

# Transport for London

## Revenue Collection Services

# **Schedule 4.2 – Surface Transport Services**

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# 1 Introduction

## 1.1 Scope and Purpose

- 1.1.1 This Schedule 4.2 (Surface Transport Services) sets out the scope, performance regime, monitoring and reporting requirements for the ST Services.
- 1.1.2 The "**ST Services**" are:
- (a) the Primary Services provided in relation to all Devices located on buses, at Garages and on River services or piers and in relation to the Garage Computer Data Landing; and
  - (b) the services set out in Appendices 1 to 4 of this Schedule.
- 1.1.3 The Contractor shall provide the ST Services in accordance with this Schedule, Schedule 4.1 (Service Delivery) and the terms of the Contract.
- 1.1.4 The Electronic Ticket Machine (ETM), at the Date of Contract, acts as the host Device for the Card Reader and may require replacement during the Term; however, TTL is considering a consolidation of the technology systems on buses which may remove the requirement for this Device. This change would be effected through a Variation.
- 1.1.5 Consequently the ST Services have been split into three (3) parts for the purposes of this Schedule, as follows;
- (a) services associated with the Bus Validators and supporting systems (the "**Bus Validator Services**");
  - (b) services associated with the ETM and its supporting systems (the "**Legacy Bus Services**"); and
  - (c) services associated with the Devices supporting river transport (the "**River Services**").
- 1.1.6 The London Buses operation at the Date of Contract is made up of a fleet of approximately eight thousand five hundred (8,500) buses and ninety (90) Garages, though the Contractor shall provision support for up to one hundred (100) ST Sites.
- 1.1.7 The functional specifications for the Devices delivering the ST Services are set out in Schedule 5.2 (Validation and Access Control), Schedule 5.3 (Retail) and Schedule 5.4 (Control Systems and Networks).
- 1.1.8 The Contractor shall deliver the Legacy Bus Services in accordance with the requirements set out in the Contract, this Schedule and in Appendices 1 to 4 to this Schedule. In the event of any inconsistency between Appendices 1 to 4 to this Schedule and the other provisions of this Schedule or the Contract, the provisions of the Contract and this Schedule shall take precedence.

## 1.2 Device Categories

1.2.1 The following paragraph sets out the categories of Devices used in the provision of:

- (a) Bus Validator Services;
- (b) Legacy Bus Services; and
- (c) River Services.

### Bus Validator Services Devices

1.2.2 The Bus Validator Services are delivered by a group of Devices which allow Passengers to validate Cards on buses, be charged the appropriate fare and transmit Data between the Card Reader and the Back Office Modules. These Devices comprise:

- (a) "**Bus Validators**" being the following Device types:
  - i. **MDE Master Bus Reader** installed on Multi Door Entry buses and connected to the Universal Validators on the same bus;
  - ii. **OPO Bus Readers** installed on OPO buses,  
  
(both Bus Card Readers) which are the Devices that allow Passengers to validate Cards when boarding buses, which are installed adjacent to the bus driver and which interface with a host Device installed on the bus; and
  - iii. "**Universal Validators**" (UVs) which are the Validators installed at distances away from the bus driver that facilitate Passengers being able to validate Cards in multiple areas on a bus; and
- (b) "**Garage Devices**" being the following Device types:
  - i. "**Garage Interactive Display**" or "**GID**" meaning the Device utilised to allow bi-directional communication between Operator Personnel at Garages and the Level 1 Help Desk; and
  - ii. "**Hot Spares Rack**" or "**HSR**" meaning the Devices used to store Bus Validators at Garages and to provide power to them to enable the Bus Validators to maintain communications with the Back Office Modules.

### Legacy Bus Services Devices

1.2.3 The Legacy Bus Services are delivered by a group of Devices which are utilised to support cash sales, route configuration at Garages, Data transfer and interface to other Interfacing Systems on buses. These Devices comprise:

- (a) "**Garage Computer Data Landing Devices**" being the following Device types:
  - i. "**LTBCC**" being the legacy London Transport Bus Central Computer; and

- ii. **"Bus Workstations"** being the Devices utilised by Operator Personnel to apply operational changes to the bus ticketing system, for asset management and to provide operational reporting;
- (b) **"Legacy Garage Devices"** being the following Device types:
  - i. **Garage Computer (GPC)** and associated equipment (including monitor, printer and UPS) – the Devices utilised to support the transfer of Data from Garages to the LTBCC;
  - ii. **Garage Terminal (GT)** and associated equipment (including GT Tray, power supply and UPS) being the Device utilised to transfer Data from the GPC to the Drivers Data Module; and
  - iii. **Bus PTID Basestation** and associated equipment (including the base station, base computer and power supply, the UPS, the hub, the sign on cradle, printer and printer charger and the locker and locker charging cradle) being the Devices utilised to transfer Data and charge PTIDs;
- (c) **"Legacy On-Bus Devices"** which contains the following Device types:
  - i. **"Electronic Ticket Machine"** being the Device utilised by the driver for sign on purposes, interfaces to the AVL and Card Readers and to support cash sales; and
  - ii. **"ETM and Bus Card Reader Trays"** being the mounting trays fixed to the bus into which the ETM and Bus Card Readers are located; and
  - iii. **"Drivers Data Modules"** meaning the Devices utilised to transfer Data between the Garage Terminal and on bus equipment; and
- (d) **"Bus PTID"** being the hand held Device including printer utilised by Operator Personnel to support cash tickets or validate Prestige Cards on Heritage Buses.

#### River Services Devices

1.2.4 The River Services are delivered by a group of Devices which comprise the following Device types:

- (a) **"River PTID"** being a handheld Device utilised by Operator Personnel to validate river Passengers' Prestige Cards; and
- (b) **"Pier Devices"** which contain:
  - i. **River PTID Basestation** and associated equipment (including the base station, the UPS, the hub, the sign on cradle and the locker) being the Devices utilised to charge PTIDs and transfer Data from Pier Devices via the GPC to the LTBCC; and
  - ii. **Garage Computer (GPC)** and associated equipment (including printer and UPS) – the Devices utilised to support the bi-directional transfer of Data between River Piers to the LTBCC.

1.2.5 The ST Sites vary in scale and the types of Devices supported. In order to effectively monitor, manage and report on the performance of the ST Services a number of separate measurement levels apply as set out below:

- (a) **"ST Services Performance"** meaning the performance of all the Devices associated with the ST Services;
- (b) **"River Services Performance"** meaning the performance of all the Devices associated with the River Services; and
- (c) **"Garage Performance"** meaning the performance of all the Devices associated with the ST Services at an individual Garage or on buses operated from that Garage.

1.2.6 Any System Fault relating to a Legacy Garage Device or Pier Device shall be categorised as follows:

- (a) **"Category A System Fault"** shall mean a System Fault where:
  - i. Data cannot be transmitted to and/or received from the LTGCC;
  - ii. a Garage Terminal is unable to sign-on or sign-off a Drivers Data Module;
  - iii. a Bus PTID Basestation is unable to sign on and/or sign off Bus PTIDs and/or transmit Data to and/or receive Data from the LTGCC via the GPC;
  - iv. a River PTID Basestation is unable to sign on and/or sign off River PTIDs and/or transmit Data to and/or receive Data from the LTGCC via the GPC;
  - v. the current and correct Data is not available at all Garage Terminals at each Garage or River Pier in order to transfer Data to the appropriate Devices; or
  - vi. the complete Data for a day in respect of a Garage or River Pier is not available to be collected by the Bus Contract Management System (BCMS) by 08:00am the following day; and
- (b) **"Category B System Fault"** shall mean any System Fault which is not a Category A System Fault.

## 2 Performance

### 2.1 Generally

- 2.1.1 The Primary Services are set out in Schedule 4.1 (Service Delivery). Details of the financial impact of the Service Credit and Service Bonus regime are set out in Schedule 12.1 (Charges and the Financial Model).
- 2.1.2 Availability shall be measured during the ST Service Day other than for the Bus Workstations which shall be measured during the Bus Workstation Service Day in accordance with paragraph 2.1.4.
- 2.1.3 The "**ST Service Day**" shall be 04:30 to 04:29 the following day, seven (7) days per week including all Bank Holidays but excluding Christmas Day.
- 2.1.4 The "**Bus Workstation Service Day**" shall be 08:00 to 18:00 Monday to Friday excluding Bank Holidays and Christmas Day other than during the period of four (4) weeks prior to and one (1) week after the Go-Live Date of a Fares Revision in accordance with Schedule 10.3 (Fares Revisions), when the Bus Workstation Service Day shall be twenty-four (24) hours per day, seven (7) days per week including Bank Holidays but excluding Christmas Day.
- 2.1.5 All System Faults on Devices providing the ST Services are considered to be Service Affecting Faults and affect the Availability of the relevant Device. Where a System Fault is caused by a mounting or base plate or the connection between a Device and such a plate it shall be considered to be a System Fault of the Legacy On-Bus Device for the purposes of performance measurement under this Schedule, unless the System Fault can be specifically identified as being caused by the Bus Validator where applicable.
- 2.1.6 From the Service Commencement Date, where a Bus Validator loses communication with its host device (the ETM at the Date of Contract) for longer than one (1) minute, then the Bus Validator shall be in autonomous mode until full communication is restored. All Transaction Data when in autonomous mode shall be flagged as such and the following performance measures shall apply:
- (a) Where the percentage of Transaction Data from Bus Validators in autonomous mode exceeds 0.325% of all Bus Validator transactions on any ST Service Day then 30 Service Credits as set out in paragraph 5 shall be applied for each ST Service Day.
  - (b) Where the percentage of Transaction Data from Bus Validators in autonomous mode exceeds 0.425% of all Bus Validator transactions on any ST Service Day then paragraph 2.1.9 of this schedule shall apply.
- 2.1.7 From the New Bus Service Date, where a Bus Validator loses communication with its host device (the ETM at the Date of Contract) for longer than one (1) minute a Service Incident Point shall be applied to the Legacy On-Bus Device unless the Contractor can demonstrate that the Bus Validator was the cause of the fault.
- 2.1.8 A "**Service Incident Point**" shall be applied where a System Fault occurs on a Device delivering the ST Services. Only one (1) Service Incident Point applies to any Device regardless of whether multiple individual System Faults occur concurrently on that Device.

2.1.9 Where the performance of any Device delivering any part of the ST Services fails to meet the specified minimum threshold set out in this Schedule for that Device (the "**Unacceptable Performance Threshold**"), TTL may issue a Minor Warning as set out in Schedule 12.4 (Contract Management) and require the Contractor to take additional actions to restore the performance above the Unacceptable Performance Threshold and Assure TTL regarding the future performance of that Device type. TTL may issue a Major Warning as set out in Schedule 12.4 (Contract Management) for repeated such instances or where the Contractor fails to provide sufficient Assurance to TTL.

## 2.2 ST Services Performance

2.2.1 Buses are of two (2) main types which, due to the number and types of Devices installed on each type, are to be measured separately. These types are:

- (a) One Person Operation (OPO); and
- (b) Multi Door Entry (MDE) (also known as Open Boarding Buses (OBB)).

2.2.2 The Contractor shall, where practicable, notify Operator Personnel at the relevant Garage where System Faults occur on Devices delivering the ST Services and advise them what activities to undertake.

2.2.3 The Contractor shall measure and report upon the contract performance of each Device type by Garage and overall ST Services.

2.2.4 Where Operator Personnel change a Bus Validator without consulting the Contractor or instruction from the Level 1 Help Desk and it is later proven to the reasonable satisfaction of TTL that no System Fault existed on that Device, no Service Incident Points or Service Credits will be applied to that alleged failure.

2.2.5 Where a Major Incident has occurred, the Contractor shall notify Operator Personnel as specified by TTL from time to time, within fifteen (15) minutes of the Major Incident being logged, to prevent unnecessary activities being initiated (e.g. swapping Bus Validators).

2.2.6 To allow for the fluctuating number of buses in Passenger service each day, the different types of buses (OPO and MDE) and the different Devices, Incident Rates are utilised. Incident Rates provide a mechanism to measure and report separately for Legacy On-Bus Devices and Bus Validators.

2.2.7 The "**Incident Rate**" is, in respect of:

- (a) Legacy On-Bus Devices, the number of Service Incident Points relating to such Devices divided by the average number of buses in Passenger service each day averaged over the Period; and
- (b) Bus Validators, the number of Service Incident Points relating to such Devices divided by the average number of all such Devices installed on buses of the relevant type in Passenger service where the number of buses in operation shall be the average number of buses of each type in operation each day, averaged over the Period.

2.2.8 The following is an example of the application of the Incident Rate approach to the ST Services performance measures as set out below:

		Bus Card Validators		Legacy On-Bus Devices
		OPO Devices	MDE Devices	
a	Service Bonus Level	0.012	0.012	
b	Service Credit Level	0.037	0.037	0.185
c	Avg. no. Buses in Passenger Service	6,500	600	7,100
d	No. of Devices per bus	1	4	
e	Operational Bus Card Validators (= c x d)	6,500	2400	
	Bus Card Validators Service Bonus Threshold (= a x e)	78	28.8	
	Bus Card Validators Service Credit Threshold (= b x e)	240.5	88.8	
	Legacy On-Bus Devices Service Credit Threshold (= b x c)			1,313

## 2.3 Bus Validator Services

- 2.3.1 The Contractor shall remedy any System Fault to a Garage Device within twenty four (24) hours. Where any such System Fault is not remedied within twenty four (24) hours, Service Credits as set out in paragraph 5 shall be applied. Where any such System Fault is not remedied within three (3) days, this shall be a Major Incident and shall be managed as set out in Schedule 8.3 (Major Incident Management).
- 2.3.2 Only Devices installed on buses in Passenger service shall be included in the calculation of Availability of Bus Validators and Service Incident Points.
- 2.3.3 The Contractor shall measure and report on the Availability of Bus Validators each Period by bus type (OPO or MDE), Garage and for the overall Bus Validator Services in accordance with paragraph 7 of this Schedule.
- 2.3.4 The target for the Availability of Bus Validators for reporting purposes shall be ninety-nine point five per cent (99.5%) each Period.
- 2.3.5 Where a System Fault occurs on any Bus Validator, the Level 1 Help Desk may intervene remotely to remedy the System Fault; no Service Incident Points shall be applied where the Contractor remedies the System Fault within one (1) hour of the System Fault occurring provided that the Contractor performs no more than one (1) such remote intervention on any individual Bus Validator within each ST Service Day. If the System Fault is not remedied within one (1) hour then a Service Incident Point shall be applied.
- 2.3.6 The Contractor shall monitor and report upon the number of times and the duration that each Bus Validator loses communication with its host Device during each ST Service Day in accordance with paragraph 7 of this Schedule.
- 2.3.7 Where an Insufficient Spares Event relating to Bus Validators on OPO buses or on MDE buses occurs at a Garage, Service Credits shall be applied as set out in

paragraph 5 and this shall constitute a Major Incident and shall be managed in accordance with Schedule 8.3 (Major Incident Management).

- 2.3.8 The Contractor shall measure and report on the number of Service Incident Points applicable and the Incident Rates each Period separately for OPO and MDE buses in accordance with paragraph 7 of this Schedule. Service Incident Points incurred under paragraph 2.3.7 shall be included in the calculation of the Incident Rate.
- 2.3.9 The "**Bus Validator Service Bonus Level**" shall be 0.012 each Period.
- 2.3.10 The "**Bus Validator Service Credit Level**" shall be 0.037 each Period.
- 2.3.11 The Unacceptable Performance Threshold for Bus Validators shall be 0.07 each Period.
- 2.3.12 Where the total number of relevant Service Incident Points in any Period is below the applicable Bus Validator Service Bonus Threshold for OPO or MDE buses, Service Bonuses as set out in paragraph 5 shall be applied.
- 2.3.13 Where the total number of Service Incident Points in any Period is above the applicable Bus Validator Service Credit Threshold for OPO or MDE buses, Service Credits as set out in paragraph 5 shall be applied.
- 2.3.14 The "**Bus Validator Service Bonus Threshold**" shall be the Bus Validator Service Bonus Level multiplied by the Operational Bus Validators for the relevant type of bus (OPO or MDE) for that Period.
- 2.3.15 The "**Bus Validator Service Credit Threshold**" shall be the Bus Validator Service Credit Level multiplied by Operational Bus Validators for the relevant type of bus (OPO or MDE) for that Period.

## **2.4 Legacy Bus Services**

- 2.4.1 For Legacy Bus Services, no Service Bonuses shall be applicable; however Service Credits as set out in paragraph 5 shall apply where the Devices fail to achieve the performance levels set out below.

### **Garage Computer Data Landing Devices**

- 2.4.2 The Contractor shall measure and report the Availability of LTACC each Period in accordance with paragraph 7 of this Schedule.
- 2.4.3 The service level for the Availability of the LTACC each Period shall be ninety-nine point five per cent (99.5%). Where the Availability falls below this level, Service Credits as set out in paragraph 5 shall be applied.
- 2.4.4 The Unacceptable Performance Threshold for the Availability of the LTACC shall be ninety-eight per cent (98%) each Period. Where the Availability of the LTACC falls below this threshold the provisions of paragraph 2.1.9 shall apply.
- 2.4.5 The Contractor shall remedy any System Fault to a Bus Workstation within the Service Hours specified below:
- (a) four (4) Service Hours if the System Fault occurs within the period of four (4) weeks prior to and one (1) week after the implementation date of a Fares Revision in accordance with Schedule 10.3 (Fares Revisions); or

(b) eight (8) Service Hours where paragraph 2.4.5(a) does not apply, such Service Hours to be measured within the Bus Workstation Service Day.

2.4.6 Where a System Fault is not remedied within the Service Hours set out in paragraph 2.4.5, Service Credits as set out in paragraph 5 shall be applied. Where a System Fault is not remedied within twenty-four (24) Service Hours, this shall be a Major Incident and shall be managed in accordance with Schedule 8.3 (Major Incident Management).

#### **Legacy Garage Devices**

2.4.7 The Contractor shall remedy any Category A System Fault within eight (8) Service Hours. Where any Category A System Fault is not remedied within eight (8) Service Hours, Service Credits shall be applied as set out in paragraph 5.

2.4.8 Any Category A System Fault which is not remedied within twenty-four (24) Service Hours shall be a Major Incident and shall be managed as set out in Schedule 8.3 (Major Incident Management).

2.4.9 Where there are Category A System Faults on all of the Garage Terminals at a single Garage, which prevents Operator Personnel signing on or signing off Drivers Data Modules:

(a) this shall be a Major Incident and shall be managed in accordance with Schedule 8.3 (Major Incident Management); and

(b) the Contractor shall ensure that at least one Garage Terminal at the Garage is restored to full functionality within four (4) Service Hours or Service Credits shall be applied as set out in paragraph 5.

2.4.10 The Contractor shall remedy Category B System Faults within forty eight (48) hours. Where any System Fault is not remedied within forty eight (48) Service Hours, Service Credits shall be applied as set out in paragraph 5.

2.4.11 Examples of Category B System Faults include but are not limited to:

(a) printer faults; and

(b) monitor faults.

#### **Legacy On-Bus Devices**

2.4.12 Where an Insufficient Spares Event relating to Legacy On-Bus Devices occurs at a Garage, Service Credits shall be applied in accordance with paragraph 5 and this shall constitute a Major Incident and shall be managed in accordance with Schedule 8.3 (Major Incident Management). No Service Credits shall be applied where:

(a) the float stock or spare units have been incorrectly used without the prior permission of the Contractor for any other purposes than to replace equipment with a System Fault; or

(b) equipment has been transferred from one Garage to another without prior consent of the Contractor (such consent not to be unreasonably withheld or delayed).

2.4.13 The Contractor shall measure and report on the number of Service Incident Points applicable and the Incident Rates applicable for each type of bus each Period for the Legacy On-Bus Devices in accordance with paragraph 7 of this Schedule. Service Incident Points incurred under paragraph 2.4.12 shall be included in the calculation of the Incident Rate.

2.4.14 The "**Legacy Service Credit Level**" shall be 0.185 each Period.

2.4.15 The Unacceptable Performance Threshold for Legacy On-Bus Devices shall be 0.250 each Period. Where the Incident Rate for Legacy On-Bus Devices exceeds this threshold the provisions of paragraph 2.1.9 shall apply.

2.4.16 Where the total number of relevant Service Incident Points for Legacy On-Bus Devices is above the applicable Legacy Service Credit Threshold then Service Credits as set out in paragraph 5 shall be applied.

2.4.17 The "**Legacy Service Credit Threshold**" shall be the Legacy Service Credit Level multiplied by the average number of buses in Passenger service for that Period.

2.4.18 Where a System Fault requires remedial work to be carried out on a bus, the Contractor shall make suitable access arrangements with the relevant Bus Operating Company in accordance with Schedule 8.4 (Access Management) and carry out the works within forty-eight (48) hours of the Contractor becoming aware of the System Fault, unless otherwise agreed with TTL.

2.4.19 A single Service Incident Point shall be applied where:

- (a) the ETM is unable to issue Bus Paper Tickets with the required printed information on such tickets, for any of the ETM operating processes during which a ticket is required to be issued;
- (b) the ETM is unable to display, on the ETM's bus driver and Passenger displays, the correct Data output for any of the ETM or Bus Validator operating processes during which the displays are required to function;
- (c) the ETM is unable to record in its memory transaction and other Data generated by the ETM, Bus Validator or other external system operating processes, or is unable to record in its memory Data generated by other Devices because of a System Fault in the ETM;
- (d) the ETM does not facilitate Driver sign-on, or where the ETM fails to initialise the Bus Validator(s) into Passenger operation;
- (e) the ETM fails to interface with the Bus Validator(s) and provide route and bus stop ID information throughout the duration of the bus trip; or
- (f) the ETM or any Bus Validator (as a result of the ETM) is unable to carry out the Card validity checking and transaction processes in accordance with the specification of any functional Card presented by a Passenger,

however, only one Service Incident Point per ST Service Day shall be recorded irrespective of the number of transactions affected.

2.4.20 System Faults shall be reported by Operator Personnel to the Level 1 Help Desk where the Contractor is unable to detect and log on-bus System Faults remotely.

2.4.21 Service Incident Points shall not be recorded under the following circumstances, such circumstances to be demonstrated by the Contractor to TTL's reasonable satisfaction:

- (a) vandalism, including failure caused by foreign objects jamming paper exit guides and failure caused by foreign objects used to clear paper jams; or
- (b) where the Contractor is unable to reproduce any fault reported by Operator Personnel in relation to any Drivers Data Module, subject to TTL being Assured of the testing process undertaken and that the Drivers Data Module when returned to service functions without fault.

## **2.5 Bus PTID**

2.5.1 The Contractor shall maintain a sufficient level of spare Bus PTIDs at each relevant Garage where Bus PTIDs may be required; such that each Bus PTID locker located at each Garage contains a Bus PTID and associated printer.

2.5.2 The Contractor shall schedule a visit by Contractor Personnel to each location as required to maintain sufficient spare Bus PTIDs and maintain Bus PTID Basestation operation.

2.5.3 The Contractor shall replace any Bus PTIDs with a System Fault with a fully functional Bus PTID during the scheduled visit by Contractor Personnel in accordance with paragraph 2.5.2.

2.5.4 Where an Insufficient Spares Event relating to Bus PTIDs occurs at a Garage, this shall constitute a Major Incident and shall be managed in accordance with Schedule 8.3 (Major Incident Management).

## **2.6 River Services**

2.6.1 The Contractor shall remedy any System Fault to a Pier Device where the System Fault prevents the transmission and/or receipt of Data from the LTBCB via the GPC or ability to sign on/off River PTID Devices within eight (8) Service Hours. Where any System Fault is not remedied within eight (8) Service Hours, Service Credits as set out in paragraph 5 shall be applied. Where any such System Fault is not remedied within twenty-four (24) Service Hours this shall be a Major Incident and shall be managed as set out in Schedule 8.3 (Major Incident Management).

2.6.2 The Contractor shall maintain a sufficient level of spare River PTIDs at each relevant River Pier where River PTIDs may be required; such that each River PTID locker located at each location contains a River PTID.

2.6.3 The Contractor shall schedule a Contractor Personnel visit to each Site as applicable to maintain sufficient spare River PTIDs and maintain River PTID Basestation operation.

2.6.4 The Contractor shall replace any River PTIDs with a System Fault with a fully functional River PTID during each scheduled Contractor Personnel visit under paragraph 2.6.3.

2.6.5 Where an Insufficient Spares Event relating to River PTIDs occurs at a River Pier, this shall constitute a Major Incident and shall be managed in accordance with Schedule 8.3 (Major Incident Management).

## **2.7 Repeat Failures**

- 2.7.1 For each rolling thirteen (13) Periods where any individual Bus Validator has more than six (6) System Faults, the Contractor shall provide a Corrective Action Plan in accordance with Schedule 12.4 (Contract Management) for each such Device to TTL setting out the mitigating actions to improve the performance of the Device and a plan to implement such actions within twenty eight (28) days.
- 2.7.2 Where the Contractor has identified a repeatedly failing Bus Validator in accordance with paragraph 2.7.1 and has carried out repairs, if the relevant Bus Validator has two (2) or more System Faults within the next three (3) Periods following such repairs, TTL shall be entitled to issue a Minor Warning in accordance with Schedule 12.4 (Contract Management).

## **2.8 No Fault Found**

- 2.8.1 The Contractor shall bear responsibility for all System Faults irrespective of whether the Contractor can later reproduce the reported System Fault except where the Contractor is able to prove to TTL's reasonable satisfaction that the Device was fully functional throughout the ST Service Day.

## **2.9 Non Fair Wear and Tear**

- 2.9.1 "**Non Fair Wear and Tear**" is wear and tear on any Device which is above and beyond that which could be reasonably expected for the Device given its usage and operational environment.
- 2.9.2 No NFWT charges shall be applied by the Contractor except where:
- (a) any single event costs more than two hundred pounds sterling (£200); or
  - (b) the total value of all NFWT costs exceeds fifty thousand pounds sterling (£50,000) in aggregate in any thirteen (13) consecutive Periods,
- subject to Indexation, in which case only NFWT charges in excess of these thresholds shall be applied.
- 2.9.3 The Contractor shall ensure that all incidents of NFWT are, where practicable, acknowledged by Operator Personnel at Garages and reported to TTL within twenty four (24) hours of the equipment being returned to the Contractor's workshop. The Contractor shall provide evidence of NFWT (including photographs) to TTL in a report format for each such incident.
- 2.9.4 Where such incidents of NFWT are demonstrated to TTL's reasonable satisfaction no Service Incidents Points or Service Credits shall be applied to such incidents, except for Service Credits applicable to Insufficient Spares Events.

## **2.10 Major Incidents**

- 2.10.1 In addition to the specified instances above, where:
- (a) more than ten per cent (10%) of the total number of buses or four (4) buses, whichever is the greater, at any individual Garage have Bus Validators with a System Fault;
  - (b) more than five per cent (5%) of the total number of buses in Passenger operation across the fleet have Bus Validators with a System Fault;

- (c) any individual Garage is operating without sufficient spares;
- (d) Passengers are being charged incorrect fares; or
- (e) Operator Personnel are unable to access Garages or sign on/off all Drivers Data Modules and/or all Bus PTIDs at that Garage,

this shall constitute a Major Incident and shall be managed in accordance with Schedule 8.3 (Major Incident Management).

## 3 ST Device Management

### 3.1 Generally

- 3.1.1 It is anticipated that, at any given time, approximately ninety per cent (90%) of the Bus Validators and Legacy On-Bus Devices shall be installed on buses. The remaining Devices shall be distributed between the Contractor's workshop, those in transit and at storage locations.
- 3.1.2 The Contractor shall ensure that each Garage and River Pier operates with a suitable stock of spare Devices so that Operator Personnel are able to replace Devices with a System Fault with working spare Devices without delay.
- 3.1.3 The Contractor shall monitor and manage the quantity of spare Devices allocated to each Garage and River Pier, to ensure that no Garage or River Pier has a Device with a System Fault and zero spare Devices available to swap. Where there are insufficient fully functional spare Devices available to replace Devices with a System Fault at any Garage or River Pier this shall constitute an "**Insufficient Spares Event**" and Service Credits shall be applied in accordance with paragraph 5. Service Credits shall not be applied in respect of Legacy On-Bus Devices, Bus PTIDs or River PTIDs where the Insufficient Spares Event was caused by Operator Personnel unreasonably reporting multiple Devices with System Faults in a single instance.
- 3.1.4 Maximum stock levels of spare Devices (excluding Bus or River PTID Devices) shall be at the discretion of the Contractor subject to sufficient storage being available at each location and in relation to Garages or River Piers, in agreement with TTL and the respective Site Operator. The Contractor shall bear any additional costs incurred where additional spares Devices are stored in excess of the minimum of four point five per cent (4.5%) as set out in paragraph 3.1.5.
- 3.1.5 TTL shall procure that sufficient space is provided at each Garage or River Pier to store spare Devices equivalent to a minimum of four point five per cent (4.5%) of the relevant Devices installed at, or being operated from that Garage or River Pier unless otherwise agreed on a Site by Site basis.
- 3.1.6 The Contractor shall monitor and review stock levels of Devices with TTL every three (3) months at the Service Review Meeting or whenever material changes occur.
- 3.1.7 The Contractor shall ensure that any Devices not required to support current operations other than at Garages shall be placed in secure storage facilities.
- 3.1.8 The storage and movement of all Bus Validators shall be undertaken in a PCI-DSS compliant manner, such that the Contractor is able to report upon the location and status of all Bus Validators.
- 3.1.9 The Contractor shall ensure that all Garages have sufficient Hot Spares Rack capacity to store spare Bus Validators and all serviceable spares have the appropriate Configuration Data to be readily operable when installed on buses.
- 3.1.10 The Contractor shall have at least two (2) separate storage facilities in different locations to provide resilience and mitigate the risk of disaster(s).

### 3.2 ST Device Management Requirements from Incidents

- 3.2.1 The Contractor shall provide Operator Personnel with a means to identify Devices with a System Fault from spares available to be installed at Garages.
- 3.2.2 When transporting, collecting and replacing Devices with a System Fault, the Contractor shall make the necessary changes to their Asset details in the CMDB and/or the Asset Register in near real time as set out in Schedule 8.2 (Asset Management & Maintenance).
- 3.2.3 The Contractor shall ensure that Bus Validators with a System Fault removed from buses containing Transaction Data shall be picked up by the Contractor within twenty-four (24) hours of the Device being removed from a bus.
- 3.2.4 The Contractor shall ensure that all Bus Validator Data is uploaded into the Back Office Modules within seventy two (72) hours of the Bus Validator with a System Fault having been removed from the bus by Operator Personnel to ensure compliance with Schedule 4.6 (FTP Back Office Services) and Schedule 4.8 (Prestige Back Office Services) as applicable.
- 3.2.5 Where the Contractor has complied with the provisions of Schedule 8.4 (Access Management) and is denied any necessary access to an ST Site, a bus or any Bus Validator by Operator Personnel, the provisions of Clause 46 (Relief Events) shall apply.

## 4 Churn

### 4.1 Generally

- 4.1.1 Transport for London bus operations involve changes of BOCs, changes of Garage location and the introduction or removal of individual or groups of buses. To support these operations, the Contractor will be required to install and/or remove Devices from buses and garages as a result of requests from TTL ("**Churn**").
- 4.1.2 Where TTL requests that Devices are removed or installed on buses, each individual installation or removal will be treated as one (1) bus Churn count.
- 4.1.3 The Contractor shall include provision for a total of two thousand and eighty (2,080) bus Churn counts per year as set out in Schedule 12.1 (Charges and the Financial Model). Churn in excess of this provision shall be calculated utilising the schedule of prices in accordance with paragraph 4.7 and added to the Charges.
- 4.1.4 The Contractor shall provide the resources to perform an average of forty (40) bus Churn counts per week, averaged over a contractual year, and a maximum of sixty (60) bus Churn counts per week subject to the required notice being provided by TTL.

### 4.2 Guidelines for Bus Builders

- 4.2.1 The Contractor shall provide to TTL on request, and shall keep updated, a set of guidelines for bus builders to assist them in providing the correct space and facilities for the Devices (both Bus Validator Services and Legacy On-Bus Services) during the design and construction of the buses. This guideline document shall describe the equipment installed on buses, the dimensions and access requirements for fitting and removal, general positioning and orientation requirements, and electrical and data connections between components of the equipment and other on-bus systems.
- 4.2.2 The Contractor shall provide data in 3D CAD format for the assistance of bus builders when designing the internal area around the drivers cab and in designing the areas where Bus Validators are to be located.

### 4.3 First Installation to any Bus (First Fit)

- 4.3.1 The Contractor shall install all equipment on buses in compliance with the documented First Fit drawings agreed by TTL on a case by case basis.
- 4.3.2 The Contractor shall make and maintain accurate records and drawings of all First Fit installations and a photographic record of all such installations.
- 4.3.3 Where Churn involves fitting Devices to a particular type of bus to be operated by a particular BOC to which the Contractor has not previously installed Devices (a "**First Fit**"), TTL shall use reasonable endeavours to give thirty (30) Business Days' notice to the Contractor of any such installation and make the relevant bus available ten (10) Business Days prior to installation for drawings to be agreed and completed.
- 4.3.4 If TTL provides less notice than required in paragraph 4.3.3 then the Contractor will notify TTL and use reasonable endeavours to prepare and agree installation drawings. In the absence of such drawings the Parties may agree to proceed with an installation using whatever other information or documentation may be available (for example digital photographs) until the drawings have been completed.

#### **4.4 Subsequent Installations and Removals**

- 4.4.1 Other than for First Fit (which is dealt with under paragraph 4.3), TTL shall use reasonable endeavours to give five (5) Business Days' notice of any subsequent installation and/or removal. Such notice must be given before 14:00 hours on any Business Day. Where less notice is provided or where the quantity of work exceeds the levels set out in paragraph 4.1.4, the Contractor shall use all reasonable endeavours to perform the installations and removals to meet TTL's request and TTL shall work with the Contractor to agree the priority of the works to be carried out.

#### **4.5 Raising of Churn work requests**

- 4.5.1 The Contractor shall use an electronic activity management system agreed with TTL to facilitate the raising of orders for Churn work and the monitoring of its progress.
- 4.5.2 TTL shall include the following information on any notification to the Contractor relating to Churn:
- (a) unique reference number;
  - (b) Garage name and code, or address of location;
  - (c) order type;
  - (d) whether it is a bus 'first fit';
  - (e) bus configuration – standard OPO or MDE;
  - (f) quantity;
  - (g) date by which work is to be completed;
  - (h) Garage or location contact and access details;
  - (i) bus fleet and/or registration numbers (where available in advance);
  - (j) if an existing installation, serial numbers of all Devices where possible; and
  - (k) any special details relating to the request.

#### **4.6 Planning and Reporting**

- 4.6.1 The Contractor shall provide a plan for all Churn work intended to be carried out during the next working day to TTL by 17.00 on the previous working day.
- 4.6.2 The Contractor shall provide a daily report by 14:00 hours each working day for work related to First Fits or subsequent installations or removals on the previous working day. The report shall also identify and explain all deviations from the plan submitted for the working day concerned in accordance with paragraph 4.6.1.
- 4.6.3 For clarification in relation to paragraphs 4.6.1 and 4.6.2, where work is completed on a night shift, the working day ends at 07:59 the following morning (i.e. a Monday "working" day commences at 08:00 and finishes at 07:59 on Tuesday).
- 4.6.4 The Contractor shall notify TTL of any abortive visit (e.g. where the Contractor has not been allowed access to a Garage or has not been provided with sufficient

- information to be able to complete the work) via the daily report required under paragraph 4.6.2. Where three (3) abortive visits are made within twenty (20) Business Days from the required date of access, the Contractor shall escalate the matter to TTL in accordance with the provisions of Schedule 8.4 (Access Management).
- 4.6.5 The procedure for reporting refused access shall be implemented to ensure that any unresolved problems are escalated to the appropriate authority within TTL, LBSL and the Contractor.
- 4.6.6 The Contractor shall ensure that the Asset Register is updated to reflect any changes arising from Churn within one (1) Business Day of completion of such Churn activities.
- 4.6.7 Movement orders shall be raised by TTL if a BOC moves a bus with its equipment permanently between its Garages; such orders may be raised before or after the move takes place. The Contractor shall update the Asset Register immediately on receipt of any such order. Movement orders do not contribute to the Churn count.
- 4.6.8 The Contractor shall supply to TTL on a day nominated by TTL each week a full report in an agreed format of all Devices and their locations as known at the time of publication.
- 4.6.9 All Churn orders shall be treated as Changes and managed in accordance with Schedule 10.1 (Change Management). TTL anticipates that once agreed this will be treated as a Standard Change as set out in Schedule 10.1 (Change Management).
- 4.6.10 The Contractor shall maintain a dedicated stock of spare Devices to support bus service Churn.
- 4.6.11 The Contractor shall hold a quantity of spare Devices devoted to support Churn. This Churn call off stock shall consist, as a minimum, of seventy-five (75) sets of OPO Bus Readers and Legacy On-Bus Devices.
- 4.6.12 The installation and commissioning or removal of Devices to support Churn activities shall be carried out by the Contractor in accordance with the reasonable time scales required by TTL. Where the Churn order relates to existing Services using Churn stock, this shall be five (5) Business Days.
- 4.6.13 Where TTL requests that the Contractor collect Devices from Garages, the Contractor shall use reasonable endeavours to collect the equipment within seven (7) days of TTL's request. Where the stated numbers of equipment are not available, where possible the Contractor shall request the missing equipment from the Garage. If the requested number of Devices cannot be collected from a Garage after the Contractor has taken all reasonable endeavours to recover them, the Contractor shall inform TTL immediately.
- 4.6.14 The Contractor shall ensure that Devices removed as a result of Churn are returned to the Contractor's stock.
- 4.6.15 The Contractor shall remove any Transaction Data remaining in a Device before it is reintroduced into stock or disposed of.
- 4.6.16 The Contractor shall identify Devices that cannot immediately be returned to stock due to Non Fair Wear and Tear and advise TTL as soon as practicable.

4.6.17 Where Non Fair Wear and Tear is considered by the Contractor to be beyond economical repair, the Contractor shall seek TTL's approval for disposal of the relevant Device. After obtaining approval from TTL, the Contractor shall dispose of Devices in accordance with any relevant applicable Law, including any UK and ECC regulations and the WEEE Regulations.

4.6.18 The Contractor shall ensure that the Variation process is used to order replacements for Devices considered to be beyond repair as set out in paragraph 4.6.17, or which have been written off as lost and/or stolen, unless otherwise agreed between the Parties. The Contractor shall procure such new Devices within six (6) months of an order being placed by TTL.

#### **4.7 Pricing of Churn work**

4.7.1 The Contractor shall carry out Churn activities using:

- (a) resources and materials to meet the specified annual level set out in paragraph 4.1.3; and
- (b) such additional resources and materials as are necessary for Churn over and above the specified annual level set out in paragraph 4.1.3, which shall be priced according to the rate card set out in Appendix 5.

4.7.2 The commissioning and decommissioning of new Garages will be dealt with through the Variation Procedure and not as Churn unless otherwise agreed between the Parties.

4.7.3 When TTL requests that the Contractor inspect Devices on-bus or at Garages, and additional work is required as a result, the Contractor may add its reasonable costs reasonably incurred in connection with such a request to the Charges.

## 5 Service Credits and Bonuses

### 5.1 Calculation of Service Credits and Bonuses

5.1.1 Service Credits and Service Bonuses shall be applied in accordance with the following:

Para.	Event / Criteria	Service Credits	Service Bonuses
2.1.6	Percentage of Transaction Data from Bus Validators in autonomous mode exceeds 0.325% of all Bus Validator transactions on any ST Service Day	Thirty (30) Service Credits per ST Service Day.	N/A
2.3.1	Failure to remedy a Garage Device with a System Fault within twenty four (24) hours	Two point five (2.5) Service Credits per hour thereafter	N/A
2.3.7	An Insufficient Spares Event relating to Bus Validators on OPO buses or on MDE buses occurs at a Garage	One (1) Service Credit per Device which cannot be replaced if remedied within four (4) hours  Five (5) Service Credits per Device which cannot be replaced per day if not remedied within four (4) hours	N/A
2.3.12	The total number of Service Incident Points for OPO buses is less than the Bus Validator Service Bonus Threshold in any Period	N/A	Ten (10) Service Bonuses per Service Incident Point less than the Service Bonus Threshold
2.3.12	The total number of Service Incident Points for MDE buses is less than the Bus Validator Service Bonus Threshold in any Period	N/A	Ten (10) Service Bonuses per Service Incident Point less than the Service Bonus Threshold
2.3.13	The total number of Service Incident Points for OPO buses exceeds the Bus Validator Service Credit Threshold in any Period	Ten (10) Service Credits per Service Incident Point over the Service Credit Threshold	N/A

## Schedule 4.2 – Surface Transport Services

Para.	Event / Criteria	Service Credits	Service Bonuses
2.3.13	The total number of Service Incident Points for MDE buses exceeds the Bus Validator Service Credit Threshold in any Period	Ten (10) Service Credits per Service Incident Point over the Service Credit Threshold	N/A
2.4.3	Availability of the LTBCC below ninety-nine point five per cent (99.5%) in any Period	Ten (10) Service Credits per zero point one per cent (0.1%) below ninety-nine point five per cent (99.5%)	N/A
2.4.6	Failure to remedy a Bus Workstation System Fault within eight (8) Service Hours or four (4) Service Hours as applicable	Two point five (2.5) Service Credits per hour thereafter	N/A
2.4.7	Failure to remedy any Category A System Fault within eight (8) Service Hours	Two point five (2.5) Service Credits per Service Hour thereafter	N/A
2.4.9	Failure to ensure that at least one Garage Terminal is restored to full functionality within four (4) Service Hours	Two point five (2.5) Service Credits per Service Hour thereafter	N/A
2.4.10	Failure to remedy a Category B System Fault within forty eight (48) hours	Two point five (2.5) Service Credits per Service Hour thereafter	N/A
2.4.12	An Insufficient Spares Event relating to Legacy On-Bus Devices occurs at a Garage	One (1) Service Credit per Device which cannot be replaced if remedied within four (4) hours  Five (5) Service Credits per Device which cannot be replaced per day if not remedied within four (4) hours	N/A
2.4.16	The total number of Service Incident Points for Legacy On-Bus Devices is above the Legacy Service Credit Threshold	Ten (10) Service Credits per Service Incident Point over the Service Credit Threshold	

**Schedule 4.2 – Surface Transport Services**

Para.	Event / Criteria	Service Credits	Service Bonuses
2.6.1	Failure to remedy a Pier Device System Fault within eight (8) hours	Two point five (2.5) Service Credits per hour thereafter	N/A
3.1.3	An Insufficient Spares Event relating to Bus PTIDs occurs at a Garage	One (1) Service Credit per Device which cannot be replaced if remedied within four (4) hours  Five (5) Service Credits per Device which cannot be replaced per day if not remedied within four (4) hours	N/A
3.1.3	An Insufficient Spares Event relating to River PTIDs occurs at a River Pier	One (1) Service Credit per Device which cannot be replaced if remedied within four (4) hours  Five (5) Service Credits per Device which cannot be replaced per day if not remedied within four (4) hours	N/A

5.1.2 The Contractor shall report on Service Credits and Service Bonuses as set out in paragraph 7 of this Schedule.

## 6 General Obligations

### 6.1 BOC

- 6.1.1 In circumstances where System Faults are not capable of being identified by the Contractor by automatic notification through the System, Operator Personnel shall report failed Devices to the Level 1 Help Desk via phone and replace the item(s) with a System Fault utilising spares held at the Garage.
- 6.1.2 Operator Personnel shall update the GID as soon as practicable after replacing a Device to allow the Level 1 Help Desk to monitor and manage the stock allocation at each Garage.
- 6.1.3 Where Operator Personnel swap Devices without Level 1 Help Desk instruction, the Operator Personnel shall retrospectively log a job with the Level 1 Help Desk as soon as practicable after the activity occurring.
- 6.1.4 Operator Personnel shall ensure that spare or replaced Bus Validators are stored in the Hot Spares Racks to aid Asset management processes except where, due to an exceptional event such as the decommissioning or transfer of a bus route, the number of such Devices is in excess of normal levels and there is insufficient space in which event those Devices shall be stored securely until collected by the Contractor.

## 7 Reporting

### 7.1 The Service Performance Report

7.1.1 In respect of the ST Services, as a minimum, the Contractor shall report on the following in each Service Performance Report delivered in accordance with Schedule 4.1 (Service Delivery):

Para.	Report
2.2.3	<p>All Device types:</p> <ul style="list-style-type: none"> <li>the relevant contract performance measure by Garage and overall ST Service</li> </ul>
2.1.6	<p>Bus Validators</p> <ul style="list-style-type: none"> <li>The percentage of Transaction Data from Bus Validators in autonomous mode on any ST Service Day</li> <li>Availability by bus type (OPO or MDE), Garage and for the overall Bus Validator Services</li> <li>the number of times and the duration that each Bus Validator loses communication with its host Device during each ST Service Day</li> <li>the number of Service Incident Points and the Incident Rates on OPO buses and MDE buses</li> </ul>
2.3.3	
2.3.6	
2.3.8	
2.4.2	<p>Garage Computer Data Landing Devices</p> <ul style="list-style-type: none"> <li>Availability of the LTBCC</li> </ul>
2.4.13	<p>Legacy On-Bus Devices</p> <ul style="list-style-type: none"> <li>the number of Service Incident Points and the Incident Rates on OPO buses and MDE buses</li> </ul>
5	<p>Service Credits and Service Bonuses</p> <ul style="list-style-type: none"> <li>applicable to the Bus Validator Services</li> <li>applicable to the Legacy Bus Services</li> <li>applicable to the River Services</li> </ul>

7.1.2 Each report set out in the table above shall be provided in respect of the Period prior to the date of provision of the Service Performance Report, unless otherwise specified by TTL.

# Appendix 1 - Legacy Bus Service Requirements

## 1 General Overview

The Contractor shall deliver the Legacy Bus Services in accordance with the requirements set out below until such time as TTL issues a Variation to remove the Legacy Bus Services from the scope of the Contract.

### 1.1 London Bus Services Limited (LBSL)

1.1.1 As the regulatory body responsible for managing London's bus services and for its revenue collection system, LBSL needs and the Contractor shall provide the Legacy Bus Services for the purpose of:

- (a) issuing Bus Paper Tickets of the correct value to all bus Passengers who choose to pay their fare with cash;
- (b) providing a secure audit trail for the cash collected for Bus Paper Tickets;
- (c) recording the boarding of Passengers using valid passes or Concessionary Permits;
- (d) recording summary details of validation of all types of Card;
- (e) providing information to LBSL Revenue Protection Inspectors to assist them in detecting Passenger or bus driver fraud;
- (f) recording Data used by LBSL to monitor the performance of route agreements between LBSL and BOCs;
- (g) providing communications and Data support to other on-bus systems;
- (h) transmitting the transaction Data and other Data recorded to LBSL headquarters and making this Data available to BOCs.

### 1.2 Bus Passengers

1.2.1 As relates to the Legacy Bus Services, bus Passengers fall into two principal groups:

- (a) those that pay for their journey with cash on the bus, who need the ETM in order to obtain a Bus Paper Ticket that will permit them to travel on a bus to their desired destination; and
- (b) those that use Travel Products on Cards, who need the ETM in order to indicate to themselves and the bus driver whether they are in possession of a valid Card when they present their Card to the Bus Validator.

### 1.3 Bus Operating Companies (BOCs)

1.3.1 Bus Operating Companies have a contractual obligation to LBSL to operate the Bus Validator Services and Legacy Bus Services on OPO and MDE buses and in the Garages. The main purpose of the Legacy Bus Service for Bus Operating Companies is to:

- (a) ensure cash paying Passengers are charged the correct amount for their journey;
- (b) provide an auditable record of the fares taken and Bus Paper Tickets issued by each bus driver;
- (c) provide a record of Passengers using Token in Card and printed formats; and
- (d) provide the primary means of signing-on the radio and vehicle location system installed in every bus operated on LBSL's services.

#### **1.4 Bus Operating Company Staff**

1.4.1 For bus drivers, the ETM exists:

- (a) to provide them with the information to enable them to collect the correct cash fare;
- (b) as a means to record the acceptance of each printed Token;
- (c) a visual means to check the validity of every Card presented by Passengers, and to provide information on reasons for any rejection; and
- (d) provide an auditable record of the fares taken and Bus Paper Tickets issued during each bus driver duty.

#### **1.5 Service Objectives**

1.5.1 The Legacy Bus Services are required to:

- (a) make the bus boarding process as efficient as possible for Passengers and bus drivers;
- (b) minimise the income lost due to Passenger and bus driver fraud by reducing the opportunities for fraud and increasing the ability to detect fraud;
- (c) provide accurate Data on all fare transactions for service planning and revenue apportionment purposes;
- (d) facilitate innovative fares policies and ticket products introduced by TTL; and
- (e) contribute to the corporate image of LBSL through continued high levels of reliability.

## **2 Detailed Requirements**

### **2.1 General Services**

Until instructed otherwise by Variation associated with the replacement of the Legacy Bus Services, the Contractor shall:

- 2.1.1 maintain all training documentation in accordance with Schedule 8.6 (Training), in relation to the use of all equipment when updated at either TTL's or the Contractor's instigation so that the groups of people detailed below have full knowledge in the use of the Devices which deliver the Legacy Bus Services:
  - (a) Bus Operating Company trainers;
  - (b) bus Revenue Protection Inspectors, staff and managers;
  - (c) TfL Information Management department staff;
  - (d) LBSL Ticket Technology staff; and
  - (e) TTL contract management team members;
- 2.1.2 provide dedicated training equipment for Operator Personnel at the Garages as set out in Appendix 4;
- 2.1.3 provide Documentation in accordance with Schedule 11.1 (Document Management), to provide LBSL and Bus Operating Companies with the Documentation they need to operate the ETM;
- 2.1.4 supply and fit Devices delivering the Legacy Bus Services into new or expanding Garages and remove such Devices from any Garages closing or reducing in size as set out in paragraph 4 of this Schedule;
- 2.1.5 install equipment as instructed by TTL and remove equipment from buses as instructed by TTL under Churn arrangements, making good where necessary.

- 2.1.6 provide LBSL with the Data as specified in Appendix 2;
- 2.1.7 provide the Bus Operating Companies with the Data specified in Appendix 3 via the Garage Computer; and
- 2.1.8 take reasonable steps to secure all Data from access or interference by any unauthorised persons.

## **2.2 On-Bus Service**

- 2.2.1 Until instructed by Variation associated with the replacement of the Legacy Bus Services, the Contractor shall:
  - (a) provide the number of baseplates and all associated cables, fittings and equipment for all buses set out in the Asset Register, and any further buses added as a result of Churn or Variation;
  - (b) equip and maintain the Devices as detailed within the Asset Register or install on buses; as instructed through Variations, Churn or Changes; and
  - (c) provide the number of ETMs to each Garage to enable each bus to leave the Garage with a working ETM.
- 2.2.2 Until instructed by Variation associated with the replacement of the Legacy Bus Services, the Contractor shall support the ETM which shall:
  - (a) issue Bus Paper Tickets with the information printed on them as specified in the functional specifications set out in Schedules 5.1 (Front Office Overview) to 5.5 (Prestige Cards and Enablement) and 6.1 (Back Office Overview) to 6.6 (Operational Support System), whenever a Bus Paper Ticket is required to be issued as specified in the functional specifications set out in Schedules 5.1 (Front Office Overview) to 5.5 (Prestige Cards and Enablement) and 6.1 (Back Office Overview) to 6.6 (Operational Support System);
  - (b) display on the ETM's bus driver display and Passenger display, the correct output of LBSL Data as specified in the functional specifications set out in Schedules 5.1 (Front office Overview) to 5.5 (Prestige Cards and Enablement) and 6.1 (Back Office Overview) to 6.6 (Operational Support System) for any of the processes specified in the functional specifications set out in Schedules 5.1 (Front Office Overview) to 5.5 (Prestige Cards and Enablement) and 6.1 (Back Office Overview) to 6.6 (Operational Support System);
  - (c) electronically record all transactions carried out on the ETM;
  - (d) enable the bus driver to register manually the use of visually inspected Travel Products and Concessionary Permits by Passengers;
  - (e) provide a technical solution to TTL's service requirements with a set of functionality as specified in the functional specifications set out in Schedules 5.1 (Front Office Overview) to 5.5 (Prestige Cards and Enablement) and 6.1 (Back Office Overview) to 6.6 (Operational Support System); and
  - (f) interface with the existing or compatible bus radio and automatic vehicle location (AVL) systems to provide the functionality as specified in the functional specifications set out in Schedules 5.1 (Front Office Overview) to 5.5 (Prestige Cards & Enablement) and 6.1 (Back Office Overview) to 6.6 (Operational Support System).
- 2.2.3 If the issue of Bus Paper Tickets, display of required LBSL Data or electronic recording of LBSL Data is not available, a degraded form of service shall where possible be provided and Service Incident Points shall be recorded as provided for in

this Schedule). The ETM shall where possible inform the bus driver when this degraded form of service is provided.

### **2.3 Garage Service**

2.3.1 Until instructed by Variation associated with the replacement of the Legacy Bus Services, the Contractor shall:

- (a) provide the number of Data Modules set out in the Asset Register to each Garage allowing each bus driver to sign-on for bus driver duty and to have a working Drivers Data Module available for use;
- (b) provide the number of Garage Terminals set out in the Asset Register to each Garage allowing every bus driver signing-on or signing-off, to do so within the defined performance criteria as specified in this Schedule;
- (c) provide Garage Computers as set out in the Asset Register to each Garage allowing all LBSL Data to be collected, stored and provided to the LTBCC;
- (d) equip the number of Garages with Garage Terminals, a Garage Computer and all associated cabling, fittings and equipment as set out in the Asset Register; and
- (e) deliver all Consumables as specified in Schedule 4.10 (Sales & Consumables) to Garages such that Garages do not run out of these Consumables at any time.

### **2.4 LBSL HQ Service**

2.4.1 Until instructed by Variation associated with the replacement of the Legacy Bus Services, the Contractor shall provide LBSL with the LTBCC and the number of work stations as set out in the Asset Register.

## **3 Constraints**

### **3.1 General Services**

- 3.1.1 Bus services and Bus Operating Company operations or any other on-bus electronic systems shall not be adversely affected by any element of the ETM or any other service provided or maintained by the Contractor.
- 3.1.2 The installation of equipment or services shall not adversely disrupt the on-going bus operations being run from each Garage.
- 3.1.3 All Legacy Bus Services Devices shall have unique, permanent and unchangeable identification numbers which are visible on the equipment without removal, with the exception of Data Modules, when inserted into the ETM or Garage Terminal.

### **3.2 On-Bus Service**

- 3.2.1 Where the Contractor makes changes to Legacy On-Bus Devices, all changes shall preserve the safety and ergonomic functions detailed in the relevant System Specifications unless otherwise agreed by TTL.
- 3.2.2 Where the Contractor makes changes to the Legacy On-Bus Devices and Bus Validators, the Contractor shall preserve the security function and gaps between the Device and driver assault screen, unless otherwise agreed by TTL.
- 3.2.3 Where a new bus enters operation, the Contractor shall provide and maintain a vehicle builders installation guide for all on bus Devices used by each Bus Operating Company.
- 3.2.4 The Contractor shall define and control Test Data.

3.2.5 Test Data shall be clearly identified such that it shall not be interpreted / processed as live Data.

3.2.6 Any trialling or testing carried out by the Contractor shall not result in any loss or corruption of genuine live Data.

**3.3 Garage Service**

3.3.1 The Contractor shall deliver to Garages no more Consumables than the Bus Operating Company can accommodate.

3.3.2 The Contractor shall deliver to Garages no more equipment than can be stored by the Bus Operating Company.

3.3.3 LBSL Data shall be processed for reports within the Garage Computers such that Operator Personnel at Garages shall be able to produce operational reports.

**3.4 LBSL HQ Service**

3.4.1 The Contractor shall provide an output from the Garage Computers in Wayfarer 2 Format to allow BOCs access to this Data for revenue reporting purposes.

## Appendix 2 – LBSL Data

Data Item	Fields	Sub-fields
Location Tracking	Equipment id.	ETM Baseplate Serial Number
		ETM Serial Number
		Bus Validator Serial Number
		Drivers Data Module Serial Number
		PTID Serial Number
		Garage Terminal Serial Number
	User id.	Bus Driver (or Conductor) Number
	Location	Garage Code or Location / Site code
		Vehicle number supplied by the AVL system
	Date & Time of use	
ETM Configuration		Route Numbers
		First and Last Farestage Numbers
		First and Last Farestage Names
		Standard Adult Fares
		Commencement Date & Time
		Modifying Rules:
		<ul style="list-style-type: none"> <li>• Class</li> </ul>
		<ul style="list-style-type: none"> <li>• Fare Type</li> </ul>
		<ul style="list-style-type: none"> <li>• Time &amp; Date</li> </ul>
		<ul style="list-style-type: none"> <li>• Route Variations</li> </ul>
		<ul style="list-style-type: none"> <li>• Currency</li> </ul>
	Logical Route Numbers	
	ETM Sign Off time	
Ticket Sale	Ticket type	Single
		Return

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Data Item	Fields	Sub-fields
		Inspector's
		Waybill
		Transfer
		Excess Fare
		Last Transaction Annulment
		PAYG Debit
		One Day Bus Pass issue
	Payment	Cash
		PAYG
	Sale details	Bus Driver (or Conductor) Number
		Duty Number
		Trip Number
		Route Number
		Bus Stop ID
		Operating Number
		Travel Product Zone
	Travel Product details	Travel Product Number
	Class	Adult
		Child
		Concessionary
	Time & Date	
	Value	Cash
Validation	Medium	Card
		Other
	Pass / Permit type	Wheelchair user
		Staff Pass
		Concessionary Permit
		Return ticket

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Data Item	Fields	Sub-fields
		One Day Bus Pass
	Pass / Permit id.	Card Number
	Time & Date	
	RTD Transaction type	Successful – Valid
		Successful – Invalid
		Unsuccessful
System Fault Diagnostics	Equipment id.	Baseplate
		ETM
		Bus Validator
		Drivers Data Module
		PTID
		Garage Terminal
		PTID Base Station
		HSR and GID
	Fault ID.	Fault code
	Time	
	Date	
Fraud monitoring	Bus Driver actions	Number of Bus Paper Tickets
		Total number of cash tickets, Travel Products & Staff Passes on Data Module
		Cash Taken / Total cash on Data Module
		Number of Paper door openings
		Number of ticket cancellations
		Number of Inspector's Summary Tickets issued
		Number of Card "error messages" printed
Fault reporting	Call Log	Time & Date
		Bus Operating Company id.

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Data Item	Fields	Sub-fields
		Nature of call
		Action taken
		Progress of resolution
		Time & date of resolution

## Appendix 3 – BOC Data

The Data detailed in this Appendix shall be made available on request to Bus Operating Companies at the Garage Computer using Software provided by the Contractor. Data will either be printed on the Garage Computer Printer or be output via the port of the Garage Computer in Wayfarer 2 format.

<b>Report Title</b>	Daily Audit Report / Garage Audit Report
<b>Description of Contents</b>	Details revenue, Travel Product and Staff Pass totals per duty, trip and bus driver (or conductor) including "Low Value Tickets"
<b>Inputs (Data Sets)</b>	
<b>Output to &amp; Format</b>	Bus Operating Company. On GPC screen or hard copy
<b>Routine frequency of preparation</b>	On demand by Operator Personnel at GPC
<b>Available to &amp; Format &amp; timeliness</b>	

<b>Report Title</b>	Trip Report
<b>Description of Contents</b>	Details of revenue, Travel Product and Staff Pass usage by ticket category (up to 16 ticket categories, configurable by the Operator Personnel at the GPC), pass type and route
<b>Inputs (Data Sets)</b>	
<b>Output to &amp; Format</b>	Bus Operating Company. On GPC screen or hard copy
<b>Routine frequency of preparation</b>	On demand by Operator Personnel at GPC
<b>Available to &amp; Format &amp; timeliness</b>	

<b>Report Title</b>	Ticket Audit Report
<b>Description of Contents</b>	Details revenue, Travel Product and Staff Pass totals and percentage by ticket category
<b>Inputs (Data Sets)</b>	
<b>Output to &amp; Format</b>	Bus Operating Company. On GPC screen or hard copy
<b>Routine frequency of preparation</b>	On demand by Operator Personnel at GPC

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<b>Report Title</b>	Journey Analysis Report
<b>Description of Contents</b>	Details the bus driver (or conductor) number, name, operating number, duty number, trip number, revenue, tickets issued and visually inspected Travel Products recorded by transaction time
<b>Inputs (Data Sets)</b>	
<b>Output to &amp; Format</b>	Bus Operating Company. On GPC screen or hard copy
<b>Routine frequency of preparation</b>	On demand by Operator Personnel at GPC
<b>Available to &amp; Format &amp; timeliness</b>	

<b>Report Title</b>	Equipment Audit Report
<b>Description of Contents</b>	Details the location of ETM Baseplate, ETM, Bus Validator, Baseplate and Drivers Data Module. An exception report shall indicate where the location has changed or where equipment has not been seen for a configurable period.
<b>Inputs (Data Sets)</b>	
<b>Output to &amp; Format</b>	Bus Operating Company. On GPC screen or hard copy
<b>Routine frequency of preparation</b>	On demand by Operator Personnel at GPC
<b>Available to &amp; Format &amp; timeliness</b>	

<b>Report Title</b>	Stage Times Report
<b>Description of Contents</b>	Details revenue, Travel Products and Staff Passes from first and last farestage by time or category of ticket or Pass.
<b>Inputs (Data Sets)</b>	
<b>Output to &amp; Format</b>	Bus Operating Company. On GPC screen or hard copy
<b>Routine frequency of preparation</b>	On demand by Operator Personnel at GPC

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<b>Available to &amp; Format &amp; timeliness</b>	
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<b>Report Title</b>	Service Report Summaries
<b>Description of Contents</b>	Details of each bus route by revenue collected and ticket type issued
<b>Inputs (Data Sets)</b>	
<b>Output to &amp; Format</b>	Bus Operating Company. On GPC screen or hard copy.
<b>Routine frequency of preparation</b>	On demand by Operator Personnel at GPC
<b>Available to &amp; Format &amp; timeliness</b>	

<b>Report Title</b>	Data Module Print Report
<b>Description of Contents</b>	Details of the contents of each Data Module or PTID by first and last farestage, duty and transaction.
<b>Inputs (Data Sets)</b>	
<b>Output to &amp; Format</b>	Bus Operating Company. On GPC screen or hard copy.
<b>Routine frequency of preparation</b>	On demand by Operator Personnel at GPC
<b>Available to &amp; Format &amp; timeliness</b>	

<b>Report Title</b>	Inspectors Report
<b>Description of Contents</b>	Details of all inspection tickets issued and penalty fare payments made, sorted by inspector number
<b>Inputs (Data Sets)</b>	
<b>Output to &amp; Format</b>	Bus Operating Company. On GPC screen or hard copy.
<b>Routine frequency of preparation</b>	On demand by Operator Personnel at GPC
<b>Available to &amp; Format &amp; timeliness</b>	

<b>Report Title</b>	Data Module Files
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<b>Description of Contents</b>	Raw Data from each Data Module as it is signed-off at a Garage Terminal
<b>Inputs (Data Sets)</b>	
<b>Output to &amp; Format</b>	Bus Operating Company's Computer. On GPC screen or hard copy.
<b>Routine frequency of preparation</b>	On demand by Operator Personnel at GPC
<b>Available to &amp; Format &amp; timeliness</b>	

<b>Report Title</b>	Annulment Report
<b>Description of Contents</b>	Details of annulments by all bus drivers and conductors
<b>Inputs (Data Sets)</b>	
<b>Output to &amp; Format</b>	Bus Operating Company's Computer. On GPC screen or hard copy
<b>Routine frequency of preparation</b>	On demand by Operator Personnel at GPC
<b>Available to &amp; Format &amp; timeliness</b>	

<b>Report Title</b>	Tray and Vehicle Report
<b>Description of Contents</b>	Details of ETM tray serial numbers against each bus number (where the bus number is entered by the bus driver).
<b>Inputs (Data Sets)</b>	
<b>Output to &amp; Format</b>	Bus Operating Company. On GPC screen or hard copy
<b>Routine frequency of preparation</b>	On demand by Operator Personnel at GPC
<b>Available to &amp; Format &amp; timeliness</b>	

## Appendix 4 – Training Matrix

The Contractor shall provide:

1. sufficient quantities of dedicated equipment needed to support training of new Operator Personnel and other functions and report these on the Asset Register. Data for training shall not interact or affect live System use;
2. an annual supply of driver summary reference cards, the quantity provided each year to be twenty per cent (20%) of the total number of drivers for whom Data Modules are to be provided; and
3. where the Contractor has introduced a major change to the ST Services or installed new equipment to a Garage that has not previously been operating it which necessitates Operator Personnel requiring additional training other than as a result of a Variation, the Contractor shall train two (2) trainers nominated by TTL at each Garage location at their cost and provide relevant training materials.

## Appendix 5 - Additional Churn

[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	
[REDACTED]	[REDACTED]	[REDACTED] work
[REDACTED]	[REDACTED]	

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Item	Rate Card Pricing (£)	Additional Information
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

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[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	
[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	