



CITY OF TSHWANE METROPOLITAN MUNICIPALITY

TENDER NUMBER:

RTD 09 - 2022/23

TENDER DESCRIPTION:	Tender for the maintenance and operational support of the Advanced Public Transport Management System (APTMS): three-year period
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NAME OF BIDDER:

CSD NUMBER:

VENDOR NUMBER (WHERE APPLICABLE)

Prepared by:
City of Tshwane Metropolitan Municipality
Tshwane House
320 Madiba Street
Pretoria
0002
Tel: 012 358 9999

BID CLOSING DATE

29 November 2022

Only bidders registered on the central supplier database (CSD) and with a CSD number will be considered for this tender, as this is a requirement from the National Treasury.

Bidders are required to submit electronic copies of the bid either by memory stick/USB flash drive/CD/DVD together with the hard copy of the Bid/Proposals



CITY OF TSHWANE METROPOLITAN MUNICIPALITY

DEPARTMENT: ROAD AND TRANSPORT

Bids are hereby invited from suppliers for the following bid:

Bid number	Description	Department	Contact person	Compulsory briefing session	Closing date
RTD 09 - 2022/23	Tender for the maintenance and operational support of the Advanced Public Transport Management System (APTMS): three-year period	Road and transport	Tshepiso Motlhape (tshepisomo@tshwane.gov.za or 012 358 4120)	Venue: Big Boardroom, 2 nd floor, Infotech Building, 1090 Arcadia Street, Hatfield Date: 8 November 2022 at 10:00	29 November 2022 at 10:00

The document is downloadable from the e-Tender Portal.

Bidders are required to submit electronic copies of the bid either by memory stick/USB flash drive/CD/DVD together with the hard copy of the Bid/Proposals.

Each quotation shall be enclosed in a sealed envelope that bears the correct identification details and shall be placed in the tender box located at:

City of Tshwane Metropolitan Municipality
Tshwane House
320 Madiba Street
Pretoria
0002

Documents must be deposited in the bid box not later than **10:00 on 29 November 2022** when bids will be opened in public.

Bidders must contact the following officials for any enquiries:

- Technical enquiries: Tshepiso Motlhape (tshepisomo@tshwane.gov.za or 012 358 4120)
- Supply chain enquiries: Lukkiet Thobejane-Selowe (lukkiet3@tshwane.gov.za or 012 358 6282)

Bids will remain valid for a period of 90 days after the closing date.

Bids received after the closing date and time will not be considered. The City of Tshwane does not bind itself to accept the lowest or any other bid in whole or in part.

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18.	BBBEE certificate		
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VERY IMPORTANT NOTICE ON DISQUALIFICATIONS

A bid that does not comply with the peremptory requirements stated hereunder will be regarded as not being an “acceptable bid”, and such a bid will be rejected. An “acceptable bid” means any bid which, in all respects, complies with the conditions of the bid and the specifications as set out in the bid documents, including the conditions as specified in the Preferential Procurement Policy Framework Act, 2000 (Act 5 of 2000) and related legislation as published in *Government Gazette 22549*, dated 10 August 2001, in terms of which provision is made for this policy.

1. If any pages have been removed from the bid document and have therefore not been submitted or if a copy of the original bid document has been submitted.
2. If the bid document is completed using a pencil. Only black ink must be used to complete the bid document.
3. The bidder attempts to influence or has in fact influenced the evaluation and/or awarding of the contract.
4. The bid has been submitted after the relevant closing date and time.
5. If any bidder who, during the last five years, has failed to perform satisfactorily on a previous contract with the municipality, municipal entity or any other organ of state after written notice was given to that bidder that performance was unsatisfactory.
6. The accounting officer must ensure that, irrespective of the procurement process followed, no award may be given to a person –
 - (a) who is in the service of the state;
 - (b) if that person is not a natural person, of which any director, manager, principal shareholder or stakeholder is a person in the service of the state; or
 - (c) who is an advisor or consultant contracted to the municipality in respect of a contract that would cause a conflict of interest.
7. Bid offers will be rejected if the bidder or any of his/her directors are listed on the Register of Bid Defaulters in terms of the Prevention and Combating of Corrupt Activities Act, 2004 (Act 12 of 2004) as a person prohibited from doing business with the public sector.
8. Bid offers will be rejected if the bidder has abused the City of Tshwane supply chain management system.
9. Failure to complete and sign the certificate of independent determination or disclosure of wrong information.

Failure to comply with the above will lead to immediate disqualification.

Bidder

CERTIFICATE OF AUTHORITY FOR SIGNATORY

Status of concern submitting tender (delete whichever is not applicable):

COMPANY/PARTNERSHIP/ONE-PERSON BUSINESS/CLOSE CORPORATION/JOINT VENTURE

A. COMPANY

If the bidder is a company, a certified copy of the resolution of the board of directors that is personally signed by the chairperson of the board, authorising the person who signs this bid to do so and to sign any contract resulting from this bid, and any other documents and correspondence in connection with this bid or contract on behalf of the company, must be submitted with this bid.

An example is shown below:

By resolution of the board of directors on 20.....,
Mr/Ms has been duly
authorised to sign all documents in connection with
Bid Number

SIGNED ON BEHALF OF THE COMPANY:

IN HIS/HER CAPACITY AS

DATE:

SIGNATURE OF SIGNATORY:

WITNESSES: 1.

2.

B. PARTNERSHIP

The following particulars in respect of every partner must be furnished and signed by every partner:

Full name of partner	Residential address	Signature
.....
.....
.....

We, the undersigned partners in the business trading as, hereby authorise to sign this bid as well as any contract resulting from the bid and any other documents and correspondence in connection with this bid or contract on our behalf.

.....
Signature	Signature	Signature

.....
Date	Date	Date

C. ONE-PERSON BUSINESS

I, the undersigned,, hereby confirm that I am the sole owner of the business trading as

.....
Signature	Date

D. CLOSE CORPORATION

In the case of a close corporation submitting a bid, a certified copy of the founding statement of such corporation shall be included with the bid with a resolution by its members, authorising a member or other official of the corporation to sign the documents and correspondence in connection with this bid or contract on behalf of the company.

An example is shown below:

By resolution of the members at the meeting on 20..... at
....., Mr/Ms, whose
signature appears below, has been duly authorised to sign all documents in
connection with Bid Number

SIGNED ON BEHALF OF THE CLOSE CORPORATION:

IN HIS/HER CAPACITY AS:

DATE:

SIGNATURE OF SIGNATORY:

WITNESSES: 1.

 2.

E. CERTIFICATE OF AUTHORITY FOR JOINT VENTURES

This returnable schedule is to be completed by joint ventures.

We, the undersigned, are submitting this bid offer in joint venture and hereby authorise Mr/Ms , authorised signatory of the company..... , acting in the capacity of the lead partner, to sign all documents in connection with the bid offer and any contract resulting from it on our behalf.

NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
Lead partner		Signature: Name: Designation:
		Signature: Name: Designation:
		Signature: Name: Designation:
		Signature: Name: Designation:

ROADS AND TRANSPORT DEPARTMENT

*TENDER FOR MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC
TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS*

BID NUMBER
(RTD09-2022/23)

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i. LIST OF ACRONYMS

ADSL	Asymmetric Digital Subscriber Line
AFC	Automated Fare Collection
AP	Access Point
APN	Access Point Name
APTMS	Advanced Public Transport Management System
ARY	A Re Yeng
BOC	Bus Operating Company
BoQ	Bill of Quantities
BRT	Bus Rapid Transit
CBD	Central Business District
CBP	Current Best Practice
CCTV	Closed Circuit Television
CEN	European Committee for Standardization
CoO	Concept of Operations
CoT	City of Tshwane
COTS	Commercial Of The Shelf
DB	Database
ECSA	Engineering Council of South Africa
EMI	Electromagnetic Interference
ETSI	European Telecommunications Standards Institute
FAT	Functional Acceptance Test
FO	Fibre Optic
FOB	Free On Board
GIS	Geographic Information System
GPS	Global Positioning System
GSM	Global System for Mobile Communications
HW	Hardware
ICASA	Independent Communications Authority of South Africa

ICC	Interim Control Centre
ICT	Information and Communications Technology
ID	Identification
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers
IP	Internet Protocol
IP	Ingress Protection
IRPTN	Integrated Rapid Public Transport Network
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
IT	Information Technology
ITS	Intelligent Transport Systems
KPI	Key Performance Indicator
LAN	Local Area Network
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LTE	Long Term Evolution
MS	Microsoft
MTBF	Mean Time Between Failure
MTTR	Mean Time To Resolve
NAS	Network Attached Storage
ODBC	Open Database Connectivity
OEM	Original Equipment Manufacturer
PC	Personal Computer
PM	Preventive Maintenance
POE	Power Over Ethernet
POP	Point of Presence
PPE	Personal Protective Equipment
QA	Quality Assurance
RF	Radio Frequency

RFI	Radio Frequency Interference
RTIG	Real Time Information Group
SABS	South African Bureau of Standards
SAICE	South African Institution of Civil Engineers
SANS	South African National Standards
SAPS	South African Police Services
SAT	System Acceptance Test
SIM	Subscriber Identity Module
SMS	Short Message Service
SOC	Station Operating Company
SOP	Standard Operating Procedure
SW	Software
TFT	Thin Film Transistor
TMPD	Tshwane Metropolitan Police Department
TOC	Taking Over Certificate
TRT	Tshwane Rapid Transit
TBS	Tshwane Bus Services
TSP	Traffic Signal Priority
UMTS	Universal Mobile Telecommunications System
UPS	Uninterruptable Power Supply
UTC	Urban Traffic Control
VLAN	Virtual LAN
VoIP	Voice over IP
VPN	Virtual Private Network
WAN	Wide Area Network
Wi-Fi	Wireless Fidelity
WLAN	Wireless Local Area Network

1. INTRODUCTION AND PURPOSE

The City of Tshwane requests service providers who have experience in providing the services for the maintenance and operational support of the Advanced Public Transport Management System for the Integrated Rapid Public Transport Network (IRPTN), the Bus Rapid Transit (BRT) service known as A Re Yeng (ARY)

The objective of this Tender is to appoint a Contractor for three years, to manage and action the maintenance, and to provide operational support on the:

1. Interim Control Centre (ICC) sub-systems,
2. Station systems,
3. Depot systems,
4. Route CCTV systems and
5. Bus APTMS Systems.

2. BACKGROUND

As part of the Bus Rapid Transit (BRT) AReYeng was launched in December 2014. An Advanced Public Transport Management System (APTMS) has been implemented to support the ARY which is operating on the following 3 trunk routes:

- Line 1A CBD to Wonderboom
- Line 2A CBD to Hatfield
- Line 2B Hatfield to Menlyn

Each route is summarized in the table below

Table 1: Summary of BRT Routes

Construction Phase	BRT Line	Area Description	Length	Service Inception
Phase 1B	Line 1A	CBD to Wonderboom	9 KM	October 2017
Phase 1A	Line 2A	CBD to Hatfield	7 KM	December 2014
Phase 1C	Line 2B	Hatfield to Menlyn	10 KM	September 2021

3. PROJECT SCOPE

The system description and scope of works is outlined under Section 3 of this tender document. An explanation of the maintenance objectives, including KPI, is found under Sections 7 and 8, respectively. In addition, the Employer requires the Contractor to optimise the system as part of the Maintenance process and Asset replacement.

3.1 DESCRIPTION OF WORKS

A high-level systems architecture of the APTMS system is given in Figure 1, followed by a short description of the APTMS system operation.

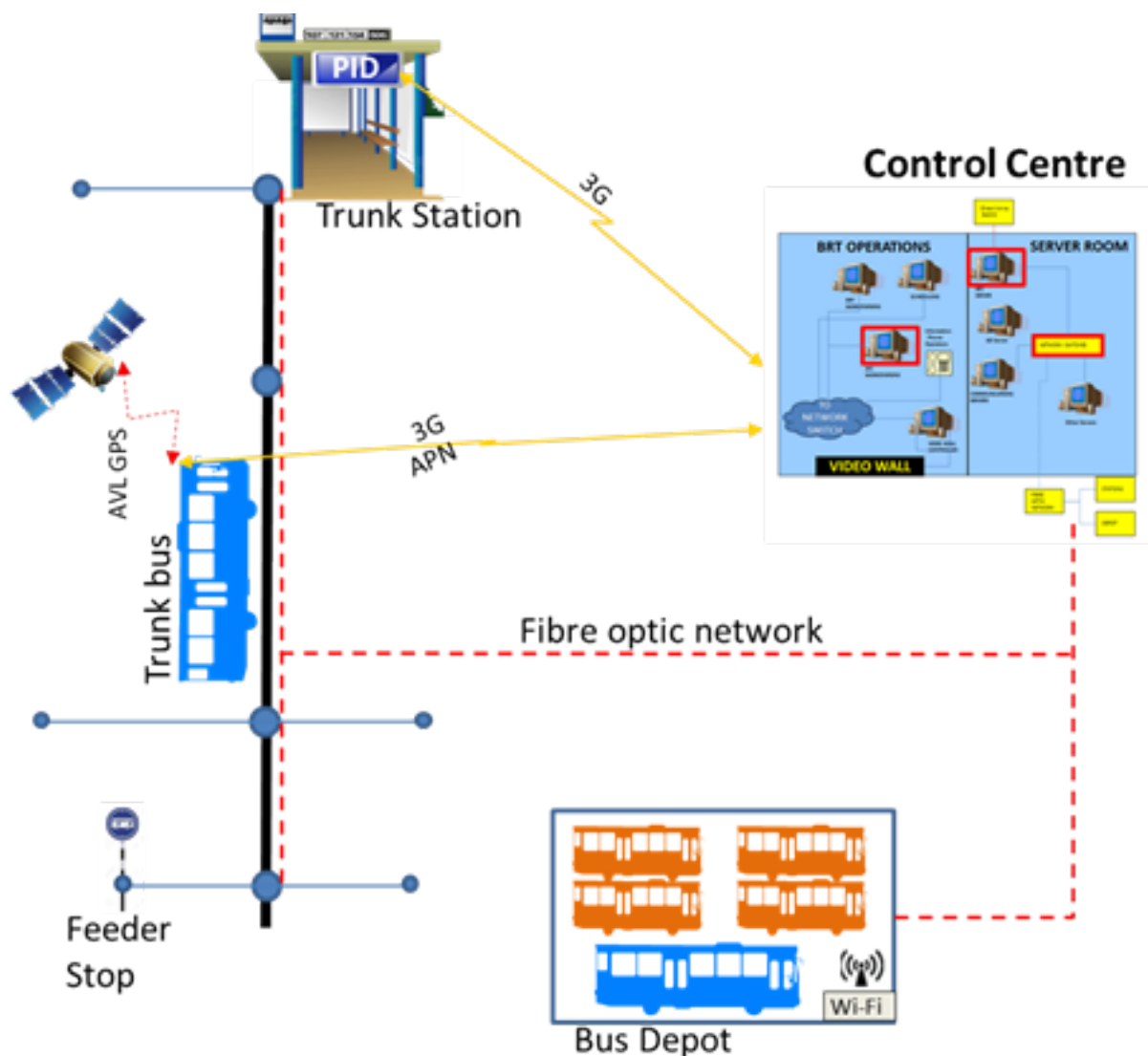


Figure 1: High-level APTMS systems architecture.

The APTMS systems and sub-systems are implemented throughout the BRT infrastructure:

1. Interim Control Centre (ICC)
2. Vehicles (Trunk and Feeder Buses)
3. Trunk Stations
4. Bus Depots and Layovers

An On-Board Unit (OBU) in every bus allows tracking of the bus and provides an interface to other bus systems. Continuous communications to the ICC are via an Access Point Name (APN) and update the bus location in semi-real-time (every 30 seconds). Operators can see the bus location measured against a schedule. The operators can communicate with the bus driver using voice or text messages. All system real-time operating information is logged, available in a database, and used for reporting purposes.

Inside trunk stations, Passenger Information Displays (PIDs) provide semi-real-time information about the departures of the next buses, including route information, time of departure and platform (or gate) number. Voice communications to the station supervisor are possible via an Internet Protocol (IP) telephone network.

A Wi-Fi network is installed at the bus depot to upload/download bulk information to or from the ICC. In addition, a remote viewing station with limited user rights allows the Bus Operating Company (BOC) to

view bus schedule adherence. The information is the same as seen in the ICC but with limited system interaction from the depot.

All CCTV video is recorded and stored at the ICC for 14 days. The CMMS software is implemented to manage the maintenance of the IRPTN network. The ICC has a view of the BRT network operations on a video wall.

3.2 SUMMARY OF THE SYSTEMS TO BE MAINTAINED

As part of the scope of this tender, the following elements form part of this Maintenance Tender and will need to be maintained; they include:

A. Interim Control Centre (ICC)

- a. Digital Video Management System (DVMS)
- b. Computerised Maintenance Management Software (CMMS)
- c. Network Attached Storage (NAS)
- d. Video Wall
- e. Firewall
- f. CCTV cameras
- g. Servers and Workstations
- h. IP Phones
- i. Fire Suppression System
- j. Uninterruptable Power Supply (UPS)
- k. Air Conditioning System
- l. Generator
- m. Access Control
- n. Anti-virus
- o. Backup Systems

B. Station Systems

- a. Passenger Information Displays (PIDs)
- b. CCTV Cameras
- c. Panic Buttons
- d. IP Phones
- e. Public Address (PA) System
- f. CCTV Display
- g. CCTV Decoder
- h. Last Mile Switch
- i. Bus to Station Interface System (BSIS)
- j. Workstations for CMMS

C. Depot Systems

- a. Wi-Fi system
- b. CCTV Cameras
- c. Communications Network
- d. IP Phones
- e. Depot Data Management Servers (DMS)
- f. Depot DTI Front-End Server

D. On Route

- a. CCTV Cameras
- b. Network Switch

E. Bus

- a. Bus Alignment BRU
- b. Bus Alignment Array
- c. On board Unit (OBU)
- d. Driver terminal (ITT)
- e. Internal Destination Display
- f. Network Video Recorder (NVR)
- g. Driver CCTV displays and CCTV cameras

3.3 INTERFACE TO OTHER CONTRACTS

The following diagram illustrates different stakeholders and systems which form part of the larger City ITS infrastructure

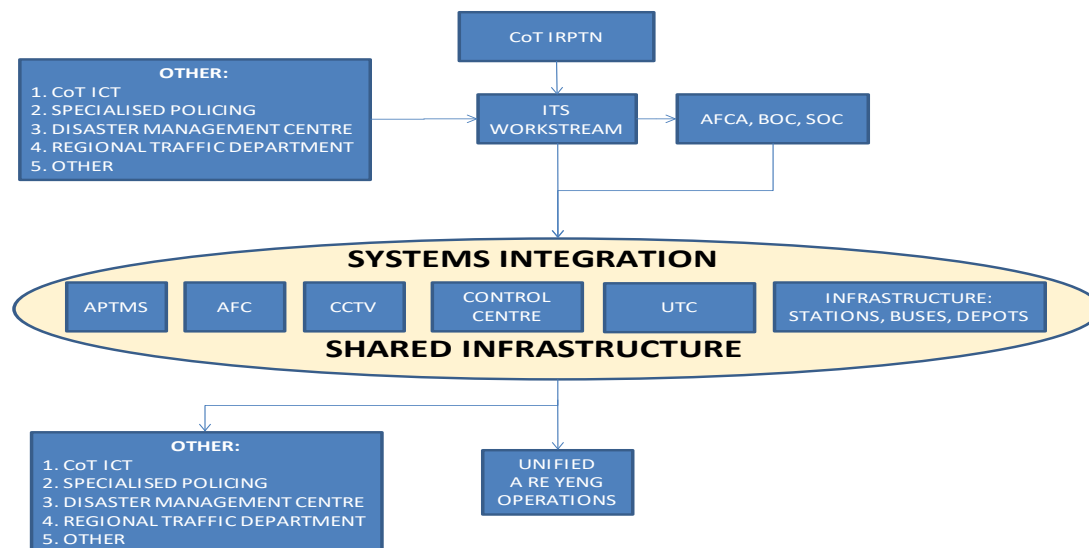


Figure 2: Different role players, systems and infrastructure forming part of the A Re Yeng service.

The different role players, functions and interdependencies are summarised below.

1. The APTMS as defined within this scope of works
2. The AFC Ticketing system is installed throughout the same infrastructure as APTMS.
3. The City CCTV systems: Crime deterrence, surveillance and support ARY operations. Share the same infrastructure with APTMS.
4. ICC: City operated with the representation of all relevant stakeholders. Location of APTMS systems controllers and APTMS back-office systems.
5. UTC: Traffic signals and communications network. APTMS systems interface with and depend on the communications infrastructure. TSP receivers and antennae are installed on/in traffic signal infrastructure.
6. SOC & BOC: Infrastructure including stations, buses and depot, respectively. APTMS components make use of provided infrastructure.

The above interdependencies are not exhaustive. The Contractor shall coordinate, cooperate and meet with, support and share information with all the entities above and others as directed by the City, as and when required.

3.4 HIGH LEVEL SCOPE OF WORK

The high-level scope of work for the project includes but is not limited to the following specific work elements:

1. Project and Contract management.
2. Perform comprehensive maintenance of all systems described (per KPI), including:
 - a. Responsive maintenance
 - b. Preventive maintenance
 - c. Continuous improvement
3. Development of a Maintenance Plan.
4. Use Computerized Maintenance Management System (CMMS) for all maintenance activities and provide asset and maintenance-related information to be captured as may be required.
5. Submit Maintenance reports monthly assigned with the progress report.
6. Provide training to The City personnel or others as instructed.
7. Assist Operations with advisory services as and when needed.
8. Coordinate, liaise with and support other contractors to ensure systems integration.
9. Any other work obligations as specified or implied throughout the Contract.

3.5 PROGRAMME

The Contractor shall submit a detailed programme within 14 days of the Commencement date. The Contractor shall address the following in his programme:

1. This Contract is for three years, starting from the Commencement Date.
2. The first 28 days, starting with the Commencement Date, shall be a hand-over period including at least:
 - a. Familiarization with the site.
 - b. Draw up a baseline status report of the condition of the site and submit it to the City. The first draft shall be submitted within 14 days.
 - c. Ensure the contractor has the necessary tools, instruments, equipment and facilities to conduct the Works and procure the same if required.
 - d. Procure the necessary spares to conduct the Works.
 - e. Setup of the CMMS on the Contractor's hardware (e.g. tablets). The Contractor shall obtain the necessary training on the CMMS if required at his own cost.
3. The full system maintenance shall commence immediately after the hand-over period as per the Key Performance indicator (KPI).
4. Issuing the first version of the complete maintenance plan 28 days after the Contact Commencement Date. i.e. at the conclusion of the hand-over period.
5. The programme shall show how the Contractor can meet his KPI obligations, including the planning of resources.
6. Preventive maintenance cycles of different system components. Depending on the devices/systems, this can be:

- a. Weekly
 - b. Bi-weekly
 - c. Monthly
 - d. Quarterly
 - e. 6-monthly
 - f. Annual
7. Critical assessment of processes as part of continuous improvement.
 8. Support in the setup of APTMS assets and maintenance processes in CMMS.
 9. Submission of maintenance reports.
 10. Provide training to the City designated personnel.
 11. Providing monthly operational reports generated by the BI system with supporting descriptions and analysis.
 12. Install new capital works as part of the optimization of system expansion.
 13. Procurement and equipment lead times.
 14. Any equipment/sub-system on which Functional Acceptance Testing is required shall first pass the FAT before orders are placed unless otherwise approved by The City in writing.
- The programme(s) shall be updated continuously (monthly) to reflect the actual progress and be aligned with cash flow forecasts.

4. PERSONNEL REQUIREMENTS

The personnel requirements specified in this Section are minimum requirements. It shall remain the Contractor's responsibility to ensure that suitable quantity and adequate qualified personnel are made available throughout the Contract period to fulfil all Contractual obligations, including KPI requirements.

4.1 CONTRACT MANAGER

Qualifications and Experience

The Contractor shall provide a Contract Manager who meets the following minimum requirements:

1. Reside in South Africa for the duration of the Contract.
2. Must have a higher education qualification at a level of NQF6 or higher on Contract management.
3. Have a minimum of 4 years of working experience.
4. Have a minimum of 4 years of experience in managing ICT-related projects.
5. Contract management experience based on a recognized form of Contracts such as FIDIC, NEC or GCC(SAICE). FIDIC experience is preferable.
6. Experience in Quality Assurance Management.

Summary of Minimum tasks

The following minimum tasks are expected from the CM.

1. Act as the Contractor's Representative as per the FIDIC GCC.
2. Shall ensure that all Contractual obligations set out in the GCC are met and adhered to by the Contractor.
3. Shall be responsible for all project management-related activities specified or implied in this Contract.

4. Contract management shall be an ongoing and continuous service that the Contractor provides to ensure that the City's requirements are met within the program and budget.
5. Various meetings at locations to be advised by the City or the Engineer shall be held during the Contract, including but not limited to the following:
 - a. Monthly contract meetings.
 - b. Monthly maintenance meetings.
 - c. Various integration and coordination meetings as required.
 - d. Technical meetings as required related to new capital works or system maintenance.
 - e. Joint Operations Committee (JOC) meeting every week (a mandated representative may also attend).
 - f. Other meetings may become necessary.
6. Shall be present at all project meetings or send mandated representatives after approval from the City or Engineer.
7. Shall ensure that relevant technical personnel attend meetings as and when required.
8. Prepare and submit the Contractor's Maintenance Plan in coordination with the maintenance manager for approval.
9. Submit monthly maintenance reports in coordination with the maintenance manager.
10. Submit monthly progress reports in coordination with the maintenance manager.
11. Coordinate and submit any other report within his team as may be required.
12. Shall, where required, compile and submit a compliance traceability matrix for every clause of the specifications.
13. Shall be responsible for developing and implementing a quality assurance plan approved by the City.
14. The QA plan shall be updated as required or instructed by the City or Engineer.
15. Together with the maintenance manager, manage the tasks of all other personnel to ensure persons with the right skills are assigned to maintenance jobs.
16. Plan and manage new capital work requirements.

4.2 MAINTENANCE MANAGER

Qualifications and Experience

The Contractor shall provide a person who shall act as the Maintenance Manager who meets the following minimum requirements:

1. Reside in South Africa for the duration of the Contract.
2. Have a higher education qualification in electronic engineering, ICT systems, network engineering or a related technical field at a level of NQF 6 or higher.
3. They are registered with a professional engineering body, such as the Engineering Council of South Africa (ECSA) as a minimum requirement.
4. Have a minimum of 5 years of experience in electronics, ICT, or network engineering.
5. Have a minimum of 3 years of Maintenance Management experience in Technical or ICT-related projects.

Summary of minimum tasks

The following minimum tasks are expected from the Maintenance Manager.

1. Act as overall project technical coordinator and director for the Contractor and his Specialist Sub-contractors.

2. Together with the CM plan and manage minimum required spares to meet KPI obligations.
3. Review Service Requests and ensure detailed planning of work orders and approve these before they are scheduled and executed.
4. Ensure his Specialist Subcontractors comply with all maintenance requirements.
5. Be responsible for the actions of all other technical personnel.
6. Be responsible for the overall quality of technical work done throughout the project.
7. Develop and review technical documentation and approve it before submission to the City and Engineer
8. Ensure testing performed on any replacement/repair work is done correctly and sufficient to demonstrate full functionality and integration.
9. Attend technical meetings as and when required.
10. Carry out certain work items himself as and when necessary. The works may be to resolve issues of any technical nature specified or implied in this Contract, e.g.
 - a. Technical issues that are critical and urgent.
 - b. Other technical personnel are not qualified/experienced to carry out the work.
 - c. Ensure system backup and recovery of data in the event of system failure.
 - d. Ensure back-office systems are maintained.
 - e. Configure or reconfigure any software within the scope of this contract.
11. Assist the CM with reporting requirements as may be necessary.
12. Draw up failure reports, actively analyze the cause of failure, and propose improvements.
13. Supervise and inspect the quality of the Technician's jobs.

4.3 TECHNICIANS

Qualifications and Experience

The Contractor shall provide technicians who meet the following minimum requirements:

1. Have a higher education qualification in electronic engineering, ICT systems, network engineering or a related technical field at a level of NQF 5 or higher.
2. A sufficient number of technicians to meet the KPI obligations.
3. Have a minimum of 5 years of work experience as an artisan, preferably in the electric or electronic fields.
4. Technicians working on CCTV systems shall have at least 3 years of experience working in the CCTV environment.
5. The Contractor shall ensure all technicians are trained and adhere to OHS regulations and QA requirements.
6. Have an excellent knowledge and hands-on experience in ICT networks, Wi-Fi networks and electronic sub-systems.

Summary of Minimum Tasks

The following minimum tasks are expected from the technicians:

1. Carry out work in stations, buses, at the depot, in the ICC and on route or anywhere on-site as may be required.
2. Respond to WO (Work Orders) within KPI agreed time.
3. General Responsive Maintenance tasks.
4. General Preventive Maintenance tasks.

5. Basic troubleshooting.
6. Shall adhere to QA and OHS requirements.
7. Report and advice on critical issues observed on site.

4.4 SPECIALIST SUB-CONTRACTORS

The City acknowledge that the Contractor might not have internal/full-time staff to resolve all the challenges that can be experienced within the scope of the Contract. Maintenance, Expansion and Operational Support of the Advanced Public Transport Management System (APTMS). The Contractor would therefore be allowed to make use of Specialist Sub-Contractors.

The Contractor shall have verifiable access to Specialist Sub-Contractors that shall assist with works, including but not limited to the following:

1. Have experience in configuring and maintaining the systems required.
2. Provide Operational inputs on the APTMS systems when required.
3. Report to the Maintenance Manager on all work done.
4. Provide specialist training, including on-the-job training to the City-designated personnel, when required.
5. Respond to the SR and WO issued by the City and Maintenance Manager within agreed KPI timeframes.
6. When needed, attend maintenance meetings and be prepared to report on system functionality.
7. Attend special technical meetings as and when required.
8. Issue fault reports and actively analyze the cause of faults.
9. Assist in ensuring the spares part stock is up to date.

5. SYSTEM FUNCTIONAL DESCRIPTION

A description of the installed systems to be maintained is given in this section. Sections 6, 7 and 8 details the Maintenance and KPI requirements of the APTMS equipment and systems.

5.1 CURRENT SYSTEMS INSTALLED

Below is a list of the main software/products used as part of the APTMS:

#	System	Product
1	DVMS	March Enterprise System
2	CMMS	Maximo System
3	NAS	DELL System
4	BSIS	FROST Alignment System
5	VIDEO WALL	Eyevis
6	ANTIVIRUS	Kaspersky
7	BACKUP	Symantec Backup Exec
8	Vehicle Tracking	Trapeze LIO
9	Scheduling	MDV DIVA
10	Back-Office Servers	Dell and IBM

5.2 INTERIM CONTROL CENTRE (ICC) EQUIPMENT

The APTMS back-office systems are installed as server-client architecture in the ICC. Rack-mounted servers are located in the server room and workstations in the operations area.

The ICC is located inside the Tshwane Metro Police Department Head Quarters building on the corner of WF Nkomo Street and Es'kia Mphahlele Drive.

5.2.1 Digital Video Management System (DVMS)

The APTMS uses a DVMS platform to manage and record the CCTV footage from the bus stations, on the route, at the ICC, and at the bus depots.

The DVMS is the centre of the Solution. It stores the CCTV system's configuration, handles the user authentication and hosts the web services for the web client. It also manages the recording servers that manage the recording process and store the data on the NAS, connected via the communications network.

The maintenance will include the hardware support and software (incl. License) support agreements and warranties applicable for the duration of the contract. The system has a fully configurable video wall display client, which allows an operator with sufficient privileges to drag and drop video content onto the video wall. In addition, the system has a fully configurable alarm manager, allowing alarms from video analytics and external integrated devices to be processed.

The CCTVs connected to the DVMS exclude the Bus CCTV, which is being recorded on the Depot Data Manager (DDM) server at the Depot. The Bus CCTV system and DDM server are described elsewhere in this document.

5.2.2 Computerised Maintenance Management System (CMMS)

An Asset and Maintenance Management system was implemented for the APTMS, the BOC, the SOC, and Quality Inspectors from The City and the Forcelink integration from the AFC (Automatic Fare Collection). The CMMS is continuously being improved by updating the workflow and processes to accommodate daily operational procedures and changes.

The CMMS is run from two servers, the Application server and the Database server, and requires the use of annual user licenses. These licenses will need to be renewed annually or as required in this maintenance agreement.

The CMMS is accessed via the Operator Workstations in ICC, Mobile Devices and Workstation of the Maintenance Contractor and City Quality Inspectors.

5.2.3 Network Attached Storage (NAS)

As part of the APTMS project, the city has installed a NAS system. The NAS system has multiple storage units and uses the RAID5 configuration for redundancy. The management of the NAS system is done via an Enterprise Manager product.

5.2.4 Video Wall System

The video wall installed in the ICC consists of:

- A Controller unit.
- LCD modules (incl. housing and wall mount brackets).
- Basic Control room and Video wall management software.
- CCTV Decoder,
- CCTV Control Switch,
- Digital DVI high-quality copper cable

The video wall content is provided via HDMI ports via APTMS and CCTV workstations.

5.2.5 Firewall

Firewalls were procured, and the license support was renewed under the APTMS contract. These devices form part of the communications network.

5.2.6 ICC CCTV

Within the ICC, there are fixed IP dome CCTV cameras installed.

5.2.7 APTMS Central Control System

The ICC installed servers and workstations with operating systems and databases for the operations of the APTMS central control system.

5.2.8 Workstations

The workstations are used for all related APTMS operations works and include actions like:

- CCTV Monitoring
- CMMS Operations
- Bus Monitoring

5.2.9 Server Operating System

Servers within the ICC are running the Microsoft Windows Server operating system.

5.2.10 IP Phones System

The ICC contains IP desk phones. Also included as part of the IP phone system are the ISDN interface cards. The IP phone system includes Software Support Services.

5.2.11 Fire Suppression Systems

The ICC Fire detection and suppression system is for the protection of the server room. The system consists of the Cabling within the ceiling void, the gas Suppression System, Pyroshield Gas and Piping, Fire equipment and Signage, and the Fire Control panel.

5.2.12 Uninterruptable Power Supply (UPS)

The ICC UPS is based on 10 minutes of autonomy, enough time for the ICC generator to start up.

5.2.13 Air Conditioner System

The ICC air conditioning system consists of extraction fans, fresh air fans, ducting, electrical ancillaries, and the main split unit for the Server room and the cassette unit for the Control room.

5.2.14 Generator System

The ICC generator supplied as a backup generator is rated at 200KVA.

5.2.15 Access Control System

The ICC Access Control is done via a Biometric access control system. That includes:

- Biometric Fingerprint Devices
- Access Control Management Software

5.2.16 Antivirus System

The ICC ICT Infrastructure is protected by Antivirus software that includes:

- Anti-Virus and Security for Windows
- Anti-Virus Linux File Server
- Security for Virtualization

The Anti-Virus software is hosted as a virtual machine on one of the ICC virtual servers.

5.2.17 Backup System

The ICC Backup software is licensed to manage the backups and archiving of the NAS server.

5.3 STATION EQUIPMENT

There are 13 bus stations in operation on the BRT trunk route. These stations are equipped with APTMS equipment that needs to be maintained. The APTMS equipment includes CCTV cameras and displays, network switches, IP Phones, PIDs (Passenger Information Displays), Panic Buttons, PA (Public Address) System and the BSIS (Bus to Station Interface System).

5.3.1 Passenger Information Displays (PIDs)

Double-sided Passenger Information Displays (PIDs) are installed at all the Station. The functionality includes but is not limited to:

- Passenger information on the next buses.
- Content is updated at 30-second intervals.
- Non-reflective, anti-glare film over displays.
- The light sensor allows for auto-brightness control based on ambient light conditions.
- PID clock time is synchronised with the central system.

The content displayed on the screen is generated and managed from the ICC.

5.3.2 CCTV cameras

The CCTV cameras in the stations and the kiosk are connected to the local station switch with CAT-5 cabling. The CCTV camera footage is streamed to the ICC.

5.3.3 Panic button system

The panic button system consists of the following elements:

- Emergency panic button in the Kiosk.
- The emergency panic button in the manager's office.
- Equipment room door sensor.
- Remote panic button carried by the security guard.

All Panic buttons are linked to an RTU (Remote Test Unit). The RTU is connected to the last mile switch, which is connected to the Local network switch. Once the alarm is activated, the DVMS also gets notified. The CCTV monitoring workstation in the ICC gets the sound and visual (red flashing light) display on the screen.

5.3.4 IP Phones

All station has IP Phones. One in the manager's office and one in the kiosk. The IP Phones have a unique IP address and are connected to the local station switch with CAT5 cabling.

5.3.5 Public Address System

The PA (Public Address) system is IP based and consists of the following elements:

- Microphone.
- IP Audio decoder.
- PA Power Amplifier.
- Network Controller.
- Several Station fireproof Wall Mounted Loudspeakers.

Announcements are possible in either:

- The announcement was made from the microphone on the Kiosk.
- The announcement was made from the ICC.
- The announcement was made from the APTMS system.

5.3.6 CCTV Decoder and Display

All station is equipped with a CCTV decoder and display monitor inside the kiosk to monitor and view all CCTV on the station.

5.3.7 Last Mile Switch

All station is equipped with last mile switches that connect the Barix Box (for PA), the RTU alarm unit, the PID RTUs and the NUC (CCTV decoder) and then to the Local Station Switch. The Local Station Switch is maintained under the UTC Maintenance Contract.

5.3.8 Bus to Station Interface System

The BSIS (Bus to Station Interface System) is designed for BRT to coordinate the opening and closing of the platform doors on a station with the doors on the bus. The basic functionality is shown in Figure 3. The purpose of the BSIS system is to synchronize station doors with bus doors on docking to ensure passenger safety. The remote button can override the BSIS in case of BSIS failure. Depending on the station configuration, e.g. how many gates and doors, the number of each BSIS element varies per station.

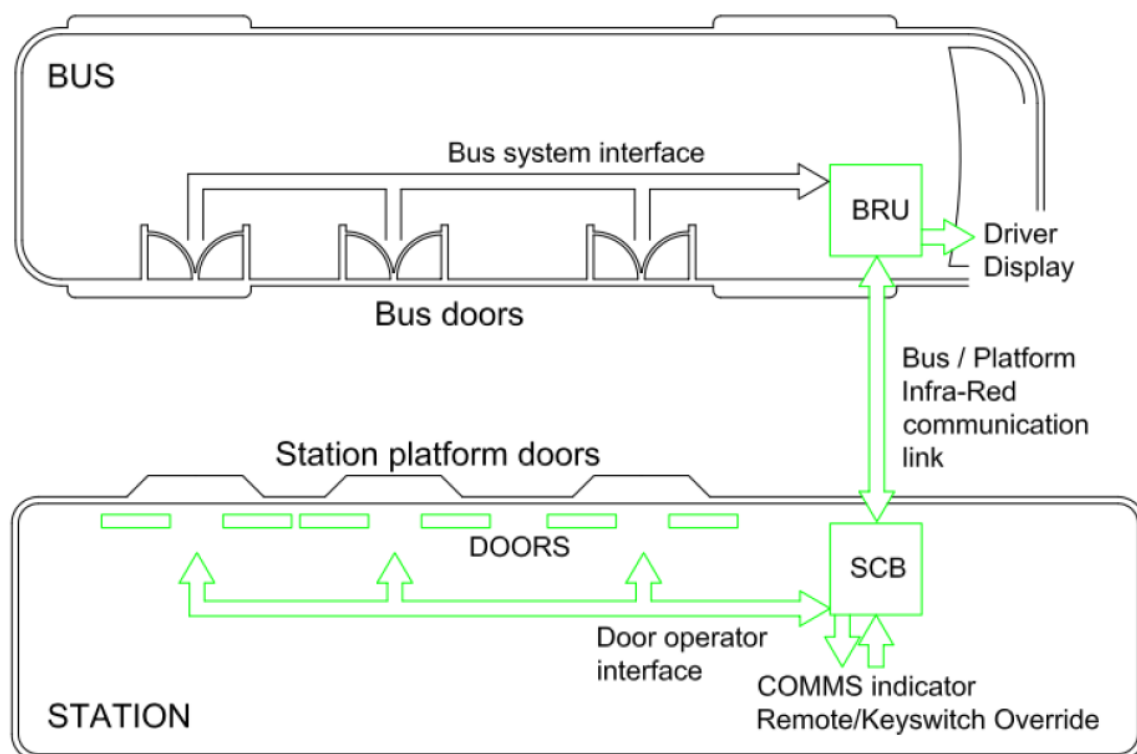


Figure 3: The BSIS for bus station door synchronization

5.3.9 Station Workstations

At some stations, workstations are installed. These Works Stations are equipped with CMMS Software for Station personnel (SOC) to log system faults.

5.4 DEPOT EQUIPMENT

The A Re Yeng depot is located at Belle Ombre in Bosman Street in Pretoria. It has sufficient parking for all buses, a wash bay, a fuel bay (both Diesel and CNG), a Workshop and the admin building.

The admin building has a server room with the DDM (Depot Data Manager) and DTI (Bus CCTV Download Manager).

The APTMS Systems network at the depot consists of the Wi-Fi network, the communication network, and the depot CCTV components.

Disclaimer: the following depot equipment has been moved from the old to the new depot, and must therefore be re-commissioned before maintenance can be done

5.4.1 Depot Wi-Fi

The Depot Wi-Fi network at Belle Ombre consists of multiple Sectorized Access Points. The Wi-Fi network is used to offload daily CCTV data and other APTMS-related data once the bus arrives at the depot. Also, during the nighttime, the software updates and new configurations can be loaded onto the buses using the Wi-Fi network.

5.4.2 CCTV Cameras

The CCTV is connected to the last mile network switch at the depot. The switch allows all CCTV data to be streamed back to ICC via the core communication network and DVMS and stored on the NAS.

5.4.3 Communications Network

ITS masts on the Belle Ombre Depot host the Wi-Fi APs, the CCTV cameras and the enclosure where power and Fibre terminate. AFC share these 8m ITS masts and enclosures with APTMS for their Wi-Fi solution. The enclosure and APTMS equipment inside form part of the communications network. Fibre Cables on the Belle Ombre Depot will be part of the maintenance agreement. The Fibre Cables outside of Belle Ombre fall outside the scope of this contract.

5.4.4 IP Phones

The Belle Ombre depot has three IP Phones. They are located in the dispatch office. The IP Phones have a unique IP address and are connected to the local station switch with CAT5 cabling.

5.4.5 APTMS components installed at Depot

The APTMS items installed at the Belle Ombre depot server room are the DDM and DTI front-end servers that interface with the DDM and DTI back-end servers in the ICC. It manages the upload/download of information between buses and the central system.

The implemented depot systems functionality includes but is not limited to:

- Base Versions (containing route and schedule information) are uploaded onto buses via the Wi-Fi network.
- The driver schedule workstation is used for scheduling drivers.
- The dispatch workstation is used for dispatching drivers and buses.
- Logged files and event recordings are downloaded from all buses used in operations during the day once they return to the depot.
- Uploads/downloads commence automatically when the bus is in the Wi-Fi zone at the depot.

5.5 BUS EQUIPMENT

The following figure shows the typical equipment layout on a 12m bus.

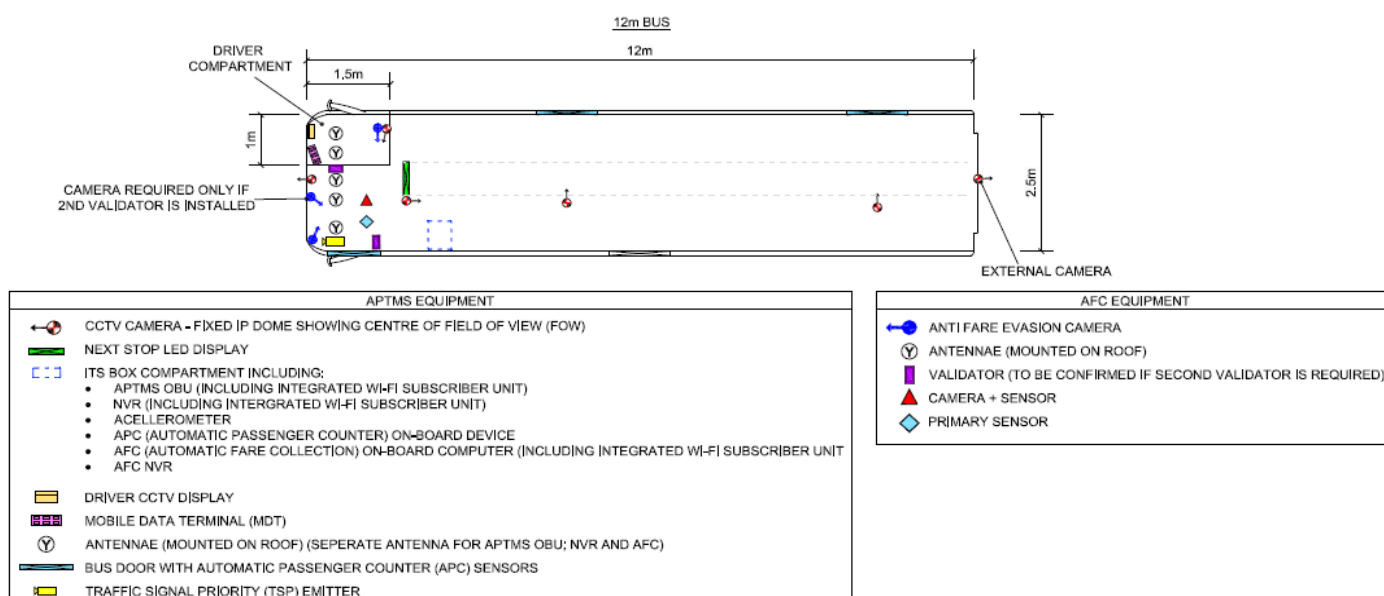


Figure 4: Schematic for Bus Layout

Important: The schematic shows other equipment not included as part of this Contract, such as AFC devices. The Contractor shall coordinate, liaise and support other Contractors as may be required

Some of the most prominent implemented on-board system functions include but are not limited to:

- Driver login and route/block selection.
- Automatic Vehicle Location (AVL) is sent to ICC every 30 seconds.
- Schedule adherence tracking and display.

- Interface with and updates the internal next stop display and announcements.
- Text and Voice communications with ICC.
- Passenger counter information logged.
- Interface with various bus signals, including odometer, reverse gear signal, stop request, ignitions sense signal, and door open/close (left and right-hand doors).
- On-board NVR, cameras, CCTV display and accelerometer.

5.6 ON ROUTE EQUIPMENT

CCTV cameras are installed along the BRT trunk routes to ensure the ICC has a view of the network.

5.6.1 CCTV cameras

All CCTV cameras are integrated into the DVMS in the ICC. Video is streamed to the ICC via the City Fibre network. All Video is stored on the NAS located in the ICC. No video is recorded on the CCTV site.

The video is compressed into H.264 format. The CCTV cameras have Optical zoom functionality with Pan, Tilt and Zoom (PTZ) that can be manually controlled from ICC.

The CCTV camera is mounted on a pole. The pole does have lightning protection.

5.6.2 Network Switch

The CCTV is connected to a last-mile network switch. The CCTV camera is connected to the switch using the POE port and a CAT-6 cable.

6. MAINTENANCE REQUIREMENTS

A site information pack will be provided to the Service Providers at the tender briefing session. The site information pack will contain the current maintenance plan and minimum spares list.

The following shall apply:

1. Maintenance applies to all the APTMS sub-systems installed.
2. The purpose of the maintenance is to ensure complete system functionality remains available and is safe and reliable, deliver integrated systems operations and make improvements where required. As a minimum, the full current system functionality, including sub-sections, shall be maintained.
3. Complete maintenance is included for all systems, sub-systems, devices, parts, components, accessories, hardware, applications, software, firmware, interfaces to other systems and any other element as required.
4. The Key Performance Indicators (KPIs) shall apply to all maintenance.
5. If the Contractor uses different terminology than that specified here. The Contractor shall map this to his terminology to prove that all components and maintenance elements specified are covered.
6. The Contractor shall provide a maintenance support desk which can be contacted by telephone or email during operational times.
7. Where needed, the Contractor shall appoint specialist sub-contractors to maintain the specialist APTMS sub-systems without voiding any warranty.

6.1 MAINTENANCE DEFINITIONS

Below are key definitions. Other terms will be defined throughout the document.

- **Maintenance Plan:** A documented plan defining a detailed approach to system maintenance. It describes the application of the maintenance program to a specific system or set of systems. It typically identifies the maintenance activities, priorities, timetables, resource commitments and expenditures.
- **Fault or Failure:** when an item can no longer fulfil one or more of its intended functions or operates in an unstable condition or outside of certain acceptable operating parameters. An item does not need to be completely unable to function to have suffered a failure. Partial functionality will be considered a failure. Software that becomes out of date is considered a failure.
- **Breakdown:** a type of failure where an item is completely unable to function.
- **Service request (SR):** Document used to request initiation of maintenance task. Converted into a work order after the service request has been authorised.
- **Work order (WO):** Document used to plan and manage maintenance tasks. Include a description of the work, priority, procedures, parts, materials, tools, instrumentation and equipment required, labour hours, costs and materials consumed. Also, include key information about failure causes, work performed, etc.
- **Job or Task:** A work order which contains all the necessary information required to perform a maintenance task.
- **Responsive maintenance:** Sometimes called “corrective maintenance”. Maintenance is performed in response to a failure to rectify the problem.
- **Preventive maintenance:** Sometimes called “routine maintenance”. Maintenance is performed on a routine basis at predefined scheduled intervals.
- **Planned maintenance:** maintenance for which a job procedure (pre-determined or otherwise) has been documented. All labour, materials, tools and equipment required have been estimated and availability assured before the commencement of the task.
- **Scheduled maintenance:** any maintenance work that has been planned and included on an approved maintenance schedule.

Maintenance is divided into 3 main categories, as shown in the figure below. Each of these will be discussed in the next sections.

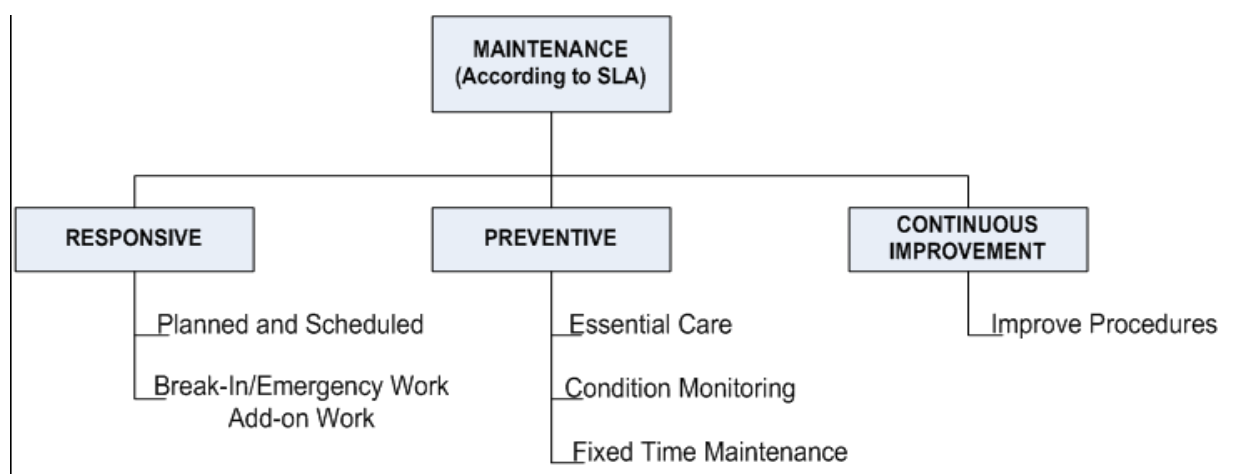


Figure 5: Definition of Maintenance

6.2 RESPONSIVE MAINTENANCE

The following shall apply:

1. Responsive Maintenance shall include supply, delivery, installation, setup and configuration and testing and re-integration of all parts, components, devices or software and related services and any work required to correct/rectify/resolve any system failure and its restoration to safe, reliable, normal operation to fulfil its intended function.
2. Major software updates or system upgrades shall be included.
3. Responsive Maintenance shall include testing and re-commissioning to prove complete system functionality has been re-instated.
4. Failures and upgrades shall be rectified by repairing or replacing faulty components and/or updating/upgrading any software, firmware, databases, applications, etc.
5. System failures shall be logged directly in the CMMS by the Contractor. However, the failures can also be done by parties other than the Contractor.
6. Failures will result in a Service Request (SR) being logged in the CMMS and assigned to the Contractor/Service Provider by the ICC personnel.
7. Suppose a failure is outside of the Contractors scope. In that case, the SR shall be rejected with detailed, comprehensive motivation for escalation to the correct party.
8. The Contractor and/or his sub-contractors shall create a Work Order (WO) against the SR in which planning of resources shall be done.
9. After the final remedy, the WO will not be considered closed within 3 days of normal, stable systems operation after rectifying the fault. If the same problem occurs again within this period, it will be considered as belonging to the original WO.
10. Where applicable Responsive Maintenance shall be initiated through Preventive Maintenance procedures, for example, failure modes which lend themselves to condition monitoring shall be inspected regularly and/or monitored remotely to detect any failure before it results in a breakdown.
11. Any system failure shall be inspected and analyzed to identify the reason for the failure. A system failure report will be sent to the Engineer and City containing the failure description and pictures.
12. Where a device/component fails and requires a return to the OEM for analysis, the Contractor shall promptly return such device/component to the OEM. In addition, the Contractor shall carry any related costs for shipment and/or analysis.
13. An action shall be taken to eliminate or reduce the frequency of similar future failures.
14. Failure analysis procedures and results shall be documented and are part of the maintenance reports and continuous improvement process.
15. The cause of any failure shall be logged against the asset. A complete record of the asset history shall be kept and made available to the City upon request by the City of the Engineer.
16. Repaired parts can be used as part of the spares stock. Repaired parts shall be identifiable to differentiate them from new stock and be listed in the spares parts list.

6.2.1 Planned and scheduled maintenance

The following shall apply:

1. The maintenance manager shall be responsible for the planning of all work orders.
2. Planning shall include a form with a checklist to complete including but not limited to:
 - a. Verify the scope of the job.
 - b. Equipment, tools, instruments, parts, material, spares and personnel to do the job are identified and allocated.
 - c. Personnel have the required skills needed.
 - d. A description of job steps is documented.
 - e. Risk and safety requirements are identified.

- f. Necessary technical documentation is available.
 - g. Estimated job duration by skills and the number of people needed.
 - h. Required permits available (including wayleaves).
 - i. Consider the location and define physical and environmental constraints.
 - j. Record keeping of all parts and costs
 - k. Identify and avoid duplicate work
 - l. Consider performing other jobs in parallel to save time and/or costs
 - m. Coordination with other Contractors/role players
 - n. Consider testing to be performed to prove system restoration
3. Where other parties report a fault, an accurate description of the fault will be given as far as possible. It shall, however, remain the Contractor's responsibility to obtain complete information about any failure to plan the maintenance as described.
4. After a job is planned, it shall be scheduled and executed within the obligations of the KPI.

6.2.2 Emergency maintenance

The following shall apply:

1. Emergency maintenance will be assigned the highest priority level. Various scenarios of critical nature can lead to this, including but not limited to:
 - a. An immediate safety or environmental hazard.
 - b. Failure of any core ICC system functionality.
 - c. Failures that undermine system integrity, e.g. scenarios that lead to incorrect BI reports to manage the BOC contract, e.g. incorrect mileage, missed trips reporting, etc.
 - d. No communications with buses.
 - e. No tracking of buses.
 - f. System backup failure.
 - g. The bus has an incorrect base version, i.e. incorrect route/schedule information loaded.
 - h. Any failure or breakdown with a significant impact on the system or operations.
 - i. The city may determine any further requirements from time to time. Any failure or breakdown with a significant impact on the system or operations
 - j. The city may determine any further requirements from time to time.
2. The Contractor shall have pre-planned emergency maintenance procedures in place at all times. These shall be submitted to the City for approval.
3. Emergency maintenance shall be carried out without delay, within the requirements of the KPI.
4. It is recommended that the Contractor have staff available on-site during peak operating times to ensure they can attend to Emergency maintenance with immediate effect. E.g. Technician at the depot at morning peak to ensure all equipment on buses is functional and operational when leaving the depot.

6.2.3 Failure resolution, system testing and documentation

Responsive maintenance shall include testing and re-commissioning to prove complete re-integration, and reliable, accurate and safe operating conditions have been re-instated. The following shall apply:

1. It shall be the Contractor's responsibility to:

- a. Prove full system functionality has been re-instated.
 - b. Develop detailed test documentation and issue it to the City for approval.
 - c. Submit test reports with testing results proving that normal and stable operations have been re-established.
2. Suppose test procedures or results are not satisfactory. In that case, the Contractor shall include additional testing and/or re-testing or perform further maintenance if required. At the same time, KPI obligations and penalties remain in force.
3. The City and/or Engineer might, at their discretion, witness any testing.
4. The City retains the right to demand further testing if, in its opinion, the provided information is inadequate, if the system is unstable or fails to meet intended operating conditions or for other reasons that may be motivated by the City.
5. Testing might be required over more than one day and include other systems to prove systems integration and to achieve acceptable test conditions or sample size for acceptable statistical evaluations.
6. Where system changes are effected, the Contractor shall be responsible for keeping, updating and generating new as-built documentation as required within 14 days after failure resolution.

6.3 PREVENTIVE MAINTENANCE

1. The key objectives of Preventive Maintenance are:
 - a. ensure continuous optimum system performance and peak efficiency of equipment,
 - b. monitor device performance and minimize deterioration,
 - c. detection and correction of incipient failures either before they occur or before they develop into breakdowns,
 - d. Ensure all software is updated.
2. Preventive Maintenance shall be a planned, scheduled and controlled program.
3. Depending on the device or component, preventive maintenance periods for different parts may be done at different intervals, such as weekly, bi-weekly, monthly, quarterly, 6 months or annual.
4. Preventive maintenance is sub-divided into
 - a. Fixed time maintenance:
 - Systematic inspections based on manufacturer recommendations, considering Mean Time Between Failures (MTBF) and other applicable recommendations.
 - Trend analysis through component History. Anticipate component failure before it occurs.
 - b. Essential care includes:
 - Detailed cleaning
 - Replace and renew
 - Adjust and re-configure
 - Testing, analysis and verification
 - Routine software or system updates
 - c. Condition monitoring:
 - System performance monitoring through systematic inspections and/or remote monitoring.

6.3.1 Preventive Maintenance Tasks

1. Preventive Maintenance will be monitored according to a schedule and checklists to be agreed upon with the City. The Contractor shall ensure that the checklists are signed off by facilities managers as applicable (e.g. BOC, SOC, the City) and shall be submitted to the City monthly.

2. The minimum Preventive Maintenance to be performed is 6-monthly. Take note this is simply a guideline, and a detailed checklist will be agreed upon with the City during the 28 days handover period. All checklists will be updated, aligned and approved by the City during this time.
3. The Contractor shall remain responsible for the complete maintenance of the entire system, and the Contractor shall propose improvements if required. Any changes shall only take effect after written approval from the City.
4. Asset Management (e.g. Spares part stock, new assets entered into the CMMS) shall form part of Preventative Maintenance.
5. Preventive Maintenance tasks of specialized systems to be performed only by technicians with experience in the specific system, e.g. the CMMS preventive maintenance to be done by the CMMS specialist, BSIS preventative maintenance to be done by an approved BSIS system specialist.
6. The frequency of preventative maintenance is dependent on the specific system. However, the Contractor is expected to propose an optimised strategy that will not compromise the equipment and systems.

6.4 CONTINUOUS IMPROVEMENT

1. The goal of Continuous Improvement is to improve and optimize maintenance procedures and reduce incidents and breakdowns of equipment and systems throughout the Contract period.
2. Optimised maintenance eliminates both under-maintenance and over-maintenance and results in overall cost savings.
3. After review, evaluation and analysis of current and alternative procedures, the Contractor shall propose amendments, including motivation.
4. Any changes to maintenance procedures shall only come into effect after written approval from the City or the Engineer.
5. The City may, at its discretion, instruct the Contractor to review, analyze and/or amend any specific process.
6. Trend analysis, Root Cause Analysis (RCA) and Current Best Practice (CBP) Assessment shall form part of Continuous Improvement.
7. The Contractor shall keep a record and report on all Continuous Improvement actions and outcomes.
8. The maintenance plan shall be continuously updated to reflect the most recent maintenance procedures and status.

6.5 MAINTENANCE REPORTING

The following reports shall be submitted as and when necessary:

1. Monthly maintenance report shall include at least the following:
 - a. System summary and overview showing SR's and WO's categorized per sub-system, device, status, priority and over an adjustable defined period.
 - b. Rejected SRs, including motivation for rejections, e.g. outside Contractor's scope of work. Where applicable and possible, the Contractor shall identify the correct service provider to whom the SR should be assigned.
 - c. Open and completed WO's.
 - d. Average time to repair.
 - e. System uptime and percentage available per sub-system and/or equipment type.
 - f. Risks and Mitigation measures.
 - g. Responsive Maintenance summary and findings.

- h. Preventive Maintenance (against the schedule) summary and findings.
 - i. Continuous Improvement.
 - j. Status of spares stock and movement (e.g. new/repaired).
 - k. Failure reports.
 - l. Insurance claims details
 - m. Exceptional Events
 - n. OHS&E events and/or issues
 - o. Any other information to assist in interpreting system performance and reliability or as Instructed by the City of Engineers.
2. System test and re-commissioning reports, including test procedures, analysis and results as may be required to prove the system has been reinstated to full functionality.
3. Trend analysis reports.
4. Breakdown analysis/system failure report to describe the cause of breakdown, how it was repaired and what can be done to avoid similar future problems.
5. Maintenance reports shall be submitted to the City and Engineer at least 2 business days before the monthly maintenance meeting.

6.6 MAINTENANCE PLAN

The Contractor shall develop a maintenance plan. The following minimum requirements shall apply:

1. Cover all maintenance activities and processes as specified.
2. Identify the maintenance activities, priorities, schedules, and resource commitments and expenditures.
3. Depending on the device or component, preventive maintenance periods for different parts may be done at different intervals, such as weekly, bi-weekly, monthly, quarterly, 6 months or annual. The maintenance plan shall identify components and associated intervals.
4. Include flowcharts of all processes, showing decision points, holding points and responsibilities. Decision and holding points shall be as relevant for internal approvals/commissioning as well as approvals/sign-off by the City and/or Engineer.
5. Clearly describe escalation procedures and show the interface between Preventive Maintenance and how any identified issues are escalated to Responsive Maintenance.
6. Include the maintenance team organogram.
7. Describe maintenance processes considering planning of human and material resources with the view of KPI compliance.
8. Describe procurement procedures, lead times and keeping sufficient spares stock to meet KPI obligations.
9. Describe how the Contractor will manage sub-contractors and suppliers to ensure sufficient spares stock is available as may be required. The City or Engineer can insist on seeing the specialist sub-contractor agreement.
10. Shall include any other information as may be required for a complete maintenance plan.
11. Upon Instruction from the City or Engineer, the Contractor shall review and amend the maintenance plan if required.
12. The maintenance plan shall be critically reviewed and updated continuously.

6.7 SPARES STOCK

The following shall apply:

1. The Contractor shall ensure he carries enough spares stock to meet his KPI obligations.

2. The Contractor shall ensure that his sub-contractors carry sufficient spare stock to meet his KPI obligations.
3. The Contractor shall submit a minimum recommended spares list for approval to the City.
4. The Contractor shall price each listed spare part stock in the BoQ and will be paid accordingly for each part for the duration of the contract.
5. Upon Instruction from the City or Engineer, the minimum required spares shall be amended.
6. Spares shall be stored in a separate lockable room for the exclusive use of this Contract.
7. Maintenance spares and stock designated for new installations shall be separated and marked for their intended use.
8. The Contractor shall under no circumstances:
 - a. Use any stock intended for capital works expansion as maintenance spares unless otherwise approved by the City or Engineer in writing.
 - b. Use any maintenance spares for capital works expansion unless otherwise approved by the City or Engineer in writing.
9. The Contractor shall assign a responsible person to the spares store to:
 - a. Manage access to the spares store and prevent unauthorized access.
 - b. Keep inventory and take full responsibility for releasing any items from stock.
 - c. Promptly update the inventory upon any change in the stock, i.e. release of stock, return, new stock, etc.
10. The Contractor shall carry comprehensive insurance on all spares against any eventuality.
11. Upon Instruction by the City or Engineer, the Contractor shall allow the City and/or Engineer access to the spares for inventory inspection. The inspection shall happen at least once in three months.
12. Six months before the end of the Contract, the City will enter into a discussion with the Contractor on how to handle the maintenance spares at the end of Contract.
13. In case of component failure, the component will be replaced within KPI time from spares part stock. If a component is repairable, the repair will be done at the cost of the City only if the City approves the repair quotation. Then, the repaired component can be added to the spares part list marked as repaired. The repair cost will be claimed against Spares Part Replacement in BoQ. The new component installed will be claimed against the component from Spares Part Replacement in BoQ.
14. In case of component failure, the component will be replaced within KPI time from spares part stock. If the component is not repairable, a new component will be added to the spares part stock at the Contractors cost. The new component installed will be claimed against the component from Spares Part Replacement in BoQ. Payment will only be processed upon submission of the failure report from the OEM supplier.

7. KEY PERFORMANCE INDICATORS (KPI's)

The following shall apply:

1. As specified in this Section, the KPI must be signed as part of this Contract.
2. The KPI shall apply to the Contractor and all his sub-contractors.
3. The Contractor shall be responsible for his sub-contractors and ensure that his sub-contractors comply with KPI obligations.
4. The Contractor shall enter into a signed agreement with each of his sub-contractor, to include:
 - a. An undertaking between the parties that both the Contractor and sub-contractor shall comply with the KPI obligations.
 - b. Spares stock management.

- c. Dispute resolution procedures.
5. The signed sub-contractor agreements shall be submitted to The City and the Engineer for approval.
6. The system operating times are between 05:00 to 21:00, Monday to Saturday and 05:00 to 20:30 on Sundays and Public Holidays.

7.1 KEY PERFORMANCE INDICATORS (KPIs) AND PENALTIES

It is essential to ensure APTMS-related systems availability and adequate response times, and the following KPI regime shall apply:

1. **The availability KPI** defines the average uptime required during system operations spread over all the equipment of one type.
2. **The response time KPI** defines the required response and repair time, measured during system operations for a particular equipment type.
3. Both KPIs shall be applied and measured simultaneously and independent of each other.
4. KPIs are calculated during operating hours only, i.e. downtime outside of these hours will not be considered in the availability or response time calculations.
5. KPI times will take effect from when the asset is made available to the Contractor.
6. Partial functionality will be considered a normal failure, e.g. intermittent PID display.
7. If one KPI affects others, then the most stringent KPI requirements shall apply.
8. The total penalty shall be capped at 30% per month for all maintenance items.
9. Penalties shall be subject to escalation as per the Tender PCC clause.
10. Exceeding the KPIs shall not result in a credit to the Contractor.
11. The imposing of penalties is at the sole discretion of the City.
12. The Contractor may request scheduled system downtime as part of routine maintenance procedures, e.g. to update software. The City and the Contractor shall agree ad-hoc if such downtime will be acceptable during operating hours or if such downtime will have to be outside operating hours.
13. The Contractor may make representation to adjust KPI limits. Any changes shall be agreed upon in writing between both parties before coming into effect.

7.1.1 KPIs for Availability and Response

The following table lists the KPIs per equipment, sub-system or functionality:

Table 2: KPIs for availability and response times.

1.	2.	3.
Equipment / device type / sub-system / functionality	Availability KPI [%]	Response Time [Hours]
ICC Equipment		
DVMS	100%	4 hours
CMMS	100%	4 hours
NAS	100%	4 hours
Video Wall	99%	4 hours

1.	2.	3.
Equipment / device type / sub-system / functionality	Availability KPI [%]	Response Time [Hours]
Firewall	100%	4 hours
CCTV Cameras	100%	8 hours
Works stations	99%	4 hours
IP Phones	99%	4 hours
Fire Suppression System	99%	8 hours
UPS	99.5%	4 hours
Air Conditioner system	98%	8 hours
Generator	99%	8 hours
Access Control System	99%	8 hours
Station Equipment		
PIDs	100%	4 hours
CCTV Cameras	100%	4 hours
Panic Button	100%	4 hours
IP Phones	99%	4 hours
PA System	99%	8 hours
CCTV Decoder	99%	8 hours
CCTV Display	99%	8 hours
Last Mile Switch	99%	4 hours
BSIS	100%	8 hours
Workstations	99%	4 hours
Depot Equipment		
Wi-Fi	100%	4 hours
CCTV Cameras	100%	4 hours
Communications	99%	4 hours
IP Phones	99%	4 hours

1.	2.	3.
Equipment / device type / sub-system / functionality	Availability KPI [%]	Response Time [Hours]
Disaster Recovery (once available)	100%	4 hours
On Route Equipment		
CCTV Cameras	100%	4 hours
Network Switch	100%	4 hours
Bus and other Equipment		
BSIS - BRU or Array	100%	4 hours
Infotech Training Workstations	99%	8 hours
ICC Schedule Adherence		
Schedule Adherence Central System	100.00%	2 hours
Schedule Adherence Client(s)	100.00%	2 hours
Vehicle Tracking System	100.00%	2 hours
Voice/Text communications to buses	100.00%	2 hours
Passenger Information to stations	99.50%	4 hours
System backup	100.00%	8 hours
Schedule Adherence IDS	99.00%	12 hours
DDM back-end	99.00%	12 hours
BI system	99.00%	24 hours
Fleet Management	99.00%	24 hours
ICC Schedule Planning		
Schedule Planning System	100.00%	8 hours
Journey Planner	99.80%	8 hours
System Backup	100.00%	8 hours
Duty Scheduling and Optimization	99.80%	8 hours

1.	2.	3.
Equipment / device type / sub-system / functionality	Availability KPI [%]	Response Time [Hours]
Vehicle Scheduling and Optimization	99.80%	8 hours
Dispatch Module	99.80%	8 hours
Client Workstations	100.00%	12 hours
Timetable Publication Module	99.00%	24 hours
VDV Interface	99.00%	24 hours
Survey Tool	99.00%	24 hours
DTI Archive server	99.00%	8 hours
On-board systems		
On-board unit: IDR	99.95%	4 hours
Mobile driver terminal: ITT	99.95%	4 hours
SOAP interface with AFC OBU	99.95%	4 hours
Driver panic button	100.0%	8 hours
TSP receiver	99.5%	8 hours
TSP transponder	99.95%	8 hours
Automatic Passenger Counters	99.99%	12 hours
Internal next-stop display	99.95%	12 hours
On-board Network Video Recorder	99.95%	4 hours
8 Port, POE Network Switch	99.95%	4 hours
3-axis accelerometer	99.95%	8 hours
On-board CCTV cameras	99.99%	4 hours
Driver CCTV display screen	99.90%	4 hours
Depot equipment		
Dispatch Workstation	99.00%	8 hours
DDM Front-End Server	99.00%	12 hours
Remote Viewing Workstation	99.00%	24 hours

1.	2.	3.
Equipment / device type / sub-system / functionality	Availability KPI [%]	Response Time [Hours]
Duty Scheduling Workstation	99.00%	24 hours
DTI Front-End Server	99.00%	8 hours

7.1.2 Availability KPI

The following shall apply:

1. The reporting period for availability is one calendar month, including weekends and public holidays.
2. Availability will be the average sub-system, equipment or device type availability per Table 2 over the reporting period.
3. Downtime, which determines the availability, will be calculated from the time that ICC logs the SRs until the time that SR is closed by ICC (via CMMS). The downtime reflects the time that the system was down or unavailable.
4. Unavailability due to 3rd party damage, e.g. resulting in an insurance claim, will not be considered as part of the availability calculation.
5. Calculations will be finalized on the 10th calendar day of the following month after the end of the month under calculation.
6. The Availability KPI penalty points are calculated on the difference between the actual availability calculated and the KPI availability as stipulated in Table 2.
7. Every % over Availability KPI target attracts a penalty of R 1000 for that equipment.
8. **Sample Availability KPI Calculation 1:** In the ICC for one month, four SRs were logged against the Video Wall being down. Each time the Video Wall was restored in 4 hours exactly. As a result, the Video Wall was unavailable for a total of 16 hours in the month, or 960 minutes. The availability is calculated as a percentage of the available minutes/total minutes of operation per month. The total minutes of operation per month is 31,380 minutes. Therefore, the Video Wall was available for 31,380 – 960 minutes, 30,420 minutes in the month. The availability is thus: $30,420/31,380 = 96.9\%$. Availability will always be rounded up to one decimal place. The Video Wall availability KPI is set at 99%. Thus, the penalty is calculated as $99.0 - 96.9 = 2.1$ Penalty Points. The penalty payable is then R2,100.00.
9. **Sample Availability KPI Calculation 2:** The 12 stations have, in total, 23 PIDs. Assuming the same month as in sample calculation 1, the total operating time per PID is 31,380 minutes per month. For the 23 PIDs, the total operating time for PIDs is 721,740 minutes. Summing all the SRs logged to PID, it is established that the PIDs on all 12 stations were unavailable for 480 minutes. The availability is then calculated to be $(721,740 - 480)/721,740 = 99.933\%$, rounded up to one decimal place is 99.9%. The availability KPI penalty points are $100 - 99.9 = 0.1$ and will be penalized with R100.00.

In another example, a total of 350 minutes of downtime on all the PIDs results in availability of $(721,740 - 350)/721,740 = 99.952\%$, rounded up to one decimal place is 100%. The availability of KPI Penalty points is then $100 - 100 = 0$, resulting in an R0.00 penalty.

In another example, a total of 3,500 minutes of downtime on all the PIDs results in availability of $(721,740 - 3,500)/721,740 = 99.515\%$, rounded up to one decimal place is 99.5%. The availability of KPI Penalty points is then $100 - 99.5 = 0.5$, resulting in an R500.00 penalty.
10. **Sample Availability KPI Calculation 3:** The 114 buses have 114 BRUs. Assuming the same month as in sample calculation 1, the total operating time per BRU is 31,380 minutes per month.

For the 114 BRUs, the total operating time for BRUs is 3,577,320 minutes. Summing all the SRs logged to BRUs, it is established that the BRUs on all 114 buses were unavailable for 5000 minutes. The availability is then calculated to be $(3,577,320 - 5,000) / 3,577,320 = 99.860\%$, rounded up to one decimal place is 99.9%. The availability KPI penalty points are $100 - 99.9 = 0.1$ and will be penalized with R100.00.

7.1.3 Response time KPI

The following shall apply:

- a. Response time KPIs for all specified systems are determined from when the SRs were assigned to the Contractor (as the service provider) by ICC.
- b. In the case of an SR for the BRU or array on a Bus, it is assumed that the bus is available at the depot, Belle Ombre. If not, the KPI shall only take effect once the bus has returned to the depot.
- c. Response time KPIs for all specified systems are considered close from when the ICC closes the SR.
- d. The City may, at its discretion, accept a temporary solution within the specified response times, given that such a temporary solution provides the full functionality of the device, component or sub-system. However, the time to complete the full repair shall be limited as agreed with The City.
- e. System testing shall be completed within the response times.
- f. Where extended testing necessitates periods longer than the response times, it shall be considered a temporary solution as specified in point 2 above. It shall be regarded as the full repair once complete testing has been successfully conducted.
- g. Response time KPI's targets shall be met for all repairs, including 3rd party damage and repairs performed under insurance, and shall not be dependent upon payment or any other condition of an insurance claim.
- h. Submission of failure and test reports shall be within 5 business days after failure resolution.
- i. Every hour over the KPI target that a piece of equipment remains faulty shall attract a penalty of R 1000 for that equipment.
- j. Part of an hour shall constitute a full hour.
- k. **Sample Response Time KPI Calculation 1:** The ICC log an SR for the Depot Wi-Fi not functioning at 08:10. The Contractor responds and fix the problem and performs the various test at 14:30. The ICC acknowledge the repair and close the SR at 14:40. The total response time is then $14:30 - 08:10 = 6$ hours 20 minutes, thus according to point 10 above rounded up to a full hour is 7 hours. Because the response time KPI is set at 4 hours, the Response time KPI penalty points is $7 - 4 = 3$ hours resulting in R3,000 penalty fees.

7.2 PERFORMANCE EVALUATION

7.2.1 The consistent provision of quality preventative and responsive maintenance to the City is important. Therefore, the overall maintenance performance by the Contractor will be monitored by calculating a performance score every month, using the KPIs as well as a score derived from the execution of preventative maintenance (PM).

Performance score = Quality score + PM score

Quality score = the sum of all the penalties (value in Rand) expressed as a percentage of the maintenance pay items accumulated by the contractor over the calendar month.

PM score = 0 or 5%

7.2.2 Preventative Maintenance will be monitored according to a schedule and checklists/SOPs agreed with the city. After each visit, the Contractor shall ensure that his equipment PM checklist is signed off by the facilities/station/bus manager. These shall be submitted at the Monthly

Maintenance Management meeting and added to his monthly invoice as proof of the PM work done. Failure to adhere to and complete the agreed schedules or work shall result in a PM score of 5%. Note the PM score is not a financial penalty.

7.2.3 The Performance level of Good, Average or Poor will then be established from the evaluation table below:

Table 3: Maintenance performance evaluation table.

Monthly Performance Level	Performance score
Poor	> 10%
Average	5-10%
Good	< 5%

7.2.4 For example: the Contractor accumulated R4,000 availability KPI penalties for the month and R2,000 response time KPI penalties. The total monthly PM amount on BoQ is R50,000. As a result, the Quality score is $(R4,000 + R2,000)/R50,000 = 1.2\%$. The contractor did not complete all PM work incl. submitting check sheets. The Performance score is then: $1.2+5 = 6.2$. As a result, the performance is seen as Average.

7.2.5 Where performance is unsatisfactory, the following process shall occur:

- a. Achieving a “poor” performance level in any single month shall result in the issue of a “first warning notice” by the Employer to the Contractor, indicating the performance measures which have been breached, giving rise to the notice, and indicating to the Contractor the implications of the notice. The Contractor shall, within five (5) business days, provide to the City an action plan to achieve future compliance with the relevant performance measures for the written approval of the City. The Contractor shall implement the action plan and provide the City with a report evidencing how the measures identified in the action plan have been implemented by the end of the next month.
- b. Suppose the Contractor fails to implement and comply with the action plan and/or obtains a second consecutive month score of “poor”. In that case, the City has the right to issue a “second warning notice” to the Contractor, indicating the performance measures which have been breached and requesting a second action plan to achieve future compliance with the relevant performance measures. The Contractor shall implement the second action plan and provide to the City a report evidencing how the measures identified in the second action plan have been implemented by the end of the next month.
- c. If, following the above remedies, the Contractor:
 - Fails to implement and comply with the second action plan.
 - Obtains a third consecutive month score of “poor”.
 - Obtains 5 or more “poor” scores during 12 months.

The City has the right to issue a “final warning notice” to the Contractor, indicating the performance measures which have been breached and requesting a final action plan to achieve future compliance with the relevant performance measures. The Contractor shall implement the final action plan and provide to the City a report evidencing how the measures identified in the final action plan have been implemented by the end of the next month.

- d. Suppose the Contractor fails to implement and comply with the final action plan. In that case, the City shall have the right to terminate the agreement immediately.

7.2.6 COMPUTERISED MAINTENANCE MANAGEMENT SYSTEM (CMMS)

The City has already procured a CMMS. The maintenance and management of CMMS form part of this maintenance Contract.

The following shall apply:

- a. The Contractor shall make use of CMMS as part of his maintenance procedures. The procedures include logging of service requests, creation of work orders or any other actions as may be required.
- b. In the unlikely case that the CMMS provided by the city becomes unavailable, the Contractor must provide and utilize their CMMS. If they don't have one, the CMMS would be replaced by a manual process that a spreadsheet would manage.
- c. The Contractor shall capture all required information in the CMMS to ensure accurate and complete information is logged as part of the maintenance.
- d. The Contractor shall liaise, coordinate, meet with, assist and provide information to the APTMS Contractor to ensure that all APTMS assets and processes are continuously updated, correct and amended if required.
- e. Asset information, including but not limited to serial numbers of all equipment, shall be provided and shall be linked to different status indicators, for example:
 - New – installed – installation date.
 - New – spares stock.
 - Faulty – description and date of fault, fault report and required action.
 - Repaired – description and date of repair – installed/in-stock – date of installation.
- f. The current APTMS maintenance process is set up in the CMMS to measure compliance against KPIs. This is summarized below, and the Contractor shall comply with these procedures:
 - Any failure is logged in the CMMS as a Service Request (SR).
 - SRs can be logged directly in the CMMS (by licensed users) or by reporting to the ICC, who will log the SR.
 - Licensed CMMS users (besides the APTMS Contractor) include the UTC, AFC, SOC, BOC, ICC and others as may be required by the city.
 - The ICC assigns the SR to the responsible contractor (service provider) or automatically through the CMMS.
 - The KPI times come into force as soon as the SR is assigned to a Contractor.
 - Once the SR is assigned, notification of the SR is received by the Contractor, e.g. per email with a short description of the fault.
 - The Contractor shall accept the SR.
 - In the event that an SR is assigned to him in error, e.g. for systems outside his scope of work, the Contractor shall reject the SR, including the reason for doing so.
 - Suppose an SR relates to sub-contractor work/equipment. In that case, the Contractor shall remain responsible for assigning the work to his sub-contractors. Likewise, the Contractor shall remain responsible for the work of his sub-contractors.
 - Following the SR, the Contractor (and/or his sub-contractors) shall create a Work Order (WO) in the CMMS.
 - Every WO is linked to an SR.
 - SR and WO are assigned priority levels.
 - The WO shall include planning of all required resources.

- Once the job is complete, the WO is closed, and the associated SR is resolved.
 - Designated personnel in the ICC review and approve if the job can be closed.
 - If the original fault is not repaired to standard, a follow-up WO is created and linked to the original WO.
 - Timestamps are used to record actual repair time and measured against the KPI.
 - Certain basic systems reports are set up. These shall be supported with analysis and explanations as part of more comprehensive reporting specified elsewhere.
- g. The above procedures shall be reviewed and are subject to be aligned with the requirements of the Maintenance Contract, including KPI. In case of any apparent conflict, the City retains the right to apply the most stringent requirements.
- h. The Contractor will be provided with CMMS licenses, 1 for the Maintenance Manager and 2 for Technicians.
- i. The CMMS license requirements may be reviewed from time to time.
- j. To use the CMMS, the Contractor shall provide his laptops, computers, smartphones and/or tablets as may be required by his maintenance personnel.
- k. It is the Contractors responsibility to ensure that any such hardware with operating systems is fully compatible with the CMMS.
- l. Note that the CMMS is also used to manage the maintenance of the UTC, AFC, SOC and BOC and/or other contracts.
- m. Any other procedures required to use the CMMS as an asset and maintenance management system shall be complied with.
- n. Provision is made to update and customize the CMMS application to align it with the Contracts related to APTMS systems and equipment, including considering all the KPI penalties. The contractor shall support the CMMS sub-contractor in doing this customization work.
- o. The CMMS Customization work will need to be scheduled as part of the 28 days handover period.

8 ASSET REPLACEMENT

As part of this tender, the contractor is expected to replace failing assets with new equipment on the following infrastructure during this Contract period.

- Buses
- Trunk Stations
- Depot and layover

The replacement asset or equipment shall be of the same functionality, fully compatible and be integrated with the existing APTMS Systems, including the back-end, systems operations and client user interfaces.

Requirements, functionality and specifications of the asset replacement is attached as (**ANNEXURE A**)

9 TRAINING AND OPERATIONAL SUPPORT

10.1 TRAINING

The following shall apply:

- 10.1.1** The Contractor shall train personnel on all systems' maintenance and/or operations as decided by the City. The City may decide that training be provided to a third party.

10.1.2 Typically, the Contractor shall conduct training classes per the following table and submit training handbooks/manuals/material for approval by The City at least 14 days before the scheduled training. Upon Instruction by the City or the Engineer, the Contractor shall amend training documentation to include/exclude/amend the scope of training.

#	Training Categories	Max Students per Session
1	ICC Equipment	
A	• DVMS operations training	12
B	• CMMS operations training	12
C	• ICC Preventative Maintenance training	12
D	• Driver and Bus Scheduling training	12
E	• Basic Troubleshooting of ICC equipment training	12
2	Station Equipment	
A	• Station Preventative Maintenance training	12
B	• Basic Troubleshooting of station equipment training	12
3	Depot Equipment	
A	• Wi-Fi Management training	12
B	• Depot Preventative Maintenance training	12
C	• Basic troubleshooting of depot equipment training	12
4	Bus Equipment	
A	• On-board equipment operations training	12
B	• Bus Preventative Maintenance training	12
C	• Basic troubleshooting of bus equipment training	12

Table 4: Categories of training to be provided

10.1.3 Any number of personnel may attend any class up to a maximum of 12. The City will provide training facilities as required.

10.1.4 The Contractor shall keep an attendance register of each session and submit this to the City and/or Engineer after every session. In addition, the Contractor shall keep a complete register/breakdown of all training provided and is still to be provided for approval by the City. The records shall include dates, content, etc.

10.1.5 The Contractor shall report on the status of the Training monthly at the Contracts meeting and a monthly progress report.

10.1.6 Three (3) training sessions per category or sub-category shall be provided. The same or different scope of work shall be covered per session as instructed by The City, upon which the Contractor shall issue a training document for approval by The City. The content of the training sessions per category or sub-category may differ depending on the level of competence of the trainees. The City shall retain the right to swop courses, i.e. so that more than 3 courses are given in any category, whilst reducing that of another category.

10.1.7 The trainer will hand out all students' training notes and manuals in hard and softcopy.

10.1.8 Certain categories and training sessions may require to be carried out by system specialists.

10.1.9 Besides the formal training sessions per Table 4, the Contractor shall:

- a. Provide on-the-job training in the ICC, depot or buses upon request from the City. Scope of such training to be agreed with and approved by The City in writing.
- b. Allow up to 2 persons per time, as designated by The City, to job-shadow the Contractor's personnel as part of training, as and when required by the City. There shall be no limit on the number of times job shadowing is allowed.

10.2 OPERATIONAL SUPPORT

The following shall apply:

- The Contractor shall provide operational support to the City on all systems described as and when required, including but not limited to the following:
 - a. DVMS management, e.g. adding CCTV, changing specs etc., retrieving CCTV footage.
 - b. Help The City uses the CMMS application more efficient.
 - c. NAS management and optimization.
 - d. Depot Wi-Fi configuration.
 - e. Station APTMS support system operational support.
- The Operational support will be seen as on-the-job Training.
- The Contractor (Maintenance Manager) shall attend the Joint Operations Committee Meetings and provide the City with a thorough overview of the previous week's maintenance activities.

11 MEASUREMENT AND PAYMENT

This section aims to clarify the use of the Bill of Quantity (BoQ).

11.1 PART A: GENERAL OBLIGATIONS

- Insurance
Insurance will be paid monthly. Insurance will be paid as specified in FIDIC Sub Clause 18.1.
- Provision of Performance Security
Provision of Performance Security paid as a lump sum upon proof of Performance Guarantee. Refer to FIDIC Sub Clause 4.2 for details.
- Costs to appoint EMEs and QSEs
Provision for the Costs to appoint EMEs and QSEs paid as a lump sum (transfer amount from Schedule of proposed subcontractors form).
- Day works – Labour
These amounts will only be expended on specific instruction by the Engineer to the Contractor for additional tasks that may be required. For example, the rates will typically be used in Variation Orders and Value Engineering Proposals.

- Day work – Material
Provision for Day works material is made for as a Provisional Sum. The provisional sum will only be expended from specific instruction by the Engineer to the Contractor for material that may be required as part of day works. For example, the fund will typically be used in Variation Orders and Value Engineering Proposals.

11.2 PART B: ICC MAINTENANCE

- The maintenance rates to be filled in the BoQ must provide complete system maintenance to meet KPI obligations.
- Rates to include personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas-based maintenance personnel if required), and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations.
- Rate to include specialist subcontractor mark-up and admin cost as well.
- The BoQ is divided into the Six main Maintenance categories:

1. *Hardware Support and Warranty*

Hardware Support and Warranty will be paid monthly per hardware. Contractor to ensure OEM hardware support is aligned to KPI obligations. Contractor to ensure all hardware listed is under OEM support and warranty for the contract duration.

2. *Software and Licence Support*

Software and License Support includes all updates, bug fixes and new releases. The licenses will be paid monthly. Contractor to ensure the tendered price ensures the City always has the latest software releases and bug fixes installed for the duration of the contract.

3. *Setup and configuration of APTMS and DTI systems to accommodate new stopping points, new routes, new layover.*

This setup will accommodate the expansion of services that includes Route surveys, scheduling system, voice recording and APTMS Back-office system (all modules).

4. *ICC Preventative -, Responsive Maintenance and Continues Improvement to meet KPI Obligations (as per Sections 7 and 8 of the SoW)*

The ICC's Preventative Maintenance, Responsive Maintenance, and Continues Improvements are priced together. An amount will be paid to have a technician available to perform Maintenance to meet KPI Obligations as defined in Sections 7 and 8. All systems as described in Section 5 are included.

Note that the Specialist Sub-Contractor system requires a specialist preventative maintenance service and is listed and priced separately. Pricing should include mark-up and admin costs.

Fully inclusive maintenance labour rates shall be given for all responsive maintenance, preventative maintenance and continuous improvement for the ICC. This shall include as a minimum:

- Personnel costs, transport and fuel
- Use of any required tools and instrumentation
- Cleaning materials, small materials, consumables
- Setting up and upkeep the maintenance plan and procedures
- Use the CMMS and support the CMMS contractor to update the CMMS as required
- Asset and spares stock control
- All tasks as required for complete system maintenance
- Device installation, setup, configuration and testing and approval of maintenance work if required
- Any reporting required for the maintenance-related activities

5. ICC Spares Part Replacement

The spares part is listed and should be priced individually. The price is for what the City will pay for spares part replacements for the duration of the contract.

For any spare part replacement, it is required that the contractor submit a report for approval prior to equipment being replaced

Unless a separate pay item has been provided, the material rates shall include all parts and components, including cabling, connectors, brackets and miscellaneous, auxiliary and sundry materials, consumables, etc., for a complete, fully functional installation that complies with the specifications.

6. New Proposed Back-Office

The Price for the New back-office system is required only if a new back-end is proposed Refer to SoW Price to be all inclusive for a fully operational, integrated system.

In the Pricing Schedule, provision is made for scheduling and vehicle tracking support of hardware and software and licenses. The following must be noted about the OEM support:

11.3 PART C: STATION MAINTENANCE

- The maintenance rates to be filled in BoQ must provide complete system maintenance to meet KPI obligations. New equipment is priced elsewhere. Rates to include personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas-based maintenance personnel if required), and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. In addition, rates should include all specialist subcontractors' mark-up and admin fees.

- The BoQ is divided into three main Maintenance categories:

1. Software and License Support

Software and License Support, incl. all updates, bug fixes and new releases. The licenses will be paid monthly. Contractor to ensure the tendered price ensures the City always has the latest software releases and bug fixes installed for the contract duration on all equipment listed.

2. STATION Preventative -, Responsive Maintenance and Continues Improvement to meet KPI Obligations (as per Sections 7 and 8)

The Preventative Maintenance, Responsive Maintenance, and Continues Improvements for the Stations are priced together. An amount will be paid to have a technician available to perform Maintenance to meet KPI Obligations as defined in Sections 7 and 8. All systems as described in Section 5 are included.

Note that the pricing should include mark-up and admin cost of specialist Sub-Contractor that the Contractor might use.

The price is for 13 stations. The maintenance rate will increase pro-rata as more stations are added to the network.

Fully inclusive maintenance labour rates shall be given for all responsive maintenance, preventative maintenance and continuous improvement for the Stations. This shall include as a minimum:

- a. Personnel costs, transport and fuel
- b. Use of any required tools and instrumentation
- c. Cleaning materials, small materials, consumables
- d. Setting up and upkeep the maintenance plan and procedures
- e. Use the CMMS and support the CMMS contractor to update the CMMS as required
- f. Asset and spares stock control

- g. All tasks required for complete system maintenance
- h. Device installation, setup, configuration and testing and approval of maintenance work if required
- i. Any reporting required for the maintenance-related activities

3. *STATION Spares Part Replacement*

The spares part is listed and should be priced individually. The price is for what the City will pay for spares part replacements for the duration of the contract.

For any spare part replacement, it is required that the contractor submit a report for approval prior to equipment being replaced

Unless a separate pay item has been provided, the material rates shall include all parts and components, including cabling, connectors, brackets and miscellaneous, auxiliary and sundry materials, consumables, etc., for a complete, fully functional installation that complies with the specifications.

11.4 **PART D: DEPOTS**

- The maintenance rates to be filled in BoQ must provide complete system maintenance to meet KPI obligations. New equipment is priced elsewhere. Rates to include personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas-based maintenance personnel if required), and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. In addition, rates should include all specialist subcontractors' mark-up and admin fees.
- The BoQ is divided into the four main Maintenance categories:
 1. *Hardware Support and Warranty*
Hardware Support and Warranty will be paid monthly per hardware. Contractor to ensure OEM hardware support is aligned to KPI obligations. Contractor to ensure all hardware listed is under OEM support and warranty for the contract duration.
 2. *Software and Licence Support*
Software and License Support, incl. all updates, bug fixes and new releases. The licenses will be paid monthly. Contractor to ensure the tendered price ensures the City always has the latest software releases and bug fixes installed for the contract duration on all equipment listed.
 3. *DEPOT Preventative -, Responsive Maintenance and Continues Improvement to meet KPI Obligations (as per Sections 7 and 8)*
The Preventative Maintenance, Responsive Maintenance, and Continues Improvements for the Depot are priced together. An amount will be paid to have a technician available to perform Maintenance to meet KPI Obligations as defined in Sections 7 and 8. All systems as described in Section 5 are included.

Take note that the pricing should include mark-up and admin cost of specialist Sub-Contractor that the Contractor might use.

Fully inclusive maintenance labour rates shall be given for all responsive maintenance, preventative maintenance and continuous improvement of the Depot equipment. This shall include as a minimum:

- a. Personnel costs, transport and fuel
- b. Use of any required tools and instrumentation
- c. Cleaning materials, small materials, consumables
- d. Setting up and upkeep the maintenance plan and procedures
- e. Use the CMMS and support the CMMS contractor to update the CMMS as required
- f. Asset and spares stock control

- g. All tasks required for complete system maintenance
- h. Device installation, setup, configuration and testing and approval of maintenance work if required
- i. Any reporting required for the maintenance-related activities

4. *DEPOT Spares Part Replacement*

The spares part is listed and should be priced individually. The price is for what the City will pay for spares part replacements for the duration of the contract.

For any spare part replacement, it is required that the contractor submit a report for approval prior to equipment being replaced

Unless a separate pay item has been provided, the material rates shall include all parts and components, including cabling, connectors, brackets and miscellaneous, auxiliary and sundry materials, consumables, etc., for a complete, fully functional installation that complies with the specifications.

11.5 **PART E: ON-ROUTE MAINTENANCE**

- The maintenance rates to be filled in BoQ must provide complete system maintenance to meet KPI obligations. New equipment is priced elsewhere. Rates to include personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas-based maintenance personnel if required), and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. In addition, rates should include all specialist subcontractors' mark-up and admin fees.
- The BoQ is divided into three main Maintenance categories:
 1. *Software and Licence Support*
Software License Support, incl. all updates, bug fixes and new releases. Licenses will be paid monthly. Contractor to ensure the tendered price ensures the City always has the latest software releases and bug fixes installed for the contract duration on all equipment listed.
 2. *ON-ROUTE Preventative, Responsive Maintenance and Continues Improvement to meet KPI Obligations (as per Sections 7 and 8)*
The Preventative Maintenance, Responsive Maintenance, and Continues Improvements for on-route equipment are priced together. An amount will be paid to have a technician available to perform Maintenance to meet KPI Obligations as defined in Sections 7 and 8. All systems as described in Section 5 are included.

Take note that the pricing should include mark-up and admin cost of specialist Sub-Contractor that the Contractor might use.

The rate is for 34 Cameras. As more on-route cameras are added to the network, the Maintenance rate will increase pro-rata.

Fully inclusive maintenance labour rates shall be given for all responsive maintenance, preventative maintenance and continuous improvement of the On-route equipment. This shall include as a minimum:

- a. Personnel costs, transport and fuel.
- b. Use of any required tools and instrumentation.
- c. Cleaning materials, small materials, consumables.
- d. Setting up and upkeep the maintenance plan and procedures.
- e. Use the CMMS and support the CMMS contractor to update the CMMS as required.
- f. Asset and spares stock control.
- g. All tasks required for complete system maintenance.
- h. Device installation, setup, configuration and testing and approval of maintenance work if required.
- i. Any reporting required for the maintenance-related activities.

3. *ON-ROUTE Spares Part Replacement*

The spares part is listed and should be priced individually. The price is for what the City will pay for spares part replacements for the duration of the contract.

For any spare part replacement, it is required that the contractor submit a report for approval prior to equipment being replaced

Unless a separate pay item has been provided, the material rates shall include all parts and components, including cabling, connectors, brackets and miscellaneous, auxiliary and sundry materials, consumables, etc., for a complete, fully functional installation that complies with the specifications.

11.6 PART F: BUS MAINTENANCE

BUS Preventative -, Responsive Maintenance and Continues Improvement to meet KPI Obligations (as per Section 7 and 8)

The Preventative Maintenance, Responsive Maintenance, and Continues Improvements for Bus equipment are priced together. An amount will be paid to have a technician available to perform Maintenance to meet KPI Obligations as defined in Sections 7 and 8. All systems as described in Section 5 are included.

Take note that the pricing should include mark-up and admin cost of specialist Sub-Contractor that the Contractor might use.

The rate is 114 buses. The rate will increase pro-rata as more buses are added to the network.

Under the Section for on-board systems (in the Pricing Schedule), inclusive material rates shall be given. Noting the following:

- a. Separate pay items have been allowed for various brackets and cabling, including connectors.
- b. Considering point a. above, unless a separate pay-item has been provided, the material rates shall include all parts and components, including cabling, connectors, brackets and miscellaneous, auxiliary and sundry materials, consumables, etc. for a complete, fully functional installation that complies with the specifications.
- c. Complete wiring looms shall be included as part of the rates for new asset replacement.

Fully inclusive maintenance labour rates shall be given for all responsive maintenance, preventative maintenance and continuous improvement of the Bus equipment. This shall include as a minimum:

- a. Personnel costs, transport and fuel.
- b. Use of any required tools and instrumentation.
- c. Cleaning materials, small materials, consumables.
- d. Setting up and upkeep the maintenance plan and procedures.
- e. Use the CMMS and support the CMMS contractor to update the CMMS as required.
- f. Asset and spares stock control.
- g. All tasks may be required for complete system maintenance.
- h. Device installation, setup, configuration and testing and approval of maintenance work if required.
- i. Any reporting required for the maintenance-related activities.

BUS Spares Part Replacement

The spares part is listed and should be priced individually. The price is for what the City will pay for spares part replacements for the duration of the contract.

Unless a separate pay item has been provided, the material rates shall include all parts and components, including cabling, connectors, brackets and miscellaneous, auxiliary and sundry materials, consumables, etc., for a complete, fully functional installation that complies with the specifications.

11.7 PART G: TRAINING & OPS SUPPORT

The training and operational support will be paid upon completing the training module and delivering training material and attendance register. The proposed training courses are stipulated in Section 10 of SoW.

11.8 PART H: ASSET REPLACEMENT FUND

The Provision for Asset Replacement during the Contract duration is subject to the pre-approval of the Employer.

12 EVALUATION CRITERIA

The evaluation process will comprise of **FOUR STAGES** which will be conducted as follows:

Stage 1: Administrative compliance

Stage 2: Mandatory Requirements

Stage 3: Functionality

Stage 4: Preferential Point System 80/20

The tender will be awarded as a whole to one service provider.

12.1 STAGE 1: ADMINISTRATIVE COMPLIANCE

All the bids will be evaluated against the administrative responsiveness requirements as set out in the list of returnable documents.

12.2 STAGE 2: MANDATORY REQUIREMENTS

Note: Failure to fully complete and submit the applicable documents will result in the tender offer being disqualified from further consideration

#	Document name	Confirmation of Document Included
1	Personnel Qualifications and experience	
2	Tenderers relevant project experience	
3	Bills of Quantities / Price Schedule	

12.2.1 Personnel: qualifications & experience

The submitted CV's shall clearly show the information that includes at least the following:

1. Qualification (attach certificate)
2. Relevant field of qualification
3. Describe work experience
4. Describe specific work experience
5. Registration with professional body, e.g. Engineering Council of South Africa (ECSA) (attach certificate)
6. Copy of ID or passport
7. Work references, testimonials and/or completion certificate
8. Attach Training Certificates

12.2.2 Tenderer's Relevant Project Experience

The tenderer needs to indicate the experience of the tenderer or joint venture / consortium partners in relation to the scope of work.

In particular, Tenderers must demonstrate experience in the following areas:

1. Maintenance of APTMS systems.
2. Implementation of APTMS systems.
3. Operations of APTMS systems.
4. System adaptation / customization.
5. Interfacing and integration of APTMS systems with other systems.
6. Development of customized BI reports.
7. Setup and configuration of database systems.

The City retains the right to contact any of the reference provided. It is the tenderer's responsibility to ensure that correct contact details of references are included.

References from City of Tshwane should be from the Head of Department

The Bidder to complete Schedule of tenderer's experience form

12.3 STAGE 3 FUNCTIONALITY

Tender Offers Evaluation Criteria

1. Tender offers will be allocated a functionality score in accordance with the functionality criteria / sub-criteria described throughout this sub-clause.
2. The score will be determined by the evaluation panel of not less than 3 persons according to the details throughout this sub-clause and based on evidence and information submitted with the tender offer.
3. If the Tenderer did not submit documentation required to evaluate functionality and price/preference criteria in compliance with:
 - a. the requirements herein,
 - b. The requirements of the corresponding schedules in Returnable Documents and the format stipulated in these; then a score of zero will be allocated for that category and/or preference points.

Tender offers must attain a minimum functionality score of 70%. Tenders which do not achieve the minimum stated score will be rejected.

The categories for which functionality will be evaluated and their weightings are shown in Table 1 below

TABLE 1: FUNCTIONALITY MAIN CATEGORIES AND WEIGHTING		
#	FUNCTIONALITY / QUALITY CATEGORIES	WEIGHTING
1	Company Experience	25
2	Key Personnel Qualifications and Experience	60
3	Locality: Locally Based Company	15
	Total	100

The sum of the weighted scores for all categories, will be the final score achieved for the functionality of the tender.

All supporting documents required for functionality categories 1 and 2 are based on paragraph 12.2

Functionality Category 1: Company Experience

Where the Company or a person does not meet any specified criteria; or full supporting documentation with evidence of qualifications and experience is not submitted, zero points will be scored for that sub-category.

TABLE 2: EVALUATION CRITERIA FOR 1. Company Experience					
#	Sub-Category	Criteria	Points	Weight	Max points available
1	Numbers of years of Experience in the ITS Industry (Points will be scored for the most years of experience only)	More than 7 years of work experience	5	2	25
		Between 5 and 7 years of work experience	2.5		
		Less than 5 years of work experience	0		
2	Number of years of APTMS-specific experience (Points will be scored for the most relevant experience only)	More than 3 years APTMS related work experience	5	2	
		Between 1 and 3 years APTMS related work experience	2.5		
		Less than 1-year APTMS related work experience	0.5		
3	Number of APTMS-related projects (Points will be scored for the most years' experience only)	More than 3 APTMS related projects	5	1	
		Less than 3 APTMS-related projects	0		
NOTE: Project references need to be provided. The City retains the right to contact any of the references provided. It is the Tenderer's responsibility to ensure that the correct contact details of references are included.					

Functionality Category 2: Key Personnel Qualifications and Experience

Personnel, Qualifications and Experience will be used for evaluation purposes. Where the Company or a person does not meet any specified criteria; or full supporting documentation with evidence of qualifications and experience is not submitted, zero points will be scored for that sub-category.

TABLE 3: EVALUATION CRITERIA FOR 2. Key Personnel Qualifications and Experience					
CONTRACT MANAGER ¹					
#	Sub-Category	Criteria	Points	Weight	Max points available
1	Qualification in either 1. Contract Management 2. ICT/ITS systems 3. Related Management Field	higher than NQF 6	3	1	12
	(Points will be scored for the highest qualification only)	NQF 6	2		
2	Work experience in Project/ Contract Management	More than 5 years	3	1	
	(Points will be scored for the most years' experience only)	Between 4 and 5 years	2		
3	ICT/ITS Specific experience (Points will be scored for the most relevant experience only)	More than 5 years in Contract Management of ICT and/or ITS related projects.	3	2	
		4 to 5 years in Contract Management of ICT and/or ITS related projects.	2		
		Contract Management of Non-ICT and/or ITS related projects.	1		
NOTE: The resource must be resident within South Africa for the project's duration. If not, zero points will be allocated.					

	MAINTENANCE MANAGER				
#	Sub-Category	Criteria	Points	Weight	Max points available
1	Qualification in either: 1. Electronic engineering 2. ICT/ITS systems 3. Related Technical Field (Points will be scored for the highest qualification only)	higher than NQF 6	3	1	12
		NQF 6	2		
2	Work experience in Maintenance Management (Points will be scored for the most years' experience only)	More than 5 years	3	1	
		3 to 5 years	2		
3	APTMS/AFC Specific experience (Points will be scored for the most relevant experience only)	More than 5 years in Maintenance Management of APTMS/AFC related environment	3	2	

		3 to 5 years in Maintenance Management of APTMS/AFC related environment	2	
		Maintenance Management in of Non-APTMS/AFC related environment	0	
NOTE: The resource must be resident within South Africa for the project's duration. If not, zero points will be allocated.				

	SENIOR TECHNICIAN – CCTV/WI-FI SPECIALIST				
#	Sub-Category	Criteria	Points	Weight	Max points available
1	Qualification in either: 1. Electronic engineering 2. ICT/ITS systems 3. Network Engineering 4. Related Technical Field (Points will be scored for the highest qualification only)	Higher than NQF 5	3	1	12
		NQF 5	2		
2	Work experience in Electronic Engineering / ICT /ITS / Related Technical fields. (Points will be scored for the most years' experience only)	More than 5 years	3	1	
		3 to 5 years	2		
3	CCTV/Wi-Fi Specific experience (Points will be scored for the most relevant experience only)	More than 5 years in: CCTV Systems environment, ICT Networks and Wi-Fi and Knowledge in working on electronic sub-systems environment	3	2	
		3 to 5 years in: CCTV Systems environment, ICT Networks and Wi-Fi and Knowledge in working on electronic sub-systems environment	2		
		One or two expertise in the following CCTV Systems environment, and/or ICT Networks and Wi-Fi and/or Knowledge in working on electronic sub-systems environment	1		
NOTE: The resource must be resident within South Africa for the project's duration. If not, zero points will be allocated.					

SENIOR TECHNICIAN – APTMS SPECIALIST					
#	Sub-Category	Criteria	Points	Weight	Max points available
1	Qualification in either: 1. Electronic engineering 2. ICT/ITS systems 3. Computer Systems	Higher than NQF 5	3	1	12

	4. Related Technical Field (Points will be scored for the highest qualification only)	NQF 5	2		
2	Work experience in Electronic Engineering / ICT /ITS / Computer Related Technical fields. (Points will be scored for the most years' experience only)	More than 5 years	3	1	
		3 to 5 years	2		
3	APTMS Specific experience (Points will be scored for the most relevant experience only)	More than 5 years in APTMS Back-Office & Business Intelligent (BI) tool	3	2	
		3 to 5 years in APTMS Back-Office & BI tool	2		
		Less than 3 years in APTMS central control systems	0		

	SENIOR TECHNICIAN – SCHEDULER SPECIALIST				
#	Sub-Category	Criteria	Points	Weight	Max points available
1	Qualification in either: 1. Industrial Engineering 2. Transport Economics 3. Related Technical Field (Points will be scored for the highest qualification only)	Higher than NQF 5	3	1	12
		NQF 5	2		
2	Work experience in Electronic Engineering / ICT /ITS / Related Technical fields. (Points will be scored for the most years' experience only)	More than 5 years	3	1	
		3 to 5 years	2		
3	Scheduling Specific Experience (Points will be scored for the most relevant experience only)	More than 5 years in: Bus scheduling system	3	2	
		3 to 5 years in Bus and 1 year in another similar APTMS scheduling system	1.5		
		Other similar APTMS schedulers	1		

Functionality Category 3: Locality Content Locally Based Company

Where the Company or a person does not meet any specified criteria; or full supporting documentation with evidence is not submitted, zero points will be scored for that category. (Note: Supporting documents in a form of certificate for municipal service and payment)

TABLE 6: EVALUATION CRITERIA FOR

3. Locality: Locally Based Company.

#	Category	Quality criteria	Points	Weight	Max points available
1	Company Head Office and Support/Maintenance Office (Points will be scored for the most relevant location only)	Tshwane Municipal District	3	5	15
		Gauteng	2		
		Elsewhere in South Africa	1		

Only those tenders which achieve the minimum score of 70% (sum of weighted scores for all categories), will be further evaluated based on the 80/20 preference points system, depending on the price of the lowest acceptable tender offer.

12.4 STAGE 4 PREFERENTIAL POINT SYSTEM

The 80/20-point system as prescribed in Preferential Procurement Regulation 2017.

Price: 80 points

BBBEE Contribution Level: 20 points (service provider to submit the certified copy of a valid B-BBEE level rating certificate or signed Sworn Affidavit as per Department of Trade and Industry template)

Pricing Schedule / BoQ

The tender to submit a completed BoQ (**ANNEXURE B**)

13 PRICING DATA

13.1 PRICING INSTRUCTIONS

13.1.1 General

- a. This section provides the Tenderer with guidelines and requirements for completing the Price Schedule. The Schedule has to be completed in black ink, and the Tenderer is referred to the Tendering Procedures for correcting errors.
- b. The Price Schedule shall be read with all the documents which form part of this Contract.
- c. The following words shall have the meanings hereby assigned to them:
 - Unit: The unit of measurement for each item of work in terms of the Specifications and the Project Specifications.
 - Quantity: The number of units of work for each item.
 - Rate: The payment per unit of work at which the tenderer tenders to do the work.
 - Price: The product of the quantity and the rate tendered for an item.
 - Lump sum: An amount tendered for an item, the extent of which is described in the Price Schedule, the Specification, and the Scope of Work, but the quantity of work of which is not measured in any units.

13.1.2 Units of Measurements

- a. The units of measurement described in the Price Schedule are metric units.
- b. Abbreviations used in the Price Schedule are as follows:

mm = millimetre	h = hour
m = metre	kg = kilogram
km = kilometre	t = ton (1000kg)
m ² = square metre	no = number
m ² .pass = square metre pass	sum = lump sum
ha = hectare	MN = meganewton
m ³ = cubic metre	MN.m = meganewton-metre
m ³ .km = cubic metre-kilometre	PC sum = Prime Cost sum
l = litre	Prov sum = Provisional sum
kl = kilolitre	% = Percentage
MPa = megapascal	kW = kilowatt

13.1.2 Rates

This Price Schedule has columns for unit, quantity, rate and amount for the goods. Entries in these columns are made as follows:

- a. If the Supplier is to be paid an amount for the goods, which is a fixed price for an item or a fixed price for each of a series of items, the tendering Supplier enters the amount in the amount column only, the other columns being left blank.
- b. If the Supplier is to be paid an amount for the goods, which is the unit rate for each item multiplied by the quantity of the item supplied (i.e. a 'Price Schedule' arrangement) - the tendering Supplier enters the rate, which is then multiplied by the quantity (which has been entered either by him or by the Purchaser) to produce the amount which is also entered.
- c. All prices and rates entered in the Price Schedule must be excluding VAT. VAT will be added on the summary page of the Price Schedule

CORRECTION OF ENTRIES MADE BY TENDERER

Any entry made by the Tenderer in the Price Schedule, forms, etc., which the Tenderer desires to change, shall not be erased or painted out. A line shall be drawn through the incorrect entry, and the correct entry shall be written above in black ink, and the full signature of the Tenderer shall be placed next to the correction.

13.2 PREAMBLE TO THE PRICE SCHEDULE

13.2.1 General

All work to be carried out to the relevant CoT specifications or as specified in the Scope of Works and Pricing Instructions.

13.2.2 Conditions of Contract

The Price Schedule is to be read in conjunction with the Conditions of Contract and Specification.

13.2.3 General Directions and Descriptions

General direction and descriptions of work and materials are not necessarily repeated in this Price Schedule, and reference should be made to the Conditions of Contract and Scope of Work.

13.2.4 Statutory Obligations

The rates and prices entered in the Price Schedule shall be deemed to include for compliance with the statutory obligations arising from the appointment and duties of the Principal Contractor.

13.2.5 Each Item to be Priced

- a. Each item of the Price Schedule shall have a rate or price entered against it – such rate or price shall properly reflect the value of the work covered by the item. Provisional items must be properly priced.
- b. Any major items that the Contractor consider have been omitted from the Schedule must be added by the Contractor in the places provided in the Schedule and described as "...Items not covered elsewhere...". Prices for minor items Contractors consider are omitted from the Schedule must be included within prices for appropriate existing Schedule items.

- c. The Price Schedule provided must be filled in and returned by the Contractor, but the Contractor may include any supplementary or replacement Schedules they wish, provided in full detail.

13.2.6 Prices and Rates to be Inclusive

- a. The unit costs and total prices inserted in the Price Schedule are to be the full inclusive cost of the work described, including all general risks, liabilities and obligations set forth or implied in the documents. The cost of complying with the Conditions of Contract and the requirements set out in Scope of work, is to be covered by the prices and rates quoted in the various items of the Price Schedule.
- b. At least the following list of general obligations is to be included in the rates:
- Warranties and extended warranties.
 - Shipping costs, including associated insurance.
 - Import duties.
 - Supervision.
 - Travelling costs, unless where specifically provided for in the Price Schedule
- c. All accessories, sundry materials & consumables shall be provided if necessary and costs included in the rates. This includes but is not limited to at least the following:
- All required tools, instruments, vehicles & machinery required to do the works.
 - Equipment brackets unless a pay item for specific brackets is allowed for.
 - Electrical fuses.
 - Cabling.
 - Connectors.
 - Wiring.
 - Terminations (fibre optic & electrical).
 - Splicing & joints.
 - Sealant.
 - All other accessories, sundry materials & consumables as may be required for complete system maintenance and expansion.

13.2.7 Un-priced Items

Items against which no price or rate is entered shall be deemed to be covered by the other rates and prices in the Price Schedule.

13.2.8 Quantities

The Quantities shown in the Price Schedule are indicative. CoT does not guarantee these quantities as minimum or maximum quantities for purchase and reserves the right to re-measure quantities, without limit, if required at the rates provided in the Price Schedule. However, these quantities will be used for evaluation purposes of the total price of the Contractor's Tender.

CITY OF TSHWANE

CONTRACT RTD09-2022/23

TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS)
FOR A PERIOD OF 3-YEARS

Summary of pricing schedule

NAME OF TENDERER: _____

#	Description	Amount
A	GENERAL OBLIGATIONS	
B	ICC MAINTENANCE	
C	STATION MAINTENANCE	
D	DEPOT MAINTENANCE	
E	ON-ROUTE MAINTENANCE	
F	BUS MAINTENANCE	
G	TRAINING & OPERATIONAL SUPPORT	
H	ASSET REPLACEMENT FUND	
	Sub-total	
	Value-Added Tax (VAT at 15%)	
	TOTAL AMOUNT VAT INCLUSIVE	

CITY OF TSHWANE

CONTRACT RTD09-2022/23

TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS)
FOR A PERIOD OF 3-YEARS

A: General obligations and dayworks

NAME OF TENDERER: _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE	AMOUNT	RATE	AMOUNT
				(Excl. Vat) (B)	(Excl. Vat) =(A*B)	(Excl. Vat) (C)	(Excl. Vat) =(A*C)

The rates to be filled in hereunder must make provision for all items to cover general obligations specified below and implied in the Contract.

General obligations and dayworks

1	Insurance, Employers spares within the Contractor store/Care	Month	36				
2	Provision of performance security, as specified in the returnable documents (FIDIC, sub-Clause 4.2)	Lump sum					
3	Costs to appoint EMEs and/or QSEs (transfer amount from Schedule of proposed subcontractors)	Lump sum					
4	Dayworks – Labour						
	These amounts will only be expended on specific instruction by the Engineer to the Contractor for additional tasks that may be required.						
a	Unskilled labour	Hour	100				
b	Electrician / Electrical technician	Hour	100				
c	Fibre optics technician	Hour	100				
d	Electronics technician	Hour	100				
e	ICT technician	Hour	100				
f	Communications-network engineer	Hour	100				
g	Systems engineer	Hour	100				
h	Systems integrator	Hour	100				
5	Reinstatement						
	APTMS on Take over	Prov Sum			R 800 000.00		
Total material							
Total labour							
General obligations and dayworks: Total carried forward to summary							

CITY OF TSHWANE

CONTRACT RTD09-2022/23

TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS

B. Interim Control Centre (ICC) Maintenance and KPIs

NAME OF TENDERER: _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY	SUPPLY MATERIALS	SUPPLY LABOUR
------	---------------------	------	----------	------------------	---------------

			(A)	RATE (Excl. Vat) (B)	AMOUNT (Excl. Vat) =(A*B)	RATE (Excl. Vat) (C)	AMOUNT (Excl. Vat) =(A*C)
4	ICC Preventative Maintenance, Responsive Maintenance & Continues Improvement to meet KPI obligations						
A	MONTHLY						
i	Complete Maintenance to meet KPI for all ICC systems incl. APTMS Back-office, scheduling, DVMS, Maximo, NAS, Video Wall, Firewall, CCTV, Workstations, IP Phones, AntiVirus, Symantec Backup Exec & IBM Server OS	ICC/Month	36				
B	6-MONTHLY (SPECIALIST SUB CONTRACTORS)						
i	Video Wall	No	6				
ii	Fire Suppression System	No	6				
iii	Uninterruptable Power Supply (UPS)	No	6				
iv	Air Condioning System	No	6				
v	Generator	No	6				
vi	Access Control System	No	6				
5	ICC Spare Part Replacement						
i	CCTV Camera	No	2				
ii	Workstation Hard Drive	No	4				
iii	Workstation Screen	No	4				
iv	IP Phones	No	2				
6	New Proposed Back-Office						
i	New back-office system (price only if new back-end is proposed). Refer to SoW Price to be all inclusive for a fully operational, integrated system.	Lump sum					
Total material							
Total labour							
ICC: Total carried forward to summary							

CITY OF TSHWANE**CONTRACT RTD09-2022/23****TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS****C. Stations Maintenance and KPIs****NAME OF TENDERER:** _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE	AMOUNT	RATE	AMOUNT
				(Excl. Vat)	(Excl. Vat)	(Excl. Vat)	(Excl. Vat)
				(B)	=(A*B)	(C)	=(A*C)
The maintenance rates to be filled in hereunder must make provision for complete system maintenance to meet KPI obligations. Rates to include, personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas based maintenance personnel if required) and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. Rates should include all specialist subcontractors markup and admin fees. The quantity ratio is based on the current deployment and maintenance needed accordingly; however, the maintenance price will change pro-rata as quantities change.							
1	Software and Licence Support (incl. Updates, bug fixes, new releases...)						
A	12x PID Controllers	PID/Months	468				
B	12x Panic Button RTU (Stuttgart Field Controller)	RTU/Months	468				
C	12x IP Phones	Phone/Months	468				
D	12x Public Address (Amplifier, Network Controller & Barix)	PA/Months	468				
E	12x CCTV Decoder (NUC)	Decoder/Months	468				
F	12x Last Mile Switch (Moxa)	Switch/Months	468				
2	STATION Preventative Maintenance, Responsive Maintenance & Continues Improvement to meet KPI obligations						
A	Complete Maintenance to meet KPI for Station systems (Per Stations)	Station/Month	468				
3	STATION Spare Part Replacement						
A	40" Samsung TFT Screen	No	4				
B	Filter Fans (for PID)	No	4				
C	Power Supply (230VAC/12VDC)	No	4				
D	PI Controller	No	4				
E	RTU	No	2				
F	Tamper alarm	No	2				
G	Light Sensor	No	2				

H	PID Enclosure	No	2				
I	CCTV Camera (Fixed Dome March)	No	8				
J	CCTV Camera (360 degree ACTi)	No	4				
K	Panic Button	No	4				
L	Remote Panic Button	No	4				
M	Panic Button RTU (Stuttgard Field Controller)	No	4				
N	IP Phones	No	2				
O	Microphone	No	4				
P	IP Audio Decoder	No	2				
Q	Power Amplifier	No	2				
R	PA (Public Announcement) Network Controller	No	2				
S	Wall Mounted Loudspeakers	No	4				
T	CCTV Decoder (NUC)	No	2				
U	CCTV Display	No	4				
V	Last Mile Switch (Moxa)	No	2				
W	BSIS door Motor	No	4				
X	BSIS door Drive Unit	No	4				
Y	BSIS door Power Supply	No	4				
Z	BSIS door Station control board	No	4				
AA	BSIS Infrared Array	No	4				
BB	BSIS door Remote	No	4				
CC	WiFi Communications AP	No	2				
				Total material			
				Total labour			
STATIONS: Total carried forward to summary							
CITY OF TSHWANE							
CONTRACT RTD09-2022/23							
TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS							

D. Depot Maintenance and KPIs

NAME OF TENDERER: _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE	AMOUNT	RATE	AMOUNT
				(Excl. Vat)	(Excl. Vat)	(Excl. Vat)	(Excl. Vat)
				(B)	=(A*B)	(C)	=(A*C)
The maintenance rates to be filled in hereunder must make provision for complete system maintenance to meet KPI obligations. Rates to include, personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas based maintenance personnel if required) and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. The price should include the specialist sub-contractor markup and admin fees. The quantity ratio is based on the current deployment and maintenance needed accordingly; however, the maintenance price will change pro-rata as quantities change.							
1	Hardware Support & Warranty extensions (onsite) for duration of the Contract						
A	1x Alcatel Lucent (6900 or 6860) for 3 years	No	1				
B	1x Moxa (EDS510 or PTG7809) for 3 years	No	1				
C	1x Disaster Recovery Hardware for 3 years	No	1				
D	APTMS Back-office and Scheduling						
i	5x IBM Server (IBMX3630 M4) for 3 years	No	5				
ii	2x IBM Server (IBMX3250 M5) for 3 years	No	2				
2	Software and Licence Support (incl. Updates, bug fixes, new releases...)						
A	1x Ruckus ZoneFlex Access Point Supp and Lic per year	Lic/Month	36				
B	1x Ruckus ZoneDirector Supp per year	Lic/Month	36				
C	1x Alcatel Lucent OmniSwitch (6900 or 6860) per year	Lic/Month	36				
D	1x Moxa Network Switches (PTG7809 or EDS510) per year	Lic/Month	36				
E	1x CCTV decoder per year	Lic/Month	36				
F	1x Disaster Recovery Software (Synmantec Backup Exec, Vmware, Server OS and other) per year	Lic/Month	36				
G	WORKSTATION						
i	3x Upgrade: Win10 Pro (64bit) to Win11 Pro (64-bit)	No	3				
ii	3x Latest version MS Office (Win11 64-bit) per year	Lic/Month	108				
iii	3x Latest version MS Outlook (Win11 64-bit) per year	Lic/Month	108				
3	DEPOT Preventative Maintenance, Responsive Maintenance & Continues Improvement to meet KPI obligations						

A	Complete Maintenance to meet KPI for Depot systems incl. APTMS Back-office, Scheduling, DVMS, Maximo, NAS, Firewall, CCTV, Workstations, IP Phones, AntiVirus, Symantec Backup Exec & IBM Server OS	Depot/Month	36				
4	DEPOT Spare Part Replacement						
A	Ruckus ZoneFlex Access Point (T301s)	No	2				
B	Ruckus ZoneDirector (1200)	No	1				
C	Alcatel Lucent 6900	No	1				
D	Alcatel Lucent 6860	No	1				
E	Moxa EDS510	No	1				
F	Moxa PTG7809	No	1				
H	Fixed IP Microdome CCTV Camera	No	4				
I	Fixed IP Mini-dome CCTV Camera	No	1				
J	CCTV Decoder & Control switch	No	1				
K	CCTV Display Screen	No	1				
L	IP Phone	No	1				
Total material							
Total labour							
DEPOT: Total carried forward to summary							
CITY OF TSHWANE							
CONTRACT RTD09-2022/23							
TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS							
E. On Route Maintenance and KPIs							
NAME OF TENDERER: _____							
ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE (Excl. Vat)	AMOUNT (Excl. Vat)	RATE (Excl. Vat)	AMOUNT (Excl. Vat)
				(B)	=(A*B)	(C)	=(A*C)

The maintenance rates to be filled in hereunder must make provision for complete system maintenance to meet KPI obligations. Rates to include, personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas based maintenance personnel if required) and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. The price should include the specialist sub-contractor markup and admin fees. The quantity ratio is based on the current deployment and maintenance needed accordingly; however, the maintenance price will change pro-rata as quantities change.

1	Software and Licence Support (incl. Updates, bug fixes, new releases...)						
A	34X Moxa Network Switches (PTG7809 OR EDS510) per year	Switch/Month	1224				
2	ON-ROUTE Preventative Maintenance, Responsive Maintenance & Continues Improvement to meet KPI obligations						
A	34x Complete Maintenance to meet KPI for On-Route systems (Per CCTV camera nodes)	Camera/Month	1224				
3	ON-ROUTE Spare Part Replacement						
A	PTZ Dome CCTV Camera	No	4				
B	Moxa Network Switches (EDS510E)	No	2				
Total material							
Total labour							
ON ROUTE: Total carried forward to summary							

CITY OF TSHWANE

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TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS

F. Bus Maintenance and KPIs

NAME OF TENDERER: _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE (Excl. Vat)	AMOUNT (Excl. Vat)	RATE (Excl. Vat)	AMOUNT (Excl. Vat)
				(B)	=(A*B)	(C)	=(A*C)

The maintenance rates to be filled in hereunder must make provision for complete system maintenance to meet KPI obligations. Rates to include, personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas based maintenance personnel if required) and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. The price should include the specialist sub-contractor markup and admin fees. The quantity ratio is based on the current deployment and maintenance needed accordingly; however, the maintenance price will change pro-rata as quantities change.

1	BUS Preventative Maintenance, Responsive Maintenance & Continues Improvement to meet KPI obligations						
i	114x Complete Maintenance to meet KPI for BUS systems (Per Bus)	Bus/Month	4104				
2	On-board APTMS systems						
i	OBU replacement HDD/SDD	No	5				

ii	OBU Bracket	No	5				
iii	MDT Bracket	No	5				
iv	On-Board Unit (OBU)	No	5				
v	Mobile Data Terminal (MDT)	No	5				
3 DTI On-board video surveillance system							
i	DTI MDR NVR with HDD/SDD	No	5				
ii	DTI MDR replacement HDD/SDD, 2TB	No	5				
iii	Driver CCTV Display	No	5				
iv	POE Network switch, 8 Port	No	5				
v	POE Network switch, 12 Port	No	5				
vii	3 axis accelerometer	No	5				
vii	NVR Bracket MDR	No	5				
viii	Driver CCTV Display bracket	No	5				
ix	On-board CCTV Axis P3905-R	No	10				
4 Automatic Passenger Counters (APC)							
i	APC Door sensor: Hella Aglaia, bi-scopic	No	5				
ii	APC Bracket/enclosure: Hella Aglaia, bi-scopic	No	5				
5 Internal Next Stop Display							
i	Internal next stop display: Hanover LED type	No	5				
ii	Internal next stop display bracket: Hanover LED	No	5				
6 Antennae							
i	3 in 1 combination Wi-Fi, GSM/UMTS and GPS antenna (IP67) for OBU and NVR, incl. cabling and connectors	No	5				
ii	Antennae cable, incl. connectors	No	5				
7 Other							
i	Driver pannic button for covert installation (small form factor), including wiring and connector	No	5				
ii	Filter fan, type Pfannenbergl PF22.000 or equivalent approved (inlet fan, forced ventilation)	No	5				
iii	CAT5/CAT6 Patch leads, incl. connectors	No	5				
iv	WAGO (or equivalent approved) connector terminals	No	5				

Total material		
Total labour		
BUS: Total carried forward to summary		

CITY OF TSHWANE**CONTRACT RTD09-2022/23****TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS****G: Training and Operations Support**
NAME _____ **OF**
TENDERER: _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE (Excl. Vat)	AMOUNT (Excl. Vat)	RATE (Excl. Vat)	AMOUNT (Excl. Vat)
				(B)	=(A*B)	(C)	=(A*C)

The maintenance rates to be filled in hereunder must make provision for complete system maintenance to meet KPI obligations. Rates to include, personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas based maintenance personnel if required) and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. The price should include the specialist sub-contractor markup and admin fees. The quantity ratio is based on the current deployment and maintenance needed accordingly; however, the maintenance price will change pro-rata as quantities change.

Training and Operational support

1	Training of CoT personnel, priced per training session						
A	ICC Equipment						
i	DVMS operations training	No	3				
ii	CMMS operations training	No	3				
iii	ICC Preventative Maintenance training	No	3				
iv	Driver and Bus Scheduling training	No	3				
v	Basic Troubleshooting of ICC equipment training	No	3				
B	Station Equipment						
i	Station Preventative Maintenance training	No	3				
ii	Basic Troubleshooting of station equipment training	No	3				
C	Depot Equipment						
i	Wi-Fi Management training	No	3				
ii	Depot Preventative Maintenance training	No	3				

iii	Basic troubleshooting of depot equipment training	No	3				
D	Bus Equipment						
i	On-board equipment operations training	No	3				
ii	Bus Preventative Maintenance training	No	3				
iii	Basic troubleshooting of bus equipment training	No	3				
2	On the job training, live in the ICC, depot or buses & Operational Support						
i	APTMS Operations and BI Expert	Hour	100				
ii	Tracking Systems Specialist	Hour	100				
iii	Scheduling Systems Specialist	Hour	100				
Total material							
Total labour							
Training & Ops Support: Total carried forward to summary							

CITY OF TSHWANE

CONTRACT RTD09-2022/23

TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS

H: Asset Replacement Fund

NAME**OF****TENDERER:** _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE (Excl. Vat)	AMOUNT (Excl. Vat)	RATE (Excl. Vat)	AMOUNT (Excl. Vat)
				(B)	=(A*B)	(C)	=(A*C)

The rates to be filled in hereunder must make provision for complete Asset Replacement to meet compatibility and integration obligations. Rates to include, personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas based maintenance personnel if required) and any other costs the Contractor deems necessary for complete asset replacement obligations. Cost to include specialist subcontractor markup and admin cost as well. The quantity ratio is based on the current deployment; however, the price will change pro-rata as quantities change subject to optimisation goals.

Provision for Asset Replacement During the duration of the Contract. Subject to approval of the Employer.

1	ICC Equipment	
A	IBM SYSTEM	

ii	IBM Server (IBM x3650 M4 BD) per unit	No	4				
B	NAS						
i	NAS DELL FS8600 per unit	No	1				
ii	NAS DELL SC8000 per unit for 3 years	No	2				
C	FIREWALL						
i	Fortinet Firewall (Fortigate 200D) per unit for 3 years	No	1				
D	VIDEOWALL						
i	55" LCD screens with automated calibration including interface	No	8				
ii	Video Wall Controller with 2x DisplayPort Inputs, 8x HDMI Inputs and 4x DisplayPort Outputs	No	1				
2	Station Equipment						
A	PID 40" LCD TFT Screen	No	32				
B	PID Filter Fans (for PID)	No	16				
C	PID Power Supply (230VAC/12VDC)	No	16				
D	PID Controller	No	16				
E	Panic Button	No	12				
F	Panic Button RTU (Stuttgart Field Controller)	No	12				
G	IP Phones	No	12				
H	PA Microphone	No	12				
I	PA IP Audio Decoder	No	12				
J	PA Power Amplifier	No	12				
K	PA (Public Announcement) Network Controller	No	12				
L	PA Wall Mounted Loudspeakers	No	48				
M	Wi-Fi Communications AP	No	12				
3	Depot Equipment						
i	Layer 3 24 port network switch	No	1				
v	IBM Server (IBM x3650 M4 BD) per unit	No	2				
vi	Ruckus ZoneFlex Access Point (T301s)	No	8				
vii	Ruckus ZoneDirector (1200)	No	1				

xii	IP Phone	No	1				
4	Bus Equipment						
A	On-board APTMS systems						
i	On-Board Unit (OBU) including bracket and SDD	No	114				
ii	Mobile Data Terminal (MDT) including bracket	No	114				
B	Automatic Passenger Counters (APC)						
i	APC Door sensor: Hella Aglaia, bi-scope. Including bracket and enclosure	No	114				
C	Internal Next Stop Display						
i	Internal next stop display: Hanover LED type. Including bracket	No	121				
D	Antennae						
I	3 in 1 combination Wi-Fi, GSM/UMTS and GPS antenna (IP67) for OBU and NVR, incl. cabling and connectors. Including Cabling	No	114				
E	Other						
I	Driver panic button for covert installation (small form factor), including wiring and connector	No	114				
li	Filter fan, type Pfannenbergl PF22.000 or equivalent approved (inlet fan, forced ventilation)	No	228				
Total material							
Total labour							
ASSET REPLACEMENT: Total carried forward to summary							

14 SPECIAL CONDITIONS

FIDIC special condition of Contract (**ANNEXURE C**)

List of MBD Forms and Returnable documents attached as (**ANNEXURE D**)

MBD FORMS

LIST OF ADDITIONAL RETURNABLE DOCUMENTS

15 VALIDITY PERIOD

90 Days

ANNEXURE A: Asset Replacement

1. BUS ASSET REPLACEMENT SPECIFICATIONS

The Contractor shall procure, install, setup, configure, test and commission the following equipment for the buses asset replacement that will be procured during this Contract:

1. BRU unit for synchronising the opening of the bus doors.
2. The array above the right-hand side bus door must be aligned with the station array.
3. The onboard unit is to be integrated with the existing system.
4. Mobile driver terminal to be integrated with the existing system.
5. Three-in-one combination antennae for GPS, GSM/UMTS and Wi-Fi.
6. Automatic Passenger Counters (APC) at the driver's door.
7. Filter fans for ventilation within the installation compartment.
8. Terminal block with spring-loaded blade terminals of type WAGO.
9. Covert driver panic button.
10. SOAP interface to AFC OBU (optional).
11. Interface to vehicle CANbus (optional).
12. Interface to the internal destination display controller (optional).

The City does not guarantee that any or all of the above will be installed on all new buses. Full technical details of all of the above units offered shall be provided to the successful tenderer.

1.1.1 Electrical requirements

The following shall apply:

1. The Contractor shall provide wiring/installation diagrams for in-vehicle systems. These shall be submitted to the City for approval by the vehicle manufacturer and The City. Installation shall not commence until these have been approved.
2. Unless otherwise approved, all devices, cables and connectors shall be shielded and grounded.
3. Onboard components shall be robust and not suffer data corruption, failure or damage due to power spikes (> 40VDC) or dips below 9 VDC.
4. If necessary, protection to devices shall be supplied by the Contractor, including fuses, circuit breakers, power regulators/conditioners/filters and low voltage cut-out relays for all in-vehicle equipment.
5. Operated equipment shall not be affected by vehicle components, such as engine ignition or other onboard equipment, including vehicle power supplies, radios, automatic vehicle location systems, fare collection systems, Wi-Fi communications, and onboard data collection and processing equipment.

1.1.2 Environmental requirements

All onboard equipment must meet or exceed the following minimum conditions unless otherwise specified for specific components:

1. All onboard equipment shall be manufactured for use in harsh environments as found on buses or equivalent vehicles, including continuous vibrations, high ambient temperatures, etc. and be able to continuously operate without problem within this environment.

2. Operating Temperatures between -20° and +65°C
3. Storage Temperatures between – 30° and +80°C
4. Humidity: 0 - 98% relative humidity (condensing)
5. Shock: 30g of 6 milliseconds and up to 5g sustained
6. Operating Vibration: 1.5g RMS, 5 to 150 Hz
7. Endurance Vibration: 8g RMS, 100 to 1,100 Hz
8. Dust and Water Ingress Protection to IP 54 for all equipment inside the bus.
9. All parts shall be made of corrosive-resistant material, such as plastic, stainless steel, anodised aluminium or brass. All external screws, bolts, nuts, and locking washers shall be stainless steel or an approved alternate non-corrosive material.
10. All external connectors shall be weather-tight and designed for use in a mobile environment subjected to dirt, water, oil, cleaning solvents and continuous vibrations.

1.1.3 Work procedure and coordination with bus manufacturer

The following shall apply:

1. The Contractor shall coordinate and agree with the bus manufacturer on a work procedure to install BRU, array, or any other component.
2. The procedure shall happen on the bus assembly line where applicable.
3. The Contractor shall comply with all bus manufacturer requirements for visiting his premises, assembly line, etc., including required OHS induction, permits, or other requirements.
4. It may be preferred for the bus manufacturer to install certain items, e.g. cable looms, antennae, brackets, terminal blocks, etc. In this case, the Contractor shall supply and deliver such items to the bus manufacturer.
5. Considering point 4, the Contractor shall plan, procure, prepare and supply any equipment timeously for the bus manufacturer to install according to his programme.
6. The Contractor shall advise the bus manufacturer on the required locations of devices, e.g. APC and physical requirements/sizes, so that the manufacturer can provide sufficient space.
7. The Contractor shall install components and connections as agreed to fit in with the bus manufacturer's programme. The location shall be advised by the bus manufacturer and may be subject to change.
8. The Contractor shall install his equipment and take care to clean up after work. He shall not stand on seats or damage any part of the bus.
9. The Contractor shall clearly show in his QA plan this work procedure, including the personnel involved.
10. As part of his QA, the Contractor shall ensure the quality of work complies with the specification and is of high-quality workmanship. Such pre-inspections shall be done against check sheets before inviting the City and/or Engineer for inspections of the work.
11. The City and/or Engineer shall have the right to inspect the quality of the work at any time during the installation process.

1.1.4 Bus Requirements

1.1.4.1 BRU and Array General Requirements

1. The BRU unit shall be compatible with the current installed BRUs.

2. The BRU shall be the same size as the current installed BRUs.
3. The BRU shall have the option to open three different bus doors independently.
4. The BRU shall have an LED indication of functional status, e.g. Red light if there are errors.
5. The array shall be the same size and technology as currently installed arrays.

1.1.4.2 On-Board Unit (OBU) General Requirements

The APTMS OBU shall act as a central processing unit with adequate processing power and data storage required to control, monitor, record, log data and oversee all APTMS systems installed on the bus in real time.

An integrated APTMS onboard unit (OBU) with at least the following capabilities shall be supplied:

1. Automatic Vehicle Location (AVL).
2. GPS includes advanced algorithms such as dead reckoning.
3. GSM/UMTS communications.
4. Wi-Fi subscriber unit capable of communicating at both 2.4 and 5.8 GHz.
5. Driver voice communications, including VoIP.
6. Text communications via data (preferred) or SMS.
7. Data upload/download via Wi-Fi or GSM/UMTS.
8. Passenger announcements include:
 - a. Driver announcements.
 - b. Announcements that are made from the ICC.
 - c. Automatic Stop Annunciation (ASA) is based on a schedule adherence system.
9. All system data shall be logged and stored local until it can be transferred to the ICC.
10. Power management and controlled shutdown.
11. Interfaces to various signals and devices.

1.1.4.3 Power management

The following shall apply:

1. It shall be possible for the OBU to manage power to at least one external device, e.g. MDT.
2. The OBU shall be powered directly from the bus auxiliary battery, i.e. permanent power supply.
3. The OBU have an input to sense whether the bus ignition is switched off.
4. After the bus ignition is switched off, the device shall go through a managed shutdown procedure. The procedure will allow all system uploads/downloads to be completed (if in the depot Wi-Fi zone or via GSM/UMTS) and prevent corruption or loss of system or log files.
5. The time allowed for system shutdown shall be configurable in minute increments between 0 and 120 minutes.
6. The default time shall be 30 minutes, which shall be adjusted based on experience to achieve the optimum time to preserve the auxiliary battery.
7. After shutdown, the OBU shall enter sleep mode with minimal current draw < 50mA.

8. It may be possible for the OBU to wake up at configurable intervals to check for any data downloads from the ICC. The unit shall immediately resume sleep mode afterwards.

1.1.4.4 Interfaces

It shall be possible for the APTMS onboard unit to interface with at least the following:

1. Mobile Driver Terminal (MDT).
2. Various bus signals, including:
 - a. Odometer.
 - b. Reverse gear signal.
 - c. Stop request.
 - d. Ignition sense signal.
 - e. Door open/close (left and right-hand doors).
3. Driver panic button/duress signal.
4. Microphone and speakers (supplied by others) (optional).
5. The internal next-stop display controller (supplied by others).
6. Automatic Passenger Counters (APC).
7. The external destination display controller (supplied by others).
8. Automatic Fare Collection (AFC) system (supplied by others) (optional).
9. Traffic Signal Priority (TSP) system (optional).
10. Accelerometer to monitor harsh braking and cornering (supplied by others).
11. Vehicle CANbus (optional).

The Contractor shall coordinate interfacing of the above with the vehicle manufacturer, BOC, SOC, AFC, UTC and any other contractors or sub-contractors as required. If a logical interface does not exist, it shall be developed using an open interface based on XML or similar approved open architecture.

The APTMS onboard unit shall have physical interfaces to all the devices listed above. In addition, the devices may include but are not limited to the following:

1. 10/100/1000Mb/s Ethernet ports, M12 or RJ45.
2. Serial interfaces, including RS232/RS422/RS485.
3. USB 2.0.
4. CAN bus.
5. Odometer interface.
6. Digital inputs/output.
7. Antenna connector for GPS, GSM/UMTS, and WLAN.
8. HDMI port.
9. Embedded SIM (preferred) or unmarked SIM card slot with secure screw-on cover

1.1.4.5 Automatic Vehicle Location (AVL) requirements

The following shall apply:

1. GPS positioning shall be used as the primary method for vehicle location. Counting odometer pulse may be used to augment the GPS positioning but shall not be the primary means of AVL.
2. Real-time route data shall be sent via GSM/UMTS communications to the ICC.

3. It shall be possible to configure the interval by which real-time data is updated in the ICC by increments of seconds. The default update period shall be 30 seconds.
4. After the bus departure from a stop, the location shall be updated when doors close and the bus has moved by a predefined distance, e.g. 30m from the stop.
5. The AVL shall provide positional accuracy of +/- 15 meters 95% of the time.
6. The AVL system shall provide multiple geo-fences polygons of a minimum resolution of 5m by 5m.
7. In case of lost or weak GPS signal, utilise certain information received from the bus systems, e.g. tachometer signal and steering direction, to determine the most accurate bus location using algorithms such as dead reckoning or equivalent.
8. Scheduled stops can be used as an accurate reference point along routes to augment or recalibrate GPS location if required.
9. Onboard systems shall be synchronised with back-office systems. A clock accuracy of +/- 20 seconds is acceptable between different system components.
10. For time synchronisation, a GPS signal may be used. Still, the Contractor is responsible for ensuring synchronisation with onboard and back-office systems.
11. AVL shall be integrated into a remote user interface to be monitored in the ICC.
12. The AVL system must receive information from scheduling software/databases to compare the actual bus location to the bus's schedule. Once the bus is behind its schedule by a pre-determined configurable threshold, it activates the Traffic Signal Priority (TSP) request system (optional).
13. The APTMS OBU with AVL must include logic to use bus average speed and distances from various intersections to determine the appropriate time to activate Traffic Signal Priority (TSP) requests (optional).

1.1.5 Mobile Driver Terminal (MDT) requirements

The MDT can be either integrated with the APTMS OBU (preferred option) or a separate unit. The following shall apply:

1. It shall be possible to set priority levels for sending and receiving certain data. For instance, the emergency signal shall have the highest priority.
2. Act as the user interface between the bus driver and all in-vehicle devices connected to the APTMS OBU and to the ICC, including providing the interface for initialisation, operation, and configuration of all devices.
3. Be equipped with a colour, liquid crystal display (LCD) capacitive touchscreen.
4. Have a minimum resolution of VGA 800 x 600 or 800 x 450.
5. Have a screen size of approximately 7 inches (18cm) diagonal.
6. Have configurable soft keys.
7. Support different language options. The default shall be English.
8. Include functionality to display different font sizes and styles on the same screen.
9. Display both text and icon-based messages and key labels.
10. Be readable in direct sunlight, have a low glare/anti-glare display, and be equipped with a suitable cowl to reduce reflections.
11. Have automatic low brightness settings for nighttime operation.
12. A small speaker and tone generator can be used to provide audio alerts.
13. Shall provide at least the following information to the driver:

- a. Status of all attached systems, including but not limited to:
 - o Door status.
 - o GPS signal strength.
 - o Passenger counters (optional).
 - o Accelerometer information, including driver performance (optional).
 - o Self-diagnostics and any fault notifications.
 - b. Schedule adherence information. Incorporate an audible and graphical schedule adherence display, including alarms/warnings if the driver is behind or in front of the schedule by a configurable time in a 1-minute resolution.
 - c. List of next stopping points.
14. Automatically configure and initialise itself for operation when the power is turned on. The default screen is the operator log-on screen.
 15. Initialise all in-vehicle devices integrated with the APTMS OBU in a single action as the operator enters the log-on information.
 16. Have a programmable interface and menu structure.
 17. Utilise a hierarchical multi-page menu structure. The MDT shall include the functionality to scroll through a page and switch between pages.
 18. Include default (but configurable) backlight, brightness, contrast, audio and tone settings.
 19. Include functionality to set audio tone types, frequencies, volume and duration through configuration data.
 20. Controls allow the bus operator to adjust the backlight, brightness, contrast, and volume settings. However, in no event shall such controls allow the screen to be set to all bright or all dark such that the text is unreadable.
 21. Upon start-up and log-on, the system shall revert to default settings for all configurable parameters.
 22. Include operator log-on and log-out functions. The log-on function of the MDT shall permit the operator to initialise the system with a driver ID and block number.
 23. Include functionality to select routes and trips.
 24. Have a soft key which shall request the ICC and/or other locations to establish voice communications with the driver. For this purpose, the unit shall interface with the bus speakers and microphone (to be provided by the bus supplier).
 25. Provide simple access to at least 10 pre-programmed text messages configurable by the ICC operators.
 26. Indicate that there are unread messages in the incoming message queue and how many messages are in that queue. The MDT shall also indicate when there are no more messages to be read.
 27. Move priority messages to the front of the queue and provide visual and audible indications that a priority message has been received.
 28. Include functionality to skip a message in the queue, delete it from the queue only after it has been displayed, or save a message to memory for long-term storage (until MDT shutdown).
 29. Include a minimum of two levels of critical messages, including:
 - a. Overt/Covert Alarm (highest priority - level 0).
 - b. Non-Emergency (priority - level 1).
 30. Be configurable system-wide to provide non-priority messaging functions to the operator at any time or only when the vehicle is below a customisable speed threshold.

31. Shall be able to display font sizes in the range of 16 to 30 points.
32. The MDT power shall be managed through the OBU.

1.1.6 Automatic Stop Annunciation (ASA)

Automatic Stop Annunciations (ASA) shall be made on all buses. ASA consists of two components, namely audio annunciations and visual annunciations. Both are considered in this section.

1.1.6.1 General requirements

The APTMS Contractor shall be responsible for the control logic and communications required on the APTMS OBU and the integration of components supplied by others to ensure the proper, integrated operation of all the ASA components.

The following shall apply:

1. No interaction by the driver or an operator to trigger announcements (all triggering to be set as configuration data) shall be required.
2. The APTMS OBU shall store bus stop and route information and compare that to the actual GPS coordinates. At pre-determined distances from the next stop, an announcement shall be triggered.
3. Announcement trigger distances shall be configurable by the back-office application in the ICC.
4. Announce transfer point and connecting route information at every stop, where relevant.
5. Both audible and visible messages shall begin playing within one (1) second of being triggered.

1.1.6.2 Audio annunciation

The following shall apply:

1. The following audio system components will be supplied and installed by the vehicle manufacturer
 - a. Driver microphone (without key button). Rugged gooseneck analogue microphone to be fitted overhead to allow pick up of driver's voice whilst not interfering with driver field of view or controls.
 - b. Driver speaker mounted overhead.
 - c. Saloon speakers (8 minimum) are mounted in the vehicle ceiling with no more than 3m of saloon length per speaker.
 - d. Wiring to pre-determined locations for connection to APTMS components.
2. APTMS equipment shall be installed a minimum of 500mm from speaker magnets.
3. Typical speaker specifications are:

Size (driver Speaker)	100mm
Size (saloon speaker)	160mm
Impedance	4 ohms
Type	2-way coaxial (Woofer with integrated tweeter)
Power	20W RMS
Frequency Response	55 – 20 000 Hz

4. The above components shall be integrated with the APTMS OBU. The APTMS OBU shall act as a controller and amplifier for the audio system. The APTMS Contractor

shall liaise with and cooperate with the vehicle manufacturer to guarantee seamless and efficient system integration within the required programme requirements of both contractors.

5. The Contractor shall take care to ensure speaker impedance matching to his equipment.
6. The volume of the internal announcements shall be adjustable to a standard level through configuration data. This level shall be determined during bus operation, considering ambient noise. The City shall approve this level. It may be the same for all buses or under special conditions (to be determined by the City). It may be different for certain buses.
7. The system shall include an automatic gain control to adjust interior volumes depending on interior ambient noise levels.
8. The system shall provide a manual override to allow an operator to cancel or manually activate an announcement.
9. A voice artist (to be provided or approved by the City) shall be used to record words and short phrases.
10. Messages shall be assembled using combinations of words and phrases to sound like continuously recorded messages.
11. Professional studio recordings shall be the responsibility of the Contractor.
12. All recording volumes shall be normalised to the same reference level.
13. The following are typical recording requirements:

Channel	Mono
Constant bit rate	32 kBits/s
Impedance	22 050Hz
Format	mp3 format

14. Once recorded, the Contractor shall arrange prototype messages to be approved by the City before "going live". System testing will be conducted with computer-generated sound bites before loading voice recordings.
15. Messages shall be announced in English and other official South African languages if required and determined by the City.

1.1.6.3 Visual annunciation

The following shall apply:

1. The following visual annunciation system components have been specified for supply and installation by the vehicle manufacturer:

	Rigid 12m bus	18m Articulated bus
Forward Destination Display	1	1
Side Mounted Destination Display	1	1
Rear Mounted Destination Display	1	1
Internal Next-Stop Display	1	2

2. The displays shall be controlled and managed by a single display controller, which shall allow:
 - a. Input, storage and display of predefined text, messages and symbols.
 - b. Manual control via a simple user interface on the controller.
 - c. Automatic control via a communications interface to the APTMS OBU.
3. At least 3 portable display configuration data download devices shall be supplied.
4. The displays shall utilise high brightness, wide viewing angle, and amber Light Emitting Diode (LED) technology. LED brightness shall be controlled by photocells installed as part of the sign.
5. The displays shall consist of a 2-line Amber LED matrix with minimum sizes

Display	Minimum Character Height	Minimum number of Characters
Forward Destination Display	200mm	18
Side Mounted Destination Display	100mm	16
Internal Next-Stop Display	60 mm	16

6. Messages on the signs shall be legible during any time of day and from any designated passenger position on the bus.
7. The displays shall be provided with a combined display controller for all signs. Using a standard display control protocol, the controller shall communicate with the APTMS OBU via Ethernet or serial RS 485. The vehicle manufacturer shall provide and install the required cabling and connectors.
8. The time display shall be outside the message display area for the internal next-stop displays. It may be provided either through additional dot-width on display or through a separate display module integrated into the sign housing.
9. The displays shall be capable of displaying upper and lower case characters with proportional fonts. Characters shall be between three (3) and five (5) dot-width, with an average (mode) of four (4) dot-width.
10. The display shall be capable of displaying double-stroke width (bold) fonts.
11. The front face of the display shall be designed to minimise glare.
12. The background shall be black, and the display housing shall include a black border.
13. The signs shall have the functionality to display time and messages in the following modes, set through configuration data:
 - a. A single, non-scrolling or changing message.
 - b. A right-to-left scrolling message.
 - c. An alternating (between up to four states) message.
14. In their installed configuration, LEDs in the onboard signs shall have a minimum service life of 80000 hours.
15. The data content to be displayed shall include but not be limited to;
 - a. Display the route number and final destination of the bus.
 - b. Next-stop messages give the next stop's location or name.
 - c. Display the current time (on a separate line).
 - d. Display customer service announcements and alerts.
16. The above components shall be integrated with the APTMS OBU by the APTMS Contractor.

17. The APTMS Contractor shall be responsible for the communications protocols on the OBU to ensure the proper integrated operation of all the ASA and internal and EDD components.
18. The APTMS Contractor is responsible for ensuring that all wiring and connectors between OBU and display components are correct and that the firmware on the display controllers is correct for operation with the OBU. The vehicle manufacturer shall provide his full cooperation and assistance in this regard.
19. All message content shall be configurable and approved by the City.
20. Messages shall be in English and other official South African languages if required and determined by the City.

1.1.7 Antenna requirements

Wireless communications at different frequencies are required, and the following shall apply.

1. Antennae shall be mounted on the bus and connected to the APTMS OBU and the TSP transponder.
2. The antenna shall have ingress protection of at least IP67.
3. Antennae shall have a small form factor suitable for a mounting flush on the bus exterior.
4. Where integrated combination antennae are installed, at least 20dB isolation between antennae is required.
5. The OBU antenna shall:
 - a. Be a three-in-one combination of Wi-Fi, GSM/UMTS, and GPS hi-performance outdoor antennae.
 - b. To support WLAN communications at both 2.4 and 5.8 GHz frequencies.
6. Cabling and connectors shall be included with antennae. This shall be to RG-58, RG-142 of type LMR-195 or equivalent approved. Connectors shall be of type SMA.
7. The suppliers of the APTMS OBU and the TSP shall confirm in writing that their equipment is fully compatible with the proposed antennae. To obtain this written confirmation shall be the responsibility of the Contractor.

1.1.8 GSM/UMTS and SIM card provider for bus communications

The City has an existing APN service provider. The Contractor shall liaise, coordinate and assist the service provider in provisioning sim cards for all new buses to allow voice and text communications.

1.2 Interim Control Centre (ICC)

Unless the Contractor offers a new separate back-end system, no new APTMS-specific installation will be required in the ICC.

1. However, it shall be the Contractor's responsibility to ensure that new schedules, routes, stations, stops, layovers and buses are set up, configured and registered on the APTMS systems to ensure complete integrated operations. As a minimum, this shall include the following:
 - a. Scheduling system updated with all new buses, routes, stopping points, and layovers.
 - b. Monitoring system to include all new systems/subsystems as part of live operations.
 - c. Update of Journey Planner.
 - d. Existing BI reports are being amended to include new systems.

- e. Fleet management to include new buses.
 - f. The new base version is to be uploaded to all buses.
2. The above shall be done in close coordination with the City. The work shall not be accepted unless the City sign off on the work done.
3. The separate pay item shall be priced if a new back-end system is proposed. It shall include all hardware, software, application, systems integration, etc., to ensure a fully integrated functional APTMS system meets the requirements specified throughout this document.

1.2.1 Video Wall

The video wall to be installed in the ICC must be supplied by Opitec Display Solutions. The video wall must be Eyevis product. The ICC video wall consist of:

- 6x 55" LCD display modules (incl. housing and wall mount brackets)
- The NPX-4900 Plus Controller unit (Windows 10/11 ultimate 64bit OS)
- eyeCON V5 Basic Control room & Video wall management software version 5
- CCTV decoder
- CCTV control Switch
- 12x Digital DVI high quality copper cable, 15m

The video wall content is provided from APTMS and CCTV client workstations (display clients) via HDMI ports.

2. Stations equipment Asset Replacement

The Contractor shall procure, install, setup, configure, test and commission the following new equipment for the Station's asset replacement that will be during this Contract:

o Functional Description

The main features of the trunk station can be summarised as follows:

1. Closed (will be a building with walls all around).
2. Ticket Sales at the Station at kiosks and vending machines (implemented through the AFC contract).
3. The entrance is controlled by ticket validators (implemented through the AFC contract).
4. Exit controlled by ticket validators (implemented through the AFC contract).
5. Validators to activate financial transactions and transport data (through AFC contract).
6. Dynamic electronic schedules.
7. Dynamic electronic arrival times.
8. Public Address system to allow communication with passengers if required.
9. IP Phone for communications to ICC.
10. Panic buttons in the sales kiosk and on the platform.
11. Intrusion detection.

The following minimum equipment shall be installed in each Station under this Contract by the APTMS Contractor:

1. Passenger Information Displays (PID).
2. Public Address (PA) system.
3. An emergency button on the station platform.
4. Emergency button inside the sales kiosk.
5. IP phone in sales kiosk.
6. Station intrusion alarm system.
7. Backup communications are to be determined pending investigation and report from the Contractor.

The following high-level architecture shows APTMS and AFC trunk station equipment:

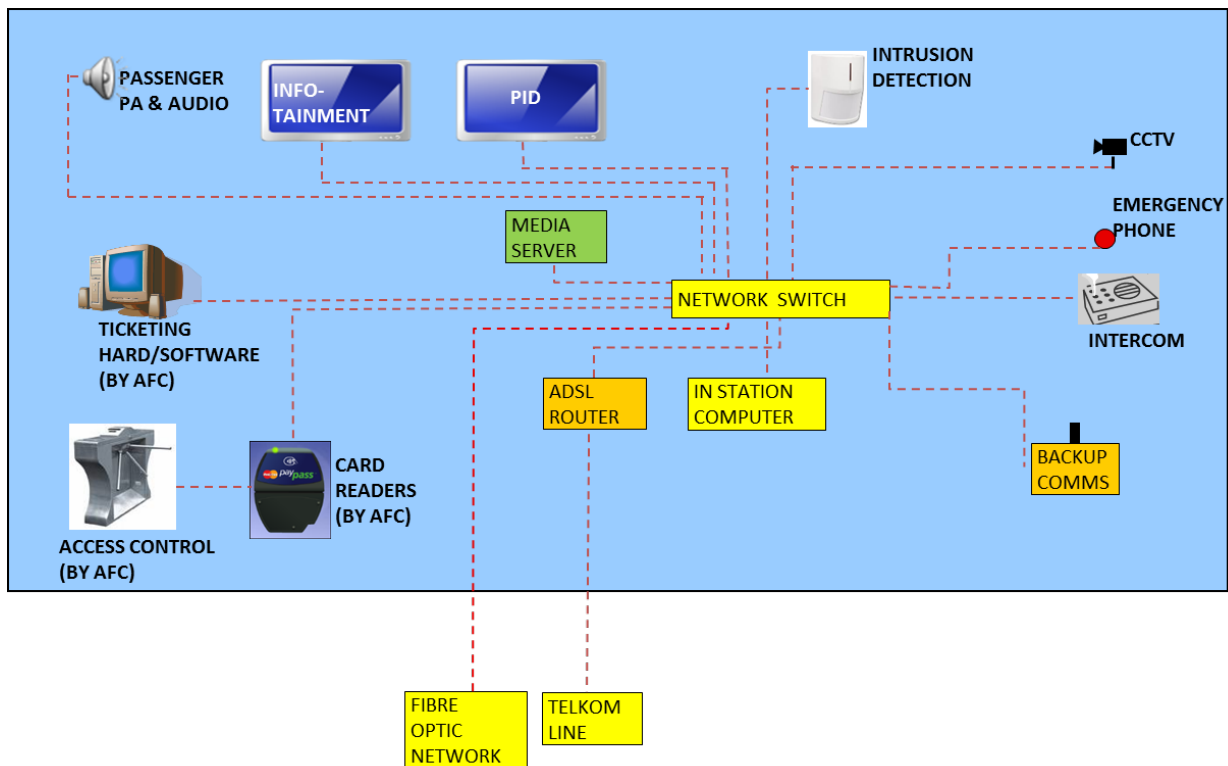


Figure 6: Schematic representation of the Station Systems

○ Passenger Information Display requirements

The City may decide to fit or not fit new stations with PIDs. However, a back-to-back PID is typically fitted in the middle of every platform, per current installations. The PIDs shall, at minimum, meet all functionality of current PIDs. In addition, the following shall apply. In case of any apparent conflict, the most stringent requirements shall apply.

1. 2 x 40" TFT ruggedised outdoor displays with LED backlight, back-to-back.
2. Resolution 1920 x 1080 (16:9).
3. Separate or integrated embedded (preferred) media player/processor.
4. In the event of a separate media player, it shall be able to support 2 displays for a complete back-to-back PID configuration.
5. Include an ambient light sensor for automatic brightness control.
6. Non-reflective display surface to minimise glare.

7. Designed for continuous 24/7 operation.
8. Hi-contrast displays, 5000:1.
9. Hi-brightness, 700nit.
10. Wide viewing angle: 178 degrees.
11. Enclosure to be IP 54 rating.
12. Connected via HDMI or DVI.
13. The display area shall be completely configurable.
14. Enclosure to include forced ventilation via filter fans.
15. Tamper alarm.
16. Interface with the web server in the ICC, from where content is received.
17. Include bracket.
18. Installation brackets to fit in with station design. Bracket and enclosure designs are to be approved by the City.
19. Enclosures and brackets are to be powder coated to colour code as advised by the City.
20. Provide and install cabling for power and network connectivity to PIDs.
21. GSM/UMTS communications modem shall be optional for communications between the ICC and the PID via the cellular network.

o **Public Address (PA) system requirements**

The following shall apply:

1. An IP-based PA system shall be installed at every Station so passengers anywhere in a station can hear announcements clearly.
2. The PA system software in the ICC shall allow for remote monitoring, alarm reporting, configuration and remote announcements.
3. Automatic volume control shall be possible based on ambient noise detection.
4. It shall be possible to override and set the speakers' volume, base and tone directly at the Station.
5. The following shall be supplied and installed under this Contract:
 - a. Microphone
 - b. Speakers as and where required
 - c. PA amplifier
6. The APTMS Contractor shall liaise and cooperate with the Stations contractor to ensure the integration of all components of the PA system.
7. It shall be possible to announce the following ways:
 - a. Announcements are made from the microphone on the Station.
 - b. Announcements are made directly from the ICC.
 - c. Automatic announcements are made through the APTMS system.
8. It shall be possible to configure priorities for the various announcements specified.
9. It shall be possible to configure announcements to be either:
 - a. Voice announcements.
 - b. A sound to play indicates bus arrival.
 - c. A combination of both of the above.

- IP phone requirements

The following shall apply:

1. Inside every sales kiosk shall be an IP phone with a physical keypad.
2. Direct voice communications with the ICC shall be established when dialling a configurable code (e.g. 1111).
3. It is anticipated that an operator from the AFC system shall attend to these calls from the sales kiosk.
4. The IP phone shall be connected to the RTU.
5. The design and location of the IP phone shall be agreed upon with the City.

- Safety and security system requirements

The APTMS Contractor shall supply, configure, install and be responsible for the following:

- 1.
2. Panic buttons on station platforms and inside sales kiosks.
3. Intrusion alarm system.
4. All safety and security devices shall be connected to the UPS and battery backup power supply. The Contractor shall liaise with the Stations contractor (responsible for the backup power supply) to ensure that this requirement is fulfilled.

The following shall apply with regard to the Intrusion Alarm (Panic Button):

1. Inside every sales kiosk and on every platform, at least one panic button shall be installed.
2. Inside the sales kiosk, the panic button shall be placed in a strategic covert location so an attendant can press the button without alerting anyone of his actions. The final location is to be agreed upon with the City.
3. On the platform, the panic button shall be identified as such (location to be agreed with the City) by any passenger.
4. The panic button shall be IP based and connected to an alarm management device. The device shall be a PC-based data acquisition and control device that uses proactive, event-based reporting to control I/O devices. The device shall be of type Remote Terminal Unit (RTU) controller or equivalent approved.
5. It shall be possible to configure the RTU to distinguish between various alarm signals, such as panic buttons, intrusion alarm systems and others.
6. Pressing the panic button shall send an emergency alarm signal to the ICC and/or other destinations (which may physically be separated from each other) and initiate a voice call to the ICC and/or other destinations.
7. As part of the DVMS, the operator attending to emergency calls in the ICC shall receive an alarm signal on his workstation (configurable to be both visual and/or audio). In addition, the camera providing coverage of the panic button shall be displayed full screen on his CCTV display.

The following shall apply regarding the Intrusion Alarm requirements:

1. The Contractor shall supply and install an infrared intruder detection system covering the Station.
2. Each station platform's groupings of infrared detectors shall be wired to an alarm management device. This shall be a PC-based data acquisition and control device that uses proactive, event-based reporting to control I/O devices. The device shall be of type Remote Terminal Unit (RTU) controller or equivalent approved. Each platform shall have a dedicated RTU.
3. RTU devices on the different platforms shall be linked to the network switch in the kiosk server room. It shall be the responsibility of the Contractor to design a fully working intruder detection system for all the different station types.
4. The City shall approve the final design of the intrusion alarm system before implementation.

○ General requirements

The following shall apply:

1. Installation of station equipment shall commence as soon as the infrastructure (Stations) Contractor has granted access.
2. The location of all station equipment shall be determined after consultation with the City.
3. After approval from the City, equipment shall be installed at optimal positions to suit their respective functionality. Where required, brackets shall be designed and procured by the Contractor after approval from the City.
4. The trunk stations are located along the major trunk routes and are all closed stations of varying widths and lengths.
5. The tenderer must ensure that all the systems in the trunk stations are integrated and that the systems are integrated with that in the ICC.

○ Electrical requirements

In addition to the requirements given, the following shall apply:

1. All equipment installed at stations shall operate from a nominal line voltage of 220 VAC, within voltage tolerances of +10% to -20%, and a frequency range of 47 Hz to 53 Hz without equipment damage.
2. Electrical supply, including UPS and battery backup, will be provided by the Station's Contractor. The Contractor shall liaise and cooperate with the Stations Contractor to ensure the provision of electrical supply points and connection to the UPS and battery backup where required.

○ Environmental requirements

The following shall apply:

1. Operating Temperature: -10°C to +65°C.
2. Storage temperature: -20°C to +70°C.
3. Humidity: 0-90% relative humidity (condensing).
4. Outdoor mounted equipment, water and solvents: Water spray on equipment as a result of cleaning activities, industrial solvents, rain, mud, hail, snow and slush, all of which may contain salts that may come into contact with equipment.
5. All outdoor equipment shall be designed for and suitably protected against exposure conditions prevalent in the City.

6. Enclosures shall include any provisions necessary to maintain the internal equipment at the manufacturer's specified Temperature and humidity.
7. All parts shall be made of corrosive-resistant material, such as plastic, stainless steel, anodised aluminium or brass. All external screws, bolts, nuts, and locking washers shall be stainless steel or an approved alternate non-corrosive material.
8. All external connectors shall be weather-tight and designed for use in a mobile environment subjected to dirt, water, oil, cleaning solvents and continuous vibrations.
9. The Contractor shall include reasonable provisions to protect all equipment and components from common vandalism and physical abuse as expected on buses and at stations in the South African environment.
10. Enclosures shall be designed to prevent moisture entry during a thunderstorm and minimise the entry of dust. The Contractor shall indicate if housings do not meet these requirements and shall identify any alternative provisions incorporated to protect against moisture and dust and requirements for installation.
11. Unless otherwise specified, all trunk station equipment shall have a minimum of 50000 hours MTBF.

○ Station Design Requirement

The Contractor will deliver one set of approved by the City and Engineer design drawings to the City. The design drawings will consist of the following minimum requirements:

1. Schematic Drawing per Station showing how all station equipment is connected.
2. Detailed Design Drawings showing all details of all connections.
3. Station layout drawing showing the locations of all equipment.

○ Station As-built Documentation Requirement

The Contractor will deliver an electronic set of approved as-built documentation with the following minimum requirements:

1. As-built documentation shall be submitted in the "base/raw" and PDF format.
2. Schematic drawing per Station showing how all station equipment is connected.
3. Detailed as-built drawings show all details of all connections and wiring of all elements/components.
4. Station layout drawing showing the locations of all equipment.
5. Equipment rack drawings and configuration.
6. All equipment data sheets and manuals.
7. All configuration of all equipment, incl. user logins.

3. Depot and Layover equipment Asset Replacement

No APTMS-specific equipment is required at the layover. However, the Contractor shall include this facility in systems planning and scheduling.

The Contractor shall procure, install, setup, configure, test and commission the following equipment for the Belle Ombre Depot under this Contract:

1. Disaster Recovery (DR) System.

The Contractor shall procure, install, setup, configure, test and commission the following new equipment for the Denneboom layover area under this Contract:

2. Workstations.

o Belle Ombre DR System Functional Description

The following describes the functional requirement of the Disaster Recovery (DR) system for installation at Belle Ombre:

1. The DR will be installed in the APTMS equipment rack located at Belle Ombre Depot inside the Server room.
2. The DR equipment will be connected to the ICC via a redundant optical Fibre network (the current APTMS network will be used).
3. The function of the DR system is to back up Business Critical Software, Configurations, Applications and data to a Server Environment located on a secondary site, far enough away from the primary site.
4. The DR site will become active once the primary (ICC) site is lost due to an unforeseen disaster.
5. The DR site will serve as the main ICC and operations for the duration of the disaster that made the ICC non-functional.
6. The DR system will have sufficient storage capacity to handle all required backups.
7. The DR does not have to make provisions for full operations. However, during the disaster, operations will be limited. The aim is to have a DR site with limited operations available within 5 calendar days.

o Belle Ombre DR System-Specific Requirements

The Disaster Recovery system shall comply with the following specific requirements:

1. The DR system shall not occupy more than 6U of Rack space.
2. The DR system shall have 20TB of usable storage available (after RIAD5 is applied) and be upgradeable to 40TB (it can be local storage on one of the Discreet servers).
3. One discreet Server hosting Backup Management software with the following minimum requirement:
 - a. Intel Xeon 3.4GHz or equivalent approved.
 - b. Main memory 32GB RAM.
 - c. 2TB HDD.
 - d. 4 Cores.
 - e. Dual 10GbE network ports.
 - f. Latest applicable Windows Server.
 - g. Hot-swappable Power Supply and Fan.
 - h. OEM Warranty and support for the duration of the Contract.
4. All the primary Server's images and applications will be backed up monthly by the Backup Management software to the 20TB storage space.
5. The following data will be backed up daily (The Recovery Point Objective (RPO) being 24 hours):
 - a. Scheduling data.
 - b. Route Survey Data.
 - c. Voice recordings.
 - d. Operational data (.saf files).
 - e. BI reports include:
 - Daily Mileage reports.
 - Schedule Adherence reports.
 - APC passenger number reports.
 - f. CMMS SRs and WOs.

- g. Maintenance checklists.
 - h. SOPs.
 - i. Journey planner.
6. One discreet Server with VMware for hosting multiple Virtual servers. The minimum requirements:
 - a. Intel Xeon 2.4GHz or equivalent approved.
 - b. Main memory 64GB.
 - c. 2TB HDD.
 - d. 12 Cores.
 - e. Dual 10GbE network ports.
 - f. Latest applicable Windows Server.
 - g. Hot-swappable Power Supply and Fan.
 - h. OEM Warranty and support for the duration of the Contract.
7. All the primary Servers (as Virtual Machines) will be available 24 hours after the disaster (Recovery Time Objective (RTO) being 24 hours).
8. The City Internet breakout and Fibre Configuration changes will need to be addressed.
9. The complete DR system should be protected against viruses by Anti-Virus Software.
10. DR solutions with other hardware configurations will be considered.
11. The three workstations located at Belle Ombre will be used as operator workstations in case of an ICC disaster. Therefore, they must be connected and configured to the DR system within 24 hours.

4. Testing and Commissioning (New Equipment)

- **General requirements**

1. New capital works as part of the system expansion shall be tested per this clause and sub-clauses.
2. The Contractor shall be responsible for conducting all testing as described herein. Work under this section shall include all labour, materials, instrumentation, setup, modification, configuration and support services required to completely test all hardware and software, systems and subsystems.
3. Suppose testing reveals that a type of equipment does not meet the specifications or requirements stated in these Specifications. In that case, it shall be the Contractor's responsibility to correct the problem in all units of that equipment furnished at no additional cost to the City.
4. The City and/or its representative shall have the right to witness all tests. The witnessing may include any number of people.
5. Detailed test plans for every test stage shall be submitted to the City a minimum of twenty-one (21) days before the planned start of testing. Testing shall not commence until the plans have been approved.
6. Unless otherwise specified, all test plans shall include, at a minimum, the following:
 - a. Overview of the test, including test objectives.
 - b. Pass/fail criteria.
 - c. Traceability matrix listing all requirements and specifications from the Contract that are included/to be verified in the test and their cross-reference to the specifications
 - d. Test setup and test measuring equipment (including descriptive diagrams).
 - e. Listing of tools, test applications, simulators, etc., required to perform the test.
 - f. Entry/start-up conditions.
 - g. Exit/closing conditions.
 - h. Test procedures and scripts to be executed (if required).

- i. Test recording form.
 - j. Test comments form.
 - k. Signatures and verification form.
7. The City reserves the right to direct, at no additional cost, the following changes to the test plans:
 - a. Add procedural changes and other reasonable tests to reasonably assure system performance and conformance to the contract specifications.
 - b. Investigation into any apparent troubles or anomalies concerning the system.
 - c. An audit of all test reports and verification of any or all previous tests and measurements.
 - d. Include/exclude any system or subsystem supplied under this Contract to be subjected to testing.
8. Unless the City agrees otherwise, all tests will be recorded and stored digitally (video) for reference purposes later.
9. Upon successful completion of any test, the Contractor shall prepare and submit within two (2) weeks a report summarising the results with relevant test records appended. All such test reports will be reviewed by the City and will become the property of the City.

- **Test suspension criteria and defects resolution**

The following shall apply:

1. Before requesting a representative from the City to witness testing, the Contractor shall perform his testing to confirm that all equipment complies with all test requirements and present proof of this.
2. After the Contractor is satisfied that the equipment passed all tests and the system is stable, the Contractor shall provide written notification of readiness to test for all required test stages a minimum of two (2) weeks before the testing.
3. In case the Contractor calls the City or his representative to witness testing without having performed verification tests himself, as stated above, the City or his representative reserves the right to call an immediate stop to the test, in which case paragraphs 1 and 2 above shall be performed in that order.
4. All test failures, system defects, system errors, missing functionality, missing components/equipment, sub-standard workmanship, etc., shall be recorded by the Contractor. And assigned a "Defect Severity" rating as follows:
 - a. **Severity 1:** Required functionality is substantially unavailable; normal in-service operation of the device or subsystem cannot be maintained, or City bus operations are disrupted.
 - b. **Severity 2:** Functionality is substantially available; however, one or more sub-functions are not operating as specified; full functionality is available, but performance is not within specifications. The normal in-service operation can be maintained via a workaround.
 - c. **Severity 3:** Minor software defect or usability problem for which there is a workaround. Substandard installation practice (e.g. loose bracket, use of cable ties, etc.) that requires rectification.
5. The Contractor shall maintain a database of and track all defects' status.
6. The City reserves the right to re-classify a defect severity.
7. Test continuation, suspension or restart shall be as follows:
 - a. **Severity 1 and 2 Defects:** Applicable test(s) shall be suspended and restarted upon rectification of the defect.
 - b. **Severity 3 Defect:** Testing may continue. Defects shall be noted in the comments section of the report and form part of a snag list.

8. All Severity 1 and 2 defects shall be corrected before completion of the stage of testing where they were identified. Test results for that stage shall not be accepted until the Contractor demonstrates that all Severity 1 and 2 defects have been resolved and tested.
9. Severity 3 defects shall be corrected as soon as possible, and the Contractor shall submit proof of this.
10. After every test stage, the Contractor shall submit a test completion report documenting the complete procedure with summarised results. The report is over and above any defects or snag lists which shall be set up, managed and maintained by the Contractor.

- **Inspections and test stages**

- **Testing stage 1: Functional Acceptance Testing (FAT)**

1. FAT shall be performed to ensure that tendered equipment meets all the functional and operational requirements provided in this specification.
2. One or more City representatives will be present during the FAT.
3. All FAT shall be performed before ordering any of the equipment undergoing the FAT, except the equipment required for the FAT itself.
4. The Contractor shall develop a comprehensive FAT program consisting, at a minimum, of the following individual test programs:
 - a. **Hardware tests** to test the operating parameters of all equipment are per the Specifications of this contract and Original Equipment Manufacturer (OEM) specifications.
 - b. **The functional test** demonstrates that all functional and operational requirements and specifications applicable to the device/subsystem have been delivered.
 - c. **Environmental, Electrical and Electromagnetic tests** demonstrated compliance with Contract and regulating agency requirements or existing valid test certificates proving the same.
 - d. **Human factors test** for all devices/subsystems with a user interface.
5. A minimum of one (1) unit of each equipment type, unless specified otherwise, identically configured to all other units of that same equipment type shall be subject to the FAT unless waived by the City.
6. Any device certifications required by regulatory agencies shall be the Contractor's responsibility.
7. All required certifications shall be submitted with each shipment of devices or subsystems.
8. Any changes to the hardware configuration shall require a FAT retest.
9. Tests shall be performed in a suitable environment, either in the factory or otherwise, as may be required. The tests may be in South Africa (preferred) or another country.

- **Testing stage 2: Installation inspections**

1. All installations shall be subject to installation quality inspections.
2. The inspections aim to verify compliance with the scope, completeness and general quality of workmanship.
3. Basic functionality checks may also be included as part of the inspection.
4. Representatives from the City and/or Engineer shall be present.
5. The Contractor shall develop a checklist of everything to be checked for all devices, systems and subsystems, including, as a minimum:

- a. Quality of workmanship.
 - b. Equipment power on-test.
 - c. Screen setup and configuration to fulfil functional, operational and branding requirements.
 - d. Completeness of installation, e.g. are ground wires installed and connected/bonded properly, are there any loose brackets or screws, labelling, etc.?
 - e. Compliance with all requirements specified in this document.
 6. The installation inspections shall not be limited to the requirements listed here.
 7. The inspection checklist shall be submitted to the City for approval. The City reserves the right to amend the submitted document as required until it is satisfied that the inspections cover all points of installation sufficiently.
- o **Testing stage 3: System Acceptance Testing (SAT)**
1. The SAT can only be initiated once all system elements have been installed and configured and all other tests have been completed.
 2. The SAT looks at the entire system, and tests are completed to ensure that the overall functional requirements are met and that the system act as one integrated whole.
 3. System accuracy and reliability are key requirements. Therefore, random system behaviour shall prompt investigation by the Contractor with a written report as to the reason and proposed remedy to the random action(s).
 4. The Contractor shall develop an SAT plan, which shall be submitted to the City for review and acceptance twenty-one (21) days before commencement of SAT.
 5. The acceptance plan shall include any tests necessary to document that the system is performing in compliance with the Contract requirements. The test plan shall include a traceability matrix to show that all requirements of this specification will be tested. Full functionality, compliance and integration of all systems and components shall be demonstrated as a minimum.
 6. The acceptance test plan shall include all equipment and services placed into service to demonstrate the integrated operations of the system as a whole. Where necessary, full system functionality shall be tested based on real-time operations and actual time-tables for instance, to demonstrate that the bus scheduling has been configured correctly.
 7. Testing might be required over more than one day and include other systems to prove systems integration and to achieve acceptable test conditions or sample size for acceptable statistical evaluations.

5. Documentation

The following shall apply:

1. System acceptance test (SAT) and training documentation shall be provided as required and specified elsewhere.
2. The generation and upkeep of as-built documentation shall apply to the maintenance of the existing system and new capital works. They shall be updated continuously throughout the Contract as and when necessary.
3. Where as-built documentation has to be updated due to maintenance, such documentation shall be updated within 14 days after the failure resolution.
4. As-built documentation shall be formally issued (electronic copy) to the City on a 6-month interval or as agreed between both parties.
5. As-built documentation shall be submitted in the "base/raw" and PDF format.
6. The Contractor shall issue the City updated documentation or parts thereof on request.

7. All documentation to be provided under this Contract shall be in English.
8. As-built documentation shall include, as a minimum:
 - e. Schematics diagrams.
 - f. Drawings.
 - g. Charts.
 - h. Flow diagrams.
 - i. Design reports.
 - j. Installation reports.
 - k. Test reports.
 - l. Equipment user manuals.
 - m. Training material.
 - n. Operations manuals.
 - o. Any other relevant as-built information for the entire system as specified in this document, including software, hardware, systems, subsystems and any other item which may be required.

6. Equipment warranties

The following shall apply:

1. All new equipment supplied under this Contract shall carry of warranty of at least 365 days after the Commissioning and SAT has been completed and signed.
2. Considering point 1. Above, the Contractor is advised to negotiate the warranty to come into effect at the appropriate time or to take out an extended warranty on equipment so that all equipment is covered under warranty for the entire defects notification period of 365 days.
3. Any warranties extending beyond the Contract completion date shall be honoured by the Contractor.
4. The Contractor shall repair or replace all equipment that faults within the warranty period free of charge, unless the fault is caused by conditions outside the Contractor's control, such as vandalism, accidental damage etc.
5. The Contractor warrants that it has good title to the system and the right to sell to the City free of any proprietary rights of any manufacturer (if the Contractor is not the manufacturer) or other parties and free of any lien or encumbrance.
6. The Contractor warrants that it has good title to all system software or the right to license the use of such software, or both, free of any proprietary rights of any other party and free of any other lien or encumbrance.
7. The Contractor warrants that all installation work and system hardware shall perform according to the specifications given in this document for the warranty period.
8. All warranties and guarantees of subcontractors, suppliers and manufacturers concerning any such work and system hardware or software shall be obtained by the Contractor for the benefit of the City regardless of whether or not such warranties and guarantees have been assigned or transferred to the City by a separate agreement. The Contractor shall fully enforce such warranties and guarantees on behalf of the City.
9. During the Warranty Period, the Contractor using stock from the spares parts inventory, will replace defective hardware. The Contractor shall provide new replacement units for each defective part to replenish the spare parts inventory. The replacement units shall be fully tested and compliant with the original part.
10. The cost of all transportation and insurance charges for shipping defective and replacement parts to and from the Contractor shall be borne by the Contractor.

ANNEXURE B: PRICING SCHEDULE**CITY OF TSHWANE**

CONTRACT RTD09-2022/23

**TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS)
FOR A PERIOD OF 3-YEARS**

Summary of pricing schedule

NAME OF TENDERER: _____

#	Description	Amount
A	GENERAL OBLIGATIONS	
B	ICC MAINTENANCE	
C	STATION MAINTENANCE	
D	DEPOT MAINTENANCE	
E	ON-ROUTE MAINTENANCE	
F	BUS MAINTENANCE	
G	TRAINING & OPERATIONAL SUPPORT	
H	ASSET REPLACEMENT FUND	
	Sub-total	
	Value-Added Tax (VAT at 15%)	
	Total	

CITY OF TSHWANE**CONTRACT RTD09-2022/23****TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS****A: General obligations and dayworks****NAME OF TENDERER:** _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE (Excl. Vat) (B)	AMOUNT (Excl. Vat) =(A*B)	RATE (Excl. Vat) (C)	AMOUNT (Excl. Vat) =(A*C)
The rates to be filled in hereunder must make provision for all items to cover general obligations specified below and implied in the Contract.							
General obligations and dayworks							
1	Insurance, Employers spares within the Contractor store/Care	Month	36				
2	Provision of performance security, as specified in the returnable documents (FIDIC, sub-Clause 4.2)	Lump sum					
3	Costs to appoint EMEs and/or QSEs (transfer amount from Schedule of proposed subcontractors)	Lump sum					
4	Dayworks - Labour						
	These amounts will only be expended on specific instruction by the Engineer to the Contractor for additional tasks that may be required.						
a	Unskilled labour	Hour	100				
b	Electrician / Electrical technician	Hour	100				
c	Fibre optics technician	Hour	100				
d	Electronics technician	Hour	100				
e	ICT technician	Hour	100				
f	Communications-network engineer	Hour	100				
g	Systems engineer	Hour	100				
h	Systems integrator	Hour	100				
5	Reinstatement						
	APTMS on Take over	Prov Sum			R 800 000.00		
Total material							

Total labour	
General obligations and dayworks: Total carried forward to summary	

CITY OF TSHWANE**CONTRACT RTD09-2022/23****TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS****B. Interim Control Centre (ICC) Maintenance and KPIs**

NAME OF TENDERER: _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE (Excl. Vat)	AMOUNT (Excl. Vat)	RATE (Excl. Vat)	AMOUNT (Excl. Vat)
				(B)	=(A*B)	(C)	=(A*C)
4	ICC Preventative Maintenance, Responsive Maintenance & Continues Improvement to meet KPI obligations						
A	MONTHLY						
i	Complete Maintenance to meet KPI for all ICC systems incl. APTMS Back-office, scheduling, DVMS, Maximo, NAS, Video Wall, Firewall, CCTV, Workstations, IP Phones, AntiVirus, Symantec Backup Exec & IBM Server OS	ICC/Month	36				
B	6-MONTHLY (SPECIALIST SUB CONTRACTORS)						
i	Video Wall	No	6				
ii	Fire Suppression System	No	6				
iii	Uninterruptable Power Supply (UPS)	No	6				
iv	Air Condioning System	No	6				
v	Generator	No	6				
vi	Access Control System	No	6				
5	ICC Spare Part Replacement						
i	CCTV Camera	No	2				
ii	Workstation Hard Drive	No	4				
iii	Workstation Screen	No	4				

iv	IP Phones	No	2				
6	New Proposed Back-Office						
i	New back-office system (price only if new back-end is proposed). Refer to SoW Price to be all inclusive for a fully operational, integrated system.	Lump sum					
				Total material			
				Total labour			
				ICC: Total carried forward to summary			

CITY OF TSHWANE

CONTRACT **RTD09-2022/23**

TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS

C. Stations Maintenance and KPIs

NAME OF TENDERER: _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE	AMOUNT	RATE	AMOUNT
				(Excl. Vat)	(Excl. Vat)	(Excl. Vat)	(Excl. Vat)
				(B)	=(A*B)	(C)	=(A*C)
<i>The maintenance rates to be filled in hereunder must make provision for complete system maintenance to meet KPI obligations. Rates to include, personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas based maintenance personnel if required) and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. Rates should include all specialist subcontractors markup and admin fees. The quantity ratio is based on the current deployment and maintenance needed accordingly; however, the maintenance price will change pro-rata as quantities change.</i>							
1	Software and Licence Support (incl. Updates, bug fixes, new releases...)						
A	12x PID Controllers	PID/Months	468				
B	12x Panic Button RTU (Stuttgard Field Controller)	RTU/Months	468				
C	12x IP Phones	Phone/Months	468				
D	12x Public Address (Amplifier, Network Controller & Barix)	PA/Months	468				
E	12x CCTV Decoder (NUC)	Decoder/Months	468				
F	12x Last Mile Switch (Moxa)	Switch/Months	468				

2	STATION Preventative Maintenance, Responsive Maintenance & Continues Improvement to meet KPI obligations						
A	Complete Maintenance to meet KPI for Station systems (Per Stations)	Station/Month	468				
3	STATION Spare Part Replacement						
A	40" Samsung TFT Screen	No	4				
B	Filter Fans (for PID)	No	4				
C	Power Supply (230VAC/12VDC)	No	4				
D	PI Controller	No	4				
E	RTU	No	2				
F	Tamper alarm	No	2				
G	Light Sensor	No	2				
H	PID Enclosure	No	2				
I	CCTV Camera (Fixed Dome March)	No	8				
J	CCTV Camera (360 degree ACTi)	No	4				
K	Panic Button	No	4				
L	Remote Panic Button	No	4				
M	Panic Button RTU (Stuttgart Field Controller)	No	4				
N	IP Phones	No	2				
O	Microphone	No	4				
P	IP Audio Decoder	No	2				
Q	Power Amplifier	No	2				
R	PA (Public Announcement) Network Controller	No	2				
S	Wall Mounted Loudspeakers	No	4				
T	CCTV Decoder (NUC)	No	2				
U	CCTV Display	No	4				
V	Last Mile Switch (Moxa)	No	2				
W	BSIS door Motor	No	4				
X	BSIS door Drive Unit	No	4				
Y	BSIS door Power Supply	No	4				
Z	BSIS door Station control board	No	4				

AA	BSIS Infrared Array	No	4				
BB	BSIS door Remote	No	4				
CC	WiFi Communications AP	No	2				
				Total material			
				Total labour			
				STATIONS: Total carried forward to summary			

CITY OF TSHWANE

CONTRACT RTD09-2022/23

TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS

D. Depot Maintenance and KPIs

NAME OF TENDERER: _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE	AMOUNT	RATE	AMOUNT
				(Excl. Vat) (B)	(Excl. Vat) =(A*B)	(Excl. Vat) (C)	(Excl. Vat) =(A*C)
<i>The maintenance rates to be filled in hereunder must make provision for complete system maintenance to meet KPI obligations. Rates to include, personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas based maintenance personnel if required) and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. The price should include the specialist sub-contractor markup and admin fees. The quantity ratio is based on the current deployment and maintenance needed accordingly; however, the maintenance price will change pro-rata as quantities change.</i>							
1	Hardware Support & Warranty extensions (onsite) for duration of the Contract						
A	1x Alcatel Lucent (6900 or 6860) for 3 years	No	1				
B	1x Moxa (EDS510 or PTG7809) for 3 years	No	1				
C	1x Disaster Recovery Hardware for 3 years	No	1				
D	APTMS Back-office and Scheduling						
i	5x IBM Server (IBMX3630 M4) for 3 years	No	5				
ii	2x IBM Server (IBMX3250 M5) for 3 years	No	2				
2	Software and Licence Support (incl. Updates, bug fixes, new releases...)						
A	1x Ruckus ZoneFlex Access Point Supp and Lic per year	Lic/Month	36				

B	1x Ruckus ZoneDirector Supp per year	Lic/Month	36				
C	1x Alcatel Lucent OmniSwitch (6900 or 6860) per year	Lic/Month	36				
D	1x Moxa Network Switches (PTG7809 or EDS510) per year	Lic/Month	36				
E	1x CCTV decoder per year	Lic/Month	36				
F	1x Disaster Recovery Software (Synmantec Backup Exec, Vmware, Server OS and other) per year	Lic/Month	36				
G	WORKSTATION						
i	3x Upgrade: Win10 Pro (64bit) to Win11 Pro (64-bit)	No	3				
ii	3x Latest version MS Office (Win11 64-bit) per year	Lic/Month	108				
iii	3x Latest version MS Outlook (Win11 64-bit) per year	Lic/Month	108				
3	DEPOT Preventative Maintenance, Responsive Maintenance & Continues Improvement to meet KPI obligations						
A	Complete Maintenance to meet KPI for Depot systems incl. APTMS Back-office, Scheduling, DVMS, Maximo, NAS, Firewall, CCTV, Workstations, IP Phones, AntiVirus, Symantec Backup Exec & IBM Server OS	Depot/Month	36				
4	DEPOT Spare Part Replacement						
A	Ruckus ZoneFlex Access Point (T301s)	No	2				
B	Ruckus ZoneDirector (1200)	No	1				
C	Alcatel Lucent 6900	No	1				
D	Alcatel Lucent 6860	No	1				
E	Moxa EDS510	No	1				
F	Moxa PTG7809	No	1				
H	Fixed IP Microdome CCTV Camera	No	4				
I	Fixed IP Mini-dome CCTV Camera	No	1				
J	CCTV Decoder & Control switch	No	1				
K	CCTV Display Screen	No	1				
L	IP Phone	No	1				
				Total material			
				Total labour			
				DEPOT: Total carried forward to summary			

CITY OF TSHWANE**CONTRACT RTD09-2022/23****TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS****E. On Route Maintenance and KPIs****NAME OF TENDERER:** _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE	AMOUNT	RATE	AMOUNT
				(Excl. Vat) (B)	(Excl. Vat) =(A*B)	(Excl. Vat) (C)	(Excl. Vat) =(A*C)
The maintenance rates to be filled in hereunder must make provision for complete system maintenance to meet KPI obligations. Rates to include, personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas based maintenance personnel if required) and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. The price should include the specialist sub-contractor markup and admin fees. The quantity ratio is based on the current deployment and maintenance needed accordingly; however, the maintenance price will change pro-rata as quantities change.							
1	Software and Licence Support (incl. Updates, bug fixes, new releases...)						
A	34X Moxa Network Switches (PTG7809 OR EDS510) per year	Switch/Month	1224				
2	ON-ROUTE Preventative Maintenance, Responsive Maintenance & Continues Improvement to meet KPI obligations						
A	34x Complete Maintenance to meet KPI for On-Route systems (Per CCTV camera nodes)	Camera/Month	1224				
3	ON-ROUTE Spare Part Replacement						
A	PTZ Dome CCTV Camera	No	4				
B	Moxa Network Switches (EDS510E)	No	2				

CITY OF TSHWANE**CONTRACT RTD09-2022/23****TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS****F. Bus Maintenance and KPIs****NAME OF TENDERER:** _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE	AMOUNT	RATE	AMOUNT
				(Excl. Vat) (B)	(Excl. Vat) =(A*B)	(Excl. Vat) (C)	(Excl. Vat) =(A*C)
The maintenance rates to be filled in hereunder must make provision for complete system maintenance to meet KPI obligations. Rates to include, personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas based maintenance personnel if required) and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. The price should include the specialist sub-contractor markup and admin fees. The quantity ratio is based on the current deployment and maintenance needed accordingly; however, the maintenance price will change pro-rata as quantities change.							
1	BUS Preventative Maintenance, Responsive Maintenance & Continues Improvement to meet KPI obligations						
i	114x Complete Maintenance to meet KPI for BUS systems (Per Bus)	Bus/Month	4104				
2	On-board APTMS systems						
i	OBU replacement HDD/SDD	No	5				
ii	OBU Bracket	No	5				
iii	MDT Bracket	No	5				
iv	On-Board Unit (OBU)	No	5				
v	Mobile Data Terminal (MDT)	No	5				
3	DTI On-board video surveillance system						
i	DTI MDR NVR with HDD/SDD	No	5				
ii	DTI MDR replacement HDD/SDD, 2TB	No	5				
iii	Driver CCTV Display	No	5				
iv	POE Network switch, 8 Port	No	5				
v	POE Network switch, 12 Port	No	5				
vii	3 axis accellerometer	No	5				
vii	NVR Bracket MDR	No	5				

viii	Driver CCTV Display bracket	No	5				
ix	On-board CCTV Axis P3905-R	No	10				
4	Automatic Passenger Counters (APC)						
i	APC Door sensor: Hella Aglaia, bi-scope	No	5				
ii	APC Bracket/enclosure: Hella Aglaia, bi-scope	No	5				
5	Internal Next Stop Display						
i	Internal next stop display: Hanover LED type	No	5				
ii	Internal next stop display bracket: Hanover LED	No	5				
6	Antennae						
i	3 in 1 combination Wi-Fi, GSM/UMTS and GPS antenna (IP67) for OBU and NVR, incl. cabling and connectors	No	5				
ii	Antennae cable, incl. connectors	No	5				
7	Other						
i	Driver panic button for covert installation (small form factor), including wiring and connector	No	5				
ii	Filter fan, type Pfannenbergl PF22.000 or equivalent approved (inlet fan, forced ventilation)	No	5				
iii	CAT5/CAT6 Patch leads, incl. connectors	No	5				
iv	WAGO (or equivalent approved) connector terminals	No	5				
				Total material			
				Total labour			
				BUS: Total carried forward to summary			

CITY OF TSHWANE**CONTRACT RTD09-2022/23****TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS****G: Training and Operations Support****NAME OF TENDERER:** _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE (Excl. Vat)	AMOUNT (Excl. Vat)	RATE (Excl. Vat)	AMOUNT (Excl. Vat)
				(B)	=(A*B)	(C)	=(A*C)

The maintenance rates to be filled in hereunder must make provision for complete system maintenance to meet KPI obligations. Rates to include, personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas based maintenance personnel if required) and any other costs the Contractor deems necessary for complete system maintenance as specified and within KPI obligations. The price should include the specialist sub-contractor markup and admin fees. The quantity ratio is based on the current deployment and maintenance needed accordingly; however, the maintenance price will change pro-rata as quantities change.

Training and Operational support

1	Training of CoT personnel, priced per training session						
A	ICC Equipment						
i	DVMS operations training	No	3				
ii	CMMS operations training	No	3				
iii	ICC Preventative Maintenance training	No	3				
iv	Driver and Bus Scheduling training	No	3				
v	Basic Troubleshooting of ICC equipment training	No	3				
B	Station Equipment						
i	Station Preventative Maintenance training	No	3				
ii	Basic Troubleshooting of station equipment training	No	3				
C	Depot Equipment						
i	Wi-Fi Management training	No	3				
ii	Depot Preventative Maintenance training	No	3				
iii	Basic troubleshooting of depot equipment training	No	3				
D	Bus Equipment						

i	On-board equipment operations training	No	3				
ii	Bus Preventative Maintenance training	No	3				
iii	Basic troubleshooting of bus equipment training	No	3				
2	On the job training, live in the ICC, depot or buses & Operational Support						
i	APTMS Operations and BI Expert	Hour	100				
ii	Tracking Systems Specialist	Hour	100				
iii	Scheduling Systems Specialist	Hour	100				
Total material							
Total labour							
Training & Ops Support: Total carried forward to summary							

CITY OF TSHWANE**CONTRACT RTD09-2022/23****TENDER FOR THE MAINTENANCE AND OPERATIONAL SUPPORT OF THE ADVANCED PUBLIC TRANSPORT MANAGEMENT SYSTEM (APTMS) FOR A PERIOD OF 3-YEARS****H: Asset Replacement Fund****NAME OF TENDERER:** _____

ITEM	DESCRIPTION OF ITEM	UNIT	QUANTITY (A)	SUPPLY MATERIALS		SUPPLY LABOUR	
				RATE	AMOUNT	RATE	AMOUNT
				(Excl. Vat) (B)	(Excl. Vat) =(A*B)	(Excl. Vat) (C)	(Excl. Vat) =(A*C)

The rates to be filled in hereunder must make provision for complete Asset Replacement to meet compatibility and integration obligations. Rates to include, personnel retainer, all labour, device installation, setup and configuration where required, maintenance testing, reporting, sundries, accessories, consumables, travel costs (incl. overseas based maintenance personnel if required) and any other costs the Contractor deems necessary for complete asset replacement obligations. Cost to include specialist subcontractor markup and admin cost as well. The quantity ratio is based on the current deployment; however, the price will change pro-rata as quantities change subject to optimisation goals.

Provision for Asset Replacement During the duration of the Contract. Subject to approval of the Employer.

1	ICC Equipment						
A	IBM SYSTEM						
ii	IBM Server (IBM x3650 M4 BD) per unit	No	4				
B	NAS						
i	NAS DELL FS8600 per unit	No	1				
ii	NAS DELL SC8000 per unit for 3 years	No	2				
C	FIREWALL						
i	Fortinet Firewall (Fortigate 200D) per unit for 3 years	No	1				
D	VIDEOWALL						
i	55" LCD screens with automated calibration including interface	No	8				
ii	Video Wall Controller with 2x DisplayPort Inputs, 8x HDMI Inputs and 4x DisplayPort Outputs	No	1				
2	Station Equipment						
A	PID 40" LCD TFT Screen	No	32				

B	PID Filter Fans (for PID)	No	16				
C	PID Power Supply (230VAC/12VDC)	No	16				
D	PID Controller	No	16				
E	Panic Button	No	12				
F	Panic Button RTU (Stuttgart Field Controller)	No	12				
G	IP Phones	No	12				
H	PA Microphone	No	12				
I	PA IP Audio Decoder	No	12				
J	PA Power Amplifier	No	12				
K	PA (Public Announcement) Network Controller	No	12				
L	PA Wall Mounted Loudspeakers	No	48				
M	Wi-Fi Communications AP	No	12				
3	Depot Equipment						
i	Layer 3 24 port network switch	No	1				
v	IBM Server (IBM x3650 M4 BD) per unit	No	2				
vi	Ruckus ZoneFlex Access Point (T301s)	No	8				
vii	Ruckus ZoneDirector (1200)	No	1				
xii	IP Phone	No	1				
4	Bus Equipment						
A	On-board APTMS systems						
i	On-Board Unit (OBU) including bracket and SDD	No	114				
ii	Mobile Data Terminal (MDT) including bracket	No	114				
B	Automatic Passenger Counters (APC)						
i	APC Door sensor: Hella Aglaia, bi-scopic. Including bracket and enclosure	No	114				
C	Internal Next Stop Display						
i	Internal next stop display: Hanover LED type. Including bracket	No	121				
D	Antennae						
I	3 in 1 combination Wi-Fi, GSM/UMTS and GPS antenna (IP67) for OBU and NVR, incl. cabling and connectors. Including Cabling	No	114				
E	Other						

I	Driver panic button for covert installation (small form factor), including wiring and connector	No	114				
li	Filter fan, type Pfannenbergl PF22.000 or equivalent approved (inlet fan, forced ventilation)	No	228				
Total material							
Total labour							
ASSET REPLACEMENT: Total carried forward to summary							

ANNEXURE C: CONTRACT

AGREEMENTS AND CONTRACT DATA

CONTENTS

1. CONTRACT DATA108

2. FORM OF GUARANTEEERROR! BOOKMARK NOT DEFINED.

1. CONTRACT DATA

1.1 GENERAL CONDITIONS OF CONTRACT

The Conditions of Contract comprise:

A: The “General Conditions”, which form part of the “Conditions of Contract for Plant and Design Build” Second Edition 2017 – Yellow Book, published by FIDIC,

The Contrator is deemed to be acquainted with and in possession of the General Conditions which are obtainable, at a cost, from:

CESA, P O Box 68482, Bryanston, 2021.

Tel: (011) 463 2022 Fax: (011) 463 7383, email:general@asaace.co.za.

And

B: The following “Particular Conditions”, which include amendments and additions to such General Conditions. The Particular Conditions of Subcontract are set out in section 1.2 below.

In case of any discrepancy or conflict between these documents, the order of precedence shall be B then A.

1.2 VARIATIONS AND ADDITIONS TO THE CONDITIONS OF CONTRACT (PARTICULAR CONDITIONS)

The following “Particular Conditions” pertaining to the “**Condition of Contract for Plant and Design-Build**” **Second Edition 2017 – Yellow Book**, published by FIDIC, shall apply to this Contract:

CLAUSE or SUB- CLAUSE	PARTICULAR CONDITION
1.1	Definitions
1.1.1	The Contract
1.1.1.9	<u>Replace</u> the contents of this Clause with the following: “ “ Appendix to Tender ” means the completed pages entitled <u>1.3 - Data provided by the Employer</u> and <u>1.4 - Data provided by the Contractor</u> , which form part of the contract data.
1.1.1.10	1.1.1.10 <u>Add</u> the following: “ “ Schedule of Payments ” shall also mean the Pricing Schedule or Bill of Quantities as contained in section 13.2 of SoW.”
1.2	Interpretation
1.5	Priority of Documents

CLAUSE or SUB- CLAUSE	PARTICULAR CONDITION
	<p><u>Replace</u> sub-paragraphs items (a) to (h) with:</p> <p>“(a) the Forms of Offer and Acceptance</p> <p>(b) the Service Level Agreement (SLA)(c) the Appendix to Tender within the Contract data,</p> <p>(d) the Particular Conditions of Contract,</p> <p>(e) the General Conditions of Contract,</p> <p>(f) the Scope of Works,</p> <p>(g) the project Drawings,</p> <p>(h) the standard Specifications,</p> <p>(i) the standard Drawings, and</p> <p>(j) the Schedules and any other documents forming part of the Contract.”</p>
4.2	<p>Performance Security</p> <p><u>Replace</u> the 2nd paragraph with:</p> <p>“The Contractor shall deliver the Performance Security to the Employer within 14 days of the date of issue of the Letter of Acceptance. The Performance Security shall be issued by a bank or insurance company registered or licensed as a bank or insurance company to do business in the Republic of South Africa and approved by the Employer and having an office or banking facility in the Republic of South Africa. The Performance Security shall be subject to approval by the Employer.”</p>
6.5	<p>Working Hours</p> <p><i>Add the following line after point (c)</i></p> <p>(d) the SLA obligations necessitate it and it is approved by the Employer.</p>

CLAUSE or SUB- CLAUSE	PARTICULAR CONDITION
13.6	<p>Daywork</p> <p><u>Replace</u> the 2nd and 3rd sentences in the 1st paragraph with “The following procedure shall apply.”</p> <p><i>Add the following as the 5th paragraph of this sub-clause:</i></p> <p>“The work shall be valued in accordance with the Daywork Schedule included in the Contract or, in the absence of a Daywork Schedule or for items not included in the Daywork Schedule the Contractor shall be paid the aggregate of:</p> <ul style="list-style-type: none"> (i) the gross remuneration of the workmen for the time they are actually engaged on the work concerned, (ii) the net cost of Materials actually used, (iii) an amount in respect of Contractor’s Equipment which shall be charged on a time basis at the rates stated in the Tender, failing which at rates, to be agreed between the Contractor and the Engineer or, failing agreement, to be determined by the Engineer on the basis of ruling equipment hire rates and (iv) the percentage allowances stated in the Contract Data, which allowances shall be held to cover all charges for the Contractor’s and/or Subcontractor’s profits, timekeeping, clerical work, insurance, establishment, superintendence and the use of hand tools.”
13.8	<p>Adjustments for Changes in Costs</p> <p><u>Replace</u> the 1st paragraph with the following sentence:</p> <p>“This sub-clause applies to Cost Price Adjustment for local content. In this Sub-Clause, “<i>table of adjustment data</i>” shall mean the data provided by tenderers:</p> <p>COST PRICE ADJUSTMENT (CPA): LOCAL CONTENT.</p>

CLAUSE or SUB- CLAUSE	PARTICULAR CONDITION
	If this form is not completed no contract price adjustment for local content shall be applicable.”
13.9	<p><i>Add the following sub-clause:</i></p> <p>“Cost Price Adjustment Imported Content</p> <p>In the event of price/prices being based on a foreign exchange rate “COST PRICE ADJUSTMENT IMPORTED CONTENT” must be completed at tender stage. If this form is not completed no contract price adjustment for exchange rate variations shall be applicable, otherwise the following shall apply:</p> <ol style="list-style-type: none"> 1. In so far as any prices include components which have to be sourced from outside the Common Monetary Area (ZAR), thereby introducing a currency risk which does not apply in relation to locally sourced components, the Employer will compensate the Contractor for the increased Forex fluctuation from the rates declared of the tender document, until the date of Instruction to proceed with the ordering of equipment. 2. Adjustments due to exchange rate variations apply only to those items up to the total value in foreign currency. 3. In order to claim for any adjustment due to foreign exchange variation the Contractor must submit the following: <ol style="list-style-type: none"> a. Original invoice from the supplier on supplier letterhead showing the values of goods procured. Only the goods included as per Instruction will be subject to adjustments. b. South African Reserve Bank (SARB) exchange rate at 12:00 on the date of Instruction to order. 4. The Contractor will assume full currency risk from the date of Instruction to order the equipment to date of delivery at his site including up to the date of payment of his supplier. 5. Accordingly, the Contractor shall be entitled, but not obliged to enter into the necessary hedging arrangement and/or obtain the necessary forward cover in its sole discretion and at its sole cost, risk and expense. 6. Should the currency rate at which the Forex is calculated on date of

CLAUSE or SUB- CLAUSE	PARTICULAR CONDITION
	<p>Instruction to order be lower than the currency rate declared in at the time of tender, the tendered price shall be adjusted downwards.</p> <p>7. The rates and prices for the listed imported material and labour items shall be adjusted once only as described above.</p> <p>No other adjustments will be considered."</p>
14.5	<p>Plant and Materials intended for the Works</p> <p><i>In the first paragraph delete "If this Sub-Clause applies".</i></p> <p><i>Delete the 2nd paragraph.</i></p> <p><i>In the 3rd paragraph:</i></p> <ul style="list-style-type: none"> • <i>after sub-paragraph (a)(ii), delete the word "either"</i> • <i>delete the entire sub-paragraph (b) and the word "or" following (b)(iii).</i> <p><i>Under sub-paragraph (c), add the word "and" at the end of (c)(ii) and add the following:</i></p> <p>(iii) "storage is physically separated from any other stock and shall be accessed by a lockable door. A notice shall be posted on the door to clearly show that material is for this Contract. Only one designated person from the Contractor shall have a key to this storage. His name and number shall appear on the notice, and</p> <p>(iv) the Contractor has signed a letter of cession that the stock belongs to CoT, including full asset register with serial numbers, and</p> <p>(v) the Contractor has provided evidence of insurance taken out on the material up to full replacement value against any possible loss of material."</p> <p><i>Add the following after paragraph 3:</i></p> <p>"The Engineer and/or the City shall have access to the store room / storage space at any reasonable time. The Contractor shall keep the spares stock asset</p>

CLAUSE or SUB- CLAUSE	PARTICULAR CONDITION
	register up to date and shall re-issue to the Engineer as soon as any stock has been used or replaced.”
14.8	<p>Delayed Payment</p> <p><i>Replace the 2nd paragraph with the following:</i></p> <p>“These financing charges shall be at the rate prescribed in terms of the latest Prescribed Rate of Interest Act.</p>
14.16	<p>Asset Replacement Fund</p> <p><i>Add the following new sub-clause:</i></p> <p>14.16 Asset Replacement Fund</p> <p>The Asset Replacement Fund is to provide the necessary funding for the replacement of items of Plant identified in the Asset Replacement Schedule as required for the continued efficient operation of the Works for the duration of the Operation Service Period.</p> <p>The Asset Replacement Fund shall not cover the cost of:</p> <ul style="list-style-type: none"> (a) routine maintenance items associated with the correction of defects; (b) replacement of Plant and Materials which have a life expectancy of less than five years; (c) providing spares between scheduled dates for major Plant replacement; or (d) the replacement of Plant and Materials which are not identified in the Asset Replacement Schedule. <p>The cost of meeting the requirements of sub-paragraphs (a) to (d) above shall be borne by the Contractor and be deemed to be included in the Contract Price.</p>

CLAUSE or SUB- CLAUSE	PARTICULAR CONDITION
	<p>The Contractor shall request pre-approval from the Employer and/or Engineer at least 28 days prior to his intention to replace any item of Plant identified in the Asset Replacement Schedule.</p> <p>The Employer shall authorise release of funds from the Asset Replacement Fund in accordance with the amounts certified by the Engineer in each applicable Interim Payment Certificate. Funds will only be disbursed from the Asset Replacement Fund to the values and in accordance with the time scales for replacement identified in the Asset Replacement Schedule.</p> <p>Where items of Plant require replacement at times earlier than the scheduled replacement times given in the Asset Replacement Schedule, the appropriate funds shall not be released until the scheduled replacement date has been reached.</p>
17.3	<p>Employer's Risks</p> <p><i>Add the following to sub-paragraph (c):</i></p> <p>"unless these risks are insurable with the South African Special Risks Insurance Association (SASRIA) at the time of tendering and it is stipulated in the Contract Data that the Contractor is to effect insurance against these risks".</p>
18.2	<p>Insurance for Works and Contractor's Equipment</p> <p><u>Replace</u> this sub-clause with the following:</p> <p>"The Contractor shall affect all insurances as have been proposed and agreed by the Contractor as being necessary to adequately cover his insurable obligations under the Contract and shall maintain such insurances for the duration of the Contract.</p> <p>The Employer shall be entitled at his discretion to call for evidence of the scope and validity of such insurance as and when this may be required."</p>

CLAUSE or SUB- CLAUSE	PARTICULAR CONDITION
19.5	<p>Force Majeure Affecting Subcontractor</p> <p><i>Amend the title to read “Force Majeure Affecting Subcontractor and Supplier”.</i></p> <p><i>In the first line insert “or supplier” after the word “Subcontractor”</i></p>

1.3 DATA PROVIDED BY THE EMPLOYER

Clause/Item		Entry
1.1.2.2 & 3	Employer's name and Address	CITY OF TSHWANE PO Box 48 PRETORIA 0001
1.1.2.4 & 1.3	Engineer's Name and Address	David Reed david@mpprojects.co.za MPP Consortium Block D, Ground Floor Stoneridge Office Park Edenvale 1609
1.1.3.7	Defects Notification Period	365 days after Taking Over
1.3	Electronic Transmissions systems	E-mail
1.4	Governing Law	Law of the Republic of South Africa
1.4	Ruling Language	English
1.4	Language for communications	English
2.1	Time for access to the Site	On the Commencement Date
4.2	Amount of Performance Security	10% of the Accepted Contract Amount (excluding VAT and contingencies) in the currencies and proportions in which the Contract Price is payable. The cost to obtain the surety is carried by the Contractor.
6.5	Normal working hours	<u>Maintenance:</u> 04:00 – 22:00; Monday to Saturday 04:30 – 20:30; Sunday & Public Holidays

Clause/Item		Entry
8.1	Period within which execution of the Works shall commence.	The hand-over period of 28 days starts on the Commencement Date. Execution of Works shall commence on the Commencement Date.
8.2	Time for Completion	3 Year Contract period Maintenance work according to times specified in the SLA.
8.7 & 14.15(b)	Delay damages for the Works	<u>Maintenance:</u> Penalties are specified in the SLA
8.7	The maximum amount of Delay damages	The penalty shall not, in any case, exceed 30% of the total contract price (excl. VAT).
13.5(b)	The percentage for adjustment of provisional sums	10%
13.8	Adjustment for Change in Cost; Table(s) of adjustment data	Refer to Price Adjustment form: FORM MDB 3.2
14.2	Total Advance payment	0% of the Accepted Contract Amount
14.2	Number and timing of instalment	N/A
14.2	Currencies and proportions	N/A
14.2	Start repayment of advance payment	N/A
14.2(b)	Repayment amortisation of advance payment	N/A
14.3 (c)	Percentage of retention	5% of the value of the work (<i>excluding maintenance and operation support costs</i>)
14.3 (c)	Limit of Retention Money	There is no limit on the amount of retention money.
14.3(c)	Guarantee in Lieu of Retention	No Guarantee in-lieu-of Retention will be considered

Clause/Item		Entry
14.5(b)	Plant and Materials for payment when shipped in route to the site	<i>Not applicable</i>
14.5(c)(i)	Plant and Materials for payment when delivered to the site	As per the minimum spares list, recommended by the Contractor and to be agreed with CoT.
14.6	The minimum amount of Interim Payment Certificates	N/A
14.15	Currency/currencies of payment	<i>South African Rand, ZAR</i>
18.1	Periods for submission of insurance: a. Evidence of Insurance b. Relevant policies	14 days
18.2(d)	The maximum amount of deductibles for insurance of the Employer's risks	Refer to particular conditions
18.3	The minimum amount of third-party insurance	Refer to particular conditions
20.2	DAB	The DAB of one Member
20.3	Appointment (if not agreed) to be made by	The President of the Arbitration Foundation Of Southern Africa (AFSA)

1.4 DATA PROVIDED BY THE CONTRACTOR

CLAUSE / ITEM		ENTRY
1.1.2.3 &1.3	Contractor's Legal name and Address	<div>.....</div> <div>.....</div> <div>.....</div>
1.1.3.3	Time for completion of the works days

ANNEXURE D: LIST OF ADDITIONAL RETURNABLE DOCUMENTS

INDEX

LIST OF ADDITIONAL RETURNABLE DOCUMENTS THAT SHOULD FORM PART OF BID DOCUMENT		
1.	Schedule of proposed subcontractor	
2.	Form of Guarantee	
3.	Health and Safety	

4.	Tenderers relevant project experience	
5.	Personnel Qualifications & experience	
6.	Service Level Agreement	

SCHEDULE OF PROPOSED SUBCONTRACTORS

1. Sub-contracting to EME's and/or QSE's is recommended by the Preferential Procurement Regulations, January 2017 for Contracts above R30 million (incl. VAT). If the tender offer is above R30 million (incl. VAT) the schedule below must be completed.

WORK ITEMS WHICH CAN POSSIBLY BE SUB-CONTRACTED TO EME's and/or QSE's.					
#	Pay-item #	Description	Value of work	% Mark-up	Amount
a. Total value of work identified which can be sub-contracted to EME's and/or QSE's (excl. VAT).					
b. Total value of local content (excl. VAT)					
c. % of work identified which can be sub-contracted to EME's and/or QSE's to total value of local content (a./b.)					
d. Total cost to Contractor to fulfil obligations as required Transfer amount to Price Schedule, General Obligations					

Add more pages if required.

Tenderers shall submit the CV of the person responsible to train, supervise and mentor the sub-contractors together with this Schedule.

2. Regardless of the value of the offer and the EME / QSE requirement, you, the Employer, are hereby notified that it is our intention to employ the following Subcontractors for work on this Contract.

If we are awarded a contract we agree that this notification does not change the requirement for us to submit the names of proposed Subcontractors in accordance with requirements in the Contract for such appointments. If there are no such requirements in the Contract, then your written acceptance of this list shall be binding between us.

Note: The Particular Conditions of Contract prohibit the subcontracting of 50% or more of the whole Contract.

	Name and address of proposed subcontractor	Nature and extent of work	Approximate percentage of contract value
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

(Attach additional pages if more space is required)

FORM OF GUARANTEE

WHEREAS

THE CITY OF TSHWANE

(hereinafter referred to as the "Council"),

enters into a Contract (No.) with

.....
(hereinafter referred to as the "Contractor")

for

.....

.....

AND WHEREAS in terms of the General Conditions of the Contract the Contractor is required to furnish an acceptable independent guarantee for the due and proper fulfilment by him of all his duties and obligations in terms of the said Contract.

NOW THEREFORE we the undersigned

.....[full names of authorised agent(s)]

and acting in my/our capacity as

and

and as such duly authorised thereto, do hereby bind the said

(hereinafter referred to as the “Guarantor”) as surety and co-principal Debtor in *solidum* for the sum of:-

R (.....)
.....)

for the due and proper fulfilment by the Contractor of all or any of his duties and obligations in terms of the said Contract. This guarantee shall not be interpreted as accessory to the Contract between Council and the Contractor.

The guarantor further undertakes, in the event of the Contractor failing duly and properly to fulfil any of his duties and obligations in terms of the said Contract or if the Contractor is placed under provisional liquidation or in the event of termination of the Contract by the Council in terms of the General Conditions of Contract, to pay to the Council, the said sum of R.....
) or

.....
such portion thereof as may be required by the Council, immediately upon receiving written demand from the Council which written demand shall be addressed to the guarantor at
(*domicilium* address).

The guarantor further hereby renounces the benefits of the legal exceptions:

Exceptio non numerate pecuniae

Exception non causa debiti

Beneficium duobus vel pluribus reis debendi

Beneficium ordinis deu excussionis

Beneficium Divisionis

and all other defence which could be pleaded against the validity of this guarantee, with the meaning and effect of which it declares itself to be fully acquainted.

This undertaking shall remain in full force and effect up to and including the date of issue of the Certificate of Completion, as provided for in the General Conditions of Contract, unless the guarantor is advised in writing by the Council of his intention to institute claims, and the particulars thereof, in which event this guarantee shall remain in full force and effect until all such claims have been paid or liquidated. Notwithstanding the aforesaid, the Council may at its' sole discretion elect to have the amount provided for under this guarantee, paid out directly to it in the case of breach of Contract by the Contractor by giving the guarantor written notice to that effect, notwithstanding the fact that the Council may decide not to institute any further legal action against the Contractor.

This document is not negotiable or transferable.

NAME(s): (BLOCK LETTERS)

CAPACITY of authorized agents:.....

SIGNATURE(s) of authorized agents:.....

SIGNED at on this day of

WITNESSE(s): (Full name – in block letters – and signature)

1.

.....

2.

LIST OF INSTITUTIONS FROM WHO CONTRACT/DEPOSIT GUARANTEES CAN BE ACCEPTED.

1. ABSA Bank
2. Credit Agricole Indosuez (South Africa Branch)
3. Development Bank of South Africa
4. FirstRand Bank
5. ING Bank N.V. (South Africa Branch)
6. Investec Bank
7. Landbank
8. National Housing Finance Co.
9. Nedcor Bank
10. South African Reserve Bank
11. Standard Bank
12. AIG South Africa
13. Credit Guarantee Insurance Co
14. Emerald Insurance Company
15. Federated Employers Mutual Assurance Co
16. Global Insurance Company
17. Guardrisk Insurance Company
18. Hannover Re:
19. Home Loan Guarantee Company
20. Lion of Africa Insurance Company
21. Metropolitan Life
22. Metropolitan Odyssey Ltd
23. MUA Insurance
24. Mutual & Federal Insurance Company
25. Rand Mutual Assurance Company
26. Regent Insurance Company
27. SA Eagle Insurance Company
28. Lombard Insurance.

HEALTH AND SAFETY AGREEMENT

ARTICLE OF AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL SAFETY ACT, 1993
BETWEEN

THE CITY OF TSHWANE

(Hereinafter referred to as the "EMPLOYER")

AND

.....
.....
.....

Herein represented by..... in his/her capacity as

duly authorised by virtue of a resolution dated

, Attached hereto Annexure A, of the said

..... (herein after referred to as the
"CONTRACTOR")

.....
WHEREAS the CONTRACTOR is the mandatory of the EMPLOYER as contemplated
in an agreement in respect of

.....

Contract number

.....

AND WHEREAS section 37 of the Occupational Health and Safety act, 1993 (Act 85
of 1993, hereinafter referred to as the "ACT"), imposes certain powers and duties upon
the EMPLOYER.

AND WHEREAS the parties have agreed to enter into an agreement in terms of section 37(2) of the ACT.

NOW THEREFORE the parties agree as follows:

- a) The CONTRACTOR undertakes to acquaint the appropriate officials and employees of the CONTRACTOR with all relevant provisions of the ACT and the regulations promulgated in terms thereof.
- b) The CONTRACTOR undertakes that all relevant duties, obligations and prohibitions imposed in terms of the ACT and Regulations will be fully complied with. Provided that should the EMPLOYER prescribe certain arrangements and procedures, that same shall be observed and adhered to by the CONTRACTOR, his officials and employees. The CONTRACTOR shall bear the onus of acquainting himself/herself/itself with such arrangements and procedures.
- c) The CONTRACTOR hereby accepts sole liability for such due compliance with the relevant duties, obligations, prohibitions, arrangements and procedure, if any, imposed by the ACT and Regulations and the EMPLOYER expressly absolves the EMPLOYER from itself being obliged to comply with any of the aforesaid duties, obligations, prohibitions, arrangements and procedure as the case may be.
- d) The CONTRACTOR agrees that any duly authorised officials of the EMPLOYER shall be entitled, although not obliged, to take such steps as may be necessary to ensure that the CONTRACTOR has complied with the undertakings as more fully set out in paragraphs 1 and 2 above, which steps may include, but shall not be limited to, the right to inspect any appropriate site or premises occupied by the CONTRACTOR, or to inspect any appropriate records held by the CONTRACTOR or to take such steps it may deem necessary to remedy the default of the CONTRACTOR at the cost of the CONTRACTOR.
- e) The CONTRACTOR shall be obliged to report forthwith to the EMPLOYER any investigations, complaint or criminal charge which may arise as a consequence of the provisions of the ACT and Regulations, pursuant to work performed in terms of this agreement, and shall, on written demand, provide full details in writing of such an investigation, complaint or criminal charge as the case may be.

FOR AND ON BEHALF OF THE **EMPLOYER:**

NAME(s): (BLOCK LETTERS)

CAPACITY of authorized agents:

SIGNATURE(s) of authorized agents:.....

SIGNED at on this..... day of.....

WITNESSES: (Full name – in block letters – and signature)

1.

2.

FOR AND ON BEHALF OF THE **CONTRACTOR:**

NAME(s): (BLOCK LETTERS)

CAPACITY of authorized agents:

SIGNATURE(s) of authorized agents:.....

SIGNED aton this day of

WITNESSES: (Full name – in block letters – and signature)

1.

2.

TENDER'S RELEVANT PROJECT EXPERIENCE

The tenderer needs to indicate the experience of the tenderer or joint venture / consortium partners in relation to the scope of work.

In particular, Tenderers must demonstrate experience in the following areas:

9. Maintenance of APTMS systems.
10. Implementation of APTMS systems.
11. Operations of APTMS systems.
12. System adaptation / customization.
13. Interfacing and integration of APTMS systems with other systems.
14. Development of customized BI reports.
15. Setup and configuration of database systems.

The City retains the right to contact any of the reference provided. It is the tenderer's responsibility to ensure that correct contact details of references are included.

SIGNED ON BEHALF OF TENDERER:

SCHEDULE OF TENDERER'S EXPERIENCE

The following is a statement of similar work successfully executed by myself/ourselves.

EMPLOYER, CONTACT PERSON AND TELEPHONE NUMBER.	DESCRIPTION OF CONTRACT	VALUE OF WORK INCLUSIVE OF VAT (RAND)	DATE COMPLETED
<p>1. _____</p> <p>_____</p> <p>(Name)</p> <p>_____</p> <p>(Telephone Number)</p> <p>_____</p> <p>(email)</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
<p>2. _____</p> <p>_____</p> <p>(Name)</p> <p>_____</p> <p>(Telephone Number)</p> <p>_____</p> <p>(email)</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		

	<div><div></div><div></div></div>		
<div>3.<div></div></div> <div></div> <div>(Name)</div> <div></div> <div>(Telephone Number)</div> <div></div> <div>(email)</div>	<div><div></div><div></div></div> <div></div> <div><div></div><div></div></div> <div></div> <div><div></div><div></div></div> <div></div> <div><div></div><div></div></div> <div></div> <div><div></div><div></div></div>		
<div>4.<div></div></div> <div></div> <div>(Name)</div> <div></div> <div>(Telephone Number)</div> <div></div> <div>(email)</div>	<div><div></div><div></div></div> <div></div> <div><div></div><div></div></div> <div></div> <div><div></div><div></div></div> <div></div> <div><div></div><div></div></div> <div></div> <div><div></div><div></div></div>		

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Attach additional pages if more space is required)

PERSONNEL QUALIFICATIONS and EXPERIENCE

Tenderers shall submit CV's of all personnel specified in Part C3, Section 4: Personnel requirements.

The CV's shall clearly show the information against which scoring will be done. This includes as least the following:

1. Nationality and Location during duration of project
2. Qualification (as per National Qualification Framework)
3. Relevant field of qualification
4. Describe work experience
5. Describe specific work experience (e.g. APTMS, OBU's, FIDIC Contract, QA, etc.)
6. Registration with professional body, e.g. ECSA

In support of information submitted with CV's at least the following shall be attached to the CV where relevant:

1. Copy of ID or passport
2. Proof of qualification (as per NQF level descriptor), showing field of qualification
3. Proof of registration with professional body
4. Work references, including contact details (phone and email)
5. Approval from OEM (only if applicable)

SIGNED ON BEHALF OF TENDERER:

MBD 1**PART A****INVITATION TO BID****YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE CITY OF TSHWANE MUNICIPALITY**

BID NUMBER:	RTD 09 2022/23	CLOSING DATE:	29 November 2022	CLOSING TIME:	10:00am
DESCRIPTION	Tender for the maintenance and operational support of the Advanced Public Transport Management System (APTMS): three-year period				
THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (MBD7).					

BID RESPONSE DOCUMENTS MAY BE DEPOSITED
IN THE BID BOX SITUATED AT (*STREET ADDRESS*)

City of Tshwane Metropolitan Municipality					
Tshwane House					
320 Madiba Street					
Pretoria					
0002					
SUPPLIER INFORMATION					
NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	CODE		NUMBER		
CELLPHONE NUMBER					
FACSIMILE NUMBER	CODE		NUMBER		
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
TAX COMPLIANCE STATUS	TCS PIN:		OR	CSD No:	

B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE [TICK APPLICABLE BOX]	<input type="checkbox"/> Yes <input type="checkbox"/> No	B-BBEE STATUS LEVEL SWORN AFFIDAVIT	<input type="checkbox"/> Yes <input type="checkbox"/> No
[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES & QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]			
ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES ENCLOSE PROOF]	ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES /WORKS OFFERED?	<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES, ANSWER PART B:3]
TOTAL NUMBER OF ITEMS OFFERED		TOTAL BID PRICE	R
SIGNATURE OF BIDDER	DATE	
CAPACITY UNDER WHICH THIS BID IS SIGNED			
BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:		TECHNICAL INFORMATION MAY BE DIRECTED TO:	
DEPARTMENT	Supply Chain Management	CONTACT PERSON	Tshepiso Motlhape
CONTACT PERSON	Lukkiet N Thobejane-Selowe	TELEPHONE NUMBER	012 358 4120
TELEPHONE NUMBER	012 358 6282	FACSIMILE NUMBER	n/a
FACSIMILE NUMBER	n/a	EMAIL ADDRESS	tshepiso@tshwane.gov.za
EMAIL ADDRESS	lukkiet3@tshwane.gov.za		

PART B TERMS AND CONDITIONS FOR BIDDING

1. BID SUBMISSION	
1.1	BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.
1.2	ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED) OR ONLINE
1.3	THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.
2. TAX COMPLIANCE REQUIREMENTS	
2.1	BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
2.2	BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VIEW THE TAXPAYER'S PROFILE AND TAX STATUS.
2.3	APPLICATION FOR THE TAX COMPLIANCE STATUS (TCS) CERTIFICATE OR PIN MAY ALSO BE MADE VIA E-FILING. IN ORDER TO USE THIS PROVISION, TAXPAYERS WILL NEED TO REGISTER WITH SARS AS E-FILERS THROUGH THE WEBSITE WWW.SARS.GOV.ZA.
2.4	FOREIGN SUPPLIERS MUST COMPLETE THE PRE-AWARD QUESTIONNAIRE IN PART B:3.
2.5	BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
2.6	IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
2.7	WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.
3. QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS	
3.1	IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)? YES <input type="checkbox"/> NO <input type="checkbox"/>
3.2	DOES THE ENTITY HAVE A BRANCH IN THE RSA? YES <input type="checkbox"/> NO <input type="checkbox"/>
3.3	DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA? YES <input type="checkbox"/> NO <input type="checkbox"/>
3.4	DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA? YES <input type="checkbox"/> NO <input type="checkbox"/>
3.5	IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION? YES <input type="checkbox"/> NO <input type="checkbox"/>
<p>IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 ABOVE.</p>	

NB: FAILURE TO PROVIDE ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID. NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE.

SIGNATURE OF BIDDER:

CAPACITY UNDER WHICH THIS BID IS SIGNED:

DATE:

MBD 3.1

PRICING SCHEDULE: FIRM PRICES (PURCHASES)

NOTE: ONLY FIRM PRICES WILL BE ACCEPTED. NON-FIRM PRICES (INCLUDING PRICES SUBJECT TO RATES OF EXCHANGE VARIATIONS) WILL NOT BE CONSIDERED

IN CASES WHERE DIFFERENT DELIVERY POINTS INFLUENCE THE PRICING, A SEPARATE PRICING SCHEDULE MUST BE SUBMITTED FOR EACH DELIVERY POINT

Name of Bidder.....	Bid Number
Closing Time	Closing Date

OFFER TO BE VALID FOR DAYS FROM THE CLOSING DATE OF BID.

ITEM NO.	QUANTITY	DESCRIPTION	BID PRICE IN RSA CURRENCY **(ALL APPLICABLE TAXES INCLUDED)
----------	----------	-------------	--

- Required by:
- At:
- Brand and Model
- Country of Origin
- Does the offer comply with the specification(s)? *YES/NO
- If not to specification, indicate deviation(s)
- Period required for delivery
*Delivery: Firm/Not firm
- Delivery basis

Note: All delivery costs must be included in the bid price, for delivery at the prescribed destination.

** "all applicable taxes" includes value- added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies.

* Delete if not applicable

MBD 3.2**PRICING SCHEDULE: NON-FIRM PRICES (PURCHASES)**

NOTE: PRICE ADJUSTMENTS WILL BE ALLOWED AT THE PERIODS AND TIMES SPECIFIED IN THE BIDDING DOCUMENTS.

IN CASES WHERE DIFFERENT DELIVERY POINTS INFLUENCE THE PRICING, A SEPARATE PRICING SCHEDULE MUST BE SUBMITTED FOR EACH DELIVERY POINT

Name of Bidder	Bid number
Closing Time	Closing Date

OFFER TO BE VALID FOR 90 DAYS FROM THE CLOSING DATE OF BID.

ITEM NO.	QUANTITY	DESCRIPTION	BID PRICE IN RSA CURRENCY **(ALL APPLICABLE TAXES INCLUDED)
----------	----------	-------------	--

- Required by:
- At:
- Brand and model
- Country of origin
- Does the offer comply with the specification(s)? *YES/NO
- If not to specification, indicate deviation(s)
- Period required for delivery
- Delivery: *Firm/Not firm
- ** "all applicable taxes" includes value-added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies.
- * Delete if not applicable

MBD 3.2**PRICE ADJUSTMENTS****A. NON-FIRM PRICES SUBJECT TO ESCALATION**

1. IN CASES OF PERIOD CONTRACTS, NON FIRM PRICES WILL BE ADJUSTED (LOADED) WITH THE ASSESSED CONTRACT PRICE ADJUSTMENTS IMPLICIT IN NON FIRM PRICES WHEN CALCULATING THE COMPARATIVE PRICES
2. IN THIS CATEGORY PRICE ESCALATIONS WILL ONLY BE CONSIDERED IN TERMS OF THE FOLLOWING FORMULA:

$$Pa = (1 - V)Pt \left(D1 \frac{R1t}{R1o} + D2 \frac{R2t}{R2o} + D3 \frac{R3t}{R3o} + D4 \frac{R4t}{R4o} \right) + VPt$$

Where:

- Pa = The new escalated price to be calculated.
- (1-V) Pt = 85% of the original bid price. **Note that Pt must always be the original bid price and not an escalated price.**
- D1, D2.. = Each factor of the bid price eg. labour, transport, clothing, footwear, etc. The total of the various factors D1,D2...etc. must add up to 100%.
- R1t, R2t..... = Index figure obtained from new index (depends on the number of factors used).
- R1o, R2o = Index figure at time of bidding.
- VPt = 15% of the original bid price. This portion of the bid price remains firm i.e. it is not subject to any price escalations.

3. The following index/indices must be used to calculate your bid price:

Index..... Dated.....	Index..... Dated.....	Index..... Dated.....
Index..... Dated.....	Index..... Dated.....	Index..... Dated.....

-
4. FURNISH A BREAKDOWN OF YOUR PRICE IN TERMS OF ABOVE-MENTIONED FORMULA. THE TOTAL OF THE VARIOUS FACTORS MUST ADD UP TO 100%.

FACTOR (D1, D2 etc. eg. Labour, transport etc.)	PERCENTAGE OF BID PRICE

MBD 3.2**B. PRICES SUBJECT TO RATE OF EXCHANGE VARIATIONS**

1. Please furnish full particulars of your financial institution, state the currencies used in the conversion of the prices of the items to South African currency, which portion of the price is subject to rate of exchange variations and the amounts remitted abroad.

PARTICULARS OF FINANCIAL INSTITUTION	ITEM NO	PRICE	CURRENCY	RATE	PORTION OF PRICE SUBJECT TO ROE	AMOUNT IN FOREIGN CURRENCY REMITTED ABROAD
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		

2. Adjustments for rate of exchange variations during the contract period will be calculated by using the average monthly exchange rates as issued by your commercial bank for the periods indicated hereunder: (Proof from bank required)

AVERAGE MONTHLY EXCHANGE RATES FOR THE PERIOD:	DATE DOCUMENTATION MUST BE SUBMITTED TO THIS OFFICE	DATE FROM WHICH NEW CALCULATED PRICES WILL BECOME EFFECTIVE	DATE UNTIL WHICH NEW CALCULATED PRICE WILL BE EFFECTIVE

ADJUSTMENT PERIODS	DATE FROM WHICH NEW CALCULATED PRICES WILL BECOME EFFECTIVE
1 st Adjustment	After 12 calendar months
2 nd Adjustment	After 24 calendar months

NB: Unless prior approval has been obtained from Supply Chain Management, no adjustment in contract prices will be made

DECLARATION OF INTEREST

1. No bid will be accepted from persons in the service of the state¹.
2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the bidder or their authorised representative declare their position in relation to the evaluating/adjudicating authority.
3. **In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.**
 - 3.1 Full Name of bidder or his or her representative:
 - 3.2 Identity Number:
 - 3.3 Position occupied in the Company (director, trustee, hareholder²)
 - 3.4 Company Registration Number:
 - 3.5 Tax Reference Number:
 - 3.6 VAT Registration Number:
 - 3.7 The names of all directors / trustees / shareholders members, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below.
 - 3.8 Are you presently in the service of the state? **YES / NO**
 - 3.8.1 If yes, furnish particulars.
.....

¹ MSCM Regulations: "in the service of the state" means to be –

- (a) a member of –
 - (i) any municipal council;
 - (ii) any provincial legislature; or
 - (iii) the national Assembly or the national Council of provinces;
- (b) a member of the board of directors of any municipal entity;
- (c) an official of any municipality or municipal entity;
- (d) an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);
- (e) a member of the accounting authority of any national or provincial public entity; or
- (f) an employee of Parliament or a provincial legislature.

² Shareholder" means a person who owns shares in the company and is actively involved in the management of the company or business and exercises control over the company.

3.9 Have you been in the service of the state for the past twelve months? **YES/NO**

3.9.1 If yes, furnish particulars.

.....

3.10 Do you have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid? **YES / NO**

3.10.1 If yes, furnish particulars.

.....

3.11 Are you, aware of any relationship (family, friend, other) between any other bidder and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid? **YES / NO**

3.11.1 If yes, furnish particulars.

.....

3.12 Are any of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? **YES / NO**

3.12.1 If yes, furnish particulars.

.....

3.13 Are any spouse, child or parent of the company's directors trustees, managers, principle shareholders or stakeholders in service of the state? **YES / NO**

3.13.1 If yes, furnish particulars.

.....

3.14 Do you or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company have any interest in any other related companies or business whether or not they are bidding for this contract. **YES / NO**

3.14.1 If yes, furnish particulars:

.....

4. Full details of directors / trustees / members / shareholders.

Full Name	Identity Number	State Employee Number

.....
Signature

.....
Date

.....
Capacity

.....
Name of Bidder

MBD 5

DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (ALL APPLICABLE TAXES INCLUDED)

For all procurement expected to exceed R10 million (all applicable taxes included), bidders must complete the following questionnaire:

1 Are you by law required to prepare annual financial statements ***YES / NO**
for auditing?

1.1 If yes, submit audited annual financial statements for the past three years or since the date of establishment if established during the past three years.

.....
.....

2 Do you have any outstanding undisputed commitments ***YES / NO**
for municipal services towards any municipality for more than three months or any other service provider in respect of which payment is overdue for more than 30 days?

2.1 If no, this serves to certify that the bidder has no ***YES / NO**
undisputed commitments for municipal services towards any municipality for more than three months or other service provider in respect of which payment is overdue for more than 30 days.

2.2 If yes, provide particulars.

.....
.....
.....
.....

3 Has any contract been awarded to you by an organ of state ***YES / NO**

during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract?

3.1 If yes, furnish particulars

.....
.....

4.1 Will any portion of goods or services be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality / municipal entity is expected to be transferred out of the Republic? ***YES / NO**

4.1 If yes, furnish particulars

.....
.....

CERTIFICATION

**I, THE UNDERSIGNED (NAME)
CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION
FORM IS CORRECT. I ACCEPT THAT THE STATE MAY ACT AGAINST ME
SHOULD THIS DECLARATION PROVE TO BE FALSE.**

.....

Signature

.....

Date

.....

Position

.....

Name of Bidder

MBD 6.1**PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2017**

This preference form must form part of all bids invited. It contains general information and serves as a claim form for preference points for Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution

NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF B-BBEE, AS PRESCRIBED IN THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017.

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to all bids:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 The value of this bid is estimated **not to exceed** R50 000 000 (all applicable taxes included) and therefore the **80/20** preference point system shall be applicable.

1.3 Preference points for this bid shall be awarded for:

- (a) Price; and
- (b) B-BBEE Status Level of Contribution.

1.4 The maximum points for this bid are allocated as follows:

	POINTS
PRICE	80
B-BBEE STATUS LEVEL OF CONTRIBUTION	20
Total points for Price and B-BBEE must not exceed	100

1.5 Failure on the part of a bidder to submit a B-BBEE Verification Certificate from a Verification Agency accredited by the South African Accreditation System (SANAS), or a Registered Auditor approved by the Independent Regulatory Board of Auditors (IRBA) or a sworn affidavit confirming annual turnover and level of black ownership in case of an EME and QSE together with the bid, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.

- 1.6 The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

2. DEFINITIONS

- (a) **“all applicable taxes”** includes value-added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies;
- (b) **“B-BBEE”** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;
- (c) **“B-BBEE status level of contributor”** means the B-BBEE status received by a measured entity based on its overall performance using the relevant scorecard contained in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;
- (d) **“bid”** means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of services, works or goods, through price quotations, advertised competitive bidding processes or proposals;
- (e) **“Broad-Based Black Economic Empowerment Act”** means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003) as amended by Act No 46 of 2013;
- (f) **“comparative price”** means the price after the factors of a non-firm price and all unconditional discounts that can be utilized have been taken into consideration;
- (g) **“consortium or joint venture”** means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract;
- (h) **“contract”** means the agreement that results from the acceptance of a bid by an organ of state;
- (i) **“EME”** means an Exempted Micro Enterprise as defines by Codes of Good Practice issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (j) **“Firm price”** means the price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax, which, in terms of the law or regulation, is binding on the contractor and demonstrably has an influence on the price of any

supplies, or the rendering costs of any service, for the execution of the contract;

- (k) **“functionality”** means the measurement according to predetermined norms, as set out in the bid documents, of a service or commodity that is designed to be practical and useful, working or operating, taking into account, among other factors, the quality, reliability, viability and durability of a service and the technical capacity and ability of a bidder;
- (l) **“non-firm prices”** means all prices other than “firm” prices;
- (m) **“person”** includes a juristic person;
- (n) **“QSE”** means a Qualifying Small Enterprise as defines by Codes of Good Practice issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (o) **“rand value”** means the total estimated value of a contract in South African currency, calculated at the time of bid invitations, and includes all applicable taxes and excise duties;
- (p) **“sub-contract”** means the primary contractor’s assigning, leasing, making out work to, or employing, another person to support such primary contractor in the execution of part of a project in terms of the contract;
- (q) **“total revenue”** bears the same meaning assigned to this expression in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act and promulgated in the *Government Gazette* on 9 February 2007;
- (r) **“trust”** means the arrangement through which the property of one person is made over or bequeathed to a trustee to administer such property for the benefit of another person; and
- (s) **“trustee”** means any person, including the founder of a trust, to whom property is bequeathed in order for such property to be administered for the benefit of another person.

3. ADJUDICATION USING A POINT SYSTEM

- 3.1 The bidder obtaining the highest number of total points will be awarded the contract.
- 3.2 Preference points shall be calculated after prices have been brought to a comparative basis taking into account all factors of non-firm prices and all unconditional discounts;.
- 3.3 Points scored must be rounded off to the nearest 2 decimal places.

- 3.4 In the event that two or more bids have scored equal total points, the successful bid must be the one scoring the highest number of preference points for B-BBEE.
- 3.5 However, when functionality is part of the evaluation process and two or more bids have scored equal points including equal preference points for B-BBEE, the successful bid must be the one scoring the highest score for functionality.
- 3.6 Should two or more bids be equal in all respects, the award shall be decided by the drawing of lots.

4. POINTS AWARDED FOR PRICE

4.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

A maximum of 80 or 90 points is allocated for price on the following basis:

$$P_s = 80 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right) \quad \text{or} \quad P_s = 90 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where

P_s = Points scored for comparative price of bid under consideration
 P_t = Comparative price of bid under consideration
 P_{\min} = Comparative price of lowest acceptable bid

5. POINTS AWARDED FOR B-BBEE STATUS LEVEL OF CONTRIBUTION

- 5.1 In terms of Regulation 5(2) and 6(2) of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (90/10 system)	Number of points (80/20 system)
1	10	20
2	9	18
3	6	14
4	5	12
5	4	8
6	3	6
7	2	4
8	1	2
Non-compliant contributor	0	0

- 5.2 A bidder who qualifies as an EME in terms of the B-BBEE Act must submit a sworn affidavit confirming Annual Total Revenue and Level of Black Ownership.
- 5.3 A Bidder other than EME or QSE must submit their original and valid B-BBEE status level verification certificate or a certified copy thereof, substantiating their B-BBEE rating issued by a Registered Auditor approved by IRBA or a Verification Agency accredited by SANAS.
- 5.4 A trust, consortium or joint venture, will qualify for points for their B-BBEE status level as a legal entity, provided that the entity submits their B-BBEE status level certificate.
- 5.5 A trust, consortium or joint venture will qualify for points for their B-BBEE status level as an unincorporated entity, provided that the entity submits their consolidated B-BBEE scorecard as if they were a group structure and that such a consolidated B-BBEE scorecard is prepared for every separate bid.
- 5.6 Tertiary Institutions and Public Entities will be required to submit their B-BBEE status level certificates in terms of the specialized scorecard contained in the B-BBEE Codes of Good Practice.
- 5.7 A person will not be awarded points for B-BBEE status level if it is indicated in the bid documents that such a bidder intends sub-contracting more than 25% of the value of the contract to any other enterprise that does not qualify for at least the points that such a bidder qualifies for, unless the intended sub-contractor is an EME that has the capability and ability to execute the sub-contract.
- 5.8 A person awarded a contract may not sub-contract more than 25% of the value of the contract to any other enterprise that does not have an equal or higher B-BBEE status level than the person concerned, unless the contract is sub-contracted to an EME that has the capability and ability to execute the sub-contract.

6. BID DECLARATION

- 6.1 Bidders who claim points in respect of B-BBEE Status Level of Contribution must complete the following:

7. B-BBEE STATUS LEVEL OF CONTRIBUTION CLAIMED IN TERMS OF PARAGRAPHS 1.4 AND 5.1

- 7.1 B-BBEE Status Level of Contribution: = (maximum of 10 or 20 points)

(Points claimed in respect of paragraph 7.1 must be in accordance with the table reflected in paragraph 5.1 and must be substantiated by means of a B-BBEE certificate issued by a Verification Agency accredited by SANAS or a Registered Auditor approved by IRBA or a sworn affidavit.

8. SUB-CONTRACTING

8.1 Will any portion of the contract be sub-contracted?

(*Tick applicable box*)

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

8.1.1. If yes, indicate:

- i) What percentage of the contract will be subcontracted%
- ii) The name of the sub-contractor
- iii) The B-BBEE status level of the sub-contractor
- iv) Whether the sub-contractor is an EME.

(*Tick applicable box*)

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

9. DECLARATION WITH REGARD TO COMPANY/FIRM

9.1 Name of company/firm:

9.2 VAT number:

9.3 Company registration number:

9.4 TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
 - ☐ One person business/sole propriety
 - ☐ Close corporation
 - ☐ Company
 - ☐ (Pty) Limited
- [TICK APPLICABLE BOX]

9.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

.....

.....

.....

.....

9.6 COMPANY CLASSIFICATION

- ☐ Manufacturer
- ☐ Supplier

-
- ☐ Professional service provider
☐ Other service providers, e.g. transporter, etc.
[TICK APPLICABLE BOX]

9.7 MUNICIPAL INFORMATION

Municipality where business is situated:

Registered Account Number:

Stand Number:

9.8 Total number of years the company/firm has been in business

9.9 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBE status level of contribution indicated in paragraph 7 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraph 7, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;
- iv) If the B-BBEE status level of contribution has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –
 - (a) disqualify the person from the bidding process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) restrict the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
 - (e) forward the matter for criminal prosecution.

WITNESSES

1.

2.

SIGNATURE(S) OF BIDDERS(S)

DATE

ADDRESS:

CONTRACT FORM: RENDERING OF SERVICES

THIS FORM MUST BE FILLED IN DUPLICATE BY BOTH THE SERVICE PROVIDER (PART 1) AND THE PURCHASER (PART 2). BOTH FORMS MUST BE SIGNED IN THE ORIGINAL SO THAT THE SERVICE PROVIDER AND THE PURCHASER WOULD BE IN POSSESSION OF ORIGINALLY SIGNED CONTRACTS FOR THEIR RESPECTIVE RECORDS.

PART 1 (TO BE FILLED IN BY THE SERVICE PROVIDER)

1. I hereby undertake to render services described in the attached bidding documents to (name of the institution)..... in accordance with the requirements and task directives / proposals specifications stipulated in Bid Number **RTD 09 2022/23** at the price/s quoted. My offer/s remain binding upon me and open for acceptance by the Purchaser during the validity period indicated and calculated from the closing date of the bid.
2. The following documents shall be deemed to form and be read and construed as part of this agreement:
 - (i) Bidding documents, viz
 - Invitation to bid;
 - Tax clearance certificate;
 - Pricing schedule(s);
 - Filled in task directive/proposal;
 - Preference claims for Broad Based Black Economic Empowerment Status Level of Contribution in terms of the Preferential Procurement Regulations 2017;
 - Declaration of interest;
 - Declaration of Bidder's past SCM practices;
 - Certificate of Independent Bid Determination;
 - Special Conditions of Contract;
 - (ii) General Conditions of Contract; and
 - (iii) Other (specify)
3. I confirm that I have satisfied myself as to the correctness and validity of my bid; that the price(s) and rate(s) quoted cover all the services specified in the bidding documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.
4. I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this agreement as the principal liable for the due fulfillment of this contract.

5. I declare that I have no participation in any collusive practices with any bidder or any other person regarding this or any other bid.
6. I confirm that I am duly authorised to sign this contract.

NAME (PRINT)

CAPACITY

SIGNATURE

NAME OF FIRM

DATE

WITNESSES

1

2

DATE:

CONTRACT FORM: RENDERING OF SERVICES**PART 2 (TO BE FILLED IN BY THE PURCHASER)**

1. I..... in my capacity as accept your bid under reference number dated..... for the rendering of services indicated hereunder and/or further specified in the annexure(s).
2. An official order indicating service delivery instructions is forthcoming.
3. I undertake to make payment for the services rendered in accordance with the terms and conditions of the contract, within 30 (thirty) days after receipt of an invoice.

DESCRIPTION OF SERVICE	PRICE (ALL APPLICABLE TAXES INCLUDED)	COMPLETION DATE	B-BBEE STATUS LEVEL OF CONTRIBUTION	MINIMUM THRESHOLD FOR LOCAL PRODUCTION AND CONTENT (if applicable)

4. I confirm that I am duly authorised to sign this contract.

SIGNED AT ON

NAME (PRINT)

SIGNATURE

OFFICIAL STAMP

WITNESSES

1

2

DATE:

MBD 8

DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

- 1 This Municipal Bidding Document must form part of all bids invited.
- 2 It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
- 3 The bid of any bidder may be rejected if that bidder, or any of its directors have:
 - a. abused the municipality's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
 - b. been convicted for fraud or corruption during the past five years;
 - c. willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
 - d. been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).
- 4 **In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.**

Item	Question	Yes	No
4.1	Is the bidder or any of its directors listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector? (Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the <i>audi alteram partem</i> rule was applied). The Database of Restricted Suppliers now resides on the National Treasury's website(www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4.1.1	If so, furnish particulars:		
4.2	Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

	The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.		
4.2.1	If so, furnish particulars:		
4.3	Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4.3.1	If so, furnish particulars:		
4.4	Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4.4.1	If so, furnish particulars:		
4.5	Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4.7.1	If so, furnish particulars:		

CERTIFICATION

**I, THE UNDERSIGNED (FULL NAME)
CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM
TRUE AND CORRECT.**

**I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT, ACTION
MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE
FALSE.**

.....
Signature

.....
Date

CERTIFICATE OF INDEPENDENT BID DETERMINATION

- 1 This Municipal Bidding Document (MBD) must form part of all bids¹ invited.
- 2 Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).² Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.
- 3 Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:
 - a. take all reasonable steps to prevent such abuse;
 - b. reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and
 - c. cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.
- 4 This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.
- 5 In order to give effect to the above, the attached Certificate of Bid Determination (MBD 9) must be completed and submitted with the bid:

¹ Includes price quotations, advertised competitive bids, limited bids and proposals.

² Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I, the undersigned, in submitting the accompanying bid: **RTD 09 2022/23**

Tender for the maintenance and operational support of the Advanced Public Transport Management System (APTMS): three-year period
(Bid Number and Description)

in response to the invitation for the bid made by:

CITY OF TSHWANE MUNICIPALITY

do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of: _____ that:
(Name of Bidder)

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
 - (a) has been requested to submit a bid in response to this bid invitation;
 - (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
 - (c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder
6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium³ will not be construed as collusive bidding.

³ Joint venture or consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
- (a) prices;
 - (b) geographical area where product or service will be rendered (market allocation)
 - (c) methods, factors or formulas used to calculate prices;
 - (d) the intention or decision to submit or not to submit, a bid;
 - (e) the submission of a bid which does not meet the specifications and conditions of the bid; or
 - (f) bidding with the intention not to win the bid.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.
10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

.....
Signature Date

.....
Position Name of Bidder