

## CTP Phase 3 Monitoring Report

### Introduction

The Cheltenham Transport Plan (CTP) is a long held Cheltenham Borough Council (CBC) project to recast and re-animate the town centre, improving the quality of life and increasing economic prosperity. The key objectives are to transform the town centre environment and provide improvements for pedestrians, cyclists and people using public transport whilst also making it easier for drivers to access car parks. The cornerstone infrastructure change to facilitate the project is the removal of general traffic through a section of the town centre road network known locally as Boots Corner, and to re-connect the severed high street.

To enable the closure of Boots Corner to general traffic, changes are required to a number of sections of the existing one-way system in the centre of Cheltenham.

The implementation of the CTP in a phased process was given approval by GCC cabinet in July 2015. A phased delivery of the CTP allows monitoring of both the benefits and any additional effects as each element is constructed. Any effects can then be addressed and, if required adjusted, before the next phase is implemented. The CTP phases are:

- Phase 1: Albion Street
- Phase 2: Imperial Square
- Phase 3: Royal Well Road
- Phase 4: Contingent on the successful implementation of the other schemes, a Boot's Corner experimental order and trial scheme

### CTP Phase 3 – Summary

Construction of Phase 3 began in January 2018 and was completed in early March.

The primary physical changes implemented as part of Phase 3 have been to prepare Royal Well Road to work more effectively in conjunction with any Boots Corner trial closure. The road space in Royal Well Road has been rationalised to provide an ahead and left lane and a dedicated right-turn lane into Crescent Terrace and the Promenade. This has provided the opportunity to provide improved pedestrian crossing amenity over Royal Well Road via traffic islands and new road signage and markings have been included to aid driver understanding.

Phase 3 also provided additional blue badge bays in Clarence Street to maintain the level of provision once access to Pittville Street is restricted during the trial closure of Boots Corner.

### Purpose of This Report

One of the key benefits the phased delivery provides is it enables the effects of each element to be monitored, reviewed and measured against the overall objectives of the scheme prior to the construction of the next phase.

The monitoring and review ensures that each element of the scheme can be adjusted, if necessary, to maximise benefits but minimise traffic disruption.

The purpose of this report is to review the performance of CTP Phase 3 against the applicable objectives of the CTP and review the effects of the Phase on the operation of the wider highway network.

## CTP Objectives

The CTP is the key infrastructural element within the town centre regeneration. The plan, when fully implemented, facilitates a wide range of benefits / objectives which are summarised below<sup>1</sup>:

- Encourage people not to use their vehicles for unnecessary journeys, particularly short ones – evidence shows this to be a key change
- Remove through-traffic from the town centre – by identifying and signposting alternatives
- Allow the free movement of buses and other public service vehicles – more people use buses than cars in the town centre
- Allow two-way movements on streets thus reducing the need to follow the clockwise one-way system – two-way traffic reduces traffic speed
- Allow shops to be serviced - many shops only have front access
- Create a more pleasant town centre environment – removal of through-traffic will allow opportunity to improve streets for pedestrians
- Reduce pollution – the town exceeds some European standards on pollution levels
- Contribute to health improvements by encouraging walking and cycling – recent data identifies inactivity as a major UK health problem.
- Protect the key features for which Cheltenham is renowned - so no new roads and no demolition work envisaged
- Remove some of the existing frustrations – allow motorists to access car parks as they arrive into the town
- Encourage investment by creating the right conditions – retailers, restaurateurs and other service providers respond positively to reduced traffic flows
- Offer opportunities for low carbon transport – such as electric charging points

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[http://www.cheltenham.gov.uk/info/200133/cheltenham\\_development\\_task\\_force/1016/cheltenham\\_transport\\_plan/2](http://www.cheltenham.gov.uk/info/200133/cheltenham_development_task_force/1016/cheltenham_transport_plan/2)

## Phase 3 Objectives

The infrastructure changes and traffic regulation orders implemented as part of Phase 3 have delivered a number of the overall objectives, as set out below:

- Encourage people not to use their vehicles for unnecessary journeys, particularly short ones
- Remove through-traffic from the town centre – by identifying and signposting alternatives
- Protect the key features for which Cheltenham is renowned - so no new roads and no demolition work is envisaged
- Balance the streetscape to better cater for all users

Following sections will review effect of Phase 3 objectives.

## Assessment of Phase 3 Objectives

### 1. Encourage people not to use their vehicles for unnecessary journeys, particularly short ones

Phase 3 has introduced an apparent reduction in capacity. In reality, the carriageway narrowing on Clarence Parade to a single ahead lane has not significantly reduced the highway capacity. The Royal Well Road – Clarence Parade – Clarence Street corridor is one-way northbound with two running lanes. The nearside lane throughout the length of the route has a significant number of bus stops effectively making the corridor a single northbound running lane. The barrier island installed as part of Phase 3 has formalised the single lane through the corridor, rather than restrict capacity.

Comparison of 2017 & 2018 AM and PM peak flows along Royal Well Road show a 9% AM peak reduction and 7% PM peak reduction, although this is a continuation of a longer-term trend on Royal Well Road. ITNo direct quantitative evidence of reduction due to Phase 3 infrastructure, although has been designed to encourage modal change.

### 2. Remove through-traffic from the town centre – by identifying and signposting alternatives

Phase 3 has provided enhanced road signing along Royal Well Road. This has initially been installed to provide upgraded and amended direction signing following the rationalisation of the corridor. The sign panels will be amended as part of Phase 4 trial closure of Boots Corner.

### 3. Protect the key features for which Cheltenham is renowned - so no new roads and no demolition work is envisaged

The amendments and changes to Royal Well Road which form Phase 3 have been accomplished with minimal construction works. All the works have been completed within the existing highway boundary.

### 4. Balance the streetscape to better cater for all users

The physical works as part of Phase 3 have provided enhancements for pedestrian and accessibility impaired users. This has been accomplished by provided an informal pedestrian crossing facility over Royal Well Road and additional blue-badge bays in Clarence Street

## Summary

The physical changes as part of Phase 3 are modest and the qualitative objectives for this element reflect this. As discussed in the section above, all of the objectives have been demonstrably achieved.

## Network Traffic Effects of Phase 3

### Pre-CTP traffic data collection

A baseline assessment of the pre-CTP traffic flows on a range of roads across Cheltenham was collected in 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.

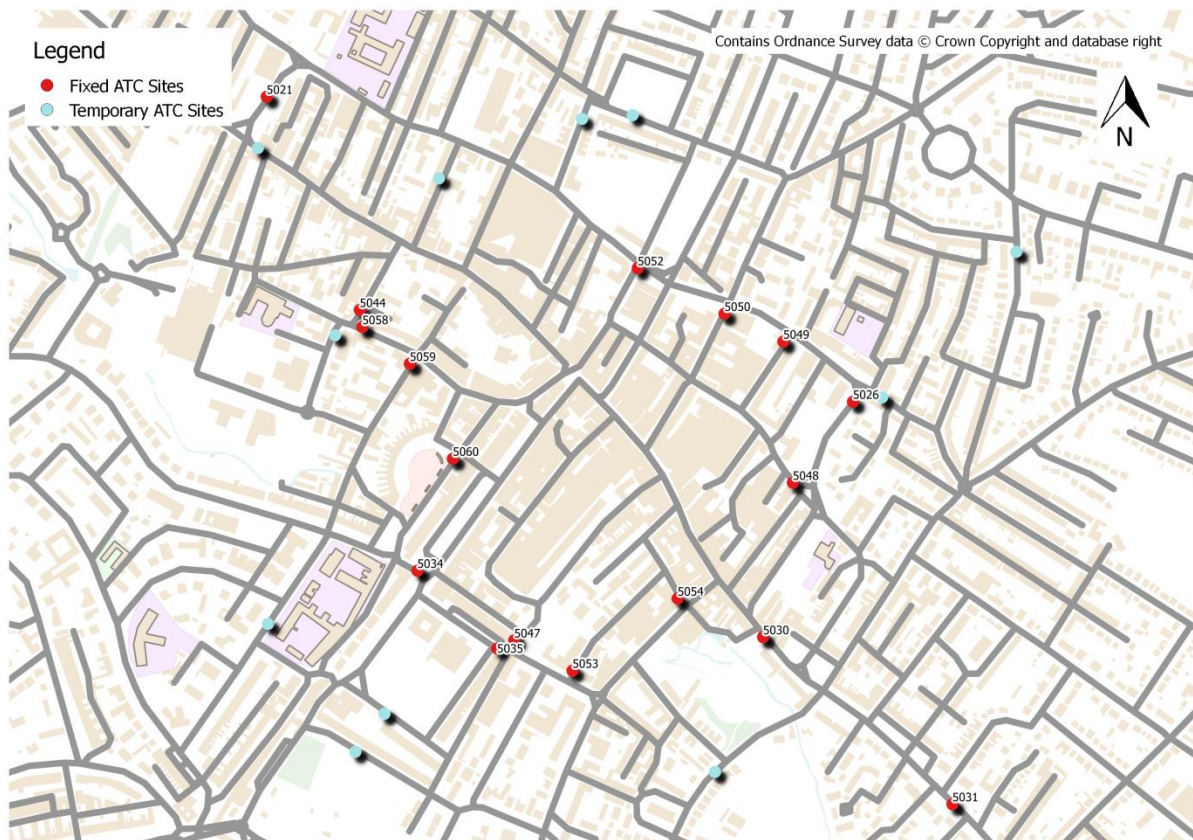
The fixed Automatic Traffic Counters sites used:

- 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 Georges 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.

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

- Monson Avenue;
- Clarence Square;
- 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.

The combined survey locations are shown in Figure 1 below.



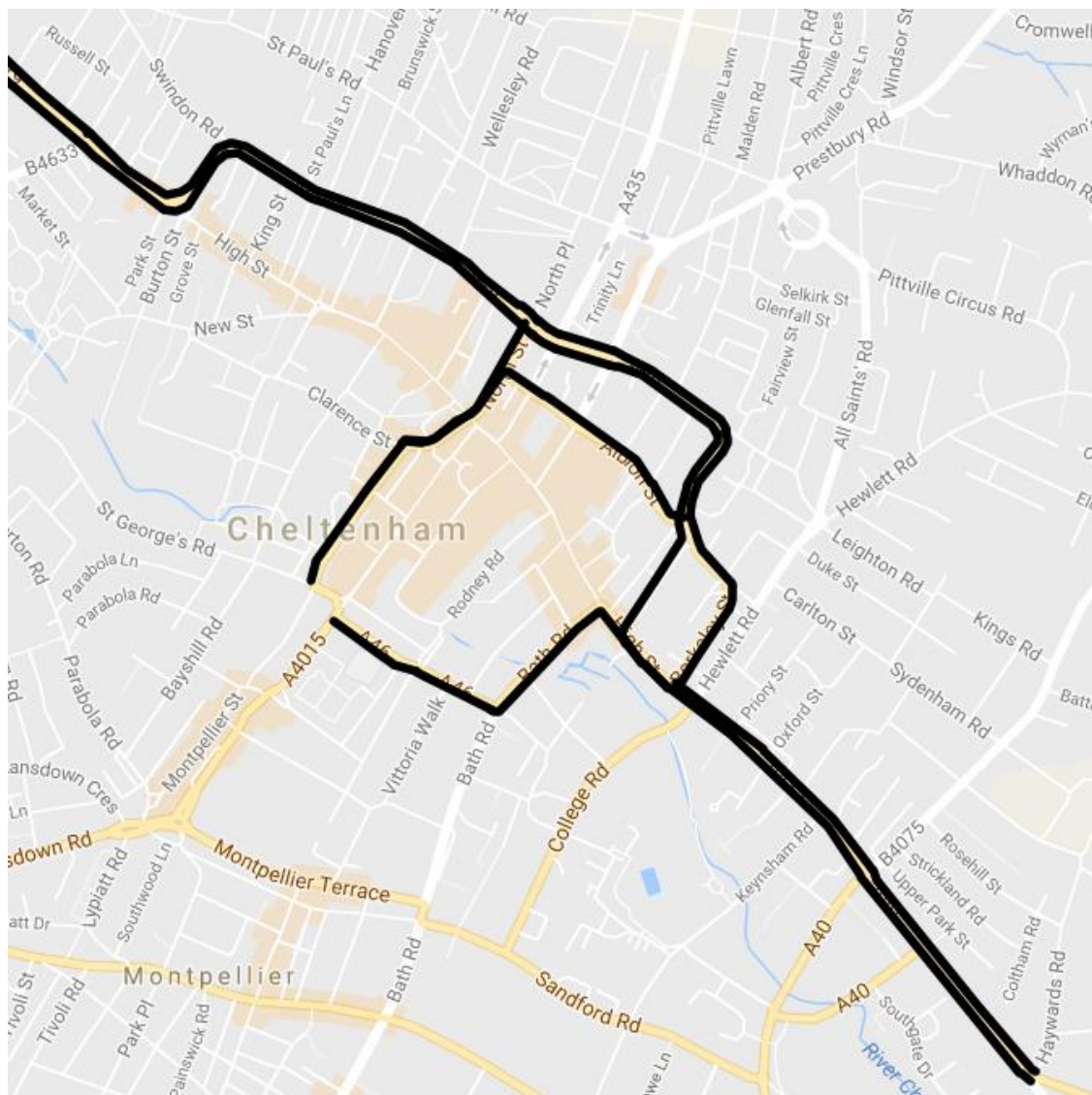
The combined survey sites provide comprehensive coverage over the town, enabling a wide-ranging picture of existing flow volumes to be built up.

Alongside the temporary traffic volume / speed surveys to monitor Phases 1 - 3, a network of Bluetooth sensors were put out on the main routes around the town centre. Bluetooth monitoring is a recent innovation in transport data collection. Historically, journey time information was obtained by sending vehicles out onto the network and recording journey times between points. The sensors collect anonymous Bluetooth addresses from suitability equipped cars / smart phones etc. This enables calculation of journey times between sensors continuously during the survey period. Bluetooth technology is generally only in more modern vehicles and consequently results in a sample rate generally around 5%. This is significantly higher than the previous journey time recording methodologies, which relied upon sending cars into the network and manually recording times between points. This provided only one or two records per peak period.

The Bluetooth route coverage across Cheltenham is shown in Figure 2 below



**Figure 2 – CTP Phases 1-3 Bluetooth Journey time route network**



Source: - Drakewell C2

Since the 2016 Post-Phase 1 survey, the GCC survey team have undertaken a review of the fixed ATC sites in Cheltenham and two fixed ATC sites, 5053 Wellington Street and 5054 Bath Street have been decommissioned.

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.

The decommissioning of the two sites has provided equipment to be re-allocated to establish a permanent ATC site in Clarence Square.

## Post Phase 3 traffic data collection

Data has been collected from a total of 24 sites for two weeks in late February / Early March 2018. Amended to take account of heavy snow on 1<sup>st</sup> and 2<sup>nd</sup> March. The data for each of these days has been removed from all sites prior to analysis.

Following the initial reviewing of data, 22 sites have been assessed to be usable. The two sites which have been discounted are:

- Bayshill Road effected by roadworks at downstream junction. To be re-run in mid-April 2018.
- 5044 Ambrose Street counter northbound channel has been flagged as defective. Counter to be replaced. Data from Feb / March 2018 unusable.

Both will be re-run, along with BlueTooth journey time surveys in mid-April 2018.

## Analysis

The average 7 day 24-hour two-way traffic volume from each survey has been used as the basis for comparison, i.e. the average two-way traffic flow at each site collected across a full week. This parameter has been used as it reduces the impact of random daily variation and provides a more representative assessment of the effects of the changes on traffic patterns across the town, as the infrastructure changes are in situ 24-hours a day.

In summary, the post Phase 3 survey data shows no significant changes to the average 24 hour two-way traffic flow have occurred across the survey sites. The majority of sites (15 of the 22 sites) show reductions in traffic volumes between 2015 and 2018, with the remaining seven sites showing increases. A summary of the 2015 – 2018 traffic flow comparison is shown in Appendix A.

The highest reduction in flow has been recorded by the fixed ATC site at St. George's Place. This site shows a 63% reduction in 24-hour traffic volume between 2015 and 2018. However, this is influenced by the street being closed northbound since April 2017 to facilitate the regeneration of John Dower House. The works are due to be complete in October 2018.

The Department for Transport (DfT) produce a set of background traffic projections for the country, the National Trip End Model (NTEM). The outputs of these are accessed via the TEMPro software package, which allows users to run a variety of queries.

The TEMPRO growth factors for 2015 – 2018 for the whole of Cheltenham set out an increase of 4.44% (TEMPro V7.2 using NTEM AF15 dataset average day, urban road).

Of the seven sites which show increases; three are lower than the NTEM forecast level of background growth, and one is 0.89% higher. The level of growth at these sites is broadly considered to be in line with the forecast background growth and not as a consequence of the Cheltenham Transport Plan Phase 3 works.

The three remaining sites are:



- Clarence Square (17.47% increase);
- Lower High Street (8.26% increase); and
- Montpellier Spa Road (37.14% increase).

Further investigation of the three sites is set out below:

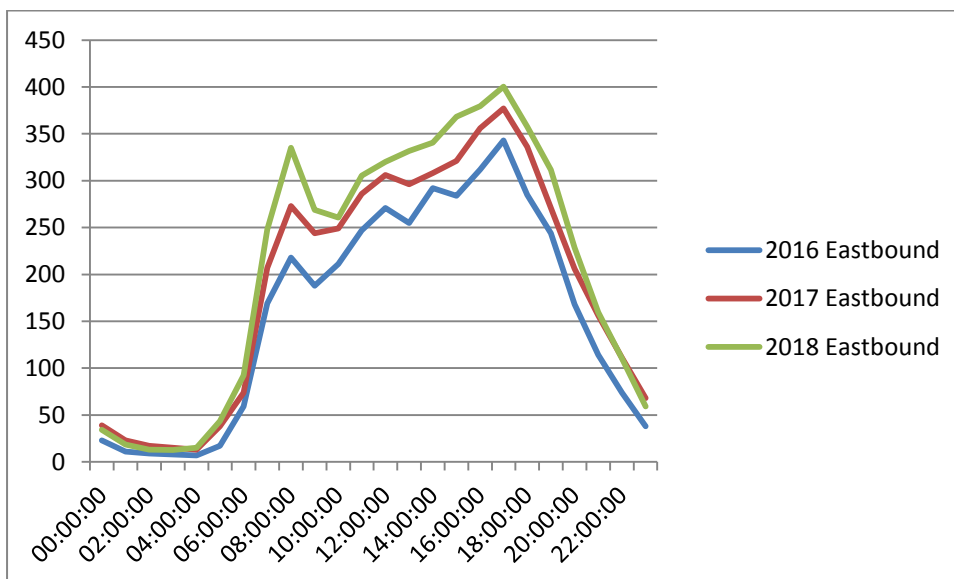
### Clarence Square

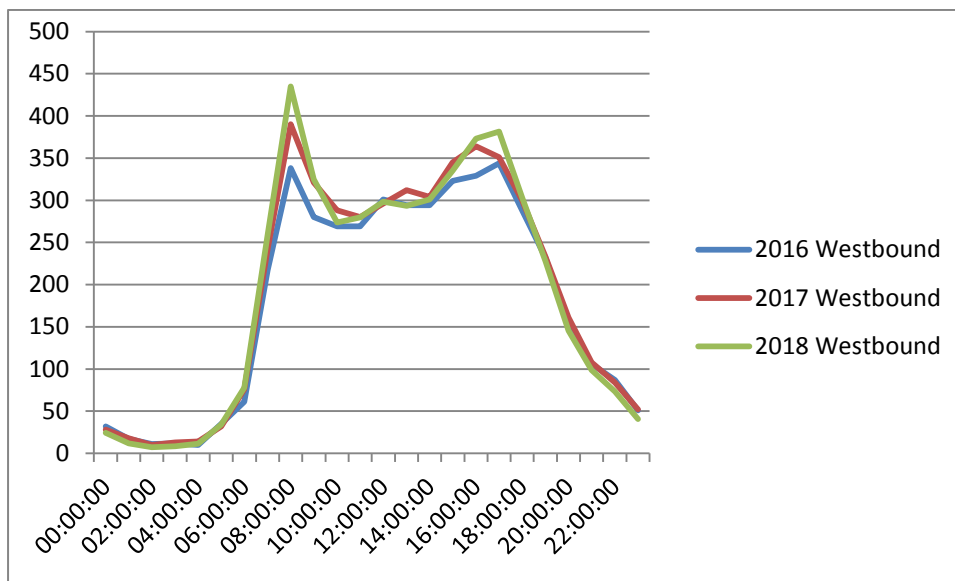
Historical data for Clarence Square shows that traffic volumes between 2015 and 2016, when Phase 1 of the CTP was implemented, remained static. Reviewing the traffic data collected as part of the earlier phases, the majority of the flow increase observed occurred between mid-2016 and mid-2017.

The increases in flow at Clarence Square are primarily in the eastbound direction, with an average increase of 1,168 vehicles over 24 hours between 2015 and 2018. The westbound flow shows an increase of 269 vehicles over the same period. Figures 3 and 4 below show the flow profiles for each direction for 2016, 2017 and 2018.

A review of the temporal distribution of the traffic shows that the traffic flows have increased across the day, with the data from each year broadly following the same profile, as shown in Figure 3 below:

**Figure 3: Clarence Square 24-hour traffic flow profile 2016 – 2018 (Eastbound)**



**Figure 3: Clarence Square 24-hour traffic flow profile 2016 – 2018 (Westbound)**

The figures show that the 2018 westbound traffic flows have increased in the AM peak, but then are broadly similar with the 2016 and 2017 flows through the rest of the day.

The eastbound flows have increased year on year, although they have broadly followed the same flow profile.

The bulk of the increase in traffic flow on Clarence Square was recorded between 2016 and 2017, during the period when CTP Phase 2 was constructed. CTP Phase 2 is located on the opposite side of Cheltenham Town Centre to Clarence Square. The distance from Phase 2 means it is unlikely to have had a significant material impact on the traffic flows on Clarence Square.

Clarence Square is the eastern end of an east / west corridor through North Cheltenham. GCC are currently reviewing the traffic signal operation along A4019, a parallel east / west route along northern edge of the town centre. Poor co-ordination of the traffic signals along this corridor is a potential factor in redistribution of eastbound traffic into Clarence Square.

The average 24 hour traffic flows along A4019 corridor have grown slightly between 2015 and 2018, (Site 5021 Poole Way shows 1.45% increase in traffic) which suggests that there may be other factors for the growth in traffic on Clarence Square, e.g. additional development growth adjacent to the corridor. Further investigation is required.

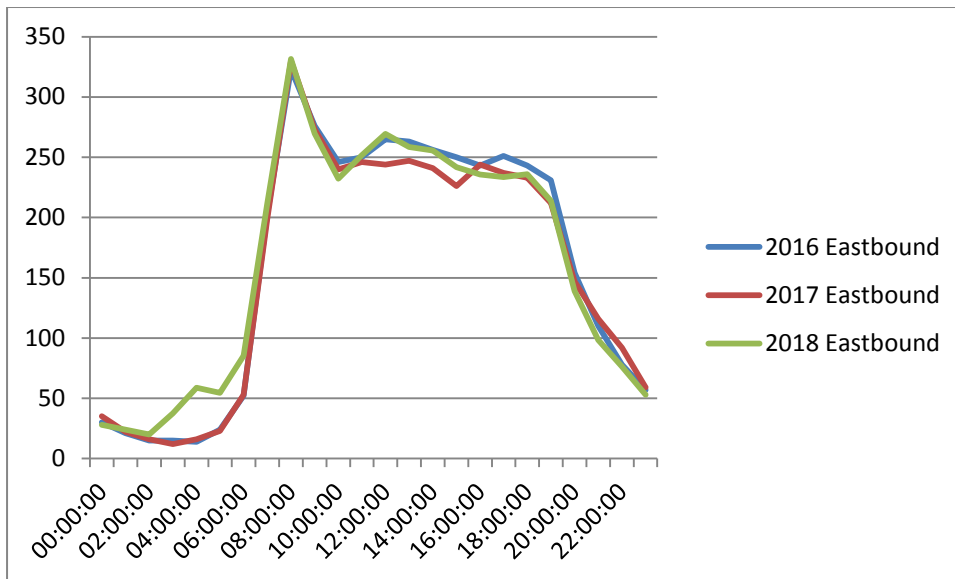
### Lower High Street

A temporary ATC site on Lower High Street, immediately east of junction with A4019. The site has been located here to capture any potential re-distribution of traffic through network west of Boots Corner, particularly from Phase 3 and Phase 4.

The survey data shows an 8.26% increase over 24 hours since 2015, which equates to a 504 vehicle increase over 24 hours. In AM peak the data is showing a 4.32% increase, or 19 vehicles and in PM peak the data shows an 11.85% increase, or 43 vehicles.

The increases in flow are primarily in the westbound direction. Figures 5 and 6 below show the flow profiles for each direction for 2016, 2017 and 2018.

**Figure 45: Lower High Street 24-hour traffic flow profile 2016 – 2018 (Eastbound)**



**Figure 6: Lower High Street 24-hour traffic flow profile 2016 – 2018 (Westbound)**

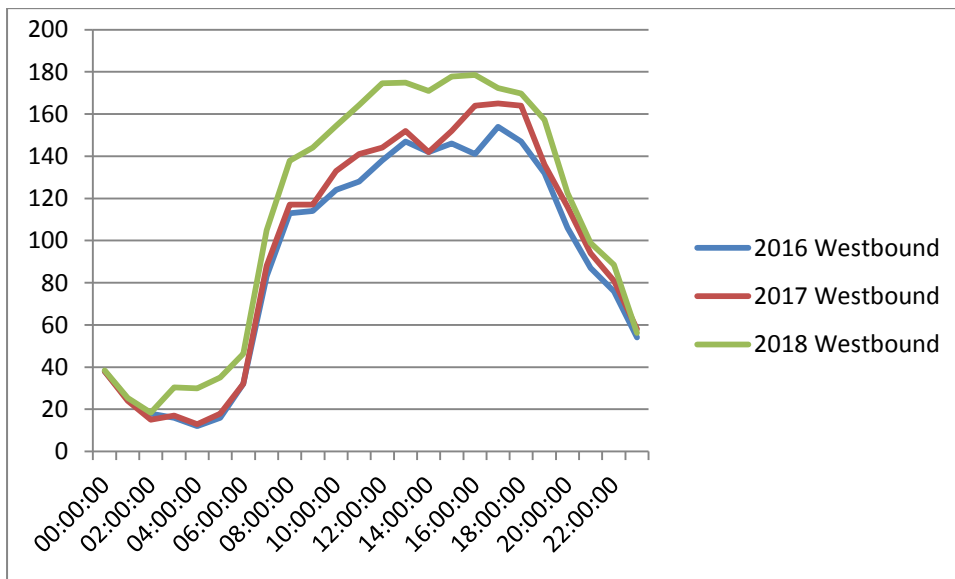


Figure 4 shows the eastbound flow has remained broadly static between 2016 and 2018. Figure 5 shows that the westbound traffic flow has increased across the day since 2016, with the majority of the increase being shown between 2017 and 2018.

The average 24-hour westbound flow on the Lower High Street has increased by 342 vehicles between 2017 and 2018. During the AM peak hour there is an increase of 5.02%, 22 vehicles, 2017 and the PM peak shows an increase of 1%, four vehicles.

The increased westbound flow between 2017 and 2018 on the Lower High Street may be partially attributable to the implementation of CTP Phase 3. However, the data suggests that westbound flows were increasing at this location prior to the implementation of CTP Phase 3.

The 24-hour percentage increase in flow on the Lower High Street between 2015 and 2018 is above the expected traffic projections from the DfT. However, the overall flow volumes during the peak periods are minimal. No mitigation is proposed at this time. This will be reviewed further during the Phase 4 monitoring.

### **Montpellier Spa Road**

The increase in traffic on Montpellier Spa Road was observed following the completion of CTP Phase 2 on Imperial Square. Montpellier Spa Road is a parallel westbound route Imperial Square and increased traffic volumes on Montpellier Spa Road are potentially a consequence of re-distribution following the introduction of CTP Phase 2.

The 2018 traffic volumes are shown to be proportionally high against the 2015 baseline traffic. However, the total increase in vehicles is on an average 215 vehicles per 24 hours. Looking at the impact during the peak hours, the AM peak traffic flow has increased by an average of 32 vehicles per hour, or one every 1.9 minutes. Similarly, the PM peak traffic flow has increased by an average of 55 vehicles per hour, or one every minute.

As reported in the Phase 2 monitoring review, the increased traffic volumes on Montpellier Spa Road are likely a consequence of re-distribution following the introduction of CTP Phase 2. Since the post Phase 2 monitoring in 2017, the average 24 hour traffic flows have increased by 34, with the AM and PM peak flows showing increases of eight and 35 respectively.

The increased traffic on Montpellier Spa Road is of very limited impact and no mitigation is proposed at this time. This will be reviewed further during the Phase 4 monitoring.

### **Phase 3 Conclusions**

The Cheltenham Transport Plan (CTP) is a long held Cheltenham Borough Council (CBC) project to recast and re-animate the town centre, improving the quality of life and increasing economic prosperity. The key objectives are to transform the town centre environment and provide improvements for pedestrians, cyclists and people using public transport whilst also making it easier for drivers to access car parks.

Phase 3 of the Cheltenham Transport Plan was completed in March 2018 and has delivered on a number of key objectives:

1. Encourage people not to use their vehicles for unnecessary journeys, particularly short ones;
2. Remove through-traffic from the town centre – by identifying and signposting alternatives;
3. Protect the key features for which Cheltenham is renowned - so no new roads and no demolition work is envisaged; and
4. Balance the streetscape to better cater for all users.

As part of the phased construction approach for the CTP, GCC committed to monitoring the each phase on the local highway network in Cheltenham, to identify and assess any unintended effects. The 2018 survey data shows no significant changes to traffic flow have occurred across the survey

sites as a result of Phase 3. The majority of sites (15 of the 22 sites) show reductions in traffic volumes.

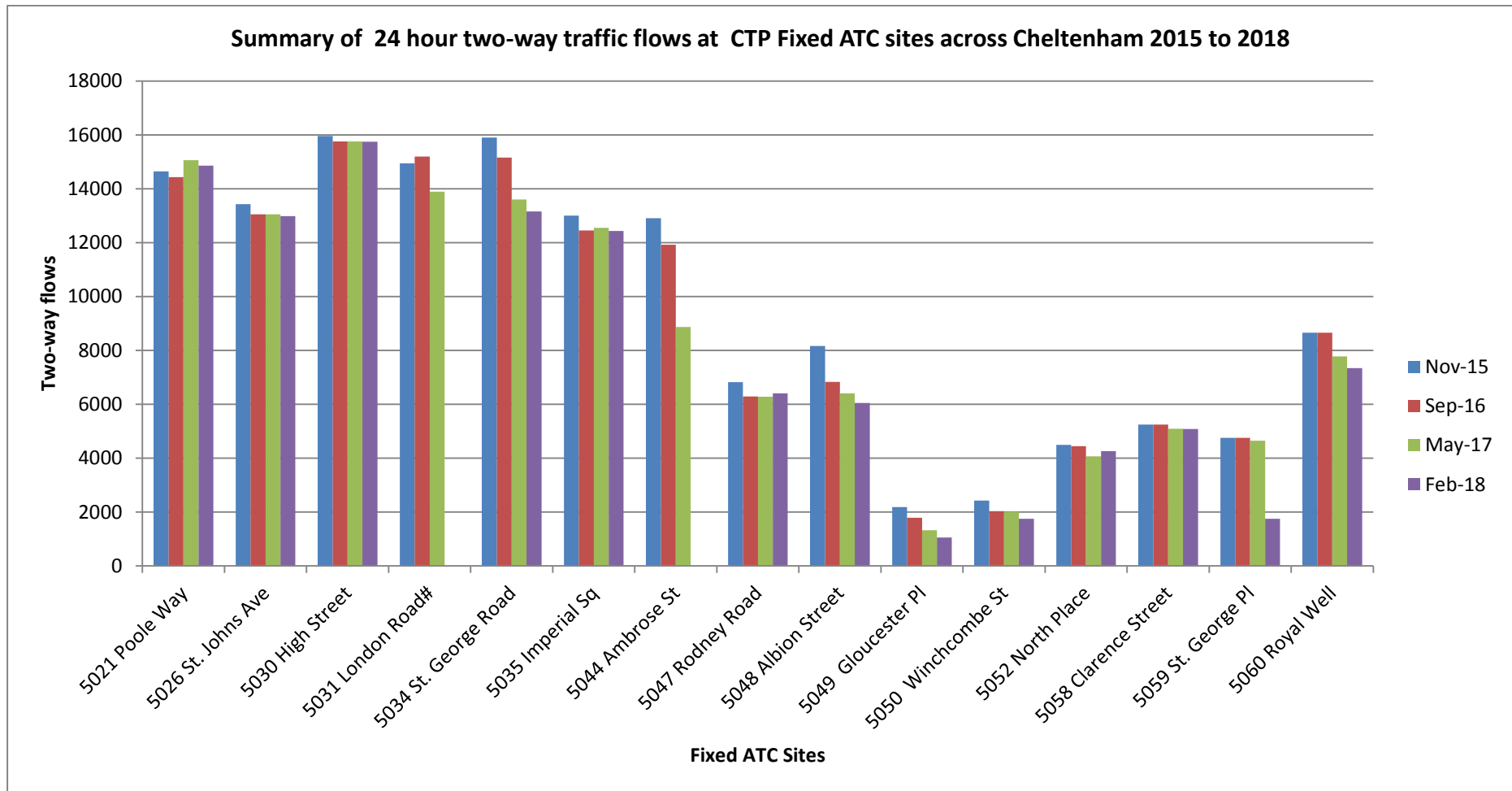
Four of the seven sites which show increases are in line with expected background traffic growth.

### **Combined Network Traffic Effects of CTP Phases 1 – 3.**

Traffic flow data across Cheltenham for the Cheltenham Transport Plan monitoring programme has been collected since November 2015, giving four distinct data points – 2015, 2016, 2017 and 2018. Following the collection of the CTP Phase 3 monitoring data, a review the long-term effects has been undertaken to determine the effects of the Inner Ring Road changes on the town centre highway network prior to CTP Phase 4, the trial closure of Boots Corner.

Figures 7 & 8 below provide a summary of the average 24 hour flow at each survey site between 2015 (pre-CTP) and 2018 (Post-CTP Phase 3)

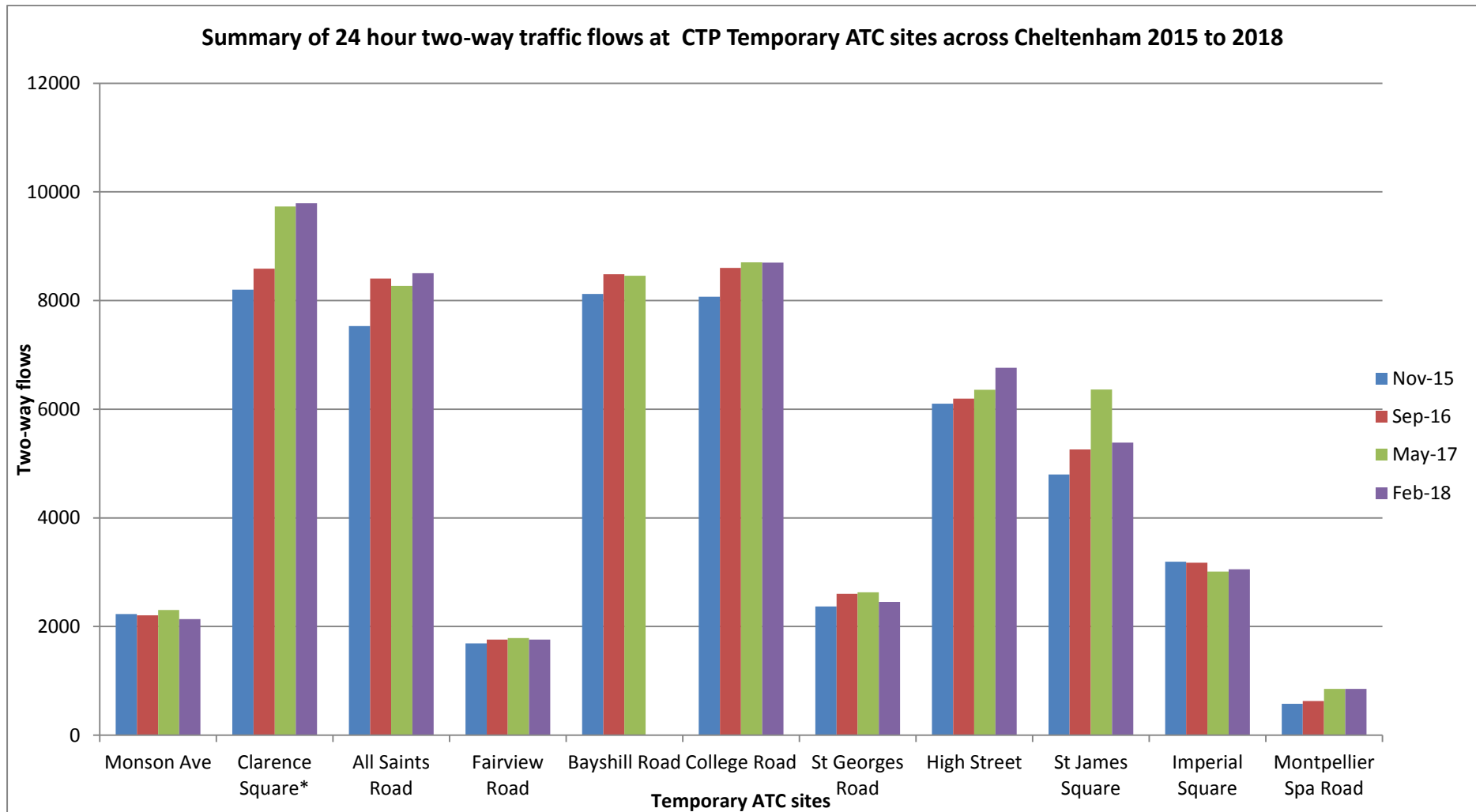
Figure 7 – CTP Fixed ATC Sites 2015 – 2017 comparisons



Notes: Bayshill Road, Ambrose Street and London Road data for 2018 not available at the time of writing



Figure 8 – CTP Temporary ATC Sites 2015 – 2018 comparisons



The figures illustrate that the average 24 hour traffic flows have varied at all sites, as to be expected. DfT data projects the background traffic growth in Cheltenham between 2015 and 2018 to be in the region of 4.4%-5%.

Figures 7 and 8 both show that there are no significant increases in flow demonstrated at any site, which would indicate a major redistribution of traffic flow as a consequence of CTP infrastructure changes made since 2016.

The Fixed ATC sites broadly show static / reductions in flow across the data range. The effect of CTP Phase 1 can be seen on the sites surrounding the phase; Albion Street, Gloucester Place etc. However, there are no significant effects observed after Phases 2 or 3.

The temporary ATC sites show more variability, with a number shown to have increases in 24 hour flow. However, the majority of these are within the DfT projected increases in background traffic flow across the town.

The stand-out increases are on Clarence Square between 2016 and 2017 and a peak on St. James Square during 2017. An examination of the Clarence Square increase in 2017 as part of the CTP Phase 2 monitoring considered it unlikely to be as a direct consequence of the CTP as Phase 2, constructed in 2017, is located on opposite side of Cheltenham town centre. The traffic flows along Clarence Square will continue to be monitored as part of CTP Phase 4 (Boots Corner Trial Closure).

The St. James Square peak is likely linked to St. George's Place northbound closure which commenced in April 2017. It is unclear as to why the flow increase has not been maintained into the 2018 survey data as the northbound closure is still in place. The traffic flows on St. George's Place will continue to be monitored as part of CTP Phase 4 (Boots Corner Trial Closure).