



CITY OF TSHWANE METROPOLITAN MUNICIPALITY

TENDER NUMBER:

EED 08-2024/25

TENDER DESCRIPTION:	TENDER FOR THE DESIGN, SUPPLY, DELIVER AND OFFLOAD OF NEW PHOTOVOLTAIC STREETLIGHTS TO THE CITY OF TSHWANE ON AN AS AND WHEN REQUIRED BASIS FOR THE PERIOD OF THREE (3) YEARS.
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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 CBD
0002
Tel: 012 358 9999

BID CLOSING DATE

15 November 2024

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.

“Note: Bidders are required to submit electronic copies of the bid either by memory stick together with the hard copy of the Bid/Proposals”



CITY OF TSHWANE METROPOLITAN MUNICIPALITY

DEPARTMENT: ENERGY AND ELECTRICITY

Bids are hereby invited from suppliers for the following bid:

Bid number	Description	Department	Contact person	Compulsory briefing session	Closing date
EED 08-2024/25	TENDER FOR THE DESIGN, SUPPLY, DELIVER AND OFFLOAD OF NEW PHOTOVOLTAIC STREETLIGHTS TO THE CITY OF TSHWANE ON AN AS AND WHEN REQUIRED BASIS FOR THE PERIOD OF THREE (3) YEARS.	Energy and Electricity	Steynberg Myburg	Date: 24 October 2024 Time: 10:00 Venue: Cafeteria Hall, Prince's Park Energy and Electricity Services Depot, 1 Nana Sita Street, Pretoria	15 November 2024 at 10:00

THE DOCUMENT IS DOWNLOADABLE ON THE TSHWANE WEBSITE (www.tshwane.gov.za) and on the E-tender portal.

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

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

**Tshwane House
320 Madiba Street
Pretoria CBD
0002**

Documents must be deposited in the bid box not later than 10:00 on 15 November 2024

Bidders must contact the following officials for any enquiries:

- Technical enquiries: Steynberg Myburg (012 358 2441 or steynbergm@tshwane.gov.za)
- Supply chain enquiries: Mulondi Rasekgala (012 358 6636 or mulondin@tshwane.gov.za)

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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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 or Tippex corrections were made, or any other colour ink. 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;
 - i. 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
 - ii. 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.
10. Duly Signed and completed MBD forms (MBD 1, 4, 5, 8 and 9) The person signing the bid documentation must be authorised to sign on behalf of the bidder. Where the signatory is not a Director / Member / Owner / Shareholder of the company, an official letter of authorization or delegation of authority should be submitted with the bid document.
11. All MBD documents fully completed and fully signed? By the authorized personnel.
12. False or incorrect declarations on any of the MBD documents will result in the rejection of the bidder.

- 13 It is the responsibility of the bidder to disclose in MBD4 any interest in any other related companies or business whether they are bidding for this contract. Failure to disclose this interest will result in the rejection of the bid.
- 14 Joint Ventures (JV) – (Only applicable when the bidder tender as a joint venture)
- i. Where the bidder bid as a Joint Ventures (JV), the required or relevant documents under administrative requirements must be provided/submitted for all JV parties. (These include MBD4, MBD5, MBD8, MBD 9, CSD and/ or SARS pin, Confirmation that the bidder's municipal rates and taxes are up to date.)
 - ii. In addition to the above the bidder must submit a Joint Venture (JV) agreement signed by the relevant parties.
 - iii. It is a condition of this bid that the successful bidder will continue with same Joint Venture (JV) for the duration of the contract, unless prior approval is obtained from City of Tshwane.
 - iv. JV agreement must be complete, relevant and signed by all parties.

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:

SPECIFICATION OR TERMS OF REFERENCE

ENERGY AND ELECTRICITY DEPARTMENT

Tender for the design, supply, deliver and offload of new photovoltaic streetlights to the City of Tshwane on an as and when required basis for the period of three (3) years.

BID NUMBER: EED 08- 2024/25

1. INTRODUCTION AND PURPOSE

The City of Tshwane invites bidders to propose a solution on new photovoltaic streetlight luminaires which will form the part of the energy efficiency programme in the City of Tshwane. Streetlight luminaires are required for the lighting of public roadways, contributing to road illumination as well as public safety and the development of public lighting infrastructure. The new photovoltaic streetlight luminaires will provide an off-grid solution to the City's needs.

2. BACKGROUND

The Energy and Electricity Department is responsible for providing the Tshwane communities with service delivery in the form of electricity and public lighting. The Department needs to appoint service provider(s) for the design, supply, delivery and offloading of new photovoltaic streetlight luminaires to the City of Tshwane.

3. PROJECT SCOPE

3.1. SCOPE

The purpose of this tender is to appoint service provider/s to design, supply, deliver and off-load new photovoltaic streetlight luminaires in accordance with the City of Tshwane (CoT) specification and requirements of SANS standards. Photovoltaic streetlight luminaires designed for various carriageways throughout the city are required.

Each PV streetlight luminaire shall be of the split type that must consist of:

- PV panel
- Enclosure with energy storage

- Solar control gear
- LED(Light Emitting Diode) light
- Mounting brackets and accessories

The required PV luminaires must be mounted on reinforced concrete mono poles.

The scope of works will include the following:

- 1) Design, supply and delivery of the photovoltaic luminaires for various carriageways. Each luminaire must consist of a solar panel, LED (Light Emitting Diode) light, enclosure with energy storage and necessary control gear(solar controller).
- 2) Transportation of all materials to the City of Tshwane.
- 3) The successful bidder(s) will also be required to erect, test and demonstrate the solar streetlight(s) in accordance with industry standards and the specifications. Reinforced concrete mono poles will be supplied by the City for mounting of the luminaires.

The specifications include the design parameters for the various carriageways and the photovoltaic luminaires required that consist of the LED light, photovoltaic panels, energy storage, and control gear.

Seven different types of PV streetlight luminaires are required, each designed for specific road classifications and configurations with varying lane counts and mounting types (single outreach or median). The following PV streetlight luminaires are required:

Item 1 - PV Luminaire 1- Residential - 2 Lane Class B1 - Single Outreach – 8,5m

Item 2 - PV Luminaire 2- Collector Main - 2/3/4 Lane Class B1- Single Outreach – 12m

Item 3 - PV Luminaire 3- Major Arterial – 4/5/6 Lane Class A2- Single Outreach – 17,5m

Item 4 - PV Luminaire 4- Major Arterial – 4/5/6 Lane Class A2- Median – 17,5m

Item 5 - PV Luminaire 5- Rural Principal Arterial – 2/3/4 Lane Class A2- Single Outreach – 17,5m

Item 6 - PV Luminaire 6- BRT Bus Route – 4/5/6 Lane - Single Outreach – 14,4m

Item 7 - PV Luminaire 7- BRT Bus Route – 4/5/6 Lane - Median – 14,4m

3.2. NORMATIVE REFERENCES AND ABBREVIATIONS

3.2.1. Applicable National and International Standards

The latest revision of the standards below shall apply:

ARP 035: Guidelines for the installation and maintenance of streetlighting

EN 1303: Building hardware - Cylinders for locks - Requirements and test methods

SANS 121 - Hot dip galvanized coatings on fabricated iron and steel articles

SANS 10313: The protection of structures against lightning in conjunction with SANS 62305

SANS 10142 - Wiring of premises: Part 1: Low-voltage installations.

SANS 61646: Thin-film terrestrial photovoltaic (PV) modules — Design qualification and type approval

SANS 61215: Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval.

SANS 61427-1: Secondary cells and batteries for renewable energy storage - General requirements and methods of test Part 1: Photovoltaic off-grid application

SANS 62305-3 - Physical damage to structures and life hazard

ISO 9001: 2008 Quality management systems

ISO 9227: Corrosion tests in artificial atmospheres - Salt spray tests

ISO 4892-2: Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps

ASTM G154: Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

SANS 215 Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

SANS 475 Luminaires for interior lighting, streetlighting and floodlighting — Performance requirements

SANS 529 Heat-resisting wiring cables

SANS 1088 Luminaire entries and spigots

SANS 1091 National Colour Standard

SAN 1277:1 Streetlighting luminaires.

SANS 10098-1 Public lighting Part 1: The lighting of public thoroughfares

SANS 10098-2 Public lighting Part 2: Lighting of certain specific areas of street and highways

SANS 10389-1 Artificial lighting of exterior areas for work and safety

SANS 10389-2 Exterior security lighting

SANS 10389-3 Guide on the limitation of the effects of obtrusive light from outdoor lighting installations

SANS/IEC 51706 Aluminum and aluminum alloys – Castings – Chemical composition and mechanical properties

SANS/IEC 60529 Degrees of Protection provided by Enclosures (IP Code)

SANS/IEC 60598-1 Luminaires: Part 1. General Requirements and Tests

SANS/IEC 60598-2-3 Luminaires Part 2-3: Particular requirements - Luminaires for road and streetlighting

SANS/IEC 61000-3-2 Electromagnetic compatibility (EMC) Part 3-2: Limits — Limits for harmonic current emissions

SANS/IEC 61000-3-3 Electromagnetic compatibility (EMC) Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flickering public low-voltage supply systems.

SANS/IEC 61000-4-5 Surge immunity test – Testing and measurement

SANS/IEC 61347-1 Lamp control gear Part 1: General and safety requirements

SANS/IEC 61347-2-13 Lamp control gear Part 2-13: Particular requirements for d.c. or a.c. supplied electronic control gear for LED modules.

SANS/IEC 61547 Equipment for general lighting purposes – EMC immunity requirements

IEC 61730-1:2023 Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction

IEC 61730-2:2023 Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing

SANS/IEC 62109-1 Safety of power converters for use in photovoltaic power systems – Part 1: General requirements

SANS/IEC 62262 Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)

SANS/IEC 62384 DC or AC supplied electronic control gear for LED modules - Performance requirements.

EN 55015 Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

IEC 62471 Photo biological safety of lamps and lamp systems

IEC TR 61547-1 Equipment for general lighting purposes - EMC immunity requirements - Part 1: An objective light flicker meter and voltage fluctuation immunity test method

IEC TR 63518 Equipment for general lighting purposes - Objective test method for stroboscopic effects of lighting equipment

IES LM-79-19 Optical and Electrical Measurements of Solid-State Lighting Products

IES LM-80-08 Measuring Lumen Maintenance of LED Light Sources

IES LM-80-15 Measuring Luminous Flux and Colour Maintenance of LED Packages, Arrays and Modules

IES TM 21-11 Projecting Long Term Lumen Maintenance of LED Light Sources

3.2.2. **Abbreviations**

A:	Ampere
mA	Milliampere
AC	Alternate Current
BMS	Battery Management System
°C	Degrees Celsius
CoT:	City of Tshwane
CPD	Continued Professional Development
CRI	Color Rendering Index
ECSA	Engineering Council of South Africa
EED:	Energy and Electricity Department
EN	European Norm
Hz	Hertz
IEC	International Electro-technical Commission
IES	Illuminating Engineering Society
IK	Impact Resistance
IP	Ingress Protection/ International protection

ISTMT	In Situation Temperature Method Testing
ISO	International Organization for Standardization
K	Kelvin
kg	Kilogram
kWh	Kilo Watt Hours
kW/km	Kilo Watt per Kilometer
LED	Light Emitting Diode
lm	Lumens
Lm/W	Lumens per Watt
LV	Low Voltage
mm	Millimeter
MPPT	Maximum Power Point Tracking
MV	Medium voltage
NOCT	Nominal Operating Cell Temperature
NRS	National Rationalized Standards
PV	Photo-voltaic
R	Rand
R/km	Rand per Kilometer
R/kWh	Rand per Kilo Watt Hour
RFP	Request for proposals
SANAS	South African National Accreditation System
SANS:	South African National Standards
SOC	State of charge
STC	Standard Test Conditions

TUV	Technischer Überwachungsverein	(Technical Inspection Association)
V	Voltage	
VDC	Volts (Direct Current)	
W	Watt	

3.3. REQUIREMENTS

3.3.1 GENERAL

After the tender is awarded, the successful bidder/s shall manufacture, erect, and test the PV streetlight/s which shall be demonstrated to the City for approval before mass production will commence. This demonstration shall include but not limited to:

- Streetlight/s design in accordance with the specifications.
- Installation and configuration of the PV system and streetlight/s.
- Streetlight/s operation.
- PV Luminaire performance.
- PV system functional test and autonomy test with reports.
- Post Lux readings - Luminance and Illuminance readings are to be taken and provided to the City to verify the installation is achieving within 10% of the design.
- Local on site monitoring of the solar luminaire/s from ground level via mobile application.
- Early tamper detection alarm system with automated alerts and notifications.
- Maintenance procedures such as cleaning of solar panels and battery replacement.
- The sites of the proposed works will be located inside the boundaries of the City of Tshwane.

The bidder is responsible for covering the expenses related to the installation and necessary testing of the streetlight/s.

The City will provide the required reinforced concrete mono pole/s for mounting of the PV luminaire/s.

In the event that the proposed PV luminaires are not approved by the City and/or does not perform as proposed by the bidder's design and in accordance to the requirements and specifications, the tenderer may be liable to replace such under-performing luminaires with a City approved luminaire which shall be used for further replacements within the contract.

The bidder will be responsible for any costs incurred for replacements. In the event that the replacement luminaire costs less than the originally bid amount, the contract will reflect the lower price.

3.3.2. CONSTRUCTION

Each streetlight shall consist of:

- a) Reinforced concrete mono pole (to be supplied by the City).
- b) Split type photovoltaic luminaire consisting of:
 - 1. Solar panel/s with adjustable mounting frame mounted on the pole top
 - 2. Cabinet and energy storage with control gear mounted below the solar panel
 - 3. LED light head/s mounted on an outreach arm/s below the cabinet

Single outreach luminaires shall consist of one LED light head mounted on a single outreach arm, one cabinet with one dedicated battery and MPPT (Maximum power point tracking technology) charge control gear, and solar panel.

Luminaires with double outreach, known as median luminaires, will be equipped with two LED light heads, with each mounted on a separate outreach arm. These LED lights must operate autonomously, ensuring that the failure of one LED light does not impact the functionality of the other. Each LED light unit must include a dedicated battery, MPPT charge controller, and an individual solar panel. The batteries and control gear for both LED lights must be housed within a single cabinet and both solar panels must be securely attached to a single mounting frame.

For each type of luminaire, a reinforced concrete mono pole(to be supplied by the City) shall be used to carry the required luminaire/s and accessories on the pole top. See Section 3.3.3 for the mounting requirements of the PV luminaire on the concrete pole top.

Solar Streetlight Pole Top Assembly Requirements:

Pole Top Configuration:

The pole top shall be designed to accommodate:

- Solar panel mounting frame with attached solar panel(s) mounted on the pole top
- Cabinet containing the energy storage and control gear mounted below the solar panel
- LED light fixture(s) mounted on a separate outreach arm(s)
- All necessary mounting brackets

Solar Panel Mounting System:

A mounting frame shall be installed at the pole top to attach the solar panel.

The solar panel must be secured to the mounting frame using tamper-resistant method and incorporate torque shear bolts or specialized tamper-proof fasteners that require unconventional tools for attachment or removal.

An adjustable bracket shall allow for orientation and tilt adjustment of the frame to optimize solar panel performance based on geographic location.

The adjustable bracket must include a visual indicator for easy adjustment of the tilt angle of the solar panel.

The adjustable bracket shall incorporate tamper-resistant fasteners, requiring special tools for tilt adjustment.

The mounting frame with adjustable bracket must be securely fixed / attached to the pole top spigot using tamper-resistant method and incorporate torque shear bolts or special tamper-resistant fasteners, requiring unconventional tools for attachment or removal.

Energy Storage and LED Light Positioning:

The energy storage cabinet and LED light(s) shall be mounted below the solar panel on the pole top spigot.

Energy Storage Cabinet Mounting:

The cabinet must be fitted with a mounting bracket that shall be permanently affixed to the bottom and back of the cabinet.

The cabinet with bracket shall be secured to the pole top below the solar panel and using tamper-resistant method and incorporate torque shear bolts or special tamper-resistant fasteners, requiring unconventional tools for attachment or removal.

LED Light Fixture Installation:

Each LED light fixture shall be mounted on a separate outreach arm below the cabinet.

Tamper-resistant fasteners shall be used to:

- a) Attach the LED light fixture to the outreach arm
- b) Secure the outreach arm to the pole top spigot

These fasteners shall require special or unconventional tools for installation or removal.

The specific design and implementation of the mounting measures must be rigorously tested and evaluated to ensure compliance with the project-specific requirements for preventing unauthorized removal, tampering and theft of the components.

Comprehensive installation instructions with step-by-step guidance on properly implementing the mounting and all anti-theft and tamper-prevention measures must be included in the Operational and Maintenance Manual. Correct installation following these procedures is critical to ensuring the security features work as intended.

Bidders shall submit detailed drawings and documentation with the tender to demonstrate the design and operation of the tamper-proof mounting mechanisms and additional tamper or unauthorized removal features of the components, and any specialized tools or procedures required for installation and maintenance.

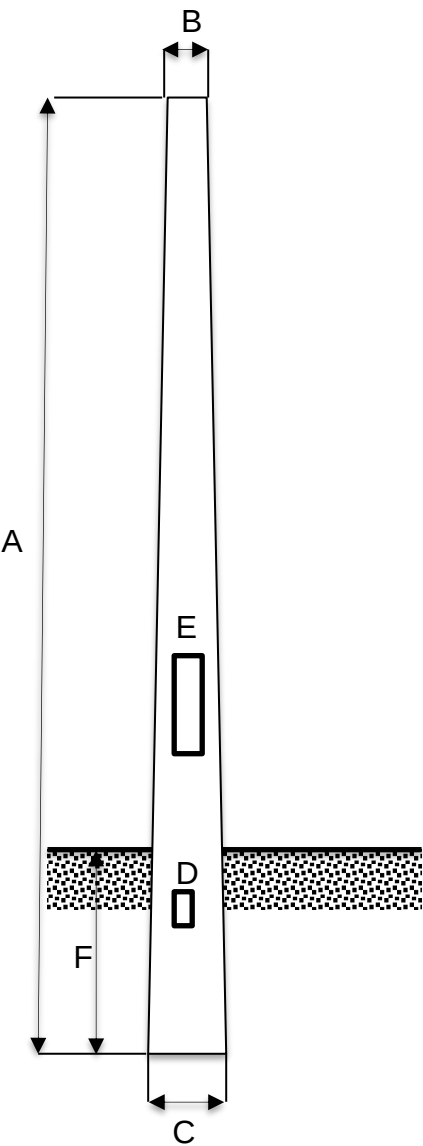
All steel parts, and all accessories, shall be hot dipped galvanized in compliance with the requirements of SANS 121(ISO 1461) 2000-1. All parts shall be corrosion resistant.

Each mast should be fitted with a lightning spike, consisting of a 10 mm(min) diameter steel rod, extending at least 800 mm(min) above the top of the mast. All related

accessories must be included to enable complete installation and costs must be included.

3.3.3. REINFORCED CONCRETE POLE SPECIFICATIONS:

Reinforced concrete pole specifications are as follows:



	A		F	B	C	D	E	
Pole	Total Length (m)	Height above Ground Level (m)	Planting Depth (m)	Tip Dia (mm)	Butt Dia (mm)	Cable Entry (mm)	Access Door (mm)	Strength (kN)

1	8,5	7	1,5	160	310	150 x 75	465 x 145	7
2	12	10,5	1,5	160	310	150 x 75	465 x 145	8
3	14,4	12	2,2	228	310	150 x 75	465 x 145	10
4	17,5	15	2,5	228	310	150 x 75		15

The photovoltaic (PV) luminaire(s) must be installed on the concrete poles as indicated in the table above.

Technical Requirements

Mounting System

The bidder shall design and provide a secure mounting fixture that is specifically designed to interface the PV luminaire with the concrete pole tops.

The mounting system shall consist of a pole top fitting with a spigot that fits over the existing concrete pole tip.

The concrete poles are fitted with a 76mm spigot. The existing 76mm spigot shall be removed and not be incorporated into the new mounting fixture.

Installation

The pole top fitting shall be securely bolted to the concrete pole using torque shear bolts or tamper-proof fasteners that require specialized and unconventional tools for attachment or removal.

The pole top fitting and spigot shall accommodate all necessary brackets for mounting all the PV luminaire components.

Materials and Construction

The pole top fitting and spigot shall be constructed from durable, tamper-resistant materials such as hardened steel or high-strength aluminum alloy.

All materials used shall resist cutting, prying, and other forced entry attempts.

All steel components shall be hot dip galvanized in compliance with SANS 121 (ISO 1461) 2000-1 standards.

All parts shall be corrosion resistant.

Environmental Resilience

The pole top fitting and spigot shall be designed to withstand:

- a) Weight of the PV luminaire
- b) Wind loads
- b) Vibrations
- c) Temperature variations

The design shall prevent unintentional dislodging or loosening of the pole top fixture and luminaire from the pole top.

A ECSA (Engineering Council of South Africa) registered Professional Civil Engineer/ Technologists must confirm that the pole with mounting interface will be sufficient for the intended use. See point 3 in Mandatory Requirements (Section 5.2).

Quality Assurance

The bidder shall rigorously test and evaluate the design and implementation of the pole top fitting and spigot.

The mounting system shall comply with all project-specific requirements for preventing unauthorized removal or tampering of the PV luminaire installation.

Anti-climb Spike Collar

Each pole must be fitted with an anti-climb spike collar or system to prevent and deter people from climbing up the pole. The system must consist of a collar with protruding spikes. The collar must be designed for easy installation and must fit securely around the pole and must be tamper-proof to prevent unauthorized removal or tampering. The collar must feature three strategically placed rows of spikes, positioned at the top, middle, and bottom sections of the collar. Each row must consist of minimum 10 spikes spread across the circumference of the pole. The spikes must be robust and engineered to discourage climbing attempts. A detailed drawing/illustration/photo of the spikes must be submitted with the tender.

Detailed installation and maintenance procedures shall be provided in the Maintenance and Operational Manual, specifying the tools, techniques, and access requirements for authorized personnel to properly install, service, or remove the pole top fitting, luminaire and anti-climb spike from the pole.

Bidders shall submit detailed drawings and documentation demonstrating the design and operation of the secure mounting mechanism, including anti-tamper fasteners and anti-climb spike, and any specialized or unconventional tools or procedures required for installation and maintenance.

Thirty (30) sets of specialized/unconventional tools shall be provided, and each tool shall have its own serial number engraved on the tool for tracking purposes.

The required PV luminaires must be mounted on the following concrete poles:

Item / Luminaire	Pole
Item 1 - PV Luminaire 1- Residential - 2 Lane Class B1 - Single Outreach – 8,5m	1
Item 2 - PV Luminaire 2- Collector Main - 2/3/4 Lane Class B1- Single Outreach – 12m	2
Item 3 - PV Luminaire 3- Major Arterial – 4/5/6 Lane Class A2- Single Outreach – 17,5m	4
Item 4 - PV Luminaire 4- Major Arterial – 4/5/6 Lane Class A2- Median – 17,5m	4
Item 5 - PV Luminaire 5- Rural Principal Arterial – 2/3/4 Lane Class A2- Single Outreach – 17,5m	4
Item 6 - PV Luminaire 6- BRT Bus Route – 4/5/6 Lane - Single Outreach – 14,4m	3
Item 7 - PV Luminaire 7- BRT Bus Route – 4/5/6 Lane - Median – 14,4m	3

3.3.4. LUMINAIRE REQUIREMENTS

Minimum luminaire compliance standards:

- SANS / IEC 60598-2-3
- SANS 475

The luminaire shall automatically switch ON at dusk, operate throughout the night and automatically switch OFF at dawn.

The light output from the LED modules must be constant throughout the duty cycle and must be flicker and noise free.

Luminaire Autonomy: Minimum 2 days autonomy (two continuous night cycles) under rainy or overcast conditions.

Luminaire charging time: max 6 hours.

Luminaire light output/ 100%

Operating hours: from sunset to sunrise during all seasons

The luminaire shall be 100% solar powered.

The solar luminaires shall refrain from activation (switching on) during rainy or overcast daylight hours to prevent unnecessary drainage of the batteries and ensure optimal energy efficiency.

Solar module requirements:

Requirements listed in section 3.3.5 apply.

Energy storage requirements:

Requirements listed in section 3.3.6 apply.

LED light requirements:

Requirements listed in section 3.3.7 apply.

Charge controller requirements:

Requirements listed in section 3.3.8 apply.

Solar components must be easily available and must be interchangeable with other manufactures.

The off-grid solar luminaires shall be engineered for Tshwane geographical location incorporating the following key aspects:

Environmental Factors: Tshwane's specific environmental conditions, such as sunlight exposure, temperature range, humidity levels, wind conditions, and precipitation patterns, must be considered to ensure optimal performance and durability of the solar luminaires.

Solar Resource Assessment: Tshwane's solar potential, including solar irradiance levels and shading considerations, to maximize solar energy capture and efficiency.

Optimal Solar Panel Orientation and Tilt: The orientation and tilt of the solar panels must be optimized based on Tshwane's latitude and solar path to enhance energy generation and overall system performance.

Battery Sizing and Performance: Batteries will be sized and configured to meet the specific solar conditions and requirements of Tshwane, considering factors like depth of discharge, battery chemistry, and temperature compensation for reliable operation.

The complete system shall be designed and manufactured and finished to ensure reliability, efficiency, maintenance free life span taking into account the harsh environmental conditions and geographic location that may affect the generation ability and efficiency of the systems. Materials shall prevent wear, fatigue and corrosion.

Bidders must also indicate the sizing of the photovoltaic panels, batteries, controllers and Led lights and the system shall also operate at a suitable voltage in terms of the above requirements.

Details must be submitted in Annexure A, Schedule B.

The following documentation for each luminaire component; (1) solar module, (2) MPPT controller, (3) battery, (4) LED light must be submitted with the tender by means of a data sheet. This shall include but not limited to the following:

- a) Name of manufacturer
- b) Country of origin/manufacture
- c) Component name and model number
- d) Technical specifications and ratings of the component
- e) Lifespan of the component

In addition to the above, the following documents (hard copy) must also be submitted with the tender:

- f) Guarantee certificates of the components
- g) Detailed drawing of the complete luminaire
- h) Circuit /wiring diagram of the luminaire with a description of the function and operation of every component in the system including protection devices.
- i) Calculations of the PV systems.
- j) User manuals of each PV component.

DESIGN SCHEDULE

Typical Streetlights utilised throughout the City:

HPS luminaire	Luminaire hight above ground level	Outreach		Luminaire angle of tilt	Distance between poles
Watt	meters	meters		degrees	meters
70	7	0,5	single	15	40
150	10,5	0,5	single	15	40
150	10,5	0,5	double	15	40
250	10,5	0,5	single	15	40
250	10,5	0,5	double	15	40
250	12	0,5	single	15	40
250	12	0,5	double	15	40
400	15	0,5	single	15	60
400	15	0,5	double	15	60

The PV streetlight/s must be designed in accordance to the parameters and criteria set out in the design schedule listed below and the requirements of SANS 10098-1 and in accordance with this specifications and the city's minimum requirements listed in Annexure A Schedule A.

Design results must be entered into Annexure A Schedule B.

The following luminaires will be required for the various carriages throughout the City:

DESIGN SCHEDULE Design Parameters	ITEM 1	ITEM 2	ITEM 3	ITEM 4	ITEM 5	ITEM 6	ITEM 7
Design speeds -km/h	60	60	80	80	70	60	60
Description	Local / Residential street	Collector - Main	Major arterial	Major arterial	Rural principal arterials	BRT- bus lane	BRT-bus lane
Carriage way width -meters	7,4	14,8	26,7	12,1 per carriage way	15	22,2	11,1 per carriage way
Number of lanes	2	2/3/4	4/5/6	4/5/6	2/3/4	4/5/6	4/5/6
Lanet width - meter	3,7	3,7	3,7	3,7	3,7	3,7	3,7
Shoulder – both sides - meter			2.25	1			
Median L/R turn incl kerbs - meters	-	-	-	6,8	-	-	6,8
Footways - mm	2000	2000	2000	2600	2000	5000	5000
Footway position	high side	high side	high and low side	high and low side	high side	high side	high side
Type of streetlight	single outreach	single outreach	single outreach	double outreach	single outreach	single outreach	double outreach
Streetlight position	high side	high side	high side	median	high side	high side	median
Streetlight arrangement	side by side	side by side	side by side	Central - Median	Side by side	Side by side	Central - Median
Pole Offset from the front of the kerb line- mm	2500	2500	2500	3400	6000	2500	3400
Lighting Category	B1 (IL: Min = 1 lux Ave = 5. lux)	B1 (IL: Min = 1 lux Ave = 5. lux)	A2 without median– 300 vehicles/hour (LU : Ave =1 cd/m ² Uo = 40 % UI = 60 % TI : 20 %)	A2 with median– >600 vehicles/hour (LU : Ave =1 cd/m ² Uo = 40 % UI = 60 % TI : 20 %)	A2 without median– 300 vehicles/hour (LU : Ave =1 cd/m ² Uo = 40 % UI = 60 % TI : 20 %)	Illuminance required across roadway including footways = 10 lux	Illuminance required across roadway including footways = 10 lux
Recommended Pole spacing-meters	40 to 50	40 to 50	40 to 50	40 to 50	40 to 50	40 to 50	40 to 50
Luminaire outreach	±0,5	±0,5	±0,5	±3	±0,5	±0,5	±3
Maintenance factor	0,8	0,8	0,8	0,8	0,8	0,8	0,8
High Pressure Sodium(HPS) to be replaced	70W HPS	150W/250W HPS	400W HPS	400W HPS	400W HPS	400W HPS	400W HPS

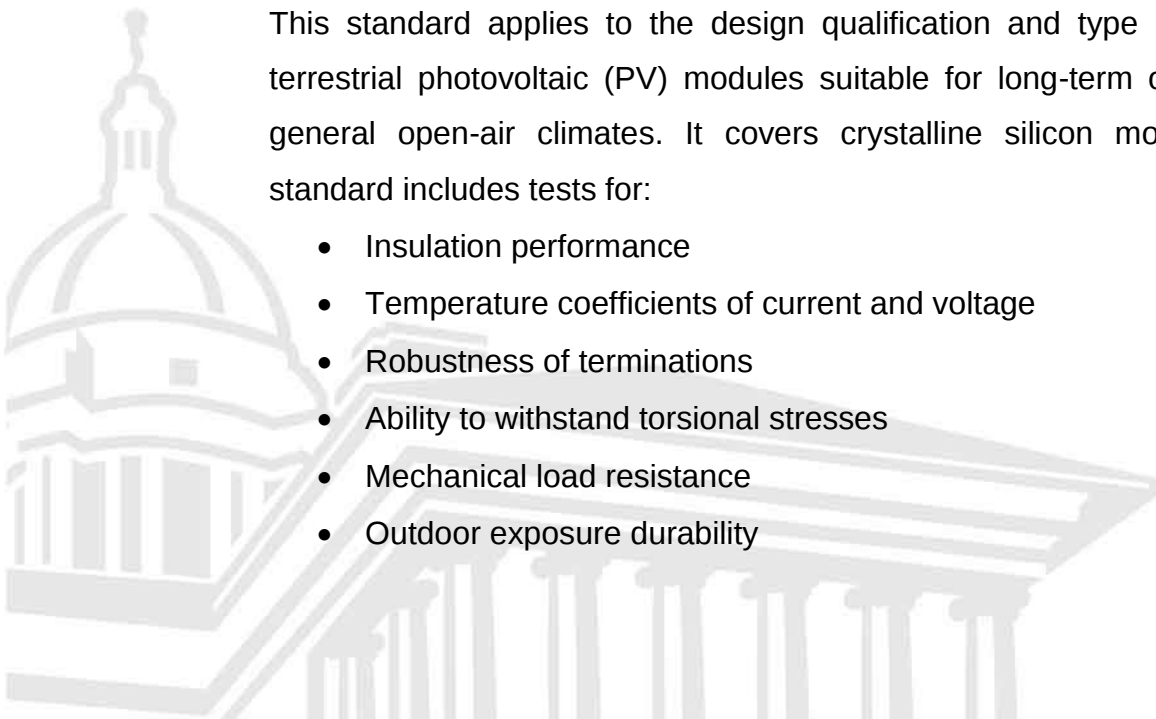
3.3.5. SOLAR MODULE REQUIREMENTS:

- 1) Module type: min Tier 1 Type A Monocrystalline (Half-cell)
- 2) Module efficiency >20%
- 3) The solar module must be water and hail proof, corrosion resistant and protected against dust and dust accumulation and must be self-cleaning. An IP66 rating is a minimum requirement.
- 4) Junction box, cabling and pug-in connectors: An IP68 rating is a minimum requirement.
- 5) Each solar module must be housed in anodised aluminium framework.
- 6) The PV modules for each type of luminaire shall be the same in all respects, of the same age, model, type and size and must be interchangeable.
- 7) The PV module must be protected from overheating when partial shading occurs and from the batteries draining or discharging back through the PV cells inside the solar panel at night or in case of fully cloudy sky. The diode needs to have a voltage and amperage rating above that of the panel.
- 8) Solar frame orientation and rake angle must be adjustable for the relevant geographic area and for maximum energy. There must be a visual indicator for easy adjustment of the rake angle.
 - a) Rake angle – 0 to 40 degrees (horizontal) adjustable.
- 9) The solar modules must comply to the following latest standards SANS/IEC 61215, SANS/IEC 61730-1/2.

➤ SANS 61215:

This standard applies to the design qualification and type approval of terrestrial photovoltaic (PV) modules suitable for long-term operation in general open-air climates. It covers crystalline silicon modules. The standard includes tests for:

- Insulation performance
- Temperature coefficients of current and voltage
- Robustness of terminations
- Ability to withstand torsional stresses
- Mechanical load resistance
- Outdoor exposure durability



- Hail impact resistance

➤ SANS 61730-1:

This part of the standard focuses on the construction requirements for photovoltaic (PV) modules to provide safe electrical and mechanical operation. It addresses the prevention of electrical shock, fire hazards, and personal injury due to mechanical and environmental stresses. Key areas covered include:

- Materials used in module construction
- Environmental stress tests
- Electrical insulation tests
- Internal circuit isolation
- Accessibility of live parts
- Marking and documentation requirements

➤ SANS 61730-2:

This part of the standard complements SANS 61730-1 by focusing on the testing requirements for photovoltaic modules to ensure safe operation. It includes various tests to verify the safety features of PV modules, such as:

- Visual inspection
- Accessibility tests
- Cut susceptibility test
- Ground continuity test
- Impulse voltage test
- Dielectric withstand test
- Wet leakage current test
- Fire test
- Temperature test
- Mechanical load test

Together, SANS 61730-1 and SANS 61730-2 form a comprehensive safety standard for photovoltaic modules, covering both construction requirements and testing procedures to ensure safe electrical and mechanical operation under various environmental conditions.

- 10) Performance warrantee: The solar module(s) will be warranted for a minimum period of 25 years from the date of installation. The solar

modules must be warranted for their output peak watt capacity, which should not be less than 90% minimum for the first 10 years and 80% minimum after 25 years. The solar panels shall be submitted to a stringent TUV Rheinland Power controlled inspection mark.

- 11) Manufacturers warranty: The panel shall have manufacturer warranty of at least ten (10) years.
- 12) There should be a Name Plate fixed inside the module which will give:
 - i. Name of the Manufacturer or Distinctive Logo.
 - ii. Model Number
 - iii. Serial Number
 - iv. Year of manufacture
- 13) Detail shall be submitted in Annexure A, Schedule B.

3.3.6. ENERGY STORAGE REQUIREMENTS

- 1) Type of energy storage: Lithium Iron Phosphate LiFePO₄.
- 2) Life expectancy; 10 years.
- 3) Maintenance free.
- 4) Service Life under normal circumstances: 8000 cycles.
- 5) Operating temperature: -20° C TO 60° C
- 6) The battery shall be capable to be installed outdoors and handle the expected environmental conditions in service.
- 7) The battery shall comply with the following standards:
 - a) SANS/IEC 62133-2
 - b) SANS/IEC 61427-1

Certified test reports/certificates from accredited laboratories must be submitted with the tender.

Detailed Requirements:

- Safety and Performance Requirements (SANS 62133-2):
 - The battery must be designed and constructed to prevent hazards during normal use.

- Must include a Battery Management System (BMS) to ensure safe operation.
 - Must pass all required safety tests, including overcharge, over-discharge, external short circuit, forced discharge, vibration, shock, and thermal abuse tests.
 - Must be clearly marked with type designation, manufacturer details, and warning symbols.
 - Must include comprehensive user documentation, including safety data sheets and handling and storage instructions.
- Performance and Testing Requirements (SANS 61427-1):
- The battery must meet specified cycle life requirements for PV energy systems.
 - Must demonstrate the rated capacity and ability to deliver the specified capacity over its intended lifespan.
 - Must have high charge/discharge efficiency and overall energy efficiency suitable for PV applications.
 - Must pass electrical tests (charge acceptance, discharge performance, cycle life, capacity retention), environmental tests (temperature performance), and mechanical tests (vibration, shock).
 - Must include protection against overcharging and over discharging and must have effective thermal management systems.
 - Must be marked with nominal voltage, rated capacity, and manufacturer details.
 - Comprehensive documentation must be provided, including safety data sheets.

8) The battery must be capable of rapid charging in 6 hours.

- 9) The batteries shall be marked with the date of manufacture. Space shall also be provided on the battery label to permit the marking, by the installer, of the date of commissioning of the battery.
- 10) The batteries for each type of luminaire and all other luminaires, shall be the same in all respects, of the same model, type and size and must be interchangeable.
- 11) The battery enclosure shall be designed to prevent casual contact with the battery terminals by the end-user of the system.
- 12) The battery enclosure shall be vandal-proof, weather-proof, hail-proof, insect-proof, corrosion-proof and resistant to both solar and ultra-violet radiation and manufactured from a material that has mechanical properties demonstrated to be suitable for this purpose with a vandal proof and key locking(cylindrical / barrel key lock) door. Minimum of 90 keys must be provided. Keys shall be non-removable in the unlocked position. Keys must have a unique serial number for tracking purposes. Keyways must be unique and exclusively for the City of Tshwane (CoT). The supply and payment of the keys will be once off.

a) Weatherproofing and Ingress Protection:

Test Standard: SANS 60529 (EN 60529)

Required Rating: Minimum IP66 (dust-tight and protected against powerful water jets)

Test Method: As specified in SANS 60529 for IP66 or higher rating

b) Impact Resistance (Vandal-proof):

Test Standard: SANS 62262

Required Rating: Minimum IK08

Test Method: As specified in SANS 62262 for IK08 or higher rating

IK 08 specification:

Represents protection against an impact of 5 joules

Equivalent to the impact of a 1.7 kg mass dropped from a height of 300 mm

c) Hail Resistance

Test Standard: SANS 61215 (equivalent to IEC 61215)

Specific Test: Ice ball impact test

Test Method: 11 impacts of a 25-millimeter (1-inch) ice ball traveling at its terminal velocity

Note: While this test is typically for PV modules, it must be applied to the battery enclosure in this case.

d) Corrosion Resistance

Test Standard: ISO 9227 (Salt spray test)

Test Method: Neutral Salt Spray (NSS) test for a duration appropriate to the expected environmental conditions (typically 500-1000 hours for severe environments)

e) UV Resistance

Test Standard: ASTM G154 or ISO 4892-2

Test Method: Accelerated weathering test using fluorescent UV lamps and moisture to simulate outdoor weathering

f) Insect Resistance

IP66 or higher ensures insect-proofing.

g) Lock Security

Test Standard: EN 1303/ (for cylinder locks)

Required Grade: Grade 3 or higher for outdoor use.

- The bidder should provide a detailed material specification for the enclosure, including the type of material used and its properties.
- Certified test reports from accredited laboratories for each of the above tests must be submitted with the tender.
- The bidder should provide documentation(warrantee) on the expected lifespan of the enclosure under typical outdoor conditions. The battery enclosure life expectancy: minimum 25 years.
- The bidder must provide certified copy of the certification of the lock's security grade.

13) Key requirements for battery enclosure ventilation:

Heat Dissipation: The enclosure design must allow for adequate heat dissipation to prevent the battery from overheating. This may involve passive cooling (natural ventilation) or active cooling (fans or heat sinks).

Gas Emission: Lithium Iron Phosphate batteries typically do not emit gases under normal operation. However, while they are less prone to thermal

runaway, they are not entirely immune to it. In the rare event of thermal runaway or a significant failure, LiFePO₄ batteries can release gases. The gases released during such events can include oxygen, which can feed a fire, and other potentially hazardous gases. The enclosure must handle such scenarios safely.

Environmental Conditions: The enclosure must be designed to operate within the temperature and humidity ranges specified by the battery manufacturer to ensure longevity and safety.

Although many standards focus on larger stationary installations, the principles still apply to smaller portable systems to ensure safety and efficiency.

Relevant Standards for Battery Enclosure Ventilation:

- IEC 62485-2: Safety Requirements for Secondary Batteries and Battery Installations - Part 2: Stationary Batteries
- IEC 62619: Safety Requirements for Secondary Lithium Cells and Batteries, for Use in Industrial Applications
- SANS 959-2-2: Battery Systems for PV Systems
- IEC 61508: Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems
- IEEE 1635/ASHRAE 21: Guide for the Ventilation and Thermal Management of Batteries for Stationary Applications

For small portable PV systems using Lithium Iron Phosphate batteries, adhering to the principles outlined in the standards mentioned ensures safe and efficient operation.

- 14) The cables shall have sufficient ampacity such that overheating of cables will not occur under peak charge or prolonged load conditions.
- 15) The terminations of the cable to the battery shall be made using connectors that are suitable for the particular battery terminals.
- 16) The battery terminals shall be protected against corrosion using an anti-corrosive coating material which has been approved by the battery supplier.

- 17) The daily discharge shall ensure that the battery will perform adequately over the warranty period and would achieve normal performance throughout its service life.
- 18) The daily discharge of the battery shall not exceed the rated battery manufacturer's indicated limits.
- 19) The battery manufacturer shall specify set-points (discharge, boost, nominal charge voltages) for the battery storage system.
- 20) The batteries shall be delivered fully charged or pre-conditioned according to manufactures requirements regarding initial use or storage conditions when delivered.
- 21) The date of manufacture shall not be more than 4 months when delivered.
- 22) The battery warranty must be stated in the technical schedules, and it must not be less than ten (10) years.
- 23) Standards and certifications: IEC/SANS 62133-2:2017, IEC/SANS 61427-1:2013, EN55032:2015, EN55024:2010, EN61000-4-2:2009, EN61000-4-3:2006+A1:2008+A2:2010, IEC/EN 62391–1 or equivalents. Required Certificates / test reports shall be from a SANS/ IEC or any national / international accredited testing facility.
- 24) Design detail shall be submitted in Annexure A, Schedule B.

3.3.7. LED LIGHT REQUIREMENTS

- 1) The LED light shall be weather-proof, hail-proof, insect-proof, corrosion-proof and resistant to both solar and ultra-violet radiation.
- 2) The LED module/s and control gear shall be housed in a corrosion resistant high-pressure die-cast aluminium (EN 1706 AC-44300) enclosure with ingress protection rating off IP 66 as a minimum. Any gaskets used shall be of an acceptable heat resistant material (e.g. silicon) and shall not deteriorate due to light, heat or compression to which it will be exposed in service and not work loose during maintenance of the luminaire thus ensuring the integrity of the IP66 rating. Failure or deterioration of the enclosure shall not occur due to electrolytic action or by differential thermal expansion.

- 3) LED light and enclosure finish: natural unpainted aluminum.
- 4) Individual Led modules must be replaceable.
- 5) Failure of one LED or module shall not affect the operation of the other LED's or modules.
- 6) All LED lights for each type of luminaire and all other luminaires shall be the same in all respects, model and type and must be interchangeable.
- 7) Fixing arrangement; outreach arm spigot. The spigot sizes of the pole should comply with SANS 1088.
- 8) Efficacy: to be determined
- 9) Color temperature: min. 5000K.
- 10) Color Rendering Index: ≥ 70 .
- 11) Lifetime: Min 100 000h
- 12) Watt rating: to be determined
- 13) Nominal Flux: to be determined
- 14) The light output from the LED light source should be constant throughout the duty cycle (the duty cycle determines the proportion of time the LED is on versus off. The light output from the LED should remain constant or uniform during the "on" periods of the duty cycle. In other words, when the LED is turned on, its brightness or light intensity should not fluctuate or vary during that "on" time. If the light output from the LED is not constant during the "on" periods, it can lead to flickering or inconsistent illumination. The LED driver circuit and the control mechanism must be designed and implemented correctly, ensuring a stable and consistent current flow through the LED when it is switched on.)
- 15) The LED module shall contain an appropriate heat sink ensuring continuous effective cooling.
- 16) The driver shall be mounted inside the control gear compartment of the LED and shall be easily replaceable.
- 17) The driver must support PWM (Pulse Width Modulation) dimming or 0-10V dimming or DALI (Digital Addressable Lighting Interface) or DALI 2 dimming.
- 18) LED driver should have built in over voltage and current protection, over temperature and short circuit protection.

- 19) The LED Driver shall comply with the requirements of SANS/IEC 61000-3-2, SANS/IEC 61000-3-3, SANS/IEC 61000-4-5, SANS/IEC 61347-1, SANS/IEC 61347-2-13, SANS/IEC 61547 and SANS/IEC 62384 or equivalent.
- 20) LED module protector: The optical LED unit should be completely sealed with a smooth, clear tempered glass protector, impact resistant, non-degrading, ultraviolet resistant material to IP66 tightness to maintain its photometric performance over the rated life.
- 21) Impact resistance: $\geq$ IK 7
- 22) Plastic trays, brackets and retaining clips will not be accepted.
- 23) Small components (such as toggle clips, bolts, screws, nuts, washers) shall be manufactured of stainless steel (grade 304 or better).
- 24) Fixing devices, junctions, lips and the like shall be designed to shed water. Pockets and ledges in which condensation may accumulate shall be avoided.
- 25) Each light shall be distinctly and durably marked with black writing on a white background using 40mm high lettering on the luminaire such that it is clearly visible from the ground, with the following information.
 - Rated wattage of the luminaire and lamp type e.g. 65W LED
 - Luminaires without the specified markings shall be rejected.

The following reports must be submitted with the tender:

- 26) Photometric Test Reports (certified copy) of the LED lights offered. The test reports must be from a SANS/ IEC or any national / international accredited testing facility.
- 27) LM 80 Test report (certified copy) of the LED. The test report must be from a SANS/ IEC or any national / international accredited testing facility. The documents should indicate the time it takes for the LED to reach L90, L80, L70 and L50 and the end of rated lifetime L₇₀.
- 28) The tenderer shall also indicate the time it takes for a LED to reach L90, L80, L70 and L50, which is the time it takes for the LED to reach 90%, 80%, 70% and 50% of the initial light output, and the tenderer shall also indicate the end of rated lifetime L₇₀ (output level, it would be considered

to no longer be delivering an acceptable quantity of light). Detail must be submitted in Annexure A, Schedule B.

- 29) LM 79 test report (certified copy) The test report must be from a SANS/ IEC or any national / international accredited testing facility.

The report must also include the following LED light performance criteria:

- Rated input power: The amount of energy used by a luminaire expressed in watt.
- Rated luminous flux: This corresponds to the light emitted by the luminaire and is expressed in lumens.
- LED luminaire efficacy: A measure of the initial luminous flux of a luminaire divided by its initial input power, expressed in lumens per watt.
- Photometric code: A rating for colour temperature, colour rendering and chromaticity.

- 30) ISTMT (In Situation Temperature Method Testing) Test Report (certified copy). The test report must be from a SANS/ IEC or any national / international accredited testing facility. An ISTMT test report checks that the LED chips are operating within their recommended limitations. Specifically, the ISTMT test report measures LED chip current and temperature and compares the outcome to the LM80 test report to see if the LED chips are running correctly "In Situation". The ISTMT test report therefore helps to identify that the luminaire has been designed well and that thermal management has been considered. This test report also verifies the current passing through each LED chip in the specific luminaire. This is important to compare to the LM80. If the LED chip current is higher than that of the LM80 then the LED chip will be under stress and will not last the expected lifetime.

- 31) Design detail shall be submitted in Annexure A, Schedule B.

3.3.8. CHARGE CONTROLLER REQUIREMENTS:

- 1) Rated lifetime: 10 years.

- 2) Ingress protection rating: enclosure min IP 66 and charge controller min IP 22
- 3) Operating temperature -20°C to +65°C
- 4) The charge controller shall be capable to be installed outdoors and handle the expected environmental conditions in service.
- 5) All charge controllers for each type of luminaire and all other luminaires, shall be the same in all respects, shall be of the same model and type and must be interchangeable.
- 6) The charge controller shall regulate the flow of current from the solar panel to the battery during daytime and from the battery to the luminaire at night-time. It shall prevent the battery from overcharging and deep discharging thus increasing system efficiency and expected lifespan.
- 7) The charge controller shall act as a daylight switch to switch the luminaires on at dusk and off at dawn.
- 8) The charge controller must have float and boost charge functions. It must be intelligent enough to optimize the charge to the battery in accordance with the battery manufacturer's recommendations.
- 9) The charge controller must be able to receive power from the panel and supply connected loads when the battery has sufficient power stored in it. When the battery is overly discharged, the system must allow for recovery charge before loads can be connected.
- 10) The continuous output (load) current rating of the charge controller shall be greater than the maximum load current drawn.
- 11) The charge control system shall employ, but not limited to, the following features:
 - Maximum power point tracking technology (MPPT)
 - Voltage and current regulation
 - Intelligent battery charging.
 - Programmable charging technology
 - Current compensated load disconnection
 - Automatic load reconnection
 - Temperature compensation
 - Overcharge protection

- Deep discharge protection
- Reverse polarity protection of load, module and battery
- Maintenance free - automatic electronic fuse
- Short circuit protection of load and module
- Open circuit protection without battery
- Reverse current protection at night
- Over-temperature and overload protection
- Battery overvoltage shutdown
- Integrated self-test

- 12) The charge controller input from the PV panel shall be capable of withstanding at least 25V for a 12V system.
- 13) The solar controller shall be equipped with robust protection mechanisms against lightning-induced current and voltage transients. The implementation shall include the integration of a suitable Surge Protection Devices (SPDs) compliant with SANS 61643-1 standards. These SPDs, designed for outdoor use, must feature fast-acting voltage-arresting capabilities to safeguard the charge controller from potential damage caused by lightning-induced surges.

Furthermore, the selected SPDs must possess a suitable surge current rating and voltage protection level in accordance with the requirements of the solar controller system. Additionally, it is imperative that the SPDs come equipped with an end-of-life visual indicator, facilitating easy monitoring and timely replacement when needed, ensuring sustained and effective protection over the solar controller's operational lifespan.

The surge current rating should be able to handle the maximum potential surge current associated with lightning events in the specific area/location.

It's crucial to conduct a thorough risk assessment, taking into account factors such as the frequency of lightning strikes, the nature of the

installation, the type of structure, and the potential consequences of equipment damage.

- 14) Protection against PV input current:
 - a) The charge controller shall be able to accept a charging current, at an ambient temperature of 40°C, of up to 1,3 times the PV short-circuit current at STC; and
 - b) It is recommended that the charge controller be protected against PV input currents higher than the above threshold.
- 15) The charge controller shall not cause conducted or radiated electromagnetic interference (EMI) over the charge controller's load range at a distance exceeding 1 m from the charge controller.
- 16) The charge controller must have a load output connection that can be programmed to switch the luminaires off when the battery voltage drops to critical levels. This allows for the batteries to be protected from over discharge.
- 17) The charge controller must have an integrated temperature sensor that can compensate for thermal environmental changes when charging the batteries.
- 18) The charge controller must use a 3-step charging process with all three charge levels programmable for LiFePO₄ battery technology.
- 19) The solar charge controller must support non-proprietary, widely adopted and industry-recognized open standards and protocols.
- 20) Local access, monitoring and control: Personnel must be able to connect to the equipment via a mobile application while standing at the base of the streetlight.

The solar controller must have integrated Bluetooth or Wi-Fi or external Wi-Fi module to create a local wireless network to monitor each luminaire on site from ground level via a mobile application. The mobile application must support the following but not limited to abilities:

- The mobile application must support iOS, Huawei, Windows and Android platforms,
- Monitoring distance: min 15 meters,
- User authentication with username and password,

- Be able to view and adjust settings and the parameters,
 - View status of the luminaire (charging, on, off, standby),
 - Product health diagnosis,
 - Failure detection and alert reporting,
 - View historical and real time system performance data,
 - Notifications: Send push notifications for triggers and system alerts.
 - Lighting profile customization,
 - Possibility to turn it on/off or reset by a simple programming operation.
 - Manual or users guide must be included in the Operational and Maintenance Manual.
 - The mobile application shall be provided with the PV luminaire. The mobile application must be included and shall not expire, or require any licensing, user, or update fees. The service provider will be required to provide training and support during the contract period to CoT personnel.
- 21) The controller should operate at an appropriate voltage suitable for proper charging of the battery.
- 22) Standards and certifications: IEC/SANS 62509, IEC 62109-1, IEC 61000; IEC 61547; EN 55015; IEC 62493; IEC 62479; EN 300328, EN 301489-1, IEC 62093, or equivalents. Required Certificates / test reports shall be from a SANS/ IEC or any national / international accredited testing facility.
- 23) Controllers shall be delivered pre-programmed. The pre-programmed settings of the controller including instructions and procedures to configure and program the controller must be included in the Operational and Maintenance Manual. The service provider will also be required to provide training and support during the contract period to CoT personnel. Additional equipment such as software and cabling to program the controller, if required, shall also be included.
- 24) Design detail shall be submitted in Annexure A, Schedule B.

3.3.9. ELECTRICAL WIRING REQUIREMENTS

The wires must meet the following characteristics:

- Correct wires and cables must be used.
- The voltage rating must be equal or greater than the voltage rating of the system.
- The current carrying capacity must be equal to, or greater than, the current to be carried.
- The wires must be able to withstand the environmental conditions.
- Special attention must be paid to the voltage drop.

Choosing the right wire sizes for the Solar PV system is essential for both performance and safety reasons.

All wiring shall be flexible and suitably rated and sized in accordance with the manufacturers recommendations and specifications and with SANS 10142-1 to withstand the voltages, current and temperatures encountered in service.

Identification of the conductors shall be as follows:

- a) the polarity of the positive conductor shall be identified by red only,
- b) the polarity of the negative conductor shall be identified by black only

Junction box, cabling and pug-in connectors: An IP68 rating is a minimum requirement.

No cable joints in any wiring shall be permitted.

The wires or cables used shall reduce power losses on the system as much as possible:

The type of cables used shall be properly designed to reduce voltage drop and optimize system performance in accordance with SANS 10142-1.

Safety of the user and the system is mandatory. The system must be able to protect itself and the user against internal and external electrical faults. As an

example, should an over current be detected, the system must be able to cut supply of electrical power.

Correct connectors must be used. All connections must be properly tightened to prevent loose joints that may start arcing or cause heat buildup. For crimped lugs a proper crimping tool must be used.

All cables must be properly routed and secured so that they cannot work loose or get snagged and thus either be damaged or cause the connections to become loose. If a connection becomes loose, it may start arching and start a fire.

Wiring must not be exposed or visible and must be securely routed and protected against tampering, unauthorized removal, theft and manipulation.

Quality components must be used throughout.

Voltage ratings of the various components shall not be exceeded.

Solar cable:

Temperature rating: -40°C up to +120°C

Solar cable: Standards:

IEC 60332-1,

EN 50618

EN60811-2-1

EN60811-1-4

HD605/A1

EN50396

Solar cable characteristics: UV, oil, moisture resistant, Halogen free, Flame retardant

Solar cable life expectancy: Min 25 years

The tenderer shall ensure that all the necessary consumables are catered for in their price.

Design detail shall be submitted in Annexure A, Schedule B

3.3.10 ADDITIONAL SECURITY SPECIFICATIONS

a) General

Associated costs must be factored into the costs of the supply of the components.

b) Identification and Special Markings:

The following minimum identification information shall be permanently fixed/engraved/stencilled onto the surface in a suitable area of the; (1) Energy storage enclosure, (2) battery, (3) PV panel, (4) LED light fitting, (5) solar controller

1. EED 08 - 2024.25.
2. Property of the City of Tshwane.
3. Serial number
4. Optional: any additional markings / codes that can be traced back.

The engraving / labelling must be clear and resilient to maintain the legibility of identification information over the components' lifespan.

The engraving or labelling must be tamper-resistant, robust, and permanently affixed, preventing any removal or alteration. This ensures the enduring integrity of the identification details, facilitating reliable traceability, ownership tracking,

c) Battery Casing- Colour

Furthermore, the battery enclosure/casing (excluding the storage enclosure) must be coloured green for easy identification. The specific green colour should match the following specifications:

Pantone® 362 C

CMYK: C70% M0% Y100% K9%

RGB: R77 G163 B47

HEX: #49a942

d) Requirements for Microdots

Microdots shall be applied to each component of the PV streetlight that consist of:

1. Solar panel
2. Solar controller
3. Battery

Microdot composition:

Microdots must be manufactured from Nickel.

Text content of microdots

Text size and structure:

Microdot Size – 500 microns (0,55mm) as a minimum requirement.

All the text on every microdot shall be legible with equipment that magnifies the text a minimum of 60 times.

Characters on the microdot shall be consecutive and not separated by spaces. The microdot identifier shall appear at least once on every microdot. If the text on the microdot is repeated, every occurrence shall be separated by an asterisk (*) from the next occurrence.

Text on the microdot:

The microdot text shall be a PIN as explained as follows:

The PIN shall contain a maximum of 16 alphanumeric characters, of which the letters shall be Roman capitals excluding I, O and Q (except in the case of the two-character country code) and the numerals shall be Arabic 0 to 9.

The microdot PIN coding Information shall be defined as follows:

Coding PIN number: MMM-YY-XXX-XXXXX-XXX

- Manufacturer of the component: MMM (first three digits of the name of the manufacturer)
- Year of manufacture: YY (20XX)
- City of Tshwane: XXX (COT)
- Contract Reference: XXXXX (first digit = E for electricity department, next two digits = tender reference number, last two digits = Year of tender(20XX))
- Manufacturer of the microdot: XXX (last three digits - name of the manufacturer)

Authenticity

The microdot supplier may add covert features to the microdot. Such covert features shall permit the microdot supplier to prove that he/she is the supplier of the microdot. The features may be proprietary.

Adhesive/coating material

The adhesive/coating material shall allow for easy detection by incorporating a trace element that enables its presence to be detected using an ultraviolet light source with a wavelength of 365 nm.

The adhesive/coating material shall be Acrylic (Not water or Nitrocellulose based) and shall not affect the integrity of the base material onto which the microdots are applied. Adhesive/coating system must be a tested and approved under SANS 534 specifications and requirements. Test certificate from a accredited laboratory shall be submitted on request from the City.

Information system

All information regarding the manufacture, the supply and the application of microdots shall be recorded in the information system of the microdot supplier. The information shall be provided to law enforcement agencies or the City on request without charge.

Surface preparation

The surfaces to which the microdots are to be applied shall allow the adhesive to adhere. If required, the surfaces shall be prepared and cleaned, and especially all dust, wax and oil shall be removed.

Application methodology:

Microdots shall be applied to the positions mentioned below by any method that ensures an even spread of microdots to the specified areas.

Compulsory positions of application:

At least 2 000 microdots shall be applied to overt and covert locations on each component.

Prohibited areas of application:

Microdots shall not be applied in positions that:

- a) negatively affect the warranty of the components, or
- b) negatively affect the safety of the components, or
- c) negatively affect the operation of the components

Certificate of application of microdots:

The bidder shall provide a certificate of application of microdots from the microdot installer. Such certificate shall certify that microdots have been applied to the components.

The certificate shall contain

- a) the unique certificate numbers.
- b) the date of application.
- c) the serial and model number of the component.
- d) the manufacturers details of the components such as manufacturers name

- e) the microdot identifier; and
- f) the name of the microdot installer.

The bidder shall keep a secure database of the above information of all uniquely marked equipment supplied to City of Tshwane. A copy of the database shall be provided to CoT at the end of the contract.

Warranty

The microdots must remain on the components in a readable condition for the life expectancy of each component after application and under the expected conditions of use. At least 50 % of the microdots applied will be present and readable for the life expectancy of each component. A warranty in terms thereof shall be submitted with the tender document.

Reader:

The following readers are required:

1) USB Digital Microscope:

- Minimum - USB Digital Microscope (300X/5MP) with Windows based computer connectivity.
- Software/drivers for the USB microscope must be included.
- Bidder is required to provide 2 x USB microscopes

2) Handheld Magnifying Glass

Minimum Requirements:

- Magnification: 10x or higher
- Lens Diameter: 50mm or larger
- Lens Material: Optical glass or high-quality acrylic
- Lighting: Built-in LED illumination
- Handle: Ergonomic design for comfortable handling
- Bidder is required to provide 10 handheld magnifying glasses

Costs for the supply of the microscopes and handheld magnifying glasses must be indicated in the Price Schedule and will be once off.

e) Early Tamper Detection Alarm System

An early tamper detection alarm system with automated alarm alerts and notifications is required to monitor the PV panel and enclosure containing the batteries and solar controller.

Provision must be made to incorporate the following for each PV streetlight:

1. Early tamper detection alarm system to monitor the PV panel and enclosure.
2. Upon detection of tampering or unauthorized removal of the PV panel and upon detection of tampering or unauthorized opening and removal of the enclosure, the system shall trigger an automated alarm signal and notifications.
3. The system must automatically transmit the alarm signal and notifications to a mobile app and web-based interface.
4. The alarm system and communications must support non-proprietary and open standards and protocols for future integration into City of Tshwane systems and software for real-time control and monitoring including receiving the alarm signal.

Specification for Early Tamper Detection System with Automated Alarm Notification for Solar Streetlights

Components Monitoring:

Solar Panel Monitoring:

- Detect unauthorized removal or tampering of the solar panel
- Implement vibration or movement sensors to detect physical disturbances of the solar panel
- Implement Geo-fencing monitoring capability
- Define a geofence perimeter around the PV panel's original location
- Trigger an alert if the unit moves beyond the pre-defined geofence distance

- This can be achieved by integrating GPS technology with the early tamper detection alarm system. The Geo-fencing should operate as follows:

GPS Module Integration:

- A small, low-power GPS module must be integrated directly into the solar panel assembly or mounting frame. This module must continuously monitor the panel's location.

Tamper Protection:

- The GPS module and its communication system must be securely integrated into the panel or mounting system to prevent easy removal or tampering.

Geo-fence Definition:

- During installation, the exact location of the solar panel must be recorded.
- A virtual perimeter (geo-fence) must be set around this location, within a 7m radius.

Monitoring:

- The GPS module must regularly check the panel's location against the defined geo-fence.

Alarm Triggering:

- If the GPS module detects movement outside the defined geo-fence, it would send an alert to the main alarm system in the enclosure. This must indicate theft or unauthorized removal of the panel.
- The main system must then trigger the alarm and send notifications through its cellular connection.

Short-Range Wireless Communication:

- The GPS module must use a short-range wireless open standard protocol to communicate with the main alarm system in the enclosure.
- This would allow for low-power, short-distance communication between the panel and the alarm system in the enclosure.

Data Relay:

- The main alarm system in the enclosure must receive location data from the solar panel's GPS module.
- It must then use its 3G/4G/LTE module to relay this information along with other alarm data and notifications to the monitoring systems (mobile app, web interface, etc.).

Power Considerations:

- The GPS module and short-range transmitter must be powered by the main PV system but must incorporate a small, separate battery as a fallback power supply.
- This setup must be extremely low powered to avoid draining resources from the main PV system.

Periodic Check-ins:

- To conserve power, the GPS module must be set to check its location periodically rather than continuously.
- The frequency of these checks must be adjustable based on risk assessment and power availability.

Software Interface:

- The mobile app and web interface must include geo-fence management features.
- This must include setting up the geo-fence, adjusting its parameters, and viewing the panel's location.

Enclosure Monitoring:

- Implement sensors to detect unauthorized opening of the enclosure
- Implement vibration or movement sensors to detect physical disturbances of the enclosure

Alarm Notification System:

- Generate automated notifications for detected tampering events
- Support multiple notification methods (e.g., SMS, email, push notifications)
- Allow authorized users to receive real-time alarm alerts and notifications
- Provide detailed information about the nature and location of the tampering event

Required Software Components:

- The alarm system must have a web-based interface accessible through a web browser to remotely interact with the system.
- A mobile application must be provided for both Ios, Huawei, Windows and Android platforms.
- Ability to add and handle a large number of additional alarm systems units
- Ensure low-latency alert generation and notifications
- Support future expansion of the system
- Support non-propriety and widely adopted and industry-recognized open standards and protocols to facilitate interoperability and future integration with CoT infrastructure and software systems.

Functionality:

The mobile app and web-base interface must support the following but not limited to features:

- User authentication with username and password,
- Support a user-friendly interface
- Enable local and remote viewing, monitoring and control of the system
- View, control and adjust relevant settings or parameters,
- View real time status of the system
- Monitor and report on system power status
- Product health diagnosis,
- Failure detection with alerts,
- Notifications: Receive push notifications for triggers and system alerts.
- View and manage alerts
- Monitor and report on network connection quality and status
- Ability to arm/disarm the system.
- Ability to enable/disable the siren.
- Retrieve historical and event logs,
- Possibility to turn it on/off or reset by a simple programming operation.

- Location Information: Display location information, such as GPS coordinates, on a map to provide context and aid in remote management and troubleshooting.
- Perform administrative and troubleshooting tasks.

Free and Unrestricted Access:

- Both the web-based interface and the mobile application must be included with the device at no additional cost.
- The City shall not be required to pay any access fees, licensing fees, user fees, or update fees to utilize these software components.
- The software should be freely accessible and usable without any restrictions or additional charges.
- These services and software shall also be available after the contract period ended without any restrictions or additional charges.

Communications:

- Incorporate a 3G/4G/LTE communications module with SIM card support. Supply of SIM cards are not required in this contract.
- Ensure compatibility with major cellular network providers
- Enable two-way communication over cellular networks
- Support TCP/IP functionality for data transmission and reception

Alarm Alerts and System Control:

- Enable reception of alarm alerts and notifications through the cellular module
- Allow remote monitoring, viewing, and control of the alarm system via cellular communication
- Implement a robust command and control protocol for remote system management

Security and Encryption:

- Implement secure communication protocols
- Ensure end-to-end encryption for all data transmissions
- Implement authentication mechanisms for all remote access attempts

System Architecture and Interoperability:

- Design a non-proprietary system architecture
- Support open standards and protocols for interoperability
- Implement standardized APIs for integration with other systems

Network Resilience:

- Provide store-and-forward capabilities for periods of network unavailability

Data Management:

- Implement efficient data compression techniques to minimize cellular data usage
- Provide configurable data reporting intervals and event-triggered transmissions
- Support over-the-air (OTA) updates for firmware and configuration changes

Power Supply:

- The alarm system must be installed inside the enclosure
- Power for the system should be sourced from the PV luminaire system
- The PV system must accommodate the power requirements of the alarm system and the alarm system shall not affect the requirements and operation of the PV luminaire.
- Optimize power consumption for long-term operation

Tamper Protection:

- The alarm system components, including sensors, wiring, and enclosures, shall be tamper-resistant and protected against theft, unauthorized access or manipulation. This involves implementing measures to conceal and protect the system's wiring infrastructure, making it resistant to tampering or interference. This precautionary step is essential to maintain the integrity and effectiveness of the security system, minimizing the risk of potential breaches or disruptions.

Geographic Location:

The alarm system must integrate GPS (Global Positioning System) functionality to provide geographic information and coordinate data. This can be achieved in the following ways:

GPS Module Integration:

- Each alarm unit can be equipped with a GPS module or receiver.
- The GPS module can determine the precise geographic coordinates (latitude, longitude, and altitude) of the transmitter's location.
- These coordinates can be embedded within the alarm signal transmitted to the receiving station, if required.

Firmware Programming:

- During the installation and commissioning process, the geographic coordinates of the PV streetlight location can be manually programmed into the firmware or memory of the alarm.
- When an alarm signal is transmitted, the pre-programmed coordinates can be included in the data packet along with the alarm information, if required.

Environmental Considerations:

- The alarm system including all components must withstand the environmental conditions at the installation site, such as rain, temperature, humidity, and other potential exposure to weather elements.

Maintenance and Serviceability:

- The alarm system shall include provisions for easy maintenance, such as accessible components for testing, troubleshooting, and replacement.
- The system shall include diagnostic features or indicators to assist in identifying and resolving issues.
- Provide remote diagnostics capabilities
- Generate periodic system health reports
- Support over-the-air (OTA) updates for firmware and software

Power Interruption Contingency Requirement:

- In the event of a power interruption, the alarm must be equipped with robust contingency measures to ensure data integrity and operational continuity. The firmware should be designed to initiate an automatic system restart upon power restoration, guaranteeing a seamless transition back to normal operations while maintaining the integrity of stored data. This contingency feature aims to minimize downtime and uphold the system's reliability during power-related disruptions.

Data Logging:

- The alarm system must implement a data logging feature to store data related to security events, enabling analysis, and trend identification for future planning.

Audible Alarm:

- The system shall include an audible alarm component that could be enabled or disabled through the mobile app or web interface.
- The alarm component must produce a siren when an alarm condition is triggered.
- The audible alarm shall automatically deactivate after a configurable duration, with a default setting of 5 minutes of continuous operation.
- The system must provide the ability to adjust the alarm duration within a minimum range of 1 to 10 minutes.
- Volume control functionality shall be included, allowing authorized personnel to adjust the alarm's loudness.
- The audible alarm should be designed as an effective deterrent against unauthorized tampering with the solar streetlight system.
- Alarm volume (typically 80-110 dB at 1 meter) shall be sufficient to alert personnel within close proximity under typical ambient noise conditions.
- The alarm system must comply with relevant local and national regulations, codes, and standards related to electrical safety, environmental protection, telecommunications, and radio frequency communication.

Documentation and Training:

- The bidder must also provide comprehensive system documentation including but not limited to, user manual, wiring diagrams, technical specifications and data sheets of the system and components, instructions and procedures relating to the installation, configuration, operation, testing and maintenance of the alarm system and must be included in Operational and Maintenance Manual. The documentation must be complete in all respects to enable CoT personnel to install, operate and maintain the system. See section 3.6 for the Operational and Maintenance Manual requirements.
- The bidder will also be required to provide training and support during the contract period to CoT personnel relating to the installation, configuration, operation, testing and maintenance of the alarm system. See section 3.4 for Support and Training requirements.

Warranty and Support

- The bidder shall also provide a warranty for the alarm system and hardware components.

Future integration of the early tamper detection alarm system with CoT infrastructure and software systems:

The alarm system and communications must support non-proprietary and widely adopted and industry-recognized open standards and protocols to facilitate interoperability and future integration with CoT infrastructure and software systems.

To facilitate the remote access, monitoring, and control capabilities and future integration with CoT infrastructure and software systems the bidder should provide the following:

Comprehensive documentation: Detailed documentation covering the following aspects:

- a. API documentation: Detailed information on the open APIs supported by the alarm system including functionalities, data formats, and integration guidelines.
- b. Data protocol specifications: Specifications and documentation for the standard data protocols supported for communication and data exchange.
- c. Integration guides: Step-by-step guides and examples for integrating the system with third-party monitoring, analytics, and control software platforms.

Software development kit (SDK) or libraries: The manufacturer may provide an SDK or libraries (e.g., API libraries, code samples) to facilitate the development of custom applications or integration with existing software platforms.

Manufacturer/Vendor Support: The manufacturer shall provide ongoing technical support, including assistance with integration, troubleshooting, and maintenance, to ensure successful and sustainable integration with future infrastructure.

Periodic firmware updates: The manufacturer should provide periodic firmware updates to address bug fixes, security vulnerabilities, and feature enhancements, ensuring remote access capabilities remain up-to-date and secure.

Security guidelines: Comprehensive security guidelines and best practices for secure remote access, data encryption, authentication mechanisms, and cyber threat mitigation should be provided.

3.4. SUPPORT AND TRAINING

The Service Provider shall as part of Maintenance and Support, ensure that a minimum of 20 nominated personnel from the City of Tshwane's receive the necessary training.

Continued Professional Development (CPD) Validation:

- Training courses must be CPD validated and verified by the Engineering Council of South Africa (ECSA).
- Participants must receive CPD points upon completing these courses, claimable through their professional body membership.

The training provider must provide the following that must be submitted by the bidder on request from the City:

- Detailed course contents which include training outcomes, types and process of assessment.
- Proof that the training provider is accredited by the relevant SETA.
- Letter of good standing (Department of Labour).
- Certificate of facilitators, assessors and moderators.

After successful completion of the training program, Certificate/s of Competence must be issued by the training provider.

Training Needs:

The required training must equip the individuals with the necessary knowledge and skills to install, safely operate and upkeep the PV systems.

The training program must consist of the following focus areas:

1. Photovoltaic systems introduction
2. Photovoltaic systems installation
3. Photovoltaic systems operations and maintenance

The costs for the above training program must be included in the Pricing Schedule.

Expected Outcomes of the training program:

- Learn from experienced professionals in the industry.
- Get trained by professionals.

1. Photovoltaic systems Introduction:

- Fundamental understanding of solar photovoltaic (PV) technology, including the principles of solar energy conversion and the components of a PV system.
- Knowledge about various types of solar panels, batteries, solar controllers, inverters etc and balance of system components.
- Awareness of the environmental and economic benefits of solar PV technology.

2. Photovoltaic systems Installation:

- Develop the skills and knowledge required for the safe and efficient installation of the solar PV systems.
- Learn step by step process of a solar PV installation.
- Competency in conducting site assessments, considering factors like shading, orientation, and tilt.
- Understanding of electrical connections, mounting structures, and compliance with local regulations for PV installations.
- Gain an understanding of the typical tests to perform when commissioning a solar PV system.
- Understand typical pitfalls and how they can be avoided.

3. Photovoltaic systems Operations and Maintenance:

- Best practices for routine inspection, monitoring, and maintenance of solar PV systems to ensure optimal performance and longevity.
- Troubleshooting skills to identify and address common issues, and overall system health.
- Learn about schedules and methodologies in solar PV operations and maintenance
- Increase efficiency and energy delivery of solar PV systems (kWh/kW)
- Optimize balance between cost of scheduled maintenance, yield and cash flow
- Know-how and confidence for PV system/plant owners
- Guaranteed return on investment of an effectively optimised solar PV system.

- Knowledge of safety protocols and compliance with industry standards for maintenance activities.

Overall Learning Objectives:

- Equip participants with the knowledge and skills necessary to contribute effectively to the planning, implementation, and maintenance of PV systems.
- A comprehensive understanding of the lifecycle of a PV project, from feasibility assessment to installation and ongoing operations.
- Empower participants to make informed decisions regarding the selection, design, and management of solar PV systems in various settings.
- Position participants for roles in the solar energy industry, including installation technicians, project managers, and operations and maintenance professionals.

It is essential to acknowledge that the outlined training courses and associated outcomes above only serve as fundamental guidelines.

Required Documents:

Prospective bidders are required to submit a detailed document outlining their proposed training program on request from the City. This submission should include the list of the training course/s, accompanied by concise descriptions of the course/s, covering topics to be addressed. Additionally, bidders are expected to specify the Continuing Professional Development (CPD) points allocated for the course/s, the anticipated duration of the training, the requisite competency level for participants, and the expected outcomes upon successful completion. To ensure transparency and facilitate evaluation, bidders must also include a clear breakdown of the costs associated with the training program. This documentation will enable the City of Tshwane to assess the suitability, relevance, and cost-effectiveness of the proposed training, ensuring alignment with the specified training requirements and objectives.

The document must be in printed or typed form, using black ink, and on A4-sized paper. The bidders are permitted to include additional brochures in A4 size to supplement their proposal, it is important to emphasize that these additional materials should not replace the document required.

Customized Training Needs:

Additional training must be provided to a minimum of 40 personnel designated by the City to cover the specified needs outlined in the specifications such as:

- Installation, setup, configuration, operation, testing, maintenance, monitoring of the PV luminaire/s and all associated equipment.
- Configuration and programming of the controller.
- Local monitoring of the luminaire and mobile application.
- Operation of the alarm system via the mobile application and web-interface.
- Training on the streetlight simulation software The training should cover all aspects of the software, including but not limited to, creating projects, importing photometric data, configuring simulation parameters, running simulations, and generating reports.

Software Licensing:

The bidder shall provide free versions of a suitable streetlight simulation software without any licensing fees or restrictions. The software should be compatible with the bidder's design and photometric files and should be capable of being installed on an unlimited number of Windows-based machines within the City's network. The bidder shall provide the necessary installation files, documentation, and any other required resources to ensure seamless deployment and usage of the software across the City's infrastructure.

- The bidder shall:
 - Develop and deliver a comprehensive 4 to 5-day training course on the maintenance, installation, setup, and configuration of their PV streetlight system and all associated equipment.
 - Provide detailed training manuals and supporting literature for the course.

- Facilitate the training at a location designated by the City.
- Supply all necessary training materials and resources for the course.
- Submit a functional sample of a PV streetlight including all accessories for hands-on training exercises.
- Ensure the course includes both theoretical instruction and practical demonstrations.
- The training program shall equip participants with the knowledge and skills required to effectively install, set up, configure, operate and maintain the bidder's PV streetlight system including the alarm system and all other accessories.

The bidder shall provide comprehensive support services throughout the contract period. As part of these services, if required, the bidder must offer support related to:

- Installation of the goods, including guidance and assistance for proper installation, setup and configuration.
- Usage of the goods, addressing inquiries and issues concerning the operation, functionality, and effective utilization of the delivered products or services.
- Addressing any specific needs or requirements outlined in the contract.
- This support shall be available for the duration of the contract period to ensure seamless implementation, optimal performance, and adherence to the specified requirements.
- The bidder shall provide information about their support services, including dedicated support personnel, procedures, contact information and any other relevant details, as part of their tender submission.
- All associated costs will be for the bidders' account.

3.5. MARKINGS AND PACKAGING

Each luminaire and all components shall be individually packed in a sturdy and suitable container or box in order to prevent damage during handling, transportation and storage. The container or box shall be clearly marked with the item number and

appropriate description of the luminaire contained therein, the tender reference number and bidder's information.

Luminaires delivered without the specified packaging and markings shall be rejected.

3.6. OPERATIONAL AND MAINTENANCE MANUAL

A manual containing detailed descriptions, procedures and instructions shall be provided for each streetlight to assist the user personnel with the installation and advanced knowledge of the equipment for short, medium and long-term maintenance and operations of the streetlight and associated equipment. It shall include, but not limited to, the following:

- 1) Storage and handling instructions and requirements including the short- and long-term storage of the batteries.
- 2) Installation guide.
- 3) Safety, general advice and precautionary measures. Some controllers must be connected in a particular sequence.
- 4) Trouble-shooting guide and procedures.
- 5) Operating guide.
- 6) Maintenance manual with procedures and schedule including maintenance check list and items to be serviced and time intervals.
- 7) Component testing and replacement instructions and procedures.
- 8) Wiring diagram/s with all inter-connected cabling.
- 9) Technical details (data sheets) of all electrical equipment and components installed.
- 10) Detailed drawings of the complete luminaire.
- 11) Pre-Programmed charge controller settings.
- 12) Configuration and programming of the controller.
- 13) Monitoring of the PV luminaires and alarm system via the software applications.
- 14) A parts and spares list of every item of equipment together with a description of the item, the name, address and telephone number of the original supplier or wholesaler of the equipment. Brochures may

be added as additional information but shall not replace the data required. Any spare parts shall be subject to the same specification, tests and conditions as similar material or parts supplied under the main contract.

The descriptions shall be complete in all respects and the manual must be prepared in such a manner that a competent and qualified technician can trace any fault, identify any defective component, replace it with the correct spare part and follow, without difficulty, the exact function of every component.

To this end, care shall be exercised to correlate the text with the circuit diagrams, to relate the diagrams one with another and to provide a simple method of diagnosis and test to be used wherever breakdowns occur. The manual shall also include block diagrams giving the layouts of equipment as well as a description of the function and operation of every unit in the system.

Fifty (50) copies of the manuals shall be neatly prepared, in typewritten and/or printed format, indexed, with appropriate dividers between each section to facilitate ready reference. All documentation shall be presented in the English language.

Manuals shall be bound in hard cover lever-arch files with plastic coatings. The files shall be clearly labelled on the outer front cover and on the edge with the following information:

- The contractor's name (logo optional)
- The tender reference numbers
- The title "Operation and Maintenance Manuals"
- The month and year during which the manuals were handed over

Pamphlets and bound leaflets/booklets from suppliers shall be placed in plastic sachets, especially if they are of non-standard size.

Large format drawings shall be folded and placed in plastic sachets such that they can be easily removed.

The manuals shall be delivered within fourteen (14) workdays after the tender was awarded.

3.7. WARRANTEE

All components of each streetlight shall be provided with a warrantee from the date of the received goods. Details to be submitted in Schedule B, Annexure A.

Warranty certificates must be submitted with tender.

4 DELIVERABLES

The acceptable delivery period of goods shall be a maximum of thirty (30) days after issuing of an official purchase order.

The bidder shall fully commit to the supply, delivery and offloading of the item/s awarded for the full duration of the contract. Failure to deliver within the stipulated delivery period, Clause 22 of the General Condition of Contract will apply.

5 STAGES OF EVALUATION

Stage 1: Administrative Compliance.

Stage 2: Mandatory Requirements.

Stage 3: Product Demonstration

Stage 4: Preferential Point System

5.1. STAGE 1: ADMINISTRATIVE COMPLIANCE

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

Compulsory Returnable Documentation (Submission of these are compulsory)	Submitted (YES or NO)	Checklist (Guide for Bidder and the Bid Evaluation Committee)
a) To enable The City to verify the bidder's tax compliance status, the bidder must provide; • A copy of their Tax Clearance Certificate (TCS). or • Indicate their tax compliance status PIN.		TCS must be in the same business name as the bidding company. TCS must be valid. Tax status must be compliant before the award.
b) A copy of their Central Supplier Database (CSD) registration; or indicate their Master Registration Number / CSD Number;		CSD must be valid. Tax status must be compliant before the award.
c) Confirmation that the bidding company's rates and taxes are up to date: Original or copy of Municipal Account Statement of the Bidder (bidding company) not older than 3 months and account must not be in arrears for more than ninety (90) days; or ,signed lease agreement or In case of bidders located in informal settlement, rural areas or areas where they are not required to pay Rates and Taxes a letter from the local councillor confirming they are operating in that area		Was a Municipal Account Statement or landlord letter provided for the bidding company? The name and / or addresses of the bidder's statement correspond with CIPC document, Address on CSD or Company profile? Are all payment(s) up to date (i.e. not in arrears for more than 90 days?
d) In addition to the above, confirmation that all the bidding company's owners / members / directors / major shareholders rates and taxes are up to date: • Original or copy of Municipal Account Statement of all the South African based owners / members / directors / major shareholders not older than 3 months and the account/s may not be in arrears for more than ninety (90) days; or a signed lease agreement of owners / members / directors / major shareholders or In case of bidders located in informal settlement, rural areas or areas		Was a Municipal Account Statement or landlord letter provided for the bidding company? The name and / or addresses of the bidder's statement correspond with CIPC document, Address on CSD or Company profile? Are all payment(s) up to date (i.e. not in arrears for more than 90 days?

Compulsory Returnable Documentation (Submission of these are compulsory)	Submitted (YES or NO)	Checklist (Guide for Bidder and the Bid Evaluation Committee)
where they are not required to pay Rates and Taxes a letter from the local councillor confirming they are residing in that area		
e) Duly Signed and completed MBD forms (MBD 1, 4, 5, 8 and 9) The person signing the bid documentation must be authorized to sign on behalf of the bidder. Where the signatory is not a Director / Member / Owner / Shareholder of the company, an official letter of authorization or delegation of authority should be submitted with the bid document. NB: Bidders must ensure that the directors, trustees, managers, principal shareholders, or stakeholders of this company, declare any interest in any other related companies or business, whether or not they are bidding for this contract. <u>See Question 3.14 of MBD 4. Failure to declare interest will result in a disqualification</u>		All documents fully completed (i.e. no blank spaces)? All documents fully signed? Signature authorized (any director / member / trustee as indicated on the CIPC document, alternatively a delegation of authority would be required? Documents completed in black ink (i.e. no "Tippex" corrections, no pencil, no other colour ink, or non-submission of the above, will be considered)?
f) Financial Statements for the most recent three (3) years or financial statements from date of existence for companies less than three years old. NB: The bidder must submit signed audited annual financial statements for the most recent three years, or if established for a shorter period, submit audited annual financial statements from date of establishment. If the bidder is not required by law to prepare signed annual financial statements for auditing purposes, then the bidder must submit proof that the bidder is not required		Applicable for tenders above R10m in conjunction with MBD 5) Are Audited financial statements provided (Audited financials must be signed by auditor)? Or proof that the bidder is not required by law to prepare audited financial statements.

Compulsory Returnable Documentation (Submission of these are compulsory)	Submitted (YES or NO)	Checklist (Guide for Bidder and the Bid Evaluation Committee)
by law to prepare audited financial statements.		
g) Joint Ventures (JV) – (Only applicable when the bidder tenders as a joint venture) Where the bidder bids as a joint venture (JV), the required or relevant documents as per (a) to (f) above must be provided for all JV parties. In addition to the above the bidder must submit a Joint Venture (JV) agreement signed by the relevant parties. NB: It is a condition of this bid that the successful bidder will continue with the same Joint Venture (JV) for the duration of the contract unless prior approval is obtained from the City.		If applicable. JV agreement provided? JV agreement complete and relevant? Agreement signed by all parties? All required documents as per (i.e. a to f) must be provided for all partners of the JV.
h) Bidder attended a compulsory briefing session where applicable		A compulsory briefing register must be signed by the bidder. Bidders will be disqualified should they fail to attend compulsory briefing session
i) Pricing schedule (All items must be quoted for in pricing schedule and if not, all items are quoted the bidder will be disqualified). Unless the tender is awarded per item or per section where the bidder only quoted the items or sections, they are interested in.		Incomplete pricing schedule results in totals being incomparable. Bidder must be disqualified. Bidder will be disqualified should they make corrections on the price schedule without attaching a signature thereto. Bidder will be disqualified should they use tippex/

Compulsory Returnable Documentation (Submission of these are compulsory)	Submitted (YES or NO)	Checklist (Guide for Bidder and the Bid Evaluation Committee)
		correction ink, on the price schedule.

5.2 STAGE 2: MANDATORY REQUIREMENTS

The following must be submitted with the tender:

1) **Company Experience:**

Bidders must showcase their relevant experience in both the design and supply of photovoltaic (PV) streetlights. The provided evidence should clearly outline the number of projects undertaken and the quantity of PV streetlights designed and supplied. The following requirements apply:

- a) **Completion of Similar Contracts:** Bidders must have successfully completed minimum of five (5) projects /contracts of similar scope to this project within the past ten (10) years. This includes:
 - **Scope Equivalence:** The projects/contracts must be similar in scope to the current project
 - **PV Streetlight Similarity:** The pv luminaires designed and supplied in previous projects must be similar (functionality)to those required for this project.
- b) **The following documentation should be submitted to illustrate the bidder's experience, including:**
 - **Project Summaries:** Detailed summaries of each relevant project/contract, including the scope, value, and duration, the location, date, and the total number of PV streetlights incorporated.
 - **Scope and Value Confirmation:** Documentation confirming the scope and value of the completed projects
 - **Technical Specifications:** Detailed specifications of the PV

streetlights used in previous projects, demonstrating similarity to the current project's requirements.

- Client References: Bidders must provide contact information for clients from completed projects who can serve as references.

These references should:

- Be capable of verifying the accuracy of the information provided.
 - Provide insight into the bidder's performance in designing and supplying PV streetlights.
- Certification or Verification Letter: Bidders must include certification or verification letters from relevant authorities, clients, or oversight bodies. These letters should:
 - Confirm the bidder's successful involvement.
 - Attest to the satisfactory design and supply of the PV streetlights.
 - Be issued on official letterheads.

These requirements are essential to ensure that bidders possess the necessary expertise and experience in both designing and supplying PV streetlights, demonstrating their ability to effectively undertake similar projects.

2) Electrical Engineer / Technologists responsible for the lighting design:

CV and Qualifications:

The candidate must submit a detailed Curriculum Vitae (CV) that includes information on their educational background, professional qualifications, and relevant experience in the field of electrical engineering, particularly in public lighting design.

ECSA Proof of Registration:

The candidate must provide proof of registration with the Engineering Council of South Africa (ECSA), including a valid ECSA registration number and

certified copies of the registration certificates.

Minimum Experience Requirement:

The Electrical Engineer/Technologist must possess a minimum of 5 years of documented experience in the field of electrical engineering, with a specific focus on public lighting design. This experience should be clearly outlined in the CV.

- 3) The bidder must submit a design certificate signed by a ECSA(Engineering Council of South Africa) registered Professional Civil Engineer/ Technologists to confirm that the pole with mounting interface will be sufficient for the intended use including the design calculations, analysis and detailed drawings of the complete PV streetlight with pole, foundation and luminaire. The certificate must include details and ECSA registration number of the Professional Civil Engineer/ Technologists.

- 4) Cost of Ownership Analysis:

Bidders are mandated to submit a detailed cost of ownership analysis for each PV streetlight the bidder is tendering for, covering the number of PV streetlights per kilometre over evaluation period of 25 years.

This analysis should encompass all relevant financial considerations associated with the acquisition, operation, and maintenance of the PV streetlight system.

Procurement and Installation Costs:

Breakdown of initial procurement costs, including equipment, installation, and any associated fees including all plant and labour.

This includes the cost of the complete PV streetlight with solar panels, battery storage, LED luminaires, and any additional components excluding the

concrete pole.

Installation: Labor, equipment, materials, testing and commissioning required for the installation of the PV streetlight system.

Design and Engineering: Fees for designing the system and engineering services.

Operational Expenses:

Identification and quantification of routine maintenance costs, specifying frequency and associated expenses.

Maintenance and Repairs: Regular maintenance costs for cleaning, inspections, and any necessary repairs.

Replacement Parts: Costs associated with replacing components that wear out over time or reached end-of-life cycle, such as batteries.

Cost must include all plant and labour.

Energy Costs:

Detailed analysis of energy consumption and potential cost savings over the 25-year period.

Life Cycle Costs:

Inclusion of life cycle costs, accounting for any anticipated, upgrades, or technological advancements.

Environmental Costs:

End-of-Life Disposal: Costs associated with environmentally responsible disposal of the system components at the end of their life.

Transparent methodology for calculating the costs, considering inflation rates and other relevant factors.

The submission should be structured to provide a clear understanding of the financial implications at every stage of the PV streetlight life cycle, ensuring a comprehensive assessment of the long-term cost-effectiveness of the proposed system.

- 5) Certificates of compliance/test reports (certified copies) from a SANS/ IEC or any national / international accredited testing facility to confirm that the PV luminaire conform to the latest SANS / IEC 60598-2-3, SANS 475 standards.
- 6) Certificates of compliance/test reports (certified copies) from a SANS/ IEC or any national / international accredited testing facility to confirm that the solar panels offered conform to the following latest standards SANS/IEC 61215, IEC 61646, IEC 61730-1/2.
- 7) Photometric test report (certified copy) for the LED light offered from a SANS/ IEC or any national / international accredited testing facility.
- 8) Compliant Lighting Simulation report and photometric data of the streetlight must be submitted with the tender. The simulations are to be done with freely available and reputable simulation software. A hard copy of the simulation report and photometric data must be attached with the tender.
The reports must be signed off by the Electrical Engineer / Technologists responsible for the lighting design.
When submitting the design the following should also be submitted with the tender on a flash disc/memory stick: (1)The original design file together with the “pdf” format and (2) photometric file in “ies or ldt” format, (3) The bidder shall provide a free version of the simulation software without any licensing fees or restrictions. The software should be compatible with the bidder’s design and photometric files and should be capable of being installed on a Windows-based machines within the City’s network. The bidder shall include the necessary installation instructions and files, documentation, and any other required resources to ensure seamless deployment and usage of the software.
- 9) Bidders are required to complete the prices in the Pricing Schedule with black ink for the items they are bidding for. Failure to complete the price for a particular item shall disqualify the tenderer for that particular item.
- 10) Bidders are required to complete the form Annexure A1 Returnable schedules A and B. Schedule B of this must be completed in full with black ink and the

form must be signed underneath. Bidders must not refer to brochures or any attached documents. Failure to comply will result in the bidder being disqualified.

NOTE: The City of Tshwane reserves the right to appoint work groups members to conduct testing and technical assessment of the goods to be supplied to the City of Tshwane.

Failure to comply with any of the requirements above, will result in the bid being disqualified.

5.3 STAGE 3: PRODUCT DEMONSTRATION

- a) Only tenderers that successfully passed stage 1 and stage 2 of the evaluation process will progress to the product demonstration stage.
- b) Bidders will be required to provide a product demonstration on request by City of Tshwane.
- c) Bidders must demonstrate a fully functional luminaire that:
 - Includes all accessories
 - Complies with all requirements and specifications
- d) Bidders need only to demonstrate one functional sample for each type of luminaire (one single and/or one double outreach).

For bids including both single and double outreach luminaires:

 - One single outreach luminaire sample
 - One double outreach luminaire sample

For bids including only single outreach luminaires:

 - One single outreach luminaire sample

For bids including only double outreach luminaires:

 - One double outreach luminaire sample
- e) Details on the product demonstration will be made available by Supply Chain Management to the shortlisted bidders. A location will be provided within the borders of the City of Tshwane.
- f) Failure to submit product demonstration shall disqualify the tenderer.

- g) Only tenderers that successfully passed the product demonstration stage will progress to the last stage that will consist of the price evaluation.

PRODUCT DEMONSTRATION AND EVALUATION PROCESS

The product demonstration will consist of the following two (2) stages:

PRACTICAL DEMONSTRATION

TECHNICAL ASSESSMENT

The evaluation panel will consist of the Bid Evaluation Committee and representatives from the Energy and Electricity Department from the City of Tshwane.

The evaluation will be conducted in a practical setting, considering the constraints of a demonstration environment,

1. PRACTICAL DEMONSTRATION:

a) Practical Demonstration:

- The practical demonstration stage will consist of a practical demonstration of the product sample and/or explanation of the sample product features.
- Bidders are required to demonstrate and/or explain the requirements as indicated in the right column of the practical demonstration checklist.

b) Evaluation:

- The practical demonstration will be evaluated by the department and in the presence of the BEC using the practical demonstration checklist, which includes specific requirements categorized into two columns:
- Right Column: Lists the detailed requirements that the bidder must comply to.
- Left Column: Indicates whether the bidder met each requirement.

c) Compliance:

Each requirement listed in the right column of the practical demonstration checklist must be met for the sample to pass.

2. TECHNICAL ASSESSMENT:

a) Evaluation:

- After the practical demonstration, each sample will be evaluated by the department and in the presence of the BEC using the technical assessment checklists, which includes specific requirements categorized into two columns:
- Right Column: Lists the detailed requirements that the sample must meet.
- Left Column: Indicates whether the sample meets each requirement.

b) Compliance:

Each requirement listed in the right column of the technical assessment checklist must be met for the sample to pass.

3. Passing Criteria:

To successfully pass the product demonstration stage the following applies:

- b) The bidder must meet all the requirements outlined in the practical demonstration checklist and the sample must comply to all requirements outlined in the technical assessment checklists for each category.
- c) Failure to comply with the above requirements may result in the bid being rejected

Additional Notes:

The demonstration should be completed within a 3-hour timeframe.

Bidders are required to bring necessary documentation, tools and equipment for the demonstration.

Bidders should be prepared to answer questions from the evaluation panel during and after the demonstration.

Note: All product demonstration costs shall be for the bidder's account.

PRACTICAL DEMONSTRATION CHECKLIST

(Note: Bidder will be required to provide all required equipment needed for the demonstration including sim card for demonstration of the alarm system)

REQUIREMENT (The bidder is required to demonstrate or explain the following or as indicated)		Compliance	
		YES	NO
1	Explain the basic overall structure and construction (split type design) of the PV streetlight.		
2	Explain basic installation process of the streetlight and each component. Bidder must briefly explain how each component is installed and attached: ➤ Luminaire mounting mechanism with spigot ➤ PV panel(s) ➤ Enclosure ➤ LED light(s) with outreach arm(s)		
3	Explain any potential risk, safety issues and precautionary measures during the installation of the PV streetlight and/or any component.		
4	Demonstrate and explain basic operation of the PV streetlight and each component. (The bidder can perform a simple yet effective demonstration to show how the solar streetlight automatically switches on and off. They should cover the solar panel with an opaque material to simulate nighttime, causing the light to turn on. Then, by uncovering the panel, can show how the light turns off when it detects daylight.)		
5	Explain all tamper-proof measures for: ➤ PV panel(s) ➤ Enclosure ➤ LED light(s) ➤ PV luminaire mounting fixture with spigot		

6	Explain the use of unconventional/specialized tools required for installation and maintenance of: ➤ PV panel(s) ➤ Enclosure ➤ LED light(s) ➤ PV luminaire mounting fixture with spigot		
7	Explain/indicate the type of material used for the: ➤ Solar panel mounting frame ➤ Enclosure ➤ LED light(s) housing ➤ Outreach arm(s) ➤ All other mounting fixtures and brackets		
8	Briefly explain any routine care needed to keep the system functioning properly.		
9	Demonstrate locking mechanism of the enclosure/cabinet.		
10	Explain ventilation features of the enclosure/cabinet.		
11	Show manufacturing date on the battery(s). (Battery must indicate date of manufacture)		
12	Show space for commissioning date. (Space must be provided on the battery label to permit the marking of the date of commissioning of the battery).		
13	Explain short and long term storage requirements of the batteries.		
14	Show and explain basic parts of the LED light;		
14.1	LED modules: Show the LED modules.		
14.2	Lens/Diffuser: Show the optical LED cover to protect the LED's.		
14.3	Explain type of material used for the LED's cover.		
14.4	Heat Sink: Show the fins or other heat dissipation structures of the LED light.		
14.5	LED Driver: Show the electronic component that regulates power to the LEDs.		
14.6	Housing: Indicate the overall enclosure and different compartments for the LED modules and control gear. Describe its material (e.g., aluminium alloy)		

14.7	Show mounting arrangement (spigot) of the LED light.		
15	Explain and show waterproof measures and features of the LED light.		
16	Demonstrate or explain how individual LED modules can be replaced.		
17	Demonstrate or explain how the LED driver can be replaced.		
18	Show LED light fitting marked with rated wattage of the luminaire and lamp type e.g. 65W LED		
19	Explain dust resistance and self-cleaning properties of the solar panel(s).		
20	Explain cleaning requirements and recommended inspection frequency of the solar panel(s).		
21	Explain hail -proof features of the solar panel(s) and compliance with standards.		
22	Explain and show weatherproofing features of the solar panel(s) such as breathable vents to prevent condensation and drainage holes in the frame.		
23	Explain performance of the solar panel(s) in conditions such as low-light and high-temperature.		
24	Show information plate inside solar panel(s) with the following information: ➤ Name of the Manufacturer or Distinctive Logo. ➤ Model Number ➤ Serial Number ➤ Year of manufacture		
25	Show adjustable bracket with visual indicator for easy adjustment of the solar panel tilt angle.		
26	Demonstrate how to adjust orientation and tilt angle of the solar panel(s).		
27	Explain the basic steps and equipment needed to program the controller. (Actual programming of the controller is not required)		
28	Demonstrate the integrated self test functionality of the controller.		

29	Controller - Show surge protection device		
30	Controller – Show end of life visual indicator on the surge protection device		
31	Monitoring and Control of the Luminaire(s) – Bidder must demonstrate mobile app including but not limited to the following features: ➤ Monitoring distance: min 15 meters, ➤ User authentication with username and password, or pin code ➤ View and adjust settings and the parameters, ➤ View status of the luminaire (charging, on, off, standby) ➤ Product health diagnosis, ➤ Failure detection and alert reporting, ➤ View historical and real time system performance data, ➤ Possibility to turn it on/off or reset by a simple programming operation.		
32	Show the following required identification information permanently fixed/engraved/stencilled onto the surface of the; (1) Energy storage enclosure, (2) battery, (3) PV panel, (4) LED light fitting, (5) solar controller. ➤ EED 08 - 2024.25 ➤ Property of the City of Tshwane ➤ Serial number of the component		
33	Show the anti-climb spike collar and features		
34	Explain the basic installation steps of the anti-climb spike collar and show tamper-proof measures to prevent unauthorized removal or tampering.		
35	Microdot Application		
35.1	Show Application of the microdots to required components (solar pal, controller, battery)		
35.2	Show Overt and covert application of microdots to required components.		

35.3	Show Microdot PIN coding information and compliance to requirements: The microdot PIN coding Information shall be defined as follows: Coding PIN number: MMM-YY-XXX-XXXXX-XXX • Manufacturer of the component: MMM (first three digits of the name of the manufacturer) • Year of manufacture: YY (20XX) • City of Tshwane: XXX (COT) • Contract Reference: XXXXX (first digit = E for electricity department, next two digits = tender reference number, last two digits = Year of tender(20XX)) • Manufacturer of the microdot: XXX (last three digits - name of the manufacturer)		
35.4	Show Identification of the microdots with UV light.		
35.5	Show Readability of the microdots with the microscope and magnifying glass		
36	Early Tamper Detection Alarm System		
36.1	Provide a brief overview of the alarm system, functionality, and components.		
36.2	Briefly explain the steps to install the alarm system including all components.		
36.3	Demonstrate the detection of unauthorized removal or tampering with the solar panel.		
36.4	Demonstrate the detection of unauthorized opening and removal/tampering with the enclosure.		
36.5	Demonstrate the automated alarm triggering and notification process.		
36.6	Demonstrate the geo-fencing capabilities and automated alarm triggering with notifications		
36.7	Geo-fencing: Show GPS module with battery backup		

36.8	Demonstrate mobile app and web interface and features (including but not limited to): ➤ User authentication with username and password ➤ Support a user-friendly interface ➤ Enable local and remote viewing, monitoring and control of the system ➤ View, control and adjust relevant settings or parameters, ➤ View real time status of the system (armed, disarmed, off etc) ➤ Monitor and report on system power status ➤ Product health diagnosis, ➤ Failure detection with alerts, ➤ Notifications: Receive push notifications for triggers and system alerts. ➤ View and manage alerts ➤ Monitor and report on network connection quality and status ➤ Ability to arm/disarm the system. ➤ Ability to enable/disable the siren. ➤ Retrieve historical and event logs, ➤ Possibility to turn it on/off or reset by a simple programming operation. ➤ Location Information: Display location information, such as GPS coordinates, on a map to provide context and aid in remote management and troubleshooting. ➤ Perform administrative and troubleshooting tasks.		
36.9	Explain software capability to add and handle additional alarm system units.		
36.10	Demonstrate the audible alarm feature and its controllability via the mobile app and web interface.		
36.11	Demonstrate power interruption contingency requirements and automatic system restart.		
36.12	Show tamper protection measures for all system components.		

TECHNICAL ASSESSMENT CHECKLIST

Requirement		Compliant	
		YES	NO
1	Luminaire Design and Construction		
1.1	Luminaire consist of a split type design		
1.2	Luminaire consist of independent PV panel(s) secured on a frame		
1.3	Solar Panel(s) and frame mounted on the pole top		
1.4	Luminaire consist of single enclosure		
1.5	Enclosure mounted below the solar panel(s) and frame		
1.6	Each LED light functions independently with separate control gear (solar controller) and battery located in the enclosure		
1.7	LED light fitting(s) mounted on a separate outreach arm(s) below the enclosure		
2	Solar Panel Mounting System		
2.1	Solar panel(s) securely attached to the mounting frame by using tamper-resistant fasteners or torque shear bolts		
2.2	Solar panel mounting frame securely attached to the pole top spigot and tamper-proof		
2.3	Solar panel mounting frame incorporated with adjustable bracket to adjust solar panel tilt angle		
2.4	Visual indicator in degrees for easy adjustment of the solar panel tilt angle		
2.5	Solar panel adjustment angle 0 to 40 degrees		
2.6	Adjustable bracket incorporated with tamper-resistant fasteners, for tilt adjustment		
2.7	Solar panel(s) removable by using unconventional/special tool, if required		
2.8	Overall mounting mechanisms tamper-proof to prevent tampering, unauthorised removal and theft		
3	Energy Storage Cabinet and Mounting		
3.1	Mounting bracket affixed to the bottom and back of the cabinet		

3.2	Tamper-resistant fasteners or torque shear bolts used to attach bracket to the pole top spigot		
3.3	Enclosure removable, if required		
3.4	Battery enclosure vandal-proof and key locking door		
3.5	Key non-removable in the unlocked position		
3.6	Overall mounting mechanisms of the enclosure tamper-proof to prevent tampering, unauthorised removal and theft		
4	Energy Storage – Battery		
4.1	Compliance with marking – Date of manufacturing (Battery must indicate date of manufacture)		
4.2	Compliance with marking – space for commissioning date (Space must be provided on the battery to indicate commissioning date)		
5	LED Light Fixture and Installation		
5.1	LED fixture(s) properly mounted on separate outreach arm(s)		
5.2	Tamper-resistant fasteners used for both fixture and arm attachment		
5.3	LED light Fixture and arm removable		
5.4	LED light fixture compliance with housing material - corrosion resistant die-cast aluminium enclosure		
5.5	LED light fixture compliance with housing finish - natural unpainted aluminum		
5.6	LED module(s) and control gear housed in a separate enclosure		
5.7	Optical LED unit completely sealed with a smooth, clear tempered glass protector		
5.8	Driver replaceable		
5.9	LED modules replaceable		
5.10	Small components (such as toggle clips, bolts, screws, nuts, washers) stainless steel (Plastic brackets and retaining clips is not acceptable)		
5.11	LED light fitting marked with rated wattage of the luminaire and lamp type e.g. 65W LED		

6	Solar Panel		
6.1	Compliance to Information plate fixed inside solar panel module indicating the following: ➤ Name of the Manufacturer or Distinctive Logo. ➤ Model Number ➤ Serial Number ➤ Year of manufacture		
7	Pole Top Fitting		
7.1	Pole top fitting mechanism fit securely and interface over the concrete pole top		
7.2	Torque shear bolts or tamper-proof fasteners used to secure the pole top fitting to the concrete pole top		
7.3	Pole top fitting with spigot removable		
7.4	Fitting and spigot made of durable, tamper-resistant materials such as steel and corrosion resistant		
7.5	Overall mounting fixtures/mechanisms tamper-proof to prevent tampering, unauthorised removal and theft		
8	Anti-Climb Spike Collar		
8.1	The collar consist of minimum three rows of spikes (top, middle, bottom) spread around the circumference		
8.2	Each row of spikes consist of minimum 10 spikes		
8.3	Tamper-proof fasteners used to attach collar		
8.4	Spikes robust to discourage climbing attempts		
9	Wiring		
9.1	Wiring secured and properly routed so that it cannot work loose or get snagged, damaged or cause the connections to become loose		
9.2	Wiring not exposed or visible and securely routed and protected against tampering, unauthorized removal, theft and manipulation.		
10	Special Markings and Identification		
10.1	The following identification information permanently fixed/engraved/stencilled onto the surface of the; (1) Energy storage enclosure, (2) battery, (3) PV panel, (4) LED light fitting, (5) solar controller:		

	➤ EED 08 - 2024.25 ➤ Property of the City of Tshwane. ➤ Serial number		
10.2	The engraving tamper-resistant, robust, and permanently affixed, preventing any removal or alteration.		
10.3	Battery casing coloured green for easy identification		
11	Microdot Implementation		
11.1	Correct application to required components (solar panel, controller, battery)		
11.2	Adherence to microdot PIN coding information		
11.3	Microdots applied to overt and covert positions		
11.4	Microdots application visible under UV light		
11.5	Microdots readable with microscope and magnifying glass		
12	Early Tamper Detection Alarm System		
12.1	Detect unauthorized movement or removal of the solar panel(s)		
12.2	Detect if the solar panel(s) moves beyond 7m geo-fence perimeter		
12.3	Detect unauthorized opening of the enclosure		
12.4	Detect unauthorized movement or removal of the enclosure		
12.5	Incorporate a 3G/4G/LTE communications module with SIM card support		
12.6	Generate automated alert and notifications for detected events		
12.7	Send automated alerts and notifications on the mobile app and web-interface		
12.8	Geo-fencing: GPS module securely integrated into the panel(s) or mounting system to prevent removal or tampering.		
12.9	Geo-fencing: GPS module fitted with small internal battery backup		
12.10	The alarm system components, including sensors and wiring concealed, tamper-resistant and protected against unauthorized access or manipulation.		

12.11	Automatic system restart upon power restoration, guaranteeing a seamless transition back to normal operations after power interruption		
12.12	Audible alarm component that could be enabled or disabled through the mobile app or web interface		

5.4 STAGE 4 PREFERENTIAL POINT SYSTEM

SPECIFIC GOALS

The preferential point system used will be the 80/20 points system in terms of the Preferential Procurement Policy Framework Act, 2000 (Act 5 of 2000) Regulations 2022.

- 80 points for price
- 20 points for Specific goals

Specific Goals

- Bidders are required to submit supporting documents for their bids to claim the specific goal points.
- Non-compliance with specific goals will not lead to disqualification but bidders will not be allocated specific goal points. Bidders will score points out of 80 for price only and zero (0) points out of 20 for specific goals.
- Cot shall act against any bidder or person when it detects that the specific goals were claimed or obtained on a fraudulent basis.

The specific goal for this bid is outlined below. Bidders are to submit supporting documents as outlined below to be eligible for points.

Specific goals	80/20 preference point system	Proof of specific goals to be submitted
BB-BEE score of companies • Level 1 • Level 2 • Level 3 • Level 4 • Level 5 • Level 6 • Level 7 • Level 8 • Non-compliant	• 8 Points • 7 Points • 6 Points • 5 Points • 4 Points • 3 Points • 2 Points • 1 Point • 0 Points	Valid Certified copy of BBBEE certificate. Sworn Affidavit for B-BBEE qualifying small enterprise or Exempt Micro Enterprises or CIPC BBBEE certificate.
EME and/ or QSE	2 Points	Valid Sworn affidavit for B-BBEE qualifying small enterprise or Exempt Micro Enterprises or CIPC BBBEE certificate
At least 51% of Women-owned companies	2 Points	Certified copy of Identity Document/s and proof of ownership (Sworn affidavit for B-BBEE qualifying small enterprise or Exempt Micro

Specific goals	80/20 preference point system	Proof of specific goals to be submitted
		Enterprises, CIPC registration or any other proof of ownership)
At least 51% owned companies by People with disability	2 Points	Medical Certificate with doctor's details (Practice Number, Physical Address, and contact numbers) and proof of ownership (Sworn affidavit for B-BBEE qualifying small enterprise or Exempt Micro Enterprises, CIPC registration or any other proof of ownership
At least 51% owned companies by Youth	2 Point	Certified copy of Identity Document/s and proof of ownership (Sworn affidavit for B-BBEE qualifying small enterprise or Exempt Micro Enterprises, CIPC registration or any other proof of ownership
Local Economic Participation • City of Tshwane • Gauteng • National	4 Points 2 Points 1 Point	Municipal Account statement/Lease agreement.

For points to be allocated as per above the tenderers will be required to submit proof of documentation as evidence for claims made. Any tenderer that does not submit evidence as stated in the bid document to claim applicable points will be allocated zero points.

6 TYPE OF AGREEMENT REQUIRED

The General Conditions of Contract applicable to this Contract shall be the document "GOVERNMENT PROCUREMENT: GENERAL CONDITIONS OF CONTRACT" issued by the National Treasury of the Republic of South Africa, read together with the Variations and Additions to the Conditions of Contract (Special Conditions of Contract) as well as the Data provided by the City of Tshwane.

7 VALIDITY PERIOD

The validity period for the tender after closure is 90 days. CoT shall have right and power to extend any tender validity period beyond any initial validity period set and subsequent extensions. SCM shall ensure that an extension of validity is requested in writing from all bidders before the validity expiry date. Extension of validity shall be finalized while the quotations/bids are still valid

8 MARKET ANALYSIS

The City of Tshwane reserves the right to conduct market analysis. Should the city exercise this option, Where a tenderer offers a price that is deemed not to be viable to supply goods or services as required, written confirmation will be made with the tenderer if they will be able to deliver on the price, if a tenderer confirm that they cannot, The tenderer will be disqualified on the basis of being non-responsive. If they confirm that they can deliver, a tight contract to mitigate the risk of non-performance will be entered into with the service provider. Further action on failures by the supplier to deliver will be handled in terms of the contract including performance warnings and listing on the database of restricted suppliers.

The city further reserves the right to negotiate a market related price with a tenderer scoring the highest points. If the tenderer does not agree to a market-related price, the city reserves the right to negotiate a market-related price with the tenderer scoring the second highest points, if the tenderer scoring the second highest points does not agree to a market-related price, negotiate a market-related price with the tenderer scoring the third highest points. If a market-related price is not agreed, the city reserves the right to cancel the tender.

9 PRICING SCHEDULE

The Pricing Schedule has to be completed in black ink (black pen) and the tenderer is referred to the Tender Specifications in regard to the correction of errors.

The Price Schedule shall be read with all the documents which form part of this Contract.

The tenderer must enter the amounts in the price columns only.

This tender will be awarded per item.

More than one item may be awarded to a bidder.

The same item may be awarded to more than one bidder.

This is a rate only tender and estimated quantities are not contract values but for evaluation purposes only.

Actual quantities might increase or decrease depending on the need of the items required.

ITEM 1- PV Luminaire 1- Residential - 2 Lane Class B1 - Single Outreach-8,5m**PRICE SCHEDULE**

Sub-Item	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE EXCL VAT	TOTAL AMOUNT EXCL VAT
1.1	PV Luminaire 1 - Residential - 2 Lane Class B1 - Single Outreach-8,5m				
1.1.1	Solar panel	70	Each		
1.1.2	Battery	70	Each		
1.1.3	Enclosure	70	Each		
1.1.4	Charge controller	70	Each		
1.1.5	LED light	70	Each		
1.1.6	All other related accessories, outreach arm, brackets, wiring, anti-climb collar spike etc	70	Each		
1.2	Early tamper detect alarm system	70	Each		
1.3	Training	20	Per Person		
1.4	Supply of Operational & Maintenance Manuals	50	Each		
1.5	Supply of Microscopes	3	Each		
1.6	Supply of Handheld Magnifying Glasses	10	Each		
1.7	Supply of unconventional tools	30	Per Set		
1.8	Supply of Keys for Enclosure	90	Each		
SUB- TOTAL					
VAT (15%)					
TOTAL					

ITEM 2 - PV Luminaire 2- Collector Main - 2/3/4 Lane Class B1- Single Outreach-12m**PRICE SCHEDULE**

Sub-Item	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE EXCL VAT	TOTAL AMOUNT EXCL VAT
2.1	PV Luminaire 2 - Collector Main - 2/3/4 Lane Class B1- Single Outreach-12m				
2.1.1	Solar panel	70	Each		
2.1.2	Battery	70	Each		
2.1.3	Enclosure	70	Each		
2.1.4	Charge controller	70	Each		
2.1.5	LED light	70	Each		
2.1.6	All other related accessories, outreach arm, brackets, wiring, anti-climb collar spike etc	70	Each		
2.2	Early tamper detect alarm system	70	Each		
2.3	Training	20	Per Person		
2.4	Supply of Operational & Maintenance Manuals	50	Each		
2.5	Supply of Microscopes	3	Each		
2.6	Supply of Handheld Magnifying Glasses	10	Each		
2.7	Supply of unconventional tools	30	Per Set		
2.8	Supply of Keys for Enclosure	90	Each		
SUB- TOTAL					
VAT (15%)					
TOTAL					

ITEM 3 - PV Luminaire 3 – Major Arterial – 4/5/6 Lane Class A2- Single Outreach-17,5m**PRICE SCHEDULE**

Sub-Item	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE EXCL VAT	TOTAL AMOUNT EXCL VAT
3.1	PV Luminaire 3 – Major Arterial – 4/5/6 Lane Class A2- Single Outreach-17,5m				
3.1.1	Solar panel	70	Each		
3.1.2	Battery	70	Each		
3.1.3	Enclosure	70	Each		
3.1.4	Charge controller	70	Each		
3.1.5	LED light	70	Each		
3.1.6	All other related accessories, outreach arm, brackets, wiring, anti-climb collar spike etc	70	Each		
3.2	Early tamper detect alarm system	70	Each		
3.3	Training	20	Per Person		
3.4	Supply of Operational & Maintenance Manuals	50	Each		
3.5	Supply of Microscopes	3	Each		
3.6	Supply of Handheld Magnifying Glasses	10	Each		
3.7	Supply of unconventional tools	30	Per Set		
3.8	Supply of Keys for Enclosure	90	Each		
SUB- TOTAL					
VAT (15%)					
TOTAL					

ITEM 4 - PV Luminaire 4 – Major Arterial – 4/5/6 Lane Class A2- Median -17,5m**PRICE SCHEDULE**

Sub-Item	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE EXCL VAT	TOTAL AMOUNT EXCL VAT
4.1	PV Luminaire 4 – Major Arterial – 4/5/6 Lane Class A2- Median -17,5m				
4.1.1	Solar panel	140	Each		
4.1.2	Battery	140	Each		
4.1.3	Enclosure	70	Each		
4.1.4	Charge controller	140	Each		
4.1.5	LED light	140	Each		
4.1.6	All other related accessories, outreach arms, brackets, wiring, anti-climb collar spike etc	70	Each		
4.2	Early tamper detect alarm system	70	Each		
4.3	Training	20	Per Person		
4.4	Supply of Operational & Maintenance Manuals	50	Each		
4.5	Supply of Microscopes	3	Each		
4.6	Supply of Handheld Magnifying Glasses	10	Each		
4.7	Supply of unconventional tools	30	Per Set		
4.8	Supply of Keys for Enclosure	90	Each		
SUB- TOTAL					
VAT (15%)					
TOTAL					

**ITEM 5 - PV Luminaire 5 – Rural Principal Arterial – 2/3/4 Lane Class A2- Single Outreach
-17,5m**

PRICE SCHEDULE

Sub-Item	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE EXCL VAT	TOTAL AMOUNT EXCL VAT
5.1	PV Luminaire 5 – Rural Principal Arterial – 2/3/4 Lane Class A2- Single Outreach -17,5m				
5.1.1	Solar panel	70	Each		
5.1.2	Battery	70	Each		
5.1.3	Enclosure	70	Each		
5.1.4	Charge controller	70	Each		
5.1.5	LED light	70	Each		
5.1.6	All other related accessories, outreach arm, brackets, wiring, anti-climb collar spike etc	70	Each		
5.2	Early tamper detect alarm system	70	Each		
5.3	Training	20	Per Person		
5.4	Supply of Operational & Maintenance Manuals	50	Each		
5.5	Supply of Microscopes	3	Each		
5.6	Supply of Handheld Magnifying Glasses	10	Each		
5.7	Supply of unconventional tools	30	Per Set		
5.8	Supply of Keys for Enclosure	90	Each		
SUB- TOTAL					
VAT (15%)					
TOTAL					

ITEM 6 - PV Luminaire 6 - BRT Bus Route – 4/5/6 Lane - Single Outreach-14,4m**PRICE SCHEDULE**

	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE EXCL VAT	TOTAL AMOUNT EXCL VAT
6.1	PV Luminaire 6 - BRT Bus Route – 4/5/6 Lane - Single Outreach-14,4m				
6.1.1	Solar panel	70	Each		
6.1.2	Battery	70	Each		
6.1.3	Enclosure	70	Each		
6.1.4	Charge controller	70	Each		
6.1.5	LED light	70	Each		
6.1.6	All other related accessories, outreach arm, brackets, wiring, anti- climb collar spike etc	70	Each		
6.2	Early tamper detect alarm system	70	Each		
6.3	Training	20	Per Person		
6.4	Supply of Operational & Maintenance Manuals	50	Each		
6.5	Supply of Microscopes	3	Each		
6.6	Supply of Handheld Magnifying Glasses	10	Each		
6.7	Supply of unconventional tools	30	Per Set		
6.8	Supply of Keys for Enclosure	90	Each		
SUB- TOTAL					
VAT (15%)					
TOTAL					

ITEM 7 - PV Luminaire 7 - BRT Bus Route – 4/5/6 Lane - Median-14,4m**PRICE SCHEDULE**

Sub-Item	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE EXCL VAT	TOTAL AMOUNT EXCL VAT
7.1	PV Luminaire 7 - BRT Bus Route – 4/5/6 Lane - Median-14,4m				
7.1.1	Solar panel	140	Each		
7.1.2	Battery	140	Each		
7.1.3	Enclosure	70	Each		
7.1.4	Charge controller	140	Each		
7.1.5	LED light	140	Each		
7.1.6	All other related accessories, outreach arms, brackets, wiring, anti-climb collar spike etc	70	Each		
7.2	Early tamper detect alarm system	70	Each		
7.3	Training	20	Per Person		
7.4	Supply of Operational & Maintenance Manuals	50	Each		
7.5	Supply of Microscopes	3	Each		
7.6	Supply of Handheld Magnifying Glasses	10	Each		
7.7	Supply of unconventional tools	30	Per Set		
7.8	Supply of Keys for Enclosure	90	Each		
SUB- TOTAL					
VAT (15%)					
TOTAL					

MATERIAL NUMBERS

Item 1	PV Luminaire 1- Residential - 2 Lane Class B1 - Single Outreach – 8,5m	3033173	INSTL LUMINAIRE PV RESIDENTIAL CLS B1
Item 2	PV Luminaire 2- Collector Main - 2/3/4 Lane Class B1- Single Outreach – 12m	3033174	INSTL LUMINAIRE PV COLLECTOR MAIN CLS B1
Item 3	PV Luminaire 3- Major Arterial – 4/5/6 Lane Class A2- Single Outreach – 17,5m	3033175	INSTL LUMINAIRE PV CLS A2 REACH SGL 17.5M
Item 4	PV Luminaire 4- Major Arterial – 4/5/6 Lane Class A2- Median – 17,5m	3033176	INSTL LUMINAIRE PV CLS A2 MEDIAN 17.5M
Item 5	PV Luminaire 5- Rural Principal Arterial – 2/3/4 Lane Class A2- Single Outreach – 17,5m	3033177	INSTL LUMINAIRE PV RURAL CLS A2 OUT SGL
Item 6	PV Luminaire 6- BRT Bus Route – 4/5/6 Lane - Single Outreach – 14,4m	3033178	INSTL LUMINAIRE PV BUS REACH SGL 14.4M
Item 7	PV Luminaire 7- BRT Bus Route – 4/5/6 Lane - Median – 14,4m	3033179	INSTL LUMINAIRE PV BUS MEDIAN 14.4M

ANNEXURES A - Schedule A & B

- 1. Annexure A – Schedule A list the City of Tshwane’s minimum requirements. Bidders are required to complete Annexure A - Schedule B in black ink for each item they are bidding for.**
- 2. Bidders must state what they are offering in Annexure A - Schedule B in relation to what is required on the left column in Annexure A - Schedule A. The form must be completed in full and signed.**
- 3. Bids must comply with the City of Tshwane’s minimum requirements as listed in Annexure A – Schedule A .**
- 4. Failure to comply with the above will disqualify the bidder for that particular item.**

HEALTH, SAFETY AND ENVIRONMENTAL IMPACTS

ITEM 1 to ITEM 7

Schedule A: Purchaser’s specific requirements

Schedule B: Guarantees and technical particulars of equipment offered.

Note: Tender will not be considered unless this form is completed in full and signed.

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Health, Safety and Environmental Impacts		
	Health risk: 1 Does any product pose any health risk to persons handling the product? Yes/No* 2 If yes, state the type of personal protective equipment that must be used.	STATE	
	Storage: 1 How should the products be stored? 2 List any special requirements and precautionary measures for short and long term storage.	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Fire hazard: 1 Are there any products that can result in a fire hazard or when exposed to heat, or improper storage or handling of the product? Yes/No. 2 If yes, state the products and any special requirements and precautionary measures required	STATE	
	Toxic hazard: 1 Are any toxic gaseous, liquid or solid by-products produced if product is exposed to fire or heat? Yes/No* 2 If yes, state the temperatures at which these byproducts are produced, °C	STATE	
	Hazardous Waste: Specify if any of the products are classified as hazardous waste. If yes, specify the following: - Source and composition of waste – Hazards identification – Physical and chemical properties – Toxicological and ecological effects – Transport requirements – Disposal options – First aid/fire-fighting measures – Handling and storage requirements	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Recycling: State any specific requirements relating to the disposal and recycling of the products.	STATE	
	State any other pertinent and relevant information pertaining to health, safety and environmental risks.	STATE	

ANNEXURE A: TECHNICAL SCHEDULE A & B

ITEM 1: PV Luminaire 1- Residential - 2 Lane Class B1 - Single Outreach – 8,5m

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered.

Note: Tender will not be considered unless this form is completed in full and signed.

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Bidders Details:		
	Company Name	STATE	
	Address	STATE	
	Contact number	STATE	
	Email contact	STATE	
	Experience: Number of projects/contracts successfully completed of similar scope to this project within the past ten(10) years.	Min 5	
	Total number of PV streetlights incorporated?	State	
3.3.4	Luminaire		
	Minimum luminaire compliance standards:	SANS / IEC 60598-2-3 SANS 475	
	Certificates of Compliance/test report(certified copies) to standards included?	YES	
	Number of LED lights	1	
	System autonomy (number of days)	MINIMUM 2	
	Luminaire system voltage(V)	12V	
	Luminaire operating hours/night	AVERAGE 11	
	Light output(%)	100	
	Luminaires charging time (hours)	Max 6	
	Luminaire construction: Each luminaire must consist of: 1 x independent PV panel 1 x independent battery 1 x independent LED light 1 x independent charge controller 1 x cabinet	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Solar frame orientation and rake angle adjustable?	YES	
	Solar frame Rake / Tilt angle(degrees)	Min 0 to 40	
	Recommended solar panel tilt angle for maximum energy – (Tshwane geographic area)?	STATE	
	Visual indicator for easy adjustment of the solar frame orientation and rake angle?	YES	
	Luminaire components removable?	YES	
	Total weight of luminaire(Kg)	STATE	
	Compliant Lighting Simulation report and photometric data submitted with the tender?	YES	
3.3.4	Required documents submitted - point a to j ?	YES	
	Does the lighting values comply to SANS 10098-1 in accordance to the lighting design schedule?	YES	
	Recommended lighting levels in accordance to SANS 10098-1		
	Lighting Category	B1	I
	Minimum average horizontal illuminance,av(lux)	5	
	Minimum horizontal illuminance, min(Lux)	1	
	Design Results: Luminaire lighting values achieved:		
	Minimum average horizontal illuminance, av(lux)	STATE	
	Minimum horizontal illuminance, min(Lux)	STATE	
	Design Results Luminaire		
	Quantity of luminaires per kilometre	STATE	
	Luminaire mounting height- meters	STATE	
	Pole height above ground level- meters	7	
[2]	Luminaire spacing- meters	STATE	
	Luminaire outreach	SINGLE OUTREACH	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Luminaire outreach- meters	0,5	
	Luminaire arrangement	SIDE BY SIDE	
	Luminaire tilt angle(degrees)	15	
	Luminaire Efficacy(Lm/W)	STATE	
	Luminaire Nominal flux(lm)	STATE	
[1]	Luminaire Watt rating(W)	STATE	
	Price evaluation, based on the following given criteria and costs:		
[3]	Number of years to be considered for evaluation (years)	25	
[4]	Electricity cost, averaged over evaluation period (R/kWh)	2.619	
[5]	Cost of complete PV street light– for the design, supply, delivery, offloading, installation, test and commissioning. Price must also include all material, plant and labour.(R)	STATE	
[6]	Estimated maintenance cost over evaluation period including part replacement. Price must also include all plant and labour required. R)	STATE	
[7]	Estimated Environmental Costs: Costs associated with environmentally responsible disposal of the system components such as batteries, LED light and other components at the end of their life. End-of-Life Disposal – (R)	STATE	
[8]	Scheme price Per Kilometer: $(1000/[2]) \times ([5] + [6] + [7])$ (R/km)	CALCULATE	
[9]	Power consumption: $(1000/[2]) \times ([1]/1000)$ (kW/km)	CALCULATE	
[10]	Annual energy saving costs: $[4] \times 4000 \times [9]$ (R/km)	CALCULATE	
[11]	Total energy saving costs over period of evaluation: $[3] \times [10]$ (R/km)	CALCULATE	
	Cost of ownership: $[8] - [11]$ (R/km)	CALCULATE	
	Luminaire components		

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
3.3.5	Solar module		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which solar panel complies	SANS/IEC 61215 IEC 61730-1 IEC 61730-2	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the solar panel display product certification mark?	YES	
	Type of panel	TIER 1 GRADE A MONO CRYSTALLINE (Half-Cell)	
	Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Type and number of cells	STATE	
	State fill factor of the module (%)	STATE	
	Rated watt peak power (W) @ STC	STATE	
	Max power voltage (Vmp) @ STC	STATE	
	Power tolerance - Watt	0 - +5W	
	Maximum Power Current (Imp) @ STC	STATE	
	Power temp coefficient(%/°C)	STATE	
	Open circuit voltage (Voc) @ STC	STATE	
	Short Circuit Current (Isc) @ STC	STATE	
	Nominal power (Pnom) @NOCT test conditions	STATE	
	Max power voltage (Vmp) @ NOCT	STATE	
	Maximum Power Current (Imp) @ NOCT	STATE	
	Open circuit voltage @ NOCT (V)	STATE	
	Temperature coefficient of current (A/°C)	STATE	
	Temperature coefficient of voltage (V/°C)	STATE	
	Conversion efficiency	>20%	
	Junction box, cabling and cable pug-in connectors	MIN IP 68	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Material: Solar module frame,	EXTRUDED ANODISED ALUMINIUM	
	Manufacturer's warranty (years)	MIN 10	
	Performance warranty (years)	25	
	Dimensions (LWH-mm)	STATE	
	Weight (kg)	STATE	
	Data sheet with technical details submitted?	YES	
3.3.6	Energy storage		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of energy storage	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Standards to which battery complies?	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the battery display product certification mark?	STATE CERTIFICATIO N	
	Depth of discharge (%)	Max 50%	
	Battery nominal voltage (VDC)	STATE	
	Battery energy (Wh)	STATE	
	Battery capacity (Ah)	STATE	
	Maximum charge current (Amps)	STATE	
	Recommended charge current (Amps)	STATE	
	Recommended charging voltage (VDC)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Float charge voltage(VDC)	STATE	
	End of Discharge voltage(VDC)	STATE	
	Max discharge current(A)	STATE	
	Recommended discharge current(A)	STATE	
	Discharge temperature	STATE	
	Charge temperature	STATE	
	Long term storage temperature	STATE	
	Short term(< 3 months) storage temperature	STATE	
	State Of Charge -SOC		
	Voltage @ 0% SOC (V)	STATE	
	Voltage @ 25% SOC (V)	STATE	
	Voltage @ 50% SOC (V)	STATE	
	Voltage @ 75% SOC (V)	STATE	
	Voltage @ 100% SOC (V)	STATE	
	Internal resistance(Ω)	STATE	
	Self-discharge	< 1% per month	
	Battery terminal type	STATE	
	Safety; BMS	SHUTDOWN ON OVER-CHARGE, OVER-DISCHARGE, OVER-CURRENT, OVER-UNDER TEMPERATURE, SHORT CIRCUIT, REVERSE POLARITY, CELL IMBALANCE	
	Material: battery cabinet	STATE	
	Battery cabinet life expectancy (years)	MIN 25	
	Battery Cabinet Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Battery Cabinet impact resistance	$\geq$ IK 8	
	Battery Cabinet- vandal proof and key locking door?	YES	
	Cabinet dimensions (w x d x h - mm)	STATE	
	Weight of cabinet(kg)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Battery dimensions (w x d x h - mm)	STATE	
	Weight of battery(kg)	STATE	
	Battery cycle life(cycles)	MIN 8000	
	Battery warranty (years)	MIN 10	
	Battery life expectancy (years)	10	
	Battery - Data sheet with technical details submitted?	YES	
3.3.7	LED LIGHT		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which the LED light complies.	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	LED light certification mark	STATE	
	Photometric test report of the LED light submitted	YES	
	LM 79 test report submitted	YES	
	LM 80 test report submitted	YES	
	ISTMT (In Situation Temperature Method Testing) test report submitted	YES	
	LED Lumen maintenance(@25°C)		
	L90(hours)	STATE	
	L80(hours)	STATE	
	L70(hours)	STATE	
	L50(hours)	STATE	
	L ₇₀ end of rated lifetime(hours)	STATE	
	Type of optical LED	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Number of LED's	STATE	
	Ingress protection rating – enclosure & protector	Min IP 66	
	Min input voltage(V)	STATE	
	Max input voltage(V)	STATE	
	Power supply efficiency (%)	STATE	
	Current consumption(A)	STATE	
	Efficacy (Lm/W)	STATE	
	Nominal flux(lm)	STATE	
	Watt rating(W)	STATE	
	Color temperature(K)	5000K	
	Color rendering (CRI)	≥70	
	Lifetime(hours)	100 000	
	Protector cover material	IMPACT AND ULTRAVIOLET RESISTANT, CLEAR TEMPERED GLASS	
	Enclosure material	MARINE GRADE DIE-CAST ALUMINIUM - EN 1706 AC-44300	
	Enclosure finish	UNPAINTED ALUMINIUM	
	Impact Resistance	MIN IK 07	
	LED driver dimmable	YES	
	LED driver efficiency	>90%	
	Individual LED modules (YES/NO)	YES	
	LED Driver protection	BUILT IN OVER VOLTAGE AND CURRENT PROTECTION, OVER TEMPERATURE AND SHORT CIRCUIT PROTECTION	
	LED Driver lifespan(hours) at normal operating temperatures	> 100 000	
	LED Driver replaceable	YES	
	LED modules replaceable	YES	
	Mounting arrangement	SIDE ENTRY SPIGOT	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Nominal size of spigot(mm)	STATE	
	Length of spigot(mm)	STATE	
	Screws, bolts, clips	STAINLESS STEEL S316	
	Warranty (years)	Min 5 Years	
	Life expectancy (years)	Min 10 Years	
	Mass (kg)	STATE	
	Data sheet submitted?	YES	
3.3.8	Charge Controller		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of controller	MPPT	
	Standards to which controller complies:	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the controller display product certification mark?	STATE CERTIFICATIO N	
	Is the solar charge controller integrated with the LED light? (YES/NO)	NO	
	Ingress protection rating: (SANS/IEC 60529)	MIN IP 22	
	Nominal battery voltage (VDC) (12/24/36/48VDC or Auto)	12V	
	Battery input Voltage range(V)	STATE	
	Battery type	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Rated charge current(A)	STATE	
	Rated charge Power(W/V) for example: 1000W/12V	STATE	
	Max PV open circuit voltage(V) (At maximum operating environment temperature and at 25°C)	STATE	
	Max PV short circuit current(A)	STATE	
	MPP Voltage Range(V)	STATE	
	Self-consumption(mA)	STATE	
	Tracking efficiency (%)	STATE	
	Conversion efficiency (%)	STATE	
	Charge voltage 'absorption'(V)	STATE	
	Charge Voltage 'float'(V)	STATE	
	Charge algorithm	STATE	
	Temperature compensation(V/°C)	STATE	
	Max. continuous load current(A)	STATE	
	Low voltage load disconnect (V)	STATE	
	Low voltage load reconnect (v)	STATE	
	Protection features:	STATE	
	Lightning protection- surge arrester	YES	
	Warranty (year)	5	
	Life expectancy (years)	5	
	Mass (kg)	STATE	
	Dimensions(mm)	L x W x H	
	Data sheet with technical details submitted?	YES	
	Remote monitoring ability (if required in future)?	YES	
	On site and ground monitoring ability?	YES MOBILE APP	
	Monitoring distance Wireless monitoring technology? E.g. Bluetooth/Wifi etc	MIN 15 METERS STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Mobile application included? Support provided during the contract period? Training offered during contract period?	Yes Yes Yes	
	Wiring - Luminaire		
	Wiring not exposed or visible and securely routed and protected against tampering, unauthorized removal, theft and manipulation.	YES	
	Category wires (for example from PV panel to controller to battery etc)		
	Category of wire, Type of cable, Cable size(mm ²), Outer diameter(mm) Current rating(A), Voltage rating(V), Insulation material, Jacket/sheath material,	STATE	
	Microdots		
	Supplier Name	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Supplier Address	STATE	
	Supplier Contact Number	STATE	
	Supplier E-mail Address	STATE	
	Coding PIN number: MMM-YY-XXX-XXXXX-XXX • Manufacturer of the component: MMM (first three digits of the name of the manufacturer) • Year of manufacture: YY (20XX) • City of Tshwane: XXX (COT) • Contract Reference: XXXXX (first digit = E for electricity department, next two digits = tender reference number, last two digits = Year of tender(20XX)) • Manufacturer of the microdot: XXX (last three digits - name of the manufacturer)	STATE	
	Composition	NICKEL	
	Size	500 Micron (0,55mm)	
	Adhesive coating	ACRYLIC	
	Microdot Certificate	TO BE SUPPLIED	
	Reader - MICROSCOPE	USB DIGITAL MICROSCOPE (300X/5MP)	
	Reader – HANDHELD MAGNIFYING GLASS	MIN 10X MAGNIFICATION MIN 50mm OPTICAL GLASS OR HIGH-QUALITY ACRYLIC LENS BUILT-IN LED ILLUMINATION HANDLE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Early Tamper Detect Alarm System		
	Detect unauthorized removal or tampering of the solar panel	YES	
	Implement vibration or movement sensors to detect physical disturbances of the solar panel	YES	
	Implement Geo-fencing to monitor solar panel location	YES	
	Geo-fencing perimeter(meter)	7	
	Implement sensors to detect unauthorized opening of the enclosure	YES	
	Implement vibration or movement sensors to detect physical disturbances of the enclosure	YES	
	Send automated alarm signal and notifications to a mobile app and web-based interface.	YES	
	Support non-propriety and open standards and protocols for future integration into City of Tshwane systems and software	YES	
	Required Software Components: • web-based interface accessible through a web browser. • A mobile application (iOS, Android, Huawei, Windows platforms) • Ability to add and handle a large number of additional alarm systems units	YES	
	Communications module	3G/4G/LTE With SIM CARD	
	Communications module must support TCP/IP	YES	
	Alarm system components, including sensors and wiring concealed, tamper-resistant and protected against unauthorized access or manipulation.	YES	
	After power failure system must automatically transition back to normal operations	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Audible alarm that can be enabled or disabled through mobile app/web-interface	YES	
	Training and Support provided during contract period	YES	
	Warranty(years)	STATE	

ITEM 2: PV Luminaire 1- Residential - 2 Lane Class B1 - Single Outreach – 8,5m

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Note: Tender will not be considered unless this form is completed in full and signed.

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Bidders Details:		
	Company Name	STATE	
	Address	STATE	
	Contact number	STATE	
	Email contact	STATE	
	Experience: Number of projects/contracts successfully completed of similar scope to this project within the past ten (10) years.	MIN 5	
	Total number of PV streetlights incorporated?	STATE	
3.3.4	Luminaire		
	Minimum luminaire compliance standards:	SANS / IEC 60598-2-3 SANS 475	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Number of LED lights	1	
	System autonomy (number of days)	MINIMUM 2	
	Luminaire system voltage(V)	12V	
	Luminaire operating hours/night	AVERAGE 11	
	Light output (%)	100	
	Luminaires charging time (hours)	Max 6	
	Luminaire construction: Each luminaire must consist of: 1 x independent PV panel 1 x independent battery 1 x independent LED light 1 x independent charge controller 1 x cabinet	YES	
	Solar frame orientation and rake angle adjustable?	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Solar frame Rake / Tilt angle(degrees)	Min 0 to 40	
	Recommended solar panel tilt angle for maximum energy – (Tshwane geographic area)?	STATE	
	Visual indicator for easy adjustment of the solar frame orientation and rake angle?	YES	
	Luminaire components removable?	YES	
	Total weight of luminaire (Kg)	STATE	
	Compliant Lighting Simulation report and photometric data submitted with the tender?	YES	
3.3.4	Required documents submitted - point a to j ?	YES	
	Does the lighting values comply to SANS 10098-1 in accordance to the lighting design schedule?	YES	
	Recommended lighting levels in accordance to SANS 10098-1		
	Lighting Category	B1	I
	Minimum average horizontal illuminance,av(lux)	5	
	Minimum horizontal illuminance, min(Lux)	1	
	Design Results: Luminaire lighting values achieved:		
	Minimum average horizontal illuminance, av(lux)	STATE	
	Minimum horizontal illuminance, min(Lux)	STATE	
	Design Results Luminaire		
	Luminaire centre height- meters	STATE	
	Total pole height above ground level- meters	10,5	
[2]	Luminaire spacing- meters	STATE	
	Luminaire outreach	SINGLE OUTREACH	
	Luminaire outreach- meters	0,5	
	Luminaire arrangement	SIDE BY SIDE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Luminaire tilt angle(degrees)	15	
	Luminaire Efficacy (Lm/W)	STATE	
	Luminaire Nominal flux(lm)	STATE	
[1]	Luminaire Watt rating(W)	STATE	
	Price evaluation, based on the following given criteria and costs:		
[3]	Number of years to be considered for evaluation (years)	25	
[4]	Electricity cost, averaged over evaluation period (R/kWh)	2.619	
[5]	Cost of complete PV street light– for the design, supply, delivery, offloading, installation, test and commissioning. Price must also include all material, plant and labour.(R)	STATE	
[6]	Estimated maintenance cost over evaluation period including part replacement. Price must also include all plant and labour required. R)	STATE	
[7]	Estimated Environmental Costs: Costs associated with environmentally responsible disposal of the system components such as batteries, LED light and other components at the end of their life. End-of-Life Disposal – (R)	STATE	
[8]	Scheme price Per Kilometre: $(1000/[2]) \times ([5] + [6] + [7])$ (R/km)	CALCULATE	
[9]	Power consumption: $(1000/[2]) \times ([1]/1000)$ (kW/km)	CALCULATE	
[10]	Annual energy saving costs: $[4] \times 4000 \times [9]$ (R/km)	CALCULATE	
[11]	Total energy saving costs over period of evaluation: $[3] \times [10]$ (R/km)	CALCULATE	
	Cost of ownership: $[8] - [11]$ (R/km)	CALCULATE	
	Luminaire components		
3.3.5	Solar module		
	Manufacturer	STATE	
	Country of manufacture	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Model number	STATE	
	Standards to which solar panel complies	SANS/IEC 61215 IEC 61730-1 IEC 61730-2	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the solar panel display product certification mark?	YES	
	Type of panel	TIER 1 GRADE A MONO CRYSTALLINE (Half-Cell)	
	Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Type and number of cells	STATE	
	State fill factor of the module (%)	STATE	
	Rated watt peak power (W) @ STC	STATE	
	Max power voltage (Vmp) @ STC	STATE	
	Power tolerance - Watt	0 - +5W	
	Maximum Power Current (Imp) @ STC	STATE	
	Power temp coefficient(%/°C)	STATE	
	Open circuit voltage (Voc) @ STC	STATE	
	Short Circuit Current (Isc) @ STC	STATE	
	Nominal power (Pnom) @NOCT test conditions	STATE	
	Max power voltage (Vmp) @ NOCT	STATE	
	Maximum Power Current (Imp) @ NOCT	STATE	
	Open circuit voltage @ NOCT (V)	STATE	
	Temperature coefficient of current (A/°C)	STATE	
	Temperature coefficient of voltage (V/°C)	STATE	
	Conversion efficiency	>20%	
	Junction box, cabling and cable pug-in connectors	MIN IP 68	
	Material: Solar module frame,	EXTRUDED ANODISED ALUMINIUM	
	Manufacturer's warranty (years)	MIN 10	
	Performance warranty (years)	25	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Dimensions (LWH-mm)	STATE	
	Weight (kg)	STATE	
	Data sheet with technical details submitted?	YES	
3.3.6	Energy storage		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of energy storage	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Standards to which battery complies?	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the battery display product certification mark?	STATE CERTIFICATION	
	Depth of discharge (%)	Max 50%	
	Battery nominal voltage (VDC)	STATE	
	Battery energy (Wh)	STATE	
	Battery capacity (Ah)	STATE	
	Maximum charge current (Amps)	STATE	
	Recommended charge current (Amps)	STATE	
	Recommended charging voltage (VDC)	STATE	
	Float charge voltage (VDC)	STATE	
	End of Discharge voltage (VDC)	STATE	
	Max discharge current(A)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Recommended discharge current(A)	STATE	
	Discharge temperature	STATE	
	Charge temperature	STATE	
	Long term storage temperature	STATE	
	Short term (< 3 months) storage temperature	STATE	
	State of Charge -SOC		
	Voltage @ 0% SOC (V)	STATE	
	Voltage @ 25% SOC (V)	STATE	
	Voltage @ 50% SOC (V)	STATE	
	Voltage @ 75% SOC (V)	STATE	
	Voltage @ 100% SOC (V)	STATE	
	Internal resistance(Ω)	STATE	
	Self-discharge	< 1% per month	
	Battery terminal type	STATE	
	Safety; BMS	SHUTDOWN ON OVER-CHARGE, OVER-DISCHARGE, OVER-CURRENT, OVER-UNDER TEMPERATURE, SHORT CIRCUIT, REVERSE POLARITY, CELL IMBALANCE	
	Material: battery cabinet	STATE	
	Battery cabinet life expectancy (years)	MIN 25	
	Battery Cabinet Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Battery Cabinet impact resistance	$\geq$ IK 8	
	Battery Cabinet- vandal proof and key locking door?	YES	
	Cabinet dimensions (w x d x h - mm)	STATE	
	Weight of cabinet(kg)	STATE	
	Battery dimensions (w x d x h - mm)	STATE	
	Weight of battery(kg)	STATE	
	Battery cycle life(cycles)	MIN 8000	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Battery warranty (years)	MIN 10	
	Battery life expectancy (years)	10	
	Battery - Data sheet with technical details submitted?	YES	
3.3.7	LED LIGHT		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which the LED light complies.	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	LED light certification mark	STATE	
	Photometric test report of the LED light submitted	YES	
	LM 79 test report submitted	YES	
	LM 80 test report submitted	YES	
	ISTMT (In Situation Temperature Method Testing) test report submitted	YES	
	LED Lumen maintenance(@25°C)		
	L90(hours)	STATE	
	L80(hours)	STATE	
	L70(hours)	STATE	
	L50(hours)	STATE	
	L ₇₀ end of rated lifetime(hours)	STATE	
	Type of optical LED	STATE	
	Number of LED's	STATE	
	Ingress protection rating – enclosure & protector	Min IP 66	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Min input voltage(V)	STATE	
	Max input voltage(V)	STATE	
	Power supply efficiency (%)	STATE	
	Current consumption(A)	STATE	
	Efficacy (Lm/W)	STATE	
	Nominal flux(lm)	STATE	
	Watt rating(W)	STATE	
	Color temperature(K)	5000K	
	Color rendering (CRI)	≥70	
	Lifetime(hours)	100 000	
	Protector cover material	IMPACT AND ULTRAVIOLET RESISTANT, CLEAR TEMPERED GLASS	
	Enclosure material	MARINE GRADE DIE-CAST ALUMINIUM - EN 1706 AC-44300	
	Enclosure finish	UNPAINTED ALUMINIUM	
	Impact Resistance	MIN IK 07	
	LED driver dimmable	YES	
	LED driver efficiency	>90%	
	Individual LED modules (YES/NO)	YES	
	LED Driver protection	BUILT IN OVER VOLTAGE AND CURRENT PROTECTION, OVER TEMPERATURE AND SHORT CIRCUIT PROTECTION	
	LED Driver lifespan(hours) at normal operating temperatures	> 100 000	
	LED Driver replaceable	YES	
	LED modules replaceable	YES	
	Mounting arrangement	SIDE ENTRY SPIGOT	
	Nominal size of spigot(mm)	STATE	
	Length of spigot(mm)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Screws, bolts, clips	STAINLESS STEEL S316	
	Warranty (years)	Min 5 Years	
	Life expectancy (years)	Min 10 Years	
	Mass (kg)	STATE	
	Data sheet submitted?	YES	
3.3.8	Charge Controller		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of controller	MPPT	
	Standards to which controller complies:	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the controller display product certification mark?	STATE CERTIFICATION	
	Is the solar charge controller integrated with the LED light? (YES/NO)	NO	
	Ingress protection rating: (SANS/IEC 60529)	MIN IP 22	
	Nominal battery voltage (VDC) (12/24/36/48VDC or Auto)	12V	
	Battery input Voltage range(V)	STATE	
	Battery type	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Rated charge current(A)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Rated charge Power(W/V) for example: 1000W/12V	STATE	
	Max PV open circuit voltage(V) (At maximum operating environment temperature and at 25°C)	STATE	
	Max PV short circuit current(A)	STATE	
	MPP Voltage Range(V)	STATE	
	Self-consumption(mA)	STATE	
	Tracking efficiency (%)	STATE	
	Conversion efficiency (%)	STATE	
	Charge voltage' absorption'(V)	STATE	
	Charge Voltage 'float'(V)	STATE	
	Charge algorithm	STATE	
	Temperature compensation(V/°C)	STATE	
	Max. continuous load current(A)	STATE	
	Low voltage load disconnect (V)	STATE	
	Low voltage load reconnect (v)	STATE	
	Protection features:	STATE	
	Lightning protection- surge arrester	YES	
	Warranty (year)	5	
	Life expectancy (years)	5	
	Mass (kg)	STATE	
	Dimensions(mm)	L x W x H	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Data sheet with technical details submitted?	YES	
	Remote monitoring ability (if required in future)?	YES	
	On site and ground monitoring ability?	YES MOBILE APP	
	Monitoring distance Wireless monitoring technology? E.g. Bluetooth/Wifi etc Mobile application included? Support provided during the contract period? Training offered during contract period?	MIN 15 METERS STATE Yes Yes Yes	
	Wiring – Luminaire		
	Wiring not exposed or visible and securely routed and protected against tampering, unauthorized removal, theft and manipulation.	YES	
	Category wires(for example from PV panel to controller to battery etc)		
	Category of wire, Type of cable, Cable size(mm²), Outer diameter(mm) Current rating(A), Voltage rating(V), Insulation material, Jacket/sheath material,	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Microdots		
	Supplier Name	STATE	
	Supplier Address	STATE	
	Supplier Contact Number	STATE	
	Supplier E-mail Address	STATE	
	Coding PIN number: MMM-YY-XXX-XXXXX-XXX • Manufacturer of the component: MMM (first three digits of the name of the manufacturer) • Year of manufacture: YY (20XX) • City of Tshwane: XXX (COT) • Contract Reference: XXXXX (first digit = E for electricity department, next two digits = tender reference number, last two digits = Year of tender(20XX)) • Manufacturer of the microdot: XXX (last three digits - name of the manufacturer)	STATE	
	Composition	NICKEL	
	Size	500 Micron (0,55mm)	
	Adhesive coating	ACRYLIC	
	Microdot Certificate	TO BE SUPPLIED	
	Reader - MICROSCOPE	USB DIGITAL MICROSCOPE (300X/5MP)	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Reader – HANDHELD MAGNIFYING GLASS	MIN 10X MAGNIFICATION MIN 50mm OPTICAL GLASS OR HIGH-QUALITY ACRYLIC LENS BUILT-IN LED ILLUMINATION HANDLE	
	Early Tamper Detect Alarm System		
	Detect unauthorized removal or tampering of the solar panel	YES	
	Implement vibration or movement sensors to detect physical disturbances of the solar panel	YES	
	Implement Geo-fencing to monitor solar panel location	YES	
	Geo-fencing perimeter(meter)	7	
	Implement sensors to detect unauthorized opening of the enclosure	YES	
	Implement vibration or movement sensors to detect physical disturbances of the enclosure	YES	
	Send automated alarm signal and notifications to a mobile app and web-based interface.	YES	
	Support non-propriety and open standards and protocols for future integration into City of Tshwane systems and software	YES	
	Required Software Components: • web-based interface accessible through a web browser. • A mobile application (iOS, Android, Huawei, Windows platforms) • Ability to add and handle a large number of additional alarm systems units	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Communications module	3G/4G/LTE With SIM CARD	
	Communications module must support TCP/IP	YES	
	Alarm system components, including sensors and wiring concealed, tamper-resistant and protected against unauthorized access or manipulation.	YES	
	After power failure system must automatically transition back to normal operations	YES	
	Audible alarm that can be enabled or disabled through mobile app/web-interface	YES	
	Training and Support provided during contract period	YES	
	Warranty(years)	STATE	

ITEM 3: PV Luminaire 3- Major Arterial – 4/5/6 Lane Class A2- Single Outreach – 17,5m

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Note: Tender will not be considered unless this form is completed in full and signed.

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Bidders Details:		
	Company Name	STATE	
	Address	STATE	
	Contact number	STATE	
	Email contact	STATE	
	Experience: Number of projects/contracts successfully completed of similar scope to this project within the past ten(10) years.	Min 5	
	Total number of PV streetlights incorporated?	State	
3.3.4	Luminaire		
	Minimum luminaire compliance standards:	SANS / IEC 60598-2-3 SANS 475	
	Certificates of Compliance/test report(certified copies) to standards included?	YES	
	Number of LED lights	1	
	System autonomy (number of days)	MINIMUM 2	
	Luminaire system voltage(V)	12V	
	Luminaire operating hours/night	AVERAGE 11	
	Light output(%)	100	
	Luminaires charging time (hours)	Max 6	
	Luminaire construction: Each luminaire must consist of: 1 x independent PV panel 1 x independent battery 1 x independent LED light 1 x independent charge controller 1 x cabinet	YES	
	Solar frame orientation and rake angle adjustable?	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Solar frame Rake / Tilt angle(degrees)	Min 0 to 40	
	Recommended solar panel tilt angle for maximum energy – (Tshwane geographic area)?	STATE	
	Visual indicator for easy adjustment of the solar frame orientation and rake angle?	YES	
	Luminaire components removable?	YES	
	Total weight of luminaire(Kg)	STATE	
	Compliant Lighting Simulation report and photometric data submitted with the tender?	YES	
3.3.4	Required documents submitted - point a to j ?	YES	
	Does the lighting values comply to SANS 10098-1 in accordance to the lighting design schedule ?	YES	
	Recommended lighting levels in accordance to SANS 10098-1		
	Lighting Category	A2 without median– 300 vehicles/hour	
	LU: Ave - cd/m ² Uo - % UI - % TI - %	1 40 60 20	
	Design Results: Luminaire lighting values achieved:		
	LU: Ave - cd/m ² Uo - % UI - % TI - %	STATE STATE STATE STATE	
	Design Results Luminaire		
	Luminaire centre height- meters	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Pole height above ground level- meters	15	
[2]	Luminaire spacing- meters	STATE	
	Luminaire outreach	SINGLE OUTREACH	
	Luminaire outreach- meters	0,5	
	Luminaire arrangement	SIDE BY SIDE	
	Luminaire tilt angle(degrees)	15	
	Luminaire Efficacy(Lm/W)	STATE	
	Luminaire Nominal flux(lm)	STATE	
[1]	Luminaire Watt rating(W)	STATE	
	Price evaluation, based on the following given criteria and costs:		
[3]	Number of years to be considered for evaluation (years)	25	
[4]	Electricity cost, averaged over evaluation period (R/kWh)	2.619	
[5]	Cost of complete PV street light– for the design, supply, delivery, offloading, installation, test and commissioning. Price must also include all material, plant and labour.(R)	STATE	
[6]	Estimated maintenance cost over evaluation period including part replacement. Price must also include all plant and labour required. R)	STATE	
[7]	Estimated Environmental Costs: Costs associated with environmentally responsible disposal of the system components such as batteries, LED light and other components at the end of their life. End-of-Life Disposal – (R)	STATE	
[8]	Scheme price Per Kilometre: $(1000/[2]) \times ([5] + [6] + [7])$ (R/km)	CALCULATE	
[9]	Power consumption: $(1000/[2]) \times ([1]/1000)$ (kW/km)	CALCULATE	
[10]	Annual energy saving costs: $[4] \times 4000 \times [9]$ (R/km)	CALCULATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
[11]	Total energy saving costs over period of evaluation: [3] x [10] (R/km)	CALCULATE	
	Cost of ownership: [8] –]11] (R/km)	CALCULATE	
	Luminaire components		
3.3.5	Solar module		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which solar panel complies	SANS/IEC 61215 IEC 61730-1 IEC 61730-2	
	Certificates of Compliance/test report(certified copies) to standards included?	YES	
	Does the solar panel display product certification mark?	YES	
	Type of panel	TIER 1 GRADE A MONO CRYSTALLINE (Half-Cell)	
	Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Type and number of cells	STATE	
	State fill factor of the module (%)	STATE	
	Rated watt peak power (W) @ STC	STATE	
	Max power voltage (Vmp) @ STC	STATE	
	Power tolerance - Watt	0 - +5W	
	Maximum Power Current (Imp) @ STC	STATE	
	Power temp coefficient(%/°C)	STATE	
	Open circuit voltage (Voc) @ STC	STATE	
	Short Circuit Current (Isc) @ STC	STATE	
	Nominal power (Pnom) @NOCT test conditions	STATE	
	Max power voltage (Vmp) @ NOCT	STATE	
	Maximum Power Current (Imp) @ NOCT	STATE	
	Open circuit voltage @ NOCT (V)	STATE	
	Temperature coefficient of current (A/°C)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Temperature coefficient of voltage (V/°C)	STATE	
	Conversion efficiency	>20%	
	Junction box, cabling and cable pug-in connectors	MIN IP 68	
	Material: Solar module frame,	EXTRUDED ANODISED ALUMINIUM	
	Manufacturer's warranty (years)	MIN 10	
	Performance warranty (years)	25	
	Dimensions (LWH-mm)	STATE	
	Weight (kg)	STATE	
	Data sheet with technical details submitted?	YES	
3.3.6	Energy storage		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of energy storage	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Standards to which battery complies?	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the battery display product certification mark?	STATE CERTIFICATION	
	Depth of discharge (%)	Max 50%	
	Battery nominal voltage (VDC)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Battery energy (Wh)	STATE	
	Battery capacity (Ah)	STATE	
	Maximum charge current (Amps)	STATE	
	Recommended charge current (Amps)	STATE	
	Recommended charging voltage (VDC)	STATE	
	Float charge voltage (VDC)	STATE	
	End of Discharge voltage (VDC)	STATE	
	Max discharge current(A)	STATE	
	Recommended discharge current(A)	STATE	
	Discharge temperature	STATE	
	Charge temperature	STATE	
	Long term storage temperature	STATE	
	Short term(< 3 months) storage temperature	STATE	
	State of Charge -SOC		
	Voltage @ 0% SOC (V)	STATE	
	Voltage @ 25% SOC (V)	STATE	
	Voltage @ 50% SOC (V)	STATE	
	Voltage @ 75% SOC (V)	STATE	
	Voltage @ 100% SOC (V)	STATE	
	Internal resistance(Ω)	STATE	
	Self-discharge	< 1% per month	
	Battery terminal type	STATE	
	Safety; BMS	SHUTDOWN ON OVER-CHARGE, OVER-DISCHARGE, OVER-CURRENT, OVER-UNDER TEMPERATURE, SHORT CIRCUIT, REVERSE POLARITY, CELL IMBALANCE	
	Material: battery cabinet	STATE	
	Battery cabinet life expectancy (years)	MIN 25	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Battery Cabinet Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Battery Cabinet impact resistance	≥ IK 8	
	Battery Cabinet- vandal proof and key locking door?	YES	
	Cabinet dimensions (w x d x h - mm)	STATE	
	Weight of cabinet(kg)	STATE	
	Battery dimensions (w x d x h - mm)	STATE	
	Weight of battery(kg)	STATE	
	Battery cycle life(cycles)	MIN 8000	
	Battery warranty (years)	MIN 10	
	Battery life expectancy (years)	10	
	Battery - Data sheet with technical details submitted?	YES	
3.3.7	LED LIGHT		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which the LED light complies.	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	LED light certification mark	STATE	
	Photometric test report of the LED light submitted	YES	
	LM 79 test report submitted	YES	
	LM 80 test report submitted	YES	
	ISTMT (In Situation Temperature Method Testing) test report submitted	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	LED Lumen maintenance(@25°C)		
	L90(hours)	STATE	
	L80(hours)	STATE	
	L70(hours)	STATE	
	L50(hours)	STATE	
	L ₇₀ end of rated lifetime(hours)	STATE	
	Type of optical LED	STATE	
	Number of LED's	STATE	
	Ingress protection rating – enclosure & protector	Min IP 66	
	Min input voltage(V)	STATE	
	Max input voltage(V)	STATE	
	Power supply efficiency (%)	STATE	
	Current consumption(A)	STATE	
	Efficacy (Lm/W)	STATE	
	Nominal flux(lm)	STATE	
	Watt rating(W)	STATE	
	Color temperature(K)	5000K	
	Color rendering (CRI)	≥70	
	Lifetime(hours)	100 000	
	Protector cover material	IMPACT AND ULTRAVIOLET RESISTANT, CLEAR TEMPERED GLASS	
	Enclosure material	MARINE GRADE DIE-CAST ALUMINIUM - EN 1706 AC-44300	
	Enclosure finish	UNPAINTED ALUMINIUM	
	Impact Resistance	MIN IK 07	
	LED driver dimmable	YES	
	LED driver efficiency	>90%	
	Individual LED modules (YES/NO)	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	LED Driver protection	BUILT IN OVER VOLTAGE AND CURRENT PROTECTION, OVER TEMPERATURE AND SHORT CIRCUIT PROTECTION	
	LED Driver lifespan(hours) at normal operating temperatures	> 100 000	
	LED Driver replaceable	YES	
	LED modules replaceable	YES	
	Mounting arrangement	SIDE ENTRY SPIGOT	
	Nominal size of spigot(mm)	STATE	
	Length of spigot(mm)	STATE	
	Screws, bolts, clips	STAINLESS STEEL S316	
	Warranty (years)	Min 5 Years	
	Life expectancy (years)	Min 10 Years	
	Mass (kg)	STATE	
	Data sheet submitted?	YES	
3.3.8	Charge Controller		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of controller	MPPT	
	Standards to which controller complies:	STATE	
	Certificates of Compliance/test report(certified copies) to standards included?	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Does the controller display product certification mark?	STATE CERTIFICATIO N	
	Is the solar charge controller integrated with the LED light?(YES/NO)	NO	
	Ingress protection rating: (SANS/IEC 60529)	MIN IP 22	
	Nominal battery voltage(VDC) (12/24/36/48VDC or Auto)	12V	
	Battery input Voltage range(V)	STATE	
	Battery type	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Rated charge current(A)	STATE	
	Rated charge Power(W/V) for example: 1000W/12V	STATE	
	Max PV open circuit voltage(V) (At maximum operating environment temperature and at 25°C)	STATE	
	Max PV short circuit current(A)	STATE	
	MPP Voltage Range(V)	STATE	
	Self-consumption(mA)	STATE	
	Tracking efficiency (%)	STATE	
	Conversion efficiency(%)	STATE	
	Charge voltage' absorption'(V)	STATE	
	Charge Voltage 'float'(V)	STATE	
	Charge algorithm	STATE	
	Temperature compensation(V/°C)	STATE	
	Max. continuous load current(A)	STATE	
	Low voltage load disconnect(V)	STATE	
	Low voltage load reconnect(v)	STATE	
	Protection features:	STATE	
	Lightning protection- surge arrester	YES	
	Warranty (year)	5	
	Life expectancy (years)	5	
	Mass (kg)	STATE	
	Dimensions(mm)	L x W x H	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Data sheet with technical details submitted?	YES	
	Remote monitoring ability (if required in future)?	YES	
	On site and ground monitoring ability?	YES MOBILE APP	
	Monitoring distance Wireless monitoring technology? E.g. Bluetooth/Wifi etc Mobile application included? Support provided during the contract period? Training offered during contract period?	MIN 15 METERS STATE Yes Yes Yes	
	Wiring – Luminaire		
	Wiring not exposed or visible and securely routed and protected against tampering, unauthorized removal, theft and manipulation.	YES	
	Category wires(for example from PV panel to controller to battery etc)		
	Category of wire, Type of cable, Cable size(mm²), Outer diameter(mm) Current rating(A), Voltage rating(V), Insulation material, Jacket/sheath material,	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Microdots		
	Supplier Name	STATE	
	Supplier Address	STATE	
	Supplier Contact Number	STATE	
	Supplier E-mail Address	STATE	
	Coding PIN number: MMM-YY-XXX-XXXXX-XXX • Manufacturer of the component: MMM (first three digits of the name of the manufacturer) • Year of manufacture: YY (20XX) • City of Tshwane: XXX (COT) • Contract Reference: XXXXX (first digit = E for electricity department, next two digits = tender reference number, last two digits = Year of tender(20XX)) • Manufacturer of the microdot: XXX (last three digits - name of the manufacturer)	STATE	
	Composition	NICKEL	
	Size	500 Micron (0,55mm)	
	Adhesive coating	ACRYLIC	
	Microdot Certificate	TO BE SUPPLIED	
	Reader - MICROSCOPE	USB DIGITAL MICROSCOPE (300X/5MP)	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Reader – HANDHELD MAGNIFYING GLASS	MIN 10X MAGNIFICATION MIN 50mm OPTICAL GLASS OR HIGH-QUALITY ACRYLIC LENS BUILT-IN LED ILLUMINATION HANDLE	
	Early Tamper Detect Alarm System		
	Detect unauthorized removal or tampering of the solar panel	YES	
	Implement vibration or movement sensors to detect physical disturbances of the solar panel	YES	
	Implement Geo-fencing to monitor solar panel location	YES	
	Geo-fencing perimeter(meter)	7	
	Implement sensors to detect unauthorized opening of the enclosure	YES	
	Implement vibration or movement sensors to detect physical disturbances of the enclosure	YES	
	Send automated alarm signal and notifications to a mobile app and web-based interface.	YES	
	Support non-propriety and open standards and protocols for future integration into City of Tshwane systems and software	YES	
	Required Software Components: • web-based interface accessible through a web browser. • A mobile application (iOS, Android, Huawei, Windows platforms) • Ability to add and handle a large number of additional alarm systems units	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Communications module	3G/4G/LTE With SIM CARD	
	Communications module must support TCP/IP	YES	
	Alarm system components, including sensors and wiring concealed, tamper-resistant and protected against unauthorized access or manipulation.	YES	
	After power failure system must automatically transition back to normal operations	YES	
	Audible alarm that can be enabled or disabled through mobile app/web-interface	YES	
	Training and Support provided during contract period	YES	
	Warranty(years)	STATE	

ITEM 4: PV Luminaire 4- Major Arterial – 4/5/6 Lane Class A2- Median – 17,5m

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Note: Tender will not be considered unless this form is completed in full and signed.

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Bidders Details:		
	Company Name	STATE	
	Address	STATE	
	Contact number	STATE	
	Email contact	STATE	
	Experience: Number of projects/contracts successfully completed of similar scope to this project within the past ten(10) years.	Min 5	
	Total number of PV streetlights incorporated?	State	
3.3.4	Luminaire		
	Minimum luminaire compliance standards:	SANS / IEC 60598-2-3 SANS 475	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Certificates of Compliance/test report(certified copies) to standards included?	YES	
	Number of LED lights	2	
	System autonomy (number of days)	MINIMUM 2	
	Luminaire system voltage(V)	12V	
	Luminaire operating hours/night	AVERAGE 11	
	Light output(%)	100	
	luminaires charging time (hours)	Max 6	
	Luminaire construction: Each luminaire must consist of: 2 x independent PV panel 2 x independent battery 2 x independent LED light 2 x independent charge controller 1 x cabinet	YES	
	Solar frame orientation and rake angle adjustable?	YES	
	Solar frame Rake / Tilt angle(degrees)	Min 0 to 40	
	Recommended solar panel tilt angle for maximum energy – (Tshwane geographic area)?	STATE	
	Visual indicator for easy adjustment of the solar frame orientation and rake angle?	YES	
	Luminaire components removable?	YES	
	Total weight of luminaire(Kg)	STATE	
	Compliant Lighting Simulation report and photometric data submitted with the tender?	YES	
3.3.4	Required documents submitted - point a to j ?	YES	
	Does the lighting values comply to SANS 10098-1 in accordance to the lighting design schedule ?	YES	
	Recommended lighting levels in accordance to SANS 10098-1		

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Lighting Category	A2 with median– >600 vehicles/hour	
	LU: Ave - cd/m ² Uo - % UI - % TI - %	1 40 60 20	
	Design Results: Luminaire lighting values achieved:		
	LU: Ave - cd/m ² Uo - % UI - % TI - %	STATE STATE STATE STATE	
	Design Results Luminaire		
	Luminaire centre height- meters	STATE	
	Total pole height above ground level- meters	15	
[2]	Luminaire spacing- meters	STATE	
	Luminaire outreach	DOUBLE OUTREACH	
	Luminaire outreach- meters	3	
	Luminaire arrangement	Central Median	
	Luminaire tilt angle(degrees)	15	
	Luminaire Efficacy(Lm/W)	STATE	
	Luminaire Nominal flux(lm)	STATE	
[1]	Luminaire Watt rating(W)	STATE	
	Price evaluation, based on the following given criteria and costs:		
[3]	Number of years to be considered for evaluation (years)	25	
[4]	Electricity cost, averaged over evaluation period (R/kWh)	2.619	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
[5]	Cost of complete PV street light– for the design, supply, delivery, offloading, installation, test and commissioning. Price must also include all material, plant and labour.(R)	STATE	
[6]	Estimated maintenance cost over evaluation period including part replacement. Price must also include all plant and labour required. R)	STATE	
[7]	Estimated Environmental Costs: Costs associated with environmentally responsible disposal of the system components such as batteries, LED light and other components at the end of their life. End-of-Life Disposal – (R)	STATE	
[8]	Scheme price Per Kilometre: $(1000/[2]) \times ([5] + [6] + [7])$ (R/km)	CALCULATE	
[9]	Power consumption: $(1000/[2]) \times ([1]/1000)$ (kW/km)	CALCULATE	
[10]	Annual energy saving costs: $[4] \times 4000 \times [9]$ (R/km)	CALCULATE	
[11]	Total energy saving costs over period of evaluation: $[3] \times [10]$ (R/km)	CALCULATE	
	Cost of ownership: $[8] - [11]$ (R/km)	CALCULATE	
	Luminaire components		
3.3.5	Solar module		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which solar panel complies	SANS/IEC 61215 IEC 61730-1 IEC 61730-2	
	Certificates of Compliance/test report(certified copies) to standards included?	YES	
	Does the solar panel display product certification mark?	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Type of panel	TIER 1 GRADE A MONO CRYSTALLINE (Half-Cell)	
	Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Type and number of cells	STATE	
	State fill factor of the module (%)	STATE	
	Rated watt peak power (W) @ STC	STATE	
	Max power voltage (Vmp) @ STC	STATE	
	Power tolerance - Watt	0 - +5W	
	Maximum Power Current (Imp) @ STC	STATE	
	Power temp coefficient(%/°C)	STATE	
	Open circuit voltage (Voc) @ STC	STATE	
	Short Circuit Current (Isc) @ STC	STATE	
	Nominal power (Pnom) @NOCT test conditions	STATE	
	Max power voltage (Vmp) @ NOCT	STATE	
	Maximum Power Current(Imp) @ NOCT	STATE	
	Open circuit voltage @ NOCT (V)	STATE	
	Temperature coefficient of current (A/°C)	STATE	
	Temperature coefficient of voltage (V/°C)	STATE	
	Conversion efficiency	>20%	
	Junction box, cabling and cable pug-in connectors	MIN IP 68	
	Material: Solar module frame,	EXTRUDED ANODISED ALUMINIUM	
	Manufacturer's warranty (years)	MIN 10	
	Performance warranty (years)	25	
	Dimensions (LWH-mm)	STATE	
	Weight (kg)	STATE	
	Data sheet with technical details submitted?	YES	
3.3.6	Energy storage		
	Manufacturer	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of energy storage	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Standards to which battery complies?	STATE	
	Certificates of Compliance/test report(certified copies) to standards included?	YES	
	Does the battery display product certification mark?	STATE CERTIFICATIO N	
	Depth of discharge(%)	Max 50%	
	Battery nominal voltage (VDC)	STATE	
	Battery energy(Wh)	STATE	
	Battery capacity(Ah)	STATE	
	Maximum charge current(Amps)	STATE	
	Recommended charge current(Amps)	STATE	
	Recommended charging voltage(VDC)	STATE	
	Float charge voltage(VDC)	STATE	
	End of Discharge voltage(VDC)	STATE	
	Max discharge current(A)	STATE	
	Recommended discharge current(A)	STATE	
	Discharge temperature	STATE	
	Charge temperature	STATE	
	Long term storage temperature	STATE	
	Short term(< 3 months) storage temperature	STATE	
	State Of Charge -SOC		

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Voltage @ 0% SOC (V)	STATE	
	Voltage @ 25% SOC (V)	STATE	
	Voltage @ 50% SOC (V)	STATE	
	Voltage @ 75% SOC (V)	STATE	
	Voltage @ 100% SOC (V)	STATE	
	Internal resistance(Ω)	STATE	
	Self-discharge	< 1% per month	
	Battery terminal type	STATE	
	Safety; BMS	SHUTDOWN ON OVER-CHARGE, OVER-DISCHARGE, OVER-CURRENT, OVER-UNDER TEMPERATURE, SHORT CIRCUIT, REVERSE POLARITY, CELL IMBALANCE	
	Material: battery cabinet	STATE	
	Battery cabinet life expectancy (years)	MIN 25	
	Battery Cabinet Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Battery Cabinet impact resistance	$\geq$ IK 8	
	Battery Cabinet- vandal proof and key locking door?	YES	
	Cabinet dimensions (w x d x h - mm)	STATE	
	Weight of cabinet(kg)	STATE	
	Battery dimensions (w x d x h - mm)	STATE	
	Weight of battery(kg)	STATE	
	Battery cycle life(cycles)	MIN 8000	
	Battery warranty (years)	MIN 10	
	Battery life expectancy (years)	10	
	Battery - Data sheet with technical details submitted?	YES	
3.3.7	LED LIGHT		
	Manufacturer	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which the LED light complies.	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	LED light certification mark	STATE	
	Photometric test report of the LED light submitted	YES	
	LM 79 test report submitted	YES	
	LM 80 test report submitted	YES	
	ISTMT (In Situation Temperature Method Testing) test report submitted	YES	
	LED Lumen maintenance(@25°C)		
	L90(hours)	STATE	
	L80(hours)	STATE	
	L70(hours)	STATE	
	L50(hours)	STATE	
	L ₇₀ end of rated lifetime(hours)	STATE	
	Type of optical LED	STATE	
	Number of LED's	STATE	
	Ingress protection rating – enclosure & protector	Min IP 66	
	Min input voltage(V)	STATE	
	Max input voltage(V)	STATE	
	Power supply efficiency (%)	STATE	
	Current consumption(A)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Efficacy (Lm/W)	STATE	
	Nominal flux(lm)	STATE	
	Watt rating(W)	STATE	
	Color temperature(K)	5000K	
	Color rendering (CRI)	≥70	
	Lifetime(hours)	100 000	
	Protector cover material	IMPACT AND ULTRAVIOLET RESISTANT, CLEAR TEMPERED GLASS	
	Enclosure material	MARINE GRADE DIE-CAST ALUMINIUM - EN 1706 AC-44300	
	Enclosure finish	UNPAINTED ALUMINIUM	
	Impact Resistance	MIN IK 07	
	LED driver dimmable	YES	
	LED driver efficiency	>90%	
	Individual LED modules (YES/NO)	YES	
	LED Driver protection	BUILT IN OVER VOLTAGE AND CURRENT PROTECTION, OVER TEMPERATURE AND SHORT CIRCUIT PROTECTION	
	LED Driver lifespan(hours) at normal operating temperatures	> 100 000	
	LED Driver replaceable	YES	
	LED modules replaceable	YES	
	Mounting arrangement	SIDE ENTRY SPIGOT	
	Nominal size of spigot(mm)	STATE	
	Length of spigot(mm)	STATE	
	Screws, bolts, clips	STAINLESS STEEL S316	
	Warranty (years)	Min 5 Years	
	Life expectancy (years)	Min 10 Years	
	Mass (kg)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Data sheet submitted?	YES	
3.3.8	Charge Controller		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of controller	MPPT	
	Standards to which controller complies:	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the controller display product certification mark?	STATE CERTIFICATIO N	
	Is the solar charge controller integrated with the LED light? (YES/NO)	NO	
	Ingress protection rating: (SANS/IEC 60529)	MIN IP 22	
	Nominal battery voltage (VDC) (12/24/36/48VDC or Auto)	12V	
	Battery input Voltage range(V)	STATE	
	Battery type	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Rated charge current(A)	STATE	
	Rated charge Power(W/V) for example: 1000W/12V	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Max PV open circuit voltage(V) (At maximum operating environment temperature and at 25°C)	STATE	
	Max PV short circuit current(A)	STATE	
	MPP Voltage Range(V)	STATE	
	Self-consumption(mA)	STATE	
	Tracking efficiency (%)	STATE	
	Conversion efficiency (%)	STATE	
	Charge voltage' absorption'(V)	STATE	
	Charge Voltage 'float'(V)	STATE	
	Charge algorithm	STATE	
	Temperature compensation(V/°C)	STATE	
	Max. continuous load current(A)	STATE	
	Low voltage load disconnect (V)	STATE	
	Low voltage load reconnect (v)	STATE	
	Protection features:	STATE	
	Lightning protection- surge arrester	YES	
	Warranty (year)	5	
	Life expectancy (years)	5	
	Mass (kg)	STATE	
	Dimensions(mm)	L x W x H	
	Data sheet with technical details submitted?	YES	
	Remote monitoring ability (if required in future)?	YES	
	On site and ground monitoring ability?	YES MOBILE APP	
	Monitoring distance	MIN 15 METERS	
	Wireless monitoring technology? E.g. Bluetooth/Wifi etc	STATE	
	Mobile application included?	Yes	
	Support provided during the contract period?	Yes	
	Training offered during contract period?	Yes	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Wiring – Luminaire		
	Wiring not exposed or visible and securely routed and protected against tampering, unauthorized removal, theft and manipulation.	YES	
	Category wires (for example from PV panel to controller to battery etc)		
	Category of wire, Type of cable, Cable size(mm ²), Outer diameter(mm) Current rating(A), Voltage rating(V), Insulation material, Jacket/sheath material,	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Microdots		
	Supplier Name	STATE	
	Supplier Address	STATE	
	Supplier Contact Number	STATE	
	Supplier E-mail Address	STATE	
	Coding PIN number: MMM-YY-XXX-XXXXX-XXX • Manufacturer of the component: MMM (first three digits of the name of the manufacturer) • Year of manufacture: YY (20XX) • City of Tshwane: XXX (COT) • Contract Reference: XXXXX (first digit = E for electricity department, next two digits = tender reference number, last two digits = Year of tender(20XX)) • Manufacturer of the microdot: XXX (last three digits - name of the manufacturer)	STATE	
	Composition	NICKEL	
	Size	500 Micron (0,55mm)	
	Adhesive coating	ACRYLIC	
	Microdot Certificate	TO BE SUPPLIED	
	Reader - MICROSCOPE	USB DIGITAL MICROSCOPE (300X/5MP)	
	Reader – HANDHELD MAGNIFYING GLASS	MIN 10X MAGNIFICATION MIN 50mm OPTICAL GLASS OR HIGH-QUALITY ACRYLIC LENS BUILT-IN LED ILLUMINATION	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
		HANDLE	
	Early Tamper Detect Alarm System		
	Detect unauthorized removal or tampering of the solar panel	YES	
	Implement vibration or movement sensors to detect physical disturbances of the solar panel	YES	
	Implement Geo-fencing to monitor solar panel location	YES	
	Geo-fencing perimeter(meter)	7	
	Implement sensors to detect unauthorized opening of the enclosure	YES	
	Implement vibration or movement sensors to detect physical disturbances of the enclosure	YES	
	Send automated alarm signal and notifications to a mobile app and web-based interface.	YES	
	Support non-propriety and open standards and protocols for future integration into City of Tshwane systems and software	YES	
	Required Software Components: • web-based interface accessible through a web browser. • A mobile application (iOS, Android, Huawei, Windows platforms) • Ability to add and handle a large number of additional alarm systems units	YES	
	Communications module	3G/4G/LTE With SIM CARD	
	Communications module must support TCP/IP	YES	
	Alarm system components, including sensors and wiring concealed, tamper-resistant and protected against unauthorized access or manipulation.	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	After power failure system must automatically transition back to normal operations	YES	
	Audible alarm that can be enabled or disabled through mobile app/web-interface	YES	
	Training and Support provided during contract period	YES	
	Warranty(years)	STATE	

ITEM 5: PV Luminaire 5- Rural Principal Arterial – 2/3/4 Lane Class A2- Single Outreach – 17,5m

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Note: Tender will not be considered unless this form is completed in full and signed.

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Bidders Details:		
	Company Name	STATE	
	Address	STATE	
	Contact number	STATE	
	Email contact	STATE	
	Experience: Number of projects/contracts successfully completed of similar scope to this project within the past ten(10) years.	Min 5	
	Total number of PV streetlights incorporated?	State	
3.3.4	Luminaire		
	Minimum luminaire compliance standards:	SANS / IEC 60598-2-3 SANS 475	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Number of LED lights	1	
	System autonomy (number of days)	MINIMUM 2	
	Luminaire system voltage(V)	12V	
	Luminaire operating hours/night	AVERAGE 11	
	Light output (%)	100	
	Luminaires charging time (hours)	Max 6	
	Luminaire construction: Each luminaire must consist of: 1 x independent PV panel 1 x independent battery 1 x independent LED light 1 x independent charge controller 1 x cabinet	YES	
	Solar frame orientation and rake angle adjustable?	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Solar frame Rake / Tilt angle(degrees)	Min 0 to 40	
	Recommended solar panel tilt angle for maximum energy – (Tshwane geographic area)?	STATE	
	Visual indicator for easy adjustment of the solar frame orientation and rake angle?	YES	
	Luminaire components removable?	YES	
	Total weight of luminaire (Kg)	STATE	
	Compliant Lighting Simulation report and photometric data submitted with the tender?	YES	
3.3.4	Required documents submitted - point a to k ?	YES	
	Does the lighting values comply to SANS 10098-1 in accordance to the lighting design schedule?	YES	
	Recommended lighting levels in accordance to SANS 10098-1		
	Lighting Category	A2 A2 without median– 300 vehicles/hour	
	LU: Ave - cd/m ² Uo - % UI - % TI - %	1 40 60 20	
	Design Results: Luminaire lighting values achieved:		
	LU: Ave - cd/m ² Uo - % UI - % TI - %	STATE STATE STATE STATE	
	Design Results Luminaire		

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Luminaire centre height- meters	STATE	
	Total pole height above ground level- meters	15	
[2]	Luminaire spacing- meters	STATE	
	Luminaire outreach	SINGLE OUTREACH	
	Luminaire outreach- meters	0,5	
	Luminaire arrangement	SIDE BY SIDE	
	Luminaire tilt angle(degrees)	15	
	Luminaire Efficacy (Lm/W)	STATE	
	Luminaire Nominal flux(lm)	STATE	
[1]	Luminaire Watt rating(W)	STATE	
	Price evaluation, based on the following given criteria and costs:		
[3]	Number of years to be considered for evaluation (years)	25	
[4]	Electricity cost, averaged over evaluation period (R/kWh)	2.619	
[5]	Cost of complete PV street light– for the design, supply, delivery, offloading, installation, test and commissioning. Price must also include all material, plant and labour.(R)	STATE	
[6]	Estimated maintenance cost over evaluation period including part replacement. Price must also include all plant and labour required. R)	STATE	
[7]	Estimated Environmental Costs: Costs associated with environmentally responsible disposal of the system components such as batteries, LED light and other components at the end of their life. End-of-Life Disposal – (R)	STATE	
[8]	Scheme price Per Kilometre: $(1000/[2]) \times ([5] + [6] + [7])$ (R/km)	CALCULATE	
[9]	Power consumption: $(1000/[2]) \times ([1]/1000)$ (kW/km)	CALCULATE	
[10]	Annual energy saving costs: $[4] \times 4000 \times [9]$ (R/km)	CALCULATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
[11]	Total energy saving costs over period of evaluation: [3] x [10] (R/km)	CALCULATE	
	Cost of ownership: [8] –]11] (R/km)	CALCULATE	
	Luminaire components		
3.3.5	Solar module		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which solar panel complies	SANS/IEC 61215 IEC 61730-1 IEC 61730-2	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the solar panel display product certification mark?	YES	
	Type of panel	TIER 1 GRADE A MONO CRYSTALLINE (Half-Cell)	
	Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Type and number of cells	STATE	
	State fill factor of the module (%)	STATE	
	Rated watt peak power (W) @ STC	STATE	
	Max power voltage (Vmp) @ STC	STATE	
	Power tolerance - Watt	0 - +5W	
	Maximum Power Current (Imp) @ STC	STATE	
	Power temp coefficient(%/°C)	STATE	
	Open circuit voltage (Voc) @ STC	STATE	
	Short Circuit Current (Isc) @ STC	STATE	
	Nominal power (Pnom) @NOCT test conditions	STATE	
	Max power voltage (Vmp) @ NOCT	STATE	
	Maximum Power Current (Imp) @ NOCT	STATE	
	Open circuit voltage @ NOCT (V)	STATE	
	Temperature coefficient of current (A/°C)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Temperature coefficient of voltage (V/°C)	STATE	
	Conversion efficiency	>20%	
	Junction box, cabling and cable plug-in connectors	MIN IP 68	
	Material: Solar module frame,	EXTRUDED ANODISED ALUMINIUM	
	Manufacturer's warranty (years)	MIN 10	
	Performance warranty (years)	25	
	Dimensions (LWH-mm)	STATE	
	Weight (kg)	STATE	
	Data sheet with technical details submitted?	YES	
3.3.6	Energy storage		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of energy storage	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Standards to which battery complies?	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the battery display product certification mark?	STATE CERTIFICATIO N	
	Depth of discharge (%)	Max 50%	
	Battery nominal voltage (VDC)	STATE	
	Battery energy (Wh)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Battery capacity (Ah)	STATE	
	Maximum charge current (Amps)	STATE	
	Recommended charge current (Amps)	STATE	
	Recommended charging voltage (VDC)	STATE	
	Float charge voltage (VDC)	STATE	
	End of Discharge voltage (VDC)	STATE	
	Max discharge current(A)	STATE	
	Recommended discharge current(A)	STATE	
	Discharge temperature	STATE	
	Charge temperature	STATE	
	Long term storage temperature	STATE	
	Short term(< 3 months) storage temperature	STATE	
	State of Charge -SOC		
	Voltage @ 0% SOC (V)	STATE	
	Voltage @ 25% SOC (V)	STATE	
	Voltage @ 50% SOC (V)	STATE	
	Voltage @ 75% SOC (V)	STATE	
	Voltage @ 100% SOC (V)	STATE	
	Internal resistance(Ω)	STATE	
	Self-discharge	< 1% per month	
	Battery terminal type	STATE	
	Safety; BMS	SHUTDOWN ON OVER-CHARGE, OVER-DISCHARGE, OVER-CURRENT, OVER-UNDER TEMPERATURE, SHORT CIRCUIT, REVERSE POLARITY, CELL IMBALANCE	
	Material: battery cabinet	STATE	
	Battery cabinet life expectancy (years)	MIN 25	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Battery Cabinet Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Battery Cabinet impact resistance	≥IK 8	
	Battery Cabinet- vandal proof and key locking door?	YES	
	Cabinet dimensions (w x d x h - mm)	STATE	
	Weight of cabinet(kg)	STATE	
	Battery dimensions (w x d x h - mm)	STATE	
	Weight of battery(kg)	STATE	
	Battery cycle life(cycles)	MIN 8000	
	Battery warranty (years)	MIN 10	
	Battery life expectancy (years)	10	
	Battery - Data sheet with technical details submitted?	YES	
3.3.7	LED LIGHT		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which the LED light complies.	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	LED light certification mark	STATE	
	Photometric test report of the LED light submitted	YES	
	LM 79 test report submitted	YES	
	LM 80 test report submitted	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	ISTMT (In Situation Temperature Method Testing) test report submitted	YES	
	LED Lumen maintenance(@25°C)		
	L90(hours)	STATE	
	L80(hours)	STATE	
	L70(hours)	STATE	
	L50(hours)	STATE	
	L ₇₀ end of rated lifetime(hours)	STATE	
	Type of optical LED	STATE	
	Number of LED's	STATE	
	Ingress protection rating – enclosure & protector	Min IP 66	
	Min input voltage(V)	STATE	
	Max input voltage(V)	STATE	
	Power supply efficiency (%)	STATE	
	Current consumption(A)	STATE	
	Efficacy (Lm/W)	STATE	
	Nominal flux(lm)	STATE	
	Watt rating(W)	STATE	
	Color temperature(K)	5000K	
	Color rendering (CRI)	≥70	
	Lifetime(hours)	100 000	
	Protector cover material	IMPACT AND ULTRAVIOLET RESISTANT, CLEAR TEMPERED GLASS	
	Enclosure material	MARINE GRADE DIE-CAST ALUMINIUM - EN 1706 AC-44300	
	Enclosure finish	UNPAINTED ALUMINIUM	
	Impact Resistance	MIN IK 07	
	LED driver dimmable	YES	
	LED driver efficiency	>90%	
	Individual LED modules (YES/NO)	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	LED Driver protection	BUILT IN OVER VOLTAGE AND CURRENT PROTECTION, OVER TEMPERATURE AND SHORT CIRCUIT PROTECTION	
	LED Driver lifespan(hours) at normal operating temperatures	> 100 000	
	LED Driver replaceable	YES	
	LED modules replaceable	YES	
	Mounting arrangement	SIDE ENTRY SPIGOT	
	Nominal size of spigot(mm)	STATE	
	Length of spigot(mm)	STATE	
	Screws, bolts, clips	STAINLESS STEEL S316	
	Warranty (years)	Min 5 Years	
	Life expectancy (years)	Min 10 Years	
	Mass (kg)	STATE	
	Data sheet submitted?	YES	
3.3.8	Charge Controller		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of controller	MPPT	
	Standards to which controller complies:	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the controller display product certification mark?	STATE CERTIFICATION	
	Is the solar charge controller integrated with the LED light?(YES/NO)	NO	
	Ingress protection rating: (SANS/IEC 60529)	MIN IP 22	
	Nominal battery voltage (VDC) (12/24/36/48VDC or Auto)	12V	
	Battery input Voltage range(V)	STATE	
	Battery type	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Rated charge current(A)	STATE	
	Rated charge Power(W/V) for example: 1000W/12V	STATE	
	Max PV open circuit voltage(V) (At maximum operating environment temperature and at 25°C)	STATE	
	Max PV short circuit current(A)	STATE	
	MPP Voltage Range(V)	STATE	
	Self-consumption(mA)	STATE	
	Tracking efficiency (%)	STATE	
	Conversion efficiency (%)	STATE	
	Charge voltage 'absorption'(V)	STATE	
	Charge Voltage 'float'(V)	STATE	
	Charge algorithm	STATE	
	Temperature compensation(V/°C)	STATE	
	Max. continuous load current(A)	STATE	
	Low voltage load disconnect (V)	STATE	
	Low voltage load reconnect (v)	STATE	
	Protection features:	STATE	
	Lightning protection- surge arrester	YES	
	Warranty (year)	5	
	Life expectancy (years)	5	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Mass (kg)	STATE	
	Dimensions(mm)	L x W x H	
	Data sheet with technical details submitted?	YES	
	Remote monitoring ability (if required in future)?	YES	
	On site and ground monitoring ability?	YES MOBILE APP	
	Monitoring distance Wireless monitoring technology? E.g. Bluetooth/Wifi etc Mobile application included? Support provided during the contract period? Training offered during contract period?	MIN 15 METERS STATE Yes Yes Yes	
	Wiring – Luminaire		
	Wiring not exposed or visible and securely routed and protected against tampering, unauthorized removal, theft and manipulation.	YES	
	Category wires (for example from PV panel to controller to battery etc)		
	Category of wire, Type of cable, Cable size(mm ²), Outer diameter(mm) Current rating(A), Voltage rating(V), Insulation material, Jacket/sheath material,	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Microdots		
	Supplier Name	STATE	
	Supplier Address	STATE	
	Supplier Contact Number	STATE	
	Supplier E-mail Address	STATE	
	Coding PIN number: MMM-YY-XXX-XXXXX-XXX • Manufacturer of the component: MMM (first three digits of the name of the manufacturer) • Year of manufacture: YY (20XX) • City of Tshwane: XXX (COT) • Contract Reference: XXXXX (first digit = E for electricity department, next two digits = tender reference number, last two digits = Year of tender(20XX)) • Manufacturer of the microdot: XXX (last three digits - name of the manufacturer)	STATE	
	Composition	NICKEL	
	Size	500 Micron (0,55mm)	
	Adhesive coating	ACRYLIC	
	Microdot Certificate	TO BE SUPPLIED	
	Reader - MICROSCOPE	USB DIGITAL MICROSCOPE (300X/5MP)	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Reader – HANDHELD MAGNIFYING GLASS	MIN 10X MAGNIFICATION MIN 50mm OPTICAL GLASS OR HIGH-QUALITY ACRYLIC LENS BUILT-IN LED ILLUMINATION HANDLE	
	Early Tamper Detect Alarm System		
	Detect unauthorized removal or tampering of the solar panel	YES	
	Implement vibration or movement sensors to detect physical disturbances of the solar panel	YES	
	Implement Geo-fencing to monitor solar panel location	YES	
	Geo-fencing perimeter(meter)	7	
	Implement sensors to detect unauthorized opening of the enclosure	YES	
	Implement vibration or movement sensors to detect physical disturbances of the enclosure	YES	
	Send automated alarm signal and notifications to a mobile app and web-based interface.	YES	
	Support non-propriety and open standards and protocols for future integration into City of Tshwane systems and software	YES	
	Required Software Components: • web-based interface accessible through a web browser. • A mobile application (iOS, Android, Huawei, Windows platforms) • Ability to add and handle a large number of additional alarm systems units	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Communications module	3G/4G/LTE With SIM CARD	
	Communications module must support TCP/IP	YES	
	Alarm system components, including sensors and wiring concealed, tamper-resistant and protected against unauthorized access or manipulation.	YES	
	After power failure system must automatically transition back to normal operations	YES	
	Audible alarm that can be enabled or disabled through mobile app/web-interface	YES	
	Training and Support provided during contract period	YES	
	Warranty(years)	STATE	

ITEM 6: PV Luminaire 6- BRT Bus Route – 4/5/6 Lane - Single Outreach – 14,4m

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Note: Tender will not be considered unless this form is completed in full and signed.

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Bidders Details:		
	Company Name	STATE	
	Address	STATE	
	Contact number	STATE	
	Email contact	STATE	
	Experience: Number of projects/contracts successfully completed of similar scope to this project within the past ten (10) years.	Min 5	
	Total number of PV streetlights incorporated?	State	
3.3.4	Luminaire		
	Minimum luminaire compliance standards:	SANS / IEC 60598-2-3 SANS 475	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Number of LED lights	1	
	System autonomy (number of days)	MINIMUM 2	
	Luminaire system voltage(V)	12V	
	Luminaire operating hours/night	AVERAGE 11	
	Light output (%)	100	
	Luminaires charging time (hours)	Max 6	
	Luminaire construction: Each luminaire must consist of: 1 x independent PV panel 1 x independent battery 1 x independent LED light 1 x independent charge controller 1 x cabinet	YES	
	Solar frame orientation and rake angle adjustable?	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Solar frame Rake / Tilt angle(degrees)	Min 0 to 40	
	Recommended solar panel tilt angle for maximum energy – (Tshwane geographic area)?	STATE	
	Visual indicator for easy adjustment of the solar frame orientation and rake angle?	YES	
	Luminaire components removable?	YES	
	Total weight of luminaire (Kg)	STATE	
	Compliant Lighting Simulation report and photometric data submitted with the tender?	YES	
3.3.4	Required documents submitted - point a to j ?	YES	
	Does the lighting values comply to SANS 10098-1 in accordance to the lighting design schedule ?	YES	
	Required Lighting Level		
	Required illuminance,(lux)	Min 10	10
	Design Results: Luminaire lighting values achieved:		
	Lux level -Lux	STATE	
	Design Results Luminaire		
	Luminaire centre height- meters	STATE	
	Total pole height above ground level- meters	12	
[2]	Luminaire spacing- meters	STATE	
	Luminaire outreach	SINGLE OUTREACH	
	Luminaire outreach- meters	0,5	
	Luminaire arrangement	SIDE BY SIDE	
	Luminaire tilt angle(degrees)	15	
	Luminaire Efficacy (Lm/W)	STATE	
	Luminaire Nominal flux(lm)	STATE	
[1]	Luminaire Watt rating(W)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Price evaluation, based on the following given criteria and costs:		
[3]	Number of years to be considered for evaluation (years)	25	
[4]	Electricity cost, averaged over evaluation period (R/kWh)	2.619	
[5]	Cost of complete PV street light– for the design, supply, delivery, offloading, installation, test and commissioning. Price must also include all material, plant and labour.(R)	STATE	
[6]	Estimated maintenance cost over evaluation period including part replacement. Price must also include all plant and labour required. R)	STATE	
[7]	Estimated Environmental Costs: Costs associated with environmentally responsible disposal of the system components such as batteries, LED light and other components at the end of their life. End-of-Life Disposal – (R)	STATE	
[8]	Scheme price Per Kilometre: $(1000/[2]) \times ([5] + [6] + [7])$ (R/km)	CALCULATE	
[9]	Power consumption: $(1000/[2]) \times ([1]/1000)$ (kW/km)	CALCULATE	
[10]	Annual energy saving costs: $[4] \times 4000 \times [9]$ (R/km)	CALCULATE	
[11]	Total energy saving costs over period of evaluation: $[3] \times [10]$ (R/km)	CALCULATE	
	Cost of ownership: $[8] - [11]$ (R/km)	CALCULATE	
	Luminaire components		
3.3.5	Solar module		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which solar panel complies	SANS/IEC 61215 IEC 61730-1 IEC 61730-2	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the solar panel display product certification mark?	YES	
	Type of panel	TIER 1 GRADE A MONO CRYSTALLINE (Half-Cell)	
	Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Type and number of cells	STATE	
	State fill factor of the module (%)	STATE	
	Rated watt peak power (W) @ STC	STATE	
	Max power voltage (Vmp) @ STC	STATE	
	Power tolerance - Watt	0 - +5W	
	Maximum Power Current (Imp) @ STC	STATE	
	Power temp coefficient(%/°C)	STATE	
	Open circuit voltage (Voc) @ STC	STATE	
	Short Circuit Current (Isc) @ STC	STATE	
	Nominal power (Pnom) @NOCT test conditions	STATE	
	Max power voltage (Vmp) @ NOCT	STATE	
	Maximum Power Current (Imp) @ NOCT	STATE	
	Open circuit voltage @ NOCT (V)	STATE	
	Temperature coefficient of current (A/°C)	STATE	
	Temperature coefficient of voltage (V/°C)	STATE	
	Conversion efficiency	>20%	
	Junction box, cabling and cable pug-in connectors	MIN IP 68	
	Material: Solar module frame,	EXTRUDED ANODISED ALUMINIUM	
	Manufacturer's warranty (years)	MIN 10	
	Performance warranty (years)	25	
	Dimensions (LWH-mm)	STATE	
	Weight (kg)	STATE	
	Data sheet with technical details submitted?	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
3.3.6	Energy storage		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of energy storage	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Standards to which battery complies?	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the battery display product certification mark?	STATE CERTIFICATIO N	
	Depth of discharge (%)	Max 50%	
	Battery nominal voltage (VDC)	STATE	
	Battery energy (Wh)	STATE	
	Battery capacity (Ah)	STATE	
	Maximum charge current (Amps)	STATE	
	Recommended charge current (Amps)	STATE	
	Recommended charging voltage (VDC)	STATE	
	Float charge voltage (VDC)	STATE	
	End of Discharge voltage (VDC)	STATE	
	Max discharge current(A)	STATE	
	Recommended discharge current(A)	STATE	
	Discharge temperature	STATE	
	Charge temperature	STATE	
	Long term storage temperature	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Short term(< 3 months) storage temperature	STATE	
	State Of Charge -SOC		
	Voltage @ 0% SOC (V)	STATE	
	Voltage @ 25% SOC (V)	STATE	
	Voltage @ 50% SOC (V)	STATE	
	Voltage @ 75% SOC (V)	STATE	
	Voltage @ 100% SOC (V)	STATE	
	Internal resistance(Ω)	STATE	
	Self-discharge	< 1% per month	
	Battery terminal type	STATE	
	Safety; BMS	SHUTDOWN ON OVER-CHARGE, OVER-DISCHARGE, OVER-CURRENT, OVER-UNDER TEMPERATURE, SHORT CIRCUIT, REVERSE POLARITY, CELL IMBALANCE	
	Material: battery cabinet	STATE	
	Battery cabinet life expectancy (years)	MIN 25	
	Battery Cabinet Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Battery Cabinet impact resistance	$\geq$ IK 8	
	Battery Cabinet- vandal proof and key locking door?	YES	
	Cabinet dimensions (w x d x h - mm)	STATE	
	Weight of cabinet(kg)	STATE	
	Battery dimensions (w x d x h - mm)	STATE	
	Weight of battery(kg)	STATE	
	Battery cycle life(cycles)	MIN 8000	
	Battery warranty (years)	MIN 10	
	Battery life expectancy (years)	10	
	Battery - Data sheet with technical details submitted?	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
3.3.7	LED LIGHT		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which the LED light complies.	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	LED light certification mark	STATE	
	Photometric test report of the LED light submitted	YES	
	LM 79 test report submitted	YES	
	LM 80 test report submitted	YES	
	ISTMT (In Situation Temperature Method Testing) test report submitted	YES	
	LED Lumen maintenance(@25°C)		
	L90(hours)	STATE	
	L80(hours)	STATE	
	L70(hours)	STATE	
	L50(hours)	STATE	
	L ₇₀ end of rated lifetime(hours)	STATE	
	Type of optical LED	STATE	
	Number of LED's	STATE	
	Ingress protection rating – enclosure & protector	Min IP 66	
	Min input voltage(V)	STATE	
	Max input voltage(V)	STATE	
	Power supply efficiency(%)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Current consumption(A)	STATE	
	Efficacy (Lm/W)	STATE	
	Nominal flux(lm)	STATE	
	Watt rating(W)	STATE	
	Color temperature(K)	5000K	
	Color rendering (CRI)	≥70	
	Lifetime(hours)	100 000	
	Protector cover material	IMPACT AND ULTRAVIOLET RESISTANT, CLEAR TEMPERED GLASS	
	Enclosure material	MARINE GRADE DIE-CAST ALUMINIUM - EN 1706 AC-44300	
	Enclosure finish	UNPAINTED ALUMINIUM	
	Impact Resistance	MIN IK 07	
	LED driver dimmable	YES	
	LED driver efficiency	>90%	
	Individual LED modules (YES/NO)	YES	
	LED Driver protection	BUILT IN OVER VOLTAGE AND CURRENT PROTECTION, OVER TEMPERATURE AND SHORT CIRCUIT PROTECTION	
	LED Driver lifespan(hours) at normal operating temperatures	> 100 000	
	LED Driver replaceable	YES	
	LED modules replaceable	YES	
	Mounting arrangement	SIDE ENTRY SPIGOT	
	Nominal size of spigot(mm)	STATE	
	Length of spigot(mm)	STATE	
	Screws, bolts, clips	STAINLESS STEEL S316	
	Warranty (years)	Min 5 Years	
	Life expectancy (years)	Min 10 Years	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Mass (kg)	STATE	
	Data sheet submitted?	YES	
3.3.8	Charge Controller		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of controller	MPPT	
	Standards to which controller complies:	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the controller display product certification mark?	STATE CERTIFICATION	
	Is the solar charge controller integrated with the LED light?(YES/NO)	NO	
	Ingress protection rating: (SANS/IEC 60529)	MIN IP 22	
	Nominal battery voltage (VDC) (12/24/36/48VDC or Auto)	12V	
	Battery input Voltage range(V)	STATE	
	Battery type	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Rated charge current(A)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Rated charge Power(W/V) for example: 1000W/12V	STATE	
	Max PV open circuit voltage(V) (At maximum operating environment temperature and at 25°C)	STATE	
	Max PV short circuit current(A)	STATE	
	MPP Voltage Range(V)	STATE	
	Self-consumption(mA)	STATE	
	Tracking efficiency (%)	STATE	
	Conversion efficiency (%)	STATE	
	Charge voltage' absorption'(V)	STATE	
	Charge Voltage 'float'(V)	STATE	
	Charge algorithm	STATE	
	Temperature compensation(V/°C)	STATE	
	Max. continuous load current(A)	STATE	
	Low voltage load disconnect(V)	STATE	
	Low voltage load reconnect(v)	STATE	
	Protection features:	STATE	
	Lightning protection- surge arrester	YES	
	Warranty (year)	5	
	Life expectancy (years)	5	
	Mass (kg)	STATE	
	Dimensions(mm)	L x W x H	
	Data sheet with technical details submitted?	YES	
	Remote monitoring ability (if required in future)?	YES	
	On site and ground monitoring ability?	YES MOBILE APP	
	Monitoring distance Wireless monitoring technology? E.g. Bluetooth/Wifi etc Mobile application included? Support provided during the contract	MIN 15 METERS STATE Yes Yes	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	period? Training offered during contract period?	Yes	
	Wiring – Luminaire		
	Wiring not exposed or visible and securely routed and protected against tampering, unauthorized removal, theft and manipulation.	YES	
	Category wires (for example from PV panel to controller to battery etc)		
	Category of wire, Type of cable, Cable size(mm²), Outer diameter(mm) Current rating(A), Voltage rating(V), Insulation material, Jacket/sheath material,	STATE	
	Microdots		

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Supplier Name	STATE	
	Supplier Address	STATE	
	Supplier Contact Number	STATE	
	Supplier E-mail Address	STATE	
	Coding PIN number: MMM-YY-XXX-XXXXX-XXX • Manufacturer of the component: MMM (first three digits of the name of the manufacturer) • Year of manufacture: YY (20XX) • City of Tshwane: XXX (COT) • Contract Reference: XXXXX (first digit = E for electricity department, next two digits = tender reference number, last two digits = Year of tender(20XX)) • Manufacturer of the microdot: XXX (last three digits - name of the manufacturer)	STATE	
	Composition	NICKEL	
	Size	500 Micron (0,55mm)	
	Adhesive coating	ACRYLIC	
	Microdot Certificate	TO BE SUPPLIED	
	Reader - MICROSCOPE	USB DIGITAL MICROSCOPE (300X/5MP)	
	Reader – HANDHELD MAGNIFYING GLASS	MIN 10X MAGNIFICATION MIN 50mm OPTICAL GLASS OR HIGH-QUALITY ACRYLIC LENS BUILT-IN LED ILLUMINATION HANDLE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Early Tamper Detect Alarm System		
	Detect unauthorized removal or tampering of the solar panel	YES	
	Implement vibration or movement sensors to detect physical disturbances of the solar panel	YES	
	Implement Geo-fencing to monitor solar panel location	YES	
	Geo-fencing perimeter(meter)	7	
	Implement sensors to detect unauthorized opening of the enclosure	YES	
	Implement vibration or movement sensors to detect physical disturbances of the enclosure	YES	
	Send automated alarm signal and notifications to a mobile app and web-based interface.	YES	
	Support non-propriety and open standards and protocols for future integration into City of Tshwane systems and software	YES	
	Required Software Components: • web-based interface accessible through a web browser. • A mobile application (iOS, Android, Huawei, Windows platforms) • Ability to add and handle a large number of additional alarm systems units	YES	
	Communications module	3G/4G/LTE With SIM CARD	
	Communications module must support TCP/IP	YES	
	Alarm system components, including sensors and wiring concealed, tamper-resistant and protected against unauthorized access or manipulation.	YES	
	After power failure system must automatically transition back to	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	normal operations		
	Audible alarm that can be enabled or disabled through mobile app/web-interface	YES	
	Training and Support provided during contract period	YES	
	Warranty(years)	STATE	

ITEM 7: PV Luminaire 7- BRT Bus Route – 4/5/6 Lane - Median – 14,4m
Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered
Note: Tender will not be considered unless this form is completed in full and signed.

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Bidders Details:		
	Company Name	STATE	
	Address	STATE	
	Contact number	STATE	
	Email contact	STATE	
	Experience: Number of projects/contracts successfully completed of similar scope to this project within the past ten(10) years.	Min 5	
	Total number of PV streetlights incorporated?	State	
3.3.4	Luminaire		
	Minimum luminaire compliance standards:	SANS / IEC 60598-2-3 SANS 475	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Number of LED lights	1	
	System autonomy (number of days)	MINIMUM 2	
	Luminaire system voltage(V)	12V	
	Luminaire operating hours/night	AVERAGE 11	
	Light output (%)	100	
	Luminaires charging time (hours)	Max 6	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Luminaire construction: Each luminaire must consist of: 2 x independent PV panel 2 x independent battery 2 x independent LED light 2 x independent charge controller 1 x cabinet	YES	
	Solar frame orientation and rake angle adjustable?	YES	
	Solar frame Rake / Tilt angle(degrees)	Min 0 to 40	
	Recommended solar panel tilt angle for maximum energy – (Tshwane geographic area)?	STATE	
	Visual indicator for easy adjustment of the solar frame orientation and rake angle?	YES	
	Luminaire components removable?	YES	
	Total weight of luminaire (Kg)	STATE	
	Compliant Lighting Simulation report and photometric data submitted with the tender?	YES	
3.3.4	Required documents submitted - point a to j ?	YES	
	Does the lighting values comply to SANS 10098-1 in accordance to the lighting design schedule ?	YES	
	Required Lighting Level		
	Required illuminance,(lux)	Min 10	10
	Design Results: Luminaire lighting values achieved:		
	Lux level -Lux	STATE	
	Design Results Luminaire		
	Luminaire centre height- meters	STATE	
	Total pole height above ground level- meters	12	
[2]	Luminaire spacing- meters	STATE	
	Luminaire outreach	DOUBLE OUTREACH	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Luminaire outreach- meters	3	
	Luminaire arrangement	CENTRAL - MEDIAN	
	Luminaire tilt angle(degrees)	15	
	Luminaire Efficacy (Lm/W)	STATE	
	Luminaire Nominal flux(lm)	STATE	
[1]	Luminaire Watt rating(W)	STATE	
	Price evaluation, based on the following given criteria and costs:		
[3]	Number of years to be considered for evaluation (years)	25	
[4]	Electricity cost, averaged over evaluation period (R/kWh)	2.619	
[5]	Cost of complete PV street light– for the design, supply, delivery, offloading, installation, test and commissioning. Price must also include all material, plant and labour.(R)	STATE	
[6]	Estimated maintenance cost over evaluation period including part replacement. Price must also include all plant and labour required. R)	STATE	
[7]	Estimated Environmental Costs: Costs associated with environmentally responsible disposal of the system components such as batteries, LED light and other components at the end of their life. End-of-Life Disposal – (R)	STATE	
[8]	Scheme price Per Kilometer: $(1000/[2]) \times ([5] + [6] + [7])$ (R/km)	CALCULATE	
[9]	Power consumption: $(1000/[2]) \times ([1]/1000)$ (kW/km)	CALCULATE	
[10]	Annual energy saving costs: $[4] \times 4000 \times [9]$ (R/km)	CALCULATE	
[11]	Total energy saving costs over period of evaluation: $[3] \times [10]$ (R/km)	CALCULATE	
	Cost of ownership: $[8] - [11]$ (R/km)	CALCULATE	
	Luminaire components		

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
3.3.5	Solar module		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which solar panel complies	SANS/IEC 61215 IEC 61730-1 IEC 61730-2	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the solar panel display product certification mark?	YES	
	Type of panel	TIER 1 GRADE A MONO CRYSTALLINE (Half-Cell)	
	Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Type and number of cells	STATE	
	State fill factor of the module (%)	STATE	
	Rated watt peak power (W) @ STC	STATE	
	Max power voltage (Vmp) @ STC	STATE	
	Power tolerance - Watt	0 - +5W	
	Maximum Power Current (Imp) @ STC	STATE	
	Power temp coefficient(%/°C)	STATE	
	Open circuit voltage (Voc) @ STC	STATE	
	Short Circuit Current (Isc) @ STC	STATE	
	Nominal power (Pnom) @NOCT test conditions	STATE	
	Max power voltage (Vmp) @ NOCT	STATE	
	Maximum Power Current (Imp) @ NOCT	STATE	
	Open circuit voltage @ NOCT (V)	STATE	
	Temperature coefficient of current (A/°C)	STATE	
	Temperature coefficient of voltage (V/°C)	STATE	
	Conversion efficiency	>20%	
	Junction box, cabling and cable pug-in connectors	MIN IP 68	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Material: Solar module frame,	EXTRUDED ANODISED ALUMINIUM	
	Manufacturer's warranty (years)	MIN 10	
	Performance warranty (years)	25	
	Dimensions (LWH-mm)	STATE	
	Weight (kg)	STATE	
	Data sheet with technical details submitted?	YES	
3.3.6	Energy storage		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of energy storage	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Standards to which battery complies?	STATE	
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the battery display product certification mark?	STATE CERTIFICATIO N	
	Depth of discharge (%)	Max 50%	
	Battery nominal voltage (VDC)	STATE	
	Battery energy (Wh)	STATE	
	Battery capacity (Ah)	STATE	
	Maximum charge current (Amps)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Recommended charge current (Amps)	STATE	
	Recommended charging voltage (VDC)	STATE	
	Float charge voltage (VDC)	STATE	
	End of Discharge voltage (VDC)	STATE	
	Max discharge current(A)	STATE	
	Recommended discharge current(A)	STATE	
	Discharge temperature	STATE	
	Charge temperature	STATE	
	Long term storage temperature	STATE	
	Short term(< 3 months) storage temperature	STATE	
	State Of Charge -SOC		
	Voltage @ 0% SOC (V)	STATE	
	Voltage @ 25% SOC (V)	STATE	
	Voltage @ 50% SOC (V)	STATE	
	Voltage @ 75% SOC (V)	STATE	
	Voltage @ 100% SOC (V)	STATE	
	Internal resistance(Ω)	STATE	
	Self-discharge	< 1% per month	
	Battery terminal type	STATE	
	Safety; BMS	SHUTDOWN ON OVER-CHARGE, OVER-DISCHARGE, OVER-CURRENT, OVER-UNDER TEMPERATURE, SHORT CIRCUIT, REVERSE POLARITY, CELL IMBALANCE	
	Material: battery cabinet	STATE	
	Battery cabinet life expectancy (years)	MIN 25	
	Battery Cabinet Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Battery Cabinet impact resistance	$\geq$ IK 8	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Battery Cabinet- vandal proof and key locking door?	YES	
	Cabinet dimensions (w x d x h - mm)	STATE	
	Weight of cabinet(kg)	STATE	
	Battery dimensions (w x d x h - mm)	STATE	
	Weight of battery(kg)	STATE	
	Battery cycle life(cycles)	MIN 8000	
	Battery warranty (years)	MIN 10	
	Battery life expectancy (years)	10	
	Battery - Data sheet with technical details submitted?	YES	
3.3.7	LED LIGHT		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which the LED light complies.	STATE	
	Certificates of Compliance/test report(certified copies) to standards included?	YES	
	LED light certification mark	STATE	
	Photometric test report of the LED light submitted	YES	
	LM 79 test report submitted	YES	
	LM 80 test report submitted	YES	
	ISTMT (In Situation Temperature Method Testing) test report submitted	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	LED Lumen maintenance(@25°C)		
	L90(hours)	STATE	
	L80(hours)	STATE	
	L70(hours)	STATE	
	L50(hours)	STATE	
	L ₇₀ end of rated lifetime(hours)	STATE	
	Type of optical LED	STATE	
	Number of LED's	STATE	
	Ingress protection rating – enclosure & protector	Min IP 66	
	Min input voltage(V)	STATE	
	Max input voltage(V)	STATE	
	Power supply efficiency (%)	STATE	
	Current consumption(A)	STATE	
	Efficacy (Lm/W)	STATE	
	Nominal flux(lm)	STATE	
	Watt rating(W)	STATE	
	Color temperature(K)	5000K	
	Color rendering (CRI)	≥70	
	Lifetime(hours)	100 000	
	Protector cover material	IMPACT AND ULTRAVIOLET RESISTANT, CLEAR TEMPERED GLASS	
	Enclosure material	MARINE GRADE DIE-CAST ALUMINIUM - EN 1706 AC-44300	
	Enclosure finish	UNPAINTED ALUMINIUM	
	Impact Resistance	MIN IK 07	
	LED driver dimmable	YES	
	LED driver efficiency	>90%	
	Individual LED modules (YES/NO)	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	LED Driver protection	BUILT IN OVER VOLTAGE AND CURRENT PROTECTION, OVER TEMPERATURE AND SHORT CIRCUIT PROTECTION	
	LED Driver lifespan(hours) at normal operating temperatures	> 100 000	
	LED Driver replaceable	YES	
	LED modules replaceable	YES	
	Mounting arrangement	SIDE ENTRY SPIGOT	
	Nominal size of spigot(mm)	STATE	
	Length of spigot(mm)	STATE	
	Screws, bolts, clips	STAINLESS STEEL S316	
	Warranty (years)	Min 5 Years	
	Life expectancy (years)	Min 10 Years	
	Mass (kg)	STATE	
	Data sheet submitted?	YES	
3.3.8	Charge Controller		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of controller	MPPT	
	Standards to which controller complies:	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Certificates of Compliance/test report (certified copies) to standards included?	YES	
	Does the controller display product certification mark?	STATE CERTIFICATION	
	Is the solar charge controller integrated with the LED light?(YES/NO)	NO	
	Ingress protection rating: (SANS/IEC 60529)	MIN IP 22	
	Nominal battery voltage (VDC) (12/24/36/48VDC or Auto)	12V	
	Battery input Voltage range(V)	STATE	
	Battery type	LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY	
	Rated charge current(A)	STATE	
	Rated charge Power(W/V) for example: 1000W/12V	STATE	
	Max PV open circuit voltage(V) (At maximum operating environment temperature and at 25°C)	STATE	
	Max PV short circuit current(A)	STATE	
	MPP Voltage Range(V)	STATE	
	Self-consumption(mA)	STATE	
	Tracking efficiency (%)	STATE	
	Conversion efficiency (%)	STATE	
	Charge voltage 'absorption'(V)	STATE	
	Charge Voltage 'float'(V)	STATE	
	Charge algorithm	STATE	
	Temperature compensation(V/°C)	STATE	
	Max. continuous load current(A)	STATE	
	Low voltage load disconnect (V)	STATE	
	Low voltage load reconnect (v)	STATE	
	Protection features:	STATE	
	Lightning protection- surge arrester	YES	
	Warranty (year)	5	
	Life expectancy (years)	5	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Mass (kg)	STATE	
	Dimensions(mm)	L x W x H	
	Data sheet with technical details submitted?	YES	
	Remote monitoring ability (if required in future)?	YES	
	On site and ground monitoring ability?	YES MOBILE APP	
	Monitoring distance Wireless monitoring technology? E.g. Bluetooth/Wifi etc Mobile application included? Support provided during the contract period? Training offered during contract period?	MIN 15 METERS STATE Yes Yes Yes	
	Wiring - Luminaire		
	Wiring not exposed or visible and securely routed and protected against tampering, unauthorized removal, theft and manipulation.	YES	
	Category wires (for example from PV panel to controller to battery etc)		
	Category of wire, Type of cable, Cable size(mm ²), Outer diameter(mm) Current rating(A), Voltage rating(V), Insulation material, Jacket/sheath material,	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Microdots		
	Supplier Name	STATE	
	Supplier Address	STATE	
	Supplier Contact Number	STATE	
	Supplier E-mail Address	STATE	
	Coding PIN number: MMM-YY-XXX-XXXXX-XXX • Manufacturer of the component: MMM (first three digits of the name of the manufacturer) • Year of manufacture: YY (20XX) • City of Tshwane: XXX (COT) • Contract Reference: XXXXX (first digit = E for electricity department, next two digits = tender reference number, last two digits = Year of tender(20XX)) • Manufacturer of the microdot: XXX (last three digits - name of the manufacturer)	STATE	
	Composition	NICKEL	
	Size	500 Micron (0,55mm)	
	Adhesive coating	ACRYLIC	
	Microdot Certificate	TO BE SUPPLIED	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Reader- MICROSCOPE	USB DIGITAL MICROSCOPE (300X/5MP)	
	Reader – HANDHELD MAGNIFYING GLASS	MIN 10X MAGNIFICATION MIN 50mm OPTICAL GLASS OR HIGH-QUALITY ACRYLIC LENS BUILT-IN LED ILLUMINATION HANDLE	
	Early Tamper Detect Alarm System		
	Detect unauthorized removal or tampering of the solar panel	YES	
	Implement vibration or movement sensors to detect physical disturbances of the solar panel	YES	
	Implement Geo-fencing to monitor solar panel location	YES	
	Geo-fencing perimeter(meter)	7	
	Implement sensors to detect unauthorized opening of the enclosure	YES	
	Implement vibration or movement sensors to detect physical disturbances of the enclosure	YES	
	Send automated alarm signal and notifications to a mobile app and web-based interface.	YES	
	Support non-propriety and open standards and protocols for future integration into City of Tshwane systems and software	YES	
	Required Software Components: • web-based interface accessible through a web browser. • A mobile application (iOS, Android, Huawei, Windows platforms)	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Ability to add and handle a large number of additional alarm systems units		
	Communications module	3G/4G/LTE With SIM CARD	
	Communications module must support TCP/IP	YES	
	Alarm system components, including sensors and wiring concealed, tamper-resistant and protected against unauthorized access or manipulation.	YES	
	After power failure system must automatically transition back to normal operations	YES	
	Audible alarm that can be enabled or disabled through mobile app/web-interface	YES	
	Training and Support provided during contract period	YES	
	Warranty(years)	STATE	

MATERIAL NUMBER				
3033174	Item 1	INSTL LUMINAIRE PV RESIDENTIAL CLS B1	PV Luminaire 1- Residential - 2 Lane Class B1 - Single Outreach – 8,5m	
3033175	Item 2	INSTL LUMINAIRE PV COLLECTOR MAIN CLS B1	PV Luminaire 2- Collector Main - 2/3/4 Lane Class B1- Single Outreach – 12m	
3033176	Item 3	INSTL LUMINAIRE PV CLS A2 REACH SGL 17.5M	PV Luminaire 3- Major Arterial – 4/5/6 Lane Class A2- Single Outreach – 17,5m	
3033177	Item 4	INSTL LUMINAIRE PV CLS A2 MEDIAN 17.5M	PV Luminaire 4- Major Arterial – 4/5/6 Lane Class A2- Median – 17,5m	
3033178	Item 5	INSTL LUMINAIRE PV RURAL CLS A2 OUT SGL	PV Luminaire 5- Rural Principal Arterial – 2/3/4 Lane Class A2- Single Outreach – 17,5m	
3033179	Item 6	INSTL LUMINAIRE PV BUS REACH SGL 14.4M	PV Luminaire 6- BRT Bus Route – 4/5/6 Lane - Single Outreach – 14,4m	
3033173	Item 7	INSTL LUMINAIRE PV BUS MEDIAN 14.4M	PV Luminaire 7- BRT Bus Route – 4/5/6 Lane - Median – 14,4m	

OCCUPATIONAL HEALTH AND SAFETY

ARTICLE OF AGREEMENT IN TERMS OF SECTION 37(2) OF THE

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 BETWEEN

THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY

(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 as Annexure A of the said

(hereinafter 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:

1. 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.

2. 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.

3. The CONTRACTOR hereby accepts sole liability for such due compliance with the relevant duties, obligations, prohibitions, arrangements and procedures, if any, imposed by the ACT and Regulations and the CONTRACTOR expressly absolves the EMPLOYER from itself being obliged to comply with any of the aforesaid duties, obligations, prohibitions, arrangements and procedures as the case may be.

4. The CONTRACTOR agrees that any duly authorized 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 this undertaking as more fully set out in paragraphs 1 and 2 above, which steps may include, but shall not be limited to remedy the default of the CONTRACTOR at the cost of the CONTRACTOR.

5. The CONTRACTOR shall be obliged to report forthwith to the EMPLOYER any investigation, 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 investigation, complaint or criminal charge as the case may be.

Thus signed at PRETORIA for and on behalf of the EMPLOYER on this the day of..... 20

AS WITNESSES:

1.

2.

.....

SIGNATURE

.....

NAME AND SURNAME

.....

CAPACITY

Thus signed at PRETORIA for and on behalf of the CONTRACTOR on this the

..... day of 20

AS WITNESSES:

1.

2.

.....

SIGNATURE

.....

NAME AND SURNAME

.....

CAPACITY

PART A INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE CITY OF TSHWANE MUNICIPALITY					
BID NUMBER:	EED 08-2024/25	CLOSING DATE:	15 November 2024	CLOSING TIME:	10:00
DESCRIPTION	TENDER FOR THE DESIGN, SUPPLY, DELIVER AND OFFLOAD OF NEW PHOTOVOLTAIC STREETLIGHTS TO THE CITY OF TSHWANE ON AN AS AND WHEN REQUIRED BASIS FOR THE PERIOD OF THREE (3) YEARS.				
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)

Tshwane House					
Supply Chain Management					
320 Madiba Street					
Pretoria CBD					
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]	☐ Yes ☐ No		B-BBEE STATUS LEVEL SWORN AFFIDAVIT		☐ Yes ☐ 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?	☐ Yes ☐ No [IF YES ENCLOSE PROOF]	ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES /WORKS OFFERED?	☐ Yes ☐ 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	Steynberg Myburg
CONTACT PERSON	Mulondi Rasekgala	TELEPHONE NUMBER	012 358 2441
TELEPHONE NUMBER	012 358 6636	FACSIMILE NUMBER	n/a
FACSIMILE NUMBER	n/a	EMAIL ADDRESS	steynbergm@tshwane.gov.za
EMAIL ADDRESS	mulondin@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, 2022, 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 ☐ NO ☐
- 3.2 DOES THE ENTITY HAVE A BRANCH IN THE RSA? YES ☐ NO ☐
- 3.3 DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA? YES ☐ NO ☐
- 3.4 DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA? YES ☐ NO ☐
- 3.5 IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION? YES ☐ NO ☐

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.

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:

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

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

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

[illegible]

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, shareholder²)
 - 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



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 for auditing? ***YES / NO**

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 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? ***YES / NO**

2.1 If no, this serves to certify that the bidder has 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. ***YES / NO**

2.2 If yes, provide particulars.

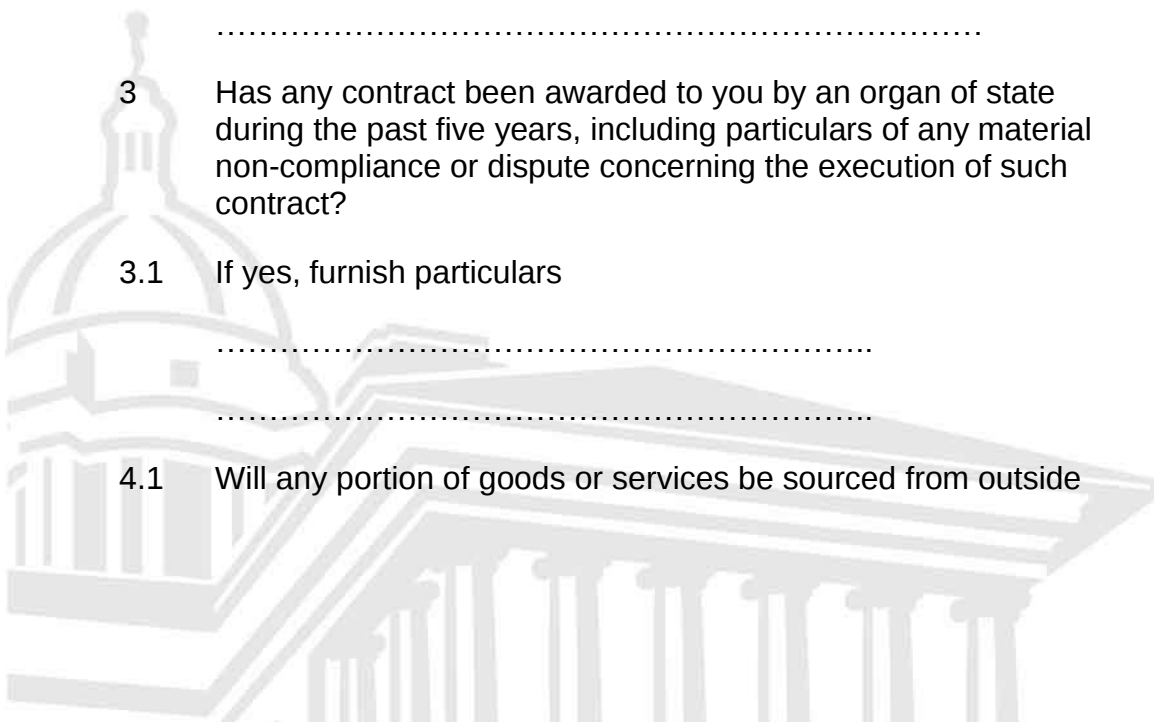
.....

3 Has any contract been awarded to you by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract? ***YES / NO**

3.1 If yes, furnish particulars

.....

4.1 Will any portion of goods or services be sourced from outside ***YES / NO**



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?

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

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals.

NB: BEFORE COMPLETING THIS FORM, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF THE TENDER AND PREFERENTIAL PROCUREMENT REGULATIONS, 2022

1. GENERAL CONDITIONS

- 1.1 The following preference point systems are applicable to invitations to tender:
- 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 **To be completed by the organ of state**
(delete whichever is not applicable for this tender).
- a) The applicable preference point system for this tender is the 80/20 preference point system.
- 1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:
- (a) Price; and
- (b) Specific Goals.
- 1.4 **To be completed by the organ of state:**
 The maximum points for this tender are allocated as follows:
- | | Points |
|--|--------|
| PRICE | 80 |
| SPECIFIC GOALS | 20 |
| TOTAL POINTS FOR PRICE AND SPECIFIC GOALS | 100 |
- 1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.
- 1.6 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

2. DEFINITIONS

- (a) **“tender”** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;
- (b) **“price”** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- (c) **“rand value”** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;
- (d) **“tender for income-generating contracts”** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and
- (e) **“the Act”** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

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

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

80/20	or	90/10
$Ps = 80 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right)$	or	$Ps = 90 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right)$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

3.2. FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME GENERATING PROCUREMENT

3.2.1. POINTS AWARDED FOR PRICE

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

80/20	or	90/10
$Ps = 80 \left(1 + \frac{Pt - P_{max}}{P_{max}} \right)$	or	$Ps = 90 \left(1 + \frac{Pt - P_{max}}{P_{max}} \right)$

Where

- Ps = Points scored for price of tender under consideration
 Pt = Price of tender under consideration
 Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

- 4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:
- 4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—
- (a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or
 - (b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,
- then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

Table 1: Specific goals for the tender and points claimed are indicated per the table below.

(Note to organs of state: Where either the 90/10 or 80/20 preference point system is applicable, corresponding points must also be indicated as such.)

Note to tenderers: The tenderer must indicate how they claim points for each preference point system.)

Specific goals	80/20 preference point system	Number of points claimed (80/20 system) (To be completed by the tenderer)
BB-BEE score of companies • Level 1 • Level 2 • Level 3 • Level 4 • Level 5 • Level 6 • Level 7 • Level 8 • Non-compliant	• 8 Points • 7 Points • 6 Points • 5 Points • 4 Points • 3 Points • 2 Points • 1 Point • 0 Points	
EME and/ or QSE	2 Points	
At least 51% of Women-owned companies	2 Points	
At least 51% owned companies by People with disability	2 Points	
At least 51% owned companies by Youth	2 Point	
Local Economic Participation		

Specific goals	80/20 preference point system	Number of points claimed (80/20 system) (To be completed by the tenderer)
• City of Tshwane • Gauteng • National	4 Points 2 Points 1 Point	

N.B For points to be allocated as per above the tenderers will be required to submit proof of documentation as evidence for claims made. Any tenderer that does not submit evidence as stated in the bid document to claim applicable points will be allocated zero points.

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/firm.....

4.4. Company registration number:

4.5. TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
- ☐ One-person business/sole propriety
- ☐ Close corporation
- ☐ Public Company
- ☐ Personal Liability Company
- ☐ (Pty) Limited
- ☐ Non-Profit Company
- ☐ State Owned Company

[TICK APPLICABLE BOX]

4.6. I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I 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 paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
- iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –
 - (a) disqualify the person from the tendering 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) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted 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, if deemed necessary.

.....
SIGNATURE(S) OF TENDERER(S)

SURNAME AND NAME:

DATE:

ADDRESS:

.....

.....

CONTRACT FORM: PURCHASE OF GOODS/WORKS

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

PART 1 (TO BE FILLED IN BY THE BIDDER)

1. I hereby undertake to supply all or any of the goods and/or works described in the attached bidding documents to **CITY OF TSHWANE MUNICIPALITY** in accordance with the requirements and specifications stipulated in bid number **EED 08-2024/25** 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 time of 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);
 - Technical Specification(s);
 - Preference claims for Broad Based Black Economic Empowerment Status Level of Contribution in terms of the Preferential Procurement Regulations 2011;
 - 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 goods and/or works 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 fulfilment 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: PURCHASE OF GOODS/WORKS

PART 2 (TO BE FILLED IN BY THE PURCHASER)

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

ITEM NO.	PRICE (ALL APPLICABLE TAXES INCLUDED)	BRAND	DELIVERY PERIOD	B-BBEE STATUS LEVEL OF CONTRIBUTION

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

SIGNED ATON.....

NAME (PRINT)

SIGNATURE

OFFICIAL STAMP

WITNESSES

1.

2.

DATE:

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 **EED 08-2024/25** 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 2022;
 - 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

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

SIGNED AT ON

NAME (PRINT)

SIGNATURE

OFFICIAL STAMP

WITNESSES

1
2

DATE:

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 ☐	No ☐
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)? 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.	Yes ☐	No ☐

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 ☐	No ☐
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 ☐	No ☐
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 ☐	No ☐
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: **EED 08-2024/25**

TENDER FOR THE DESIGN, SUPPLY, DELIVER AND OFFLOAD OF NEW PHOTOVOLTAIC STREETLIGHTS TO THE CITY OF TSHWANE ON AN AS AND WHEN REQUIRED BASIS FOR THE PERIOD OF THREE (3) YEARS.

(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

THE NATIONAL TREASURY

Republic of South Africa



GOVERNMENT PROCUREMENT

GENERAL CONDITIONS OF CONTRACT

July 2010

GOVERNMENT PROCUREMENT

GENERAL CONDITIONS OF CONTRACT

July 2010

NOTES

The purpose of this document is to:

- (i) Draw special attention to certain general conditions applicable to government bids, contracts and orders; and
- (ii) To ensure that clients be familiar with regard to the rights and obligations of all parties involved in doing business with government.

In this document words in the singular also mean in the plural and vice versa and words in the masculine also mean in the feminine and neuter.

- The General Conditions of Contract will form part of all bid documents and may not be amended.
- Special Conditions of Contract (SCC) relevant to a specific bid, should be compiled separately for every bid (if applicable) and will supplement the General Conditions of Contract. Whenever there is a conflict, the provisions in the SCC shall prevail.

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General Conditions of Contract

1. Definitions

1. The following terms shall be interpreted as indicated:
 - 1.1 “Closing time” means the date and hour specified in the bidding documents for the receipt of bids.
 - 1.2 “Contract” means the written agreement entered into between the purchaser and the supplier, as recorded in the contract form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
 - 1.3 “Contract price” means the price payable to the supplier under the contract for the full and proper performance of his contractual obligations.
 - 1.4 “Corrupt practice” means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.
 - 1.5 "Countervailing duties" are imposed in cases where an enterprise abroad is subsidized by its government and encouraged to market its products internationally.
 - 1.6 “Country of origin” means the place where the goods were mined, grown or produced or from which the services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembly of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components.
 - 1.7 “Day” means calendar day.
 - 1.8 “Delivery” means delivery in compliance of the conditions of the contract or order.
 - 1.9 “Delivery ex stock” means immediate delivery directly from stock actually on hand.
 - 1.10 “Delivery into consignees store or to his site” means delivered and unloaded in the specified store or depot or on the specified site in compliance with the conditions of the contract or order, the supplier bearing all risks and charges involved until the supplies are so delivered and a valid receipt is obtained.
 - 1.11 "Dumping" occurs when a private enterprise abroad market its goods on own initiative in the RSA at lower prices than that of the country of origin and which have the potential to harm the local industries in the RSA.
 - 1.12 ”Force majeure” means an event beyond the control of the supplier and not involving the supplier’s fault or negligence and not foreseeable. Such events may include, but is not restricted to, acts of the purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
 - 1.13 “Fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of any bidder, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the bidder of the benefits of free and open competition.

- 1.14 “GCC” means the General Conditions of Contract.
- 1.15 “Goods” means all of the equipment, machinery, and/or other materials that the supplier is required to supply to the purchaser under the contract.
- 1.16 “Imported content” means that portion of the bidding price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or his subcontractors) and which costs are inclusive of the costs abroad, plus freight and other direct importation costs such as landing costs, dock dues, import duty, sales duty or other similar tax or duty at the South African place of entry as well as transportation and handling charges to the factory in the Republic where the supplies covered by the bid will be manufactured.
- 1.17 “Local content” means that portion of the bidding price which is not included in the imported content provided that local manufacture does take place.
- 1.18 “Manufacture” means the production of products in a factory using labour, materials, components and machinery and includes other related value-adding activities.
- 1.19 “Order” means an official written order issued for the supply of goods or works or the rendering of a service.
- 1.20 “Project site,” where applicable, means the place indicated in bidding documents.
- 1.21 “Purchaser” means the organization purchasing the goods.
- 1.22 “Republic” means the Republic of South Africa.
- 1.23 “SCC” means the Special Conditions of Contract.
- 1.24 “Services” means those functional services ancillary to the supply of the goods, such as transportation and any other incidental services, such as installation, commissioning, provision of technical assistance, training, catering, gardening, security, maintenance and other such obligations of the supplier covered under the contract.
- 1.25 “Written” or “in writing” means handwritten in ink or any form of electronic or mechanical writing.

1. Application

- 2.1 These general conditions are applicable to all bids, contracts and orders including bids for functional and professional services, sales, hiring, letting and the granting or acquiring of rights, but excluding immovable property, unless otherwise indicated in the bidding documents.
- 2.2 Where applicable, special conditions of contract are also laid down to cover specific supplies, services or works.
- 2.3 Where such special conditions of contract are in conflict with these general conditions, the special conditions shall apply.

3. General

- 3.1 Unless otherwise indicated in the bidding documents, the purchaser shall not be liable for any expense incurred in the preparation and submission of a bid.
Where applicable a non-refundable fee for documents may be charged.

	3.2	With certain exceptions, invitations to bid are only published in the Government Tender Bulletin. The Government Tender Bulletin may be obtained directly from the Government Printer, Private Bag X85, Pretoria 0001, or accessed electronically from www.treasury.gov.za
4. Standards	4.1	The goods supplied shall conform to the standards mentioned in the bidding documents and specifications.
5. Use of contract documents and information inspection.	5.1	The supplier shall not, without the purchaser's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the purchaser in connection therewith, to any person other than a person employed by the supplier in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.
	5.2	The supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in GCC clause 5.1 except for purposes of performing the contract.
	5.3	Any document, other than the contract itself mentioned in GCC clause 5.1 shall remain the property of the purchaser and shall be returned (all copies) to the purchaser on completion of the supplier's performance under the contract if so required by the purchaser.
	5.4	The supplier shall permit the purchaser to inspect the supplier's records relating to the performance of the supplier and to have them audited by auditors appointed by the purchaser, if so required by the purchaser.
6. Patent rights	6.1	The supplier shall indemnify the purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the goods or any part thereof by the purchaser.
7. Performance security	7.1	Within thirty (30) days of receipt of the notification of contract award, the successful bidder shall furnish to the purchaser the performance security of the amount specified in SCC.
	7.2	The proceeds of the performance security shall be payable to the purchaser as compensation for any loss resulting from the supplier's failure to complete his obligations under the contract.
	7.3	The performance security shall be denominated in the currency of the contract, or in a freely convertible currency acceptable to the purchaser and shall be in one of the following forms: (a) a bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the purchaser's country or abroad, acceptable to the purchaser, in the form provided in the bidding documents or another form acceptable to the purchaser; or (b) a cashier's or certified cheque
	7.4	The performance security will be discharged by the purchaser and returned to the supplier not later than thirty (30) days following the date of completion of the supplier's performance obligations under the contract, including any warranty obligations, unless otherwise specified in SCC.
8. Inspections, tests and analyses	8.1	All pre-bidding testing will be for the account of the bidder.

- 8.2 If it is a bid condition that supplies to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspection, the premises of the bidder or contractor shall be open, at all reasonable hours, for inspection by a representative of the Department or an organization acting on behalf of the Department.
- 8.3 If there are no inspection requirements indicated in the bidding documents and no mention is made in the contract, but during the contract period it is decided that inspections shall be carried out, the purchaser shall itself make the necessary arrangements, including payment arrangements with the testing authority concerned.
- 8.4 If the inspections, tests and analyses referred to in clauses 8.2 and 8.3 show the supplies to be in accordance with the contract requirements, the cost of the inspections, tests and analyses shall be defrayed by the purchaser.
- 8.5 Where the supplies or services referred to in clauses 8.2 and 8.3 do not comply with the contract requirements, irrespective of whether such supplies or services are accepted or not, the cost in connection with these inspections, tests or analyses shall be defrayed by the supplier.
- 8.6 Supplies and services which are referred to in clauses 8.2 and 8.3 and which do not comply with the contract requirements may be rejected.
- 8.7 Any contract supplies may on or after delivery be inspected, tested or analyzed and may be rejected if found not to comply with the requirements of the contract. Such rejected supplies shall be held at the cost and risk of the supplier who shall, when called upon, remove them immediately at his own cost and forthwith substitute them with supplies which do comply with the requirements of the contract. Failing such removal the rejected supplies shall be returned at the suppliers cost and risk. Should the supplier fail to provide the substitute supplies forthwith, the purchaser may, without giving the supplier further opportunity to substitute the rejected supplies, purchase such supplies as may be necessary at the expense of the supplier.
- 8.8 The provisions of clauses 8.4 to 8.7 shall not prejudice the right of the purchaser to cancel the contract on account of a breach of the conditions thereof, or to act in terms of Clause 23 of GCC.

9. Packing

- 9.1 The supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing, case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.
- 9.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract, including additional requirements, if any, specified in SCC, and in any subsequent instructions ordered by the purchaser.

10. Delivery and documents

- 10.1 Delivery of the goods shall be made by the supplier in accordance with the terms specified in the contract. The details of shipping and/or other documents to be furnished by the supplier are specified in SCC.
- 10.2 Documents to be submitted by the supplier are specified in SCC.

11. Insurance	11.1	The goods supplied under the contract shall be fully insured in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the SCC.
12. Transportation	12.1	Should a price other than an all-inclusive delivered price be required, this shall be specified in the SCC.
13. Incidental services, services	13.1	The supplier may be required to provide any or all of the following services, including additional services, if any, specified in SCC: (a) performance or supervision of on-site assembly and/or commissioning of the supplied goods; (b) furnishing of tools required for assembly and/or maintenance of the supplied goods; (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied goods; (d) performance or supervision or maintenance and/or repair of the supplied goods, for a period of time agreed by the parties, provided that this service shall not relieve the supplier of any warranty obligations under this contract; and (e) training of the purchaser's personnel, at the supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied goods.
	13.2	Prices charged by the supplier for incidental services, if not included in the contract price for the goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the supplier for similar services.
14. Spare parts	14.1	As specified in SCC, the supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the supplier: (a) such spare parts as the purchaser may elect to purchase from the supplier, provided that this election shall not relieve the supplier of any warranty obligations under the contract; and (b) in the event of termination of production of the spare parts: (i) Advance notification to the purchaser of the pending termination, in sufficient time to permit the purchaser to procure needed requirements; and (ii) following such termination, furnishing at no cost to the purchaser, the blueprints, drawings, and specifications of the spare parts, if requested.
15. Warranty	15.1	The supplier warrants that the goods supplied under the contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the contract. The supplier further warrants that all goods supplied under this contract shall have no defect, arising from design, materials, or workmanship (except when the design and/or material is required by the purchaser's specifications) or from any act or omission of the supplier, that may develop under normal use of the supplied goods in the conditions prevailing in the country of final destination.
	15.2	This warranty shall remain valid for twelve (12) months after the goods, or any portion thereof as the case may be, have been delivered to and accepted at the

final destination indicated in the contract, or for eighteen (18) months after the date of shipment from the port or place of loading in the source country, whichever period concludes earlier, unless specified otherwise in SCC.

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| 15.3 | The purchaser shall promptly notify the supplier in writing of any claims arising under this warranty. |
| 15.4 | Upon receipt of such notice, the supplier shall, within the period specified in SCC and with all reasonable speed, repair or replace the defective goods or parts thereof, without costs to the purchaser. |
| 15.5 | If the supplier, having been notified, fails to remedy the defect(s) within the period specified in SCC, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expense and without prejudice to any other rights which the purchaser may have against the supplier under the contract. |
| 16. Payment | <p>16.1 The method and conditions of payment to be made to the supplier under this contract shall be specified in SCC.</p> <p>16.2 The supplier shall furnish the purchaser with an invoice accompanied by a copy of the delivery note and upon fulfillment of other obligations stipulated in the contract.</p> <p>16.3 Payments shall be made promptly by the purchaser, but in no case later than thirty (30) days after submission of an invoice or claim by the supplier.</p> <p>16.4 Payment will be made in Rand unless otherwise stipulated in SCC.</p> |
| 17. Prices | 17.1 Prices charged by the supplier for goods delivered and services performed under the contract shall not vary from the prices quoted by the supplier in his bid, with the exception of any price adjustments authorized in SCC or in the purchaser's request for bid validity extension, as the case may be. |
| 18. Contract | 18.1 No variation in or modification of the terms of the contract shall be made amendments except by written amendment signed by the parties concerned. |
| 19. Assignment | 19.1 The supplier shall not assign, in whole or in part, its obligations to perform under the contract, except with the purchaser's prior written consent. |
| 20. Subcontracts | 20.1 The supplier shall notify the purchaser in writing of all subcontracts awarded under this contracts if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the supplier from any liability or obligation under the contract. |
| 21. Delays in the supplier's performance | <p>21.1 Delivery of the goods and performance of services shall be made by the supplier in accordance with the time schedule prescribed by the purchaser in the contract.</p> <p>21.2 If at any time during performance of the contract, the supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the goods and performance of services, the supplier shall promptly notify the purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation and may at his discretion extend the supplier's time for performance, with or without the imposition of penalties, in which case the extension shall be ratified by the parties by amendment of contract.</p> |

- 21.3 No provision in a contract shall be deemed to prohibit the obtaining of supplies or services from a national department, provincial department, or a local authority.
- 21.4 The right is reserved to procure outside of the contract small quantities or to have minor essential services executed if an emergency arises, the supplier's point of supply is not situated at or near the place where the supplies are required, or the supplier's services are not readily available.
- 21.5 Except as provided under GCC Clause 25, a delay by the supplier in the performance of its delivery obligations shall render the supplier liable to the imposition of penalties, pursuant to GCC Clause 22, unless an extension of time is agreed upon pursuant to GCC Clause 21.2 without the application of penalties.
- 21.6 Upon any delay beyond the delivery period in the case of a supplies contract, the purchaser shall, without canceling the contract, be entitled to purchase supplies of a similar quality and up to the same quantity in substitution of the goods not supplied in conformity with the contract and to return any goods delivered later at the supplier's expense and risk, or to cancel the contract and buy such goods as may be required to complete the contract and without prejudice to his other rights, be entitled to claim damages from the supplier.
- 22. Penalties**
- 22.1 Subject to GCC Clause 25, if the supplier fails to deliver any or all of the goods or to perform the services within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services using the current prime interest rate calculated for each day of the delay until actual delivery or performance. The purchaser may also consider termination of the contract pursuant to GCC Clause 23.
- 23. Termination for default**
- 23.1 The purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate this contract in whole or in part:
- (a) if the supplier fails to deliver any or all of the goods within the period(s) specified in the contract, or within any extension thereof granted by the purchaser pursuant to GCC Clause 21.2;
 - (b) if the Supplier fails to perform any other obligation(s) under the contract; or
 - (c) if the supplier, in the judgment of the purchaser, has engaged in corrupt or fraudulent practices in competing for or in executing the contract.
- 23.2 In the event the purchaser terminates the contract in whole or in part, the purchaser may procure, upon such terms and in such manner as it deems appropriate, goods, works or services similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for such similar goods, works or services. However, the supplier shall continue performance of the contract to the extent not terminated.
- 23.3 Where the purchaser terminates the contract in whole or in part, the purchaser may decide to impose a restriction penalty on the supplier by prohibiting such supplier from doing business with the public sector for a period not exceeding 10 years.
- 23.4 If a purchaser intends imposing a restriction on a supplier or any person associated with the supplier, the supplier will be allowed a time period of not more than fourteen (14) days to provide reasons why the envisaged restriction should not be imposed. Should the supplier fail to respond within the stipulated

fourteen (14) days the purchaser may regard the intended penalty as not objected against and may impose it on the supplier.

23.5 Any restriction imposed on any person by the Accounting Officer / Authority will, at the discretion of the Accounting Officer / Authority, also be applicable to any other enterprise or any partner, manager, director or other person who wholly or partly exercises or exercised or may exercise control over the enterprise of the first-mentioned person, and with which enterprise or person the first-mentioned person, is or was in the opinion of the Accounting Officer / Authority actively associated.

23.6 If a restriction is imposed, the purchaser must, within five (5) working days of such imposition, furnish the National Treasury, with the following information:

- (i) the name and address of the supplier and / or person restricted by the purchaser;
- (ii) the date of commencement of the restriction
- (iii) the period of restriction; and
- (iv) the reasons for the restriction.

These details will be loaded in the National Treasury's central database of suppliers or persons prohibited from doing business with the public sector.

23.7 If a court of law convicts a person of an offence as contemplated in sections 12 or 13 of the Prevention and Combating of Corrupt Activities Act, No. 12 of 2004, the court may also rule that such person's name be endorsed on the Register for Tender Defaulters. When a person's name has been endorsed on the Register, the person will be prohibited from doing business with the public sector for a period not less than five years and not more than 10 years. The National Treasury is empowered to determine the period of restriction and each case will be dealt with on its own merits. According to section 32 of the Act the Register must be open to the public. The Register can be perused on the National Treasury website.

24. Anti-dumping and countervailing duties and rights

24.1 When, after the date of bid, provisional payments are required, or antidumping or countervailing duties are imposed, or the amount of a provisional payment or anti-dumping or countervailing right is increased in respect of any dumped or subsidized import, the State is not liable for any amount so required or imposed, or for the amount of any such increase. When, after the said date, such a provisional payment is no longer required or any such anti-dumping or countervailing right is abolished, or where the amount of such provisional payment or any such right is reduced, any such favourable difference shall on demand be paid forthwith by the contractor to the State or the State may deduct such amounts from moneys (if any) which may otherwise be due to the contractor in regard to supplies or services which he delivered or rendered, or is to deliver or render in terms of the contract or any other contract or any other amount which may be due to him

25. Force Majeure

25.1 Notwithstanding the provisions of GCC Clauses 22 and 23, the supplier shall not be liable for forfeiture of its performance security, damages, or termination for default if and to the extent that his delay in performance or other failure to perform his obligations under the contract is the result of an event of force majeure.

25.2 If a force majeure situation arises, the supplier shall promptly notify the purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all

		reasonable alternative means for performance not prevented by the force majeure event.
26. Termination for insolvency	26.1	The purchaser may at any time terminate the contract by giving written notice to the supplier if the supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the purchaser.
27. Settlement of Disputes	27.1	If any dispute or difference of any kind whatsoever arises between the purchaser and the supplier in connection with or arising out of the contract, the parties shall make every effort to resolve amicably such dispute or difference by mutual consultation.
	27.2	If, after thirty (30) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the purchaser or the supplier may give notice to the other party of his intention to commence with mediation. No mediation in respect of this matter may be commenced unless such notice is given to the other party.
	27.3	Should it not be possible to settle a dispute by means of mediation, it may be settled in a South African court of law.
	27.4	Mediation proceedings shall be conducted in accordance with the rules of procedure specified in the SCC.
	27.5	Notwithstanding any reference to mediation and/or court proceedings herein, (a) the parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and (b) the purchaser shall pay the supplier any monies due the supplier.
28. Limitation of liability	28.1	Except in cases of criminal negligence or willful misconduct, and in the case of infringement pursuant to Clause 6; the supplier shall not be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser; and the aggregate liability of the supplier to the purchaser, whether under the contract, in tort or otherwise, shall not exceed the total contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.
29. Governing language	29.1	The contract shall be written in English. All correspondence and other documents pertaining to the contract that is exchanged by the parties shall also be written in English.
30. Applicable law	30.1	The contract shall be interpreted in accordance with South African laws, unless otherwise specified in SCC.
31. Notices	31.1	Every written acceptance of a bid shall be posted to the supplier concerned by registered or certified mail and any other notice to him shall be posted by ordinary mail to the address furnished in his bid or to the address notified later by him in writing and such posting shall be deemed to be proper service of such notice

	31.2	The time mentioned in the contract documents for performing any act after such aforesaid notice has been given, shall be reckoned from the date of posting of such notice.
32. Taxes and duties	32.1	A foreign supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the purchaser's country.
	32.2	A local supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted goods to the purchaser.
	32.3	No contract shall be concluded with any bidder whose tax matters are not in order. Prior to the award of a bid the Department must be in possession of a tax clearance certificate, submitted by the bidder. This certificate must be an original issued by the South African Revenue Services.
33. National Industrial Participation (NIP) Programme	33.1	The NIP Programme administered by the Department of Trade and Industry shall be applicable to all contracts that are subject to the NIP obligation
34. Prohibition of Restrictive practices	34.1	In terms of section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, an agreement between, or concerted practice by, firms, or a decision by an association of firms, is prohibited if it is between parties in a horizontal relationship and if a bidder (s) is / are or a contractor(s) was / were involved in collusive bidding (or bid rigging).
	34.2	If a bidder(s) or contractor(s), based on reasonable grounds or evidence obtained by the purchaser, has / have engaged in the restrictive practice referred to above, the purchaser may refer the matter to the Competition Commission for investigation and possible imposition of administrative penalties as contemplated in the Competition Act No. 89 of 1998.
	34.3	If a bidder(s) or contractor(s), has / have been found guilty by the Competition Commission of the restrictive practice referred to above, the purchaser may, in addition and without prejudice to any other remedy provided for, invalidate the bid(s) for such item(s) offered, and / or terminate the contract in whole or part, and / or restrict the bidder(s) or contractor(s) from conducting business with the public sector for a period not exceeding ten (10) years and / or claim damages from the bidder(s) or contractor(s) concerned.

Js General Conditions of Contract (revised July 2010)

DRAFT SERVICE LEVEL AGREEMENTS

entered into between

THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY

(Hereafter referred to as the “**City**”)

Herein Represented by:

In the capacity as: **The City Manager**

(Duly authorised hereto)

AND

.....

(Hereafter referred to as the “**SERVICE PROVIDER**”)

Herein Represented by:

In the capacity as:.....

(Duly authorised hereto)

SERVICE LEVEL AGREEMENT

entered into between

THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY

a municipality as described in section 2 of the Local Government: Municipal Systems Act, 2000 and as contemplated in section 155 of the Constitution of the Republic of South Africa, 1996 as a category A municipality, or the Assignee, if applicable, herein represented by in his capacity as City Manager duly authorised thereto under and by virtue of a resolution passed on, and who by his signature hereto warrants that he/she is properly authorised to sign this Agreement.

(Herein referred to as the “**CITY**”)

AND

**Service
Provider**.....

Registration Number

Herein represented by, in his capacity as duly authorised thereto under and by virtue of a resolution of the Board passed on(DATE), a copy of which is annexed as Annexure “**B**”, and who by his signature hereto warrants that he is properly authorised to sign this Agreement

(Herein referred to as the “**SERVICE PROVIDER**”)

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RECORDAL:

WHEREAS the City of Tshwane requires to appoint service provider for the supply, deliver and off-loading of distribution transformers for the City of Tshwane as and when required for a three years period.

AND WHEREAS the City wishes to appoint as a service provider;

AND WHEREAS the service provider wishes to provide such services;

AND WHEREAS the service provider has indicated that it has the necessary expertise, skills and capabilities to provide the service;

NOW THEREFORE the Parties have agreed to enter into this Agreement, in terms of which**(SP)** shall provide the Services in the Service Areas and/or Delivery Area and provide maintenance and support thereof, to the City in accordance with the terms and subject to the conditions of this Agreement:

- **DEFINITIONS**

Unless otherwise expressly stated, or the context otherwise requires, the words and expressions listed below shall, when used in this Agreement, including this introduction, bear the meanings ascribed to them:

- **“Agreement”** means this Service Level Agreement and shall include any annexures and/or schedules and/or attachments and/or appendices and/or any addenda hereto or incorporated herein by reference, as amended from time to time;
- **“Business Day”** means any day from Monday to Friday excluding Public Holidays as defined in the Public Holidays Act 36 of 1994 (“Public Holidays Act”) as amended from time to time;
- **“Business Week”** means five consecutive Business Days, excluding Public Holidays as defined in the Public Holidays Act;
- **“City”** means the City of Tshwane Metropolitan Municipality, a metropolitan municipality established in terms of section 12 of the Local Government: Municipal Structures Act 117 of 1998;
- **“Contact Persons”** means persons identified by the Parties as persons who are responsible for the execution of the Agreement and whose names are set out in clause 34 below and who can be substituted in writing from time to time;
- **“Contract Price”** shall mean the amount reflected as the contract price in clause □ below;
- **“Contract Period”** means the contract period as reflected on Annexure **“A”**;
- **“Effective Date”** means notwithstanding the Signature Date,
.....
- **“GCC”** shall mean the General Conditions of Contracts as stated in the Government Procurement: General Conditions of Contract July 2010;
- **“Goods”** shall mean the Services related goods to be procured by the City from time to time as stated in clause 8 below and the Appointment Letter attached herewith as Annexure **“A”**;
- **“Intellectual Property”** means Patents, Designs, Know-How, Copyright and Trade Marks and all rights having equivalent or similar effect which may exist anywhere in the world, introduced and required by either Party to give effect to their obligations under this Agreement, owned in whole

or in part by, or licensed to either Party prior to the Commencement Date or developed after the Commencement Date, and includes all further additions and improvements to the Intellectual Property, otherwise pursuant to this Agreement;

- **“Month”** means a calendar month;
 - **“Parties”** means the City and Service Provider and “Party” means either of them as the context requires;
 - **“Order”** means an official written order issued for the supply of Goods and or Services under this Agreement;
 - **“Services”** means services to be provided by the Service Provider to the City as detailed in clause □ below;
 - **“Service Provider”** means a contractor appointed by the City of Tshwane with the company laws of the Republic of South Africa with a company registration number;
 - **“Signature Date”** means the date of signature of this Agreement by the Party signing last;
 - **“Subcontract”** means any contract or agreement or proposed contract between the Service Provider and any third party whereby that third party agrees to provide to the Service Provider the Services or any part thereof;
 - **“Subcontractor”** means the third party with whom the Service Provider enters into a Subcontract;
 - **“Tax Invoice”** means the document as required by section 20 of the Value Added Tax Act 89 of 1991, as amended from time to time; and
 - **“VAT”** means Value Added Tax as defined in terms of the Value Added Tax Act of 1991.
- **INTERPRETATION**
 - Headings and sub-headings are inserted for information purposes only and shall not be used in the interpretation of this Agreement.
 - Unless the context clearly indicates a contrary intention, any word connoting:
 - any singular shall be deemed to include a reference to the plural and vice versa;

- any one gender shall be deemed to include a reference to the other two genders; and
 - a natural person shall be deemed to include a reference to a legal or juristic person.
- The expiry or termination of this Agreement shall not affect provisions of this Agreement which expressly provide that they will operate after any such expiry or termination of this Agreement. Provisions of necessity shall continue to have been effective after such expiry or termination of this Agreement, notwithstanding that the clauses themselves do not expressly provide for this.
- The rule of interpretation that a written agreement shall be interpreted against the party responsible for the drafting or preparation of that Agreement shall not apply.
- The provision of this Agreement shall be read in conjunction with the provisions of the Government Procurement General Conditions of Contracts (“GCC”) 2010 as if they are incorporated herein.
- Where figures are referred to in numerals and in words and there is any conflict between the two, the words shall prevail.
- Any reference to any legislation is a reference to such legislation as at the Signature Date and as amended or re-enacted, from time to time.
- If any provision in a definition is a substantive provision conferring any rights or imposing any obligations on any party, then notwithstanding that, it is only in this interpretation clause, effect shall be given to it as if it were a substantive provision in this Agreement.
- APPOINTMENT

The City hereby appoints the Service Provider, who accepts such appointment, as per the Appointment letter dated attached herewith as Annexure “A” to provide the Services in accordance with the terms and subject to the conditions of this Agreement.
- PURPOSE OF THE AGREEMENT
 - The Purpose of this Agreement is to:
 - formalise and regulate the working relationship between the Parties;
 - set out the roles and responsibilities of the Parties; and

- define process and procedures to be followed by the Parties.
- RELATIONSHIP

Nothing in this Agreement shall constitute, or be deemed to constitute a partnership or joint venture between the Parties. Furthermore the Service Provider acknowledges and agrees that its status under this Agreement is that of an independent service provider and its status shall in no way be deemed to be that of an agent or employee of the City, for any purpose whatsoever, and the Service Provider shall have no authority or power to bind the City or to contract in the name of the City, or create a liability against the City in any way or for any purpose.
- DURATION

This Agreement shall commence on the Effective Date and shall subsist for a period of 3 (three) years, unless terminated earlier pursuant to clause □ below.
- CONTACT PERSON
 - The work to be performed by the Service Provider hereunder will be supervised by City's Contact Person.
 - The Parties shall notify each other, in writing from time to time, of the details of their nominated Contact Person.
 - The Contact Persons shall liaise and update each other on the progress of the Services rendered and shall endeavour to resolve and remedy any problems or disputes that may arise in relation to the Services.
 - Either Party may substitute a Contact Person at its discretion provided that each Party shall give the other Party reasonable notice of such substitution and will provide replacement employees of equivalent ability.
 - Without derogating from the foregoing, should either Party replace a Contact Person for any reason whatsoever, it shall ensure, to the greatest extent possible in the circumstances, that the suitable period of hand-over and overlap takes place, at its cost, between the new and the encumbered Contact Person.
- SCOPE OF GENERAL SERVICES
 - The Service Provider shall, for the duration of this Agreement, provide the Services in terms of the Appointment Letter and as outlined fully in the Scope of Work including but not limited to:

Tender for the design, supply, deliver and offload of new photovoltaic streetlights to the City of Tshwane on an as and when required basis for the period of three (3) years

- **PRICE AND PAYMENT**

- The City shall pay to the Service Provider as stated in the Appointment Letter attached and or in terms of the Scope of Work attached herein as **Annexure “C”**.
- All payments under this Agreement shall be made by electronic fund transfer or other forms of payment as the Parties may agree from time to time, upon receipt of valid and undisputed Tax Invoices and month-end statements together with the supporting documentation from the Service Provider, once the undisputed Tax Invoices or such portion of the Tax Invoices which are undisputed become due and payable.
- All amounts and other sums payable in terms of this Agreement and Schedules hereto will be stipulated exclusive of VAT, unless expressly stated otherwise.
- Unless otherwise provided in the Schedules, valid Tax Invoices shall be submitted together with a month-end statement. Payment against such month-end statement shall be made by The City within 30 (thirty) days after the date of receipt by The City of the Service Provider's statement together with the relevant valid and undisputed Tax Invoice(s) and supporting documentation, but in any event not later than 90 (ninety) days of receipt of such statement.
- There shall be no interest levied on a Tax Invoice that is in dispute between the Parties.
- The City shall pay the amount reflected on a Tax Invoice once the City's Contact Person has verified that the Services set out in a schedule have been rendered and the Tax Invoice amount has been approved by the City.
- All Tax Invoices shall be addressed to the City' Contact Person.
- All payments shall be transferred, by the City to the Service Provider electronically into the Service Provider's bank account, the details of which are set out below:

Bank:
Account type:
Account No:
Branch No:

- Failure to comply with the clauses above may result in late payment of the total amount of an invoice by the Service Provider to the City. The City shall not be liable for any costs or damages suffered by the Service Provider as a result of such late payment.
- If the City fails to make payment in accordance with the Agreement or fails to comply with any provisions of any Order issued under this Agreement, the Service Provider reserves the right to cancel any undelivered portion of the Goods and/or to suspend the Services, and the City shall remain responsible for the completed and partly completed work up to the date of such cancellation.
- **PRICE RESTRUCTURING**
 - The Service Provider shall be subject to a price review every year.
 - The City shall embark on a benchmarking exercise every 12 (twelve) months where the City shall benchmark the Service Provider's Contract Price against the prevailing market rates.
 - In the event it emerges that the Service Provider's charges in respect of the Contract Price and other charges under this Agreement are materially higher than the reasonable benchmark ascertained by the City or that the City can acquire similar Services of a like quality from another supplier at a total delivered cost that is lower than the total delivered cost of the Services acquired hereunder from the Service Provider, the City shall have the right to notify the Service Provider of such total delivered cost and the Service Provider shall have an opportunity to adjust the Contract Price and any other charges hereunder, on such a basis as to result in the same total delivered cost to the City, within 30 (thirty) calendar days of such notice.
 - If the Service Provider fails to do so or cannot legally do so, The City may:
 - acquire the Services from such other supplier in which case the obligations, including, but not limited to, any purchase and sale requirements and/or commitments, if any, of the City and the Service Provider hereunder shall be reduced accordingly;

- terminate this Agreement without any penalty, liability or further obligation; or
 - continue under this Agreement.
- Within 30 (thirty) calendar days of a notice by the City or at any time the City so requests, the Service Provider shall certify in writing to the City that it is in compliance with this clause and shall provide all information that the City reasonably requests in order to verify such compliance.
- SERVICE LEVELS
 - The Service Provider recognises that the City has entered into this Agreement relying specifically on the Service Provider's representations regarding service levels including, *inter alia*:
 - capacity allocations in accordance with the Service to be provided;
 - all work to be performed and Services rendered under this Agreement shall comply with industry norms and best practice acceptable within the Services industry and shall be executed by the Service Provider to the total satisfaction of the City.
 - The Service Provider shall provide suitably qualified and trained employees to provide the Services to the City in terms of this Agreement, and shall allocate, in its discretion employee resources in accordance with the technical skill and knowledge required, provided that any exercise of such discretion by the Service Provider shall not negatively impact on the provision of the Services by the Service Provider to the City, and shall allocate employees with the technical skill and knowledge onsite at the City at all times during normal working hours, if the City so requires.
 - Amongst others, the Service Provider shall comply with and provide the Services as set out in clause □ above.

- WITHHOLDING OF PERFORMANCE

The Service Provider may not under any circumstances, including, without limitation, non-payment by the City, withhold any Services from the City during the currency of this Agreement, unless it validly terminates this Agreement in terms of clause □ below.

- PENALTY

- Should the Service Provider fails to comply with its obligations in terms of this Agreement, the City may impose a penalty on the Service Provider in terms of clause 13.3 below.
- The City shall provide the Service Provider with a written notice requiring the Service Provider to remedy the default within 7 (seven) days from the date of delivery of the notice.
- Should the Service Provider fail to remedy the default within 7 (seven) days after receiving the notice, then the City shall be entitled, without prejudice to any alternative or additional right of action or remedy available to the City and without further notice, impose as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services using the current prime interest rate calculated for each day of the delay until actual delivery or performance not exceeding 10% of the total purchase order. The City may also consider termination of the Agreement as stated in clause 31 of this Agreement once the maximum penalty amount related to delays has been reached. .
-
- Should there be a dispute as to whether the failure to deliver was caused by the City or was the Service Provider's fault such dispute shall be dealt with in accordance to clause □ below.

- ACCESS

- The City shall allow the Service Provider reasonable access to its premises, provided that:
 - access is related to the Services to be provided by the Service Provider; and
 - the Service Provider adheres to all rules, regulations and instructions applicable at City's premises.
- The Service Provider is required to notify City monthly of employees who are to provide Services at the Service Areas and/or Delivery Areas.

- The City shall grant the Service Provider and/or its employees, referred in clause □o above, access to its premises to perform its obligations in terms of this Agreement.
- The Service Provider and its employees shall at all time when entering the premises and/or Service Areas and/or Delivery Areas of the City comply with all rules, laws, regulations and policies of the City.
- DELIVERY OF GOODS
 - The Service Provider shall deliver the Goods within thirty (30) days after receipt of an official purchase order.
 - Should the Service Provider be unable to deliver the Goods on the Delivery Date, the Service Provider shall inform the City of its inability to deliver the Goods, the reason thereof, and shall provide the City with a reasonable alternative Delivery Date which in any event shall not be more than 14 (fourteen) days from the original Delivery Date.
 - In the event that the Service Provider is unable to deliver the Goods on the Delivery Date 3 (three) times in a period of 6 (six) months, then the City shall be entitled to terminate this Agreement by giving the Service Provider 1 (one) month's written notice to terminate.
 - Upon delivery of the Goods by the Service Provider, the City's contact person shall sign the delivery document provided by the Service Provider as acknowledgement of receipt of the Goods. Such acknowledgement of receipt shall not constitute an acceptance:
 - that the Goods were received in good condition;
 - that the Goods were free of any defects;
 - that the Goods were fit for the purpose for which they were purchased; and/or
 - of any terms and conditions of the delivery document.
 - In the event that the City notifies the Service Provider, within five (5) Business Days, that the Goods delivered are not in accordance with the order, the City shall be entitled to return the Goods to the Service Provider at the Service Provider's cost and the Service Provider shall deliver the replacement Goods ordered within five (5) Business Days of taking delivery of the defective Goods.
- 15.6 The Service Provider shall bear all risk of loss or damage to the Goods until they are delivered to the City's named place of destination, and

transfer of ownership of the Goods shall pass from the Service Provider to the City only when all payments have been made in full.

- **DEFECTIVE GOODS**

- The Service Provider shall verify whether the Goods received are in order and without any defects.
- In the event that the City realises that the Goods have any defect, the City shall inform the Service Provider in writing within 5 (five) days of becoming aware of the defect ("Notice of Defect").
- Upon receipt of the Notice of Defect, the Service Provider shall immediately deliver replacement Goods to the City within 14 (fourteen) Business Days of receiving the Notice of Defect referred to in clause □o above and replace the defective Goods.
- The cost of returning and replacing the defective Goods shall be borne by the Service Provider.
- The Service Provider shall be responsible for the replacement amount of any parts of the Goods that are to be replaced in terms of this Agreement.

- **AMENDMENT OR CANCELLATION OF PURCHASE ORDER**

The City is entitled to cancel an order, reschedule delivery of the Goods or change the Delivery Area and Delivery Date on fourteen (14) days written notice to the Service Provider.

- **INSPECTION**

- The City may at any time inspect the Goods and/or Services levels of the Service Provider in terms of this Agreement.
- If the City is, at any time, dissatisfied with the service levels then the Service Provider shall, within 7 (seven) days, notify the Service Provider in writing of the failure or default.
- The Service Provider shall immediately upon receipt of written demand by the City, remedy such failure or default, within 7 (seven) Business Days from the date of receipt of the notice, free of charge.
- Should the Service Provider fail to remedy the failure or default referred to above then the City shall have the right to impose penalties as provided for in clause □ above or invoke the provisions of clauses and/or clause □ below.

- To enable the City to determine whether the Goods and/or Services rendered in terms of this Agreement are being complied with the Service Provider shall:
 - *provide the City with such information as it may reasonably require;*
 - *allow the City to inspect and take copies of any records of the Service Provider relating to the Goods and/or Services, including all hardware, software, data, information, visuals, procedures, event logs, transaction logs, audit trails, books, records, contracts and correspondence;*
 - *allow the City or its authorised representatives to conduct interviews with any of the Service Provider's employees, subject to reasonable notice being given to the Service Provider.*
- **Service Provider to Provide Reasonable Assistance**
 - Where any information is required for inspection in terms of this clause and the information is kept in a computer, the Service Provider shall give the City reasonable assistance required to facilitate inspection and obtain copies of the information in a visible and legible form or to inspect and check the operation of any computer and any associated apparatus or material that is or has been in use in connection with the keeping of the information.
 - Any information required to be provided to the City pursuant to this clause 18 shall be provided by the Service Provider, as the case may be in such form (including a form otherwise than in writing) as the City may reasonably specify.
 - The cost of any inspection contemplated in terms of this clause 18 shall be for the account of the City unless any material irregularity or failure on the part of the Service Provider is determined by City in the course of such inspection.
- The inspection contemplated in this Agreement will be conducted:
 - during normal business hours;
 - save where the circumstances justify it, on reasonable notice to the Service Provider; with the minimum interference in the

provision of the Goods and/or Services and the Service Provider's other operations.

- **MAINTENANCE AND SUPPORT**

The SP will be required to provide support during the contract period.

- **TRAINING**

If required, the Service Provider shall as part of Maintenance And Support, ensure that the City's nominated employees, receive the required and necessary training relating to the nature, purpose, handling and storage, installation, maintenance and appropriate use of the Goods.

- **SERVICE PROVIDER'S WARRANTIES AND INDEMNITIES AND LIABILITIES**

- **Service Warranties**

- The Service Provider warrants that in relation to each Service provided in terms of this Agreement:
 - *it has full capacity and authority to enter into and perform this Agreement, and that this Agreement is executed by duly authorised representatives of the Service Provider;*
 - *it possesses or has access to the requisite knowledge, skill and experience to provide the Services in an expert manner;*
 - *it will discharge its obligations under this Agreement and any annexure, appendix or Schedule hereto with all due skill, care and diligence;*
 - *all work performed and Services rendered under this Agreement shall comply with prevailing practice, standards and specifications within the industry;*
 - *it will be solely responsible for the payment of remuneration and associated benefits, if any, of its Personnel and for withholding and remitting income tax for its Personnel in conformance with any applicable laws and regulations;*

- *the use or possession by the City of any Materials will not subject the City to any claim for infringement of any Intellectual Property Rights of any third party;*
- *with promptness and diligence and in a skilful manner and in accordance with the practices and professional standards of operations while performing Services and/or delivering Goods and/or similar to the Services and/or Goods;*
- *which Services and/or Goods will in all aspects comply with industry norms and best practice to the satisfaction of the City with regard to materials and workmanship; ;*
- *using and adopting any standards, processes and procedures required under this Agreement;*
- *warranting that it shall employ suitably qualified and trained employees to provide the Services and/or Goods to the City and it shall allocate employees in accordance with the technical skill and knowledge required;*
- *free from any defects in material and workmanship;*
- *maintaining and causing to be maintained the highest standard of workmanship and care in undertaking the Services and/or processing the Goods;*
- *maintaining and caused to be maintained the highest standard of care and diligence in providing the Services, maintenance and support;*
- *ensuring that all applicable laws are observed;*
- *without derogating from the generality of the foregoing, strictly adhering to any or all laws, regulations and accepted procedures with regard to health, hygiene and the maintaining of the environment in the manufacture, packaging,*

labelling, identification, storage and transportation of the Goods.

- *guaranteeing that the Goods shall be in good working condition for the warranty and/ or maintenance period of the Goods, and that the Service Provider shall be responsible for the costs of repair of the Goods should the Goods require to be repaired to their normal use.*

21.1.2 Defective workmanship or failure of the Goods and/or Services shall cease upon expiry of the period of maintenance, being the earlier of twelve (12) months after completion of the Services or eighteen (18) months from delivery of the Goods to the site. Such liability shall be in lieu of any liability implied by law and shall be limited to the repair or replacement, at the election of the Service Provider, of the defective portion of the Goods and/or Services, where after the Service Provider shall have no further liability of whatsoever nature towards the City.

○ **Indemnity**

- The Service Provider hereby indemnifies the City against any claim which may be brought against the City by the Service Provider's personnel or a third party arising from the execution of this Agreement alternatively which arises against the City as a result of the Service Provider's breach of any of the provisions of this Agreement, provided that the City shall notify the Service Provider in writing within a reasonable time, and in any event not less than 14 (fourteen) Business days of the City becoming aware of any such claim to enable the Service Provider to take steps to contest it and shall provide the Service Provider with such reasonable assistance as may be necessary to enable the Service Provider to defend the claim to the extent only that it is in a position to render such assistance. The Service Provider may, within 5 (five) Business Days of receipt of written notice from the City aforesaid, elect in writing to contest such a claim in the name of the City and shall be entitled to control the proceedings in regard thereto, provided that the Service Provider indemnifies the City against all and any costs (including attorney and own client costs) which may be incurred by or awarded against the City as a consequence of the defence of the claim.

- **Limitation of Liability**
 - 21.3.1 Neither Party shall be liable to the other party for loss of use of any works, loss of profit, loss of contract or for any indirect or consequential loss or damages which may be suffered by the other party in connection with this Agreement.
 - 21.3.2 Notwithstanding anything to the contrary contained or implied in the applicable conditions of contract, and in no event, whether as a result of breach of contract, indemnity, warranty, delict (including negligence), strict liability, or any other cause arising, shall the Service Provider's total liability to the City, or its insurers, for any loss or damage arising out of, or resulting from an Order issued under this Agreement or from the performance or breach thereof, or from the Goods and/or Services furnished hereunder, exceed 100% of the specific Order value.
- **SERVICE PROVIDER'S PERSONNEL**
 - **Liability for Criminal Acts of Employees**

The Service Provider shall be liable to the City for any loss that the City or any third party may suffer as a result of any theft, fraud or other criminal act of any employee of the Service Provider which arises within the course and scope of such employees' employment with the Service Provider.
 - **Character of Employees**
 - Due to the confidential nature of certain aspects of the Services and the position of trust which the Service Provider's employees will fulfil, the Service Provider hereby undertakes to use its best commercial endeavours to ensure that it only assigns to the City employees who are fit and proper persons and who display the highest standards of personal integrity and honesty and who have not, to their knowledge, being convicted of any crime.
 - The Service Provider shall, at its own cost, conduct all reasonable background checks into members of its employees prior to utilizing same to provide the Services in terms of this Agreement.
 - The City shall conduct all reasonable background checks into the Service Provider's employees from time to time, where it deems it necessary to do so.

- **STATUTORY AND EMPLOYMENT ISSUES**
 - **The Service Provider shall comply with all employment legislation**
 - The Service Provider warrants that it has full knowledge of all relevant statutory, collective and other stipulations applicable to the relationship with its personnel and its relationship with the City. This includes, but is not limited to, the Labour Relations Act, the Basic Conditions of Employment Act, 1977, the Employment Equity Act, 1998 and any other applicable employment legislation currently in force.
 - The Service Provider warrants further that it is not and will not in future be in contravention of any of the provisions of any such legislation and in the event of such contravention, the Service Provider shall immediately take all steps to remedy such contravention. If the City advises the Service Provider of any contravention of such legislation in writing, the Service Provider shall, within 10 (ten) days after receipt of such notice, take all steps necessary to remedy such contravention and shall keep the City informed regarding the steps taken and the implementation and the result thereof.
 - **No employment**

The Service Provider warrants that none of its personnel shall be regarded as employees of the City. The Service Provider shall assist to defend and bear all costs in the event that the City is required to defend a claim, whether civil or employment related, instituted against it by the Service Provider's personnel should the City defend the matter, the Service Provider hereby indemnifies the City against all and any costs (including attorney and own client costs) which may be incurred by or awarded against the City as a consequence of the defence of the claim.
 - **Occupational Health and Safety Act, 1993**

The Service Provider shall be responsible for ensuring compliance with all the provisions of the Occupational Health and Safety Act, 1993 and it indemnifies the City against any claim which may arise in respect of such Act by its personnel against the City.
- **SUB-CONTRACTING**
 - The Service Provider may not Subcontract the whole of or any portion of the Services in terms of this Agreement to any third party without the prior written consent of the City.

- In the event the Service Provider wishes to Subcontract the whole of or any portion of the Services in terms of this Agreement, it shall apply to the City in writing for consent to do so.
- In its application, the Service Provider shall give the name of the Subcontractor, the Subcontractor's obligations, the proposed date of commencement of the Subcontract which shall include the fees payable to the Subcontractor, and a report of the background security check on the Subcontractor's suitability, financial and otherwise.
- The City may, in its sole and absolute discretion refuse consent to Subcontract. In the event the City approves the Subcontracting of the whole of or any portion of the Services in terms of this Agreement, then:
 - the Service Provider shall ensure that the Subcontractor's B-BBEE level is equal or better than that of the Service Provider, their price is competitive and they have the capacity to provide the Service;
 - such Subcontracting shall not absolve the Service Provider from responsibility for achieving the Service Levels or complying with its obligations in terms of this Agreement and the Service Provider hereby indemnifies and holds the City harmless against any loss, harm or damage which the City may suffer as a result of such Subcontracting;
 - the Service Provider shall at all times remain the sole point of contact for the City in respect of the acquisition of Services by the City; and
 - no such Subcontracting shall have any effect on the Contract Price and charges payable by the City to the Service Provider in terms of this Agreement.
- CONFIDENTIALITY
 - The Service Provider acknowledge that all information relating to the City confidential business and technical information, data, documents or other information necessary or useful for the carrying on by the City of its business which shall include, but shall not be limited to operating procedures, quality control procedures, approximate operation personnel requirements, descriptions and trade names and trademarks, know how, techniques, technology, information relating to clients, customers, suppliers, relevant authorities, copyright, trade secrets and all goodwill relating to the business and any other intellectual property rights, technical data and documents in whole or in part, used by the City in

respect of its business; (“**Confidential Information**”), shall remain confidential and shall not be made known unless the City has given written consent to do so.

- The information provided by the City in the context of this Agreement is Confidential Information and the Service Provider shall take all reasonable measures to keep the information confidential and will only use the information for the purpose for which it was provided.
- The Service Provider undertakes to not disclose any such Confidential Information. However, there will be no obligation of confidentiality or restriction on use where:
 - the information is publicly available, or becomes publicly available otherwise than by action of the receiving Party; or
 - the information was already known to the receiving Party (as evidenced by its written records) prior to its receipt under this or any previous agreement between the Parties or their affiliates; or
 - The information was received from a third Party not in breach of an obligation of confidentiality.
- INTELLECTUAL PROPERTY RIGHTS
 - All Intellectual Property Rights of the Service Provider and/or third party vest in the Service Provider and/or third party, as appropriate.
 - All rights in the City name and logo remain the absolute property of the City.
 - The Service Provider warrants that no aspect of the Services provided in terms thereof will infringe any Patent, Design, Copyright, Trade Mark or trade secret or other proprietary right of any third party.
 - The Service Provider shall promptly notify the City, in writing, of any infringement or apparent or threatened infringement or any circumstances which may potentially give rise to an infringement, or any actions, claims or demands in relation to any Intellectual Property Rights.
 - In the event the City becomes aware of any such infringement, the Service Provider shall, at its cost, defend the City against any claim that the Services infringe any such third party Intellectual Property Rights, provided that the City gives notice to the Service Provider of such claim and the Service Provider controls the defence thereof. The Service

Provider further indemnifies the City against, and undertakes that it will pay all costs, damages and attorney fees, if any, finally awarded against the City in any action which is attributable to such claim and will reimburse the City with all costs reasonably incurred by the City in connection with any such action.

- Should any claim be made against the City by any third party in terms of clause 10 above, the City shall give the Service Provider written notice thereof within 3 (three) days of becoming aware of such claim to enable the Service Provider to take steps to contest it.
- Should any third party succeed in its claim for the infringement of any third party proprietary rights, the Service Provider shall, at its discretion and within 30 (thirty) days of the Services having been found to infringe, at its own cost:
 - obtain for the City the right to continue using the subject of infringement or the parts thereof which constitute the infringement; or
 - replace the subject of infringement or the parts thereof which constitute the infringement with another product or service which does not infringe and which is materially similar to the subject of infringement; or
 - alter the subject of infringement in such a way as to render it non-infringing while still in all respects operating in substantially the same manner as the subject of infringement; or
 - withdraw the subject of infringement.
- **FORCE MAJEURE**
 - For the purposes hereof, Force Majeure shall mean civil strife, riots, insurrection, sabotage, national emergency, acts of war of public enemy, rationing of supplies, flood, storm, fire or any other like forces of nature beyond the reasonable control of the party claiming Force Majeure and comprehended in the terms thereof.
 - If Force Majeure causes delays in or failure or partial failure of performance by a Party of all or any of its obligations hereunder, this Agreement shall be suspended for the period agreed in writing between the Parties.
 - In the event of circumstances arising which the other Party believes that it constitutes a Force Majeure ("the Affected Party") then such Affected

Party shall send, within 5 (five) days from the interrupting circumstances, a written notice of the interrupting circumstances specifying the nature and date of commencement of the interrupting event to the other Party. The Parties shall agree, in writing, to suspend the implementation of this Agreement for a specific period ("Agreed Period").

- In the event that both Parties reasonably believe that the Affected Party shall be unable to continue to perform its obligations after the Agreed Period, then either Party shall be entitled to terminate this Agreement without further notice to the other Party.
- The Party whose performance is interrupted by the interrupting circumstances shall be entitled, provided that such party shall have given notice to that effect with a written notice of the interrupting circumstances as provided above, to extend the period of this Agreement by a period equal to the time that its performance is so prevented.

- **CESSION**

The Service Provider shall not be entitled to cede or assign or transfer in any other way and/or alienate its rights and obligations in terms of this Agreement without the prior written consent of the City.

- **CHANGE OF CONTROL / CIRCUMSTANCE**

- The Service Provider shall notify the City, in writing, of any change in the Service Provider's shareholding or membership or any change in the Service Provider's subsidiary companies or holding or its affiliates.
- The Parties agree that should there be a change as envisaged in clause ☐o above, the City shall have the opportunity to renegotiate the terms of this Agreement with the 3rd party.
- The Service Provider shall further notify the City of any material changes or circumstance which might have led the City to appoint the Service Provider to Provide the Goods and/or Services. In the event that any material change or circumstance occurs and the Service Provider fails to inform the City of such a change or circumstance, the Service Provider shall be deemed to have breached a material term of this Agreement and the City shall be entitled to cancel the Agreement on 1 (one) month's prior notice.

- **BREACH**

- Subject to clause ☐o above, should either Party commit a breach of any term of this Agreement ("the Defaulting Party") then the affected party

("Aggrieved Party") shall be entitled to inform the Defaulting Party in writing to remedy such failure or default within 5 (five) Business Days and should the Defaulting Party fail to remedy the breach within 5 (five) Business Days after receipt of the notice the so Aggrieved Party shall be entitled, without prejudice to any of its rights under this Agreement or law to:

- immediately terminate this Agreement without giving written notice and claim damages (which shall include legal costs on an attorney/client scale); or
- request specific performance and claim damages (which shall include legal costs on an attorney/client scale); or
- impose penalties as provided for in clause □ above.

- EARLY TERMINATION

The City shall have the right to terminate this Agreement by giving 30 (thirty) days' notice in writing to the Service Provider of its intention to terminate the Agreement.

- DISPUTES

- Save for clause 30 above or any other clause in this Agreement which provides for its own remedy, should any dispute arise between the Parties in respect of or pursuant to this Agreement, including, without limiting the generality of the foregoing, any dispute relating to:
 - the interpretation of the Agreement;
 - the performance of any of the terms of the Agreement;
 - any of the parties' rights and obligations;
 - any procedure to be followed;
 - the termination or cancellation or breach of this Agreement; or
 - the rectification or repudiation of this Agreement; then any Party may give the other Party written notice of such dispute, in which event the provisions below shall apply.
- Within 7 (seven) days of the declaration of such dispute, the Parties representatives or their nominated persons shall meet in the spirit of goodwill and endeavour to resolve the dispute, failing which (and without prejudice to any other alternative dispute resolution to which the Parties

may agree, either prior to or concurrently with arbitration) the provisions of this clause □ above shall apply.

- If the Parties are unable to resolve the dispute within 14 (fourteen) days of the notice of the dispute (or such longer period as they may have agreed to in writing), then either Party may, on written notice to the other Party, require that the dispute be submitted to and decided by arbitration, in terms of the Arbitration Act, 42 of 1965 of South Africa (“the Arbitration Act”).
- The arbitration shall be held under the provisions of the Arbitration Act provided that the arbitration shall be:
 - at any place which the Parties agree, in writing, to be mutually convenient.
 - in accordance with such formalities and/or procedures as may be settled by the arbitrator and may be held in an informal and summary manner, on the basis that it shall not be necessary to observe or carry out the usual formalities of procedure, pleadings and/or discovery or respect rules of evidence.
- If the arbitration is:
 - a legal matter, then the arbitrator shall be a practicing advocate or a practicing attorney of not less than 10 (ten) years' standing;
 - an accounting matter, then the arbitrator shall be a practicing chartered accountant of not less than 10 (ten) years' standing;
 - any other matter, then the arbitrator shall be any independent person agreed upon between the parties.
- Should the Parties fail to agree on an arbitrator within 14 (fourteen) days after the arbitration has been demanded, then the arbitrator shall be nominated at the request of either of the Parties, by the president for the time being of the Law Society of the Northern Provinces.
- Should the Parties fail to agree whether the dispute is of a legal, accounting or other nature within 7 (seven) days after the arbitration has been demanded, then it shall be deemed to be a dispute of a legal nature.
- The arbitrator may:

- investigate or cause to be investigated any matter, fact or thing which he considers necessary or desirable in connection with the dispute and for that purpose, shall have the widest powers of investigating all documents and records of any party having a bearing on the dispute;
 - interview and question under oath the parties or any of their representatives;
 - decide the dispute according to what he considers just and equitable in the circumstances; and
 - make such award, including an award for specific performance, damages or otherwise, as he in his discretion may deem fit and appropriate. The arbitration shall be held as quickly as possible after it is requested, with a view to it being completed within 30 (thirty) days after it has been so requested.
- The arbitrator's decision and award shall be in writing with reasons and shall be final and binding upon the Parties.
 - The arbitrator's award may, on application by either Party to a court of competent jurisdiction and after due notice is given to the other Party, be made an order of court.
 - Notwithstanding the provisions of clauses 30, 31, 32, 33, 34, 35, 36 above, in the event of either Party having a claim against the other Party for a liquidated amount or an amount which arises from a liquid document, or for an interdict or other urgent relief, then the other Party having such a claim shall be entitled to institute action therefore in a court of law rather than in terms of the above clauses, notwithstanding the fact that the other Party may dispute the claim.
 - The provisions of this clause 32 are severable from the rest of this Agreement and shall remain in effect even where this Agreement is terminated or cancelled for any reason.
- LAWS AND JURISDICTION
 - This Agreement shall be governed by and interpreted according to the Law of the Republic.
 - Each Party submits to the exclusive jurisdiction of the South African courts in respect of any matter arising from or in connection with this Agreement including its termination. Each Party further consents to the

jurisdiction of the High Court of South Africa (North Gauteng High Court (Pretoria)).

- NOTICES AND COMMUNICATIONS

- The Parties choose as their respective *domicilium citandi et executandi* (hereinafter referred to as the “*domicilium*”) and for the delivery of any notices arising out of this Agreement or its termination or cancellation, whether in respect of court process, notices or other documents or communications of whatsoever nature (including the exercise of any option), the address set out below:

- **THE CITY:**

Office of the City Manager
Tshwane House
2nd Floor, Block D
320 Madiba Street
Pretoria, 0001
P O Box 440
Pretoria, 0001
Fax: 086 214 9544
Attention:
Telephone:
Email:

- **THE SERVICE PROVIDER:**

.....
.....
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.....
.....
Attention:
Telephone:
Fax:
Email:

- Each Party shall be entitled from time to time, by written notice to the other Party, to vary its *domicilium* to any other address which is not a Post Office Box or a Poste Restante.
- Any notice given and any payment made by any Party to another Party (hereinafter referred to as “the addressee”) which:

- is delivered by hand during normal business hours of the addressee at the addressee's *domicilium*, shall be deemed, until the contrary is proved by the addressee, to have been received by the addressee at the time of delivery;
- is posted by prepaid registered post to the addressee at the addressee's *domicilium* shall be deemed, until the contrary is proved by the addressee, to have been received on the 7th (seventh) day after the date of posting.
- is sent by email or facsimile machine shall be deemed, until the contrary is proven by the addressee, to have been received within 1 (one) hour of transmission where it is transmitted during business hours of the receiving instrument and at noon on the following business day (excluding Saturdays) where it is transmitted outside such business hours.
- Any notice or communication required or permitted in terms of this Agreement shall be valid and effective only if in writing but it shall be competent to give notice by facsimile.
- Notwithstanding anything to the contrary in this Agreement a notice or communication actually received by one Party shall be an adequate notice or communication notwithstanding that it was not sent to or delivered at the chosen *domicilium citandi et executandi*.
- GENERAL AND MISCELLANEOUS
 - **SOLE RECORD OF AGREEMENT**
This Agreement constitutes the sole record of the agreement between the Parties with regard to the subject matter hereof. No Party shall be bound by any express or implied term, representation, warranty, promise or the like not recorded herein.
 - **NO AMENDMENT EXCEPT IN WRITING**
No addition to, variation of, or agreed cancellation of, this Agreement shall be of any force or effect unless in writing and signed by or on behalf of the Parties. Any alleged waiver of this requirement must itself be reduced to writing and signed by the relevant Party to be of any effect.
 - **WAIVERS**

No relaxation or indulgence which any party may grant to any other shall constitute a waiver of the rights of that party and shall not preclude that party from exercising any rights which may have arisen in the past or which might arise in future.

○ **SURVIVAL OF OBLIGATIONS**

Any provision of this Agreement which contemplates performance or observance subsequent to any termination or expiration of this Agreement shall survive any termination or expiration of this Agreement and continue in full force and effect.

○ **APPROVALS AND CONSENTS**

An approval or consent given by a Party under this Agreement shall only be valid if in writing and shall not relieve the other party from responsibility for complying with the requirements of this Agreement nor shall it be construed as a waiver of any rights under this Agreement except as and to the extent otherwise expressly provided in such approval or consent, or elsewhere in this Agreement. Any alleged waiver of the requirement that the approval or consent must be in writing must itself be reduced to writing and signed by the relevant Party to be of any effect.

● **EXECUTION**

- This Agreement may be executed in several counterparts, which shall each be deemed an original, but all of which shall constitute one and the same instrument. A facsimile shall constitute a valid counterpart for all purposes hereunder.
- The signatories to this Agreement by their signature warrant their authority to enter into this Agreement and the capacity of their principal, if signing in a representative capacity, to enter into this Agreement.

Signed at _____ on this _____ day of _____ 20

For and on behalf of **THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY**

Duly represented by

City Manager

Signed at _____ on this _____ day of _____
20

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Duly represented by