

Bus Partnership Forum

working together for better bus travel

Performance Monitoring Task and Finish Group

1 Executive Summary

- 1.1 The Task and Finish Group was asked to study the performance of bus services and to make recommendations of measures of improvement through the joint endeavours of the partners represented in the Forum.
- 1.2 The Group reports on research into bus service punctuality, where data shows that the existing standards applied by the Traffic Commissioners present a target that is above what is currently being achieved by operators. Approximately 74% of buses run between 1 minute early and 5 minutes late at service timing points. Buses were generally more punctual at the beginning of a route before traffic problems on the route worsened their performance.
- 1.3 Operators have the responsibility to establish sensible and realistic timetables and to ensure that adequate resources are available to deliver the services that they have registered. The constant pressure of increasing traffic presents a challenge that can only be tackled by co-operative working between operators and local authorities.
- 1.4 The Group proposes partnerships between operators and local authorities to improve bus service performance. A participative approach to the identification of the causes of problems that affect passengers and solutions to such problems will be greatly assisted by an open and constructive dialogue between the partners. Service monitoring information will be an essential feature of the joint Punctuality Improvement Partnerships that are proposed.
- 1.5 The Group has benefited from the involvement of the Senior Traffic Commissioner who, with his colleagues, is revising the approach to standards and targets to reflect the recommendations of the Task and Finish Group. The Traffic Commissioners believe that the Punctuality Improvement Partnership proposal presents the possibility of a constructive new approach. The Group supports a proposal to apply different targets at the beginning of routes and specific standards at intermediate points; the Group supports also the adoption of the measure of Excess Waiting Time, modelled on the system used by Transport for London, for high frequency services.
- 1.6 Through the adoption of stretching but realistic targets, a new approach to the identification and analysis of problems with the adoption of Punctuality Improvement Partnerships and the revision of current standards for local bus services by the Traffic Commissioners, the Task and Finish believes that it has been able to deliver a significant contribution to the aims of the Bus Partnership Forum to improve the quality and attractiveness of bus services. The Group proposes to review the outcomes of its recommendations in Autumn 2005; in all other regards the Task and Finish Group proposes that its work is completed with this report.

2 Background

- 2.1 This Task and Finish Group (TFG) was asked by the Bus Partnership Forum to study the issue of performance of bus services and to make recommendations for improvement through the joint endeavours of the partners represented in the Forum.
- 2.2 The initial work of the group confirmed the many, complex factors that affect the performance of bus services. In order to be able to make reasonable progress, the TFG restricted its work to a number of key areas where joint work by the partners in the Forum will bring clear benefits for passengers.
- 2.3 The Group does not believe that this report marks the end of future, co-operative joint work on improving the performance of bus services. The Group has concentrated on bus service punctuality (by which it means the adherence to timetables) as an area where all members of the group wish to see a process of continuous improvement and where action taken in partnership will have the greatest impact. The Group has tried to complement the existing target on reliability (adopted in 2002) by filling a gap in performance management. Measures to improve punctuality will also improve reliability, although effective management of the operation of bus services will have the greatest impact.
- 2.4 The Group did not look specifically at the predictability of operation (meaning the extent to which it is possible to have a reliable and consistent estimate of the time taken to complete a whole trip, of which the journey on the bus is only a part). Reliability and predictability are important issues; the fact that they are not covered in detail in this report is a measure of the complexity of the issues involved in the TFG's current work, rather than any belief that these two issues do not merit continuing attention by those whose work impacts on them.
- 2.5 Similarly, the TFG did not look at the many wider issues that form part of a passenger's experience of travelling by bus – the relative speed of buses and other traffic, particularly in major urban areas, for example and issues such as the location and condition of bus stops, the condition and appearance of buses and the availability of information. All the organisations that were represented in the TFG share a wish for a process of continuous improvement in all these elements. All will, no doubt, form part of the future work of the Forum.

3 Research undertaken

- 3.1 The TFG was able to take advantage of two principal pieces of research, for which the assistance of the DfT is gratefully acknowledged.
- 3.2 The Operational Research Unit of the DfT looked at data provided by a number of bus operators. In principle, the arrangement was that operators were asked to release details of their internal monitoring data against an undertaking that the data would not lead to action by the Traffic Commissioners if, on the basis of the analysis of that data, it could be shown that operators were not matching the existing standards set by the Commissioners. The Traffic Commissioners proposed a number of Traffic Areas for inclusion in the research and operators within these regions were invited to participate in the work of the Group.
- 3.3 The data provided by operators varied in its scope and structure as each operator has developed its own approach to the management of its services in line with its resources and its operating practices. This varies from occasional, random checks undertaken either by the operator or by an external agency (such as "mystery travellers") through to full GPS recording of performance. It was therefore comparatively difficult to create a report that is based on data that is strictly

comparable between operators. Nevertheless, the research demonstrated the variability of what is being achieved at present by a small selection of operators in three different traffic areas.

- 3.4 The DfT also undertook a project across England (outside London) using VOSA's Bus Compliance Officers to record all the local buses seen passing a set of 175 points for periods of up to three hours each during March 2004. Here the data had a greater level of coherence, although this pilot exercise itself also drew attention to the difficulty of ensuring that data is collected on a comparable basis by different people working in different locations. The observations made by the bus monitors were compared to the registered timetable and other information so as to give an analysis of punctuality. The Traffic Commissioners' standard measure of punctuality (95% of buses to depart within a window of no more than 1 minute early and no more than 5 minutes late) was used to assess the punctuality of services that operated at a frequency wider than every 10 minutes. For frequent services, either those registered as such or those found to run with an average interval of ten minutes or less, punctuality was assessed by assuming that the gap between buses should, for a perfectly delivered service, be evenly spaced; the extra waiting time (considered later in this report in terms of Excess Waiting Time) was calculated for such routes. The DfT proposes to repeat this survey in March 2005, with some refinements taking account of lessons learned from the pilot.
- 3.5 The results of both these exercises form the basis of the Group's report to the Forum.
- 3.6 The Group is grateful for the willing participation of operators, the support of the Traffic Commissioners, help from the DfT and in particular, the work of VOSA and the Operational Research Unit in the work undertaken in the above exercises. The Group was chaired by a CPT representative, who thanks all the members of the Group for their commitment to the development of a joint approach to the issues discussed and for their active and constructive involvement in the process.

4 What the analysis of operator data shows

- 4.1 Bus service punctuality varies between the operators whose work has been the subject of the ORU analysis. In some cases the data from operators comes from such a small number of samples that it cannot form the basis of a robust determination of what is being achieved in practice. Nevertheless, the general picture is that the existing Traffic Commissioner standard presents a target that is above what is currently being achieved by operators in practice.
- 4.2 Some operators included in the survey are close to meeting the Traffic Commissioners' standard; others less so. Punctuality varies by the day of the week and the time of day; as might be expected, the least punctual time of the day appears to be peak hours.
- 4.3 The DfT pilot survey of bus punctuality show a very similar picture, with around 66% compliance with the Traffic Commissioners' punctuality standard, though 74% at timing points which is where measurement takes place for enforcement. The former figure was based on times estimated by interpolation between registered timing points. Buses were generally more punctual at the beginnings of routes before encountering traffic problems.

5 Other information considered by the TFG

- 5.1 The TFG has had the benefit of a wide range of other information provided by operators and local authorities, particularly the PTEs. Operators who are well advanced in the development of new ways of measuring bus punctuality gave details to the TFG of their initial experience of the benefits of GPS and other new technology. The work of several consultants, commissioned both by operators and local

authorities, in seeking to identify the causes of problems for the punctuality of bus services has helped to inform the work of the TFG in coming to its recommendations.

- 5.2 By way of background to this report, the Forum will be aware of the agreement between CPT and DfT regarding the importance of bus service reliability in the delivery of an attractive service. Operators remain committed to a target for the delivery of 99.5% of scheduled mileage except where services are affected by disruptions beyond their control. The recommendations contained in this report are in addition to that target.

6 How the TFG interprets this data

- 6.1 The analysis that has been undertaken in 2004 represents a major contribution to a better understanding of bus service punctuality across England (outside London). Punctuality and reliability are vital components of a quality bus service. The industry (in its widest sense) needs to develop strategies that improve punctuality and reliability without the risk (in the words of "The Future of Transport" White Paper) that these may "unintentionally work against the interests of passengers".
- 6.2 All the members of the TFG agree that operators have a responsibility to establish realistic running times and to keep those running times under review. Operators need to ensure that adequate resources are made available to deliver their service registrations. All responsible operators will wish to secure continuing improvements in punctuality and reliability. The constant pressure of increased car usage presents operators with a moving target. In some cases adherence to timetables can only be achieved by lengthening running times, adding additional resources or reducing frequencies. The work of the TAS consultancy has shown that a 1 mph reduction in scheduled bus speeds adds 9% to bus operating costs. Bus priority measures must therefore keep pace with worsening general traffic conditions.
- 6.3 Faced with the evidence it has gathered, the TFG has reviewed what recommendations it can make to the Bus Partnership Forum. These are summarised in the remainder of this report. In particular, the Group proposes the development of joint Punctuality Improvement Partnerships that should encourage a participative joint approach to the identification of the causes of the problems that affect bus passengers and solutions to such problems.

7 Sharing data

- 7.1 There has been unwillingness among some operators to share with local authorities the data that they hold about the performance of their services. In some cases this comes from a fear that sharing data will lead to punitive action by the Traffic Commissioner, whose powers are extensive. The TFG believes that this is not a constructive relationship and recommends a new approach from operators and authorities.
- 7.2 In principle, the TFG believes that much greater progress can be made in improving bus service punctuality if operators and authorities work together to find solutions for local problems. Operators and authorities should have agreements for the exchange of information and such agreements should include mechanisms for the joint review of data and the development of appropriate remedial measures. Authorities should treat the data provided by operators as commercially confidential and should not pass this information on without the operator's consent. Arrangements for the publication of data would form part of the Punctuality Improvement Partnership agreement. In cases where operators and local authorities enter into partnership to collect data relating to the performance of bus services, for instance using jointly funded real-time information systems, they should consider carefully the rights to the information delivered by such

partnerships. The TFG's members are keen to recommend a new start through the Punctuality Improvement Partnership proposal recommended here.

8 Using data

- 8.1 Sharing data is not an end in itself. The key objective is to improve the quality of services for passengers and prospective passengers. All those involved in the bus industry in its widest sense are keen to see an increase in the number of people travelling by bus. Better data should provide more evidence on which to build robust plans to improve the efficiency, effectiveness and attractiveness of services.
- 8.2 Operators must recognise that authorities need to have good data on which to build their plans for better priorities for buses and their passengers. Given the significant public resources and the political capital invested in creating effective bus priorities – and the additional costs of ensuring compliance by other road users – authorities need to be able to identify a problem, to develop a solution, to secure the implementation of that solution and to monitor its effectiveness. Although authorities can to an extent do this on their own, the TFG believes that quicker and more effective progress requires a co-operative approach.
- 8.3 The partners in performance monitoring need to establish at an early stage what the key determinants are for the delivery of bus services in their area; these are likely to be a complex set of interacting elements. There may, for example, be matters that are in the operator's control (including timetable design and ticketing systems), or in the control of the highway authority (highway junction delays, bus stop layout, priority measures designed to improve consistency rather than simply increasing journey speeds, etc) or in the control of other local agencies or the police: the list will vary from place to place.
- 8.4 Those whose actions have an adverse effect on service performance need to review jointly what can be done to improve matters and need also to set out a programme of work to bring about improvements. It has to be recognised that not everything will be possible, or desirable in the wider context of the transport needs of an area, or financially achievable either individually or collectively. In such cases, the parties will need to come to a consensus view about when and how to manage the situation from that point.
- 8.5 The TFG believes that the role of operators and authorities is to co-operate in seeking improvements for passengers. In addition, there are shared benefits from promoting a process of continuous improvement.

9 The role of operators in monitoring services

- 9.1 Every operator should undertake a regular process of monitoring of its service performance. Where this can be done using new technology, much greater levels of detail and accuracy will be available. The TFG believes that operators and authorities should review how they could jointly develop strategies to take advantage of new technology given the benefits that will also accrue from greater levels of information about services and options for adding improved passenger information. However, whether the work is undertaken electronically or manually, operators are strongly recommended to carry out regular monitoring and to keep their monitoring processes under review.

10 The role of the DfT in monitoring services

- 10.1 Having piloted a national survey of punctuality, and adapted the methodology, the DfT intends to conduct an annual survey from 2005. This will permit the Department to track the overall progress which it hopes will come from:

- the Traffic Management Act
- the inclusion of punctuality targets in Local Transport Plans, and
- the recommendations set out in this report, notably the new approach to enforcement and the Punctuality Improvement Partnerships.

11 The role of local authorities in monitoring services

- 11.1 The TFG notes that a number of local authorities, notably in the PTE areas, undertake their own monitoring of both commercial and subsidised services. The TFG recommends that these be revised to develop a methodology that is comparable with that being developed by the DfT through the Forum, is understood and agreed with operators and that monitoring data should form part of the joint analysis of service performance recommended in this report. The TFG recommends that authorities and operators seek agreement how best to use, analyse and report the data. The joint objective of promoting the greater use of buses is not served by using data about performance in a way that reinforces the prejudices of non-users. The TFG believes that the monitoring process should be designed with service quality improvements as the key aim.
- 11.2 The TFG believes that the co-operative use of bus service monitoring data is an essential element of improving services for passengers. Operators will welcome the better understanding of the role of authorities in monitoring services that will come from closer working and will, in particular, welcome an approach that is based on the joint use of agreed information.

12 The role of the Traffic Commissioners

- 12.1 Traffic Commissioners have a formal, statutory role to regulate the conduct of operators and, in relation to bus service registrations, to judge whether a failure to operate in accordance with the registered timetable is reasonable or not. The analysis produced as a result of the work of the TFG has helped the Traffic Commissioners to shape a proposed new approach to bus punctuality enforcement.
- 12.2 The TFG supports this approach, which was developed by the Traffic Commissioners and the DfT. It is clear that if enforcement is based on too aspirational a target, there is a risk of operators routinely lengthening timetables to meet the target, which deters modal shift and leads to early-running and standing still (to the annoyance of passengers) when traffic conditions are good.
- 12.3 On the other hand the two studies reviewed in this report together with other evidence provided to the TFG showed plenty of room for improvement: proposed changes should not cause complacency by appearing to dilute the target. The new approach to enforcement, explained below, fits well with local authorities' duties under the Traffic Management Act.
- 12.4 The existing standard (95% of services to operate within a 'window' of no more than one minute early and no more than five minutes late) will be applied to the start of a route. Operators will be expected to focus attention - which some have already done - on getting buses out on time. This is a stretching but realistic 'back to basics' target, and *largely* within the control of operators.
- 12.5 At other timing points there will be a standard of 70% within the six minutes window. The aim is to raise performance that is currently below the average, and in these cases Traffic Commissioners have told the TFG that they would expect to impose penalties in the upper range for failure within an operator's control. The TFG has been assured by operators that they are committed to operating processes and procedures that seek to eliminate early running;

- 12.6 For performance in the range 70%-90% within the 'window', graduated penalties are proposed; operators would normally be given credit for implementing a Punctuality Improvement Partnership plan drawn up jointly with the local authority and including targets for the delivery of performance improvement.
- 12.7 For those services registered as frequent services, the Traffic Commissioners propose to adopt the London concept of Excess Waiting Time for performance measurement. This well-researched approach looks at the difference between the average time passengers have to wait between buses and the scheduled service interval. If a bus is scheduled to run every 10 minutes, passengers arriving randomly might expect to wait, on average, 5 minutes; an average wait of 7 minutes means 2 minutes of Excess Waiting Time. The standard to be applied is that buses scheduled to run frequently are expected to operate regularly ensuring that excess waiting time does not exceed one-and-a-quarter minutes. Excess Waiting Time calculations are included at Appendix B.
- 12.8 . The TFG has discussed the Commissioners' proposals in detail and endorses their role as part of a balanced set of processes to achieve reliable bus services for the benefit of the public. The Traffic Commissioners have a legitimate interest in productive joint working between operators and authorities, as outlined in this report, and should be kept abreast of the work of the new partnerships.
- 12.9 The objective will be to secure continuous improvement through co-operative work between operators and authorities. Although the Traffic Commissioners must still judge only operators, the TFG believes that their full and constructive engagement with the relevant authorities should be an indication of good practice that the Traffic Commissioners should take into account in their consideration of any issues of failure to operate in accordance with registered particulars brought to their attention. Where the Traffic Commissioner determines to review the matter at public inquiry, the TFG believes that operators should engage with their local authorities so that the Traffic Commissioner can have the benefit of a more rounded understanding of the local situation. An operator that failed to be involved in joint working to improve service performance would have considerable difficulty in convincing the Traffic Commissioner that they were acting reasonably in the operation of their services.
- 12.10 This recommendation has been considered by the Traffic Commissioners, who support it.
- 12.11 The TFG believes that it will be possible, over time, gradually to raise the target and review the standard applied at intermediate points along a route as the Government's policies to encourage measures to promote bus service quality start to have effect. The TFG recommends that operators and authorities also develop local, higher standards and that they seek to raise their standards as their own co-operative work develops.
- 12.12 In the same way that authorities would support operators who are engaged in constructive work with them, authorities would draw the Traffic Commissioners' attention to operators that failed to do so.
- 12.13 The TFG believes that the new approach being proposed to the Traffic Commissioners will help to encourage a more passenger-based focus and an increasingly co-operative approach by operators and local authorities. Quite rightly, the Traffic Commissioners have to have a coherent, national approach to the basic principles of compliance with bus service registration particulars. At a local level, operators and authorities will seek to agree targets and standards that take account of local conditions. The TFG encourages the adoption of challenging and realistic standards: the key aim must be to improve the delivery of and adherence to timetables.

13 Traffic Management Act

- 13.1 The new Traffic Management Act, in particular its network management duty, fits well with the recommendation for Punctuality Improvement Partnerships. Indeed the network management guidance says:

“Local Transport Authorities need to consider how best to involve PTEs and bus operators to ensure the most efficient use of the network, both for the bus services and for other road users. Examples would be to ensure that they had advance warning of works that could affect bus services and consulting them on future activity in order to minimise disruption; and to assist PTEs with implementing bus priority measures set out in the Local Transport Plan.

Where necessary, LTAs should work with the relevant parties, including Traffic Commissioners and bus operators, in formulating and implementing improvement plans for bus punctuality.”

14 Links between PTEs and Highway Authorities

- 14.1 The TFG recognises the wish of PTEs to work closely with their constituent Highway Authorities and, where appropriate with the Highways Agency, to promote the role of bus services and, in particular to secure appropriate priorities for bus services. PTEs will continue in this role and are committed to working tri-laterally with operators in seeking to deliver a more ‘bus friendly’ traffic and pedestrian environment to assist bus passengers and grow the market for bus travel. PTEs will also continue to work with operators to produce accurate and accessible information about services and to monitor overall service delivery.
- 14.2 The TFG recognises that PTEs will continue to collect information both in conjunction with operators and independently to monitor the performance of bus services in order to examine the reasons for poor performance and help to identify the issues that need to be addressed and the organisations that need to take actions. The reasons for poor bus performance can be wide-ranging and complex. Where appropriate, PTEs will promote joint area and corridor-based studies to understand more fully the reasons for poor performance and to produce jointly agreed action plans to improve performance. The TFG believes that co-operative and constructive dialogue between all the parties will be an essential element of the new approach to the development of measures to improve bus services punctuality
- 14.3 The TFG noted the reference to highway powers in PTE areas within ‘The Future of Transport’ (section 5.23): it is clear that the current arrangements will continue to operate for the foreseeable future. The TFG welcomes a commitment by PTEs that reaffirms their aim of working in partnership with their District Highway authorities and bus operators to solve the problems that bus passengers suffer.

15 Punctuality Improvement Partnerships

- 15.1 The major recommendation from the TFG is the creation of Punctuality Improvement Partnerships between bus operators and local authorities. A recommended approach to this process is included as Appendix A to this report.
- 15.2 The TFG believes that the development of Punctuality Improvement Partnerships will encourage a participative joint approach to the identification of problems and solutions. Where such arrangements have been implemented, passenger benefits rapidly become apparent. The TFG strongly urges operators and local authorities to take up the challenge of determining the programme of work that will secure improvements in the punctuality and reliability of bus services. The third element that is of importance to passengers – predictability of journey times – should form part of their analysis.

15.3 The Punctuality Improvement Partnership approach recognises that some aspects of the reliability of bus services are in the hands of operators, notably the creation of realistic timetables and schedules and the recruitment, training and retention of sufficient staff. Other aspects of bus service reliability and punctuality are in the hands of local authorities (notably highway authorities) for which the Traffic Management Act creates specific responsibilities.

15.4 The TFG urged the DfT to include in Local Transport Plan guidance a clear indication of the importance of Punctuality Improvement Partnerships in improving bus service quality, in line with the Government's objectives of putting buses at the heart of the LTP process. Subject to the support of the Bus Partnership Forum the guidance is likely to say:

"Authorities should work in partnership with bus operators to improve bus punctuality, which is affected by both management of the road network and operator action. The Bus Partnership Forum has recommended a model for partnerships to improve punctuality."

16 Next steps

16.1 At least one operator has suggested that, in co-operation with its local authority, it will pilot the concept of the Punctuality Improvement Partnership. The TFG welcomes this initiative. The TFG does not believe that the development of a pilot project should delay the widespread adoption of the Punctuality Improvement Partnership process in principle, rather that it would be a closely monitored project whose experience the TFG would use to review the proposed Punctuality Improvement Partnership. The TFG proposes that it would review the pilot project in Autumn 2005 with a view to determining any changes that might be necessary to the Punctuality Improvement Partnership recommended here.

16.2 On its inception, the TFG assessed a wide range of measures that could form part of an analysis of bus service performance against the key objective of improving the passenger's experience of a quality service. The complexity of the work on punctuality and reliability has led the TFG to concentrate solely on this area. The TFG recommends that the Steering Group of the Bus Partnership Forum consider bus service quality other than punctuality and reliability as a topic for a future Task and Finish Group project.

17 Review of Recommendations

17.1 The Task and Finish Group proposes to complete its work with the production of this report. It proposes, however, to review the outcomes of its recommendations in Autumn 2005 so as to assess any changes that may be necessary at that early stage in the light of experience.

November 2004

Bus Punctuality Improvement Partnerships

Introduction

1.1 The Performance Monitoring and Publication Task and Finish Group (TFG) presented its initial report to the Bus Partnership Forum in July 2003 and a further progress report to the February 2004 meeting of the Forum. The Group's target was, by the end of 2004, to achieve two key outcomes:

- A better picture of punctuality than we currently have, enabling the Traffic Commissioners to define a realistic, evidence-based standard against which to measure operator performance;
- Guidance to local authorities and operators on a consistent method of measuring punctuality.

1.2 As part of this work, there was to be further analysis to see whether, and to what extent, good punctuality is associated with particular traffic management measures as a way of improving – not simply monitoring – punctuality and reliability.

1.3 In June 2004, the TFG considered evidence drawn from pilot studies commissioned by the Department for Transport and CPT in order to assess the extent to which bus operators are currently meeting the Traffic Commissioners' punctuality targets. Those studies have informed a review of the Traffic Commissioners' Practice Direction on Bus Standards, leading to the issue of a new Practice Direction note to apply from January 2005.

1.4 The studies identified that bus services become less punctual the further they progress along their route. Whilst a bus operator can reasonably be expected to ensure the prompt departure of a service at the start of its route, its punctuality along the route is significantly influenced by traffic conditions – over which the highway authority, rather than the operator, has the prime influence.

1.5 The process outlined here is not intended as a prescriptive approach to the development of a local partnership, where the partners are free to develop their own approach. The emphasis is on promoting an open and constructive relationship between the partners and the development of processes to secure sound data collection and analysis, understanding the potential for improvement and the choice of actions that may be taken, including those not directly relating to traffic congestion issues where appropriate, the setting of achievable but challenging targets, agreeing a plan with a timetable for action and review and monitoring processes including the development of updated or replacement plans.

2. The Traffic Commissioners' Practice Direction on Bus Standards

2.1 Under Sections 154 and 155 of the Transport Act 2000, the Traffic Commissioners have powers to impose financial penalties on operators who have failed, to a significant extent, to achieve the required standards of operation. A Commissioner may impose a

penalty up to, but not exceeding £550 multiplied by the total number of vehicles for which the operator is licensed to use under all of the PSV Operators' Licences held by him. The Traffic Commissioners consider the formality of any penalty for failure to operate in accordance with the registered particulars of the service at a public inquiry where the circumstances of the case can be considered in detail. The Traffic Commissioners' approach to penalties is set out in a Practice Direction Note, available from Traffic Area Offices.

3. Standards and Targets

3.1 The term 'standard' is used in this report to reflect a situation that should be being achieved most of the time and which, if it fails to be met may justify some sanctions being used by those responsible for the upholding of that standard. The term 'target' is used to describe an aspiration that is not currently being met, but one that the parties agree should be deliverable with the co-operation and commitment of all relevant parties within a stated timescale. In line with the DfT, this report proposes that all parties should commit to developing 'challenging but achievable' targets.

4. The bus operator's obligations

4.1 The Transport Act 1985 requires bus operators to register the route and times of any local bus service which they propose to operate. The registration must include a timetable detailing the times at which buses are scheduled to depart from points along the route – unless the service operates at intervals of less than 10 minutes, in which case the service may be registered as a "frequent service" without specifying individual journey timings.

4.2 Once the registration has been accepted, the operator is under a statutory obligation to adhere to that timetable, and failure to do so may render the operator liable to enforcement action being imposed by the industry regulators, the Traffic Commissioners.

4.3 If a Traffic Commissioner believes that the performance of a bus operator has fallen below an acceptable standard, Bus Compliance Officers will carry out observations of the operator's services at a number of locations, and will report their findings to the Traffic Commissioner. The operator will be advised of the Compliance Officers' findings, and will be given the opportunity to present mitigating evidence if they consider there is a reasonable excuse for the poor performance. Operators may present evidence that the punctuality of their services has been adversely affected by variable and unpredictable traffic congestion – over which they have no direct influence or control. The only course of action available to a bus operator to compensate for the effects of traffic delays is to increase the scheduled journey time allowed over the route. While the application of differential running times can at least in part contribute to improved levels of punctuality, it has been recognised that the general extension of journey times can produce a slower, less attractive service that may deter modal shift, and lead to higher operating costs (or reduced frequencies) and to early running and standing still at timing points (to the annoyance of passengers) when traffic conditions are good.

4.4 Whilst the bus operator has no direct recourse on the highway authority if bus services are disrupted by traffic congestion, the actions which the operator may take to address that disruption will impact directly on the local transport authority or Passenger Transport Executive – at best by way of slower, less attractive, bus services and at worst by the reduction or withdrawal of service on routes which are subject to heavy traffic congestion.

4.5 There is an agreement between the Confederation of Passenger Transport (CPT) and the DfT regarding the importance of bus service reliability in the delivery of an attractive

service. It is unrealistic to expect 100% of the planned service to be delivered on ever day of the year. The resources it would be necessary to plan for this would be significantly increased, and would often not be used pending the arrival of an unexpected situation. CPT Members committed to a national target for the operation of 99.5% of scheduled mileage, after having made allowance for journeys not run as a result of circumstances outside the operator's control. This national commitment remains in place. Improvement Partnerships will wish to ensure that their locality is working towards the achievement of this target.

5 The Local Transport Authority's obligations

5.1 The Traffic Management Act 2004 places new obligations on local transport authorities to adopt policies that will ensure the efficient use of the road network and minimise delays to road users. As part of this obligation, each local transport authority will be required to appoint a Traffic Manager, whose remit will be to direct the authority's actions to minimise disruption to road users from congestion.

5.2 The draft Network Management Duty guidance emphasises that, where necessary, local transport authorities should work with the relevant parties, including Traffic Commissioners and bus operators, in formulating and implementing improvement plans for bus punctuality.

5.3 Local transport authorities will be required to develop strategies within their Local Transport Plan to tackle the problem of congestion and will be encouraged to adopt local targets for the reduction of traffic congestion – though such targets are only prescriptive for the larger urban authorities.

5.4 However, every local transport authority will also be required, through its Local Transport Plan, to monitor levels of public transport patronage, public satisfaction with bus services and bus performance, as well as monitoring mode share of journeys to work and school by public transport, cycling and walking.

5.5 There has been much discussion over the methodology for measuring bus performance. Initially, it was suggested that a composite measure of punctuality [*the extent to which buses run on time*] and reliability [*the extent to which scheduled services fail to operate for reasons both within and outside the operators' control*] should be used as a core indicator. From the customer's perspective, reliability can be viewed as just part of the wider problem of punctuality, and therefore a measure solely of bus punctuality is likely to be adopted as the core indicator of bus performance against which every local transport authority will be required to report.

5.6 Draft Local Transport Plan guidance to local authorities has suggested that the methodology for measuring bus punctuality will be confirmed once the results of the DfT's pilot bus punctuality study have been fully considered. The pilot has also provided the necessary information for a review of the Traffic Commissioners' punctuality standards – and this review is expected to be concluded before the end of 2004.

6 Passenger Transport Executives

6.1 Although Passenger Transport Executives (PTEs) are not bound by the requirements of the Traffic Management Act, as the promoter and co-ordinator of public transport services (under the Transport Act 1985) they play an important role in the major conurbations. They are responsible for implementing the policies set out in the Local Transport Plan and the bus strategy which forms part of it, on which the local highway authority would have been consulted.

6.2 Local highway authorities in metropolitan areas need to consider how best to involve PTEs and bus operators to ensure the most efficient use of the road network, both for the bus services and for other road users. Examples would be to ensure that they had advance warning of works that could affect bus services, and consulting them on future activity in order to minimise disruption; and to assist PTEs with implementing bus priority measures set out in the Local Transport Plan.

7 Measuring Bus Punctuality

7.1 The pilot studies have revealed a range of differing methodologies being applied to measuring bus punctuality. These include:

- Real Time Passenger Information Systems, which (as well as providing customer information) offer the facility to monitor variance from scheduled service times or service intervals
- GPS Monitoring of bus punctuality through electronic ticketing systems (e.g. Wayfarer's GPS Reporter) which record actual departure times from timing points and report on variances from scheduled departure times
- Programmed sampling techniques adopted by operators to measure performance standards – usually at bus stations – by manual recording of actual departure times
- Routine roadside monitoring of bus punctuality – typically adopted in metropolitan areas where high service frequencies allow statistically significant off-bus monitoring to be achieved
- Random spot checks undertaken at timing points to gauge adherence to timetables

7.2 There is no single method that will be appropriate in all circumstances. Decisions on the methodology used will be influenced by the availability of technology, the objectives of the monitoring, the resources available and local circumstances. It is important, however, that whichever method is used, it is capable of being sustained consistently over a period of time to monitor longer term trends – and that it can be applied consistently by different local transport authorities (or PTEs) to provide a meaningful basis for comparison.

7.3 Roadside monitoring, most typically used by Passenger Transport Executives, offers a very cost-effective method of monitoring high frequency services in urban conurbations, whereas in shire counties such high levels of sampling are likely to be prohibitively expensive except in very limited circumstances.

7.4 Routine monitoring by bus operators at terminal points may achieve their local sampling targets, but evidence from the DfT's pilot study has clearly demonstrated that the standards of punctuality achieved at terminals is not representative of the standards achieved across the wider network.

7.5 Typically, bus operators monitor the punctuality of their services as a measure of management effectiveness, or to provide an indication of service quality measured against the Traffic Commissioners' standards. Local transport authorities, by comparison, need to measure performance against their Local Transport Plan targets. Previously, local authority monitoring focussed primarily on subsidised services, where failure to achieve performance targets would result in contract penalties. To meet their new LTP obligations, future local authority monitoring must reflect the performance of all services – and this will require a more comprehensive methodology to be adopted.

7.6 Monitoring by local authorities has rarely been conducted in partnership with operators, and is often viewed with suspicion as ‘policing’ of the network for political or financial objectives. The results may or may not be shared with operators, and there is concern that in some areas local authority monitoring has been used solely to provide evidence of poor performance to the Traffic Commissioner.

8 Establishing a Bus Punctuality Improvement Partnership

8.1 Agreeing to a co-operative approach to punctuality monitoring will bring benefits to operators and local authorities alike. Local transport authorities may be able to access capital funding to invest in new technology to deliver comprehensive network monitoring at a level that may not be achievable by the operator alone – yet without the participation of operators, the local authority may not be able to achieve the required standard of monitoring to comply with its Local Transport Plan obligations.

8.2 Operators and local transport authorities are encouraged to consider a joint, co-operative approach to punctuality monitoring – not simply to comply with Local Transport Plan obligations or to reduce the risk of penalties from the Traffic Commissioner – but to demonstrate a common commitment to achieving a higher standard of service for the customer. The precise nature of a Bus Punctuality Improvement Plan will be determined by local circumstances, but to be effective, it is vital that the Partnership reflects the support and commitment both of the bus operator and of the local transport and highway authority or authorities. Local authorities should consider carefully how they should best be represented in the process and how responsibilities for actions will be allocated – for instance between the Traffic Manager and the Public Transport Co-ordinator - or between the Passenger Transport Executive and the District Council.

8.3 The Partners should also ensure that the Traffic Commissioner is advised of the work of the Partnership so that a fuller understanding is available to the Commissioner of the actions being taken to improve bus service punctuality.

9 Key elements of a Bus Punctuality Improvement Plan

9.1 An effective Improvement Partnership must, as a minimum, demonstrate the following objectives and include the following elements:

- A commitment to genuine co-operative working between the bus operator, the local transport authority and (where appropriate) the Passenger Transport Executive
- A shared objective to achieve measurable improvement in the punctuality of bus services
- An agreement between the bus operator and the local transport authority or PTE as to the method of monitoring and the sampling rate to be achieved in monitoring the punctuality of bus services
- A willingness jointly to use the findings of punctuality monitoring surveys together with any other relevant data to identify methods of improving the delivery of bus services
- Jointly agreed targets for improvement
- A common understanding of the confidentiality of any commercially sensitive information and an agreed framework within which such information may be used by any of the partners

- An agreement detailing the extent to which such information may be published or divulged to others – including the Traffic Commissioner – or to the media.

10 A Specimen Bus Punctuality Improvement Plan

10.1 The Bus Punctuality Improvement Plan will form the basis of a partnership agreement between a [A] Local Transport Authority, [B] Passenger Transport Executive (where applicable) and [C] Bus Operator representing a joint commitment to achieving continuous improvement in the punctuality and reliability of bus services for an agreed period of [X] years, extending thereafter by mutual consent.

11 Terms

11.1 Under the terms of this Bus Punctuality Improvement Partnership, the signatories to this Improvement Plan agree to adopt a co-operative approach to the monitoring and reporting of the punctuality of bus services in the area, whereby both parties agree to the following:

- the method of data collection and analysis;
- the minimum sampling rate to be achieved;
- the apportionment of costs and resources involved in the monitoring of services;
- the methodology to be adopted in setting performance targets and measuring performance against those targets;
- the actions to be taken in response to under-performance against agreed targets
- the way in which such monitoring information will be reported or otherwise made available.

12 Methodology

12.1 The methodology to be applied will be agreed between the parties, and is likely to take the form of one [or more] of the following methods:

- Reports derived from Real-Time Passenger Information Systems
- Reports derived from GPS positioning data held in electronic ticketing systems
- An agreed continuous programme of off-bus monitoring at terminals and pre-determined points elsewhere
- An agreed structured programme of spot-checks throughout the area, with clear targets of the number of observations to be carried out (say) each month to ensure statistically robust results.

13 Sampling Rate

13.1 The Plan should include a statement outlining the percentage of services to be monitored, the proportion of observations that will be recorded at departure points as well as at timing points on line of route, and a strategy for carrying out observations at points other than registered timing points. (This will normally be considered appropriate only for frequent services, where a measure of excess waiting time is required, as distinct from measuring variance from scheduled departure time).

14 Key data to be recorded

14.1 The data to be collected must, as a minimum, include the following key elements:

- Date and time of day
- Location (Terminal point / mid point / last timing point before destination)
- Observed traffic or other conditions on the road network
- Route number(s) and direction of travel
- Scheduled times of departure
- Actual times of departure
- Scheduled service intervals (for frequent services)
- Actual service intervals (for frequent services)

15 Outputs from the Analysis

15.1 The data must, as a minimum, provide the information which both the operator and the local transport authority [or PTE] are required to collect. This is likely to include:

- The percentage of bus services departing from the start of a journey within the range –1 to +5 minutes of their scheduled time;
- The percentage of bus services departing from timing points elsewhere along their route within the range –1 to +5 minutes of their scheduled time;
- The percentage of bus services departing from points anywhere on line of route within the range –1 to +5 minutes of their scheduled time (a composite of the previous two);
- A breakdown of the above information by different days of the week; school terms or holidays; and by different times of the day (peak, off-peak and evening).
- Analysis of those services falling outside the “six minute window” by time band, e.g. 2-5 mins early, 6-10 mins late etc. These time bands should be agreed to suit local needs.
- The percentage of bus services not observed as having been operated within the survey sample
- The actual percentage of services not operated (usually expressed as a % of mileage lost) over the network as a whole
- The proportion of lost mileage attributable to traffic congestion, as distinct from problems associated with the availability of drivers or vehicles

16 Setting an Improvement Target

16.1 Many bus operators will have adopted internal targets for bus punctuality – and will routinely be reporting against those targets. However, in some cases, that reporting is confined to services which are monitored at terminal points, and therefore neither the indicator nor the target is likely to be representative of the operation of the whole network.

16.2 For local transport authorities, the Local Transport Plan guidance defines an obligatory bus punctuality indicator against which it is expected that each authority will be encouraged to set an improvement target once a reliable baseline has been established. This is likely to be a single, area-wide target which may not distinguish between punctuality at the start of a route and punctuality elsewhere.

16.3 However, it is expected that the review of the Traffic Commissioners' Practice Direction will lead to differential punctuality targets being adopted for buses at the start of the route, and at points further along the route. In any event, it has been evidenced that standards of performance can vary considerably between the start and end of a route, and it would therefore be sensible to consider setting separate improvement targets, such as:

16.4 An annual improvement of x% in the percentage of buses departing from the start of a journey between –1 and +5 minutes of their scheduled time; and

16.5 An annual improvement of x% in the percentage of buses departing from timing points elsewhere on their route between –1 and +5 minutes of their scheduled time

16.6 Since, in both cases, the indicator itself is expressed as a %age of the total number of buses observed, care will be needed in the wording of the actual target. If, for example, an operator is currently achieving 80% punctuality, a 5% improvement target could be interpreted as an increase to 85% punctuality, or as an increase to 84% punctuality (i.e. 5% of 80% = 4%). For absolute clarity, it is recommended that the targets are phrased as "Increase by [x] percentage points the proportion of buses departing"

17 Achieving the Improvement Targets

17.1 The operator and local transport authority (and, where applicable, the PTE) will need to agree a strategy for achieving the improvement in performance that is indicated in their proposed targets.

17.2 In general terms, it can be argued that the operator will be best placed to initiate any actions that are necessary to increase the punctuality of buses departing from the start of a journey through re-scheduling. Elsewhere along the route the actions required might include re-scheduling (for example where repeated early running is observed), but are almost certain to include the need for the local authority to conduct a review of the traffic conditions at congestion hot-spots where delays to services repeatedly occur.

17.3 For this to be managed effectively, it will be necessary for the bus operator and the local transport authority to establish regular and effective liaison meetings specifically to examine those routes which are subject to frequent delays, to identify the locations at which the delays occur and to explore and analyse potential opportunities for reducing those delays. Such meetings need to be held within an agreed framework for action – ideally one which commits each of the partners to meeting specific response times; for example:

- Cases of congestion causing delays to bus services are identified by the bus operator, public transport co-ordinator or PTE and a consensus view reached on possible courses of action to address those delays;
- The bus operator will formally write to the local authority's Traffic Manager with suggestions for addressing the causes of delays;
- The Traffic Manager will investigate the causes of delays – and any suggestions put forward by the operator – within an agreed timescale and will provide a formal response within, (say) three months of the receipt of the operator's letter to a

Partnership meeting, defining how and when the causes of those delays can be addressed.

- The bus operator and public transport co-ordinator (or PTE) will assist the Traffic Manager in the facilitation of the corrective action, ensuring that appropriate before and after monitoring takes place.

17.4 To inform this process, the monitoring should, ideally, be conducted and recorded on a route-by route basis, to provide both parties with a broad overview of performance such as:

Route	Direction	% of buses starting their journey on time	% of buses on time at subsequent timing points	% differential due to traffic or other conditions
555 Atown – Cside	From Atown	96%	83%	13%
	From Cside	88%	81%	7%
	Both directions	92%	82%	10%

17.5 If resources permit, the information could be broken down yet further by time of day or by individual timing points, to assist the identification of the causes of delays. This will be much more readily achieved if continuous monitoring systems such as GPS or Real-Time Passenger Information Systems are in place.

17.6 Whatever the system employed, however, it is essential to be able to identify the differential in performance between the start of a journey and points further along the route, since it is in this area that the Local Authority may be able to offer assistance in addressing the causes of service delays. **It may therefore be sensible to consider a separate annual improvement target based on reducing this % differential.**

18 Frequent Services

18.1 Services that are registered as frequent (i.e. those registered as such with a headway of every ten minutes or more frequently) will be assessed by a new measure (used in London) called Excess Waiting Time.

18.2 Further advice on how to calculate Excess Waiting Time is included in Appendix B to the group's report.

19 Recognising differing priorities

19.1 The concept of a Bus Punctuality Improvement Partnership is to provide a formal structure around which to facilitate co-operative working by the bus operators and local transport authorities – and it should at all times focus on a shared priority of delivering better, more reliable, bus services to the community.

19.2 It is important, however, to recognise that each of the partners will bring differing priorities to the table – based around their respective obligations and responsibilities to their customers and stakeholders. The drivers behind those priorities may vary to some degree

through local circumstances, but in general terms a Joint Improvement Plan should recognise the following key objectives of each partner:

Bus Operators	Compliance with Traffic Commissioners' standards; Efficiency and economy of operation; Improved customer satisfaction; Increased ridership; Greater profitability.
Public Transport Co-ordinators and Passenger Transport Executives	Improved performance against punctuality targets Improved customer satisfaction Increased ridership Increased modal share Reduced subsidy
Local Transport Authority Traffic Managers	Measurable indicators of the impact of traffic congestion Modal share indicators Justification for future bus priority measures Monitoring the impact of roadworks on traffic flows

20 Publication of data

20.1 Each of the partners must acknowledge and recognise that, for the providers of bus services, the joint monitoring of service quality and sharing of performance data presents, possibly for the first time, a significant insight into the running of a commercial business which, like any other business, relies on the protection of commercially confidential business information from release to its competitors – or to those who might ultimately seek to influence the share value of that business.

20.2 A vital element of the Bus Punctuality Improvement Plan must therefore be an agreement between all of the partners on the extent to which commercially sensitive data may be used, reported or published in reports, LTP Annual Performance Reviews or the wider media.

20.3 The overriding principle should at all times be the confidentiality of data which is identifiable to individual bus operators, individual bus routes or individual employees. The Partnership must therefore agree, within its terms of reference, the precise way in which the results of joint monitoring will be presented, actioned and reported.

20.4 Specific agreement should be reached on the extent to which such data will, either routinely or on demand, be provided to the Traffic Commissioner for the relevant Traffic Area. As a matter of course, the Traffic Commissioner should, as an absolute minimum, be informed of the existence of the Partnership, and of its Terms of Reference, in order that he or she may direct other bus operators in the area to enter into similar working arrangements with the local transport authority.

21 Footnote

21.1 This specimen Improvement Plan is not intended to be an exhaustive or definitive model; it is designed to offer guidance and assistance to those who wish to enter into such an agreement.

Outline of Excess Waiting Time

1 Principles

1.1 Services that are registered as frequent (i.e. those registered as such with a headway of every ten minutes or more frequently) will be assessed by a new measure (based on that used in London) called Excess Waiting Time. This is the difference between the average waiting time actually experienced by passengers and the waiting time one would expect from the schedule. If buses on a route are expected to run every ten minutes, then statistically the average waiting time is half this gap or headway, i.e. 5 minutes. If the buses run exactly to schedule then the average waiting time experienced by passengers will be 5 minutes and there will be no excess waiting time. If buses do not run at even 10 minute intervals, there will be excess waiting time. The new target is for a maximum of one-and-a-quarter minutes of Excess Waiting Time. This means that, for a service registered as every 10 minutes the average wait experienced by passengers should be no longer than 6.25 minutes.

2 How is bus operator performance calculated?

2.1 It is necessary to make a sufficient number of observations and then calculate a **weighted average**, so as to penalise longer gap (or headways).

3 Why use a weighted average?

3.1 If, say, the middle one of three buses is 5 minute late, there will be a gap of 15 minutes between the first and second buses, but one of only 5 minutes between the second and third buses. The average gap is therefore still ten minutes, i.e. $(15+5)$ divided by 2. However, on the assumption that passengers arrive at randomly at the stop, three times as many passengers will be affected by the long gap than the short gap and this has to be reflected in the calculations. For instance, if passengers were arriving at the rate of one per minute, then there would be 15 passengers affected by the long wait and only 5 passengers benefiting from the short wait.

4 How do I calculate the weighted average?

4.1 This is best illustrated by means of an example, such as the one shown below with a ten-minute interval between buses. First, the departure times, and thus the gaps between buses over a period of time, need to be recorded: 3 hours continuous monitoring should be sufficient, though this could be reduced for very frequent services. If two buses arrive at the same time then the gap/headway for one of them will be 0 minutes. The information then needs to be entered into a spreadsheet to calculate the average waiting time (see below). Once this has been calculated, the result needs to be compared to the scheduled waiting time in order to estimate the excess waiting time.

Bus departures (a)	Headway (minutes) (b)	Average wait time for each bus (c)	Weighted average wait time ((b)*(c)) (d)
0800			
0811	11	5.5	60.5
0819	8	4	32.0
0830	11	5.5	60.5
0850	20	10	200.0
0900	10	5	50.0
0913	13	6.5	84.5
0918	5	2.5	12.5
0930	12	6	72.0
0941	11	5.5	60.5
0950	9	4.5	40.5
1000	10	5	50.0
1020	20	10	200.0
1020	0	0	0.0
1030	10	5	50.0
1038	8	4	32.0
1050	12	6	72.0
1100	10	5	50.0

4.2 The total waiting time during the period monitored, i.e. the total of column (d), is 1,127 minutes. This was for a period of 3 hours or 180 minutes. Thus the average waiting time for the period is 6.26 minutes (1,127 divided by 180). The scheduled waiting time was 5 minutes and so the excess waiting time is 1.26 minutes (6.26 minus 5). Note that the timekeeping of the bus route was generally excellent for this period, apart from a "no-show" at 0840 and the fact that two buses arrived at the same time of 1020. These two lapses were sufficient for the overall performance to be below the target during this time.

4.3 The formula for measuring the average waiting time is summarised by Transport for London (TfL) as the "sum of the headways squared divided by twice the sum of the headways". If the average wait time for a bus is expressed as half the headway, then the sum of the final column is the sum of the headways squared divided by two. After dividing this total by the sum of the headways, the same value is obtained as in the TfL formula.