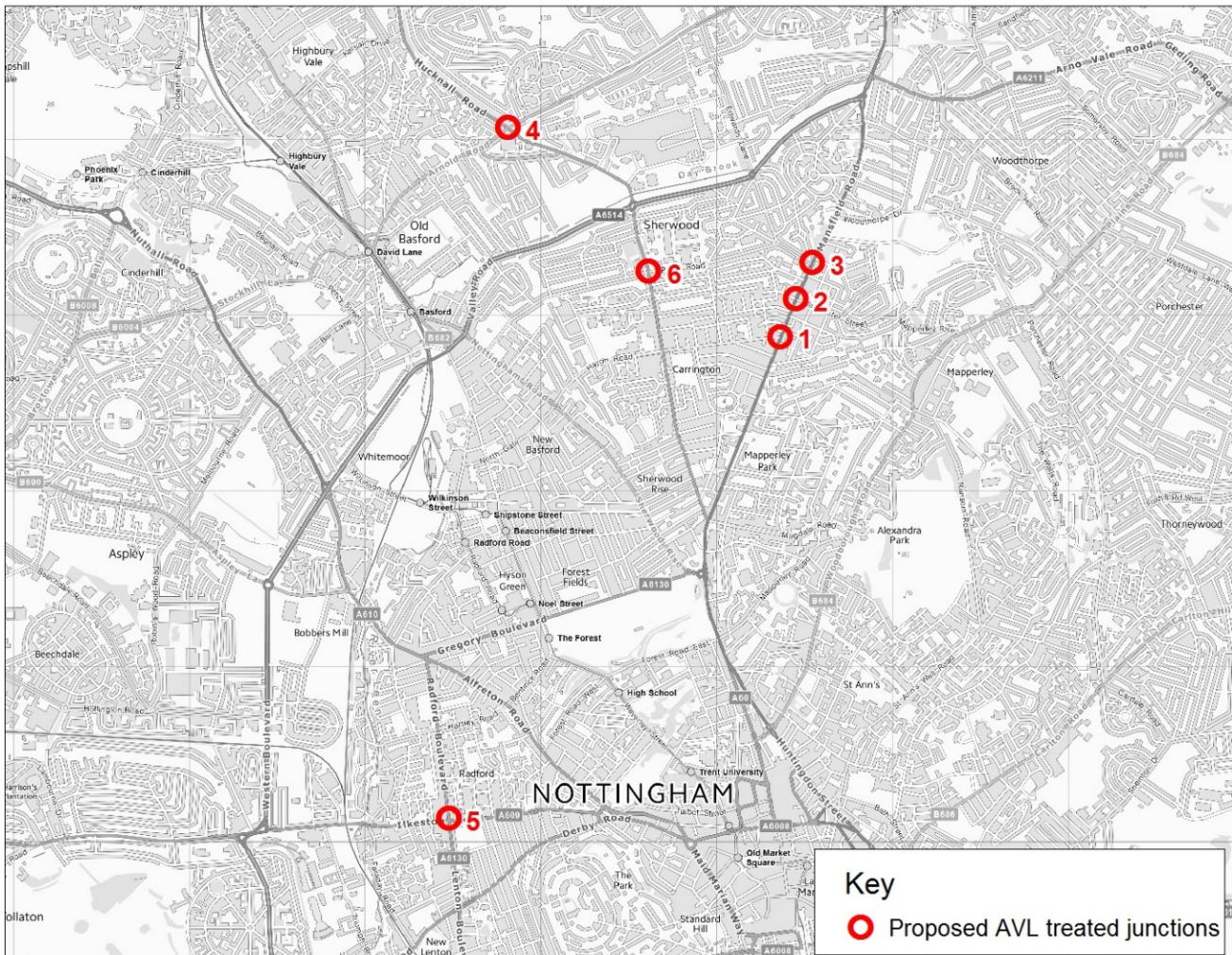
3.4   The key indicators for evaluating the impacts of the six junction priority improvements are as follows:

   1.   Absolute and % change in average bus journey times through the affected junctions

   2.   Absolute and % change in bus journey time difference from timetabled journey times

   3.   Change in level of user satisfaction (% of users satisfied or very satisfied with different aspects of service)

   4.   Absolute and percentage changes in car journey times

3.5   The remainder of this section presents the baseline data (where available at the time of writing) for each of four indicators.

<u>Bus journey times</u>

3.6   Nottingham City Transport provided a series of datasets that present the GPS journey times between bus stops for the whole of September 2014 for all services that will be impacted by the AVL junction interventions. The following sets out greater detail of these datasets:

   ❑   Journey times are measured as mean average journey times, in addition to the maximum and minimum journey times, to travel between bus stops.

   ❑   Journey times are captured as the time at which a bus departs from one stop and arrives at the next stop.

   ❑   Journey times are captured by time of day with AM peak (0700-0859), inter peak (0900-1559) and PM peak (1600 – 1759) journey times captured for all six junctions.

   ❑   Journey times are also captured per direction of travel, but it is notable that bus stops are not necessarily opposite one another, therefore this must be borne in mind when comparing the effects of a junction intervention in each direction of travel.

3.7   Table 3.1 presents the journey times between bus stops for each of the six junctions. The names of bus stops are fixed and can be provided by NCT or via google maps.

Table 3.1 Bus journey times through AVL treated junctions

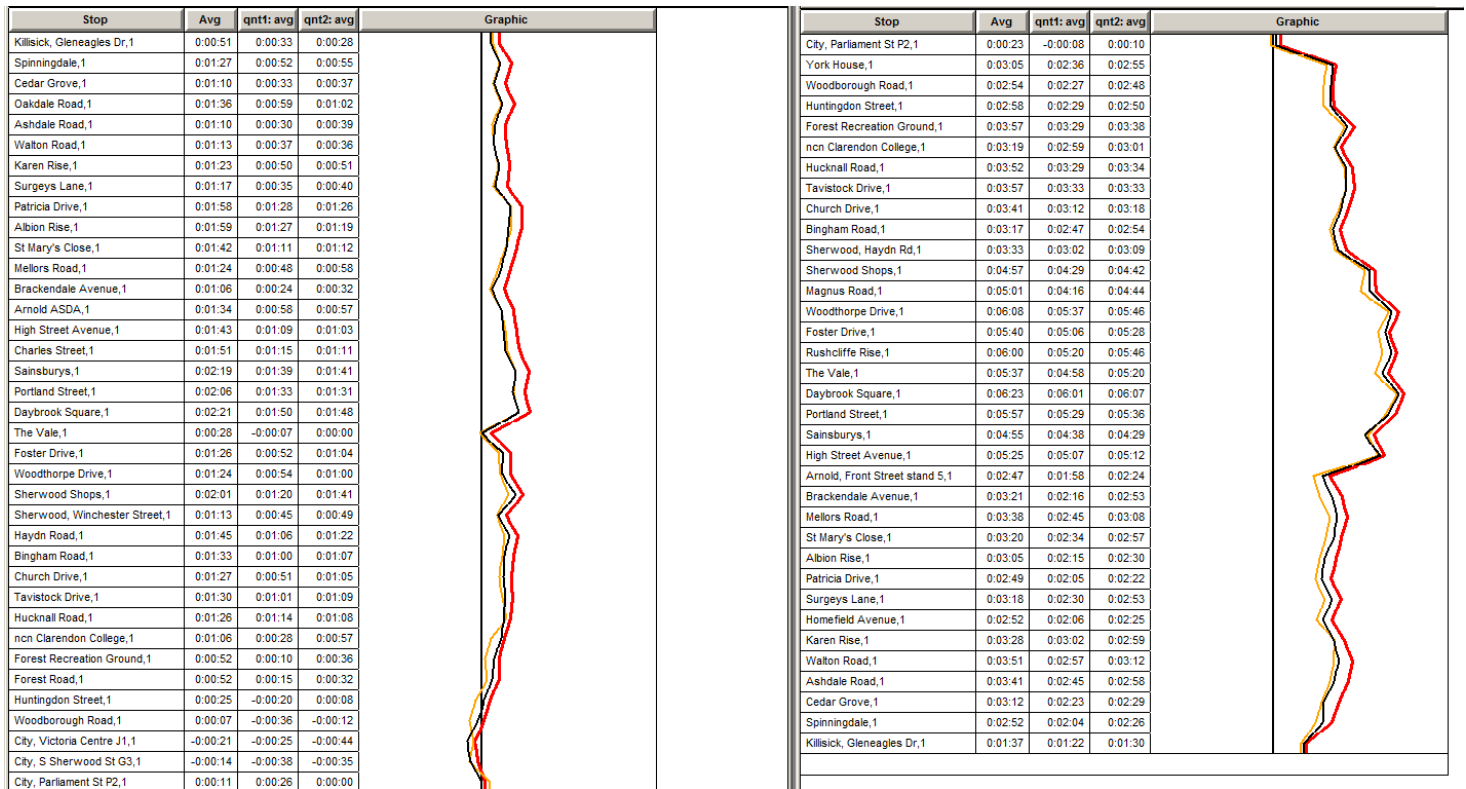File location: Nottingham – AVL Signal Priority – Bus Journey Times

Junction	Direction	Bus Stops	Average Bus Journey Times by Time Period			
			All Day	AM Peak	IP	PM Peak
1	Out	Bingham Rd - Haydn Rd	1.13mins	1.16mins	1.17mins	1.16mins
1	In	Winchester St – Haydn Rd	0.41mins	0.41mins	0.41mins	0.47mins
2	Out	Haydn Rd – Sherwood Shops	1.12mins	1.09mins	1.17mins	1.24mins
2	In	Sherwood Shops – Winchester St	1.20mins	1.19mins	1.27mins	1.17mins
3	Out	Sherwood Shops – Magnus Rd	0.54mins	0.52mins	0.56mins	1.02mins
3	In	Woodthorpe Dv – Sherwood Shops	1.30mins	1.34mins	1.36mins	1.32mins

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4	Out	Arnold Rd – Riber Crescent	1.06mins	1.06mins	1.06mins	1.14mins
4	In	Riber Crescent – Arnold Rd	1.30mins	1.30mins	1.29mins	1.22 mins
5	Out	Savoy Cinema – Lenton Bvd	1.00mins	0.59mins	1.05mins	1.16mins
5	In	Faraday Rd – Savoy Cinema	1.19mins	1.15mins	1.21mins	1.21mins
6	Out	Perry Rd – Valley Rd	1.22mins	1.27mins	1.17mins	1.57mins
6	In	Valley Rd – Perry Rd	1.09mins	1.09mins	1.09mins	1.14mins

3.8   In addition to the data presented in Table 3.1, Figure 3.2 presents how service 58 performs in relation to its timetable during the AM peak inbound and the PM peak outbound. The solid black line represents the scheduled time from the timetable, while the red line presents the mean difference from the scheduled time.

3.9   What is evident is that during September 2014 in the AM peak inbound, bus running times are typically within two minutes of the timetable throughout the length of route 58 (which encompasses junctions 1, 2 and 3). According to the operator, this is partly the result of nine signalised junctions receiving AVL treatment between Killisick and the Vale which minimises delays at the start of each journey.

3.10   By comparison, in an outbound direction during the PM peak, bus running times suffer greater delays, with average running times being more than 6 minutes later than scheduled time at some points along the route. At Arnold Front Street, it is noticeable that the average deviation from the scheduled time reduces significantly, and this corresponds with the introduction of AVL supported signalised junctions from that point onwards.

3.11   These two graphical representations of how service 58 performs in comparison to its timetable set out the baseline case for this service. The same datasets should therefore be captured post implementation in September 2015, 2016, 2017 and 2018 to demonstrate the journey time benefits of providing bus priority at three junctions in Nottingham.

Figure 3.2 Average performance compared to scheduled time on service 58

File location: Nottingham – AVL Signal Priority – Bus Journey Times

Stop	Avg	qnt1: avg	qnt2: avg	Graphic
Killisick, Gleneagles Dr,1	0:00:51	0:00:33	0:00:28	
Spinningdale,1	0:01:27	0:00:52	0:00:55	
Cedar Grove,1	0:01:10	0:00:33	0:00:37	
Oakdale Road,1	0:01:36	0:00:59	0:01:02	
Ashdale Road,1	0:01:10	0:00:30	0:00:39	
Walton Road,1	0:01:13	0:00:37	0:00:36	
Karen Rise,1	0:01:23	0:00:50	0:00:51	
Surgeys Lane,1	0:01:17	0:00:35	0:00:40	
Patricia Drive,1	0:01:58	0:01:28	0:01:26	
Albion Rise,1	0:01:59	0:01:27	0:01:19	
St Mary's Close,1	0:01:42	0:01:11	0:01:12	
Mellors Road,1	0:01:24	0:00:48	0:00:58	
Brackendale Avenue,1	0:01:06	0:00:24	0:00:32	
Arnold ASDA,1	0:01:34	0:00:58	0:00:57	
High Street Avenue,1	0:01:43	0:01:09	0:01:03	
Charles Street,1	0:01:51	0:01:15	0:01:11	
Sainsburys,1	0:02:19	0:01:39	0:01:41	
Portland Street,1	0:02:06	0:01:33	0:01:31	
Daybrook Square,1	0:02:21	0:01:50	0:01:48	
The Vale,1	0:00:28	-0:00:07	0:00:00	
Foster Drive,1	0:01:26	0:00:52	0:01:04	
Woodthorpe Drive,1	0:01:24	0:00:54	0:01:00	
Sherwood Shops,1	0:02:01	0:01:20	0:01:41	
Sherwood, Winchester Street,1	0:01:13	0:00:45	0:00:49	
Haydn Road,1	0:01:45	0:01:06	0:01:22	
Bingham Road,1	0:01:33	0:01:00	0:01:07	
Church Drive,1	0:01:27	0:00:51	0:01:05	
Tavistock Drive,1	0:01:30	0:01:01	0:01:09	
Hucknall Road,1	0:01:26	0:01:14	0:01:08	
ncn Clarendon College,1	0:01:06	0:00:28	0:00:57	
Forest Recreation Ground,1	0:00:52	0:00:10	0:00:36	
Forest Road,1	0:00:52	0:00:15	0:00:32	
Huntingdon Street,1	0:00:25	-0:00:20	0:00:08	
Woodborough Road,1	0:00:07	-0:00:36	-0:00:12	
City, Victoria Centre J1,1	-0:00:21	-0:00:25	-0:00:44	
City, S Sherwood St G3,1	-0:00:14	-0:00:38	-0:00:35	
City, Parliament St P2,1	0:00:11	0:00:26	0:00:00	

Stop	Avg	qnt1: avg	qnt2: avg	Graphic
City, Parliament St P2,1	0:00:23	-0:00:08	0:00:10	
York House,1	0:03:05	0:02:36	0:02:55	
Woodborough Road,1	0:02:54	0:02:27	0:02:48	
Huntingdon Street,1	0:02:58	0:02:29	0:02:50	
Forest Recreation Ground,1	0:03:57	0:03:29	0:03:38	
ncn Clarendon College,1	0:03:19	0:02:59	0:03:01	
Hucknall Road,1	0:03:52	0:03:29	0:03:34	
Tavistock Drive,1	0:03:57	0:03:33	0:03:33	
Church Drive,1	0:03:41	0:03:12	0:03:18	
Bingham Road,1	0:03:17	0:02:47	0:02:54	
Sherwood, Haydn Rd,1	0:03:33	0:03:02	0:03:09	
Sherwood Shops,1	0:04:57	0:04:29	0:04:42	
Magnus Road,1	0:05:01	0:04:16	0:04:44	
Woodthorpe Drive,1	0:06:08	0:05:37	0:05:46	
Foster Drive,1	0:05:40	0:05:06	0:05:28	
Rushcliffe Rise,1	0:06:00	0:05:20	0:05:46	
The Vale,1	0:05:37	0:04:58	0:05:20	
Daybrook Square,1	0:06:23	0:06:01	0:06:07	
Portland Street,1	0:05:57	0:05:29	0:05:36	
Sainsburys,1	0:04:55	0:04:38	0:04:29	
High Street Avenue,1	0:05:25	0:05:07	0:05:12	
Arnold, Front Street stand 5,1	0:02:47	0:01:58	0:02:24	
Brackendale Avenue,1	0:03:21	0:02:16	0:02:53	
Mellors Road,1	0:03:38	0:02:45	0:03:08	
St Mary's Close,1	0:03:20	0:02:34	0:02:57	
Albion Rise,1	0:03:05	0:02:15	0:02:30	
Patricia Drive,1	0:02:49	0:02:05	0:02:22	
Surgeys Lane,1	0:03:18	0:02:30	0:02:53	
Homefield Avenue,1	0:02:52	0:02:06	0:02:25	
Karen Rise,1	0:03:28	0:03:02	0:02:59	
Walton Road,1	0:03:51	0:02:57	0:03:12	
Ashdale Road,1	0:03:41	0:02:45	0:02:58	
Cedar Grove,1	0:03:12	0:02:23	0:02:29	
Spinningdale,1	0:02:52	0:02:04	0:02:26	
Killisick, Gleneagles Dr,1	0:01:37	0:01:22	0:01:30	

3.12 To complement the above datasets, timetables are provided for all NCT bus routes that will be impacted by the junction interventions. Timetables are provided within the supporting documents for the bus routes listed below. These timetables were obtained in September 2014 and represent the timetables that were in operation at the time of collecting all of the above data for the following services:

- ❑ 15, 16, 16C   ❑ 57
- ❑ 17   ❑ 58
- ❑ 36, 36B   ❑ 59
- ❑ 56

User satisfaction

3.13 Nottingham City Council carries out surveys every quarter relating to user satisfaction. Surveys are carried out off bus at four specific locations across the city. These locations are:

1. City centre outside NCT travel centre
2. On the concourse at Victoria Bus Station
3. On the concourse at Broadmarsh bus station
4. Within the NCC travel centre within Broadmarsh Bus Station

3.14 The survey asks two specific questions which are relevant to this exercise:

- ❑ How do you rate the service in terms of journey time?
- ❑ How do you rate the service in terms of time keeping?

3.15 In order to assess the impacts of the interventions over time, the views of passengers who use those services affected by the three AVL junction interventions have been captured from council satisfaction surveys from December 2013 - September 2014. All other passenger responses are used as a counter-factual benchmark. Unfortunately, due to the scale of the council surveys and the location of where they are carried out, the sample size for bus users on services that operate along Mansfield Road is limited. This must be borne in mind when interpreting results. The raw data is included within the accompanying folder with files titled 'Nottingham City Council User Satisfaction Responses'.

3.16 Table 3.2 presents bus user perceptions of time-keeping on those services that operate along Mansfield Road, and along all other bus routes in Nottingham. Survey results from December 2013, March, June and September 2014 were used to compile the table below. It should be noted that there were 32 responses from services 56, 57, 58 and 59, while there were 1618 responses from all users of other bus routes.

Table 3.2 User perceptions of bus services in terms of time keeping

File location: Nottingham – AVL Signal Priority – User Satisfaction

	Service in terms of time keeping			
	Excellent	Good	Fair	Poor
Services 56, 57, 58 & 59	0.00%	90.63%	6.25%	3.13%
All other routes in Nottingham	12.48%	69.84%	10.07%	7.60%

3.17 Table 3.3 presents bus user perceptions of journey times on services 56, 57, 58 and 59, and all other bus services in Nottingham. Survey results from December 2013, March, June and September 2014 were used to compile the table below. It should be noted that there were 32 responses from services 56, 57, 58 and 59, while there were 1612 responses from all users of other bus routes.

Table 3.3 User perceptions of bus services in terms of journey time

File location: Nottingham – AVL Signal Priority – User Satisfaction

	Service in terms of journey time			
	Excellent	Good	Fair	Poor
Services 56, 57, 58 & 59	0.00%	96.88%	0.00%	3.13%
All other routes in Nottingham	12.22%	75.00%	7.51%	5.27%

3.18 The above datasets are limited due to the very low sample size of respondents that use services impacted by the AVL bus priority interventions. Therefore, additional user satisfaction results were obtained from surveys carried out by Nottingham City Transport (NCT).

3.19 NCT carry out their own user satisfaction surveys on an annual basis. As part of those surveys, passengers are asked to rate journey time reliability (amongst other indicators). Surveys were carried out in November 2013 and the questionnaire is provided within the accompanying folder of supporting files).

3.20 NCT asks passengers to rate their satisfaction using a 4 point scale (very good, good, not very good and not at all good). All responses are designated a value (very good = 4, good = 3, not very good = 2 and not at all good = 1) and these values are totalled and compared to the maximum that could be achieved if every respondent stated 'very good'. The percentage values for each relevant bus service is presented in figure 3.X below.

3.21 When providing this data, NCT did state that all the routes within the table except for the 58 and 59 experienced significant road works which affected journey time reliability.

Table 3.4 NCT user satisfaction survey results – reliability

File location: Nottingham – AVL Signal Priority – User Satisfaction

Route	% of respondents satisfied or very satisfied with bus journey time reliability	Sample Size
15/16	77%	114
17	79%	99
36	78%	158
56/57	73%	124
58	82%	142
59	82%	101

Vehicle journey times

3.22 Trafficmaster data for the period September-November 2014 was obtained from the Congestion Stats team at the DfT. Journey time data was obtained for all links along each road where AVL technology will be implemented in each direction. The data presented within the tables below represents the journey times for all vehicle types between the nodes before and after the treated junction (which is stated within the table header).

3.23 The data provided below are the processed outputs to measure car journey times along the treated corridors before the implementation of AVL technology. The data is also available in its original form and has been supplied to DfT in both formats.

Table 3.5 Mansfield Road – Haydn Road

File location: Nottingham – AVL Signal Priority – Car Journey Times

	Outbound	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	672	906.2187746
	Oct	644	951.1589334
	Nov	703	995.3797687
IP	Sept	1911	791.3084703
	Oct	1942	867.3762423
	Nov	1889	839.4454827
PM	Sept	304	1259.788787
	Oct	325	1054.783333
	Nov	261	1276.637063

	Inbound	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	445	290.0487536
	Oct	499	302.8312325
	Nov	468	326.8408244
IP	Sept	2322	310.3153816
	Oct	2523	294.0670226
	Nov	2275	301.5251243
PM	Sept	812	361.4249216
	Oct	779	380.0034486
	Nov	657	445.8259506

Table 3.6 Mansfield Road – Winchester Street

File location: Nottingham – AVL Signal Priority – Car Journey Times

	Outbound	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	626	2341.982213
	Oct	584	2200.13148
	Nov	623	2372.600256
IP	Sept	1540	2985.956171
	Oct	1701	3065.536368
	Nov	1562	3054.140823
PM	Sept	260	2850.899575
	Oct	261	2661.336032
	Nov	243	2848.579333

	Inbound	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	284	2437.995269
	Oct	314	2163.794252
	Nov	299	2180.316537
IP	Sept	1612	2304.842818

	Oct	1825	2196.696252
	Nov	1610	2301.417259
PM	Sept	567	2420.949446
	Oct	561	2474.72574
	Nov	1610	2301.417259

Table 3.7 Mansfield Road – Winchester Street

File location: Nottingham – AVL Signal Priority – Car Journey Times

	Outbound	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	864	771.1496256
	Oct	857	781.5743225
	Nov	962	785.7427665
IP	Sept	2105	938.8759137
	Oct	2345	896.2897838
	Nov	2148	990.1435426
PM	Sept	365	1178.550183
	Oct	382	1139.43141
	Nov	385	1270.424107

	Inbound	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	335	561.4484075
	Oct	395	578.2185654
	Nov	367	548.5761153
IP	Sept	2188	544.5127725
	Oct	2475	522.5114051
	Nov	2122	566.0667709
PM	Sept	835	613.6590195
	Oct	818	559.8984109
	Nov	734	689.9717134

Table 3.8 Hucknall Road – Perry Road

File location: Nottingham – AVL Signal Priority – Car Journey Times

	Outbound	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	259	715.4128946
	Oct	266	773.3427885
	Nov	243	745.8408279
IP	Sept	1044	727.0781588
	Oct	1085	752.2734986
	Nov	1123	706.9520634
PM	Sept	269	788.4939875
	Oct	288	732.8916951
	Nov	343	737.4010362

	Inbound	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	356	694.2762462
	Oct	399	779.2569477
	Nov	360	711.2762351
IP	Sept	887	735.6252186
	Oct	939	689.4310074
	Nov	931	695.7642977
PM	Sept	161	1000.916667
	Oct	137	976.9453405
	Nov	151	1012.363158

Table 3.9 Hucknall Road – Arnold Road

File location: Nottingham – AVL Signal Priority – Car Journey Times

	Outbound	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	369	3786.057911
	Oct	343	3484.185626
	Nov	296	3526.958505
IP	Sept	1606	3755.778972
	Oct	1693	3546.683649
	Nov	1567	3678.345569
PM	Sept	391	5174.478634
	Oct	430	4801.279106
	Nov	400	5812.655123

	Inbound	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	373	5681.542725
	Oct	391	5097.89275
	Nov	328	5311.899535
IP	Sept	1335	4160.745939
	Oct	1485	3919.82737
	Nov	1417	4302.89471
PM	Sept	248	4640.066691
	Oct	219	4697.615369
	Nov	192	4466.463082

Table 3.10 Derby Road – Lenton Boulevard

File location: Nottingham – AVL Signal Priority – Car Journey Times

	Outbound	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	757	906.2680642
	Oct	685	973.861379
	Nov	596	957.5548906
IP	Sept	3156	773.3168578
	Oct	3361	829.1646805
	Nov	3135	928.2492042

PM	Sept	690	1297.204915
	Oct	619	1472.597515
	Nov	636	1655.781761

	Inbound	No. of Obsv.	Ave jny time (100ths of a second)
AM	Sept	561	1063.984923
	Oct	507	1032.264825
	Nov	453	1069.411418
IP	Sept	3397	949.6808884
	Oct	3199	978.2983457
	Nov	3053	1176.52881
PM	Sept	769	1320.977628
	Oct	758	1365.25549
	Nov	707	1399.543342

3.24 To complement the vehicle journey time data above, Nottingham City Council provided traffic flow data directly from its SCOOT system, in addition to automatically recorded levels of congestion through SCOOT. A summary of these datasets are presented below and contained within the accompanying folder, titled 'Nottingham SCOOT Extracts'.

3.25 Table 3.11 presents traffic flows (in terms of number of vehicles passing through a junction) for each arm of the junction and the direction in which the vehicles were travelling. This data has been collected for weekdays only during September 2014.

Table 3.11 Vehicle flows at four AVL treated junctions

File location: Nottingham – AVL Signal Priority – Car Journey Times

Junction	Direction	AM Peak (0730-0900)	Inter Peak (0900-1600)	PM Peak (1600-1800)
Mansfield Rd – Haydn Rd	Inbound	633	613	587
	Outbound	378	535	884
	Haydn Rd	159	199	282
Mansfield Rd – Winchester St	Inbound	897	755	752
	Outbound	461	654	953
	Winchester St	251	283	317
Mansfield Rd – Magnus Rd	Inbound	766	557	532
	Outbound	477	650	906
	Magnus Rd	365	336	449
Derby Rd – Lenton Bvd	Inbound	712	822	893
	Outbound	385	418	507
	Lenton Bvd Southbound	486	406	432
	Lenton Bvd Northbound	297	386	429

3.26 The City Council also provided SCOOT extracts that calculates levels of congestion based on the length of time that there are stationary vehicles on the SCOOT road sensors. While an imperfect metric, it provides an indication of how the AVL bus priority technology impacts upon

other road users before and after implementation. Presented below are graphs of three junctions for which the Council provided SCOOT extracts, while the raw data is contained within the accompanying folder. There are apparent idiosyncrasies within these datasets, therefore careful consideration must be given to the validity of this data pre and post implementation.

Figure 3.3 Recorded congestion at Mansfield Road – Winchester Street junction (in both directions)

File location: Nottingham – AVL Signal Priority – Car Journey Times
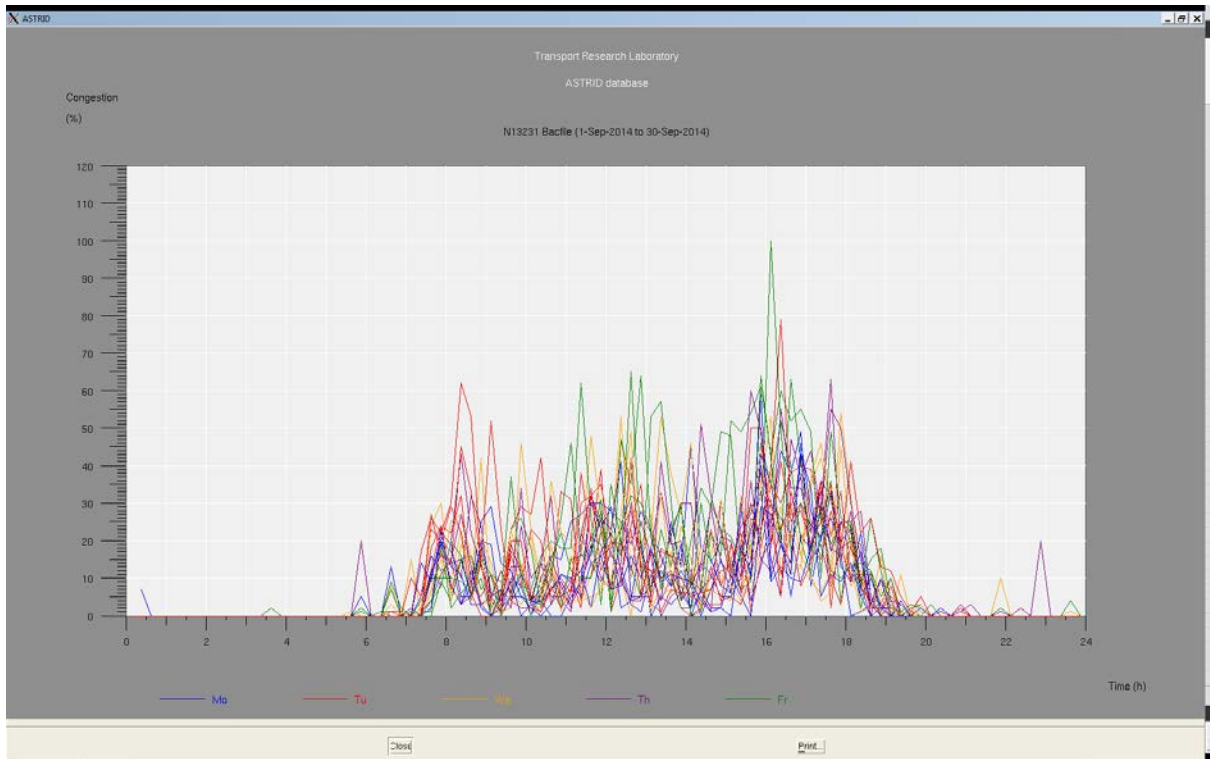
Figure 3.4 Recorded congestion at Mansfield Road – Magnus Road junction (in both directions)

File location: Nottingham – AVL Signal Priority – Car Journey Times
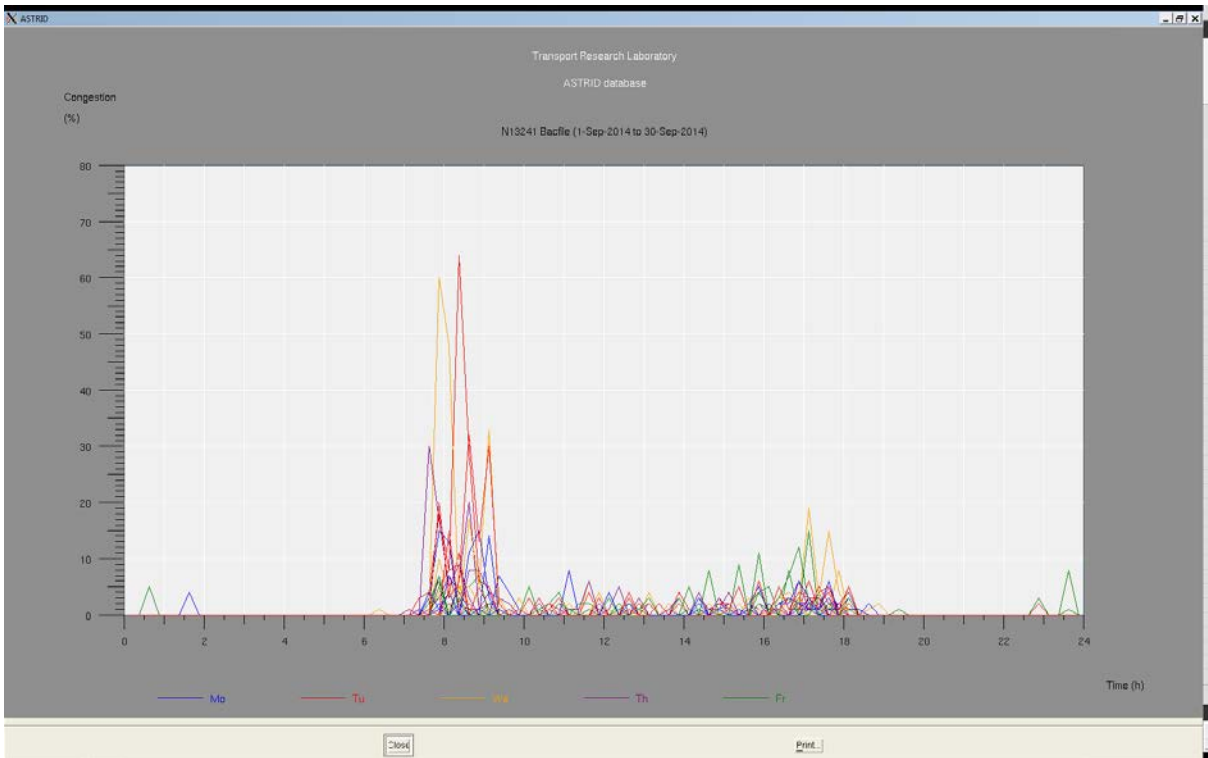
Figure 3.5 Recorded congestion on Derby Road - Lenton Boulevard junction (in both directions)

File location: Nottingham – AVL Signal Priority – Car Journey Times
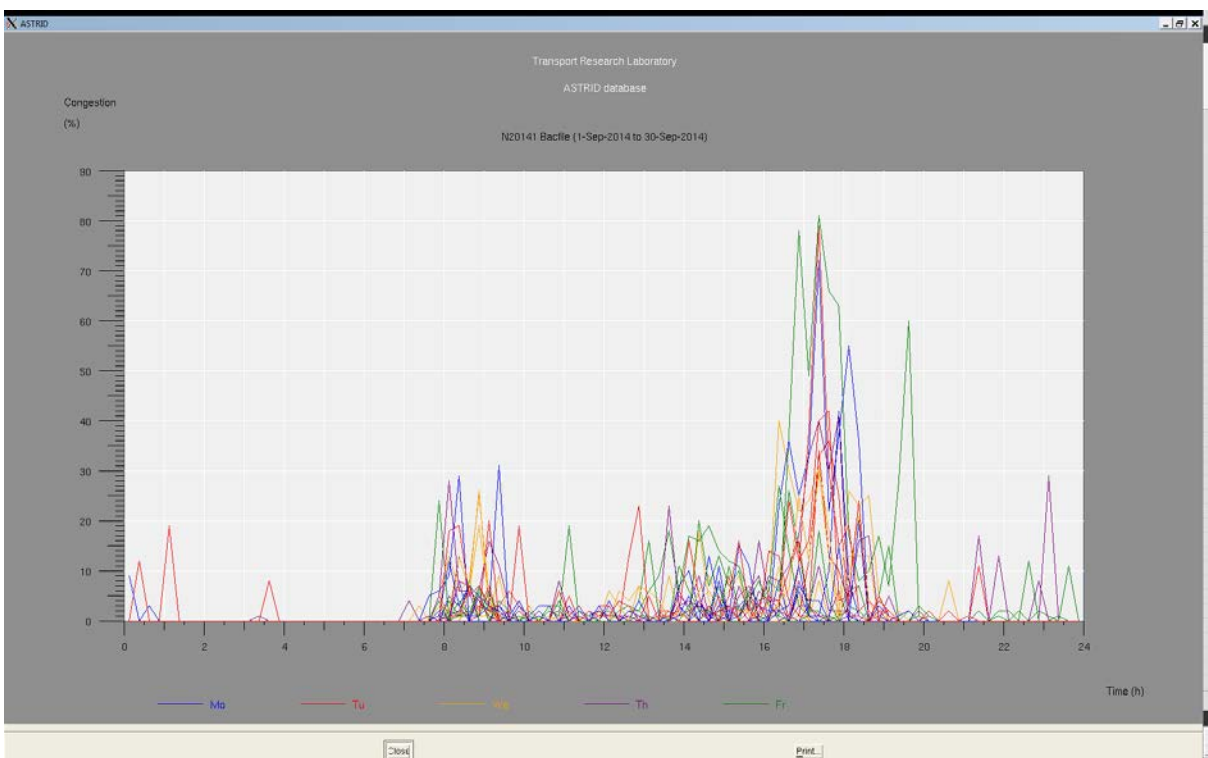
Smartcard retail network

3.27   The smartcard retail network consists of kiosks, outlets and an online portal in order to make the purchase of smart public transport tickets faster, more convenient and more cost effective. The Evaluation Plan identified this intervention as possible to evaluate in a qualitative manner, understanding the views of public transport users, operators and council officers.

3.28   At the time of writing this report, the delivery of the retail network was still in its infancy with 18 out of an intended 88 smartcard retail outlets across Greater Nottingham installed. It is envisaged that the installation of the retail outlets will be completed by Spring 2015. As there are only 18 installed across predominantly city centre locations, there is limited evidence of them being used by public transport users. The views of council officers and operators towards the retail network were explored during the process evaluation interviews, and these views are presented below. The views of bus users are sought through quarterly surveys carried out by the City Council, and the findings from recent surveys are also discussed below.

3.29   According to the City Council, the aim of the smartcard retail network is to make purchasing public transport tickets faster, easier and more cost effective. With purchasing tickets becoming easier for passengers, it is envisaged that operators will start to see the benefits of the retail network and start contributing financially towards the operation and maintenance of the outlets. The City Council sees this as an opportunity to 'invest to save' and generate a regular income for the Council in future.

3.30   The smartcard retail network is also seen as the pre-cursor to delivering an e-purse smartcard product. This will allow public transport users to use their e-purse on any operators' services across Greater Nottingham with the best value fare being charged for that day's travel. It is envisaged that this will introduce an 'Oyster-style' smartcard system in Nottingham which is an ultimate political goal within the city.

3.31   Bus operators were less enthusiastic about the retail network. They felt that the Council's insistence that all smart cards had to be ITSO compliant to be included on the retail network is prohibitive and is likely to mean that bus users will not be able to top up operator specific smart cards at the outlets.

3.32   Operators highlighted another concern that the Council is attempting to encourage public transport users to purchase multi-operator Kangaroo tickets through the retail network, which is a higher priced ticket to what operators themselves provide. They fear that public transport users may therefore be paying more than they need to make the journeys they want due to how the retail network operates.

3.33   It is evident that the retail network is still in its infancy with ticket vending machines being installed at the time of writing. Therefore the views of operators and council officers could develop over time once there are more widely situated and possibly used more frequently. It is therefore necessary to capture these views again at a later date to understand the added value of the retail network to public transport users.

3.34   It would be prudent to revisit operators and the Council when the qualitative process evaluation interviews are next carried out, which is recommended for Autumn 2016. It is therefore proposed that specific questions are included within the next process evaluation questionnaire to investigate the impacts of the smartcard retail network. This will be further explored within the final deliverable as part of this commission.

3.35 The City Council also carries out user satisfaction surveys on a quarterly basis to understand the views of bus users. The survey includes the following question:

How would you rate the availability of integrated ticketing between different bus operators in Nottingham?

3.36 Assessing the responses to this question over time will provide an indication of user views towards the smartcard retail network. Table 3.5 below presents the number of respondents who have rated the availability to date of integrated ticketing as excellent, good, fair and poor. The raw data for these surveys are contained within the accompanying folder of documents and are titled as 'Nottingham City Council User Satisfaction Survey Responses'.

Table 3.12 User survey ratings of integrated ticketing

File location: Nottingham – Smartcard Retail Network – User Satisfaction

	Number of people rating 'integrated ticketing' as			
	Excellent	Good	Fair	Poor
Dec-13	14	304	43	23
Mar-14	25	223	47	6
Jun-14	8	184	49	13
Sep-14	33	109	8	4
Total	80	820	147	46
Total %	7.32%	75.02%	13.45%	4.21%

CCTV feed to operator control centres

3.37 At the time of writing this report, the City Council had not installed CCTV feeds within operator control centres. The intention was to install the feeds into operator control centres during Autumn 2014, but a number of issues have arisen that has prevented that from happening. The City Council is now in the process of replacing their urban traffic control equipment and once that is complete, they will share the feed with bus operators. This is likely to be mid-2015.

3.38 The aim of evaluating the CCTV feeds is to understand how it impacts upon bus services and bus operators. Where quantitative data is available, it will be obtained, but at present no data is available. From a qualitative perspective, operators only have limited perceptions of it to date because they do not yet know the full extent to how it will affect their services. These perceptions are presented below.

3.39 When asked during the process evaluation interviews, NCT and Trent Barton were broadly positive towards the introduction of the CCTV feed. They felt that it is both a sensible scheme which BBA can deliver and is a welcome addition to the BBA schemes that were contained within the BBA bid. They felt that it would provide the following key benefits:

❑ Operators will be able to respond more quickly to incidents on the road network.

❑ Operators will be better placed to introduce optimal limitation measures to reduce the negative effects of incidents on services.

❑ Operators will be able to convey messages more quickly to passengers, particularly via social media. At present, operators sometimes find out about issues through passenger comments on social media.

3.40 The operators felt that it cannot be a dis-benefit to them, while the greatest benefit would be in how they can communicate issues with passengers. However, operators do not yet know the full extent to how it will affect them, therefore it is necessary to carry out additional

interviews at a later date once the CCTV feeds are operational. As the feeds are likely to be operational mid-2015, it would be prudent to revisit operators when the qualitative process evaluation interviews are next carried out, which is recommended for autumn 2016.

3.41   It is therefore proposed that specific questions are included within the next process evaluation questionnaire to investigate the impacts of CCTV feeds. This will be further explored within the final deliverable as part of this commission.

4   SHEFFIELD

4.1   This chapter presents the baseline data collected for Sheffield. There are two schemes identified by DfT during the Evaluation Plan phase that should be evaluated:

  ❑   Sheffield city centre improvements

  ❑   On-bus audio-visual equipment

4.2   This chapter sets out the baseline data collected for each of these schemes.

Sheffield city centre improvements

4.3   This scheme aims to use existing infrastructure more intelligently and efficiently by improving the links between the central RTI system and the central UTC centre to enable late running buses to travel through the city centre with fewer delays.

4.4   The key indicators are:

  ❑   Absolute and % change in average bus journey times through the city centre

  ❑   Absolute and % change in bus journey time difference from timetabled journey times

  ❑   Absolute and % changes in car journey times

4.5   The following datasets were therefore obtained:

  ❑   Bus journey time data for the length of those bus routes affected by the interventions, disaggregated by section of route within city centre. Dataset should be for a period of one month disaggregated by AM peak, Inter Peak, and PM Peak

  ❑   Car journey times between locations within the city centre, disaggregated by peak period, subject to locations of Trafficmaster ANPR cameras

Bus journey times

4.6   AVL-based bus journey time data for frequent services travelling through key junctions into, and out of, the city centre has been provided by SYPTE. The key junction locations and associated bus services are:

  ❑   The Wicker - Service 52

  ❑   Leopold Street – Service 51

  ❑   Granville Square – Service 53

  ❑   Arundel Gate - Services 120 (Inbound) and 20/20A (Outbound)

  ❑   Eyre St / Moorfoot – Service 81, Inbound only

  ❑   Bramall Lane – Service 252

4.7   In order to disaggregate AVL journey time data and allow the impact of the scheme to be measured, relevant bus stops for each route have been determined by SYPTE allowing comparison of the bus journey times and speeds before the key city centre junction, and after.

4.8   Figures 4.1 and 4.2 present the city centre area and sections of bus services analysed. Weekday datasets for a period of six weeks (15th September 2014 to 24th October 2014) have been disaggregated by AM peak, Inter Peak, and PM Peak defined as 0730 – 0930, 0930-1600 and 1600-1800 respectively.

Figure 4.1 Sheffield City Centre UTC Priority: Bus Journey Time/Speed Monitoring Locations (Sites 1-3)

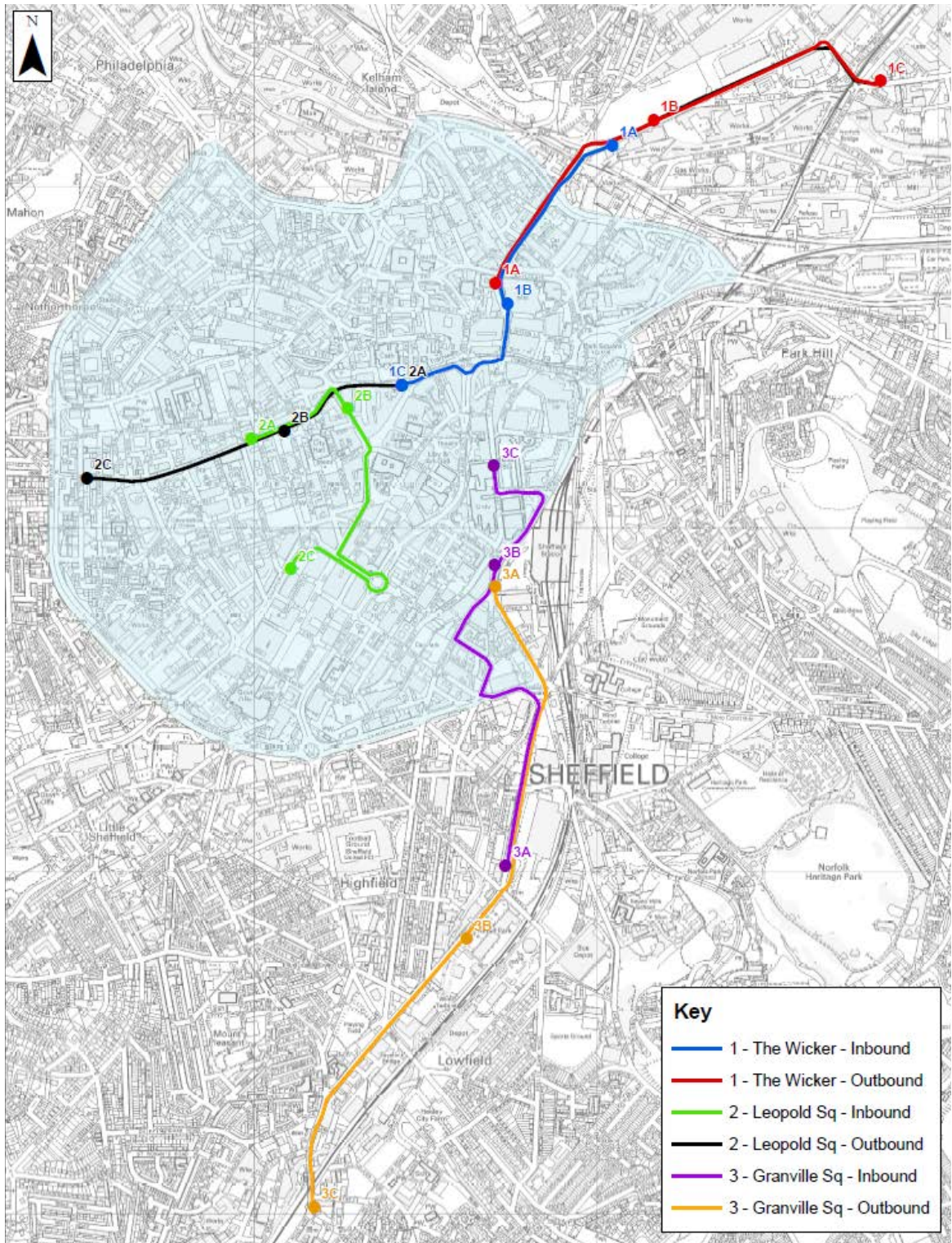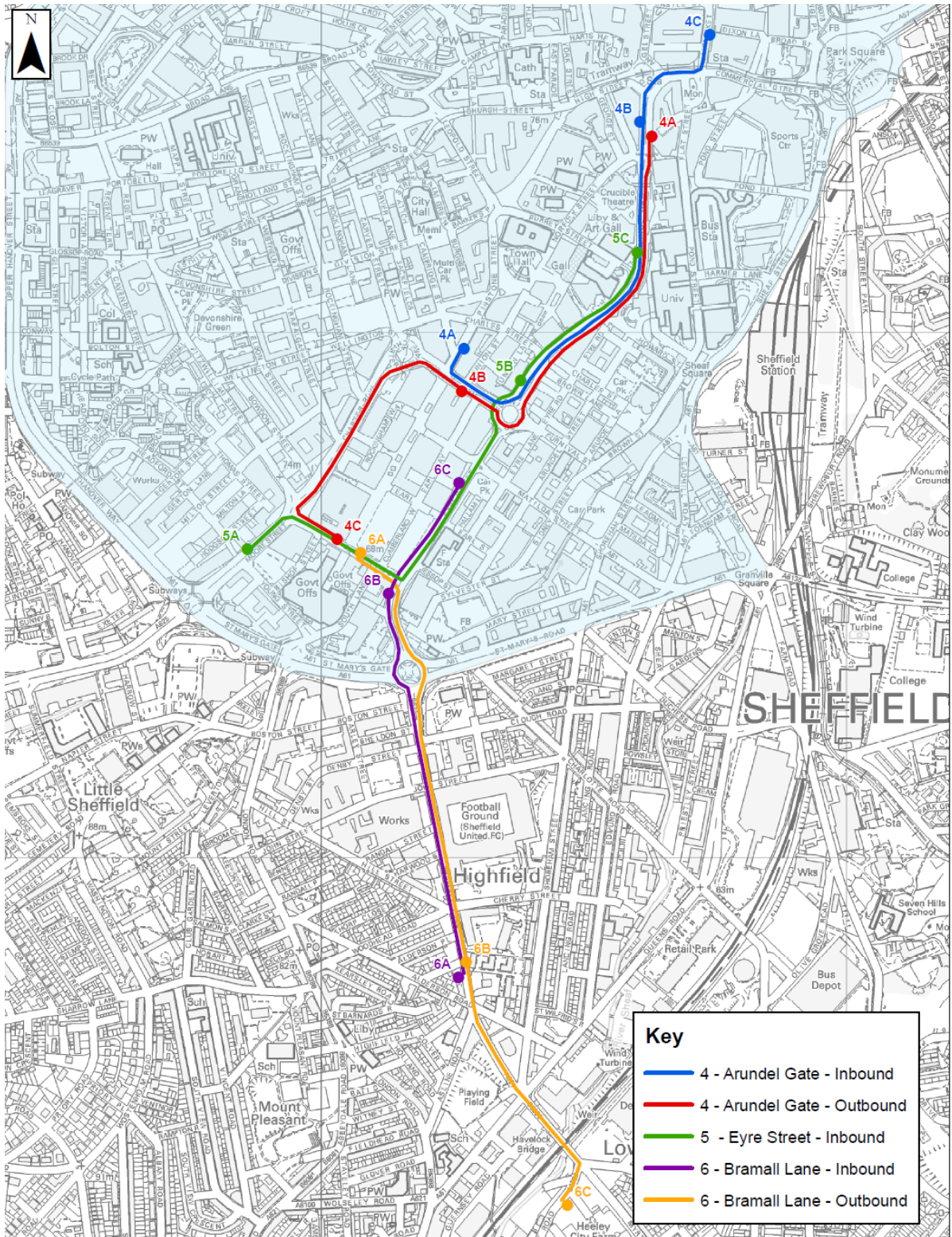File location: Sheffield – City Centre Improvements – Bus Journey Times

Key

— 1 - The Wicker - Inbound
— 1 - The Wicker - Outbound
— 2 - Leopold Sq - Inbound
— 2 - Leopold Sq - Outbound
— 3 - Granville Sq - Inbound
— 3 - Granville Sq - Outbound

Figure 4.2 Sheffield City Centre UTC Priority: Bus Journey Time/Speed Monitoring Locations (Sites 4-6)

File location: Sheffield – City Centre Improvements – Bus Journey Times

Key

———	4 - Arundel Gate - Inbound
———	4 - Arundel Gate - Outbound
———	5 - Eyre Street - Inbound
———	6 - Bramall Lane - Inbound
———	6 - Bramall Lane - Outbound

4.9   The benchmark bus journey time data, and timetable compliance, is summarised in the following sub-sections, split by location and route. The raw data is supplied on the accompanying USB memory stick.

itp

The Wicker - Service 52

Table 4.1 Journey times and average speeds on Service 52 inbound between locations A-B and B-C

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound A-B Distance 0.379 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	4mins 3secs	5.606
Inter peak 0930-1600	3mins 57secs	5.753
PM peak 1600-1800	4mins 19secs	5.262

Inbound B-C Distance 0.305 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	4mins 10secs	4.399
Inter peak 0930-1600	5mins 3secs	3.628
PM peak 1600-1800	4mins 28secs	4.091

Table 4.2 Timetable performance of service 52 at High Street HS4 bus stop (no. of services at last bus stop on measured section)

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound	Very Early	Early	On Time	Late	Very Late
AM Peak 0730-0930	0	13	570	220	1
Inter Peak 0930-1600	0	20	2365	237	0
PM Peak 1600-1800	0	8	626	128	2

Table 4.3 Journey times and average speeds on Service 52 outbound between locations A-B and B-C

File location: Sheffield – City Centre Improvements – Bus Journey Times

Outbound A-B Distance 0.438 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	3mins 35secs	7.347
Inter peak 0930-1600	3mins 47secs	6.953
PM peak 1600-1800	4mins 16 secs	6.081

Outbound B-C Distance 0.474 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	2mins 5secs	13.604
Inter peak 0930-1600	1min 57secs	14.614
PM peak 1600-1800	2 mins 2 secs	13.972

itp

Table 4.4 Timetable performance of service 52 at Princess Street bus stop (no. of services at last bus stop on measured section)

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound	Very Early	Early	On Time	Late	Very Late
AM Peak 0730-0930	0	1	558	252	1
Inter Peak 0930-1600	0	1	1842	820	4
PM Peak 1600-1800	0	2	367	354	4

Leopold Street – Service 51

Table 4.5 Journey times and average speeds on Service 51 inbound between locations A-B and B-C

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound A-B Distance 0.233 miles	Average journey time between stops	Average Speed (MPH)
Am peak 0730-0930	1min 54secs	7.334
Inter peak 0930-1600	2mins 17secs	6.103
PM peak 1600-1800	2mins 10secs	6.428

Inbound B-C Distance 0.627 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	5mins 10secs	7.274
Inter peak 0930-1600	5mins 4secs	7.423
PM peak 1600-1800	6mins 8secs	6.130

Table 4.6 Timetable performance of service 52 at Moorhead MH3 bus stop (no. of services at last bus stop on measured section)

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound	Very Early	Early	On Time	Late	Very Late
AM Peak 0730-0930	0	0	222	86	0
Inter Peak 0930-1600	0	0	204	102	1
PM Peak 1600-1800	1	1	203	53	2

Table 4.7 Journey times and average speeds on Service 51 outbound between locations A-B and B-C

File location: Sheffield – City Centre Improvements – Bus Journey Times

Outbound A-B Distance 0.243 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	1min 54secs	7.690
Inter peak 0930-1600	1min 55secs	7.590
PM peak 1600-1800	2mins 4secs	7.060

Outbound B-C Distance 0.243 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	2mins 38secs	8.615
Inter peak 0930-1600	2mins 38secs	8.654
PM peak 1600-1800	2mins 44secs	8.308

Table 4.8 Timetable performance of service 52 at Gell Street bus stop (no. of services at last bus stop on measured section)

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound	Very Early	Early	On Time	Late	Very Late
AM Peak 0730-0930	0	2	213	103	0
Inter Peak 0930-1600	0	7	251	60	0
PM Peak 1600-1800	0	8	171	45	2

Granville Sq – Service 53

Table 4.9 Journey times and average speeds on Service 53 inbound between locations A-B and B-C

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound A-B Distance 0.721 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	5mins 4secs	8.550
Inter peak 0930-1600	4mins 13secs	10.257
PM peak 1600-1800	4mins 56secs	8.781

Inbound B-C Distance 0.296 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	2mins 17secs	7.752
Inter peak 0930-1600	2mins 12secs	8.085
PM peak 1600-1800	1min 49secs	9.809

Table 4.10 Timetable performance of service 53 at Pond Street bus stop (no. of services at last bus stop on measured section)

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound	Very Early	Early	On Time	Late	Very Late
AM Peak 0730-0930	0	1	60	159	9
Inter Peak 0930-1600	0	9	497	251	16
PM Peak 1600-1800	0	2	120	135	16

Table 4.11 Journey times and average speeds on Service 53 outbound between locations A-B and B-C

File location: Sheffield – City Centre Improvements – Bus Journey Times

Outbound A-B Distance 0.702 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	4mins 33secs	9.266
Inter peak 0930-1600	4mins 27secs	9.453
PM peak 1600-1800	4mins 34secs	9.233

Outbound B-C Distance 0.584 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	3mins 10secs	11.051
Inter peak 0930-1600	3mins 41secs	9.495
PM peak 1600-1800	4mins 23secs	7.996

Table 4.12 Timetable performance of service 53 at London Road/Well Road bus stop (no. of services at last bus stop on measured section)

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound	Very Early	Early	On Time	Late	Very Late
AM Peak 0730-0930	0	3	64	204	23
Inter Peak 0930-1600	0	49	481	299	14
PM Peak 1600-1800	0	17	89	150	9

Arundel Gate – Service 120 (Inbound) and services 20/20A (Outbound)

Table 4.13 Journey times and average speeds on Service 120 inbound between locations A-B and B-C

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound A-B Distance 0.531 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	4mins 48secs	6.646
Inter peak 0930-1600	4mins 48secs	6.638
PM peak 1600-1800	5mins 32secs	5.759

Inbound B-C Distance 0.237 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	2mins 33secs	5.593

Inter peak 0930-1600	2mins 53secs	4.921
PM peak 1600-1800	3mins 1sec	4.720

Table 4.14 Timetable performance of service 120 at Haymarket CG21 bus stop (no. of services at last bus stop on measured section)

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound	Very Early	Early	On Time	Late	Very Late
AM Peak 0730-0930	0	38	326	43	0
Inter Peak 0930-1600	1	41	1103	69	1
PM Peak 1600-1800	0	15	303	46	0

Table 4.15 Journey times and average speeds on Service 20/20A outbound between locations A-B and B-C

File location: Sheffield – City Centre Improvements – Bus Journey Times

Outbound A-B Distance 0.654 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	3mins	13.080
Inter peak 0930-1600	3mins 54secs	10.073
PM peak 1600-1800	4min 19secs	9.086

Outbound B-C Distance 0.194 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	1mins 28secs	7.944
Inter peak 0930-1600	2mins 8secs	5.442
PM peak 1600-1800	1mins 50secs	6.358

Table 4.16 Timetable performance of service 20/20A at Moor Market MF5 bus stop (no. of services at last bus stop on measured section)

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound	Very Early	Early	On Time	Late	Very Late
AM Peak 0730-0930	0	0	120	155	6
Inter Peak 0930-1600	0	1	499	461	12
PM Peak 1600-1800	0	1	164	103	2

Eyre St / Moorfoot – Service 81, Inbound only

Table 4.17 Journey times and average speeds on Service 81 inbound between locations A-B and B-C

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound A-B Distance 0.506 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	4mins 29secs	6.783
Inter peak 0930-1600	4mins 14secs	7.176
PM peak 1600-1800	4mins 8secs	7.335

itp

Inbound B-C Distance 0.216 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	1min 16secs	10.197
Inter peak 0930-1600	1min 29secs	8.715
PM peak 1600-1800	2mins 44secs	4.733

Table 4.18 Timetable performance of service 81 at Arundel Gate AG11 bus stop (no. of services at last bus stop on measured section)

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound	Very Early	Early	On Time	Late	Very Late
AM Peak 0730-0930	0	79	322	165	5
Inter Peak 0930-1600	0	319	1418	301	9
PM Peak 1600-1800	1	73	448	86	2

Bramall Lane – Service 252

4.10   When completing the analysis for Bramall Lane, SYPTE noted that "…for the inbound B-C data the schedule time between stops is frequently 6 minutes. This may mean that some incorrect data has been inputted and should therefore be treated with caution. There is no reason to doubt the actual run times though as these come direct from the Real Time system and shouldn't be subject to input error".

Table 4.19 Journey times and average speeds on Service 252 inbound between locations A-B and B-C

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound A-B Distance 0.467 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	2mins 34secs	10.908
Inter peak 0930-1600	2mins 15secs	12.449
PM peak 1600-1800	-	-

Inbound B-C Distance 0.157 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	1min 1sec	9.286
Inter peak 0930-1600	1min 1sec	9.315
PM peak 1600-1800	-	-

Table 4.20 Timetable performance of service 252 at Moorhead ES2 bus stop (no. of services at last bus stop on measured section)

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound	Early	On Time	Late
AM Peak 0730-0930	33	11	23
Inter Peak 0930-1600	72	0	0
PM Peak 1600-1800	-	-	-

itp

Table 4.21 Journey times and average speeds on Service 252 outbound between locations A-B and B-C

File location: Sheffield – City Centre Improvements – Bus Journey Times

Outbound A-B Distance 0.53 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	2mins 39secs	11.992
Inter peak 0930-1600	1min 40secs	19.080
PM peak 1600-1800	3mins 59secs	7.982

Outbound B-C Distance 0.356 miles	Average journey time between stops	Average Speed (MPH)
AM peak 0730-0930	1min 41secs	12.664
Inter peak 0930-1600	1min 43secs	12.480
PM peak 1600-1800	2mins 21secs	9.066

Table 4.22 Timetable performance of service 252 at Alexandra Road bus stop (no. of services at last bus stop on measured section)

File location: Sheffield – City Centre Improvements – Bus Journey Times

Inbound	Early	On Time	Late
AM Peak 0730-0930	0	30	0
Inter Peak 0930-1600	1	308	32
PM Peak 1600-1800	0	68	48

Car journey times

4.11 SYPTE have provided vehicle journey times between locations within the city centre, disaggregated by peak period, from data collected through Trafficmaster ANPR cameras. Vehicle journey time data was provided for the period 15th Sept – 24th Oct 2014 (weekdays only) for the following peak times and with all user classes (excluding buses) combined:

❑ AM Peak: 07:30 – 09:30

❑ Inter Peak: 09:30 – 16:00

❑ PM Peak: 16:00 – 18:00

Table 4.23 Vehicle journey times in Sheffield City Centre

File location: Sheffield – City Centre Improvements – Car Journey Times

Location	Direction	AM	IP	PM
Wicker	Eastbound	02:05	01:56	02:08
Wicker	Westbound	03:07	02:04	01:57
Leopold Street	Southbound	01:08	01:22	01:23
Granville Square	Northbound	04:27	02:03	02:00
Granville Square	Southbound	03:19	01:56	02:38
Arundel Gate	Northbound	02:12	02:24	03:28
Arundel Gate	Southbound	02:19	02:18	02:45
Eyre Street	Northbound	02:03	01:46	02:01
Eyre Street	Southbound	01:56	01:38	04:38

itp

St Mary's Road	Eastbound	01:54	01:05	01:22
St Mary's Road	Westbound	01:35	01:05	02:10

On-bus audio-visual equipment

4.12 The evaluation of AV equipment has been selected in order to complement the ex-post evaluation of AV equipment that will be carried out in Nottingham during the autumn of 2014. The primary aim of this evaluation is to understand the effects of AV equipment on bus patronage and to provide evidence of the benefits of on-bus AV equipment. In Sheffield AV will be implemented on one stand-a-lone service, the 120; a frequent service serving the Royal Hallamshire Hospital, and operated equally between First and Stagecoach.

4.13 The key indicators are:

❑ Absolute and % change in bus patronage on service 120

❑ Absolute and % change in types of passengers using service 120

❑ % change in users satisfied or very satisfied with different aspects of service 120

<u>Bus Patronage</u>

4.14 Baseline data has been collected from both operators for the last two years, and is presented in Table 4.24. A full breakdown of data is provided on the accompanying USB memory stick.

Table 4.24 Bus patronage changes on service 120 October 2012 - September 2014 (indexed based on October 2012 patronage)

File location: Sheffield – AV Equipment – Bus Patronage

Month	Total Pax	ENCTS Pax	All Other Pax
Oct-12	1	1	1
Nov-12	0.98	1	0.97
Dec-12	0.87	1	0.85
Jan-13	0.85	1	0.84
Feb-13	0.86	1	0.86
Mar-13	0.91	1	0.91
Apr-13	0.87	1	0.84
May-13	0.93	1	0.91
Jun-13	0.87	1	0.84
Jul-13	0.96	1	0.92
Aug-13	0.87	1	0.81
Sep-13	0.94	1	0.91
Oct-13	1.09	1	1.10
Nov-13	1.02	1	1.01
Dec-13	0.92	1	0.92
Jan-14	0.86	1	0.86
Feb-14	0.89	1	0.90
Mar-14	0.98	1	0.99
Apr-14	0.85	1	0.83
May-14	0.96	1	0.96
Jun-14	0.88	1	0.87

Jul-14	0.89	1	0.87
Aug-14	0.80	1	0.76
Sep-14	0.92	1	0.91

4.15   To fully evaluate the effects of the AV equipment on bus patronage, there is a need to remove the influence of possible external factors that could impact upon bus patronage. The counter-factual for service 120 therefore includes all bus services across the SYPTE area disaggregated by commercial and concessionary passengers.

Table 4.25 presents all bus passengers (including service 120) in Sheffield between October 2012 and October 2014, indexed to the number of passengers in October 2012.

	Commercial Pax	Concessionary Pax
Oct-12	1	1
Nov-12	0.973	0.976
Dec-12	0.856	0.847
Jan-13	0.869	0.883
Feb-13	0.879	0.832
Mar-13	0.928	0.897
Apr-13	0.902	0.899
May-13	0.912	0.972
Jun-13	0.908	0.967
Jul-13	0.968	0.933
Aug-13	0.861	0.851
Sep-13	1.018	0.883
Oct-13	1.073	0.950
Nov-13	1.051	0.945
Dec-13	0.935	0.833
Jan-14	0.947	0.909
Feb-14	0.928	0.829
Mar-14	1.058	0.959
Apr-14	1.097	0.618
May-14	1.131	0.640
Jun-14	1.161	0.607
Jul-14	1.137	0.623
Aug-14	0.985	0.589
Sep-14	1.221	0.583
Oct-14	1.269	0.608

User Satisfaction

4.16   Following the re-development of service 120 (previously branded as 'Optio Orange'), SYPTE conducted a number of user satisfaction surveys in August 2011 and 2012. As part of the survey, users were asked to rate their satisfaction with the service. Table 4.26 outlines the findings of the surveys which will be used as a baseline to measure satisfaction following the introduction of AV on the 120.

Table 4.26 Bus user satisfaction on Service 120

File location: Sheffield – AV Equipment – User Satisfaction

		Satisfied	Neither	Dissatisfied
Quality of the bus	Aug-11	n/a	n/a	n/a
	Apr-12	85.2	10.1	4.7
The service overall	Aug-11	83.3	10.9	5.9
	Apr-12	84.9	9.1	6

5 SUMMARY

5.1 This report has presented the baseline data for the impact evaluation of selected BBA schemes. This report does not provide a commentary or analysis of the datasets, and also does not repeat what is written in other reports produced in this project. It does, however, document the baseline situation to enable a number of selected schemes to be evaluated during or following the lifetime of the BBA programme. Alongside the BBA final report and the accompanying USB memory stick, this report provides whoever carries out the post-implementation evaluation with the baseline situation from which the impacts of those schemes can be assessed.