Volume 2

The Specification

TfL 94050 Bus Driver Fatigue
I.) ORGANISATIONAL OVERVIEW

a. Transport for London (TfL)

1.1.1 TfL was created in 2000 as the integrated body responsible for London’s transport system. TfL is a functional body of the Greater London Authority. Its primary role is to implement the Mayor of London’s Transport Strategy and manage transport services to, from and within London.

1.1.2 TfL manages London’s buses, the Tube network, Docklands Light Railway, Overground and Trams. TfL also runs Santander Cycles, London River Services, Victoria Coach Station, the Emirates Air Line and London Transport Museum. As well as controlling a 580km network of main roads and the city’s 6,000 traffic lights, TfL also regulates London’s taxis and private hire vehicles and the Congestion Charge scheme.

1.1.3 Further background on what TfL does can be found on the TfL website here:

https://tfl.gov.uk/corporate/about-tfl/what-we-do

b. Business Unit

1.2.1 Bus Operations is part of Surface Transport and manages the safety and environmental planning, contracting and performance of the London bus network, as well as day to day operational aspects. The Bus Safety Programme sits within this directorate. Bus Operations secures bus services in London on a contract basis from private operators.

1.2.2 The main responsibilities include:

- developing the bus network
- competitively tendering bus services and ensuring contract compliance
- monitoring the bus network and targeting poor performing operators or routes
- dealing with ticketing issues
- maintaining the new iBus technology
- Our ambition in Surface Transport is to be the first class, seamless, integrated and interconnected system that efficiently and safely links and opens up all corners of London for everyone.

1.2.3 Our outcomes relevant to this project include:
• Reduced casualties: continuing the downward trend in casualties on London’s roads and public transport networks
• Quality bus network: maintaining and enhancing a reliable, accessible and high quality bus network and ensuring efficient coach service in London
• More and safer cycling: enabling more people to cycle, more safely, more often
• More and safer walking: supporting an increase in walking by creating safe, attractive and accessible streets and public spaces that people can use and enjoy
• Reliable roads: ensuring reliable operation of London’s road network while reducing congestion

c. Bus Operators

1.3.1 There are currently ten bus operators with contracts in London, and between them they employ around 25,000 bus drivers.

1.3.2 Each operator is responsible for their own staff, including driver employment, training, setting rota and shifts, pay etc – there are few pan-London arrangements.

1.3.3 The main trade unions play an active role in negotiating working conditions for drivers and have separate agreements with each operator regarding lengths of shifts. These can therefore differ between operators.
II.) INTRODUCTION

a. Background

Vision Zero for London

2.1.1 In his new Transport Strategy\(^1\), the Mayor has made clear that loss of life and serious injuries on London’s roads are neither acceptable nor inevitable. TfL has now adopted Vision Zero for London, with a target of zero deaths or serious injuries by 2041.

2.1.2 For buses we have even more ambitious interim targets:

1. 70 per cent reduction in the number of people killed or seriously injured in, or by, buses by 2022 (against 2005-09 baseline)
2. No one killed in, or by, a London bus by 2030

2.1.3 In 2016, 11 people were killed in collisions with London buses and 155 were seriously injured. Meeting the Vision Zero targets will require a huge step change in effort for all responsible including TfL planners and engineers, bus operators and drivers.

2.1.4 TfL applies a Safe System approach to delivering Vision Zero, based on the acceptance that, while we must minimise mistakes, there will always be the chance of human error. Our job therefore, is to make the whole system as safe as possible so that when a road user, for example a pedestrian or cyclist, does make a mistake, this mistake does not result in serious or fatal injury. Safe driver behaviour, particularly among professional drivers must be a key component of a safe system.

Fatigue

2.1.5 While there is no single agreed definition of fatigue, for the purposes of this study fatigue will use the Office of Rail and Road’s (ORR) definition:

> A state of perceived weariness that can result from prolonged working, heavy workload, insufficient rest and inadequate sleep\(^2\).

\(^1\) https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf

2.1.6 There is a growing concern and awareness across all of TfL’s operations of the potential role driver fatigue plays in incidents and collisions. The fatal tram crash in Croydon in November 2016 has, in part, been attributed to driver fatigue and we are working across the business to apply the findings from the investigations into this.\(^3\)

2.1.7 At present we do not know the scale or nature of the problem among bus drivers, but there is anecdotal evidence to suggest that fatigue is likely to be under-reported by drivers and under-identified in both police and bus operator investigations into collisions. TfL does not currently monitor bus driver fatigue and the bus operators have varying approaches to monitoring and promoting bus driver welfare. We recently held a workshop with bus operators to discuss their experience of fatigue among drivers, to identify knowledge gaps and to get an understanding of the range of initiatives that operators have already introduced, or are considering introducing. The notes from this workshop are attached to this document – see Attachment 1.

2.1.8 In July 2017, the London Assembly’s Transport Committee published a report: *Driven to Distraction - Making London’s Buses Safer*. They suggested that fatigue is a key concern among London bus drivers and may be due to working conditions and pressures. This report made the following recommendation:\(^4\)

*TfL should commission a comprehensive and independent investigation or piece of research into London bus drivers’ working conditions (with a focus on the causes of fatigue) in order to determine the scale of the problem. This should involve … surveying drivers as well as others who can offer different perspectives, such as controllers, mechanics and other operational staff.*

b. Objectives

2.2.1 This study will be applied research that will help us better understand driver fatigue in the context of London buses and will propose effective solutions. Specifically the study will answer the following questions:

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\(^4\) [https://www.london.gov.uk/sites/default/files/final_driven-to-distraction-17-07-17.pdf](https://www.london.gov.uk/sites/default/files/final_driven-to-distraction-17-07-17.pdf)
1. What is the extent and nature of fatigue in London bus drivers?

2. What are the key causes of fatigue? Are there patterns of working, demographics or any other factors that are correlated with fatigue in London bus drivers?

3. Based on the findings to questions 1 and 2, what solutions should we be implementing or trialling to reduce fatigue and the risk of associated incidents?

4. How effective are these solutions at reducing fatigue and by extension, fatigue related collisions or safety incidents?
III.) SCOPE

General Requirement

3.1 This research should use appropriate and robust methods to ensure that the project’s final output is a good quality study with valid findings. The final output will be a written report and up to two presentations.

3.2 The proposal should be concise and include appropriate detail on points outlined in Section 4.2. Proposals should not exceed 10 pages, including any appendices. One-page CVs for each of the proposed project team should also be included. Title and contents pages, CVs and a one-page example of writing are not included in the maximum 10 page length.

3.3 The proposal should name the author/s of the final report and include an extract from a previous piece of work (one page only) by the proposed author(s).

Research Methodology

3.4 Literature review

3.4.1 A literature review should be undertaken to highlight best practice for fatigue management drawing from research conducted in the UK and internationally. The literature review should assist with planning the qualitative and quantitative stages of this research.

3.4.2 We expect the literature review to cover the evidence base for fatigue management in the transport industry, including links between driver fatigue and collisions and other safety incidents.

3.5 Qualitative stage

3.5.1 We expect the research to begin with a qualitative, scoping stage, and we would need interim findings from this stage. This stage is likely to include interviews with drivers and other bus operator staff including those responsible for rostering, driver well-being, driver training and health and safety. The qualitative research should inform the quantitative design as well as generate valuable insights in itself.

3.5.2 We would expect this stage to investigate (this list is not exhaustive):

- The range of fatigue monitoring and management systems across operators.
- The degree to which rostering patterns varies across operators and garages.
- Drivers’ and operators’ views and experiences of fatigue causes and consequences.

3.6 Quantitative stage

3.6.1 The main body of the research will be a quantitative study. Methods might include, but are not limited to:

- Questionnaires
- On road assessments of fatigue. For example, using sleepiness scales. However, please be aware that App-based systems will not
work in this context as bus drivers are not permitted to use a mobile phone when in their cab, even when the bus is parked or out of service.

- Actimetry/Actigraphy
- Analysis of rostering patterns
- Analysis of data held by operators including: initial data from small-scale, operator led trials of in-cab fatigue monitoring systems.

3.6.2 The study must capture information on driver commute times, shift-swapping and overtime.

3.7 Avoiding bias
3.7.1 Fatigue and driver well-being are highly contentious issues, with strong union involvement. Drivers are likely to be reticent to share information unless they are absolutely confident that their data will be dealt with confidentially.

3.7.2 The supplier will need to clearly set out in their submission the measures they will take to ensure that the results of this research are unbiased and independent of TfL and the bus industry more widely.

3.8 Development of solutions
3.8.1 Proposed solutions (or trials of solutions) must be evidence-led. Solutions could include measures to be implemented by:

- TfL as contract manager
- Operators
- Bus Manufacturers
- Drivers
- Any other part of the bus industry, government or regulatory bodies

3.8.2 Proposed solutions should be evaluated for their expected effectiveness at reducing or managing fatigue among bus drivers in London.

3.8.3 No proposed solutions should be discounted but they should be prioritised by their expected level of effectiveness. Deliverability must also be considered, as should any operational issues. In particular, the supplier must take into account the competitive nature of the London Bus industry and ensure that solutions can be implemented effectively by all operators so that none is perceived to be disadvantaged.

3.8.4 The evaluation method proposed should be agreed with TfL to ensure it is fit for purpose.

3.8.5 Solutions may include recommendations for on-going data collection and analysis around fatigue risk. However, this must be in addition to practical solutions to manage fatigue risk.
IV.) DELIVERABLES / MILESTONES

General Requirements from Tenderers
4.1 Undertake this research into fatigue and deliver the specification outlined in Section 3 of this document.

4.2 Tenderers should follow the methodology set out in Section 3 of this document.

4.3 As part of the bid TfL expects tenderers to provide a project programme.

4.4 A progress report and agenda to be provided in advance of each progress meeting with Minutes provided within 5 days of each progress meeting.

4.5 Details of costs must be provided and include a task timeline and cost split by task and resource.

The Supplier’s Proposal
4.6 The research proposal should respond to this research brief. The proposal should be concise and include appropriate detail on points outlined in this section (section 4.2) and Section 3.1.

4.7 Demonstrate an understanding of the brief and the study’s objectives, including the study’s context and scope.

4.8 Describe how the study would be undertaken and the research objectives met.

i. In particular:
   • Describe what methods will be used and how data collection will be undertaken.
   • Describe what analysis will be undertaken.
   • Explain how the research questions will be addressed.
   • Provide details on how solutions will be identified.
   • Explain in detail how the relevance of solutions will be determined.
   • Describe how recommendations will be formulated, including a consideration of the activities already underway by the bus operators (see Attachment 1).

ii. Indicate what quality assurance processes will be used both for the research and report preparation.

iii. Explain how the project will be managed, indicate project milestones, and include a Gantt chart to represent duration of tasks against time. Propose a start and completion date and name the proposed project manager. Up to four meetings should be allowed for: at project inception, to report initial findings and draft report; and at final report stage.
iv. Include information on the suppliers’ experience of similar or related work and name any agency to be sub-contracted.

v. Describe relevant experience and qualifications of staff in the project team. Name the proposed author(s) of the final research report and reference the guidance that will be followed on research report writing and data presentation. Include an extract from a previous piece of work (1 page only) by the proposed author(s).

vi. Include a risk register to reflect risks to the project and their probability of occurrence and impact, along with proposed mitigation measures.

**Delivery and Outputs**

4.9 The main outputs will be a two-stage written report and up two presentations. Presentations are to be prepared and delivered after the completion of the full draft report and before the report is finalised.

4.10 The written report(s) will include:
- Interim results from the qualitative study
- Results of the quantitative research and analysis
- Proposed solutions, with evaluated effectiveness

4.11 To make the study relevant and useful, the findings should be presented in a way that is accessible and clear to policy makers and practitioners. Any charts, diagrams/figures and illustrations included in the final report should be fully comprehensible when viewed in black and white or greyscale.
V.) SERVICE LEVEL AGREEMENTS (SLAS)/KEY PERFORMANCE INDICATORS (KPIS)

5.1 This research is offered on a fixed-price basis only. If for any reason the tenderer does not meet the timescale set out in section 6 and the project overruns, this additional cost should be met by the tenderer.

Project Management
5.2 The research should be completed and research outputs delivered to specification and within an agreed budget and time frame. Suitable project governance, management processes and tools should be proposed by the supplier and will be agreed at the start of the project. These should then be applied throughout the duration of the project.

Quality Assurance and Research Quality
5.3 TfL expects high scientific research standards. To ensure that transport policy and practice in London are based on sound evidence, research quality is essential. Sound and established research methods should be applied and documented at each project stage. Appropriate quality assurance should be undertaken throughout the research process.

5.4 TfL requires any research output such as supporting documentation, data collection methods, and all datasets which form part of the analysis, to be safeguarded three years after the study is completed. TfL may also request any research output to be provided.

Research Ethics
5.5 TfL expects all research involving data collection from human participants to be undertaken in accordance with standards of good practice:

i. Beneficence and Non-Malfeasance: Participants and researchers should not be put at risk of harm as a result of the research. Harm includes emotional and mental distress, and possible damage to financial and social standing, as well as physical harm.

ii. Informed Consent: Each potential participant must be adequately informed of the aims, methods, benefits and disbenefits of participation. Informed consent should be required from participants and records of consent maintained.

iii. Anonymity and Confidentiality: Data collection should preserve the anonymity of participants. Interviews should be confidential. Data that could identify its originator should not be used unless identifying details can be changed.

iv. Accountability: The findings of the research should be made available, before publication and in a suitable format, to all participants.

Data Protection
5.6 Under the Data Protection Act, TfL is obliged to take appropriate technical and organisational measures against unauthorised or unlawful processing of
personal data and against accidental loss or destruction of, or damage to, personal data. To comply with this requirement, TfL must:

i. Choose a supplier who can provide sufficient guarantees in respect of the technical and organisational security measures governing the data processing to be carried out; and

ii. Ensure that the data process complies with those measures.

5.7 The supplier must not share any personal data with any sub-contractor unless TfL has given written consent.

Communicating Research

5.8 Research quality is important to TfL and this should be reflected in the project’s output. The research report should provide detail on methods and results to illustrate the validity of the findings. The research report should explicitly respond to the research questions and conclusions and recommendations should be based on research findings and appropriately referenced. The report should include a brief executive summary. Terminology should be defined and used appropriately and consistently. Instead of “accident”, the term “collision” should be used wherever possible. A standard disclaimer should be contained at the beginning of the report.

5.9 To make the research relevant and useful for transport professionals and other stakeholders, the findings should be communicated and presented in a succinct and well presented report. It is expected that report authors follow established best practice on report writing and data presentation to effectively communicate research to a wide audience. An awareness of the London’s walking and transport policy context should be shown in the final report.

5.10 An electronic copy of the draft report will be required for proposed edits. Following editing, the final report should be delivered electronically both in MS Word and Adobe pdf format (not exceeding 10MB). The pdf file should contain document information and meta data in accordance with TfL’s requirements (to be specified).

Report Publication

5.11 To promote evidence-based policy and practice in road safety across London, TfL aims to publish all research reports on TfL’s website. However, all reports need to gain approval for publication from within TfL (TfL senior managers, TfL Press Office) and from the Greater London Authority (Mayor’s office, Transport Team). The supplier must not release or publish the research report (including on their website) without the clear approval of TfL, and not before the report is published by TfL. The supplier must not charge for downloading research reports (but can charge to cover the cost of paper copies). All press work regarding the publication of the research report will be coordinated through TfL’s press office (this includes the trade press).

Academic Work

5.12 The successful tenderer should not make public this research before it has been cleared for publication by TfL and without prior approval by TfL.
Equality and Inclusion
5.13 TfL is committed to removing barriers to accessing transport services wherever possible and in the way it employs and develops its workforce. In particular, the supplier should clearly demonstrate how equality and inclusion issues in road safety are addressed by this research project.

Crime and Disorder Act
5.14 It is a statutory requirement for all departments in TfL to follow Section 17 of the Crime and Disorder Act 1998. Section 17 requires authorities to consider the likely affect on crime, disorder and community safety in all that they do, and take action to prevent crime and disorder, substance misuse, anti-social behaviour and behaviour that adversely affects the environment. In particular, the supplier should demonstrate how issues of crime and disorder are addressed by this research project.

Responsible Procurement
5.15 TfL will proactively conduct its procurement process in line with its ‘Responsible Procurement’ code. Within its obligations as a Best Value Authority, and in compliance with EU and UK legislation, TfL will adopt the principles of ‘Reduce, Reuse, Recycle’ and ‘Buy Recycled’. TfL is committed to applying these principles in procurement of Goods, Works and Services, where the required criteria for performance and cost effectiveness can be met. TfL will actively promote ‘Responsible Procurement’ throughout its supply chain.

Research Partners and Subcontractors
5.16 TfL understands that in some instances more than one supplier is necessary to best fulfil the research requirements. If multiple suppliers are involved in a project, they must be named and arrangements between suppliers need to be made transparent:

i. Name the research partners/subcontractors, explain why they were selected for the project, and describe the roles and responsibilities of all suppliers involved.

ii. Explain how the main supplier ensures that projects are delivered as proposed and guarantees that all suppliers are complying with TfL’s policies outlined in this brief and in the framework contracts.

Other Key Performance Indicators
5.17 A minimum of fortnightly written updates to the TfL Project Manager. These can be concise updates by email, but should include details of progress against project timescale, risks/ issues for discussion, actions required by TfL or others that affect the project timescale, etc.

5.18 Teleconference/ updates by telephone or email as required by the tenderer or by the TfL Project Manager.

5.19 Monthly face-to-face meetings, either at TfL’s office (Palestra, 197 Blackfriars Road, London) or at the tenderers office, by pre-arranged agreement.
5.20 Tenderer to respond to all TfL queries on the project within two working days, providing an update where queries need further time to be answered. Ensure that alternative contact details are provided when key team members are unavailable.

5.21 Provide sufficient resources to achieve the project timescale. Where slippage occurs, to be raised and discussed with the TfL Project Manager within three working days.

5.22 Build a good working relationship with the bus operators and be trusted by bus drivers and unions to deliver independent research. Any issues raised by the bus operators or TfL to be responded to within three working days.

5.23 All processes must be transparent and all results must be publishable, with any personal data to be suitably anonymised.
ATTACHMENT 1

Notes from Fatigue Management Workshop (TfL led with Bus Operators)