Department for Transport

Better Bus Areas Programme

Final Report

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Notice

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1   INTRODUCTION

1.1   The Better Bus Areas (BBA) fund is an innovative programme whereby the 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. BBA is a key element of the Government's review of BSOG as a tool to subsidise bus services.

1.2   In the summer of 2013, the Department for Transport (DfT) offered local authorities the opportunity to become a Better Bus Area. Authorities were asked to prepare a bid to become a BBA in conjunction with local bus operators and propose a series of schemes which they felt would offer better value for money than BSOG. Five local authority areas were successful in becoming Better Bus Areas:

- ❑ Sheffield
- ❑ Nottingham
- ❑ Liverpool City Region
- ❑ West of England
- ❑ York

1.3   Each of the five successful authorities looked to implement different schemes and each set up different partnership arrangements with their local bus operators.

1.4   In May 2014 Integrated Transport Planning Ltd and the University of the West of England (Bristol) were awarded a contract by DfT to conduct research to support the initial phase of the evaluation of the BBA programme. The research involved designing an evaluation plan, collecting baseline data for impact evaluation and conducting interviews to form the initial phase of process evaluation. Three reports have been produced documenting the work carried out:

- ❑ Evaluation plan – produced towards the beginning of the commission, this set out the research questions and the schemes to be the focus of impact evaluation. It set out the methodology devised to collect baseline data for impact evaluation and to conduct the process evaluation interviews. The evaluation plan also provided a comprehensive discussion around the feasibility of evaluating different interventions, alongside the feasibility of determining a counterfactual for assessing the impact of interventions. This is a helpful precursor to the discussion included in this report.

- ❑ Process evaluation report – this presented the findings and conclusions from the initial phase of process evaluation interviews. Each BBA, and the partnership arrangements they have adopted, was presented as an individual case study, followed by a synthesis of findings and a series of conclusions.

- ❑ Impact evaluation report – this documented the baseline data collected in order to evaluate the schemes within the BBA programme identified by DfT that they wish to evaluate.

1.5   This is the final report and final output of the commission. The report provides recommendations on how and when further process evaluation and post-implementation impact evaluation should be carried out. This report does not repeat the outputs from the previous reports, instead making reference to other reports as required. It is recommended

that this report is read in conjunction with the evaluation plan and process and impact evaluation reports.

1.6   This report firstly considers how and when the post-implementation process evaluation should be carried out. It then focuses on the impact evaluation and the collation and collection of data and evidence between 2015 and 2019.

1.7   Finally, this report sets out a number of key milestones for DfT with regards to follow up process and impact evaluations. These are discussed throughout the report and presented in Appendix C. It should be noted that these should be seen as recommendations made by ITP and they do not constitute Government commitment at the time of writing.

2   PROCESS EVALUATION

2.1   In February 2015, the process evaluation report was submitted to DfT. The report presented the findings from interviews held with local authority / PTE officers, bus operators and representatives of small bus operators in each of the five local authority areas within the BBA programme.

2.2   The report identified many examples of effective partnership working. In addition it noted the need for further examination of partnership working as the programme continues and schemes are delivered on the ground and operators see greater reductions in their revenues (as a result of the stepped reduction in BSOG). It was recommended that, in order to fully answer the research question ('What lessons can be learned from the partnership arrangements put in place in each BBA?'), the process evaluation exercise should be carried out twice more over the course of the BBA programme - once in 2016 and then finally in 2019 at the end of the BBA programme.

2.3   With a recommendation for two further process evaluation phases, it is difficult to prescribe an exact methodology for the latter phase at this stage as there may be outcomes from the 2016 phase that influence how the 2019 phase should be carried out. Therefore, while this chapter suggests an appropriate methodology for the 2019 process evaluation, it will need to be reassessed in light of the findings from the 2016 process evaluation interviews.

2.4   This chapter presents proposed methodologies for the two evaluation phases. This sets out how interviews should be carried out, with which stakeholders and when they should be carried out. A proposed interview topic guide is provided within Appendix A. Appendix B lists the stakeholders that were interviewed during the process evaluation carried out in 2014 and their contact details.

2016 process evaluation interviews

2.5   The purpose of the 2016 process evaluation interviews is to understand the experiences of partnership working as the BBA programme continues and schemes are delivered on the ground. This will help to provide greater depth to DfT's understanding of partnership working between bus operators and local authorities/PTEs and better answer the original research question. It is therefore necessary to revisit the methodology for carrying out the process evaluation interviews and develop it to ensure it meets the needs of DfT.

2.6   Much of the 2014 process evaluation focussed upon the partnership arrangements before the BBA programme, in establishing the BBA and what partnership arrangements had been put in place at the start of the programme. This information does not need to be obtained a second time. The focus instead should be on the following themes:

- ❑ Progress in delivering BBA schemes
- ❑ Development of partnership arrangements
- ❑ Problem resolution/adaptability/feedback
- ❑ Development of any other partnership arrangements outside of BBA
- ❑ The future

2.7   The above themes lead to a series of questions which are presented within the proposed interview topic guide – Appendix A.

2.8   In terms of carrying out the 2014 interviews, the research team found that developing conversations based on the topic guide helped to elicit a wealth of information that provided the research team with a deep understanding of partnership arrangements in each BBA. This ability to develop conversations is a critical requirement for whoever carries out the process evaluation interviews in future. In addition, while it is not proposed to re-visit some of the topic areas from the first set of interviews, it is essential for the researcher to have a full understanding of the history of partnership working in each BBA. This knowledge will help to provide background and context to the interviews and help steer each interview.

2.9   Interviewers should make reference to specific issues encountered within the initial process evaluation in order to understand how those issues have developed over time. For example, in Nottingham operators highlighted their desire to put in place formal BBA arrangements and to discuss this with the City Council. Specific issues like this should be explored in terms of developments to date, the effects of any developments (or lack of) and any pros or cons of any developments. It is not possible to include all aspects meriting discussion within a generic topic guide, so care must be taken ahead of each interview to ensure the interviewer has full knowledge of the areas of interest of previous interviews.

2.10   Interviews in 2016 should be carried out face to face if possible. However, in order to ensure interviews go ahead, telephone interviews could be adopted as a fall-back if necessary. Experience from conducting the 2014 process evaluation interviews suggests that face to face interviews allow for a more in-depth discussion that can elicit a greater depth of information.

2.11   Finally, when reporting the 2016 process evaluation, it would be logical to adopt the same reporting framework as presented within the process evaluation report.

Summary

❑   Interviews should be carried out in October and November of 2016 with local authority and PTE officers (preferably those who were interviewed in 2014), in addition to those operators interviewed previously. If there are new operators, or if those who were not interviewed the first time are agreeable, then interviewing them is encouraged as additional interviews would add greater depth and understanding to each BBA.

❑   Interviews should be carried out using experienced researchers with a comprehensive understanding of each BBA and the partnership arrangements in place.

❑   Interviews should be carried out using the topic guide as a basis towards generating a relevant and detailed discussion with the interviewee.

❑   Interviews should be face to face, as per the 2014 interviews, although there may be some scope to carry out some interviews by telephone if necessary.

2019 process evaluation interviews

2.12 The purpose of the process evaluation interviews in 2019 – at the end of the BBA programme – is to investigate and document the evolution of partnership working, including what worked well, what worked less well and how different partnership arrangements impacted upon the delivery of BBA schemes.

2.13 The process of carrying out the 2019 process evaluation interviews should be broadly similar to that presented for 2016 above. The focus should continue to be on the five themes highlighted in paragraph 2.6. The method for carrying out interviews should also be face to face and interviewers should have a thorough knowledge and understanding of the history of BBA partnership arrangements in each of the BBAs.

2.14 As the 2016 interviews will be carried out beforehand, the topic guide will need to reflect any findings from the 2016 interviews and focus upon any issues that may have arisen in any of the five BBAs. Therefore, at this stage, it is recommended that the topic guide in Appendix A is adopted in 2019 but may be subject to amendments and additions. The updating of the 2019 topic guide is a task that should be carried out following the 2016 interviews, preferably by whichever organisation carries out those interviews.

2.15 It is proposed that for the sake of consistency, it would be logical to adopt the same reporting framework as presented within the 2014 process evaluation report. However, this is subject to DfT's needs and requirements.

3   IMPACT EVALUATION

3.1   In March 2015, the impact evaluation report was submitted to DfT. The report summarised the data collected and collated to serve as the baseline 'before' case scenario. This report focuses on:

- ❑   The schemes that will be evaluated (as selected by DfT)

- ❑   How the impacts of those schemes will be evaluated, and against which indicators

- ❑   How the counterfactual will be taken into account, where applicable

- ❑   What data/evidence has been collected to date, and the source of that data

- ❑   What data/evidence will need to be collected, and the source of that data

- ❑   When data should be collected, and by whom

3.2   This chapter sets out the information above for each BBA in turn. This will provide whoever carries out the post-implementation evaluation on behalf of DfT with the information they require in order to collect and collate the post-implementation data and evaluate the effects of each scheme.

3.3   It is necessary to highlight that the impact evaluation is being carried out using available data sources. The brief of the evaluation team was to take advantage of existing data sources in order to carry out as thorough an evaluation as that data would allow. The impact evaluation could have been more robust if resources had been available to collect of baseline data from sources that were not readily available/accessible to the local BBA teams.

3.4   The impact evaluation report presented the baseline data for the evaluation of the various BBA schemes. All of the baseline data was supplied to DfT when the report was submitted. However, all baseline data is also backed up and stored on ITP's server to ensure there remains a copy of all data required.

Liverpool City Region

3.5   The schemes identified by DfT for impact evaluation in the Liverpool City Region are:

- ❑   Housing estate improvements

- ❑   Active traffic management infrastructure

3.6   The approximate implementation dates and costs for these schemes are as follows:

Scheme	Approximate implementation date	Approximate Costs
Housing estate improvements	June 2015 – March 2019	£288,000
Active traffic management infrastructure	October 2013 – December 2016	£1,703,000

Housing estate improvements

3.7   Table 3.1 presents an overview of how to carry out the post implementation evaluation for the housing estate improvements. This section will not repeat what is presented within the table, but provide more detail of how the post-implementation evaluation should be carried out.

3.8   Firstly, it is necessary to highlight that any changes to bus journey times within the housing estates are unlikely to be detectable as the proposed schemes are modest. Proposed

schemes include painting double yellow lines where parked cars can occasionally create an obstruction and having discussed this with operators, they feel that any time savings are likely to be minimal. The focus of the housing estate improvements is to make significant improvements to bus stop infrastructure and the provision of information, and therefore the impact evaluation should focus on changes in bus patronage, changes in bus user satisfaction and changes to carbon emissions.

3.9 In terms of bus patronage data, Arriva North West has provided data directly to ITP and indexed data has been reported within the impact evaluation report. Arriva provided this data on the assumption that it would be published in an indexed format so as to remove any commercial sensitivity.

3.10 Arriva provided patronage data for a period from January 2012 until December 2014. This data was disaggregated by bus stops within the housing estates, while also providing data for the entire route. Using this, a before and after comparison of passengers boarding at the housing estate bus stops will be possible to detect any changes in patronage. The counterfactual (estimate of what would have happened in the intervention area in absence of housing estate improvements) requires careful consideration. By using the remainder of each bus route as a 'local' comparator to establish the counterfactual, the net impact of the housing estate improvements can be determined.

3.11 However, this approach does have some limitations. If there are more (or fewer) passenger boardings within the intervention area, this is also likely to be echoed elsewhere along the route as bus users are likely to make more than one journey on that route i.e. it would be expected that a person travelling from the housing estate, will have to travel back later that day. As a result, the counterfactual will need to be calculated as follows:

Absolute passenger growth for comparator (APGC) =	No. of passenger boardings on route excluding the intervention area	-	Change in no. of passenger boardings within the intervention area (housing estate)
Percentage passenger growth for comparator (PPGC) =	APGC	/	Baseline passenger boardings on route excluding the intervention area
Expected no. of passenger boardings within the intervention area (EPBI)	Baseline passenger boardings within the intervention area	x	PPGC

3.12 The impact of the intervention is then estimated as the difference between the measured post-intervention passenger boardings within the intervention area (housing estate) and the EPBI (expected absolute passenger growth for intervention area).

3.13 A second counterfactual can be obtained using the Merseyside-wide bus patronage data for Arriva North West. This data has been collated for use in estimating the patronage counterfactual for the evaluation of active traffic management infrastructure, and therefore can be used to determine the general trends in bus patronage across the region. Comparing

growth in passenger boardings within the housing estates with general region-wide passenger growth will enable a second indication of the impacts of the intervention. However, this has limitations as the routes that serve the housing estates will also benefit from active traffic management infrastructure, and therefore disaggregating the effects of housing estate improvements can only be carried out using the 'local' comparator discussed above.

3.14   Merseytravel procured Passenger Focus to carry out booster samples of their annual bus user satisfaction survey across bus routes within the BBA. These surveys asked specific questions relating to bus stop infrastructure. Passenger Focus surveys will not be carried out specifically in the housing estates, but will be carried out on the bus services that serve the housing estates. This should provide a sufficient sample from which to identify any impacts of the improved bus stop infrastructure.

3.15   The same questions will be asked in 2016 and 2019 when further booster samples are obtained, and it is proposed that a comparison of the survey results before and after the intervention be used to determine the impacts of the intervention. To provide a counterfactual, the results of user satisfaction surveys across the rest of Merseyside (excluding BBA routes) should be considered.

3.16   In terms of changes to carbon emissions, it is not possible to determine precisely the impacts, since monitoring information is not readily available along all of the main corridors within the BBA. Within the Liverpool City Region, Merseytravel has adopted the Merseyside Atmospheric Emissions Inventory (MAEI) to monitor pollutants from transport. Merseytravel has adopted this tool as opposed to the DfT carbon tool for monitoring carbon reductions across the BBA. Baseline data has now been collected and is presented within the impact evaluation report, disaggregated by each bus service that operates within the BBA. Merseytravel intends to run the model in November 2016 and again in November 2019 in order to compare atmospheric emissions before and after BBA scheme implementation.

3.17   While the MAEI focusses on changes in carbon emissions from public transport vehicles, it is necessary to also examine the effects of modal shift (from private car to public transport). In addition to the outputs from MAEI modelling exercise, where there is any demonstrable change in bus patronage attributable to the housing estate improvements, it will be assumed that 30% of those passenger trips would have been made by another vehicular mode. This will require assumptions relating to the typical journey by other modes and carbon emissions associated with those journeys. In that scenario, the changes in carbon emissions can be modelled and reported upon.

Active traffic management infrastructure

3.18   Table 3.2 presents an overview of how to carry out the post-implementation evaluation for active traffic management infrastructure. The primary aim of the scheme is to provide greater priority to buses at junctions which should:

- ❑   Improve bus journey times
- ❑   Improve bus journey time reliability
- ❑   Improve bus user satisfaction
- ❑   Increase bus patronage

In addition, the scheme may influence car journey speeds and result in changes to carbon emissions.

3.19   Bus journey time data is to be supplied by Merseytravel using their real time information system. Merseytravel has made changes to its software system in order to generate reports that provide bus journey times between bus stops. Therefore, for the post-implementation evaluation, a comparison of bus journey times between specified stops (as presented within the impact evaluation report) will demonstrate the impact of the bus priority technology.

3.20   Bus patronage data for routes 32, 33, 89 and 89A, 17 and 17A has been obtained as these routes will be the most affected by changes to signal priority. These datasets are disaggregated by route, month and passenger type (commercial or concessionary). The same datasets will need to be obtained in 2019 for the period from January 2015 onwards, however operators have been made aware that they will need to collate this data on an annual basis. Again, a comparison of bus patronage across the six routes will enable the research team to determine the impact of the bus priority measures.

3.21   Operators have provided their peak vehicle requirements for the routes affected by the signal priority. The same data should be collected either directly from operators or through examining the timetables and a straight forward comparison made. It is necessary to highlight that PVRs could change as a result of the quality bus corridor agreement between Merseytravel, Arriva and Halton Borough Transport. Therefore a qualitative interpretation whether a change in PVR is attributable to active traffic management is required within the post-implementation evaluation.

3.22   As buses will receive greater priority at treated junctions, it is necessary to consider the impact on other road users. Car journey time and speed data, for the sections of corridors where the treated junctions lie, has been obtained from DfT via their congestion statistics team. The same data is required to be collected in 2019 and a comparison of the two datasets will determine the impact on the journey times and speeds of non-bus modes.

3.23   In terms of the counterfactual for car journey times and speeds, it is very difficult to determine which other roads or corridors would reflect what would have happened without the intervention. There are a variety of other factors that could impact on other roads and corridors, not least the introduction of the Mersey Gateway which is on the edge of the BBA area. This is likely to have a significant impact on traffic flows around the entire BBA, potentially affecting speeds and journey times.

3.24   The potential effects of the Mersey Gateway on traffic flows is a significant external factor that, ideally, would be accounted for. It is possible to monitor changes in traffic flows and provide a qualitative assessment in order to interpret the outputs from the pre and post implementation comparison. An alternative approach may be to select a corridor, or series of corridors away from the BBA area to act as a control area. Neither are strict counterfactuals and would require significant interpretation from the research team. As a result, this study has not obtained datasets to monitor the effects of this external factor.

3.25   By not having a control/comparison area, this is likely to impact upon the confidence of any conclusions drawn from the before and after evaluation about journey times. By not knowing what would have happened if the interventions had not been made, it is difficult to draw the conclusion that the intervention had a specific impact when there may have been other external factors. Due to the complexity of changes in the road layout and traffic movements

as a result of the Mersey Gateway, it is simply not feasible to determine a counterfactual. Whoever carries out the post-implementation evaluation will need to be mindful of this significant limitation when interpreting results.

3.26   As stated above, Merseytravel procured Passenger Focus to carry out booster samples of their annual bus user satisfaction survey across bus routes within the BBA. These surveys asked specific questions relating to bus stop infrastructure. The same questions will be asked in 2016 and 2019 when further booster samples are obtained, and it is proposed that a comparison of the survey results before and after the intervention be used to determine the impacts of the intervention. To provide a counterfactual, the results of user satisfaction surveys across the rest of Merseyside (excluding BBA routes) should be considered.

3.27   In terms of changes to carbon emissions as a result of traffic management infrastructure, the same approach detailed in paragraph 3.16 and 3.17 should be undertaken.

Table 3.1 Housing Estate Improvements Impact Evaluation Information

Scheme	Indicator	Pre-Implementation data obtained to date	Where data is stored	Post-implementation data to be collected	Data Source	When data should be collected	Counterfactual basis
Housing estate improvements	Absolute and % change in average bus journey times on the relevant routes	Through discussion with stakeholders, it was apparent that the possible improvements in bus journey times are so modest that they are unlikely to be detectable. In addition, they would not result in any changes to peak vehicle requirement.	n/a	n/a	n/a	n/a	n/a
	Absolute and % change in bus journey time difference from timetabled journey times						
	Changes to PVR requirements related to headway on affected routes						
	Changes in bus patronage (% and number of passengers)	Bus passenger boardings at bus stops within the Four Acre (service 32 and 33), Portico (89 & 89A), Australia (33) and Sutton Manor (32 and 33) estates by route, month and passenger type since January 2012	Data supplied to ITP and will be retained by ITP until required.	Bus passenger boardings at bus stops within the Four Acre (service 32 and 33), Portico (89 & 89A), Australia (33) and Sutton Manor (32 and 33) estates by route, month and passenger type from Jan 2015 to 2019	Arriva North West	Arriva will be asked to collate patronage data every year & store it themselves until 2019 when DfT will request data	Bus passenger boardings on entire routes 32, 33, 89 and 89A.
	Change in level of user satisfaction (% of users satisfied or very satisfied with different aspects of service)	Passenger Focus survey outputs include satisfaction rates for the following: • Personal safety at the bus stop • Facilities at the bus stop • Information provided at the bus stop • State of repair at the bus stop • Cleanliness and freedom from graffiti at the bus stop	Data supplied to Merseytravel by Passenger Focus. Baseline data stored on USB stick under: LCR-Housing Estates – User Satisfaction	The same passenger focus surveys should be carried out. It is currently Merseytravel's plan to carry out these surveys (with the booster sample) in 2016 and 2019. This data should be collated by Merseytravel and available to DfT or the post-implementation research team as required.	Passenger Focus / Merseytravel	In 2016 and 2019. This is already planned by Merseytravel	Change in level of user satisfaction in rest of Merseytravel area.
	Changes to carbon emissions	Changes to carbon emissions reliant upon any changes to bus passenger information	n/a	Bus passenger boardings as above.	Arriva North West	Arriva will be asked to collate patronage data every year & store it themselves until 2019. Merseytravel will carry out modelling in November '16 and November '19	The changes to carbon emissions will be estimated based on changes in bus patronage (which take into account the counterfactual).

Table 3.2 Active Traffic Management Infrastructure Impact Evaluation Information

Scheme	Indicator	Pre-Implementation data obtained to date	Where data is stored	Post-implementation data to be collected	Data Source	When data should be collected	Counterfactual basis
Active traffic management infrastructure	Absolute and % change in average bus journey times in defined corridors / areas	Bus journey times between specified stops which straddle one or more of the AVL treated junctions for a period of one month in October 2014 on the following corridors: • Prescott Road - 6 treated junctions • Thatto Heath - 3 treated junctions • Rainhill - 6 treated junctions • Marshalls Cross -4 treated junctions	Baseline data Is stored on USB stick under: LCR-ATMI-Bus Journey Times	Bus journey times between specified stops which straddle one or more of the AVL treated junctions for a period of one month in October 2018 on the following corridors: • Prescott Road - 6 treated junctions • Thatto Heath - 3 treated junctions • Rainhill - 6 treated junctions • Marshalls Cross -4 treated junctions	Merseytravel	Data should be collected in October 2017, provided all junctions have been treated by that stage and the junction priority technology is fully functional.	n/a
	Absolute and % change in bus journey time difference from timetabled journey times	Data as above, but analysis will include comparison with bus timetabled journey times	As above	As above, with timetables obtained for October 2018	Merseytravel and Arriva NW	October 2017, provided all junctions have been treated and technology is functional.	n/a
	Changes in bus patronage (% and number of passengers)	Monthly bus patronage on Arriva routes 32, 33, 89 and 89A and HBT routes 17 and 17A disaggregated by commercial and concessionary passengers from January 2012.	Data supplied to ITP and will be retained by ITP until required.	Monthly bus patronage on Arriva routes 32, 33, 89 and 89A and HBT routes 17 and 17A, disaggregated by commercial and concessionary passengers from January 2015 until 2019.	Arriva North West and Halton Borough Transport	Arriva and HBT will be asked to collate patronage data every year & store it themselves until 2019.	Bus patronage on all Arriva North West services across Merseyside (excluding routes within the BBA)
	Absolute and % changes in car journey times	Vehicle journey time/speed data by 15 minute periods for period of 3 months from September – November 2014 along the following corridors: • Prescott Road • Thatto Heath • Rainhill • Marshalls Cross	Baseline data Is stored on USB stick under: LCR-ATMI-Car Journey Times	Vehicle journey time/speed data by 15 minute periods along the following corridors: • Prescott Road • Thatto Heath • Rainhill • Marshalls Cross	Congestion stats team at DfT – Jay Symonds is main contact	September – November 2017 provided all junctions have been treated.	n/a
	Changes to PVR requirements related to headway on affected routes	PVRs for routes 32, 33, 89, 89A	Baseline data stored on USB stick under: LCR-ATMI – PVR	PVRs for routes 32, 33, 89, 89A	Arriva North West	Data can be collected from Arriva in 2019 as part of the post-implementation evaluation	n/a

Change in level of user satisfaction (% of users satisfied or very satisfied with different aspects of service)	Passenger Focus survey outputs include satisfaction rates for the following: • Length of time waiting for a bus • Length of time journey is taking This data is disaggregated by route, so routes benefitting from the intervention can be identified	Data supplied to Merseytravel by Passenger Focus. Baseline data stored on USB stick under: LCR-ATMI – User Satisfaction	The same passenger focus surveys should be carried out. It is currently Merseytravel's plan to carry out these surveys (with the booster sample) in 2016 and 2019. This data should be collated by Merseytravel and available to DfT or the post-implementation research team as required.	Passenger Focus / Merseytravel	In 2016 and 2019. This is already planned by Merseytravel	Change in level of user satisfaction in rest of Merseytravel area.
Changes to carbon emissions	Bus patronage data and car journey speed data. These will be used to model impacts on carbon emissions.	Bus patronage data retained by ITP. Car journey speed data stored on USB: LCR-ATMI-Car Journey Times	Bus patronage and car journey speed datasets as above	Arriva NW, Halton Borough Transport and Congestion stats team at DfT	Arriva will be asked to collate patronage data every year & store it themselves until 2019. Merseytravel will carry out modelling in November '16 and November '19	The changes to carbon emissions will be estimated based on changes in bus patronage (which take into account the counterfactual).

Nottingham

3.28 The schemes identified by DfT for impact evaluation in Nottingham are:

❏ AVL signal priority

❏ Smartcard retail network

❏ CCTV feeds to operator control centres

3.29 The approximate delivery dates for these schemes are as follows:

Scheme	Approximate implementation date	Approximate Costs
AVL signal priority	March 2016	£250,000
Smartcard retail network	September 2015	£1,000,000
CCTV feeds to operator control centres	March 2016	£250,000

AVL signal priority

3.30 The approach for evaluating the impacts of AVL signal priority within the Liverpool City Region (see paragraphs 3.18 onwards) will be broadly replicated in Nottingham. Table 3.3 details how the evaluation should be carried out. The main difference between the two approaches will be that in Nottingham bus patronage will not be collected due to there being relatively few treated junctions. Also, along the routes where junctions are being treated, it is not possible to determine whether patronage changes are the result of the interventions because there are other junctions on the same corridor which have received the same treatment.

3.31 Bus journey time data is collected by Nottingham City Transport (NCT) using the operator's own software. Post-implementation data will be available from the operator; however this data can only be retained for a period of three months before being archived. Therefore, at any given time, only three months' worth of data is available. It is proposed that data for September 2016 be collected in order to carry out a direct comparison of the before and after datasets, therefore DfT must be aware that someone will need to collect this data October/November 2016. As is the case within the Liverpool City Region, a control/comparison is not entirely plausible for this part of the evaluation. However, traffic flow data has been obtained for the treated junctions, which will provide an evidence base against which a qualitative assessment can be made to interpret the pre and post implementation comparison.

3.32 User satisfaction surveys are carried out annually by NCT, therefore any changes to user satisfaction of bus journey times can be observed. As a counterfactual, user satisfaction rates for all unaffected bus services in Nottingham can be compared pre and post implementation.

Smartcard retail network

3.33 The smartcard retail network will be evaluated with scheme outputs monitored and changes in bus user satisfaction rates compared pre and post implementation (see Table 3.4). Interviews, as part of the process evaluation in 2016 and 2019, should be used to obtain the views and perceptions of operators and local authority officers. An additional question has been added to the process evaluation questionnaire to ensure this happens.

3.34 In a quantitative sense, it is necessary to obtain output data from the retail network, such as the number of units in operation, how often they are used, and what type of ticket products are bought using the network, etc. Unfortunately at the time of writing this report, Nottingham City

Council was still in the process of introducing the ticket vending machines (TVMs) and so very little before data was able to be obtained.

3.35   The evaluation plan explored how the smartcard retail network could be evaluated. It concluded that "it is extremely complex to disaggregate and isolate the effects of the network from any other public transport improvement schemes that are being carried out across the city, particularly when considering the effects on bus patronage. While outcomes could be monitored by the City Council in terms of the number of people using smart card tickets before and after roll-out of the network, any measured changes in bus patronage across the city would include influences of many initiatives and external factors. Without specific additional targeted surveys (that could be carried out by NCC or ITP), and which would help determine the extent to which the smartcard retail network led to a change in bus use, it would not be possible to determine any change in the number of bus users as a result of the smartcard retail network".

3.36   Further discussions with DfT suggest that there is a desire to consider whether it is feasible to measure whether the smartcard retail network leads to an increase in smartcard use across Greater Nottingham. At present, there are four major operators (NCT, Trent Barton, Tramlink, Yourbus) in Greater Nottingham, plus a variety of minor operators. Of these four major operators, three have their own smartcard products for which obtaining data is not possible due to commercial sensitivities. In addition, Nottingham City Council has its Citycard product which can be used to store Kangaroo (multi-operator) season tickets and very soon will be used to store season tickets for tram services.

3.37   Due to these complexities, obtaining numbers of local residents who use smartcards at present is not feasible. Therefore, defining a baseline of existing smartcard use cannot be carried out for this evaluation study using existing data sources. It is, of course, possible to collect this data using on-vehicle or at-stop surveys, but this represents additional data collection which does not fall within the brief for this commission and the local BBA partnership is also not obliged to carry this out under its agreement with DfT.

3.38   Finally, Nottingham City Council carry out quarterly user satisfaction surveys. In their questionnaire, they ask a specific question about user satisfaction in relation to access to integrated ticketing. The outputs from this specific question should be compared pre and post implementation to understand the perceptions of users. Ideally, user satisfaction surveys would attempt to understand in greater detail the effects that the smartcard retail network has had on how users use public transport services. It is recommended that DfT work with Nottingham City Council to develop these surveys, and also consider how it can better understand changes in travel behaviour as a result of the smartcard retail network through the use of dedicated surveys and/or qualitative methods such as focus group discussions.

CCTV feed to operator control centres

3.39   Consideration was given to whether it is possible to evaluate the impacts of the CCTV feed to control centres. The evaluation plan concluded that "in order to quantify any impacts of the CCTV feed, it would be necessary to monitor the impact on bus services of incidents (most likely road traffic accidents) that occur on the road network before and after the CCTV feed is fed to operator control centres. In order for there to be a fair comparison, incidents would need to be in the same locations before and after and be of a similar scale/severity. The likelihood of this is very small, and therefore the ability of the study team to access data that can be

compared in a fair manner is inhibited. We therefore recommend that there should be no quantitative evaluation of the impacts of the CCTV feeds."

3.40 Without the ability to quantify delays as a result of different incidents on the road network before and after the intervention, it is recommended that the evaluation of this intervention is based on the views of operators obtained during process evaluation interviews. This will limit the evaluation and the conclusions that can be drawn, but given the nature of the intervention, qualitative feedback is the most likely way of obtaining something tangible from which the DfT can assess the benefits of the intervention.

Table 3.3 AVL Signal Priority Evaluation Information

Scheme	Indicator	Pre-Implementation data obtained to date	Where data is stored	Post-implementation data to be collected	Data Source	When data should be collected	Counterfactual basis
AVL Signal Priority	Absolute and % change in average bus journey times through the affected junctions	Bus journey times between bus stops that straddle each of the six treated junctions.	Data stored on USB: Nott-AVLSP-Bus Journey Times	Bus journey times between bus stops that straddle each of the six treated junctions.	Nottingham City Transport – Lee McPhilbin and David Astill are the main contacts	September 2016 provided all junctions have been treated.	Traffic flow data obtained for treated junctions to enable qualitative assessment of trends in traffic volumes and likely impact on journey times.
	Absolute and % change in bus journey time difference from timetabled journey times (with late running buses identified where possible)	As above, in addition to current timetables for affected routes	Data stored on USB: Nott-AVLSP-Bus Journey Times	Bus journey times between bus stops that straddle each of the six treated junctions. Timetables of affected routes	As above	September 2016 provided all junctions have been treated.	As above
	Change in level of user satisfaction (% of users satisfied or very satisfied with different aspects of service)	Bus journey time reliability user satisfaction rates by route (15, 16, 17, 36, 56, 57, 58, 59)	Data stored on USB: Nott-AVLSP-User Satisfaction	Bus journey time reliability user satisfaction rates by route (15, 16, 17, 36, 56, 57, 58, 59)	Nottingham City Transport – Anthony Carver Smith is contact	Collected each year from 2015 to 2019	Change in level of user satisfaction of bus journey time reliability for all other routes except those affected.
	Absolute and % changes in car journey times	Vehicle journey time/speed data by 15 minute periods for period of 3 months from September – November along the following sections of corridors where junction signals have been treated: • Mansfield Road • Hucknall Road • Derby Road	Data stored on USB: Nott-AVLSP-Car Journey Times	Vehicle journey time/speed data by 15 minute periods from September – November along the following sections of corridors where junction signals have been treated: • Mansfield Road • Hucknall Road • Derby Road	Congestion stats team at DfT – Jay Symonds is main contact	September to November 2016 provided all junctions have been treated.	Traffic flow data obtained for treated junctions to enable qualitative assessment of trends in traffic volumes and likely impact on journey times.

Table 3.4 Smartcard Retail Network Evaluation Information

Scheme	Indicator	Pre-Implementation data obtained to date	Where data is stored	Post-implementation data to be collected	Data Source	When data should be collected	Counterfactual basis
Smartcard retail network	n/a	Output data in terms of retail outlets installed and used to date	Data stored on USB: Nott-AVLSP-Smartcard Retail Network	Output data in terms of retail outlets installed and used	Nottingham City Council – Jay Clifford	In 2019 as part of the post implementation evaluation.	n/a
		Qualitative operator perceptions of the value of the smartcard retail network		Qualitative operator perceptions of the value of the smartcard retail network	Operators – undertaken during process evaluation interviews	In 2016 and 2019 as part of process evaluation interviews.	n/a
		User satisfaction surveys related to the access to integrated ticketing across Nottingham		User satisfaction surveys related to access to integrated ticketing across Nottingham	Nottingham City Council surveys	Each year from 2015 to 2019, data to be collected and stored by Nottingham City Council.	Assume that pre-intervention results would apply if smartcard retail network had not been developed

Table 3.5 CCTV Feed to Operator Control Centres

Scheme	Indicator	Pre-Implementation data obtained to date	Where data is stored	Post-implementation data to be collected	Data Source	When data should be collected	Counterfactual basis
CCTV feed to operator control centre	Qualitative perceptions of scheme impacts	Operator perceptions of the scheme impacts	Data stored on USB: Nott-AVLSP-CCTV Feed	Operator perceptions of the scheme impacts as part of process evaluation	Process evaluation interviews	2016 and 2019 as part of the process evaluation interviews	Operator perceptions of incident management performance without CCTV feed

Sheffield

3.41 The schemes identified by DfT for impact evaluation in Sheffield are:

  ❑ Sheffield City Centre improvements

  ❑ On-bus audio-visual equipment

3.42 The approximate delivery dates for these schemes are as follows:

Scheme	Approximate implementation date	Approximate Costs
City centre improvements	Autumn 2015 – Spring 2017	£465,595
On-bus audio visual equipment	Summer 2016	£320,000

<u>Sheffield city centre improvements</u>

3.43 The key indicator for determining the effects of the city centre improvements is bus journey times. SYPTE has provided a large quantity of pre-implementation data for bus journey times between specific locations across the city centre. This data was collected for a 6-week period from the 15th September 2014 until the 24th October 2014 and this should be replicated in 2018.

3.44 A comparison of bus journey times and speeds pre and post implementation can be used to demonstrate any changes in bus journey times. There is no comparison data that can be acquired for this scheme as all junctions within Sheffield city centre are being treated. Without comparison data, whoever carries out the post-implementation evaluation will need to assess the validity of the before and after comparison. As with the Liverpool City Region and Nottingham, it is possible to collect traffic flow data to inform any interpretation of the effects of changes in traffic flows on likely journey times. This data has not been collected as part of this study. Information obtained through the process evaluation interviews would also help to support this assessment.

3.45 In addition to bus journey times, car journey times should also be monitored in order to see whether they are affected by giving buses greater levels of priority at junctions. As a result, car journey time data has been obtained from SYPTE. Originating from DfT, Trafficmaster data has been obtained from SYPTE for the period 15th September – 24th October 2014. It is recommended that the same dataset be collected in 2018 to enable a comparison of before and after car journey times.

3.46 As with bus journey times, a counterfactual for this indicator is not feasible as there is no comparable area to Sheffield City Centre. There are so many external factors that could influence car journey times across other urban centres that using another urban centre as a comparator is unrealistic. Again, whoever carries out the post-implementation evaluation will need to assess the validity of the before and after comparison once they have the data available to them. If traffic flow data is obtained (as discussed above), then this can be used to support an interpretation of findings, however this is likely to be a qualitative assessment.

3.47 With bus journey time and car journey time data, it will be necessary to aggregate impacts across all users in each group and to identify the net impacts of the intervention across both user groups. While this will require assumptions to be made, it should demonstrate whether the intervention has led to a net benefit, dis-benefit or neutral outcome.

<u>On-bus audio-visual equipment</u>

3.48 Service 120 will see audio-visual equipment installed on all buses operated by First and Stagecoach. Therefore, examining the effects of the equipment on bus patronage pre and post implementation, while making comparison to other services, will demonstrate whether there are any impacts on bus patronage. The counterfactual, in this case, will be estimated based on bus patronage growth on all other bus routes in Sheffield, excluding service 120, disaggregated by month. This data will be provided by Stagecoach and First Group.

3.49 A second counter-factual that the research team will need to consider are the long term patronage trends on service 120 to understand whether the technology is being implemented on a service that has stable, declining or decreasing patronage. This analysis will help assess how the intervention interrupts the time series trend and will help inform the assessment to determine whether there has been an impact on bus patronage as a result of AV technology being installed.

3.50 One specific issue that the research team should be aware of is the need to establish whether there are any other changes to vehicles on service 120. In other areas, AV technology can be implemented at a time when new vehicles are purchased, therefore the ability to attribute any changes in patronage solely to the AV technology could be compromised.

3.51 While there are some complications with the development of the counterfactual i.e. the BBA is Sheffield-wide and many bus services are likely to be impacted by a variety of the schemes, it would be assumed that service 120 would be impacted in the same way as others, therefore the introduction of the AV equipment is in addition to any other impacts. The research team will need to be mindful of this when carrying out the post-implementation evaluation.

3.52 It is possible that SYPTE may look to develop their evaluation of AV technology on service 120. At the time of writing, it became apparent that preliminary work had been carried out to consult with specific groups of people who may benefit e.g. a local 'Guide Dogs for the Blind' group. This further work may provide a qualitative addition to the quantitative analysis. Again, whoever carries out the post-implementation evaluation should be aware of this and adopt any relevant information where it feels it may benefit or supplement this evaluation.

3.53 Finally, user satisfaction surveys will be carried out by SYPTE to understand passenger perceptions of the quality of bus service 120. A comparison of pre and post implementation user perceptions should be carried out. In this case, comparison data cannot be obtained because user satisfaction surveys are not being carried out across Sheffield in the same way as they are on service 120. It will be assumed for the counterfactual that user perceptions would have continued to be the same as those found from the pre-implementation survey, but the possible effect of other service improvements should be considered.

Table 3.6 Sheffield City Centre Improvements

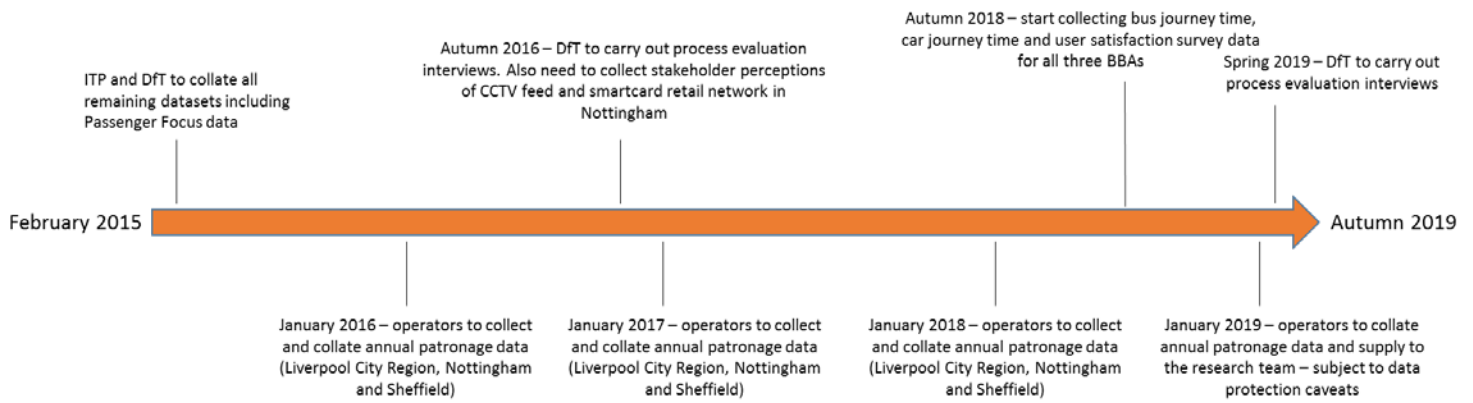| Scheme	Indicator	Pre-Implementation data obtained to date	Where data is stored	Post-implementation data to be collected	Data Source	When data should be collected	Counterfactual basis
Sheffield City Centre improvements	Absolute and % change in average bus journey times through the city centre	Bus journey times and average speeds for bus routes as they travel through the city centre. Data from mid-September to 24th October 2014, disaggregated by AM peak, Inter Peak, and PM Peak	Data stored on USB: Sheff-SCCI – Bus Journey Times	Bus journey time data for routes affected by interventions, disaggregated by section of route within city centre. Dataset for a period of one month disaggregated by AM peak, Inter Peak, and PM Peak	SYPTE obtained data from their real time information system	For the same 6 week period in September/October 2017	n/a all routes in the city centre will be affected, so it is not possible to identify control/ comparison data
	Absolute and % change in bus journey time difference from timetabled journey times	As above, with reference to timetabled journey times	As above	As above	As above	As above	As above
	Absolute and % changes in car journey times	Car journey times between locations within the city centre, disaggregated by peak period, from data collected by Trafficmaster ANPR cameras. Data is for 15 September to 24 October 2014.	Data stored on ESB: Sheff-SCCI-Car Journey Times	Car journey times between locations within the city centre, disaggregated by peak period, from data collected through Trafficmaster ANPR cameras.	SYPTE to obtain data from DfT	For the same 6 week period in September/October 2017	As above

Table 3.7 Audio-Visual Equipment on Service 120

Scheme	Indicator	Pre-Implementation data obtained to date	Where data is stored	Post-implementation data to be collected	Data Source	When data should be collected	Counterfactual basis
On bus audio-visual equipment	Absolute and % change in bus patronage on service 120	Bus patronage on service 120 from October 2012, disaggregated by commercial and ENCTS passengers	USB stick: Sheff-AVE – Bus Patronage	Monthly bus patronage on service 120 from January 2015 to 2019 disaggregated by commercial and ENCTS passengers	Stagecoach South Yorkshire and First Yorkshire	Data should be collated by operators monthly, but supplied when requested in 2019	Bus patronage on all other bus routes in Sheffield
	Absolute and % change in types of passengers using service 120	As above	As above	As above	As above	As above	As above
	% change in users satisfied or very satisfied with different aspects of service 120	2011/2012 survey to assess user.	USB stick: Sheff-AVE-User Satisfaction	User satisfaction surveys to be carried out by SYPTE asking the same questions relating to the quality of the bus and overall satisfaction of the service	SYPTE	Within 12 months after the implementation of AV technology on service 120 – around 2016-17	2011/2012 results on user satisfaction of the quality of the bus and the quality of the overall service on service 120

4   SUMMARY AND TIMESCALES

4.1   This report has summarised what data has been collected and what data needs to be collected in the future in order to carry out a comprehensive ex-post impact evaluation of several of the BBA funded schemes being delivered in Nottingham, Sheffield and the Liverpool City Region. The primary aim of this report is to enable whoever carries out the post implementation data collection and evaluation to have access to all the knowledge gained from the pre-implementation data collection and evaluation planning phase.

4.2   Finally, Figure 4.1 presents the approximate timescales for collection of additional data. The aim of this is to be a simple reference point for DfT to aid the planning of the remainder of the BBA programme evaluation.

Figure 4.1 Timeline for the remainder of the BBA evaluation

ITP and DfT to collate all remaining datasets including Passenger Focus data

Autumn 2016 – DfT to carry out process evaluation interviews. Also need to collect stakeholder perceptions of CCTV feed and smartcard retail network in Nottingham

Autumn 2018 – start collecting bus journey time, car journey time and user satisfaction survey data for all three BBAs

Spring 2019 – DfT to carry out process evaluation interviews

February 2015 ───► Autumn 2019

January 2016 – operators to collect and collate annual patronage data (Liverpool City Region, Nottingham and Sheffield)

January 2017 – operators to collect and collate annual patronage data (Liverpool City Region, Nottingham and Sheffield)

January 2018 – operators to collect and collate annual patronage data (Liverpool City Region, Nottingham and Sheffield)

January 2019 – operators to collate annual patronage data and supply to the research team – subject to data protection caveats

APPENDIX A – PROCESS EVALUATION INTERVIEW TOPIC GUIDE – 2016

Themes	Questions
Recap of previous findings	Interviewer to talk briefly through the previous operator interview notes and BBA case study.
BBA scheme delivery	Please provide an update on the delivery of BBA schemes.
	Are you aware of what schemes are being implemented?
	Are you aware of the progress of scheme delivery?
	Are you aware of the timetables for scheme implementation?
	Have the schemes or timetables of implementation changed from what was agreed at the start of the BBA process? How? Why?
	How was the change handled by the BBA Authority?
	What input do you have in relation to the delivery of schemes?
	Have you seen any impacts from any of the BBA schemes to date?
	Have you had to make any changes (to services or working practices) specifically as a result of reducing BSOG? If so, what changes have you made and why?
Progress of BBA partnership arrangements	Please give an update on the current level of partnership arrangements?
	Have there been any changes since 2014 in terms of how BBA is delivered?
	What level of contact is there between BBA partners?
	How often does the BBA partnership meet? Is this too frequent, too infrequent or about right? Why?
	How are decisions made within the partnership?
	Do you feel your interests are met through the partnership? If not, why not?
	As a partner do you feel your word is listened to, can you hold other partners to account?
	Are there any elements of the partnership arrangements that have been better or worse that you expected? Why?
	Are there any unforeseen issues that have arisen through BBA? How were they dealt with?

	Has this BBA affected your working relationships with other partners? How?
	Are there any benefits from the partnerships that have been developed through BBA? What? Why?
	Overall, what have you learned from being part of the BBA programme?
	Do you anticipate the things you have learned from BBA to impact on how you do things in future? If yes, how?
Problem resolution and adaptability	Have there been any disputes in the delivery of the BBA programme? What? How were they dealt with? What was the role of the operators and authority within the dispute?
	What arrangements are there in place to deal with resolving disputes? How have those arrangements performed?
	Are there any monitoring or feedback structures in place so that lessons can be learned, or opportunities be taken advantage of?
	How are lessons being learned?
The future	How do you see the partnership arrangements lasting over the remainder of the BBA programme? Why?
	Is there anything that you think could be done in future to ensure partnership arrangements are maintained or improved?
	Is there anything that you foresee that could jeopardise the BBA partnership arrangements over the remaining years?
BBA specific issues to raise	<u>LCR</u> Do partners still adhere to the mantra of doing 'the right thing'? Have there been any further benefits from including St Helens, Knowsley and Halton Councils? <u>Nottingham</u> Have there been any newly adopted BBA governance arrangements? Have there been any amendments to BBA schemes compared to the bid? What are the operator's perceptions of CCTV feed and smartcard retail network? What are the Council officers' perceptions of the smartcard retail network?

<u>Sheffield</u>

Have BBA schemes developed over time? What new schemes have been adopted? If yes, what have been the operator's roles in developing new schemes?

Are BBA funded schemes being delivered as operators expect?

Do BBA funded schemes still face competition from other projects in order to get delivered?

<u>West of England</u>

Has scheme delivery improved? If yes, how? Why?

Are the authorities any more accountable for scheme delivery now?

How have partnership relations developed?

<u>York</u>

Have the heads of terms stood the test of time?

Are decisions still made 'round a table' or has the voting structure been applied? How? When? What were the outcomes?

Has the BBA scheme been affected by any political changes?

APPENDIX B ON-GOING TASKS FOR DFT

Table B1 presents the key tasks that DfT should carry out, or at least be aware of, over the course of the BBA period.

Table B1 On-going tasks for DfT

BBA	Scheme	Task for DfT	Date
All BBAs	Process evaluation interviews	Arrange for process evaluation interviews to be carried out	October / November 2016
Liverpool City Region	Post-implementation data will be collected by Merseytravel and/or bus operators, therefore this data can be collated by DfT in 2019 or they will be collected naturally as part of the annual monitoring reports produced by the BBAs. It is important that DfT ensure that bus journey time data is collected October 2017 as journey time data is only available for a relatively short period of time.		
Nottingham	AVL signal priority	Collect bus journey time data from Nottingham City Transport – contact Lee McPhilbin / David Astill. Precise data required is presented within impact evaluation report.	October/November 2016
	AVL signal priority	Collect vehicle flow data from AVL treated junctions. Contact James Howe. Junctions are presented within impact evaluation report.	October/November 2016
	AVL signal priority	Provide on-going support for the City Council to develop user satisfaction surveys.	On-going
Sheffield	Post-implementation data will be collected by SYPTE and/or bus operators, therefore this data can be collated by DfT in 2019 or they will be collected naturally as part of the annual monitoring reports produced by the BBAs. It is important that DfT ensure that bus journey time data is collected September/ October 2017 as journey time data is only available for a relatively short period of time.		