

CTP Phase 4 Update Report

Executive Summary

The traffic data collected during March 2019 suggests the closure of Clarence Street as part of the Cheltenham Transport Plan Experimental Traffic Regulation Order is having only a limited effect on the wider traffic network.

Compared with pre-Cheltenham Transport Plan traffic data from 2015, three sites are showing traffic increases over the 20% background growth threshold:

- St. George's Street
- St. James' Square
- Winchcombe Street (South)

The increases on St. George's Street, St. James' Square and Winchcombe Street (South) are not unexpected, as they are on northbound routes immediately either side of the restricted route. Traffic data and feedback received during the trial is currently being reviewed and options to consider and address the increases in traffic along immediate alternative routes are being considered.

It should be noted that whilst traffic flows at St George's Street, St James' Square and Winchcombe Street (South) have increased above the 20% traffic growth threshold considered reasonable, traffic volumes across Cheltenham between 2008 and 2015 decreased by approximately 13% and are continuing to fall. In 2018, traffic volumes across Cheltenham were approximately 20% lower than they were in 2008. This pattern is likely to continue given the rise in home working and modal shift. In summary, although traffic increases have been seen on some routes because of the Experimental Traffic Regulation Order, traffic flows largely are still less than they were in 2008.

Analysis of Bluetooth journey time data shows journey times along key routes in Cheltenham have remained, for the most part, unchanged since the implementation of the trial closure. Journey times have increased on the following routes, but by no more than one minute:

- Saints Corridor northbound in the PM peak period.
- A4019 eastbound between Gloucester Road and North Place in the AM and PM peak periods.

1. Introduction

1.1. General

1.1.1. This note provides an update on the Experimental Traffic Regulation Order (ETRO) which comprised the fourth phase of the Cheltenham Transport Plan (CTP).

1.1.2. It presents a summary of network traffic impacts in terms of Average Annual Daily Traffic flows at monitoring sites and journey times along key routes. For the purposes of comparison, recent traffic data collected in March 2019 is compared with base traffic flows counted in November 2015 before the CTP schemes were introduced.

1.2. Scheme Overview

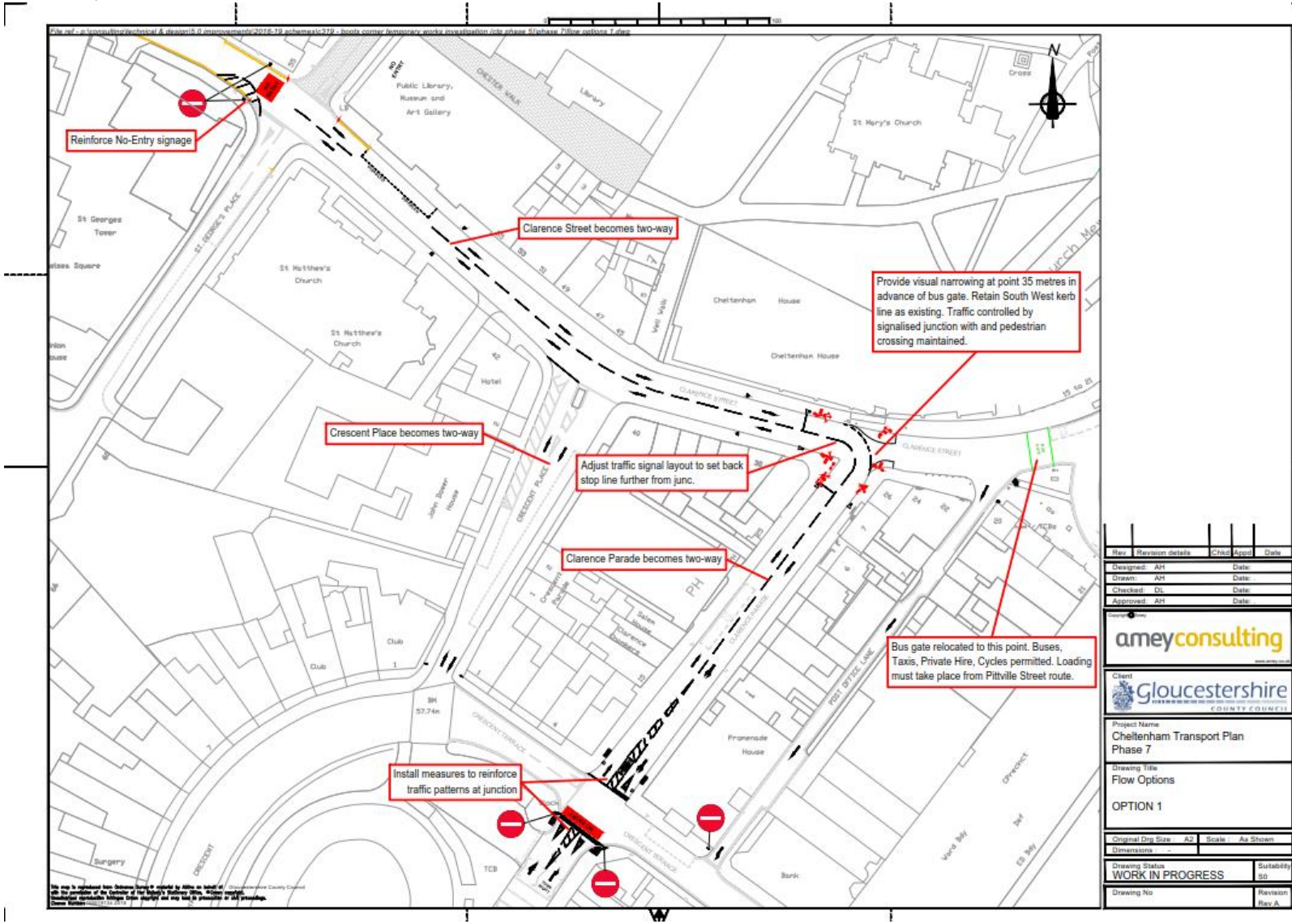
1.2.1. The Lead Cabinet Member Briefing Paper presented in December 2018 set out proposed amendments to the trial to address feedback received, primarily:

- Concerns / comments on traffic increases on other routes around the town and increases in journey time. Streets mentioned include St. George's Street and Rodney Road;
- Signage comments, most of which were recorded in the initial month, and have decreased following the additional traffic management introduced in August 2018;
- Access for businesses on Clarence Parade and the western end of Clarence Street; and
- Blue Badge Holder access to Pittville Street.

1.2.2. The revised scheme features a 24-hour bus gate in Clarence Street between Post Office Lane and Imperial Circus to limit northbound traffic progressing along Clarence Street to buses and taxis. No exemptions for service vehicles are required through the bus gate, as service access to all properties is possible either via Pittville Street or via Clarence Parade / Street.

1.2.3. This approach removes Clarence Parade / western end of Clarence Street from the experimental area. These streets have been made two-way, with the acute turn between the two streets being controlled by a signalised junction as agreed in Phase 4 of the Cheltenham Transport Plan (see figure 1 below).

Figure 1 – Clarence Parade / Clarence Street Scheme Outline



Rev	Revision details	Chkd	Appr	Date
Designed	AH			Date:
Drawn	AH			Date:
Checked	DL			Date:
Approved	AH			Date:

ameyconsulting

Client
Gloucestershire
COUNTY COUNCIL

Project Name
Cheltenham Transport Plan
Phase 7

Drawing Title
Flow Options

OPTION 1

Original Dwg Size: A2 Scale: As Shown
Dimensions: -

Drawing Status
WORK IN PROGRESS

Drawing No: - Sustainability: SD
Revision: Rev A

2. Timescale for amendments

- 2.1.1. The ETRO commenced on 28th June 2018, and will run until 28th December 2019.
- 2.1.2. Provisional dates and possible outcomes are set out below:
 - 2.1.2.1. Consultation end date is 3 December.
 - 2.1.2.2. TRO committee 11 December
 - 2.1.2.3. Cabinet 17th December.
 - 2.1.2.4. **Possible outcome 1** – Cabinet decision to make the order permanent – *this would involve making the order before 27th December. Minor works would be required in early 2020 to make the ETRO scheme permanent.*
 - 2.1.2.5. **Possible outcome 2** – Abandon the ETRO – *this outcome would require changes to enforcement of the bus gate and the parking and loading restrictions. – Clarence Street and Clarence Parade are two-way roads and changes to waiting and loading restrictions would be required for which further consultation would be required. All traffic regulations would revert to how they were pre phase 4 (phase 1,2,3)*

3. CTP Phase 4 – Network Traffic Effects.

3.1. Pre-CTP traffic data collection

3.1.1. A baseline assessment of the pre-CTP traffic flows on a range of roads across Cheltenham was collected in early November 2015 for two weeks using GCC's in-situ fixed Automatic Traffic Counters (ATCs) and additional traffic volume / speed surveys to cover other residential routes which may experience displacement effects.

3.1.2. The timing of the data collection was undertaken in line with Department for Transport TAG unit M1.2.

3.1.3. The fixed Automatic Traffic Counter sites used:

- A4019 Poole Way south of Swindon Road;
- A46 St. Johns Ave north of Albion Street;
- A435 High Street east of St. James Street;
- A435 London Road west of Keynsham Road;
- A46 St George's Road east of Royal Well Road;
- A46 Imperial Square at junction with Rodney Road;
- Ambrose Street north of Knapp Road;
- Rodney Road north of Imperial Square;
- A46 Albion Street west of St. Johns Road;
- Gloucester Place;
- Winchcombe Street;
- A46 North Place;
- Wellington Street;
- Bath Street;
- Clarence Street;
- St George Place; and
- A46 Royal Well Road.

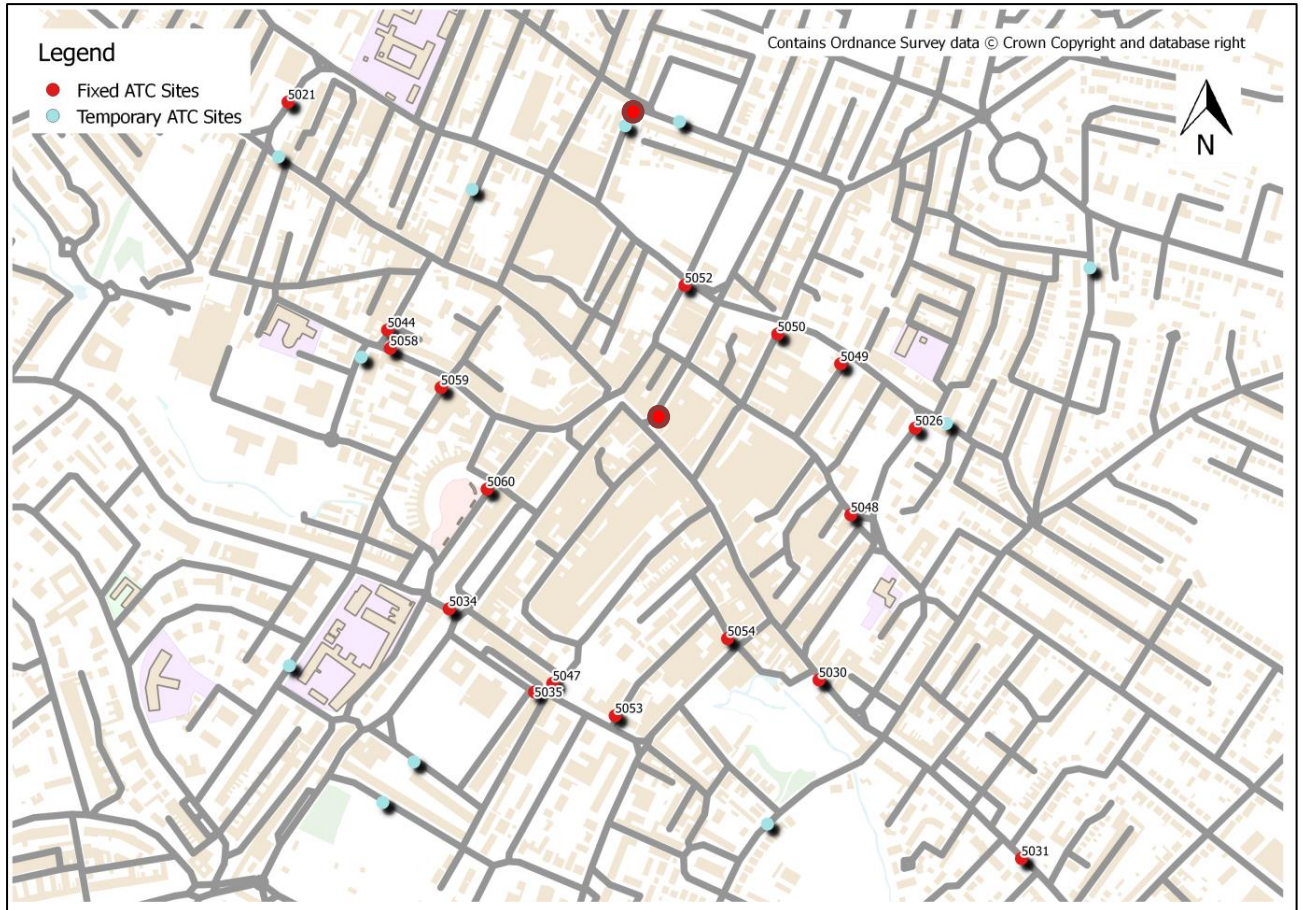
3.1.4. The additional traffic volume / speed surveys were initially carried out for a period of two weeks in early November 2015. The location of the residential additional survey sites were:

- Monson Avenue;
- Clarence Square; (fixed counter installed in 2017)
- All Saints Road;
- Fairview Road;
- Bayshill Road;
- College Road;
- St. George's Street;
- High Street;
- St. James' Square;
- Imperial Square (southern side); and

- Montpellier Spa Road.

3.1.5. The combined survey locations are shown in Figure 2 below.

Figure 2 – Traffic Flow Survey Locations

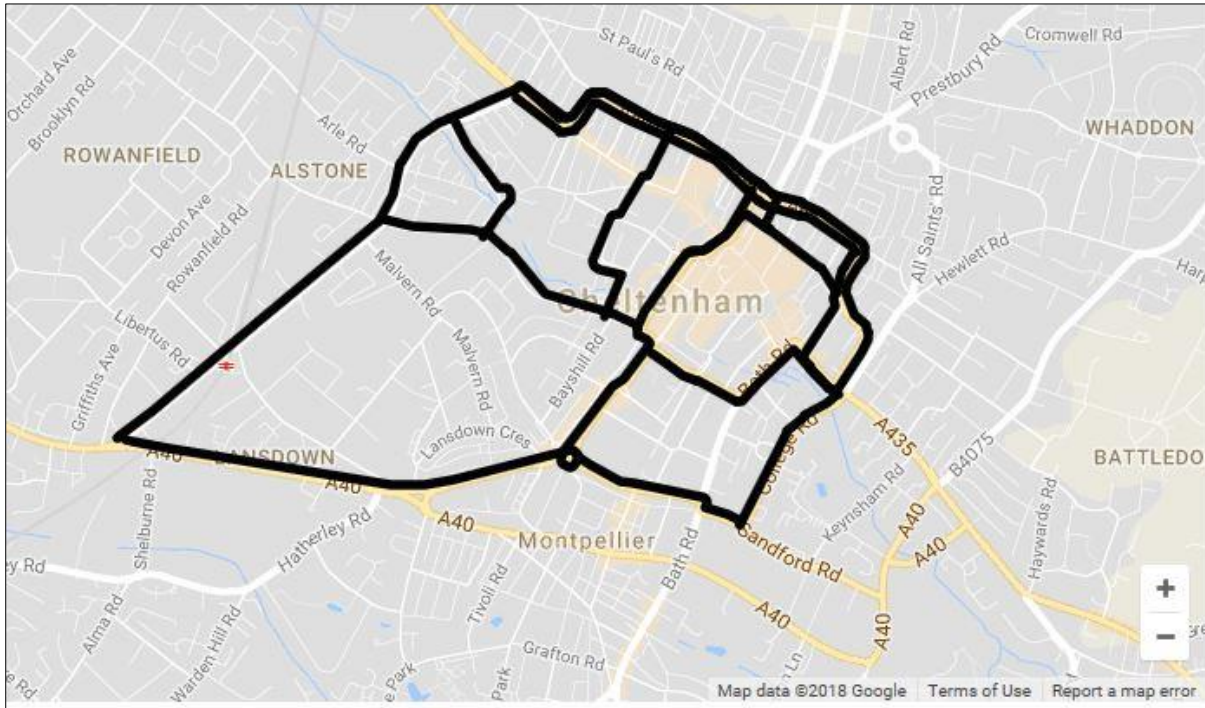


3.1.6. The combined survey sites provide comprehensive coverage over the town, enabling a wide-ranging picture of existing flow volumes to be built up.

3.1.7. Alongside the temporary traffic volume / speed surveys, a network of Bluetooth sensors has been installed on the main routes around the town centre.

3.1.8. The Bluetooth route coverage is shown in Figure 3 below

Figure 3– CTP Phase 4 Bluetooth Journey time route network



Source: - Drakewell C2

- 3.1.9. Since the 2016 Post-Phase 1 survey, the GCC survey team have undertaken a review of the fixed ATC sites in Cheltenham. Two fixed ATC sites, 5053 Wellington Street and 5054 Bath Street were decommissioned.
- 3.1.10. The decommissioning of the sites was done in correspondence with the CTP Project Manager, to ensure that the integrity of the CTP monitoring was maintained. The counter locations of these are not critical to the CTP monitoring, as they were located on a one-way loop, within the Inner Ring Road.
- 3.1.11. The decommissioning of the two sites has provided equipment to be re-allocated to establish a permanent ATC site in Clarence Square and an additional site on Winchcombe Street, South of Albion Street, to monitor traffic flow on the High Street – Winchcombe Street corridor.

3.2. Acceptable Traffic Growth

- 3.2.1. Daily traffic flows can vary significantly due to a wide range of factors including weather, road traffic collisions, congestion elsewhere on the network and local events. Therefore, an allowance for daily variation in traffic flows needs to be included within any analysis of future traffic flows on local roads.
- 3.2.2. The baseline traffic surveys were undertaken in 2015 and the Boots Corner trial commenced in 2018. There is a need to take account of background traffic growth on the network before

considering the impact of the Boots Corner closure. The UK Government produces a set of traffic growth forecasts and supporting software, TEMPRO. For Cheltenham, TEMPRO forecasts a 4.44% traffic growth between 2015 and 2018. Additionally, the Department for Transport (DfT) guidance suggests that automatic traffic survey equipment confidence values should be plus / minus 5%, or a variation of 10%¹. Therefore increases in traffic in 2018 of up to 9.44% over 24 hours will be discounted as this is demonstrably due to background traffic growth and daily variation.

- 3.2.3. Boots' Corner was temporarily closed for a week in May 2009. Traffic surveys were undertaken before, during and after the closure at a total of 24 locations across the town to understand the impacts of the closure. The 2009 surveys showed that the majority of roads had showed less than 10% increase in traffic during the Boots' Corner closure over a 24 hour period. Combined with the 9.44% variation in background growth, a 20% increase in traffic has been taken as the threshold for an acceptable level of traffic growth.

3.3. March 2019 average 24hr traffic flows

- 3.3.1. A two-week data collection exercise was undertaken in early March 2019.
- 3.3.2. Table 1 below provides a comparison of the average 24-hour flow recorded in March 2019 with the pre-CTP traffic flows in 2015, ordered in descending order from the largest 7 day percentage difference irrespective of permanent or temporary site (temporary sites are numbered).
- 3.3.3. The average seven-day 24 hour two-way flow has been used as the primary indicator for assessing and comparing the traffic flow at each site, as the scheme is in place 24 hours a day, 7 days a week. This approach allows a relatively rapid analysis of the large number of sites to be undertaken. If any of the sites show changes which are unexpected, the detailed data for individual sites can be investigated further.

¹ Paragraph 3.3.32, DfT TAG Unit M1.2 Data Sources and Surveys, January 2014
Aug-2019

Table 1 Comparison of average 24 hour two-way flows: March 2019 and November 2015 (immediately prior to CTP)

Survey Site	24 Hour Flow (Working day flow over survey period)				24 Hour Flow (7 day flow over survey period)			
	Nov-15	CTP4 Mar 19	Difference	% difference	Nov-15	CTP4 Mar 19	Difference	% difference
5069 Winchcombe Street South <small>See Note 5</small>	1919	3442	1523	79%	1842	3184	1342	73%
St George's St <small>See Note 2</small>	2493	3392	899	36%	2372	3300	928	39%
St James Square <small>See Note 3</small>	5239	7063	1824	35%	4798	6630	1832	38%
Clarence Square <small>See Note 1</small>	8672	9978	1306	15%	8202	9412	1210	15%
5047 Rodney Road <small>See Note 5</small>	6941	7970	1029	15%	6817	7827	1010	15%
College Road	8733	9747	1014	12%	8071	9061	990	12%
High Street	6327	7270	943	15%	6103	6767	664	11%
Montpellier Spa Road	606	700	94	16%	580	615	35	6%
5035 Imperial Sq North	13573	14074	501	4%	13007	13447	440	3%
Monson Ave	2333	2399	66	3%	2229	2269	40	2%
5021 Poole Way	15210	15296	86	1%	14649	14645	-4	0%
5026 St. Johns Ave	14374	13423	-951	-7%	13432	12602	-830	-6%
5031 London Road	15765	15065	-700	-4%	14946	14100	-846	-6%
5030 High Street	16713	15563	-1150	-7%	15961	14854	-1107	-7%
Fairview Road	1815	1681	-134	-7%	1689	1558	-131	-8%
5049 Gloucester Pl	2298	2120	-178	-8%	2188	2011	-177	-8%
Bayshill Road	8711	8125	-586	-7%	8123	7254	-869	-11%
All Saints Road	8195	6813	-1382	-17%	7530	6611	-919	-12%
5058 Clarence Street	5597	4982	-615	-11%	5242	4629	-613	-12%
Imperial Square South	3392	2992	-400	-12%	3194	2704	-490	-15%
5050 Winchcombe St	2433	1816	-617	-25%	2423	1791	-632	-26%
5034 St. George Road	16097	11680	-4417	-27%	15918	11289	-4629	-29%
5059 St. George Pl	4955	3644	-1311	-26%	4754	3377	-1377	-29%
5044 Ambrose St	13163	9514	-3649	-28%	12906	8999	-3907	-30%
5048 Albion Street	8164	5322	-2842	-35%	7956	5107	-2849	-36%
5052 North Place	4523	2241	-2282	-50%	4494	2147	-2347	-52%
5060 Royal Well	8896	2140	-6756	-76%	8653	2060	-6593	-76%
TOTAL FLOWS	207137	188452	-18685	-9%	198079	178250	-19829	-10%

Note 1: Baseline data from November 2012 & October 2016

Note 2: On northbound route west of Boots Corner

Note 3: On northbound route west of Boots Corner

Note 4: Includes traffic accessing Regent St and multi storey car park

Note 5: On northbound route east of Boots Corner

3.3.4. The data in Table 1 shows that in comparison to the pre-CTP 2015 flows, CTP Phase 4 has had a limited effect on the overall network to date. Most sites show increases broadly in line with expected levels of background traffic growth (broadly 4% between 2015 and 2019) or have seen reductions in traffic since 2015. Three sites show increases in traffic over 20%:

- St George's Street

- St James's Square
- Winchcombe St South

- 3.3.5. It should be noted that whilst traffic flows at St George's Street, St James's Square and Winchcombe St South have increased above the 20% traffic growth threshold, traffic volumes across Cheltenham between 2008 and 2015 decreased by approximately 13% and are continuing to fall (Analysis of GCC ATC data). In 2018, traffic volumes across Cheltenham were approximately 20% lower than in 2008. This pattern is likely to continue given the rise in home working and more people commuting on bicycles. In summary, although traffic increases have been seen on some routes because of the ETRO, traffic flows largely are still less than they were in 2008.
- 3.3.6. Table 2, Figure 4 and Figure 5 below provide summaries of the traffic data collected to monitor the trial during 2018 to March 2019.

Table 2 Comparison of Phase 3 & Phase 4 24 hour two way flows (Phase 3 - February/March 2018. Phase 4 - September, November 2018 and March 2019)

Survey Site	Feb / March 2018	Sep-18	Nov-18	Mar-19	% difference
5059 St. George Pl ^{See Note 4}	1750	3319	3067	3377	93%
5049 Gloucester Pl ^{See Note 3}	1055	1850	1855	2011	91%
5069 Winchcombe St South ^{See Note 5}	1842	2863	3132	3184	73%
Bayshill Road	5217	7749	7998	7254	39%
St George's St. ^{See Note 1}	2452	2963	2924	3300	35%
St James Square ^{See Note 2}	5385	6584	6630	6767	26%
5047 Rodney Road	6408	7520	8376	7827	22%
5035 Imperial Sq	12435	12955	13861	13447	8%
Monson Ave	2136	2237	2341	2269	6%
College Road	8697	8862	9181	9061	4%
5050 Winchcombe St	1754	1695	1721	1791	2%
5021 Poole Way	14861	14741	15131	14645	-1%
5026 St. Johns Ave	12982	12727	12853	12602	-3%
Clarence Square	9794	9741	10531	9412	-4%
5030 High Street	15745	14578	15118	14854	-6%
High Street	6763	6173	5993	6288	-7%
5031 London Road	15197	14504	17466	14100	-7%
5058 Clarence Street	5086	4523	4590	4629	-9%
Imperial Square South	3053	2829	3072	2704	-11%
Fairview Road	1762	1574	1659	1558	-12%
5034 St. George Road	13155	11156	11409	11289	-14%
5048 Albion Street	6044	4792	5210	5107	-16%
All Saints Road	8504	8480	9115	6611	-22%
5044 Ambrose St	11925	9621	10214	8999	-25%
Montpellier Spa Road	854	627	726	615	-28%
5052 North Place	4262	2014	2153	2147	-50%
5060 Royal Well	7343	1524	1847	2060	-72%
TOTAL FLOWS	186461	178201	188173	177908	-5%

Note 1: On northbound route west of Boots Corner

Note 2: On northbound route west of Boots Corner

Note 3: On northbound route east of Boots Corner (Rodney/Winchcombe/Gloucester Place)

Note 4: On northbound route west of Boots Corner

Note 5: On northbound route east of Boots Corner (Rodney/Winchcombe/Gloucester Place)

Figure 4 – Comparison of CTP temporary ATC site traffic flows – 2015 to March 2019

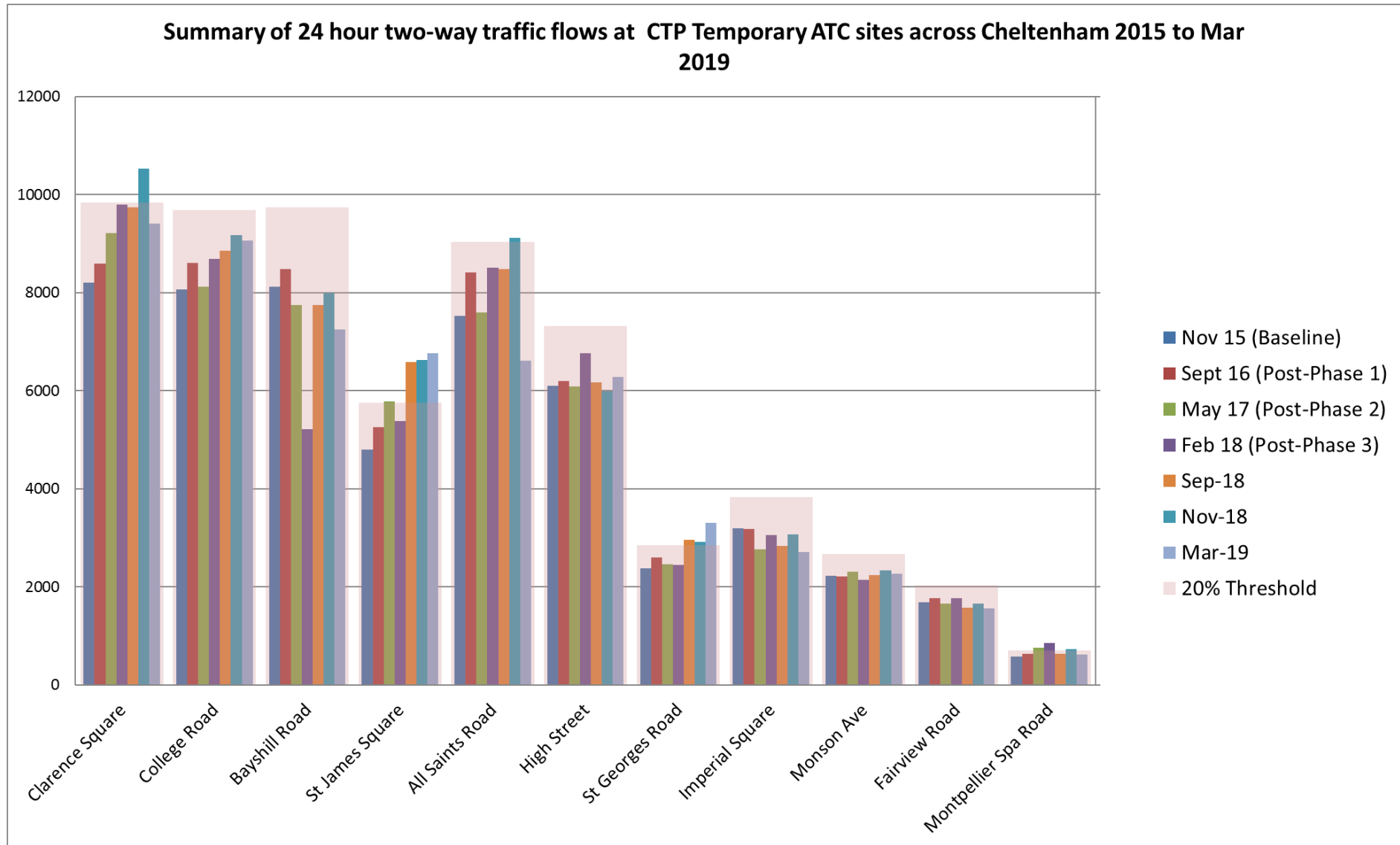
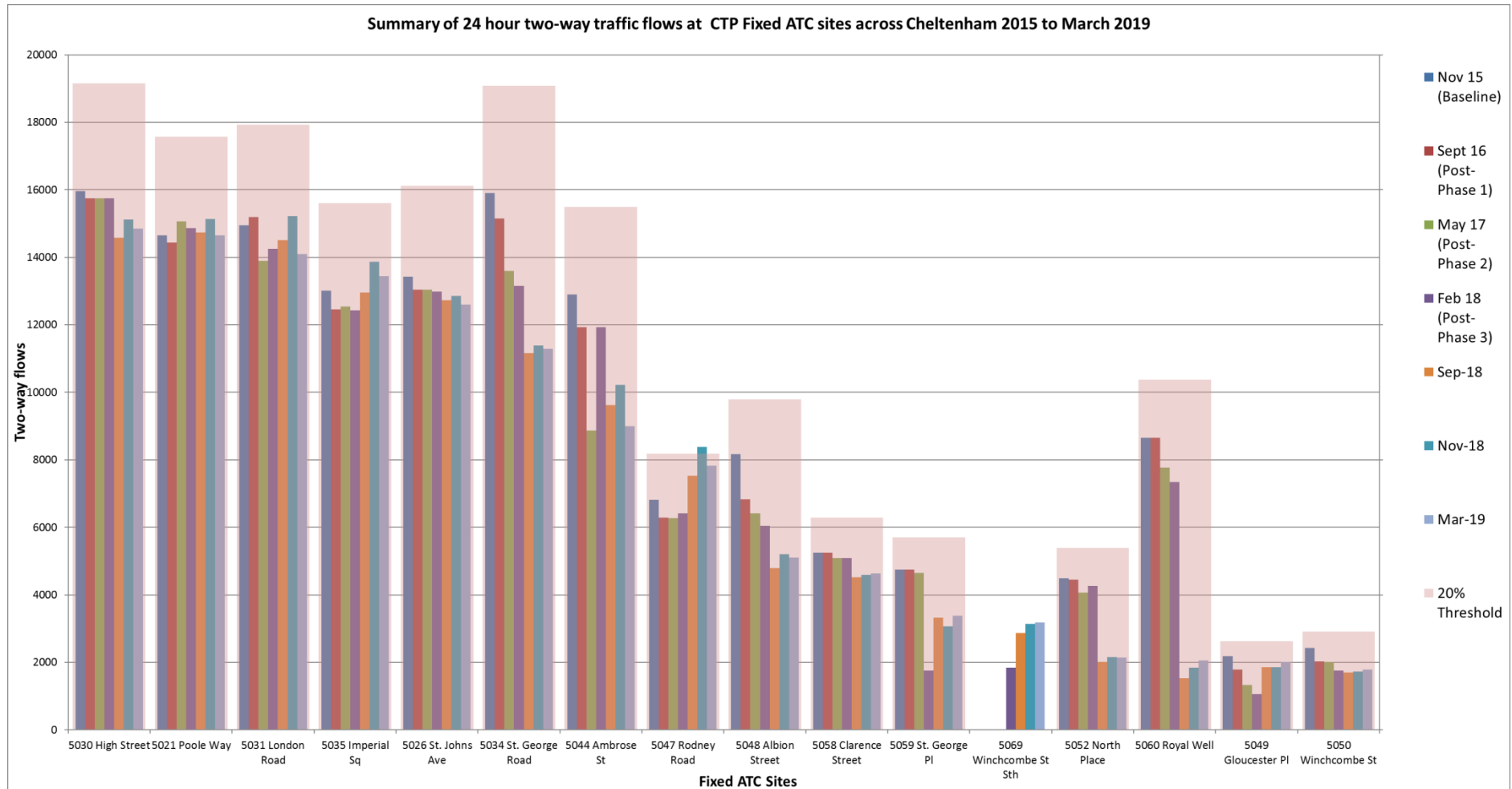


Figure 5 – Comparison of CTP Fixed ATC site traffic flows – 2015 to March 2019



3.3.7. Figure 4 and Figure 5 show traffic flows at the count locations plotted on charts. The wide pink bar represents the level of accepted traffic growth based on 2015 traffic flows (20% increase). Looking at March 2019 traffic flows in Figure 4, traffic flows on St George’s Road and St James’ Street increased above the 20% threshold. Further analysis of traffic flows on St George’s Street and St James’ Square is provided below.

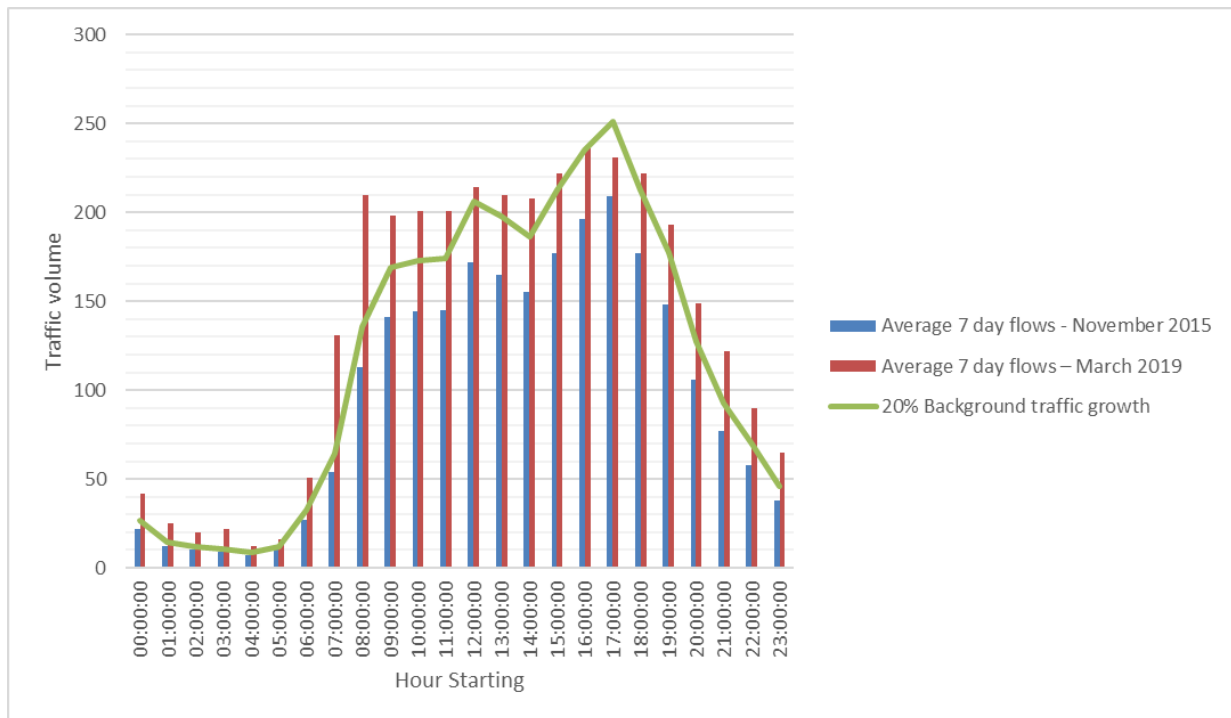
St. George’s Street

3.3.8. Table 3 and Figure 6 below provide a comparison of the November 2015 and March 2019 traffic flows on St. George’s Street. St. George’s Street is a one-way northbound only street between High Street and Swindon Road to the north.

Table 3 – Comparison of traffic flows on St. George’s Street between Pre-CTP (November 2015) and Phase 4 (March 2019)

Hour Starting	Average 7 day flows - November 2015	Average 7 day flows – March 2019
00:00:00	22	42
01:00:00	12	25
02:00:00	10	20
03:00:00	9	22
04:00:00	7	12
05:00:00	10	16
06:00:00	27	51
07:00:00	54	131
08:00:00	113	210
09:00:00	141	198
10:00:00	144	201
11:00:00	145	201
12:00:00	172	214
13:00:00	165	210
14:00:00	155	208
15:00:00	177	222
16:00:00	196	236
17:00:00	209	231
18:00:00	177	222
19:00:00	148	193
20:00:00	106	149
21:00:00	77	122
22:00:00	58	90
23:00:00	38	65
TOTAL	2372	3289

Figure 6 - Comparison of St George's Street traffic flows – November 2015 compared with March 2019.



3.3.9. Figure 6 presents traffic flows on St George's Street by the hour. The green line on the chart represents where 20% background growth would be on the chart. It can be seen that traffic flows on St. George's Street have increased higher than forecast in the AM peak period (the red columns are shown to be above the green line). In the PM peak, traffic flows are generally following forecast.

3.3.10. Given the experimental TRO on Clarence Street/North Street and the consequential rerouting of traffic, traffic flows on St George's Street have increased by 16% above the 20% background growth threshold. In real numbers, this is an additional 18 vehicles per hour over 24 hours (averaged).

St James' Square

3.3.11. Table 4 and Figure 7 & Figure 8 below provide a comparison of the November 2015 and March 2019 traffic flows on St James Square.

Table 4– Comparison of traffic flows on St. James Square between Pre-CTP (November 2015) and Phase 4 (March 2019)

Hour starting	Northbound			Southbound		
	Nov-15	Mar-19	Difference	Nov-15	Mar-19	Difference
00:00:00	25	36	11	8	24	16
01:00:00	16	23	7	4	14	10
02:00:00	12	14	2	3	10	7
03:00:00	11	12	1	3	8	5
04:00:00	9	12	3	4	8	4
05:00:00	12	20	8	5	17	12
06:00:00	27	60	33	17	59	42
07:00:00	106	171	65	82	165	83
08:00:00	207	310	103	166	229	63
09:00:00	195	290	95	136	161	25
10:00:00	178	273	95	110	131	21
11:00:00	197	274	77	110	121	11
12:00:00	218	326	108	119	132	13
13:00:00	215	319	104	109	130	21
14:00:00	218	305	87	113	129	16
15:00:00	224	312	88	114	133	19
16:00:00	277	341	64	121	153	32
17:00:00	336	346	10	127	149	22
18:00:00	216	273	57	98	142	44
19:00:00	158	214	56	74	139	65
20:00:00	104	171	67	45	104	59
21:00:00	82	132	50	35	92	57
22:00:00	66	103	37	28	70	42
23:00:00	38	67	29	20	43	23
TOTAL	3146	4404	1258	1652	2363	711

Figure 7 - Comparison of St James' Square Northbound traffic flows

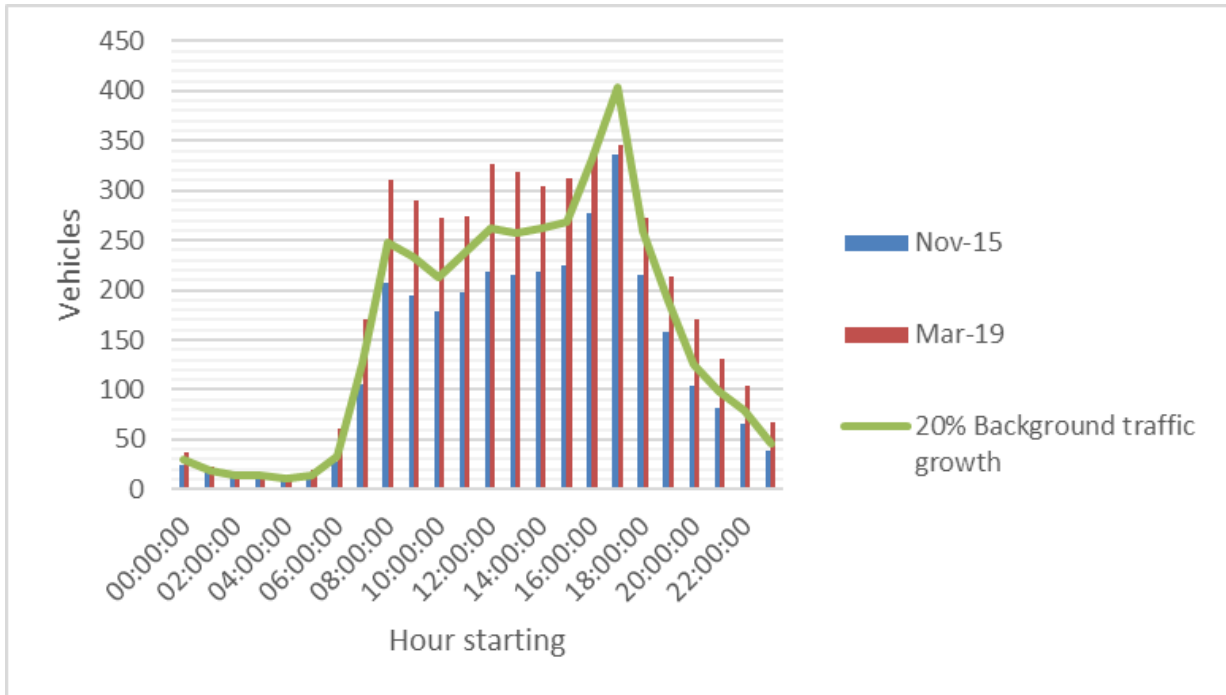
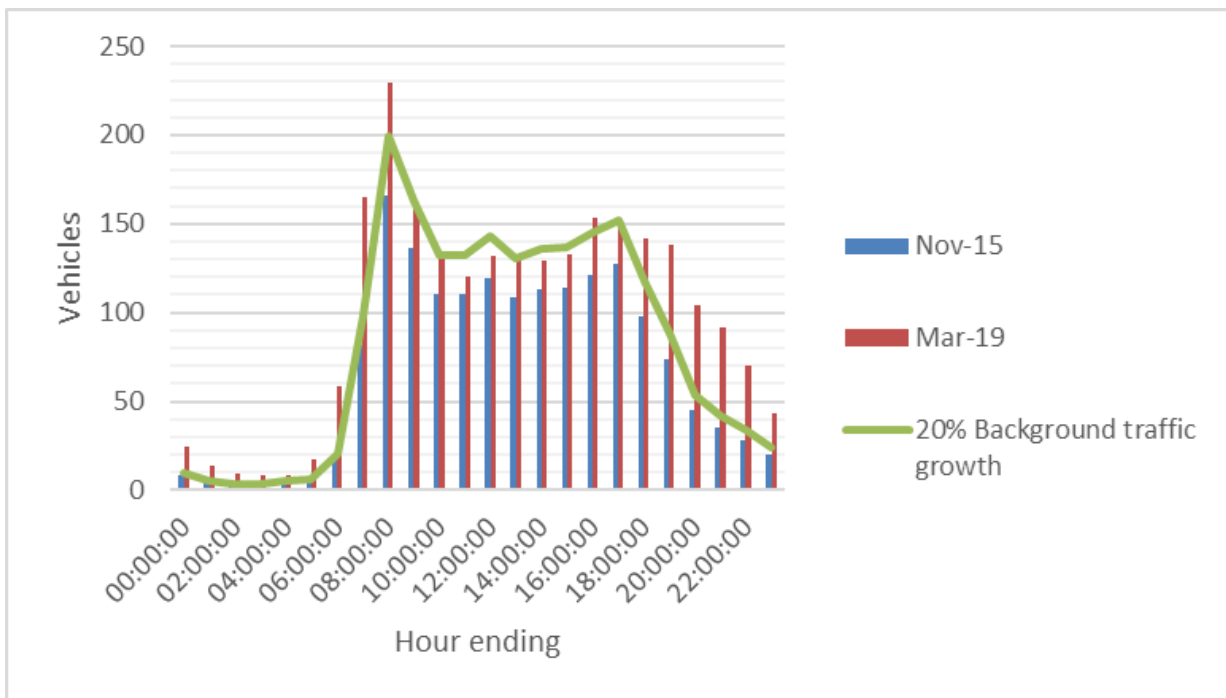


Figure 8 - Comparison of St James' Square Southbound traffic flows



- 3.3.12. As with the increased traffic flow on St George’s Street, the increased flow on St James’ Square is caused by northbound traffic in the AM peak and southbound traffic in the PM peak rerouting because of the experimental TRO.

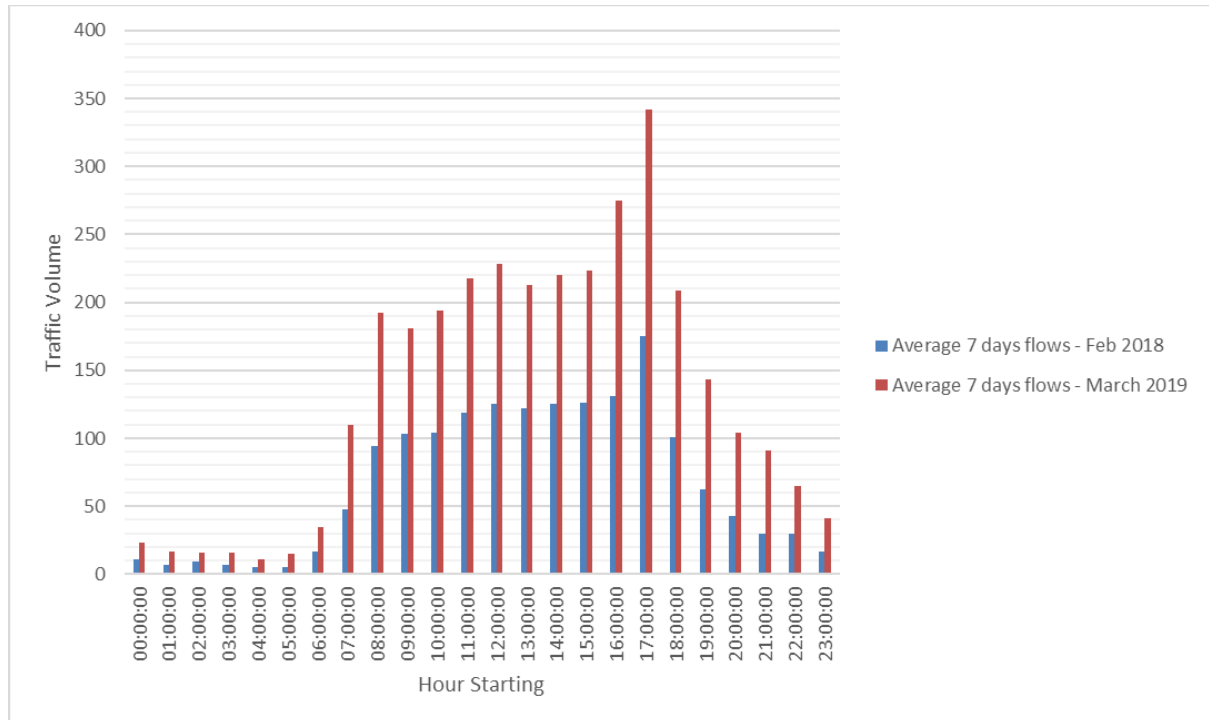
Winchcombe Street (South) - including traffic using Rodney Road

- 3.3.13. Table 6 and Figure 9 show traffic flows on Winchcombe Street (South) in February 2018 (most recent comparable baseline traffic data available) and March 2019. Average 7 day traffic flows have increased since the introduction of the ETRO. Winchcombe Street (South) and Rodney Road run parallel to Clarence Street and hence traffic volumes have increased on this alternative northbound route due to the rerouting of traffic.
- 3.3.14. GCC is exploring options to mitigate the impact of increased traffic on Rodney Road where it interacts with pedestrian movements on the High Street.

Table 5– Comparison of traffic flows on Winchcombe Street (South) between pre-Phase 4 (February 2018) and Phase 4 (March 2019)

Hour Starting	Average 7 days flows - Feb 2018	Average 7 days flows - March 2019	Difference
00:00:00	11	23	12
01:00:00	7	17	10
02:00:00	9	16	7
03:00:00	7	16	9
04:00:00	5	11	6
05:00:00	5	15	10
06:00:00	17	35	18
07:00:00	48	110	62
08:00:00	94	192	98
09:00:00	103	181	78
10:00:00	104	194	90
11:00:00	119	218	99
12:00:00	125	228	103
13:00:00	122	213	91
14:00:00	125	220	95
15:00:00	126	223	97
16:00:00	131	275	144
17:00:00	175	342	167
18:00:00	101	209	108
19:00:00	62	143	81
20:00:00	43	104	61
21:00:00	30	91	61
22:00:00	30	65	35
23:00:00	17	41	24
TOTAL	1616	3182	1566

Figure 9 - Comparison of Winchcombe Street (South) traffic flows



3.4. March 2019 Bluetooth Journey Time Data Analysis

- 3.4.1. Whenever a traffic route is affected by a short or long term closure there is always a period of adjustment required for drivers. This generally manifests itself in a period of initial localised congestion which is quickly resolved through route or transport mode alteration.
- 3.4.2. The Department for Transport defines congestion as the average ‘excess’ or ‘lost’ travel time experienced by vehicle users on a road network. Excess travel time is the time spent over and above that which would be experienced under ‘uncongested’ or ‘free-flow’ conditions. These are best measured in terms of ‘travel rates’ rather than speeds.
- 3.4.3. To assess the effect of the trial closure across the wider network, a network of Bluetooth sensors has been placed on the main routes around the town centre to monitor journey times for vehicles across the network.
- 3.4.4. The Bluetooth route coverage across Cheltenham is shown in Figure 3.

- 3.4.5. The majority of the Bluetooth baseline data was collected in advance of the trial restriction in April 2018, with additional data from 2015 being used due to some collection issues in 2018.

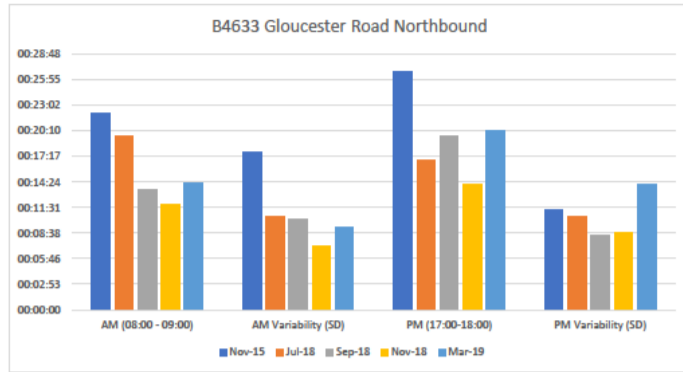
3.5. Journey Time Comparisons on Key Routes

- 3.5.1. Journey time data has been collected alongside the traffic volumes during July, September, November 2018 and March 2019.
- 3.5.2. Peak hour journey times have been analysed for the following key routes:
- A. B4633 Gloucester Road (A40 to A4019);
 - B. St. George's Road (Promenade to B4633);
 - C. Saints Corridor (St. George Road to St. Margret's Road);
 - D. College Rd (Sandford Road to High Street);
 - E. A4019 (Eastbound Gloucester Road to A435 High Street);
 - F. A4019 (Westbound A435 High Street to Gloucester Road); and
 - G. A46 (High Street – Bath Road – Imperial Square)
- 3.5.3. Figure 10 below provides a summary of the mean peak hour average journey time for each of the key routes from each survey period (April 2015 – March 2019)
- 3.5.4. Figure 10 also presents the mean Standard Deviation (SD) for each time period. i.e. how variable the dataset is. A large SD shows that there is a significant amount of variability in the journey times along a route.

Figure 10 – Summary of Mean Peak Hour Journey Times on Key Routes in Cheltenham recorded from Bluetooth data

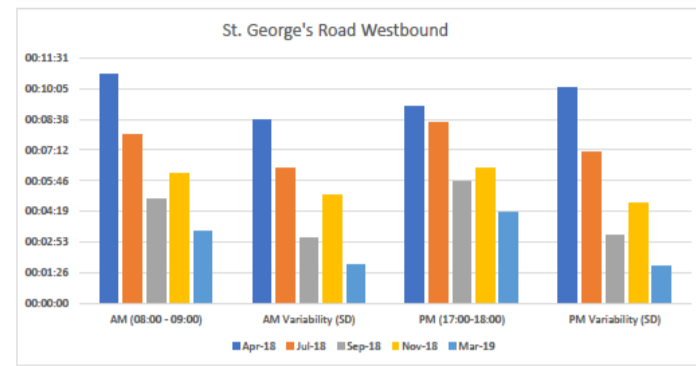
A - B4633 Gloucester Road Average Journey Times (A40 to A4019)

	AM (08:00 - 09:00)	AM Variability (SD)	PM (17:00-18:00)	PM Variability (SD)
Nov-15	00:22:05	00:17:44	00:26:47	00:11:17
Jul-18	00:19:32	00:10:30	00:16:52	00:10:33
Sep-18	00:13:28	00:10:09	00:19:36	00:08:23
Nov-18	00:11:54	00:07:15	00:14:08	00:08:44
Mar-19	00:14:20	00:09:23	00:20:16	00:14:04



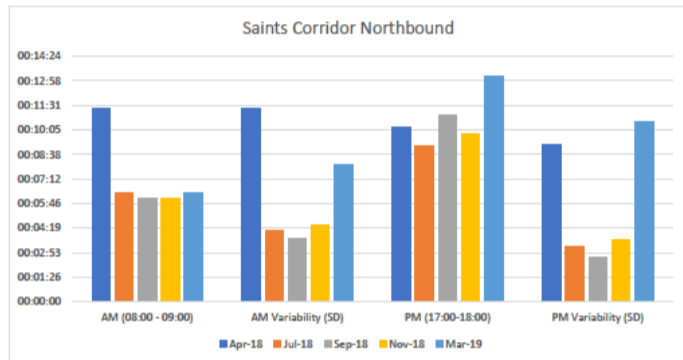
B - St. George's Road (Royal Well to B4633 Gloucester Road)

	AM (08:00 - 09:00)	AM Variability (SD)	PM (17:00-18:00)	PM Variability (SD)
Apr-18	00:10:43	00:08:37	00:09:16	00:10:06
Jul-18	00:07:55	00:06:20	00:08:27	00:07:07
Sep-18	00:04:55	00:03:06	00:05:44	00:03:10
Nov-18	00:06:07	00:05:05	00:06:23	00:04:41
Mar-19	00:03:23	00:01:50	00:04:18	00:01:44



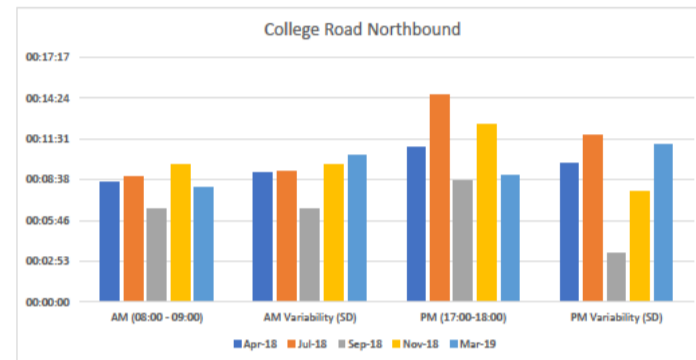
C - Saints Corridor (St. George Road to St. Margret's Road)

	AM (08:00 - 09:00)	AM Variability (SD)	PM (17:00-18:00)	PM Variability (SD)
Apr-18	00:11:21	00:11:23	00:10:13	00:09:13
Jul-18	00:06:24	00:04:10	00:09:10	00:03:14
Sep-18	00:06:04	00:03:43	00:10:55	00:02:38
Nov-18	00:06:06	00:04:30	00:09:51	00:03:38
Mar-19	00:06:24	00:08:04	00:13:14	00:10:33



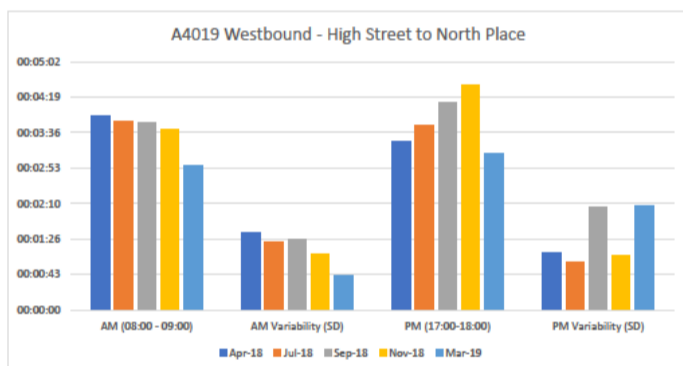
D - College Rd

	AM (08:00 - 09:00)	AM Variability (SD)	PM (17:00-18:00)	PM Variability (SD)
Apr-18	00:08:29	00:09:07	00:10:55	00:09:45
Jul-18	00:08:52	00:09:12	00:14:40	00:11:44
Sep-18	00:06:36	00:06:33	00:08:31	00:03:24
Nov-18	00:09:43	00:09:40	00:12:33	00:07:45
Mar-19	00:08:06	00:10:23	00:08:59	00:11:07



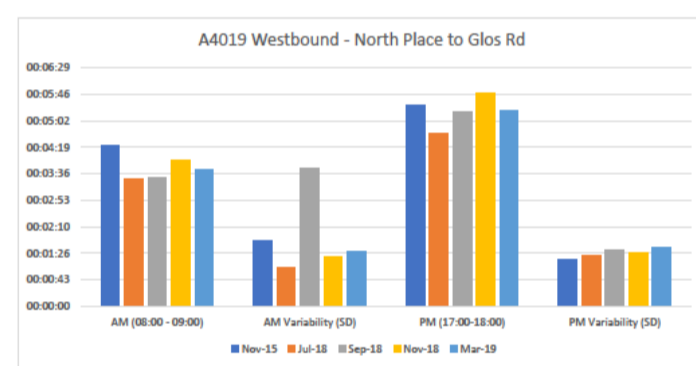
E - A4019 CORRIDOR Westbound High Street to North Place

	AM (08:00 - 09:00)	AM Variability (SD)	PM (17:00-18:00)	PM Variability (SD)
Apr-18	00:03:57	00:01:34	00:03:25	00:01:10
Jul-18	00:03:49	00:01:23	00:03:45	00:00:58
Sep-18	00:03:48	00:01:27	00:04:13	00:02:06
Nov-18	00:03:40	00:01:08	00:04:34	00:01:06
Mar-19	00:02:56	00:00:41	00:03:11	00:02:07



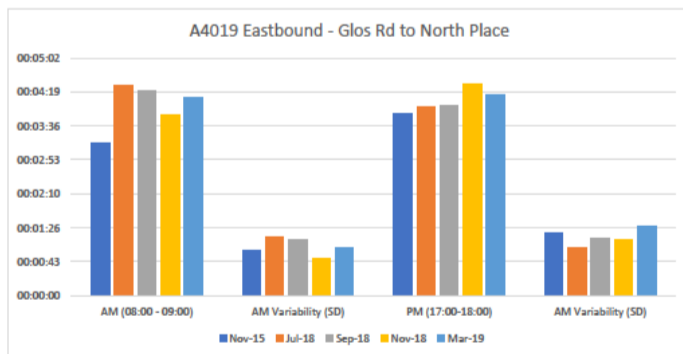
E - A4019 CORRIDOR Westbound North Place to Glos Road

	AM (08:00 - 09:00)	AM Variability (SD)	PM (17:00-18:00)	PM Variability (SD)
Nov-15	00:04:21	00:01:48	00:05:29	00:01:17
Jul-18	00:03:27	00:01:02	00:04:42	00:01:23
Sep-18	00:03:29	00:03:45	00:05:16	00:01:32
Nov-18	00:03:59	00:01:20	00:05:47	00:01:28
Mar-19	00:03:44	00:01:28	00:05:20	00:01:36



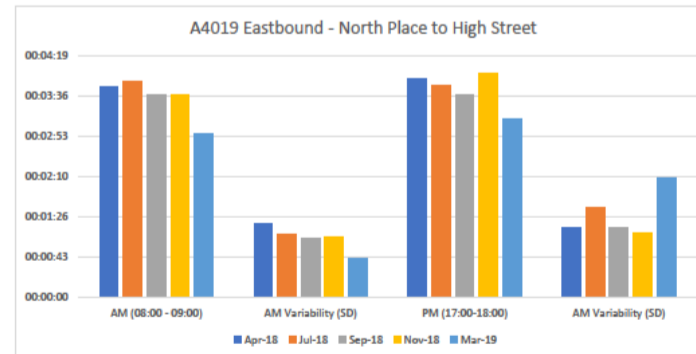
F - A4019 CORRIDOR Eastbound Glos Road to North Place

	AM (08:00 - 09:00)	AM Variability (SD)	PM (17:00-18:00)	AM Variability (SD)
Nov-15	00:03:14	00:00:58	00:03:52	00:01:20
Jul-18	00:04:27	00:01:14	00:04:01	00:01:01
Sep-18	00:04:21	00:01:12	00:04:01	00:01:12
Nov-18	00:03:50	00:00:48	00:04:29	00:01:12
Mar-19	00:04:12	00:01:01	00:04:16	00:01:29



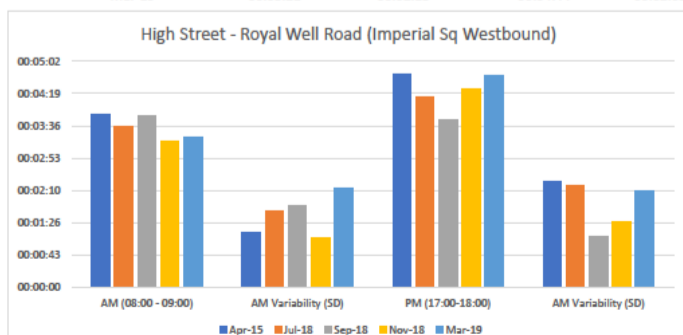
F - A4019 CORRIDOR Eastbound North Place to High Street

	AM (08:00 - 09:00)	AM Variability (SD)	PM (17:00-18:00)	AM Variability (SD)
Apr-18	00:03:46	00:01:19	00:03:55	00:01:15
Jul-18	00:03:52	00:01:07	00:03:47	00:01:36
Sep-18	00:03:37	00:01:03	00:03:36	00:01:15
Nov-18	00:03:36	00:01:05	00:04:00	00:01:09
Mar-19	00:02:56	00:00:41	00:03:11	00:02:07



G - High Street - RWR (Imperial Sq)

	AM (08:00 - 09:00)	AM Variability (SD)	PM (17:00-18:00)	AM Variability (SD)
Apr-15	00:03:52	00:01:14	00:04:45	00:02:22
Jul-18	00:03:34	00:01:42	00:04:15	00:02:17
Sep-18	00:03:50	00:01:49	00:03:45	00:01:09
Nov-18	00:03:16	00:01:06	00:04:24	00:01:28
Mar-19	00:03:21	00:02:13	00:04:44	00:02:08



- 3.5.5. It can be seen from the series of charts in Figure 10 that none of the routes included in the assessment of journey times has experienced significant journey time increases since the commencement of the trial in June 2018 when compared against baseline journey times. Journey times have increased on the following routes, but by no more than one minute:
- Route C - Saints Corridor northbound in the PM peak period.
 - Route F - A4019 eastbound between Gloucester Road and North Place in the AM and PM peak periods.
- 3.5.6. Northbound journey times along Route C, the Saints Corridor are likely to have increased due to the Saints Corridor being an existing northbound corridor.
- 3.5.7. Possible reasons for why journey times have not been adversely impacted by the ETRO may be:
- Traffic is dispersing between various routes and therefore not having any significant impact on any one route.
 - Total traffic volumes in Cheltenham have decreased by approximately 20% since 2008.
- 3.5.8. The Bluetooth data also shows that the variation in journey times, shown by the Standard Deviation, is also broadly static on most routes when compared to the baseline data.