

Bus Lane Review Trial Suspensions

Phase 1 Summary Review

Coventry City Council and Transport for West Midlands

10th April 2018

Issue and Revision Record

Revision	Date	Originator	Checked	Approved	Description
V.1	03/04/2018	SG			Draft structure
V.2	09/04/2018	SG			Revision to V.2
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1. INTRODUCTION

This review summarises journey time data for buses and all other vehicles between March 2017 and March 2018 that has been collected and evaluated against pre-trial suspension journey time data. During this period monthly journey time data has been collated from the same month the previous year to provide the “before” data with 2017 providing the “after” data following the bus lane mitigation measures and suspension undertaken during January and February 2017. Analysis is taken over the following periods: AM Peak: 07:30 – 09:30; Off Peak: 09:30 – 15:30; PM Peak: 15:30 – 19:00. In the monthly reports each period is broken down into Journey Time Periods that reflect the average changes in journey times for buses and all vehicles.

2. BACKGROUND

The Bus Lane Review timeline is as follows:

- 29th November 2016 Cabinet Report Approved
- 8th December 2016 Journey Time Data supplier appointed (INRIX)
- 8th December 2016 Contractor for mitigation works appointed (CCC Highways)
- 5th January 2017 ETRO advertised
- 16th January 2017 Mitigation works commenced; completion end of February 2017
- 13th January 2017 Phase 1 Bus Lanes suspended
- 1st March 2017 Monthly Phase 1 reports commence

3. MITIGATION MEASURES

During the trial period Bus Selected Vehicle Detection (SVD) priorities and improvements have been provided at 10 traffic signal junctions located in the sections of suspended bus lanes. This technology is designed to deliver efficient progression for buses through the junctions that provides either:

- An extension to the current green period for an approaching bus
- Stage call for a bus approaching a red signal

As part of this process each junction has also been subject to a validation process to ensure the signals are operating efficiently.

4. ROUTE ANALYSIS

Journey time graphs have been generated for each section of suspended bus lanes. The data comprises of all vehicle journey times derived from INRIX data and bus journey time derived from the VIX ACIS RTPI system operated by NXWM. For comparison purposes the data is presented for the current month and the same month the previous year to provide a before and after data comparison. A map of the route section is also provided for reference.

Analysis is taken over the following time periods:

AM Peak	07:30 – 09:30
Off Peak	09:30 – 15:30
PM Peak	15:30 – 19:00

INRIX Performance Chart Metrics Definitions:

For each road segment in a corridor, the travel time is simply the segment length divided by the segment speed.

$$\text{travelttime}_n = \frac{\text{segment length}_n}{\text{segment speed}_n}$$

The travel time metric for the entire corridor is calculated as the sum of the travel times for all the segments in the corridor.

NXWM:

Travel time represents the 80th percentile of journeys, Monday to Friday.

5. CONTEXT

Interpretation of the results must take into account that bus timing points are taken from bus top locations at the start and end of each section and do not relate directly to the route timing points taken for the all vehicle data. However, this discrepancy is kept close as possible between the two systems. Other factors to take into account are:

- The year by year comparisons cannot take into account the annual growth in traffic across the routes.
- The dwell time for buses as they pick up and set down passengers at bus stops between their timing points
- The journey time data can be adversely affected by road works either on the route or adjacent to it.
- Certain routes can be adversely affected by incidents on the Motorway network that generate abnormally high levels of traffic on the urban network.

Direct comparison between bus and all vehicle journey times does not provide a true like for like comparison as the bus timing points are taken from bus top locations at the start and end of each section and do not relate directly to the route timing points taken for the all vehicle data. However, this discrepancy is kept close as possible between the two systems. Other factors to take into account are:

- The year by year comparisons cannot take into account the annual growth in traffic across the routes.
- The dwell time for buses as they pick up and set down passengers at bus stops between their timing points
- The journey time data can be adversely affected by road works either on the route or adjacent to it.
- Certain routes can be adversely affected by incidents on the Motorway network that generate abnormally high levels of traffic on the urban network.
- Any negative impact recorded on journey time generally translates to a very small change in journey time that is typically less than 30 seconds over relatively short distances

Equally, the year by year comparisons cannot take into account the annual growth in traffic across the routes. To put this in context the Department for Transport (DfT) released the following update on traffic growth for the year ending in March 2018:

- The provisional figure of 324.3 billion vehicle miles (bvm) travelled on Great Britain's roads in the year ending March 2018 was 1.7% higher than the previous year and 3.2% higher than the pre-recession peak in the year ending February 2007.
- DfT reported that rolling annual motor vehicle traffic has now increased in each quarter in succession for four years.
- Although the number of cars on the roads rose during the year by 1.4% to a record 252.9 bvm, van traffic rose three times as fast, increasing by 4.5% to a new peak of 49.6 bvm.
- For the last four years, van traffic has increased on average by 4.8% a year and has been the fastest growing traffic type (in percentage terms) over this time. While lorry traffic fell over the year by 0.8% to 16.6 bvm, DfT officials said HGV traffic is 7.5% higher than four years ago, making it the second fastest growing traffic type in this period.

Generally, the journey times follow existing traffic patterns where we experience the most congested periods during the Autumn and Winter months (where adverse weather and the run up to Xmas create high traffic levels) and lighter traffic conditions in the Spring and Summer months (due to holiday periods and better weather conditions)

6. ROUTE COMMENTS

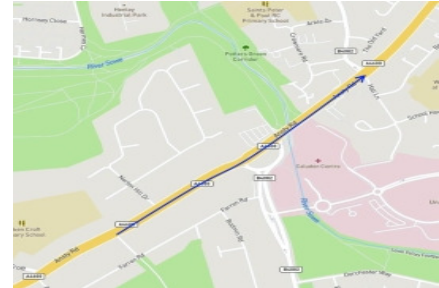
The following table provides general comments on each route based on analysis of data between March 2017 and March 2018.

Route	Comments
Ansty Road/Clifford Bridge Road Outbound	<i>This route has generally provided some inconsistent results, possibly reflecting the influence of Motorway incidents affecting this route. Results from July to February have shown improvements in journey times however, further monitoring is required to check these improvements are consistent.</i>
Ansty Road/Burns Road Inbound	<i>This route has generally provided inconsistent results, possibly reflecting the influence of Motorway incidents affecting this route. Results from July to February have shown improvements in journey times however, further monitoring is required to check these improvements are consistent.</i>
Binley Road Outbound	<i>This route continues to provide good results in terms of improved journey times for all vehicles and consistent journey times for buses. Bus JT has improved from June 2017 onwards by approx. 1 minute with this gain being maintained.</i>
Foleshill Road/Old Church Road Inbound	<i>All vehicle JT is consistent, Bus journey time now similar to all vehicle times. Results from August 2017 onwards show improved Bus times although November, December, January and February AM peak delivered a higher JT. This can be expected at this time of year as traffic flow is generally higher in this winter period and is also more prone to adverse weather situations.</i>
Foleshill Road/Old Church Road Outbound	<i>All vehicle JT is consistent, Bus journey time now similar to all vehicle times. Results from August to February show more consistent Bus times; further monitoring is required. Bus 2017 JTs are tracking 2016 JT with the exception of the PM peak period for January and February where the 2017 JT is slightly higher.</i>
Holbrook Lane Outbound	<i>Bus journey time is consistent, but this is a very short journey time. All vehicle journey time shows improvement and is becoming more consistent but still has a high PM peak JT. Bus JT for December, January and February are slightly higher, but this can be expected at this time of year as traffic flow generally increases in the winter period</i>
London Road/St James Outbound	<i>This route continues to provide good results in terms of improved journey times for all vehicles and consistent journey times for buses</i>
Tile Hill Gyratory/Herald Avenue Outbound	<i>Inconclusive results due to disruption from NPIF upgrades affecting signalised junctions during May, June and July 2017. Post works journey times are improving for all vehicles, November, December January and February AM and PM peak periods for Buses were higher than 2016 values, but this may be due to higher than normal traffic levels and weather disruption.</i>
Tile Hill Gyratory/Tile Hill Lane	<i>Inconclusive results due to disruption from NPIF upgrades affecting signalised junctions during May, June and July. Post works journey times are improving for all vehicles, but from November through to February Bus JT has increased but is still consistent with 2016 JT values.</i>

7. ANSTY ROAD/CLIFFORD BRIDGE ROAD OUTBOUND

March/April/May: Bus JT very much in a “settling down” mode following infrastructure changes made in Jan/Feb. Initial JT average for this period mainly between 3-4 mins but with some odd peaks shown particularly in the PM peak period.

June/July/August: The average JT for this period varies from 2 to 4 mins (min 2 / max 3.8 mins) with JT improving from July onwards in comparison with 2016 JT. November JT generally lower due to Holiday period but AM peak period is similar to previous months.



September/October/November: The average JT for this period varies from 2.5 to 3.5 mins (min 2.9 / max 3.6 mins) with JT improving during this period in comparison with 2016 JT.

December/January/February/March: The average JT for this period varies from 3 to 4 mins (min 3.1 / max 3.9 mins) with JT remaining consistent during this period in comparison with 2016 JT.

8. ANSTY ROAD/BURNS ROAD INBOUND

March/April/May: Bus JT very much in a “settling down” mode following infrastructure changes made in Jan/Feb. Initial JT average for this period mainly between 2-3 mins (min 2.1 / max 2.9 mins) with 2017 JT showing an improvement over 2016 JT month on month.

June/July/August: The average JT for this period varies from 2 to 3 mins (min 2.3 / max 3 mins) with JT improving from June onwards in comparison with 2016 JT.



September/October/November: The average JT for this period varies from 2 to 3 mins (min 2.4 / max 2.9 mins) with JT stabilising during this period with AM peak period improving in comparison with 2016 JT.

December/January/February/March: The average JT for this period varies from 2 to 4 mins (min 2.5 / max 3.5 mins). The AM peak JT during January was much higher, up to 2 mins max, during this period which accounts for the rise in average JT during this period.

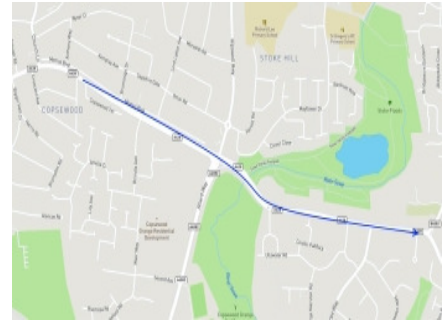
9. BINLEY ROAD OUTBOUND

March/April/May: Bus JT very much in a “settling down” mode following infrastructure changes made in Jan/Feb. Initial JT average for this period mainly between 4-5mins (min 4 / max 4.9 mins) with 2017 JT generally showing an improvement over 2016 JT month on month.

June/July/August: The average JT for this period varies from 2 to 3 mins (min 2 / max 2.9 mins) with JT improving from June onwards in comparison with 2016 JT.

September/October/November: The average JT for this period varies from 2 to 3 mins (min 2.2 / max 2.5 mins) with 2017 JT stabilising during this period in comparison with 2016 JT.

December/January/February/March: The average JT for this period varies from 2 to 3 mins (min 2.1 / max 2.7 mins) with JT generally tracking 2016 values with some small improvements.



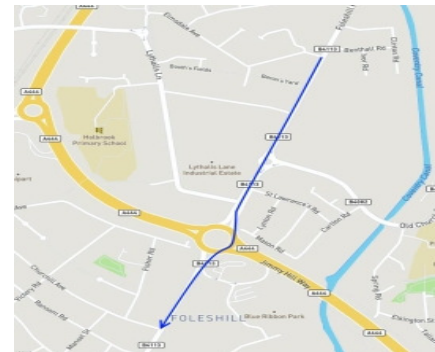
10. FOLESHILL ROAD/OLD CHURCH ROAD INBOUND

March/April/May: Bus JT very much in a “settling down” mode following infrastructure changes made in Jan/Feb. Initial JT average for this period mainly between 2-3 mins (min 2.5 / max 3.7 mins) with 2017 JT either tracking or showing a small improvement over 2016 JT in April and May.

June/July/August: The average JT for this period varies from 2.5 to 3.5 mins (min 2.8 / max 3.3 mins) with 2017 JT again either tracking or showing a small improvement over 2016 JT.

September/October/November: The average JT for this period varies from 2.5 to 4 mins (min 2.7 / 3.8 max mins) with 2017 JT stabilising during this period and generally tracking 2016 JT. The November AM peak period shows an increase in JT but this can be expected at this time of year as traffic flow generally increases in the November/December period

December/January/February/March: The average JT for this period varies from 2.5 to 4 mins (min 2.9 / max 3.5 mins). 2017 JTs are tracking 2016 JT with the exception of the AM peak period where 2017 JT is slightly higher.



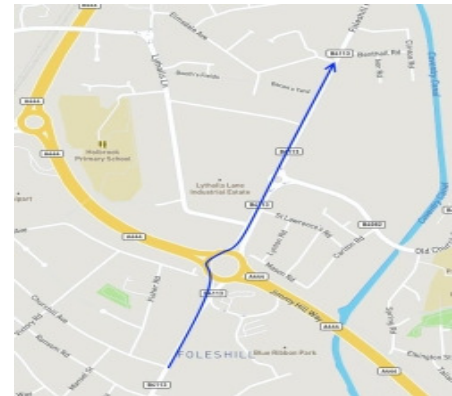
11. FOLESHILL ROAD/OLD CHURCH ROAD OUTBOUND

March/April/May: Bus JT very much in a “settling down” mode following infrastructure changes made in Jan/Feb. Initial JT average for this period mainly between 2-3 mins (min 2.6 / max 3.7 mins) with 2017 JT generally showing some improvement over 2016 JT month on month. PM Peak period JT seems to be worst affected compared to 2016 JT.

June/July/August: The average JT for this period varies from 2 to 4 mins (min 2.7 / max 3.7 mins) with JT generally becoming more consistent with the exception of the July off peak period which was unusually high. However, this does just appear to be a one-off occurrence.

September/October/November: The average JT for this period varies from 2 to 4 mins (min 2.1 / max 3.4 mins) with 2017 JT stabilising during this period and generally tracking 2016 JT.

December/January/February/March: The average JT for this period varies from 2 to 4 mins (min 2.8 / max 3.7 mins) 2017 JTs are tracking 2016 JT with the exception of the PM peak period for January and February where the 2017 JT is slightly higher.



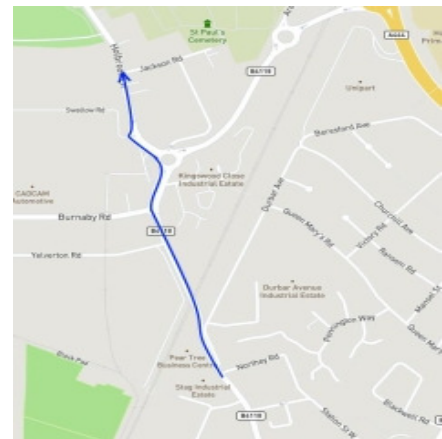
12. HOLBROOK LANE OUTBOUND

March/April/May: Bus JT very much in a “settling down” mode following infrastructure changes made in Jan/Feb. This is a very short JT for Buses with the initial JT average for this period mainly around 1 minute (min 0.7 / max 1.6 mins) with 2017 JT generally showing a small improvement over 2016 JT in April and May.

June/July/August: The average JT for this period varies from 0.7 to 0.8 mins (min 0.7 / max 0.8 mins) with JT being very consistent during this period.

September/October/November: The average JT for this period varies from 0.7 to 0.8 mins (min 0.7 / max 0.8 mins) with JT continuing to be very consistent during this period.

December/January/February/March: The average JT for this period varies from 0.7 to 2 mins (min 0.7 / max 1.9 mins). JT for December and January are slightly higher, but this can be expected at this time of year as traffic flow generally increases in the November/December period



13. LONDON ROAD/ST JAMES OUTBOUND

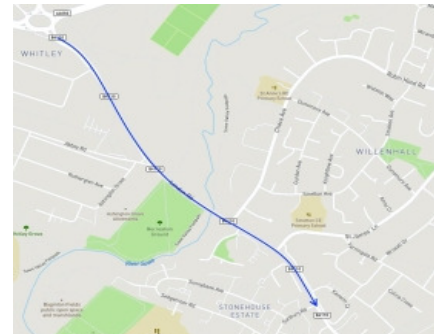
March/April/May: Bus JT very much in a “settling down” mode following infrastructure changes made in Jan/Feb. Initial JT average for March mainly between 1-2 mins (min 1.4 / max 1.9 mins) with 2017 JT generally showing a small improvement over 2016 JT in April and May.

June/July/August: The average JT for this period varies from 1 to 2 mins (min 1.3 / max 1.8 mins) with JT generally becoming more consistent and showing small improvements over 2016 JT.

September/October/November: The average JT for this period varies from 1 to 2 mins (min 1.3 / max 1.8 mins) with 2017 JT continuing to be very consistent during this period and still showing small improvements over 2016 JT.

December/January/February/March

The average JT for this period varies from 1 to 2 mins (min 1.3 / max 1.7 mins). JT continues to be consistent and tracks 2016 JT values.



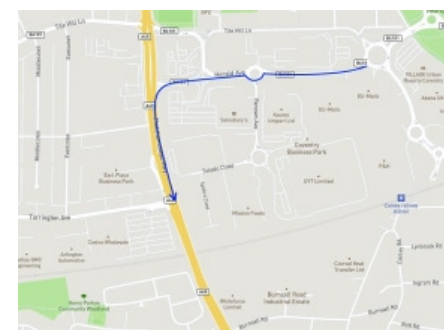
14. TILE HILL GYRATORY/HERALD AVENUE OUTBOUND

March/April/May: Bus JT very much in a “settling down” mode following infrastructure changes made in Jan/Feb. Initial JT average for this period mainly between 1-2 mins (min 1.3 / max 2.3 mins) with 2017 JT generally not showing improvement over 2016 JT in April and May.

June/July/August: The average JT for this period varies from 2 to 3 mins (min 2.1 / max 2.6 mins) with JT generally becoming more consistent but slightly higher than 2016 values. However, this is most likely as a result of disruption caused by improvement works to traffic signal upgrade works during this period.

September/October/November: The average JT for this period varies from 2 to 3 mins (min 2.1 / max 3 mins). In the AM and PM peak periods the 2017 JT is higher than 2016 JT but this can be expected at this time of year as traffic flow generally increases in the November/December period.

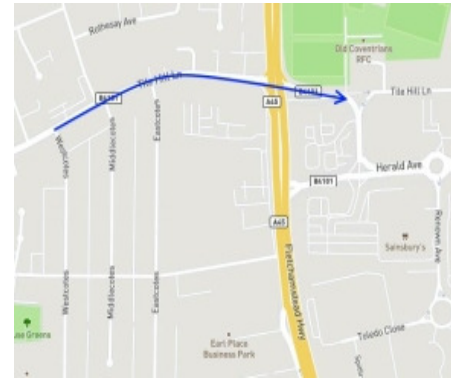
December/January/February/March: The average JT for this period varies from 2 to 3 mins (min 2.1 / max 3.1 mins). 2017 JTs are tracking 2016 JT with the exception of the AM and PM peak periods for December, January and February where the 2017 JT is slightly higher. However, February AM peak period has since returned to match 2016 JT values.



15. TILE HILL GYRATORY/TILE HILL LANE

March/April/May: Bus JT very much in a “settling down” mode following infrastructure changes made in Jan/Feb. Initial JT for this period mainly between 2-3 mins (min 2.7 / max 3.4 mins) with 2017 JT generally showing a small improvement over 2016 JT month on month.

June/July/August: The average JT for this period varies from 2 to 3 mins (min 2.6 / max 3.2 mins) with JT generally becoming more consistent but slightly higher than 2016 values. However, this is most likely as a result of disruption caused by improvement works to traffic signal upgrade works during this period.



September/October/November: The average JT for this period varies from 2 to 4 mins (min 2.3 / max 6.8 mins). In the AM and PM peak periods the 2017 JT is higher than 2016 JT, but this can be expected at this time of year as traffic flow generally increases in the November/December period.

December/January/February/March

The average JT for this period varies from 5 to 7 mins (min 5.4 / max 7.4 mins) which is showing a rising trend in JT however, this trend is reflected in the 2016 JT figures too and is most likely to be a consequence of higher traffic flows as traffic flow generally increases in the November to February period and

16. CONCLUSIONS & RECOMMENDATIONS

Based on the Journey Time monitoring undertaken each month since March 2017 there is sufficient evidence to conclude that the suspension of Bus Lanes under the ETRO has not had a detrimental effect on bus journey times when compared on a like for like basis with bus journey time for the same period in 2016.

The introduction of Bus Selected Vehicle Detection (SVD) priorities and efficiency improvements that have been provided at 10 traffic signal junctions located in the sections of suspended bus lanes has also contributed to this outcome, but it is not possible to quantify this benefit. However, given that traffic growth increases year on year and many of the journey times measured now show similarity between 2016 and 2017 values it is fair to conclude that this efficiency gain has offset the effect of traffic growth.

Therefore, based on the contents of this report and the supporting detailed monthly reports, it is recommended that the Experimental TRO is made permanent and that the bus lanes are permanently removed.