CITY OF TSHWANE
IGNITING EXCELLENCE

TENDER REFERENCE: EED 08-2023/24

TENDER FOR THE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF NEW PHOTOVOLTAIC (PV) HIGH MAST LIGHTS, ON AN AS-AND-WHEN REQUIRED BASIS

CIDB Category : 6 EP or 6 CE CIDB Registered Contractors

ISSUED BY:	**PREPARED BY:**
The Divisional Head DEMAND P O Box 6338 PRETORIA 0001 Tel: (012) 358 0303	Mr . Steynberg Myburg P.O. Box 423 PRETORIA 0001 Tel:(012) 358- 2441

Registered Name of Tenderer:	
Trading Name of Tenderer:	
Registration No. of Entity:	
Postal address of Tenderer:	
Contact Person:	CoT Vendor No:
Tel. No.	E-mail Address:
Cell No.	Fax No:
CIDB CRS Number(s):	

In compliance with THE CIDB standards for uniformity

CONTENTS OF VOLUME

PORTION 1: TENDER

PART T1: TENDERING PROCEDURES

CONTENTS

T1.1 TENDER NOTICE AND INVITATION TO TENDER

THIS TENDER WILL ONLY BE AVAILABLE ON THE INTERNET

EED 08-2023/24
CITY OF TSHWANE
ENERGY AND ELECTRICITY DEPARTMENT

TENDER FOR THE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF NEW PHOTOVOLTAIC (PV) HIGH MAST LIGHTS, ON AN AS-AND-WHEN REQUIRED BASIS.

Tenders are hereby invited for the above services.

Tenderers should have a Construction Industry Development Board CIDB contractor grading designation of **6 EP or 6 CE CIDB** or higher.

A COMPULSORY BRIEFING SESSION with a representative of the Employer will take place in the **Princess Park electricity depot, Cafeteria hall, 01 Nina Sita street, Pretoria** on **27 May 2024 at 10H00**

Tenders will be received until **10:00** on **14 June 2024.** Tenders will be received on the closing dates and times shown, must be enclosed in sealed envelopes, bearing the applicable tender heading and reference number, as well as the closing time and due date, and must be addressed to: -

The closing time for receipt of tenders is **10h00** on the **14 June 2024.** Tenders will be received on the closing date and time shown, must be enclosed in sealed envelopes bearing the applicable tender heading and reference number, as well as the closing time and due date, and must be addressed to the Divisional Head, SUPPLY CHAIN MANAGEMENT, PRETORIA, 0001 and must be submitted in the tender box situated at **Tshwane House, 320 Madiba Street, Pretoria, 0002**. Tenders will be opened at the latter address only on request.

A tender must remain open for a period of 90 days from the closing date of submission of tenders, during which period the tender may not be amended or withdrawn and may be accepted by the Municipality at any time during this period.

The lowest or any tender will not necessarily be accepted, and the Municipality reserves the right to accept a tender as a whole or in part.

ENQUIRIES: Representative: Steynberg Myburg
Tel (Office): 012 358 2441
E-Mail: steynbergm@Tshwane.gov.za

Johann Mettler
CITY MANAGER

NOTICE 14 OF 2023/24
2024

T1.2 TENDER DATA

The conditions of tender are the Standard Conditions of Tender as contained in **Annexure C** of **Standard for Uniformity in Construction Procurement (Board Notice Government Gazette No 42622 of 08 August 2019)**, bound into Section T1.3

The Standard Conditions of Tender makes several references to the Tender Data. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender to which it mainly applies.

CLAUSE NUMBER		TENDER DATA
C.1.1	Actions	The Employer is **City Of Tshwane Metropolitan Municipality**
C.1.2	Tender Documents	Volume 1: Tender Document **THE TENDER** **Part T1: Tendering Procedures** T1.1 – Tender notice and Invitation to tender T1.2 – Tender Data T1.3 – Standard Conditions of Tender **Part T2: Returnable documents** T2.1 – List of Returnable Documents T2.2 – Returnable Schedules **THE CONTRACT** **Part C1: Agreements and contract data** C1.1 – Form of Offer and Acceptance C1.2 – Contract Data C1.3 – Form of Guarantee C1.4 - Example Form of Guarantee C1.5 – Health and Safety Agreement **Part C2: Pricing data** C2.1 – Pricing Instruction C2.2 – Pricing Schedule **Part C3: Scope of work** C3.1 – Description of Works C3.2 – Health and Safety
C.1.3 *C.1.3.4*	Interpretation	**Add** the following new clause: *The tender documents have been drafted in English. The contract arising from the invitation to tender shall be interpreted and construed in English*
C.1.4	Communication and Employer's Agent	Agent: **Steynberg Myburg** Tel: **012-358-2441** E-Mail: steynbergm@tshwane.gov.za ***SCM Official:*** *Mulondi Rasekgala* ***Tel No:*** *012 358 6636* ***Email Address:*** *mulondin@tshwane.gov.za*

<table>
<tr><th colspan="2">CLAUSE NUMBER</th><th>TENDER DATA</th></tr>
<tr><td colspan="2"></td><td></td></tr>
<tr><td>C.2.1</td><td>Eligibility</td><td>Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contract grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered or a value determined in accordance with regulation 25(1B) or 25 (7A) of the Construction Industry Development Regulations for a 6 EP or 6 CE class of construction work, are eligible to submit tenders</td></tr>
<tr><td colspan="2"></td><td>Joint Ventures are eligible to submit tenders provided that:

1. The combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor designation in accordance with the sum tendered for a 6 EP or 6 CE class of construction work or a value determined in accordance with Regulation 25(1B) or 25(7A) of the Construction Industry Development Regulations.

<u>CIDB JOINT VENTURE GRADING TABLE</u>

<table>
<tr><th>Designation</th><th>Deemed to satisfy joint venture arrangements</th></tr>
<tr><td>3</td><td>Three contractors registered in contractor grading designation 2</td></tr>
<tr><td>4</td><td>Three contractors registered in contractor grading designation 3</td></tr>
<tr><td>5</td><td>Two contractors registered in contractor grading designation 4
One contractor registered in contractor grading designation 4 and two registered in contractor grading designation 3</td></tr>
<tr><td>6</td><td>Two contractors registered in contractor grading designation 5
One contractor registered in contractor grading designation 5 and two registered in contractor grading designation 4</td></tr>
<tr><td>7</td><td>Two contractors registered in contractor grading designation 6
One contractor registered in contractor grading designation 6 and two registered in contractor grading designation 5</td></tr>
<tr><td>8</td><td>Three contractors registered in contractor grading designation 7</td></tr>
<tr><td>9</td><td>Three contractors registered in contractor grading designation 8</td></tr>
</table>
</td></tr>
<tr><td>C.2.2</td><td>Cost of Tendering</td><td>The employer <u>will not</u> compensate the tenderer for any costs incurred in attending interviews or making any submissions in the office of the employer.</td></tr>
<tr><td>C.2.7</td><td>Clarification meeting</td><td>The arrangements for a <u>compulsory</u> clarification meeting and site inspection are as stated in the tender notice and invitation to tender

Confirmation of attendance will be recorded on site in the attendance register to be signed by all tenderers. Addenda will be issued to and tenders received from those tendering entities appearing on the attendance register.

Tender documents will not be made available at the clarification meeting.</td></tr>
<tr><td>C.2.8</td><td>Seek clarification</td><td>Request clarification of the tender documents, if necessary, by notifying the employer at least 5 <u>(Five) working days</u> before the closing time stated in the tender data.</td></tr>
</table>

CLAUSE NUMBER		TENDER DATA
C.2.9	Insurance	*Accept that the submission of a tender shall be construed as an acknowledgement by the tenderer that he is satisfied with, where applicable, the insurance cover the employer will affect under the contract.*
C.2.12 C.2.12.3	Alternative offers	Alternative offers will only be considered if tenderer(s) have submitted a fully completed main offer. For alternative offers a complete separate detailed activity, quantities and bill/price schedule must be submitted as a separate document. Alternative tender offer will only be considered if the main offer is the winning tender.
C2.13. Submitting a tender offer C2.13.1 C2.13.2 C2.13.3 C2.13.4 C2.13.5		Submit one tender offer only, either as a single tendering entity or as a member in a joint venture to provide the whole of the works, services or supply identified in the contract data described in the scope of work, unless stated otherwise in the tender data. Return all returnable documents to the employer after completing them in their entirety, by writing legibly in non- erasable ink. *Submit the parts of the tender offer communicated on paper as an original plus the number of copies stated in the tender data, with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the employer.* *Sign the original and all copies of the tender offer where required in terms of the tender data. The employer will hold all authorized signatories liable on behalf of the tenderer signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer.* *Seal the original tender offer and each of the tender offer as separate packages marking the packages as ORIGINAL and COPY. Each package shall state on the outside of the employer's address and identification details stated in the tender data, as well as the tenderers name and contact address.* The identification details are: Tender Reference: **EED 08-2023/24** Tender Description: **TENDER FOR THE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF NEW PHOTOVOLTAIC (PV) HIGH MAST LIGHTS, ON AN AS-AND-WHEN REQUIRED BASIS.** *Closing Time: 10:00 am* *Closing Date: 14 June 2024* *Each tender shall be enclosed in a sealed envelope, bearing the correct identification details and shall be placed in the tender box located at:* ***PROCUREMENT ADVICE CENTRE*** ***(TENDER BOX AT)*** ***Tshwane House*** ***320 Madiba Street*** ***PRETORIA CBD*** ***0002*** *This address is 24 hours available for delivery of tender offers.* *Where a two-envelope system is required in terms of the tender data, place and seal the returnable documents listed in the tender data in an envelope marked —financial proposal‖*

CLAUSE NUMBER		TENDER DATA
		and place the remaining returnable documents in an envelope marked —technical proposal||. Each envelope shall state on the outside the employer's address and identification details stated in the tender data, as well as the tenderer's name and contact address.
C2.13.6		*Seal the original tender offer and copy packages together in an outer package that states on the outside only the employer's address and identification details as stated in the tender data.* *Accept that the employer will not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated*
C2.13.7		*Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer, unless stated otherwise in the tender data.* *Only authorised signatories may sign the original and all copies of the tender offer where required.*
C2.13.8		*In the case of a ONE-PERSON CONCERN submitting a tender, this shall be clearly stated.*
C2.13.9		*In the case of a **COMPANY** submitting a tender, include a copy of a **resolution by its board of directors** authorising a director or other official of the company to sign the documents on behalf of the company.* *In the case of a **CLOSE CORPORATION** submitting a tender, include a copy of a **resolution by its members** authorising a member or other official of the corporation to sign the documents on each member's behalf.* *In the case of a **PARTNERSHIP** submitting a tender, **all the partners** shall sign the documents, unless one partner or a group of partners has been authorised to sign on behalf of each partner, in which case **proof of such authorisation** shall be included in the Tender.* *In the case of a **JOINT VENTURE/CONSORTIUM** submitting a tender, include **a resolution of each company** of the joint venture together with a **resolution by its members** authorising a member of the joint venture to sign the documents on behalf of the joint venture.* ***Accept that failure to submit proof of authorisation to sign the tender shall result in the tender offer being regarded as non-responsive.***
C.2.14 Information and data to be completed in all respects		Accept that tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the employer as non-responsive.
C.2.15	Closing time	The closing time for submission of tender offers is stated in the tender notice and invitation to tender.
C.2.16	Tender offer validity	The tender offer validity period is **90 days**. **Add** the following new clause
C.2.16.5		*In the case of a Joint Venture/Consortium/Sub-contractors each party must submit a separate original Tax Clearance Certificate.*
C.2.18	Provide other material	The tenderer shall, when requested by the employer to do so, submit the names of all management and supervisory staff that will be employed to supervise the labour-intensive

CLAUSE NUMBER		TENDER DATA
		portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirements.
C.2.19	Inspection, tests and analysis	The tenderer shall, when requested provide access during working hours to premises for inspections, tests and analysis as provided for in the tender data.
C2.20	Submit securities, bonds, policies, etc.	The tenderer is required to submit with his tender a letter of intent from an approved insurer undertaking to provide the performance bond to the format included in Section C1.3 of this procurement document.
C2.23	Certificates	Refer to Part T2 of this procurement document for a list of the documents that are to be returned with the tender.
C2.24	Conditions Associated with the Granting of Preferences	**Add** the following new clause The Tenderer, undertakes to: a) engage one or more Targeted Enterprises / Targeted Labour in accordance with the provisions of the SANS 1914 as varied in the Procurement Section of the Scope of Works; b) deliver to the Employer, within 5 working days of being requested in writing to do so, a Targeted Enterprise Declaration Affidavit in respect of all Targeted Enterprises engaged at prime contract level to satisfy Contract Participation Goal requirements; c) Accept the sanctions set out in the Scope of Works should such conditions be breached.
C2.25	*Canvassing and obtaining of additional information by tenderers*	**Add** the following new clause *The Tenderer shall not make any attempt either directly or indirectly to canvass any of the Employer's officials or the Employer's agent in respect of his tender, after the opening of the tenders but prior to the Employer arriving at a decision thereon.* *The Tenderer shall not make any attempt to obtain particulars of any relevant information, other than that disclosed at the opening of tenders.*
C2.26	*Prohibitions on awards to persons in service of the state*	**Add** the following new clause *The Employer is prohibited to award a tender to a person -* *a) who is in the service of the state; or* *b) if that person is not a natural person, of which any director, manager, principal shareholder or stakeholder is a person in the service of the state; or* *c) a person who is an advisor or consultant contracted with the municipality or municipal entity.* ***In the service of the state** means to be -* *a) a member of:-* *• any municipal council;* *• any provincial legislature; or* *• 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;* *e) provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);* *f) a member of the accounting authority of any national or provincial public entity; or* *g) an employee of Parliament or a provincial legislature.* In order to give effect to the above, the questionnaire for the declaration of interests in the tender of persons in service of state in part T2 of this procurement document must be

CLAUSE NUMBER		TENDER DATA
		completed.
C2.27	*Awards to close family members of persons in the service of the state*	**Add** the following new clause *Accept that the notes to the Employer's annual financial statements must disclose particulars of any award of more than R2000 to a person who is a spouse, child or parent of a person in the service of the state (defined in clause C2.25), or has been in the service of the state in the previous twelve months, including -* *a) the name of that person;* *b) the capacity in which that person is in the service of the state; and* *c) the amount of the award.* In order to give effect to the above, the questionnaire for the declaration of interests in the tender of persons in service of state in part T2 of this procurement document must be completed.
C2.28	*Vendor registration*	**Add** the following new clause *The contractor will required registering as a supplier/ service provider on the City of Tshwane's vendor register before any payment can be done.* *If the tenderer is already registered as a vendor, it is required to record the vendor number in space provided on the cover page of this Tender document.* *Vendor registration documents and support is available from the Procurement Advice Centre or from https://vendorportal.tshwane.gov.za/ All parties of a joint venture or consortium submitting a tender shall comply with the requirements of this clause.*
C2.29	*Tax*	**Add** the following new clause *An original tax clearance certificate must be submitted with this tender document.* *In the case of a Joint Venture/Consortium the tax clearance certificates must be individual original tax clearance certificates for the members of the Joint Venture/Consortium are not acceptable.*
C.3.1 C.3.1.1	Respond to requests from the tenderer	 The employer will respond to requests for clarification up to 5 **(seven) working days** before the tender closing time.
C.3.4	Opening of tender submissions	Tenders will be opened immediately after the closing time for tenders
C3.11	Evaluation of tender offers	**The tender will be evaluated in the following stages and criteria:** **STAGES OF EVALUATION** Stage 1: Administrative Compliance Stage 2: Mandatory and Technical Requirements Stage 3: Functionality Criteria Stage 4: Sample Evaluation

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<tr><th>CLAUSE NUMBER</th><th>TENDER DATA</th></tr>
<tr><td></td><td>
Stage 5: Preference Point System

Bids will be evaluated from stage 1 progressing to stage 5. Bids will only progress to the next stage if the bid passed the previous stage of evaluation.

STAGE 1: ADMINISTRATION EVALUATION

All the bids will be evaluated against the administrative requirements as set out in the in the table below.
<table>
<tr><th>Compulsory Returnable Documentation (Submission of these are compulsory)</th><th>Submitted (YES or NO)</th><th>Checklist (Guide for Bidder and the Bid Evaluation Committee)</th></tr>
<tr><td>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.</td><td></td><td>TCS must be in the same business name as the bidding company.
TCS must be valid.
Tax status must be compliant before the award.</td></tr>
<tr><td>b) a copy of their Central Supplier Database (CSD) registration; or indicate their Master Registration Number / CSD Number;</td><td></td><td>CSD must be valid. Tax status must be compliant before the award.</td></tr>
<tr><td>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.</td><td></td><td>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 or Company profile or CSD profile? Are all payment(s) up to date (i.e. not in arrears for more than 90 days?</td></tr>
<tr><td>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</td><td></td><td>Was a Municipal Account Statement(s) or landlord letter(s) provided for ALL the bidding company’s (SA based) directors? The names and/or addresses of all directors on statement correspond with CIPC document or Company profile or CSD profile? Are all payments up to date (i.e. not in arrears for more than 90 days?</td></tr>
</table>
</td></tr>
</table>

CLAUSE NUMBER	TENDER DATA		
	signed lease agreement of owners / members / directors / major shareholders.		
	e) Duly Signed and completed MBD forms (MBD 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. **NB: Bidders must ensure that the directors, trustees, managers, principle 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. *See Question 3.14 of MBD 4. Failure to declare interest will result in a disqualification*****		All documents fully completed (i.e. no blank spaces)? All documents fully signed? Signature authorised (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 **none submission of the above**,will be considered)?
	Financial Statements for the most recent three (3) years or financial statements from date of existence for companies less than three years. NB: The bidder must submit signed audited annual financial statements for the most recent 3 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 by law to prepare Audited financial statements.		Applicable for tenders above R10m in conjunction with MBD 5) Are Audited financial statements provided (Audited financials must be signed by auditor)? Or

CLAUSE NUMBER	TENDER DATA		
	f) Joint Ventures (JV) – (Only applicable when the bidder tender as a joint venture) • Where the bidder bid as a Joint Ventures (JV), the required or relevant documents as per (a) to I 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. • Note: 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 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 e) must be provided for all partners of the JV.
	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**
	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/ correction ink, on the price schedule.**

STAGE 2: MANDATORY AND TECHNICAL REQUIREMENTS

The following documents must be submitted with the tender.

Requirement	**Checklist: Submitted (YES/NO)**
a) Professional Civil Engineer/ Technologists responsible for the	

CLAUSE NUMBER	TENDER DATA		
		foundation and high mast design: **CV and Qualifications:** The candidate must submit a comprehensive Curriculum Vitae (CV) detailing their educational background, professional qualifications, and relevant experience in the field of foundation and high mast design. **ECSA Proof of Registration:** The candidate must provide proof of registration with the Engineering Council of South Africa (ECSA). This should include a valid ECSA registration number and certified copies of the registration certificates. **Minimum Experience Requirement:** The Professional Civil Engineer/Technologist must have a minimum of 5 years of relevant and documented experience in foundation and high mast design. The experience should be clearly outlined in the CV.	
	b)	Electrical Engineer / Technologists responsible for the high mast 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.	
	c)	CV and qualifications of the Construction manager.	

CLAUSE NUMBER	TENDER DATA	
	The individual must be registered as a construction manager with SACPCMP(South African Council for the Project and Construction Management Professions: Construction Manager) and proof of registration and certified copies of registration certificates must be submitted	
	d) CV and qualifications(Certified copy of Trade Test Certificate and Wireman's Licence) of the person responsible for the electrical installation and completion of COC and proof of registration with the Electrical Contractors Association (ECA) and proof of registration and certified copies of registration certificates.	
	e) CV and qualifications of the Installation and construction specialist Qualified artisan (Trade test certificate with Wireman's Licence) and accredited Small Scale Embedded Generation installer	
	e) CV and qualifications of the Safety officer. The individual must be registered as a safety officer with SACPCMP(South African Council for the Project and Construction Management Professions: Safety Officer) and proof of registration and certified copies of registration certificates must be submitted	
	f) Proof of the number of PV high mast lights successfully installed: Bidders must submit conclusive proof of their experience in the installation of photovoltaic high masts lights. The proof must explicitly indicate the number of photovoltaic high masts lights installed. The following requirements apply: 1. **Documentation Submission:** Bidders are required to submit comprehensive documentation that clearly and specifically outlines the number of photovoltaic high masts lights they have installed in previous projects. 2. **Project Details:** The documentation should include details of each project, specifying the location, date of installation, and the total number of photovoltaic high masts lights installed in each instance.	

CLAUSE NUMBER	TENDER DATA	
	3. **Photographic Evidence (optional):** Alongside written documentation, bidders can provide photographic evidence of the installed photovoltaic high masts lights. The photographs should clearly display the masts in operation and be accompanied by relevant project details. 4. **Client References:** Bidders should provide contact information for clients from the completed projects to serve as references. These references should be willing to verify the accuracy of the information provided regarding the installation of the number of photovoltaic high masts lights successfully installed. 5. **Certification or Verification Letter:** Bidders may include certification or verification letters from relevant authorities, clients, or supervisory bodies confirming the successful installation of the specified number of photovoltaic high masts lights. Verification letters must be on the official letterhead of the respective companies. 6. **Project Completion Certificates:** Where applicable, bidders should include project completion certificates or any other official documentation that attests to the satisfactory completion of the number of photovoltaic high mast light installations. This requirement is essential to ensure that bidders possess a proven track record in the installation of photovoltaic high masts lights and have the necessary experience to successfully execute similar projects.	
	g) Cost of Ownership Analysis: Bidders are mandated to submit a detailed cost of ownership analysis for the PV high mast light, covering the entire anticipated lifespan of 25 years. This analysis should encompass all relevant financial considerations associated with the acquisition, operation, and maintenance of the high mast system. **Procurement And Installation Costs:**	

CLAUSE NUMBER	TENDER DATA
	Breakdown of initial procurement costs, including equipment, installation, and any associated fees including all plant and labour. Solar Luminaire High Mast Light: This includes the cost of the complete high mast structure with foundation, solar panels, battery storage, LED luminaires, and any additional components. Installation: Labor, equipment, materials, testing and commissioning required for the installation of the complete PV high mast light. Design and Engineering: Fees for designing the system and engineering services. **Operational Expenses/Maintenance Costs:** A breakdown of Identification and quantification of routine maintenance costs, specifying frequency and associated expenses. The summary should include a detailed breakdown of all anticipated maintenance activities, items to be serviced, components slated for replacement during the specified timeframe. Each maintenance activity should be clearly outlined, specifying the frequency, nature, and estimated cost associated with servicing and replacing components including plant and labour. 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 entire anticipated lifespan of 25 years. **Life Cycle Costs:** Inclusion of life cycle costs, accounting for any anticipated,

CLAUSE NUMBER	TENDER DATA		
		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 such as the batteries. 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 solar high mast's life cycle, ensuring a comprehensive assessment of the long-term cost-effectiveness of the proposed system.	
	h)	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.	
	i)	Photometric test report(certified copy) for the LED floodlights offered from a SANS/ IEC or any national / international accredited testing facility .	
	j)	Compliant Lighting Simulation report and photometric data of the high mast must be submitted with the tender. The simulations are to be done with DIALux, Relux or reputable simulation software. A hard copy of the simulation report and photometric data must be attached with the tender. When submitting the design the following should also be submitted with the tender on a flash disc/memory stick: (1)The original design file in Relux “rdf” format and Dialux “dlx” format together with the “pdf” format and (2) photometric file in “ies or ldt” format. Hard copy report of the luminance distribution and illumination	

CLAUSE NUMBER	TENDER DATA

	levelS. The report must also indicate the average, minimum and maximum illuminance of the Total Area illuminated, and the average, minimum and maximum illuminance at 0m, 20m, 40m, 60m, 80m, 100m radius distance from the base of the mast. Lighting levels should be calculated on ground level.	
k)	Bidders are required to complete the prices in the Pricing Schedule in full with ink. Failure to comply will result in the bidder being disqualified.	
l)	Bidders will be evaluated based on the compliance of the following; (a) Annexure A.1 – Returnable schedules A and B which must be completed in full with ink, bidders must not refer to brochures or any attached document. Failure to comply will result in the bidder being disqualified.	

Note: Failure to comply with the requirements as stipulated above will regard the tender as non-responsive and will lead to in a tenderer being disqualified.

STAGE 3: FUNCTIONALITY SCORE CARD

The following criteria and weights will be applied when bids are assessed for functionality.

SCORECARD FOR FUNCTIONALITY

	CRITERIA	SUB-CRITERIA	SCALE	WEIGHT	HIGH POSSIBLE SCORE
1	Experience of the Company				
a	Relevant Experience of Company: i.e. design, supply, delivery, installation, testing and commissioning of PV lighting masts. (Years of experience) Proof of the number of PV high masts erected must be	< 5 years 5 ≤ years < 10 ≥ 10 years	0 3 5	6	30

CLAUSE NUMBER	TENDER DATA

	submitted with the tender.				
2	Experience of key staff:				
a	Professional Civil Engineer/ Technologists: Attach CV's indicating years of relevant experience.	5 ≤ years < 10 ≥10 years	1 2	5	**10**
b	Electrical Engineer / Technologist: Attach CV's indicating years of relevant experience.	5 ≤ years < 7 7 ≤ years < 10 ≥10 years	1 2 3	5	**15**
c	Construction Manager: Attach CV's indicating years of relevant experience	3 ≤ years < 5 ≥5 years	1 3	5	**15**
d	Installation and construction specialist: Attach CV's indicating years of relevant experience	3 ≤ years < 5 ≥5 years	1 3	5	**15**
e	Safety Officer. Attach CV's indicating years of relevant experience	3 ≤ years < 5 ≥5 years	1 3	5	**15**
	HIGHEST POSSIBLE SCORE				100

(a) The CoT reserves the right to contact references submitted by the bidder. (The CoT reserves the right to do reference check)

(b) Bids that do not achieve a minimum score of 60 points (out of 100) for functionality will not be evaluated further and will not be considered further.

STAGE 4: SAMPLE EVALUATION

a) Only tenderers that successfully passed the previous stages of the evaluation process will progress to the sample evaluation stage.

b) Samples shall only be submitted on request by CoT.

c) Bidders must submit samples of the major components of the PV systems that consist of; (1) solar panel, (2) LED light unit, (3)control gear(controller and

CLAUSE NUMBER	TENDER DATA
	inverter), (4) battery, (5)energy storage enclosure. d) Samples shall be evaluated on the compliance to Annexure A: Technical Schedule A & B.and the specifications. e) Tenderers shall provide samples within one week (5 working days) of request by CoT. f) CoT reserves the right to submit samples to such tests as deemed reasonable and necessary. g) Samples shall be delivered to: SCM, detail will be made available to the shortlisted bidders. h) **Samples shall be properly packed and labeled to show the tender number, the name of the tenderer, description of the item, bidders information.** i) Failure to provide samples shall disqualify the tender (Only for the shortlisted bidders). j) The successful bidder/s samples shall be kept at the CoT's premises for the period of the contract. k) Unsuccessful bidders samples will be returned to the bidders. l) Only tenderers that successfully passed the sample evaluation stage will progress to the last stage that will consist of the Preference point system. Note: All sample costs shall be to the bidder's account. **STAGE 5: PREFERENCE POINT SYSTEM** The preferential point system used will be the 90/10 points system in terms of the Preferential Procurement Policy Framework Act, 2000 (Act 5 of 2000) Regulations 2022. • 90 points for price • 10 points for Specific goals **SPECIFIC GOALS** 1) Bidders are required to submit supporting documents for their bids to claim the specific goal points. 2) Non-compliance with specific goals will not lead to disqualification but

<table>
<tr><th>CLAUSE NUMBER</th><th>TENDER DATA</th></tr>
<tr><td></td><td>
bidders will not be allocated specific goal points. Bidders will score points out of 90 for price only and zero (0) points out of 10 for specific goals.

3) 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.

<table>
<tr><th>Specific goals</th><th>90/10 preference point system</th><th>Proof of specific goals to be submitted</th></tr>
<tr><td>BB-BEE score of companies
• Level 1
• Level 2
• Level 3
• Level 4
• Level 5
• Level 6
• Level 7
• Level 8
• Non-compliant</td><td>• 4 Points
• 3.5 Points
• 3 Points
• 2.5 Points
• 2 Points
• 1.5 Points
• 1 Point
• 0.5 Points
0 Points</td><td>Valid Certified copy of BBBEE certificate. Sworn Affidavit for B-BBEE qualifying small enterprise or Exempt Micro Enterprises or CIPC BBBEE certificate.</td></tr>
<tr><td>EME and/ or QSE</td><td>1 Point</td><td>Valid Sworn affidavit for B-BBEE qualifying small enterprise or Exempt Micro Enterprises or CIPC BBBEE certificate</td></tr>
<tr><td>At least 51% of Women-owned companies</td><td>1 Point</td><td>Certified copy of Identity Document/s <u>and</u> proof of ownership (Sworn affidavit for B-BBEE qualifying small enterprise or Exempt Micro Enterprises, CIPC registration or any other proof of ownership)</td></tr>
<tr><td>At least 51% owned companies by People with disability</td><td>1 Point</td><td>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</td></tr>
<tr><td>At least 51% owned companies by Youth</td><td>1 Point</td><td>Certified copy of Identity Document/s <u>and</u> proof of ownership (Sworn affidavit for B-BBEE qualifying small</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th colspan="2">CLAUSE NUMBER</th><th>TENDER DATA</th></tr>
<tr><td colspan="2"></td><td>
<table>
<tr><td></td><td></td><td>enterprise or Exempt Micro Enterprises, CIPC registration or any other proof of ownership</td></tr>
<tr><td>Local Economic Participation
• City of Tshwane
• Gauteng
• National</td><td>
2 Points
1 Point
1 Point</td><td>Municipal Account statement/Lease agreement.</td></tr>
</table>

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.</td></tr>
<tr><td>C.3.13</td><td>Acceptance of Tender Offer</td><td>Tender offers will only be accepted if:

a.) the tenderer has complied in full with the all eligibility criteria
b.) the tenderer is able to produce an original Tax Clearance Certificate issued by the South African Revenue Service;
c.) the tenderer submits a letter of intent from an approved insurer undertaking to provide to provide the Performance Bond to the format included in Section C1.3 of this procurement document;
d.) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation.
e.) the tenderer is not in arrears for more than 3 months with municipal rates and taxes and municipal service charges;
f.) the tenderer or any of its directors is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector;
g.) the tenderer has not:
i) abused the Employer’s Supply Chain Management System; or
ii) failed to perform on any previous contract and has been given a written notice to this effect.
h.) the tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the tenderer’s ability to perform the contract in the best interests of the employer or potentially compromise the tender process and persons in the employ of the state are permitted to submit tenders or participate in the contract;
i.) the tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer;
j.) the employer is reasonably satisfied that the tenderer has in terms of the Construction Regulations, 2003, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely.</td></tr>
<tr><td>C.3.17</td><td>Copies of Contract</td><td>One signed copy of contract shall be provided by the Employer to the successful Tenderer.</td></tr>
</table>

T1.3 STANDARD CONDITIONS OF TENDER

TABLE OF CONTENTS

C.1 General

C.1.1 Actions

C.1.1.1 The Employer and each tenderer submitting a tender offer shall comply with these conditions of tender. In their dealings with each other, they shall discharge their duties and obligations as set out in C.2 and C.3, timeously and with integrity, and behave equitably, honestly and transparently, comply with all legal obligations and not engage in anticompetitive practices.

C.1.1.2 The Employer and the tenderer and all their agents and employees involved in the tender process shall avoid conflicts of interest and where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderers shall declare any potential conflict of interest in their tender submissions. Employees, agents and advisors of the Employer shall declare any conflict of interest to whoever is responsible for overseeing the procurement process at the start of any deliberations relating to the procurement process or as soon as they become aware of such conflict, and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.

Note: *1) A conflict of interest may arise due to a conflict of roles which might provide an incentive for improper acts in some circumstances. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in his or her position even if no improper acts result.*

2) *Conflicts of interest in respect of those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty which would in any way affect any decisions taken.*

C.1.1.3 The Employer shall not seek and a tenderer shall not submit a tender without having a firm intention and the capacity to proceed with the contract.

C.1.2 Tender Documents

The documents issued by the Employer for the purpose of a tender offer are listed in the tender data.

C.1.3 Interpretation

C.1.3.1 The tender data and additional requirements contained in the tender schedules that are included in the returnable documents are deemed to be part of these conditions of tender.

C.1.3.2 These conditions of tender, the tender data and tender schedules which are only required for tender evaluation purposes, shall not form part of any contract arising from the invitation to tender.

C.1.3.3 For the purposes of these conditions of tender, the following definitions apply:

a) **conflict of interest** means any situation which:

i) someone in a position of trust has competing professional or personal interests which make it difficult to fulfil his or her duties impartially;

ii) an individual or organisation is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or

iii) incompatibility or contradictory interests exist between an employee and the organisation which employs that employee.

b) **comparative price** means the price after the factors of a non-firm price and all unconditional discounts it can be utilised to have been taken into consideration;

c) **corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the Employer or his staff or agents in the tender process;

d) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the Employer, including collusive practices intended to establish prices at artificial levels;

e) **organization** means a company, firm, enterprise, association or other legal entity, whether incorporated or not, or a public body;

f) **functionality** means the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs

C.1.4 Communication and Employer's agent

Each communication between the Employer and a tenderer shall be to or from the Employer's agent only, and in a form that can be readily read, copied and recorded. Communications shall be in the English language. The Employer shall not take any responsibility for non-receipt of communications from or by a tenderer. The name and contact details of the Employer's agent are stated in the tender data.

C.1.5 Cancellation and re-invitation of tenders

C.1.5.1 An organ of state may, prior to the award of the tender, cancel the tender if-

(a) due to changed circumstances, there is no longer a need for the services, works or goods requested; or

(b) funds are no longer available to cover the total envisaged expenditure; or

(c) no acceptable tenders are received.

C.1.5.2 The decision to cancel the tender must be published in the CIDB website and in the Tender Bulletin for the media in which the original tender invitation as advertised.

C.1.6 Procurement procedures

C.1.6.1 General

Unless otherwise stated in the tender data, a contract will, subject to C.3.13, be concluded with the tenderer who in terms of C.3.11 is the highest ranked or the tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.

C.1.6.2 Competitive negotiation procedure

C.1.6.2.1 Where the tender data require that the competitive negotiation procedure is to be followed, tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of C.3.4, the Employer shall announce only the names of the tenderers who make a submission. The requirements of C.3.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.

C.1.6.2.2 All responsive tenderers, or not less than three responsive tenderers that are highest ranked in terms of the evaluation method and evaluation criteria stated in the tender data, shall be invited in each round to enter competitive negotiations, based on the principle of equal treatment and keeping confidential the proposed solutions and associated information. Notwithstanding the provisions of C.2.17, the Employer may request that tenders be clarified, specified, and fine-tuned

in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.

C.1.6.2.3 At the conclusion of each round of negotiations, tenderers shall be invited by the Employer to make a fresh tender offer, based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.

C.1.6.2.4 The contract shall be awarded in accordance with the provisions of C.3.11 and C.3.13 after tenderers have been requested to submit their best and final offer.

C.1.6.3 Proposal procedure using the two stage-system

C.1.6.3.1 Option 1

Tenderers shall in the first stage submit technical proposals and, if required, cost parameters around which a contract may be negotiated. The Employer shall evaluate each responsive submission in terms of the method of evaluation stated in the tender data, and in the second stage negotiate a contract with the tenderer scoring the highest number of evaluation points and award the contract in terms of these conditions of tender.

C.1.6.3.2 Option 2

C.1.6.3.2.1 Tenderers shall submit in the first stage only technical proposals. The Employer shall invite all responsive tenderers to submit tender offers in the second stage, following the issuing of procurement documents.

C.1.6.3.2.2 The Employer shall evaluate tenders received during the second stage in terms of the method of evaluation stated in the tender data and award the contract in terms of these conditions of tender.

C.2 Tenderer's obligations

C.2.1 Eligibility

C.2.1.1 Submit a tender offer only if the tenderer satisfies the criteria stated in the tender data and the tenderer, or any of his principals, is not under any restriction to do business with Employer.

C.2.1.2 Notify the Employer of any proposed material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used by the Employer as the basis in a prior process to invite the tenderer to submit a tender offer and obtain the Employer's written approval to do so prior to the closing time for tenders.

C.2.2 Cost of tendering

C.2.2.1 Accept that, unless otherwise stated in the tender data, the Employer will not compensate the tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer complies with requirements.

C.2.2.2 The cost of the tender documents charged by the Employer shall be limited to the actual cost incurred by the Employer for printing the documents. Employers must attempt to make available the tender documents on its website so as not to incur any costs pertaining to the printing of the tender documents.

C.2.3 Check documents

Check the tender documents on receipt for completeness and notify the Employer of any discrepancy or omission.

C.2.4 Confidentiality and copyright of documents

Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the Employer only for the purpose of preparing and submitting a tender offer in response to the invitation.

C.2.5 Reference documents

Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, conditions of contract and other publications, which are not attached but which are incorporated into the tender documents by reference.

C.2.6 Acknowledge addenda

Acknowledge receipt of addenda to the tender documents, which the Employer may issue, and if necessary, apply for an extension to the closing time stated in the tender data, in order to take the addenda into account.

C.2.7 Clarification meeting

Attend, where required, a clarification meeting at which tenderers may familiarize themselves with aspects of the proposed work, services or supply and raise questions. Details of the meeting(s) are stated in the tender data.

C.2.8 Seek clarification

Request clarification of the tender documents, if necessary, by notifying the Employer at least five working days before the closing time stated in the tender data.

C.2.9 Insurance

Be aware that the extent of insurance to be provided by the Employer (if any) might not be for the full cover required in terms of the conditions of contract identified in the contract data. The tenderer is advised to seek qualified advice regarding insurance.

C.2.10 Pricing the tender offer

C.2.10.1 Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes (except Value Added Tax (VAT), and other levies payable by the successful tenderer, such duties, taxes and levies being those applicable 14 days before the closing time stated in the tender data.

C.2.10.2 Show VAT payable by the Employer separately as an addition to the tendered total of the prices.

C.2.10.3 Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the conditions of contract identified in the contract data.

C.2.10.4 State the rates and prices in Rand unless instructed otherwise in the tender data. The conditions of contract identified in the contract data may provide for part payment in other currencies.

C.2.11 Alterations to documents

Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the Employer, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations.

C.2.12 Alternative tender offers

C.2.12.1 Unless otherwise stated in the tender data, submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted as well as a schedule that compares the requirements of the tender documents with the alternative requirements that are proposed.

C.2.12.2 Accept that an alternative tender offer may be based only on the criteria stated in the tender data or criteria otherwise acceptable to the Employer.

C.2.12.3 An alternative tender offer may only be considered if the main tender is the winning tender.

C.2.13 Submitting a tender offer

C.2.13.1 Submit one tender offer only, either as a single tendering entity or as a member in a joint venture to provide the whole of the works, services or supply identified in the contract data and described in the scope of works, unless stated otherwise in the tender data.

C.2.13.2 Return all returnable documents to the Employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.

C.2.13.3 Submit the parts of the tender offer communicated on paper as an original plus the number of copies stated in the tender data, with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the Employer.

C.2.13.4 Sign the original and all copies of the tender offer where required in terms of the tender data. The Employer will hold all authorized signatories liable on behalf of the tenderer. Signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the Employer shall hold liable for the purpose of the tender offer.

C.2.13.5 Seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY". Each package shall state on the outside the Employer's address and identification details stated in the tender data, as well as the tenderer's name and contact address.

C.2.13.6 Where a two-envelope system is required in terms of the tender data, place and seal the returnable documents listed in the tender data in an envelope marked “financial proposal” and place the remaining returnable documents in an envelope marked “technical proposal”. Each envelope shall state on the outside the Employer’s address and identification details stated in the tender data, as well as the tenderer's name and contact address.

C.2.13.7 Seal the original tender offer and copy packages together in an outer package that states on the outside only the Employer's address and identification details as stated in the tender data.

C.2.13.8 Accept that the Employer will not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.

C.2.13.9 Accept that tender offers submitted by facsimile or e-mail will be rejected by the Employer, unless stated otherwise in the tender data.

C.2.14 Information and data to be completed in all respects

Accept that tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the Employer as non-responsive.

C.2.15 Closing time

C.2.15.1 Ensure that the Employer receives the tender offer at the address specified in the tender data not later than the closing time stated in the tender data. Accept that proof of posting shall not be accepted as proof of delivery.

C.2.15.2 Accept that, if the Employer extends the closing time stated in the tender data for any reason, the requirements of these conditions of tender apply equally to the extended deadline.

C.2.16 Tender offer validity

C.2.16.1 Hold the tender offer(s) valid for acceptance by the Employer at any time during the validity period stated in the tender data after the closing time stated in the tender data.

C.2.16.2 If requested by the Employer, consider extending the validity period stated in the tender data for an agreed additional period, but no longer than 12 weeks.

C.2.16.3 Accept that a tender submission that has been submitted to the Employer may only be withdrawn or substituted by giving the Employer's agent written notice before the closing time for tenders that a tender is to be withdrawn or substituted.

C.2.16.4 Where a tender submission is to be substituted, submit a substitute tender in accordance with the requirements of C.2.13 with the packages clearly marked as "SUBSTITUTE".

C.2.17 Clarification of tender offer after submission

Provide clarification of a tender offer in response to a request to do so from the Employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.

Note: *Sub-clause C.2.17 does not preclude the negotiation of the final terms of the contract with a preferred tenderer following a competitive selection process, should the Employer elect to do so.*

C.2.18 Provide other material

C.2.18.1 Provide, on request by the Employer, any other material that has a bearing on the tender offer, the tenderer's commercial position (including notarized joint venture agreements), preferencing arrangements, or samples of materials, considered necessary by the Employer for the purpose of a full and fair risk assessment. Should the tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the Employer's request, the Employer may regard the tender offer as non-responsive.

C.2.18.2 Dispose of samples of materials provided for evaluation by the Employer, where required.

C.2.19 Inspections, test and analysis

Provide access during working hours to premises for inspections, tests and analysis as provided for in the tender data.

C.2.20 Submit securities, bonds and policies

If requested, submit for the Employer's acceptance before formation of the contract, all securities, bonds, guarantees, policies and certificates of insurance required in terms of the conditions of contract identified in the contract data.

C.2.21 Check final draft

Check the final draft of the contract provided by the Employer within the time available for the Employer to issue the contract.

C.2.22 Return of other tender documents

If so instructed by the Employer, return all retained tender documents within 28 days after the expiry of the validity period stated in the tender data.

C.2.23 Certificates

Include in the tender submission or provide the Employer with any certificates as stated in the tender data.

C.3 The Employer's undertakings

C.3.1 Respond to requests from the tenderer

C.3.1.1 Unless otherwise stated in the tender data respond to a request for clarification received up to five working days before the tender closing time stated in the Tender Data and notify all tenderers who drew procurement documents.

C.3.1.2 Consider any request to make a material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used to prequalify a tenderer to submit a tender offer in terms of a previous procurement process and deny any such request if as a consequence:

a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to meet any of the collective or individual qualifying requirements.

b) the new partners to a joint venture were not prequalified in the first instance, either as individual firms or as another joint venture; or

c) in the opinion of the Employer, acceptance of the material change would compromise the outcome of the prequalification process.

C.3.2 Issue addenda

If necessary, issue addenda that may amend or amplify the tender documents to each tenderer during the period from the date that tender documents are available until three days before the tender closing time stated in the Tender Data. If, as a result a tenderer applies for an extension to the closing time stated in the Tender Data, the Employer may grant such extension and, shall then notify all tenderers who drew documents.

C.3.3 Return late tender offers

Return tender offers received after the closing time stated in the Tender Data, unopened, (unless it is necessary to open a tender submission to obtain a forwarding address), to the tenderer concerned.

C.3.4 Opening of tender submissions

C.3.4.1 Unless the two-envelope system is to be followed, open valid tender submissions in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened.

C.3.4.2 Announce at the meeting held immediately after the opening of tender submissions, at a venue indicated in the tender data, the name of each tenderer whose tender offer is opened and, where applicable, the total of his prices, number of points claimed for its BBBEE status level and time for completion for the main tender offer only.

C.3.4.3 Make available the record outlined in C.3.4.2 to all interested persons upon request.

C.3.5 Two-envelope system

C.3.5.1 Where stated in the tender data that a two-envelope system is to be followed, open only the technical proposal of valid tenders in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data and announce the name of each tenderer whose technical proposal is opened.

C.3.5.2 Evaluate functionality of the technical proposals offered by tenderers, then advise tenderers who remain in contention for the award of the contract of the time and place when the financial proposals will be opened. Open only the financial proposals of tenderers, who score in the functionality evaluation more than the minimum number of points for functionality stated in the tender data, and announce the score obtained for the technical proposals and the total price and any points claimed on BBBEE status level. Return unopened financial proposals to tenderers whose technical proposals failed to achieve the minimum number of points for functionality

C.3.6 Non-disclosure

Not disclose to tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful tenderer.

C.3.7 Grounds for rejection and disqualification

Determine whether there has been any effort by a tenderer to influence the processing of tender offers and instantly disqualify a tenderer (and his tender offer) if it is established that he engaged in corrupt or fraudulent practices.

C.3.8 Test for responsiveness

C.3.8.1 Determine, after opening and before detailed evaluation, whether each tender offer properly received:

a) complies with the requirements of these Conditions of Tender,

b) has been properly and fully completed and signed, and

c) is responsive to the other requirements of the tender documents.

C.3.8.2 A responsive tender is one that conforms to all the terms, conditions, and specifications of the tender documents without material deviation or qualification. A material deviation or qualification is one which, in the Employer's opinion, would:

a) detrimentally affect the scope, quality, or performance of the works, services or supply identified in the Scope of Work,
b) significantly change the Employer's or the tenderer's risks and responsibilities under the contract, or

c) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified.

Reject a non-responsive tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.

C.3.9 Arithmetical errors, omissions and discrepancies

C.3.9.1 Check the highest ranked tender or tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with C.3.11 for:

a) the gross misplacement of the decimal point in any unit rate;

b) omissions made in completing the pricing schedule or bills of quantities; or

c) arithmetic errors in:

i) line item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or

ii) the summation of the prices.

C.3.9.2 The Employer must correct the arithmetical errors in the following manner:

a) Where there is a discrepancy between the amounts in words and amounts in figures, the amount in words shall govern.

b) If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected.

c) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern and the tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices.

Consider the rejection of a tender offer if the tenderer does not correct or accept the correction of the arithmetical error in the manner described above.

C.3.10 Clarification of a tender offer

Obtain clarification from a tenderer on any matter that could give rise to ambiguity in a contract arising from the tender offer.

C.3.11 Evaluation of tender offers

C.3.11.1 General

Appoint an evaluation panel of not less than three persons. Reduce each responsive tender offer to a comparative offer and evaluate them using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the tender data.

C.3.11.2 Method 1: Price and Preference

In the case of a price and preference:

1) Score tender evaluation points for price
2) Score points for BBBEE contribution
3) Add the points score for price and BBBEE

C.3.11.3 Method 2: Functionality, Price and Preference

In the case of a functionality, price and preference:

1) Score functionality, rejecting all tender offers that fail to achieve the minimum number of points for functionality as stated in the Tender Data.
2) No tender must be regarded as an acceptable tender if it fails to achieve the minimum qualifying score for functionality as indicated in the tender invitation.

3) Tenders that have achieved the minimum qualification score for functionality must be evaluated further in terms of the preference points system prescribed in paragraphs 4 and 4 and 5 below.

4) **The 80/20 preference point system for acquisition of services, works or goods up to Rand value of R1 million:**

(a) The following formula must be used to calculate the points for price in respect of tenders (including price quotation) with a Rand value equal to, or above R 30 000 and up to Rand value of R 1 000 000 (all applicable taxes included):

(i) $P_s = 80 \times \left[1 - \left(\frac{P_t - P_{min}}{P_{min}}\right)\right]$

Where

P_s = Points scored for comparative price of tender or offer under consideration;
P_t = Comparative price of tender of offer under consideration; and
P_{min} = Comparative price of lowest acceptable tender or offer.

(ii) An Employer of state may apply the formula in paragraph (i) for price quotations with a value less than R 30 000, if and when appropriate.

(b) Subject to subparagraph 4)(c), points must be awarded to a tender for attaining the B-BBEE status level of contributor in accordance with the table below:

B-BBEE Status Level of Contributor	Number of Points
1	20
2	18
3	16
4	12
5	8
6	6
7	4
8	2
Non-compliant Contributor	0

(c) A maximum of 20 points may be allocated in accordance with subparagraph 4)(b)

(d) The points scored by tender in respect of B-BBEE contribution contemplated in subparagraph 4)(b) must be added to the points scored for price a calculated in accordance with subparagraph 4)(a).

(e) Subject to paragraph C.4.3.8 the contract must be awarded to the tender who scores the highest total number of points.

5) **The 90/10 preference points system for acquisition of services, works or goods with a Rand value above R1 million:**

(a) The following formula must be used to calculate the points for price in respect of tenders with a Rand value above R 1 000 000 (all applicable taxes included):

$$P_s = 90 \times \left[1 - \left(\frac{P_t - P_{min}}{P_{min}}\right)\right]$$

Where

P_s = Points scored for comparative price of tender or offer under consideration;
P_t = Comparative price of tender of offer under consideration; and
P_{min} = Comparative price of lowest acceptable tender or offer.

(b) Subject to subparagraph 5)(c), points must be awarded to a tender for attaining the B- BBEE status level of contributor in accordance with the table below:

B-BBEE Status Level of Contributor	Number of Points
1	10
2	9
3	8
4	5
5	4
6	3
7	2
8	1
Non-compliant Contributor	0

(c) A maximum of 20 points may be allocated in accordance with subparagraph 5)(b)

(d) The points scored by tender in respect of B-BBEE contribution contemplated in subparagraph 5)(b) must be added to the points scored for price a calculated in accordance with subparagraph 5)(a).

(e) Subject to paragraph C.4.3.8 the contract must be awarded to the tender who scores the highest total number of points.

C.3.11.6 Decimal places

Score financial offers, preferences and quality, as relevant, to two decimal places.

C.3.11.7 Scoring financial offers

Score the financial offers of remaining responsive tender offers using the following formula:

$$N_{FO} = W_1 \times A$$

Where N_{FO} is the number of tender evaluation points awarded for the financial offer
W_1 is the maximum possible number of tender evaluation points awarded for the financial offer as stated in the tender data.

A is a number calculated using the formula and option described in Table C.1 as stated in the tender data.

Table C.1: Formulae for calculating the value of A

Formula	Comparison aimed at achieving	Option 1[a]	Option 2[a]
1	Highest price or discount	$A = \left(1 + \frac{(P - P_m)}{P_m}\right)$	$A = P / P_m$
2	Lowest price or percentage commission / fee	$A = \left(1 - \frac{(P - P_m)}{P_m}\right)$	$A = P_m / P$
a	P_m is the comparative offer of the most favourable comparative offer. P is the comparative offer of the tender offer under consideration.		

C.3.11.8 Scoring preferences

Confirm that tenderers are eligible for the preferences claimed in accordance with the provisions of the tender data and reject all claims for preferences where tenderers are not eligible for such preferences. Calculate the total number of tender evaluation points for preferences claimed in accordance with the provisions of the tender data.

C.3.11.9 Scoring functionality

Score each of the criteria and sub criteria for quality in accordance with the provisions of the Tender Data.

Calculate the total number of tender evaluation points for quality using the following formula:

$$N_Q = W_2 \times S_O / M_S$$

Where S_O is the score for quality allocated to the submission under consideration;

M_S is the maximum possible score for quality in respect of a submission; and

W_2 is the maximum possible number of tender evaluation points awarded for the quality as stated in the tender data.

C.3.12 Insurance provided by the Employer

If requested by the proposed successful tenderer, submit for the tenderer's information the policies and / or certificates of insurance which the conditions of contract identified in the contract data, require the Employer to provide.

C.3.13 Acceptance of tender offer

Accept the tender offer, if in the opinion of the Employer, it does not present any unacceptable commercial risk and only if the tenderer:

a) is not under restrictions, or has principals who are under restrictions, preventing participating in the Employer's procurement,

b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial

capability, reliability, experience and reputation, expertise and the personnel, to perform the contract,

c) has the legal capacity to enter into the contract,

d) is not insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act, 2008, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of any of the foregoing,

e) complies with the legal requirements, if any, stated in the tender data, and

f) is able, in the opinion of the Employer, to perform the contract free of conflicts of interest.

C.3.14 Prepare contract documents

C.3.14.1 If necessary, revise documents that shall form part of the contract and that were issued by the Employer as part of the tender documents to take account of:

a) addenda issued during the tender period,

b) inclusion of some of the returnable documents, and

c) other revisions agreed between the Employer and the successful tenderer.

C.3.14.2 Complete the schedule of deviations attached to the form of offer and acceptance, if any.

C.3.15 Complete adjudicator's contract

Unless alternative arrangements have been agreed or otherwise provided for in the contract, arrange for both parties to complete formalities for appointing the selected adjudicator at the same time as the main contract is signed.

C.3.16 Notice to unsuccessful tenderers

C.3.16.1 Notify the successful tenderer of the Employer's acceptance of his tender offer by completing and returning one copy of the form of offer and acceptance before the expiry of the validity period stated in the tender data, or agreed additional period.

C.3.16.2 After the successful tenderer has been notified of the Employer's acceptance of the tender, notify other tenderers that their tender offers have not been accepted.

C.3.17 Provide copies of the contracts

Provide to the successful tenderer the number of copies stated in the tender data of the signed copy of the contract as soon as possible after completion and signing of the form of offer and acceptance.

C.3.18 Provide written reasons for actions taken

Provide upon request written reasons to tenderers for any action that is taken in applying these conditions of tender, but withhold information which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of tenderers or might prejudice fair competition between tenderers.

C.3.19 Transparency in the procurement process

C.3.19.1 The CIDB prescripts require that tenders must be advertised and be registered on the CIDB i.Tender system.

C.3.19.2 The Employer must adopt a transparency model that incorporates the disclosure and accountability as transparency requirements in the procurement process.

C.3.19.3 The transparency model must identify the criteria for selection of projects, project information template and the threshold value of the projects to be disclosed in the public domain at various intervals of delivery of infrastructure projects.

C.3.19.4 The client must publish the information on a quarterly basis which contains the following information:

- Procurement planning process
- Procurement method and evaluation process
- Contract type
- Contract status
- Number of firms tendering
- Cost estimate
- Contract title
- Contract firm(s)
- Contract price
- Contract scope of work
- Contract start date and duration
- Contract evaluation reports

C.3.19.5 The employer must establish a Consultative Forum which will conduct a random audit in the implementation of the transparency requirements in the procurement process.

C.3.19.6 Consultative Forum must be an independent structure from the bid committees.

C.3.19.7 The information must be published on the employer's website.

C.3.19.8 Records of such disclosed information must be retained for audit purposes.

PART T2: RETURNABLE DOCUMENTS

TABLE OF CONTENTS

RD.A RETURNABLE DOCUMENTS REQUIRED FOR TENDER EVALUATION PURPOSES

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

Document Name	**Reference**	**Confirmation of Document Included** *(Tenderers may use this column to confirm documents have been completed and included in the tender)*
Form of Offer and Acceptance	Section C1.1	
Compulsory Enterprise Questionnaire	Form RD.A.1	
Declaration of interest in tender of persons in service of state	Form RD.A.2	
MBD 8: Declaration of Tenderer's past supply chain management practices	Form RD.A.3	
MBD 9: Certificate of independent tender determination	Form RD.A.4	
Certificate of authority of signatory	Form RD.A.5	
Certificate of authority of signatory for joint ventures and consortia	Form RD.A.6	
Copy/s of Municipal Account/s of the tenderer and each Director/Member of the company or where applicable a copy of the lease agreement		

RD.B RETURNABLE DOCUMENTS REQUIRED FOR PREFERENTIAL PROCUREMENT EVALUATION PURPOSES

Note: Failure to submit the applicable documents will result in the tender offer being awarded with 0 (zero) preference points.

Document Name	**Reference**	**Confirmation of Document Included** *(Tenderers may use this column to confirm documents have been completed and included in the tender)*
Preference Points claim form in terms of the Preferential procurement regulations 2022)	Form RD.B.1	
Valid B-BBEE Status Level of Contributor Certificate	Form RD.B.2	
B-BBEE Exempted Micro Enterprise – Sworn Affidavit	Form RD.B.3	
Promotion of local enterprises (Local Economic Participation)	Form RD.B.4	
Certified copy of Identity Document/s proof of ownership (Sworn affidavit for B-BBEE qualifying small enterprise or Exempt Micro Enterprises, CIPC registration or any other proof of ownership	Form RD.B.5	
Medical Certificate with doctor's details (Practice Number, Physical Address and contact numbers) proof of ownership (Sworn affidavit for B-BBEE qualifying small enterprise or Exempt Micro Enterprises, CIPC registration or any other proof of ownership	Form RD.B.6	

RD.C ADDITIONAL RETURNABLE DOCUMENTS REQUIRED FOR TENDER EVALUATION PURPOSES

Document Name	Reference	Confirmation of Document Included
Valid Tax Clearance Certificate	required	
Schedule of Tenderer's experience	Form RDC1	
Schedule of Proposed Subcontractors	Form RDC2	
Schedule of Plant and Equipment	Form RDC3	
Compliance with OHSA (Act 85 of 1993)	Form RDC4	
Record of services provided to organs of state	Form RDC5	
Company information for tenders greater than R 10 million	Form RDC6	
Classification of Business	Form RDC7	
Status of Concern Submitting Tender	Form RDC9	
Proof of Registration with the CIDB 6 EP or 6 CE in the applicable category or higher	as required	
Bank Rating Report	Form RDC11	

RD.D ADDITIONAL RETURNABLE DOCUMENTS THAT WILL BE INCORPORATED INTO THE CONTRACT

Document name	Reference	Confirmation of Document Included
First Programme and Method Statements	Form RDD1	
Estimated Monthly Expenditure on Contract Works by Tenderer	Form RDD2	
Key-Personnel / Management and Supervisory Staff	Form RDD3	
Quality Management Systems	Form RDD4	

RD.E OTHER DOCUMENTS THAT WILL BE INCORPORATED INTO THE CONTRACT

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

Document Name	Reference	Confirmation of Document Included
Form of offer and acceptance	Section C1.1	
Contract data (Part 2: Data provided by the Contractors)	Section C1.2	
Activity Schedules / Bills of Quantities	Section C2	
Record of Addenda to Tender Documents	Form RDE1	
Proposed Amendments	Form RDE2	
Cost Price Adjustment (CPA) – Imported Content (FOREX)	Form RDE4	
SCADA Operational Verification	Form RDE5	No not required

FORM RD.A.1 COMPULSORY ENTERPRISE QUESTIONNAIRE

The following particulars must be furnished. In the case of a joint venture, separate enterprise questionnaires in respect of each partner must be completed and submitted.

Section 1:	**Name of Enterprise:**
Section 2:	**VAT registration number, if any:**
Section 3:	**CIDB registration number, if any:**
Section 4:	**CSD number:**

Section 5: **Particulars of sole proprietors and partners in partnerships:**

Name*	**Identity Number***	**Personal Income Tax Number***

** Complete only if sole proprietor or partnership and attach separate page if more than 3 partners*

Section 6: **Particulars of companies and close corporations**

Company registration number:

Close corporation number:

Tax reference number:

Section 7:	**MBD4 issued by National Treasury must be completed for each tender and be attached as a tender requirement.**
Section 9:	**MBD8 issued by National Treasury must be completed for each tender and be attached as a tender requirement.**
Section 10:	**MBD9 issued by National Treasury must be completed for each tender and be attached as a tender requirement.**

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise:

i) **authorizes the employer to verify the tenderers tax clearance status from the South African Revenue Services that it is in order;**
ii) **confirms that the neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004;**
iii) **confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption;**
iv) **confirms that I / we are not associated, linked or involved with any other tendering entities submitting tender offers and have no other relationship with any of the tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest; and**

v) **confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.**

Signed: **Date:**

Name: **Position**

Enterprise Name:

RD.A.1

MBD 4

DECLARATION OF INTEREST

1. No bid will be accepted from persons in the service of the state[1].

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, hareholder[2]) ……

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**

FORM RD.A.3 MBD 8: DECLARATION OF TENDERER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

1. This Municipal tender document must form part of all tenders 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 tender of any tenderer may be rejected if that Tenderer, or any of its directors have:

   a. abused the Municipality's / Municipal entity's supply 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. wilfully 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, 2004 (Act 12 of 2004).

4. In order to give effect to the above, the following questionnaire must be completed and submitted with the tender:

Item	Question	Response	
4.1	Is the Tenderer, any of its directors listed on the National Treasurer's database as a company or persons prohibited from doing business with the public sector? (Companies for persons who are listed on this database were informed in writing of this restriction by the National Treasury after the *audi alteram partem* rule was applied) If so, furnish particulars:	**Yes**	**No**
4.2	Is the Tenderer or any of it's directors listed on the Register for Tender Defaulters in terms of Section 29 of the Prevention and Combating of Corrupt Activities Act, 2004 (Act 12 of 2004)? (To access this Register enter the National Treasury's website, www.treasury.gov.za , click on the icon "Register for Tender Defaulters" or submit your written request for a hard copy of the Register to facsimile number 012-326-5445) If so, furnish particulars:	**Yes**	**No**
4.3	Was the Tenderer or any of it's 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**

Item	Question	Response	
	If so, furnish particulars:		
4.4	Does the Tenderer or any of it's 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**
	If so, furnish particulars:		
4.5	Was any contract between the Tenderer 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**
	If so, furnish particulars:		

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both 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.

Person authorized to sign the tender:

Full name (in BLOCK letters): _____

Signature: _____

Date:

FORM RD.A.4 MBD 9: CERTIFICATION OF INDEPENDENT TENDER DETERMINATION

1. This Municipal Bidding Document (MBD) must form part of all tenders1 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 tendering (or tender rigging)2. Collusive tendering is a *per 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 tender of any tenderer if that tenderer 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 tendering process or the execution of the contract.

4. This MDB will serve as a certificate of declaration that would be used by institutions to ensure that, when tenders are considered, reasonable steps are taken to prevent any form of tender-rigging.

5. In order to give effect to the above, the attached Certificate of Tender Determination must be completed and submitted with the tender.

1 Includes price tenders, advertised competitive tenders, limited tenders and proposals.

2 Tender rigging (or collusive tendering) 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 tender process. Tender rigging is, therefore, an agreement between competitors not to compete.

MBD 9
CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

I, the undersigned, in submitting the accompanying tender:

EED 08 2023-24: TENDER FOR THE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF NEW PHOTOVOLTAIC (PV) HIGH MAST LIGHTS, ON AN AS-AND-WHEN REQUIRED BASIS

in response to the invitation for the tender made by

City of Tshwane Metropolitan Municipality

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

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

1. I have read and understand the contents of this certificate;

2. I understand that the accompanying tender will be disqualified if this certificate is found not to be true and complete in every aspect;

3. I am authorized by the tenderer to sign this certificate, and to submit the accompanying tender, on behalf of the tenderer;

4. Each person whose signature appears on the accompanying tender has been authorized by the tenderer to determine the terms of, and to sign, the tender, on behalf of the tenderer;

5. For the purposes of this Certificate and the accompanying tender, I understand that the word "competitor"" shall include any individual or organization, other that the tenderer, whether or not affiliated with the tenderer who:

    a. has been requested to submit a tender in response to this tender invitation, based on their qualifications, abilities or experience; and
    b. could potentially submit a tender in response to this tender invitation, based on their qualifications, abilities or experience; and
    c. provides the same goods and services as the tenderer and/or is in the same line of business as the tenderer.

6. The tenderer has arrived at the accompanying tender independently form, 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 tendering.

7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement of arrangement with any competitor regarding:

    a. Prices;
    b. Geographical area where product of services will be rendered (market allocation);
    c. Methods, factors of formulas used to calculate prices;
    d. The intention or decision to submit or not to submit, a tender;
    e. The submission of a tender which does not meet the specifications and conditions of the tender; or
    f. Tendering with the intention not to win the tender.

8. In addition, there have been no consultations, communications, agreements or arrangement with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this tender invitation relates.

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.

9. The terms of the accompanying tender have not been, and will not be, disclosed by the tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening or to 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 tenders and contracts, tenders 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 form conduction 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.

The undersigned, who warrants that he / she is duly authorized to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.
Person authorized to sign the tender:
Full name (in BLOCK letters):
Signature:
Date:

FORM RD.A.5 CERTIFICATE OF AUTHORITY OF SIGNATORY

RESOLUTION of the a meeting of the *Board of Directors/Members/Partners of

_____

_____
(Legally correct full name and registration number, if applicable, of the enterprise)

Held at: (place) _____

On: (date) _____

RESOLVED that:

1. The enterprise submits a tender to the Tshwane Metro Municipality in respect of the following project:

Tender Number:	**EED 08 2023-24**
Tender Description:	**TENDER FOR THE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF NEW PHOTOVOLTAIC (PV) HIGH MAST LIGHTS, ON AN AS-AND-WHEN REQUIRED BASIS**

2. *Mr/Ms: _____

in *his/her capacity as _____

and who will sign as follow:

Proof signature	Proof signature

be, and is hereby authorized to sign the tender, and any and all other documents and/or correspondence in connection with and relating to the tender for the enterprise mentioned above

NAME	**CAPACITY**	**SIGNATURE**

Note:	Enterprise stamp
1. *Delete which is not applicable. 2. IMPORTANT: This resolution must be signed by all the directors/members/ partners of the tendering enterprise. 3. Should the number of directors/members/partners exceed the space available above, additional names and signatures must be supplied on a separate page.	

FORM RD.A.6 CERTIFICATE OF AUTHORITY OF SIGNATORY FOR JOINT VENTURES AND CONSORTIA

*Joint venture/consortium name: _____

We, the undersigned, are submitting this tender in a *joint venture/consortium and hereby authorize *Mr/Ms

_____ authorized signatory of the enterprise

_____ acting in the capacity of lead partner

to sign the tender, and any and all other documents and/or correspondence in connection with and relating to the tender for the *joint venture/consortium mentioned above.

Registered name of enterprise	**Registration number**	**% of contract value**	**Address**	**Duly authorized signatory**	**Mark with (x) for lead partner**

Note:

1. *Delete which is not applicable.
2. IMPORTANT: This resolution must be signed by all the parties of the joint venture/consortium and every duly authorized signatory for each party to the joint venture/consortium must complete a Form RD.C.15.
3. Should the number of directors/members/partners exceed the space available above, additional names and signatures must be supplied on a separate page.

FORM RDB 1

MBD 6.1

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

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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 **90/10** 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	90
SPECIFIC GOALS	10
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**

$$Ps = 80\left(1 - \frac{Pt - P\,min}{P\,min}\right) \text{ or } \quad Ps = 90\left(1 - \frac{Pt - P\,min}{P\,min}\right)$$

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**

$$Ps = 80\left(1 + \frac{Pt - P\,max}{P\,max}\right) \text{ or } \quad Ps = 90\left(1 + \frac{Pt - P\,max}{Pmax}\right)$$

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	**90/10 preference point system**	**Number of points claimed (90/10 system) (To be completed by the tenderer)**
BB-BEE score of companies • Level 1 • Level 2 • Level 3 • Level 4 • Level 5	• 4 Points • 3.5 Points • 3 Points • 2.5 Points • 2 Points	

Specific goals	**90/10 preference point system**	**Number of points claimed (90/10 system) (To be completed by the tenderer)**
• Level 6 • Level 7 • Level 8 • Non-compliant	• 1.5 Points • 1 Point • 0.5 Points • 0 Points	
EME and/ or QSE	1 Point	
At least 51% of Women-owned companies	1 Point	
At least 51% owned companies by People with disability	1 Point	
At least 51% owned companies by Youth	1 Point	
Local Economic Participation • City of Tshwane • Gauteng • National	 2 Points 1 Point 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: …… …… …… ……

FORM RD.B.2 VALID B-BBEE STATUS LEVEL OF CONTRIBUTOR CERTIFICATE

Submit B-BBEE Verification Certificate from a Verification Agency accredited by the South African Accreditation System (SANAS) or a Registered Auditor approved by the Independent Regulatory Board of Auditors (IRBA) or an Accounting Officer as contemplated in the Close Corporation Act (CCA).

NOTE:

a. Attach original copy of B-BBEE Verification Certificate to this page.

b. In the case of a joint venture / consortium parties must each attach original copy of their B-BBEE Verification Certificates.

FORM RD.B.3 B-BBEE EXEMPTED MICRO ENTERPRISE – SWORN AFFIDAVIT

I, the undersigned

Full Name & Surname

Identity Number - - -

Hereby declare under oath as follow:

1. The contents of this statement are to the best of my knowledge a true reflection of the facts.
2. I am a member / director / owner of the following enterprise and am duly authorised to act on its behalf.

Enterprise Name

Trading Name

Registration Number

Enterprise Address

3. I hereby declare under oath that:

- The enterprise is _____ % black owned;
- The enterprise is _____ % woman owned;
- The enterprise is _____ % owned companies by People with disability;
- The enterprise is _____ % owned companies by Youth;
- Based on the audited management accounts and other information available on the _____ financial year, the income did not exceed R 10,000,000 (ten million rands);
- Please confirm on the below the B-BBEE level contributor, by ticking the applicable box.

100% Black owned **Level One** (135% B-BBEE procurement recognition)

More than 51% Black owned **Level Two** (125% B-BBEE procurement recognition)

Less than 51% Black owned **Level Four** (100% B-BBEE procurement recognition)

4. The entity is an empowering supplier in terms of the dti Codes of Good Practice
5. I know and understand the contents of the contents of this affidavit and I have no objection to take the prescribed oath and consider the oath binding on my conscience and on the owners of the enterprise which I represent in this matter.
6. The sworn affidavit will be valid for a period of 12 (twelve) month from the date signed by the commissioner.

Deponent Signature: Date:

Commissioner of oaths
(Signature and stamp)

1. Attach original or certified copy of CSD registration certificate to this page.

2. In the case of a joint venture / consortium (excluding consulting engineering partners) the joint venture / consortium must attach original or certified copy of their CSD registration certificate to this page.

FORM RD.B.4 PROMOTION OF LOCAL ENTERPRISES

The City of Tshwane has mandated the promotion of local enterprises. To comply with this the tenderer must provide proof of the type of business unit and whether the unit resides within the Tshwane and will be scored as follow:

If 90/10 preference point system applies:

	Promotion of local enterprises
No Response (score 0)	The tenderer did not respond or comply with this evaluation schedule. A score of 0 will also be awarded for any misrepresentation made in this regard,
Satisfactory (score 1)	The tenderer operates a head office or fully staffed office or his sole office outside the boundaries of Gauteng Province. (I.e. no business unit or office resides within the boundaries of Tshwane Metropolitan Municipality)
Good (score 1)	The tenderer's office resides within the boundaries of Gauteng Province. (I.e. no business unit or office resides within the boundaries of Tshwane Metropolitan Municipality)
Very good (score 2)	The tenderer's office resides within the boundaries of the Tshwane Metropolitan Municipality.

Municipal Rates & Taxes not older than three months from tender advertisement date or Valid Lease Agreement should be attached as evidence.

(If necessary the tenderer will be requested to present the office / business unit to officials of the City)

The undersigned, who warrants that he / she is duly authorized to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

Person authorized to sign the tender:

Full name (in BLOCK letters): _____

Signature: _____

Date:

FORM RD.B.5 At least 51% Women owned companies and At least 51% owned companies by Youth

The City of Tshwane has mandate for the promotion At least 51% Women owned companies and At least 51% owned companies by youth. To comply with this the tenderer must provide Certified copy of Identity Document/s that proof that company is 51% owend by Women or youth

	promotion At least 51% Women owned companies and At least 51% owned companies by youth
No **(score 0)**	The tenderer did not respond or comply with this evaluation schedule. A score of 0 will also be awarded for any misrepresentation made in this regard,
Good (score 1	Certified copy of Identity Document/s that proof that company is 51% owned by Women and proof of ownership (Sworn affidavit for B-BBEE qualifying small enterprise or Exempt Micro Enterprises, CIPC registration or any other proof of ownership
Good (score 1)	Certified copy of Identity Document/s that proof that company is 51% owned by youth and proof of ownership (Sworn affidavit for B-BBEE qualifying small enterprise or Exempt Micro Enterprises, CIPC registration or any other proof of ownership

(If necessary the tenderer will be requested to present the office / business unit to officials of the City)

The undersigned, who warrants that he / she is duly authorized to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

Person authorized to sign the tender:

Full name (in BLOCK letters): _____

Signature: _____

Date:

FORM RD.B.6 At least 51% owned companies by People with disability

The City of Tshwane has mandate for the promotion of At least 51% owned companies by People with disability. To comply with this the tenderer must provide Medical Certificate with doctor's details (Practice Number, Physical Address and contact numbers that proof that company is 51% owned by People with disability

	Promotion of At least 51% owned companies by People with disability
No **(score 0)**	The tenderer did not respond or comply with this evaluation schedule. A score of 0 will also be awarded for any misrepresentation made in this regard,
Good (score 1)	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

(If necessary the tenderer will be requested to present the office / business unit to officials of the City)

The undersigned, who warrants that he / she is duly authorized to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.
Person authorized to sign the tender:
Full name (in BLOCK letters): _____
Signature: _____
Date:

FORM RDC 1
SCHEDULE OF TENDERER'S EXPERIENCE

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

EMPLOYER, CONTACT PERSON AND TELEPHONE NUMBER.	**DESCRIPTION OF CONTRACT**	**VALUE OF WORK INCLUSIVE OF VAT (RAND)**	**DATE COMPLETED**
1._____ _____ *(Name)* _____ *(Telephone Number)*	_____ _____ _____	_____	_____
2._____ _____ *(Name)* _____ *(Telephone Number)*	_____ _____ _____	_____	_____
3._____ _____ *(Name)* _____ *(Telephone Number)*	_____ _____ _____	_____	_____
4._____ _____ *(Name)* _____ *(Telephone Number)*	_____ _____ _____	_____	_____
5._____ _____ *(Name)* _____ *(Telephone Number)*	_____ _____ _____	_____	_____

* Attach signed copies of contract appointment letters
** Attach signed copies of contract completion certificates

(Attach additional pages if more space is required)

FORM RDC 2

SCHEDULE OF PROPOSED SUBCONTRACTORS

You, the client, are hereby notified that it is our intention to employ the following Subcontractors for work on this contract.

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

	NAME AND ADDRESS OF PROPOSED SUBCONTRACTOR	NATURE AND EXTENT OF WORK
1.		
2.		
3.		
4.		

5.		

FORM RDC 3

SCHEDULE OF PLANT AND EQUIPMENT

The following are lists of major items of relevant equipment that I/we presently own or lease and will have available for this contract or will acquire or hire for this contract if my/our tender is accepted.

1. Details of major equipment that is owned by and immediately available for this contract.

QUANTITY	DESCRIPTION, SIZE, CAPACITY, ETC.

(Attach additional pages if more space is required)

2. Details of major equipment that will be hired, or acquired for this contract if my/our tender is acceptable.

QUANTITY	DESCRIPTION, SIZE, CAPACITY, ETC.

(Attach additional pages if more space is required)

FORM RDC 4

COMPLIANCE WITH OHSA

(*Act 85 of 1993)*

Tenderers are required to satisfy the Employer and the Engineer as to their ability and available resources to comply with the above by answering the following questions and providing the relevant information required below.

1. Is your company familiar with the OHSA (ACT 85 of 1993) and its Regulations ***and*** do you have a copy available?	**YES**	**NO**
2. Who will prepare your company's Health and Safety Plan? Provide a copy of the person/s curriculum vitae/s or company profile.		
3. Does your company have a health and safety policy? If YES provide a copy.	**YES**	**NO**
4. How is this policy communicated to your employees? Provide supporting documentation to prove such communication	**YES**	**NO**
5. Does your company keep record of safety aspects of each site where work is performed? If YES, what records are kept?	**YES**	**NO**
6. Does your company conduct monthly safety meetings? If YES, provide copies of the Minutes of the last 2 meetings held.	**YES**	**NO**
7. Does your company have a safety officer in its employment, responsible for overall safety of your company? If YES, explain his/her duties and provide a copy of his/her CV ***(only if not the same person as in question 2 above)*** If NO, indicate who will be appointed as safety officer for this project and provide a copy of his/her CV.	**YES**	**NO**
8. Indicate the total number of employees in the Company.	**……..**	
9. Does your company have trained first aid employees? If YES, indicate who.	**YES**	**NO**
10. Does your company have a safety induction training programme in place? If YES, provide a summary of topics covered in such induction training programme	**YES**	**NO**

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

Person Authorized to sign Tender:

FULL NAME (BLOCK LETTERS): .....

SIGNATURE: .....

DATE: .....

FORM RDC 5

RECORD OF SERVICES PROVIDED TO ORGANS OF STATE

Tenderers are required to complete this record in terms of the Supply Chain Management Regulations issued in terms of the Municipal Finance Management Act of 2003.

Include only those contracts where the tenderer identified in the signature block below was directly contracted by the Employer. Tenderers must not include services provided in terms of a sub-contract agreement.

Where contracts were awarded in the name of a joint venture and the tenderer formed part of that joint venture, indicate in the column entitled "Title of the contract for the service" that the contract was in joint venture and provide the name of the joint venture that contracted with the employer. In the column for the value of the contract for the service, record the value of the portion of the contract performed (or to be performed) by the tender.

Complete the record or attach the required information in the prescribed tabulation.

All services commenced or completed to an organ of state in the last five years

#	Organ of state, i.e. national or provincial department, public entity, municipality or municipal entity.	Title of contract for the service	Value of contract for service incl. VAT (Rand)	Date completed (State current if not yet completed)
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				

(Attach additional pages if more space is required.)

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

Person Authorized to sign Tender:

FULL NAME (BLOCK LETTERS): .....

SIGNATURE: .....

DATE: .....

FORM RDC 6

COMPANY INFORMATION FOR TENDERS GREATER THAN R4 MILLION

1. The tenderer is required by law to prepare annual financial statements for auditing and is therefore requested to provide audited annual financial statements:
   - for the past three years; or
   - since their establishment if established during the past three years.

   Indicate whether these have been included in the tender: ***YES / NO***

2. Does the tenderer have any undisputed commitments for Municipal services towards a municipality or other service provider in respect of which payment is overdue for more than 30 days? ***YES / NO***
   If so, state particulars

   .....

3. Have any contracts been awarded to the tenderer by an organ of state during the past five years? ***YES / NO***
   If so, state particulars

   .....

4. Has there been any material non-compliance or dispute concerning the execution of such contract? ***YES / NO***
   If so, state particulars

   .....

5. Is any portion of the goods or services expected to be sourced out from outside the Republic? ***YES / NO***
   If so, state what portion and whether any portion of payment from the Municipality is expected to be transferred out of the Republic.

   .....

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

Person Authorized to sign Tender:

FULL NAME (BLOCK LETTERS):

SIGNATURE: .....

DATE: .....

.....

FORM RDC 7

CLASSIFICATION OF BUSINESS

1. THE SMALL BUSINESSES ARE DEFINED IN THE NATIONAL SMALL BUSINESS ACT, 1996 (ACT 102 OF 1996).

2. INFORMATION FURNISHED WITH REGARD TO THE CLASSIFICATION OF THE SMALL BUSINESSES

a. **Indicate** whether the company/entity is defined as a **small, medium or micro** enterprise by the National Small Business Act, 1996 (Act 102 of 1996). ***YES / NO***

b. If the response to paragraph is **YES**, the following must be completed:

i. Sector/sub-sector in accordance with the Standard Industrial classification

.....

ii. Size or class

.....

iii. Total full-time equivalent of paid employees

.....

iv. Total annual turnover

.....

v. Total gross asset value (fixed property excluded)

.....

(A schedule indicating the different sectors is attached to this form.)

The tenderer should substantiate the information provided above by submitting the following documentation:

c. A letter from the tenderer's auditor or an affidavit from the South African Police Services confirming the correctness of the abovementioned information,

d. Company profile indicating the tenderer's staff compliment, and

e. 3-year financial statement or since their establishment if established during the past 3 years.

‘‘SCHEDULE”

(See definition of ‘small businesses’ in section)

SIZE OF CLASS	THE TOTAL FULL-TIME EQUIVALENT OF PAID EMPLOYEES	TOTAL TURNOVER	TOTAL GROSS ASSET VALUE (FICED PROPERTY EXCLUDED)
ARGRICULTURE			
Medium	100	R 5 mil	R 5 mil
Small	50	R 3 mil	R 3 mil
Very Small	10	R 500 000	R 500 000
Micro	5	R 200 000	R 100 000
MINING AND QUARRYING			
Medium	200	R 39 mil	R 23 mil
Small	50	R 10 mil	R 6 mil
Very Small	20	R 4 mil	R 2 mil
Micro	5	R 200 000	R 100 000
MANUFACTURING			
Medium	200	R 51 mil	R 19 mil
Small	50	R 13 mil	R 5 mil
Very Small	20	R 5 mil	R 2 mil
Micro	5	R 200 000	R 100 000
ELECTRICITY, GAS & WATER			
Medium	200	R 51 mil	R 19 mil
Small	50	R 13 mil	R 5 mil
Very Small	20	R 5.1 mil	R 1.9 mil
Micro	5	R 200 000	R 100 000
CONSTRUCTION			
Medium	200	R 26 mil	R 5 mil
Small	50	R 6 mil	R 1 mil
Very Small	20	R 3	R 500 000
Micro	5	R 200 000	R 100 000
RETAIL AND MOTOR TRADE & REPAIR SERVICES			
Medium	200	R 39 mil	R 6 mil
Small	50	R 19 mil	R 3 mil
Very Small	20	R 4 mil	R 600 000
Micro	5	R 200 000	R 100 000
WHOLESALE TRADE, COMMERCIAL AGENTS AND ALLIED SERVICES			
Medium	200	R 64 mil	R 10 mil
Small	50	R 32 mil	R 5 mil
Very Small	20	R 6 mil	R 600 000
Micro	5	R 200 000	R 100 000
CATERING, ACCOMODATION AND OTHER TRADE			
Medium	200	R 13 mil	R 3 mil
Small	50	R 6 mil	R 1 mil
Very Small	20	R 5.1 mil	R 1.9 mil
Micro	5	R 200 000	R 100 000
TRANSPORT, STORAGE & COMMUNICATIONS			
Medium	200	R 26 mil	R 6 mil
Small	50	R 13 mil	R 3 mil
Very Small	20	R 3 mil	R 600 000
Micro	5	R 200 000	R 100 000
FINANCE & BUSINESS SERVICES			
Medium	200	R 26 mil	R 5 mil
Small	50	R 13 mil	R 3 mil
Very Small	20	R 3 mil	R 500 000
Micro	5	R 200 000	R 100 000
COMMUNITY, SOCIAL AND PERSONAL SERVICES			
Medium	200	R 13 mil	R 6 mil
Small	50	R 6 mil	R 3 mil
Very Small	20	R 1mil	R 600 000
Micro	5	R 200 000	R 100 000

TERMS OF REFERENCE FOR QUALITY EVALUATION

The quality evaluation for this tender will be based on the following project.

EED 08-2023.24 - TENDER FOR THE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF NEW PHOTOVOLTAIC (PV) HIGH MAST LIGHTS, ON AN AS-AND-WHEN REQUIRED BASIS.

STAGE 2: MANDATORY AND TECHNICAL REQUIREMENTS

The following documents must be submitted with the tender.

	Requirement	**Checklist: Submitted (YES/NO)**
a)	Professional Civil Engineer/ Technologists responsible for the foundation and high mast design: **CV and Qualifications:** The candidate must submit a comprehensive Curriculum Vitae (CV) detailing their educational background, professional qualifications, and relevant experience in the field of foundation and high mast design. **ECSA Proof of Registration:** The candidate must provide proof of registration with the Engineering Council of South Africa (ECSA). This should include a valid ECSA registration number and certified copies of the registration certificates. **Minimum Experience Requirement:** The Professional Civil Engineer/Technologist must have a minimum of 5 years of relevant and documented experience in foundation and high mast design. The experience should be clearly outlined in the CV.	
b)	Electrical Engineer / Technologists responsible for the high mast 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 high mast 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 high mast lighting design. This experience should be clearly outlined in the CV.	
a)	CV and qualifications of the Construction manager. The individual must be registered as a construction manager with SACPCMP(South African Council for the Project and Construction Management Professions: Construction Manager) and proof of registration and certified copies of registration certificates must be submitted	
b)	CV and qualifications(Certified copy of Trade Test Certificate and Wireman's Licence) of the person responsible for the electrical installation and completion of COC and proof of registration with the Electrical Contractors Association (ECA) and proof of registration and certified copies of registration certificates.	
c)	CV and qualifications of the Installation and construction specialist. Qualified artisan (Trade test certificate with Wireman's Licence) and accredited Small Scale Embedded Generation installer.	
e)	CV and qualifications of the Safety officer. The individual must be registered as a safety officer with SACPCMP(South African Council for the Project and Construction Management Professions: Safety Officer) and proof of registration and certified copies of registration certificates must be submitted.	
d)	Proof of the number of PV high mast lights successfully installed: Bidders must submit conclusive proof of their experience in the installation of photovoltaic high masts lights. The proof must explicitly indicate the number of photovoltaic high masts lights installed. The following requirements apply: 1. **Documentation Submission:** Bidders are required to submit comprehensive documentation that clearly and specifically outlines the number of photovoltaic high masts lights they have installed in previous projects. 2. **Project Details:** The documentation should include details of each project, specifying the location, date of installation, and the total number of photovoltaic high masts lights installed in each instance.	

	3. **Photographic Evidence (optional):** Alongside written documentation, bidders can provide photographic evidence of the installed photovoltaic high masts lights. The photographs should clearly display the masts in operation and be accompanied by relevant project details. 4. **Client References:** Bidders should provide contact information for clients from the completed projects to serve as references. These references should be willing to verify the accuracy of the information provided regarding the installation of the number of photovoltaic high masts lights successfully installed. 5. **Certification or Verification Letter:** Bidders may include certification or verification letters from relevant authorities, clients, or supervisory bodies confirming the successful installation of the specified number of photovoltaic high masts lights. Verification letters must be on the official letterhead of the respective companies. 6. **Project Completion Certificates:** Where applicable, bidders should include project completion certificates or any other official documentation that attests to the satisfactory completion of the number of photovoltaic high mast light installations. This requirement is essential to ensure that bidders possess a proven track record in the installation of photovoltaic high masts lights and have the necessary experience to successfully execute similar projects.	
e)	Maintenance Cost Summary: Bidders must submit a comprehensive maintenance cost summary for the solar high mast over its expected lifespan of 25 years. The summary should include a detailed breakdown of all anticipated maintenance activities, items to be serviced, and components slated for replacement during the specified timeframe. Each maintenance activity should be clearly outlined, specifying the frequency, nature, and estimated cost associated with servicing or replacing components including plant and labour. Additionally, bidders are expected to provide a rationale for their cost projections, taking into account factors such as equipment reliability, environmental conditions, and potential technological advancements. The submission should be structured to enable a thorough assessment of the bidder's understanding of the long-term maintenance requirements and associated costs, ensuring transparency and informed decision-making throughout the procurement process.	
f)	Cost of Ownership Analysis:	

Bidders are mandated to submit a detailed cost of ownership analysis for the solar high mast, covering the entire anticipated lifespan of 25 years.
This analysis should encompass all relevant financial considerations associated with the acquisition, operation, and maintenance of the high mast system.

Procurement And Installation Costs:

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

Solar Luminaire High Mast Light System: This includes the cost of the complete high mast structure with foundation, solar panels, battery storage, LED luminaires, and any additional components.
Installation: Labor, equipment, materials, testing and commissioning required for the installation of the solar luminaire high mast light 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 solar high mast's life cycle, ensuring a comprehensive assessment of the long-term cost-effectiveness of the proposed system.	
g)	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.	
h)	Photometric test report(certified copy) for the LED floodlights offered from a SANS/ IEC or any national / international accredited testing facility .	
i)	Compliant Lighting Simulation report and photometric data of the high mast must be submitted with the tender. The simulations are to be done with DIALux, Relux or reputable simulation software. A hard copy of the simulation report and photometric data must be attached with the tender. When submitting the design the following should also be submitted with the tender on a flash disc/memory stick: (1)The original design file in Relux "rdf" format and Dialux "dlx" format together with the "pdf" format and (2) photometric file in "ies or ldt" format. Hard copy report of the luminance distribution and illumination levelS. The report must also indicate the average, minimum and maximum illuminance of the Total Area illuminated, and the average, minimum and maximum illuminance at 0m, 20m, 40m, 60m, 80m, 100m radius distance from the base of the mast. Lighting levels should be calculated on ground level	
j)	Bidders are required to complete the prices in the Pricing Schedule in full with ink. Failure to comply will result in the bidder being disqualified.	
k)	Bidders will be evaluated based on the compliance of the following; (a) Annexure A.1 – Returnable schedules A and B which must be completed in full with ink, bidders must not refer to brochures or any attached document. Failure to comply will result in the bidder being disqualified.	

Note: Failure to comply with the requirements as stipulated above will regard the tender as non-responsive and will lead to in a tenderer being disqualified.

STAGE 3: FUNCTIONALITY SCORE CARD

The following criteria and weights will be applied when bids are assessed for functionality.

SCORECARD FOR FUNCTIONALITY

	CRITERIA	SUB-CRITERIA	SCALE	WEIGHT	HIGH POSSIBLE SCORE
1	Experience of the Company				
a	Relevant Experience of Company: i.e. design, supply, delivery, installation, testing and commissioning of PV lighting masts. (Years of experience) Proof of the number of PV high masts erected must be submitted with the tender.	< 5 years 5 ≤ years < 10 ≥ 10 years	0 3 5	6	30
2	Experience of key staff:				
a	Professional Civil Engineer/ Technologists: Attach CV's indicating years of relevant experience.	≥5 years	1	10	**10**
b	Electrical Engineer / Technologist: Attach CV's indicating years of relevant experience.	≥5 years	1	15	**15**
c	Construction Manager: Attach CV's indicating years of relevant experience	3 ≤ years < 5 ≥5 years	1 3	5	**15**
d	Installation and construction specialist: Attach CV's indicating years of relevant experience	3 ≤ years < 5 ≥5 years	1 3	5	**15**
e	Safety Officer. Attach CV's indicating years of relevant experience	3 ≤ years < 5 ≥5 years	1 3	5	**15**
	HIGHEST POSSIBLE SCORE			100	

(a) The CoT reserves the right to contact references submitted by the bidder. (The CoT reserves the right to do reference check)

(b) Bids that do not achieve a minimum score of **60 points (out of 100)** for functionality will not be evaluated further and will not be considered further.

STAGE 4: SAMPLE EVALUATION

a) Only tenderers that successfully passed the previous stages of the evaluation process will progress to the sample evaluation stage.
b) Samples shall only be submitted on request by CoT.
c) Bidders must submit samples of the major components of the PV systems that consist of; (1) solar panel, (2) LED light unit, (3)control gear(controller and inverter), (4) battery, (5)energy storage enclosure.
d) Samples shall be evaluated on the compliance to Annexure A: Technical Schedule A & B.and the specifications.
e) Tenderers shall provide samples within one week (5 working days) of request by CoT.
f) CoT reserves the right to submit samples to such tests as deemed reasonable and necessary.
g) Samples shall be delivered to: SCM, detail will be made available to the shortlisted bidders.
h) **Samples shall be properly packed and labeled to show the tender number, the name of the tenderer, description of the item, bidders information.**
i) Failure to provide samples shall disqualify the tender (Only for the shortlisted bidders).
j) The successful bidder/s samples shall be kept at the CoT's premises for the period of the contract.
k) Unsuccessful bidders samples will be returned to the bidders.
l) Only tenderers that successfully passed the sample evaluation stage will progress to the last stage that will consist of the price evaluation.

Note: All sample costs shall be to the bidder's account

STAGE 5: PREFERENCE POINT SYSTEM

The preferential point system used will be the 90/10 points system in terms of the Preferential Procurement Policy Framework Act, 2000 (Act 5 of 2000) Regulations 2022.

- 90 points for price
- 10 points for Specific goals

SPECIFIC GOALS

1) Bidders are required to submit supporting documents for their bids to claim the specific goal points.
2) 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 90 for price only and zero (0) points out of 10 for specific goals.

3) 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.

Specific goals	**90/10 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	• 4 Points • 3.5 Points • 3 Points • 2.5 Points • 2 Points • 1.5 Points • 1 Point • 0.5 Points • 0 Points	Valid Certified copy of BBBEE certificate. For EME's and QSE's copy of a valid Sworn affidavit.
EME and/ or QSE	1 Point	Valid Sworn affidavit
At least 51% of Women-owned companies	1 Point	Certified copy of Identity Document/s
At least 51% owned companies by People with disability	1 Point	Medical Certificate with doctor's details (Practice Number, Physical Address and contact numbers)
At least 51% owned companies by Youth	1 Point	Certified copy of Identity Document/s
Local Economic Participation • City of Tshwane • Gauteng • National	2 Points 1 Point 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.

FORM RDC 9
STATUS OF CONCERN SUBMITTING TENDER

1. General

State whether the tenderer is a company, a closed corporation, a partnership, a sole practitioner or a joint venture:

(Mark the appropriate option below)

Public Company	
Private Company	
Closed Corporation	
Partnership	
Sole Proprietary	
Joint Venture	
Co-operative	

2. Information To Be Provided

	If the Tendering Entity is a:	Documentation to be submitted with the tender
1	Closed Corporation, incorporated under the Close Corporation Act,1984, Act 69 of 1984	CIPRO CK1 or CK2 (Copies of the founding statement) and list of members
2	Private Company incorporated with share capital, under the companies Act, 1973, Act 61of 1973 (including Companies incorporated under Art 53 (b))	Copies of: a) CIPRO CM 1 - Certificate of Incorporation b) CIPRO CM 29 – Contents of Register of Directors, Auditors and Officers c) Shareholders Certificates of all Members of the Company.
3	Private Company incorporated with share capital, under the companies Act, 1973, Act 61of 1973 in which any, or all, shares are held by another Closed Corporation or company with, or without, share capital.	Copies of documents referred to in 1 and/or 2 above in respect of all such Closed Corporations and/or Companies
4	Public Company incorporated with share capital, under the companies Act, 1973, Act 61of 1973 (including Companies incorporated under Art 21).	A signed statement of the Company's Secretary confirming that the Company is a public Company. Copy of CM 29
5	Sole Proprietary or a Partnership	Copy of the Identity Document of: a) such Sole Proprietary, or b) Each of the Partners in the Partnership Certified copy of the Partnership agreement.

If the Tendering Entity is a:		Documentation to be submitted with the tender
6	Co-operative	CIPRO CR2 - Copies of Company registration document. (The percentage of work to be done by each partner must clearly be indicated on Form RDB1 (or RDB2 as applicable) of the tender document: MBD6.1 Preference Points Claim Form in terms of the Preferential Procurement Regulations 2001)
7	Joint Venture	All the documents (as described above) as applicable to each partner in the JV as well as a certified copy of the Joint Venture agreement. (The percentage of work to be done by each partner of the joint venture must clearly be indicated in the Joint Venture Agreement)

Note:

2.) If the shares are held in trust provide a copy of the Deed of Trust (only the front page and pages listing the trustees and beneficiaries are required) as well as the Letter of Authority as issued by the Master of the Supreme Court, wherein trustees have been duly appointed and authorised, must be provided.

3.) Include a copy of the Certificate of Change of Name (CM9) if applicable.

3. Registered for Vat Purposes In Terms Of The Value-Added Tax Act, *(Act Nr. 89 of 1991)*

(Make an X in the appropriate space below)

Yes ☐

No ☐

REGISTRATION NO: .....

RDC10

BANK RATING REPORT

Banking Details:

Bank: _____

Branch: _____

Name of Account: _____

Account No: _____

Type of Account: _____

The Tenderer shall affix a Bank Rating Report, stamped and verified by the bank, to this page.

RDD 1

FIRST PROGRAMME AND METHOD STATEMENTS

Attach as part of your tender submission a first programme with supporting method statements.

Note:

1. If the NEC3 Engineering and Construction Contract applies to the contract, the programme should include all the requirements of a programme submitted for acceptance per clause 31.2, together with any other information requested in the Scope of Work.

FORM RDD 2
ESTIMATED MONTHLY EXPENDITURE ON CONTRACT WORKS BY TENDERER

The tenderer shall, in the table below, state the estimated cash flow on the contract based on his preliminary programme, his tendered unit rates and his submission of payment certificates to the Employer. Amounts for Contract Price Adjustment shall not be included.

Payment Certificate No.	Amount (VAT Included)					
	a	b	a-b			Cumulative cash flow
	Payments Received	Expenditure		Net cash flow		
1	None		d		j=d	
2			e		k=j+e	
3			f		l=k+f	
4			g		m=l+g	
5			h		n=m+h	
6			etc		etc	
7						
8						
9						
10						
11						
12						
13						
14						
etc						
Maximum negative cash flow: take the largest negative number in the last column and write it here						

From what sources will you fund the above amount (e.g. funds internally available, bank overdraft, loan, partner (his source), etc.)

.....

.....

.....

.....

.....

FORM RDD 3

KEY PERSONNEL / MANAGEMENT AND SUPERVISORY STAFF

The Tenderer shall insert in the spaces below, the name of key personnel to be engaged on the Contract.

	NAME	CATEGORY *	LOCAL OR NON LOCAL
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

(Attach additional pages if more space is required.)

* The Contractor shall fill in the various categories, e.g. Site, Agent, Foreman, Trainers, Plant Operators, Clerks, Technicians, Laboratory Assistants, etc as required.

FORM RDD 4

QUALITY MANAGEMENT SYSTEMS

Briefly describe the construction quality system incorporated by the tenderer in his organisation and which will be applicable to this Contract.

	Internal	**External**	**Name of responsible Company /or Person (In case of Person give years' experience and qualification)**
Survey: Setting out of the works and control			
Testing Laboratory			
Additional quality systems			

FORM RDE 1

RECORD OF ADDENDA TO TENDER DOCUMENTS

We confirm that the following communications received from the Employer before submission of this tender, amending or amplifying the tender documents, have been taken in account in this tender offer:

	DATE	TITLE OR REFERENCE
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

Person Authorized to sign Tender:

FULL NAME (BLOCK LETTERS):

SIGNATURE: .....

DATE: .....

.....

FORM RDE 2
PROPOSED AMENDMENTS

The Tenderer should record any deviations or qualifications he may wish to make to the tender documents in this Returnable Schedule. Alternatively, a tenderer may state such deviations and qualifications in **a covering letter to his tender and reference such letter in this schedule.**

The Tenderer's attention is drawn to clause 3.8 of the Standard Conditions of Tender referenced in the Tender Data regarding the Employer's handling of material deviations and qualifications.

PAGE	CLAUSE OR ITEM	PROPOSAL

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

Person Authorized to sign Tender:

FULL NAME (BLOCK LETTERS):

SIGNATURE: .....

DATE: .....

.....

FORM RDE 5
SCADA OPERATIONAL VERIFICATION

CITY OF TSHWANE

This Certifies that the Supplier (Tenderer):……..…
……..

Product Description offered:…….
……..
……..
……..

Has performed the required compatibility verification tests on site of the customer, the customer being: The City of Tshwane, Electricity Department, Power Management, Operational Systems SCADA, Capital Park, Pretoria.

The criteria for SCADA compatibility being:

ITEM	REQUIREMENT	VERIFIED YES/NO
1.	Interfacing with the front-end processor utilizing DNP3.3 protocol.	
2.	Digital input status verification to mapped points, 1bit and 2bit.	
3.	Digital output control verification to mapped points.	
4.	Analogue input verification to mapped points.	
5.	Transformer tap position indication, verification.	
6.	Sequence of events (SOE) with time stamping verification.	

These test were conducted on site on the:……/……/……

Approved and Witnessed by the following role players:

- The Engineer, Tshwane, SCADA: ……..… Date ……..……...
- The Supplier, Tenderer: ……..… Date …..……..……
- Consulting Engineers: ……..……...…… Date ……..……..

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise, confirms that the contents of this schedule are within my personal knowledge and are to the best of my belief both true and correct.

Person Authorized to sign Tender:

FULL NAME (BLOCK LETTERS):

SIGNATURE: .....

DATE: .....

.....

PORTION 2: CONTRACT

PART C1: AGREEMENTS AND CONTRACT DATA

CONTENTS

C1.1 FORM OF OFFER AND ACCEPTANCE

STAMP

OFFER

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract in respect of the following works:

TENDER FOR THE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF NEW PHOTOVOLTAIC (PV) HIGH MAST LIGHTS, ON AN AS-AND-WHEN REQUIRED BASIS

The Tenderer, identified in the Offer signature block below, has examined the documents listed in the Tender Data and addenda thereto as listed in the returnable schedules, and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the Tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance, the Tenderer offers to perform all of the obligations and liabilities of the Contractor under the Contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the Conditions of Contract identified in the Contract Data.

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VALUE ADDED TAX IS

SECTION 1

R..... (*in figures*).....

.....(*in words*)

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document to the Tenderer before the end of the period of validity stated in the Tender Data, whereupon the Tenderer becomes the party named as the Contractor in the Conditions of Contract identified in the Contract Data.

NAME(s): (in block letters) ....

CAPACITY of authorized agents: ....

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

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

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

1. ....

2.

ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the, Conditions of Contract identified in the Contract Data. Acceptance of the Tenderer's Offer shall form an agreement, between the Employer and the Tenderer upon the terms and conditions contained in this Agreement and in the, Contract that is the subject of this Agreement.

The terms of the contract, are contained in

Part T1	Tendering Procedures
Part T2	Returnable Documents
Part C1	Agreements and Contract Data, (which includes this Agreement)
Part C2	Pricing Data
Part C3	Scope of Work

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules as well as any changes to the terms of the Offer agreed by the Tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from said documents are valid unless contained in this schedule.

The Tenderer shall within two weeks after receiving a letter of acceptance, contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now Contractor) within five days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the

contents of this Agreement, this Agreement shall constitute a binding contract between the parties[1].

[1] *As an alternative, the following wording may be used:*
Notwithstanding anything contained herein, this agreement comes into effect two days after the submission by the Employer of one fully completed original copy of this document including the schedule of deviations (if any), to a courier-to-counter delivery / counter-to-counter delivery /door-to-counter delivery / door-to-door delivery / courier service (delete that which is not applicable), provided that the Employer notifies the Tenderer of the tracking number within 24 hours of such submission. Unless the Tenderer (now Contractor) within seven days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract between the parties.

NAME(s): (BLOCK LETTERS) ....

CAPACITY of authorized agents: ....

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

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

WITNESSE(s): (Full name – BLOCK LETTERS – and signature)

1. ....

2. ....

SCHEDULE OF DEVIATIONS

Notes:

1. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender;

2. A Tenderer's covering letter shall not be included in the final contract document. Should any matter in such, letter, which constitutes a deviation as aforesaid become the subject of agreements reached during the process of, offer and acceptance, the outcome of such agreement shall be recorded here;

3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the contract shall also be recorded here;

4. Any change or addition to the tender documents arising from the above agreements and recorded here shall also be incorporated into the final draft of the Contract.

4.1 **Subject** .....
Details .....

4.2 **Subject** .....
Details .....

4.3 **Subject** .....
Details .....

4.4 **Subject** .....
Details .....

4.5 **Subject** .....
Details .....

By the duly authorised representatives signing this agreement, the Employer and the Tenderer agree to and accept the foregoing Schedule of Deviations as the only deviations from the amendments to the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, as well as any confirmation, clarification or change to the

terms of the offer agreed by the Tenderer and the Employer during this process of offer and acceptance.

It is expressly agreed that no other matter whether, oral communication or implied during the period between the issue of the tender documents and the receipt by the Tenderer of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

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

NAME(s): (in block letters) .....

CAPACITY of authorized agents: .....

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

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

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

1. ....

2. ....

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

NAME(s): (in block letters) .....

CAPACITY of authorized agents: .....

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

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

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

1. ....

C1.2. CONTRACT DATA

C1.2.1 GENERAL CONDITIONS OF CONTRACT

The Conditions of Contract comprise the “General Conditions”, which form part of the “Condition of Contract for Plant and Design-Build” First Edition 1999, published by the Fédération Internationale des Ingénieurs- Conseils (FIDIC), and the following “Particular Conditions”, which include amendments and additions to such General Conditions.

C1.2.2 VARIATIONS AND ADDITIONS TO THE CONDITIONS OF CONTRACT (PARTICULAR CONDITIONS)

The following "Particular Conditions" pertaining to the **"Condition of Contract for Plant and Design-Build" First Edition 1999, published by the Fédération Internationale des Ingénieurs -.Conseils (FIDIC)**, shall apply to this Contract:

CLAUSE or SUB-CLAUSE	PARTICULAR CONDITION
1.1.1.9	**Replace** the contents of this clause with the following: "Appendix to Tender" means the completed pages entitled **C1.2.3 - Data provided by the Employer** and **C1.2.4 - Data provided by the Contractor** which form part of the contract data.
Add the following: 1.7	"(CESSION OF CONTRACT (City of Tshwane & REDS) The City of Tshwane however reserves the right to, on written notification to the successful tenderer(s), cede, assign and/or delegate its rights and obligations under this agreement to a legal entity established as a result of the restructuring of the Electricity Supply Industry and the Electricity Distribution Industry."
6.2 *Add the following:*	**Rates of Wages and Conditions of Labour** "The contractor shall submit proof that he/she labours at least the minimum wage as prescribed by the government. The Contractor shall verify such proof and submit it monthly to the Engineer."
14.9	**Payment of Retention Money** No retention money will be released at taking-over but only at the end of the guarantee period
18 *Add the following:* "18.5	**Insurance**: 1. Employer to Insure Without limiting the Contractor's/Sub-contractor's obligation in terms of the Contract, the Employer will effect and maintain for the duration of the Contract until the issuing of the Defects Certificate or the end of the Maintenance Period, the following insurances in the name of the Contractor (including all Subcontractors whether nominated or otherwise): 1.1. The Employer's insurer will indemnify the Contractor/Sub-contractor against physical loss of or damage to any part of the Property Insured not exceeding the maximum contract value or the final contract value estimated at inception including free issue materials were applicable as stated in the Contract Data: a) Whilst in transit including loading and unloading whilst temporarily stored at any premises en route to or from the Contract Site within the Territorial Limits.

CLAUSE or SUB-CLAUSE	PARTICULAR CONDITION
	b) From the time of unloading, dismantling or preparation at the Contract Site and thereafter until the Property Insured has been officially accepted by the Employer and becomes his responsibility by means of a notice of completion certificate or similar evidence of legal transfer of risk. c) During the contractual defects liability or Maintenance Period which shall not exceed the period reflected in the Schedule but only so far as the Contractors and/or Sub-Contractors may be liable for such loss or damage under the defects liability or maintenance condition/s of the Insured Contract. d) Removal of debris; e) Surrounding property; f) Work Away; g) Off Site Storage; h) Temporary repairs; i) Contribution Clause – Marine; j) Escalation during Contract Period; k) Post Loss Escalation; l) Automatic Reinstatement; m) Principals Maintenance; n) Property taken over; o) Beneficial Occupation; p) Escalation due to Currency fluctuation; q) Manufacturers Guarantees 1.2 The Employer's insurer will indemnify the Contractor/Sub-contractor against all sums for which the Contractor/Sub-contractor shall become legally liable towards third party claimants to pay for and in consequence of:

CLAUSE or SUB-CLAUSE	PARTICULAR CONDITION
	a) Accidental death of or bodily injury to or illness or disease contracted by any person (excluding employees of the Contractor/Sub-contractor). It remains the responsibility of the Contractor/Sub-contractor to mitigate the risk of employees sustaining injuries or contracting occupational diseases during lunch times and after working hours at their workplace on the project site as stipulated in Section 22 of the COID Act; b) Accidental physical loss or damage to tangible property occurring during the Period of Insurance and arising out of or in connection with the performance of the Insured Contract at the Contract Site as defined in the Schedule. The minimum limit of indemnity for any one event is R10-million in respect of contracts with a contract value of up to R50-million (excluding VAT). 2. <u>Insurance Premium payable</u> The Employer will pay the insurance premium for the works damage and public liability insurance cover. The insurance premium will be calculated based on the approved Capital Budget per financial year and the insurance premium will be debited out to the relevant departments by the Section: Insurance and Risk Management. 3. <u>Additional insurance by the Employer</u> The Employer shall be free to effect at his own cost any additional insurance, which he deems necessary in own interest to cover loss or damage not insured in terms of the insurance policies of Sub-Clause 1 of this Clause. 4. <u>Additional insurance by Contractor/Sub-contractor</u> The Contractor and Sub-contractor shall be free to effect and maintain at their own cost any additional insurance which the Contractor/Sub-contractor deem necessary to cover damage, loss or injury not insured in terms of the insurance effected by the Employer's insurer. The cost of the additional insurance will be for the account of the Contractor/Sub-contractor. 5. <u>Contractor satisfied with insurance</u> The submission of a tender shall be construed as acknowledgement by the Contractor that he is satisfied with the insurance cover affected by the Employer. 6. <u>Contractor to observe conditions</u> The Contractor shall give all notices and observe all conditions and requirements imposed by the relevant insurance policies, which shall be binding on the Contractor.

CLAUSE or SUB-CLAUSE	PARTICULAR CONDITION
	7. <u>Contractor to Insure</u> The Contractor/Sub-contractor must obtain for the duration of the contract until the issuing of the Defects Certificate or the end of the Maintenance Period, the following insurance policies at an insurance company within 14 (fourteen) days of the notification of acceptance of the tender and must pay all premiums and supply proof thereof to the relevant Project Manager, 30 (thirty) days before the inception of the contract, that the policies have been taken out and that all premiums have been paid: a) All Risk Insurance cover with regard to all Plant and Materials and Equipment, owned, leased or hired by the Contractor that are used in the execution of the contract for the full replacement value thereof. b) Motor Vehicle and Liability Insurance cover indicating the registration numbers of the vehicles owned, leased or hired by the Contractor that are used in the execution of the contract to the amount of at least R10-million per claim with the number of claims unlimited. c) SASRIA cover for motor vehicles and Plant and Materials and Equipment owned, leased or hired by the Contractor that are used in the execution of the contract for the full replacement value thereof. d) In respect of Plant and Materials and Equipment and Motor Vehicles brought onto the Site by or on behalf of Subcontractors, the Contractor shall be deemed to have compiled with the provisions of this Sub-Clause by ensuring that such Subcontractors have similarly insured such Plant and Materials and Equipment and Motor Vehicles. e) Proof must also be submitted that the Contractor complies with the conditions of the following legislation: - Compensation for Occupational Injuries and diseases, 1993. - Unemployment Insurance Act, 1996. - The Contractor shall in respect of the Site of the contract works appoint in writing a competent person to meet the requirements of the Health and Safety Act, No 85 of 1993 as amended. 8. The Project Manager involved must furnish the required insurance documentation 30 (thirty) days before the inception of the contract to the Section: Insurance and Risk Management. 9. CONTRACT WORKS CLAIMS REPORTING PROCEDURES 9.1 <u>Reporting of Incidents</u> In the event of an occurrence, which is likely to give rise to a claim under the insurance policy affected by the Employer, the Contractor/Sub-contractors and Project Manager will adhere to the following procedures: a) In addition to any statutory obligations and/or requirements contained in the General Conditions of Contract, the Contractor shall notify the Employer and the Project Manager of every occurrence within 48 (forty-eight) hours giving the circumstances, nature and an estimate of the loss or damage.

CLAUSE or SUB-CLAUSE	PARTICULAR CONDITION
	b) The Project Manager will be responsible to complete and submit the relevant claim documentation for each incident within 30 (thirty) days after the incident occurred to the Section: Insurance and Risk Management. Should the incident be reported by the Project Manager more than 30 (thirty) days after the incident occurred to the Section: Insurance and Risk Management, the claim will only be considered if the claim documentation is accompanied by a letter from the relevant Strategic Executive Officer motivating the reason(s) for the late reporting of the incident, but the Project Manager must take note the Insurer might repudiate the loss if it is found that the insurers rights have been compromised as a result of the late reporting. c) The following documentation must be included with the claim documentation: - Photos of damages caused or suffered as proof or substantiation of the claims. d) In the event of Insured Property being damaged during the Contract Works beyond economical repair, the property must be safeguarded and be handed over to the Employer's insurer for salvage. e) The Section: Insurance and Risk Management will inform the Employer's insurer of the incident. The Contractor/Subcontractor shall afford all reasonable access to the Site to the Employer, the Project Manager, the Employer's insurers and/or representatives for the purpose of assessment of any loss or damage. 9.2 <u>Reporting of catastrophic incidents</u> In the event of an occurrence, which is likely to give rise to a claim, under the insurance policy effected by the Employer, with an estimated loss or damage of more than R250 000,00, the Contractor and the Project Manager will adhere to the following procedures: a) In addition to any statutory obligations and/or requirements contained in the General Conditions of Contract, the Contractor shall notify the Employer and the Project Manager of every occurrence within 24 (twenty-four) hours giving the circumstances, nature and an estimate of the loss or damage. b) The Project Manager must notify the Section: Insurance and Risk Management on the same day that the Contractor/Sub-contractor has notified the c) Project Manager of the incident. d) The Section: Insurance and Risk Management will notify the Employer's insurer of the incident. The Contractor/Sub-contractor shall afford all reasonable access to the Site to the Employer, the Project Manager, the Employer's insurers and/or representatives for the purpose of assessment of any loss or damage.

CLAUSE or SUB-CLAUSE	PARTICULAR CONDITION
	e) The Project Manager will be responsible to complete and submit the relevant claim documentation for each incident within 30 (thirty) days after the incident occurred to the Section: Insurance and Risk Management. Should the incident be reported by the Project Manager more than 30 (thirty) days after the incident occurred to the Section: Insurance and Risk Management, the claim will only be considered if the claim documentation is accompanied by a letter from the relevant Strategic Executive Officer motivating the reason(s) for the late reporting of the incident. Should the relevant claim documentation not be submitted within 30 (thirty) days, the claim will be repudiated. 9.3 Reporting of crime related incidents All crime related incidents, losses or shortages irrespective of the value, must be reported within 24 (twenty-four) hours by the person who was involved or who has discovered the incident to the nearest South African Police Services (SAPS) station. The name of the Police Station, Investigation Officer and the Case number must be obtained and stated on the Contractor Claim Form. Should the incident not be reported to the SAPS, the claim will be repudiated. 9.4 Claim documentation The Project Manager must obtain all relevant information from the Contractor/Sub-contractor and complete the Contractor Claim Form, included in this report as Annexure B that is available on the Intranet. The project number must be stated on the Contractor Claim Form. The Project Manager must submit with the Contractor Claim Form a detailed cost sheet indicating the estimate of the loss or damage. Any misrepresentation, misdescription or non-disclosure of material facts, at the option of the insurers, can result in claims submitted being declared null and void. 9.5 Authorisation of claim forms It is imperative that a formally delegated official or his nominee of the Employer should authorize the Contractor Claim forms as proof of the appropriate authorization, verification and approval of claims submitted. The Strategic Executive Officer must provide an authorization letter to the Section: Insurance and Risk Management stating the names and the specimen signatures of the delegated official or his nominee within 30 (thirty) days from approval of this report by Council. Should the delegated official or his nominee not sign the relevant claim form, the claim will be repudiated as this may lead to inappropriate independent verification of the validity of claims, thereby increasing the risk of insurance fraud and consequent reputation damage to the Employer.

CLAUSE or SUB-CLAUSE	**PARTICULAR CONDITION**
	9.6 Contractor to pay deductibles Any claim in terms of the insurance affected by the Employer shall be subject to the Contractor being responsible for the payment of the amount stated in the Annexure to the Policies as being the deductible (first amount payable or Excess) as defined in the Certificate of Insurance issued by the Employer's insurer in terms of the Policy. 9.7 SETTLEMENT OF CLAIMS All incidents reported to the Section: Insurance and Risk Management in respect of an occurrence, which is likely to give rise to a claim will be forwarded to the Employer's insurer who will take the necessary actions for the settlement of any such claims. The Contractor shall negotiate for the settlement of claims with the Employer or the Employer's insurer through the Section: Insurance and Risk Management. The Employer's Chief Financial Officer will authorize all settlements of claims. The Contractor will also sign the Agreement of Loss document issued by the Insurer in order to settle the claims. Should action for the settlement of any such claim to the satisfaction of the Project Manager not be taken by the Contractor/sub-contractor within 30 (thirty) days after receipt of such claim by the Contractor/sub-contractor, the Employer or the Employer's insurer may settle any such claim, after giving the Contractor notice of its intention to do so; provided that no such claim shall be settled by the Employer or the Employer's insurer without first consulting the Contractor/sub-contractor. The foregoing provisions of this Sub-Clause shall apply *mutatis mutandis* to any such claim received by the Contractor directly. It is distinctly understood that should the Employer or the Employer's insurer not settle any such claim at the earliest opportunity, it shall in no way prejudice the Employer or the Employer's insurer's rights to recover from the Contractor nor shall the Contractor raise any such defence against the Employer or the Employer's insurer. Any moneys which become payable as a result of a claim under the insurance effected by the Employer shall be paid to the Employer after deduction of the deductible amount (first amount payable or Excess), who shall pay such amount to the Contractor or to the party rectifying, repairing or reinstalling or who has suffered the loss or damage, but this shall in no way affect the Contractor's obligations in terms of the Contract."

C1.2.3 DATA PROVIDED BY THE EMPLOYER

Clause/Item		Entry
1.1.2.2 & 3	Employer's name and Address	**CITY OF TSHWANE** **PO Box 48** **PRETORIA** **0001**
1.1.2.4 & 1.3	Engineer's Name and Address	**Mpho Dibakwane** **City of Tshwane** **PO Box 423** **PRETORIA** **0001**
1.1.3.7	Defects Notification Period	365 days after Taking / Hand-Over
1.3	Electronic Transmissions systems	N/A
1.4	Governing Law	Law of the Republic of South Africa
1.4	Ruling Language	English
1.4	Language for communications	English
2.1	Time for access to the Site	28 days after commencement Date
4.2	Amount of Performance Security	N/A)
5.1	Period for notifying unforeseeable errors, faults and defects in the Employer's Requirements	10 days
6.5	Normal working hours	7h00 to 17h00
8.7 & 14.15(b)	Delay damages for the Works	Penalties for delays in the completion of the Works will be calculated at a rate of 0.3% of the works order price per day. This penalty applies to delays in the entire project or any specific portion thereof. However, completed sections that have been put into beneficial use will not be subject to penalties. 'Beneficial use' is defined as the stage where a section of the Works becomes functional and adds value.
If there are Provisional Sums:		
13.5(b)	Percentage for adjustment of provisional sums	*Refer to part T2.2 Cost price adjustment: Form B.d*
If sub-clause 13.8 applies:		
13.8	Adjustment for Change in Cost; Table(s) of adjustment data	*Refer to Part T2.2 Cost price adjustment: Form B.d*
14.2	Total Advance payment	0% of the Accepted Contract Amount
14.2	Number and timing of instalment	N/A
14.2	Currencies and proportions	N/A

Clause/Item		**Entry**
14.2	Start repayment of advance payment	N/A
14.2(b)	Repayment amortisation of advance payment	N/A
14.3	Percentage of retention	10% of works order
14.3	Limit of Retention Money	*Not applicable*
14.5(b)	Plant and Materials for payment when shipped en route to the Site	*Not applicable*
14.5(c)	Plant and Materials for payment when delivered to the Site	*Refer to Part C2.2 Activity Schedule / Bill of Quantities*
14.6	Minimum amount of Interim Payment Certificates	N/A
	If payment are only to be made in a currency / currencies and named on the first page of the Letter of Tender:	
14.15	Currency / currencies of payment	*Refer to Part T2.2 Tender forms Form Bid*
18.1	Periods for submission of insurance: a. Evidence of insurance b. Relevant policies	Refer to particular conditions
18.2(d)	Maximum amount of deductibles for insurance of the Employer's risks	Refer to particular conditions
18.3	Minimum amount of third party insurance	Refer to particular conditions
20.2	DAB	The DAB of three Members
20.3	Appointment (if not agreed) to be made by	The President of FIDIC

C1.2.4 DATA PROVIDED BY THE CONTRACTOR

CLAUSE / ITEM		**ENTRY**
1.1.2.3 &1.3	Contractor's Legal name and address	....
1.1.3.3	Time for completion of the works	..... days

C1.3 FORM OF GUARANTEE

WHEREAS

THE CITY OF TSHWANE
(hereinafter referred to as the "Council"),

enters into a Contract (No.) with.....

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

for .....

.....

.....

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

NOW THEREFORE we the undersigned .....
.....[full names of authorized agent(s)]
and acting in my/our capacity as .....
and .....
and as such duly authorized thereto, do hereby bind the said .....
(hereinafter referred to as the "Guarantor") as surety and co-principal Debtor in *solidum* for the sum of:-
R ..... (.....
).....
for the due and proper fulfilment by the Contractor of all or any of his duties and obligations in terms of the said Contract. This guarantee shall not be interpreted as accessory to the contract between Council and the Contractor.

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

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

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

Exceptio non numerate pecuniae
Exception non causa debiti
Beneficium duobus vel pluribus reis debendi
Beneficium ordinis deu excussionis
Beneficium Divisionis

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

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

This document is not negotiable or transferable.

NAME(s): (BLOCK LETTERS) ....

CAPACITY of authorized agents: ....

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

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

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

1. ....

2. ....

ANNEXURE A

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

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

C1.4 GUARANTEE (CASH DEPOSIT)

CONTRACT NO.: .....

Employer: **CITY OF TSHWANE**

Contractor: .....

Description of Contract: .....

I/We, the undersigned, ...
(Contractor)

deposit herewith cash *a bank certified cheque", in the amount of .....

.....

.....,

as surety for the due performance of the Contract by the abovementioned Contractor, and for all losses, damages and expenses that may be suffered or incurred by the Employer as a result of non-performance of the Contract by the Contractor, renouncing all benefits from the legal exceptions *ordinis seu excussions et divisions* no value received and all other exceptions which might or could be pleaded against the surrender of this deposit.

The deposit shall be returned to the Contractor on the issue of the Completion Certificate in terms of the Contract, unless the Contractor is advised in writing by the Employer before issue of the said Certificate of his intention to institute claims and the particulars thereof, in which event this deposit shall remain in force until all such claims are paid or settled.

FOR AND ON BEHALF OF ..... (Contractor)

NAME(s): (BLOCK LETTERS) .....

CAPACITY of authorized agents: .....

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

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

WITNESS(s): (Full name – BLOCK LETTERS – and signature)

1. ....

2. ....

C1.5: HEALTH AND SAFETY AGREEMENT

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

THE CITY OF TSHWANE
(Hereinafter referred to as the "EMPLOYER")
AND

.....

.....

.....

.....

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

duly authorised by virtue of a resolution dated .....

, Attached hereto Annexure A, of the said .....

..... (herein after referred to as the

"CONTRACTOR")

.....

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

.....

..... Contract number .....

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

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

NOW THEREFORE the parties agree as follows:

a) The CONTRACTOR undertakes to acquaint the appropriate officials and employees of the CONTRACTOR with all relevant provisions of the ACT and the regulations promulgated in terms thereof.

b) The CONTRACTOR undertakes that all relevant duties, obligations and prohibitions imposed in terms of the ACT and Regulations will be fully complied with. Provided that should the EMPLOYER prescribe certain arrangements and procedures, that same shall be observed and adhered to by the CONTRACTOR, his officials and employees. The CONTRACTOR shall bear the onus of acquainting himself/herself/itself with such arrangements and procedures.

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

d) The CONTRACTOR agrees that any duly authorised officials of the EMPLOYER shall be entitled, although not obliged, to take such steps as may be necessary to ensure that the CONTRACTOR has complied with the undertakings as more fully set out in paragraphs 1 and 2 above, which steps may include, but shall not be limited to, the right to inspect any appropriate site or premises occupied by the CONTRACTOR, or to inspect any appropriate records held by the CONTRACTOR or to take such steps it may deem necessary to remedy the default of the CONTRACTOR at the cost of the CONTRACTOR.

e) The CONTRACTOR shall be obliged to report forthwith to the EMPLOYER any investigations, complaint or criminal charge which may arise as a consequence of the provisions of the ACT and Regulations, pursuant to work performed in terms of this agreement, and shall, on written demand, provide full details in writing of such an investigation, complaint or criminal charge as the case may be.

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

NAME(s): (BLOCK LETTERS) .....

CAPACITY of authorized agents: .....

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

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

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

1. ....

2. ....

C2.1 PRICING INSTRUCTIONS

General

No partial payment of the prototype mast will be made in this contract.

This section provides the tenderer with guidelines and requirements with regard to the completion of the Price Schedule. The Schedule has to be completed in black ink 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 following words shall have the meanings hereby assigned to them:

- Unit: The unit of measurement for each item of work in terms of the Specifications and the Project Specifications.
- Amount: The product of the quantity and the rate tendered for an item.

Rates

This price list has columns for quantity, rate and price for the goods. Entries in these columns are made as follows:

A. If the Supplier is to be paid an amount for the goods which is a fixed price for an item or a fixed price for each of a series of items, the tendering supplier enters the amount in the price column only, the other two columns being left blank.
B. If the Supplier is to be paid an amount for the goods which is the unit rate for each item multiplied by the quantity of the item supplied, (i.e. a 'Price Schedule' arrangement) - the tendering supplier enters the rate which is then multiplied by the quantity (which has been entered either by him or by the Purchaser) to produce the price which is also entered.
C. If the Supplier is to be paid an amount for an item of the goods which is the rate multiplied by the quantity supplied - whatever that quantity turns out to be (i.e. a 'schedule of rates' arrangement) - the tendering supplier enters the rate only, the other two columns being left blank. The tendering supplier's offer cannot include a total of the prices which covers all the items which the Supplier has to supply if any of the supply is dealt with using items with a rate only.
D. Rate only entries must not be made for work covered by other items.

Units of Measurements

The units of measurement described in the Schedule of Rates are metric units.
Abbreviations used in the Quantities are as follows:

mm = millimetre
m = metre
km = kilometre
m^2 = square metre
m^2.pass = square metre pass
ha = hectare
m^3 = cubic metre
m^3.km = cubic metre-kilometre
l = litre
kl = kilolitre
MPa = megaspascal
W = Watt
Each = single unit of an item

h = hour
kg = kilogram
t = ton (1000kg)
no. = number
sum = lump sum
MN = meganewton
MN.m = meganewton-metre
PC sum = Prime Cost sum
Prov sum= Provisional sum
% = Percent
kW = kilowatt

CORRECTION OF ENTRIES MADE BY TENDERER

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

PRICE SCHEDULE

Tenderers are required to complete all prices in full. Failure to complete all prices in full shall disqualify the tenderer.

This is a rate only tender, estimated quantities are for indicative purpose of the amount of work that can be expected.

The city shall pay for a fully completed work as per each purchase order. No partial payment will be done by the city.

	DESCRIPTION	UNIT	ESTIMATED QUANTITIES PER YEAR	UNIT PRICE (Excluding VAT)	TOTAL (Excluding VAT)
1.1	Design, supply and construction of the foundations for 25m mast	Per mast	70		
	Extra over Item 1.1				
1.1.a	Supply of additional concrete for casting of foundations (where applicable)	Per cubic meter	70		
1.2	Design, supply, delivery and offload of the complete 25m high mast with all accessories	Per mast	70		
1.3	25m Mast installation and commissioning	Per mast	70		

	DESCRIPTION	UNIT	ESTIMATED QUANTITIES PER YEAR	UNIT PRICE (Excluding VAT)	TOTAL (Excluding VAT)
1.4	25 m Mast Earthing supply and installation	Per mast	70		
	Extra over Item 1.4				
1.4.a	Supply and installation of additional earthing rod and earth rod resistance measurement.	Each	10		
1.4.b	Supply additional conductive earthing compound	Per 50kg bag	15		
1.5	Excavations				
1.5.1	Excavate in Pickable soil for mast foundations	Cubic metre	70		
1.5.2	Excavate in hard rock for mast foundations – Hard rock	Cubic metre	70		
1.5.3	Excavate in soft rock for mast foundations - Soft rock	Cubic metre	70		
1.5.4	Excavate in Pickable soil for mast foundations(backfill with G5 material)	Cubic metre	70		

	DESCRIPTION	UNIT	ESTIMATED QUANTITIES PER YEAR	UNIT PRICE (Excluding VAT)	TOTAL (Excluding VAT)
1.6	High mast labels supply and installation	Per mast	70		
1.7	Supervision off subcontractor.	Per mast	70		
1.8	Training of CoT personnel	Per person	20		
1.9	Maintenance and operational manuals	Once off	7		
1.10	Security system / Alarm	Per Mast	70		
Compliance with the Occupational Health and Safety Act and applicable regulations					
1.11	Provision of Health and Safety file	Once off	1		
1.12	Provision of Safety Officer	Per month	6		

	DESCRIPTION	UNIT	ESTIMATED QUANTITIES PER YEAR	UNIT PRICE (Excluding VAT)	TOTAL (Excluding VAT)
1.13	Provision of personal protective clothing and equipment	Per set	25		
1.14	OHS Representative Training	Per person	10		
1.15	Appointments of a Community Liaison Officer - (City of Tshwane T5 salary scale)	Per month	12		
				TOTAL (Excluding VAT)	
				VAT (15%)	
				TOTAL (Including VAT)	

SIGNATURE OF TENDERER: .....

PART C3: SCOPE OF WORK

CONTENTS

C3.1 DESCRIPTION OF THE WORKS

C3.1.1 Employers objectives

The Energy and Electricity Department is responsible for providing the Tshwane communities with service delivery in the form of, but not limited to, electrification and public lighting.

The Department needs to appoint service provider(s) for the design, supply, deliver and off-loading installation, testing and commissioning of photovoltaic (PV) high mast lights for the City of Tshwane as and when required for a three years period

C3.1.2 Overview of the works

This specification covers the City of Tshwane (CoT) requirements for photovoltaic (PV) high mast lights. The high mast lights will provide an off-grid solution to the City's needs.

C3.1.3 Extent of the works

The following are required:

Design, supply, installation, testing and commissioning of a 25m high mast, that must consist of:

- photovoltaic (PV) powered luminaires complete with LED lights, control gear, batteries and photovoltaic panels,
- photovoltaic (PV) powered solution to supply 230VAC required to operate Wi-Fi equipment that will be mounted on the same high mast complete with control gear, batteries and photovoltaic panels,

The extent of works will consist of the following key components:

1) Design of the foundation, mast and PV systems
2) Foundation investigation and all required soil test, preparation, supply and construction
3) Electrical earth works: supply, installation and testing
4) Manufacturing, supply, delivery to site, off-loading, erection, installation of the high mast in full working order with PV luminaries as specified
5) Testing, commissioning and handover of the high mast

C3.1.3.1 General

3.1.3.1.1. Bidders are required to complete Annexure A.1, Schedule B..

3.1.3.1.2. After the tender is awarded, the successful bidder shall manufacture and test a prototype lighting mast which shall be demonstrated to the City Engineer for approval before full scale production can commence. This demonstration shall include:

I. Lighting mast operation;

II. Required maintenance procedures;

III. Luminaire operation and performance;

IV. Luminance and Illuminance readings;

V. On site monitoring of the solar luminaires via the mobile application.

3.1.3.1.3. Before the retention amount is refunded, the successful bidder shall also perform minimum four additional tests, as specified by the City Engineer, on the prototype lighting mast as required or needed in terms of the expected design output of the system and performance of the PV luminaires.

3.1.3.1.4. It is a requirement that the lighting level specified is achieved with proposed luminaires which will be verified on site with post lux readings. In the event that the proposed luminaire does not perform as proposed by the contractor, the tenderer may be liable to replace such under-performing luminaires with an Engineer approved luminaire which shall be used for further replacements within the contract.

3.1.3.1.5. At the end of the defects liability period, the Contractor accompanied by the Engineer, shall carry out an audit and certify that the high mast lighting poles are vertical and luminaires have been installed and operate correctly and are at the correct mounting height and at the correct angle. Luminance and Illuminance readings are to be taken and provided to the Engineer to verify the installation is achieving within 10% of the design.

3.1.3.1.6. The handing over certificate containing the information as listed in Documentation is required for each completed lighting mast before payment can be made.

3.1.3.1.7. No partial payment on the delivery of the prototype mast shall be permitted.

C3.1.3.2 Design of works

The mast shall be designed in accordance with this specification and SANS 10225 and the mast and foundation design shall be performed by an ECSA registered professional engineers and submitted with the tender.

The position of the masts may be influenced by site conditions (landscape, etc.) and shall be set out and confirmed on site, prior to these items being built.

The following design standards for civil engineering infrastructure will apply:

- Standard Specifications for Municipal Civil Engineering Works of the City of Tshwane (Third Edition 2005).

C3.1.3.3 Project Implementation Plan

A Project Implementation Plan must be provided before any construction work starts.

The implementation plan must include , but not limited to:

1. Project Overview:

   Objective:

   Scope:

2. Project Phases:

a. Design Phase:

b. Manufacture and Supply Phase:

c. Delivery and Offloading:

d. Installation and Construction:

e. Testing Phase:

f. Commissioning:

3. Project Timeline:

4. Resource Allocation:

5. Quality Control:

6. Environmental Considerations:

7. Communication and Reporting:

8. Risk Management:

9. Project Completion:

10. Maintenance and Support:

C3.1.3.4 Site Works, Civil Engineering and Building Work

The site work will include all the following work that is specified in more detail in the specification, particulars and activity schedule: In addition to this document

the Standard Specification for Municipal Civil Engineering Works and National Building Regulations form part of the specification. A professional civil engineer (structural) must certify the design for the above work.

a) Clearing and preparation site

b) Excavation of the pit for the mast foundation.

c) Foundation investigation and soil testing.

d) Construction of foundation and plinth: steel and form work, casting of concrete, and all required testing.

e) Backfill of the pit and compaction of soil material.

f) Installation of the high mast structure.

g) Construction/Installation: All equipment supplied under this scope and free issue items.

h) Commissioning: The testing of all the equipment, system operation and control.

i) Switching: Arrange switching during the construction period. It may be required that due to electricity supply constraints that some work can only be done during the night an weekends after normal working hours.

j) Site cleaning: Remove all the excess material.

C3.1.3.5 Electrical Works

a) The supply and installation of the following:
   I. Mast earthing and lightning protection including all testing and certificates
   II. Photovoltaic systems for:
      - 7 LED lights
      - 230V AC supply with cable.

b) Issuing of a certificate of compliance (COC) in terms of SANS 10142 Code of Practice

C3.1.3.6 Commissioning of works

a) Test all electrical equipment and the system including PV system functionality and system autonomy.

b) Check and test all mechanical structures.

c) Check and certify all civil works.

d) A test plan and procedures must be provided before any testing starts.

e) Supply Operating and Maintenance Manuals (O&MM) of all the equipment and the system.

f) Provide handing over certificate with required documents.

C3.1.3.7 CoT Safety agent

The ***safety agent*** for CoT is ***XXX*** and he will be responsible for all safety aspects during the execution of the project.

The contact details are as follows:
Office Tel: 012 358 ***XXXX***
Fax : 012 358 ***XXXX***
e-mail: ***XXXX***@tshwane.gov.za

C3.1.4 Location of the works

The sites of the proposed works will be located inside the boundaries of the City of Tshwane. The location will be defined and confirmed before the construction of these items commences.

C3.2 ENGINEERING

C3.2.1 Design Concept

The PV high mast design is centred around a 25meter high metal mast structure. At the top of the mast must be a mounting frame that holds 8 solar panels tilted at a 15degree angle to maximize solar exposure.

Below the solar array, the mast head must have mounting brackets for 7 modular, independent solar-powered LED floodlight luminaires evenly spaced around the mast circumference. Each luminaire must consist of its own LED floodlight, battery, and charge controller, powered by a single solar panel from the top array. This modular design allows each light to function independently in case of failure.

The LED lighting system must be engineered to provide optimum illumination in a 100 meter radius area around the base of the mast. The luminaires must automatically switch on at dusk and off at dawn. Light output levels ranging from minimum 9 to 0,5 lux must be maintained out to distances from 15 to 100m from the mast. The system must be designed for reliability, efficiency, and corrosion resistance with a 25 year lifetime.

An additional solar system must utilize 1 of the 8 solar panels to provide a 140W 230V AC supply to power future WiFi equipment. Cable routing conduits must be built into the mast to supply this power from top to bottom.

Additional mast provisions must include electrical grounding and lightning protections, and integrated alarm and monitoring/control systems.

In summary, it is a self-contained vertical structure integrating solar power, modular LED lighting, batteries, and provisions for WiFi - engineered for off-grid durability, lighting performance, and sustainability.

C3.2.2 Design brief

C3.2.2.1 General

The high mast must be designed in accordance to SANS 10225 and specifications listed below and in accordance to the City of Tshwane minimum requirements listed in Annexure A.1 – Schedules A. Bidders must comply to the minimum requirements listed in Annexure A.1 – Schedules A

Bidders are required to complete Annexure A.1 – Returnable Schedule B in full with ink, bidders must not refer to brochures or any attached document.
The information provided by the bidders in Shedule B of Annexure A.1 shall be evaluated against the City of Tshwane minimum requirements in schedule A and the technical specification requirements.

C3.2.2.2 PV High Mast Concept Design Specifications

The requirements of SANS 10225 apply together with the following:

The expected life span of the high mast will be a minimum of 25 years, all measures and specifications will be taken to attain this life span.

The mast and foundation design shall be performed by an ECSA registered professional engineers and submitted with the tender.

The steel required for mast design and fabrication: structural steel grade 355WA

The design shall be appropriate for the applicable Altitude and Terrain Category where the mast is to be installed.

Regional Wind Speeds: requirements of SANS 10225 apply.

The high mast light shall consist of:
1. Foundation and plinth
2. Base and monopole shaft
3. Mast top with solar mounting frame and brackets
4. Cabinets and energy storage with control gear
5. 7 x LED flood lights
6. 8 x solar panels
7. 230V AC solar power connection and cable sleeves

The high mast shall carry at its top 7 independent (split type) solar powered LED floodlights.
Each luminaire shall consist of one independent LED floodlight, cabinet with one independent battery and MPPT charge control gear, and one independent solar panel.

The mast shall consist of the base, monopole and mast top.

The mast top shall accommodate all the required equipment such as the solar mounting frame with all the solar panels, cabinets and energy storage with control gear and LED floodlights.

The mast top must accommodate a solar panel mounting frame. All 8 solar panels must be mounted on the frame. The rake of the frame must be at 15 degrees.

The necessary energy storage cabinets and LED floodlights shall be mounted below the solar panels and frame and the 7 LED floodlights shall be evenly spread at 51,43 degrees around the circumference. Each LED floodlight shall be

mounted below the cabinets and not more than 1m away from the centre of the mast.

The necessary mounting brackets for the LED floodlights shall be incorporated into the mast top, in such a fashion that these items can be readily removed.

The required energy storage cabinets shall be permanently fixed to the mast top structure in such as fashion that these items can not be removed. The design must be robust to deter any tampering or removal of the enclosure.

In addition to the above, the design of the mast must make provision for a solar powered solution to supply 230V AC required for Wi-Fi equipment. See details and requirements below.

The Wi-Fi equipment for Free Internet Zones (FIZ) will be installed on the mast as and when needed or required. See details and requirements below.

Provision must be made to install cable sleeves in the inside of the mast as follows:
1. A cable sleeve for installation of the 230V AC power cable from the top of the mast to the Wi-Fi power enclosure. See details and requirements below.
2. A cable sleeve for installation of power cable from Wi-Fi power enclosure to Fiz enclosure. See details and requirements below.
3. A cable sleeve for installation of antenna cable from Fiz enclosure to radio antenna. See details and requirements below.

Mast Height	Height(m)	
Mast Top	1	
Mast	24	
Total	25	
Components	Installation Height from Top(m)	
8 x solar Panels at 15° Rake Max	0	
Solar frame and LED FL/Cabinet bracket	0	
Cabinets and energy storage units with control gear	±0,48	
7 x LED Floodlights	±0,81	
Single cable sleeve/pipe to install AC power cable from the top of the mast to Wi-Fi power enclosure	1,1	12,5
Single sleeve for installation of power cable from Wi-Fi power enclosure to Fiz enclosure	12,5	13,5
Single sleeve for installation of radio antenna cable from Fiz enclosure to radio	1,5 to 5	13,5

antenna		
	Installation Height from Top(m)	
Wi-Fi power-enclosure for Wi-Fi equipment for FIZ and fiber (note power enclosure will not form part of this tender)	12,5	
FIZ enclosure for Wi-Fi equipment (FIZ enclosure can house the switch) (note FIZ enclosure and Wi-Fi equipment like the switch, Access Point, radio and power module will not form part of this tender)	13,5	
Radio/Antenna(note Radio/Antenna will not form part of thie ender)	±1,5 to 5	

Wi-Fi Equipment		
Wi-Fi Equipment for FIZ-radio and fiber		
	Weight(kg)	Dimensions
Wi-Fi Equipment Enclosure	11	600 x 350 x 250
Access Point	2 to 4	100 x 220 x 220
Radio Antenna	2	

C3.2.2.3 Key Lighting Design Specifications

a) All the luminaires shall automatically switch ON at sunset operate throughout the night and automatically switch OFF at sunrise.
b) The high mast shall carry 7 independent(split type) PV luminaires. The failure of one luminaire shall not affect the operation of the remaining luminaires.
c) Minimum illuminance shall be as follows:

Illuminance	Radius from the base of the mast (meters)
9 Lux	Min 15
7 Lux	Min 20
3 Lux	Min 40
2,2 Lux	Min 50
1,5 Lux	Min 60
1 Lux	Min 70
0,8Lux	Min 80
0,5 Lux	Min 100
Average illuminance(lux)	Min 0.8

d) The light output from the LED modules must be constant throughout the duty cycle and must be flicker and noise free.
e) Autonomy: The system shall provide optimum illumination for minimum 2 days autonomy (two continuous night cycles) under rainy or overcast conditions.
f) 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.
g) Charging time: max 6 hours.
h) The solar luminaires must be designed for 100% light output, maintaining consistent brightness levels throughout the night hours during all seasons.

   The following is also required:
   - Night Hours Dimming Profile
     The solar luminaire must support a customizable dimming profile for night hours, specifically between 21:00 and 3:00. During this period, the output must be maintained at 100%, ensuring optimal illumination. To conserve energy and enhance autonomy, the luminaire can dim to 80% light output in the hours before 21:00 and after 3:00.
   - The luminaires should allow the addition of multiple dimming profiles.
   - Each dimming profile should be customizable according to specific requirements.
   - Configuration of the dimming profiles must be facilitated through the mobile application.

i) Maintenance factor 0,9.
j) The LED floodlights shall be 100% solar powered.
k) 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 : The orientation 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.
l) The complete system shall be designed, manufactured and finished to afford a maintenance free life span and materials shall be chosen to prevent wear, fatigue and corrosion.

The design of the system and selection of the solar panels, LED floodlights, batteries and controller is essential in order to achieve an optimum lighting design of the area to be illuminated.

Compliant Lighting Simulation report and photometric data of the high mast must be submitted with the tender. The simulations are to be done with DIALux, Relux or reputable simulation software. A hard copy of the simulation report and photometric data must be attached with the tender.
When submitting the design the following should also be submitted with the tender on a flash disc/memory stick: (1)The original design file in Relux “rdf” format and Dialux “dlx” format together with the “pdf” format and (2) photometric file in “ies or ldt” format.

Hard copy report indicating the luminance distribution and illumination levels must be submitted with the tender. The report must also indicate the average, minimum and maximum illuminance of the Total Area illuminated, and the average, minimum and maximum illuminance at 0m, 20m, 40m, 60m, 80m, 100m radius distance from the base of the mast. Lighting levels should be calculated on ground level. Details must also be submitted in Annexure A.1, Schedule B.

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 L_{70} (output level, it would be considered to no longer be delivering an acceptable quantity of light). Detail must be submitted in Annexure A.1, Schedule B.

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.

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

Solar module specifications:
Requirements listed in section C3.2.2.5 apply.

Energy storage specifications:
Requirements listed in section C3.2.2.6 apply.

LED floodlight specifications
Requirements listed in section C3.2.2.7 apply.

Charge controller specifications:
Requirements listed in section C3.2.2.8 apply.

C3.2.2.4 230V AC Supply And Connection Design Specifications

A solar solution to supply 230V AC is required to operate Wi-Fi equipment.

The bidder may propose a solar solution provided that the solution adhere to the following requirements:

Required voltage:
- 230V AC

Power:
- Min 140W

The solution must be able to supply the required AC by means of a inverter to a AC PoE power module.(The supply of the AC PoE power module is not required in this contract and will be done by a third-party).

In addition to the above, the system must be able to power a alarm system and other equipment(such as the GSM modem/router) required for remote monitoring. See section C3.2.2.11 and C3.2.2.12.c for the requirements and specifications.

The equipment will be mounted as indicated above.

One PV panel to charge and operate the system during daytime. The remaining 1 solar panel must be utilized for this purpose.

Working hours of the system: 16 hours per day(from 5:00 -21:00)

Days autonomy:2 days.

Charge time: max 6 hours.

The system must consist of:
1. 1 x solar panel.
2. Energy storage of the Lithium Iron Phosphate LiFePO4 type.
3. 1 x remaining energy storage enclosure must be utilised to store the battery/batteries and control gear.
4. 1 x MPPT charge controller.
5. 1 x Inverter.
6. Cable and wiring of the solar components.
7. 230V AC Power cable.
8. Cable sleeves.
9. Sizing of above components and system to be determined.

The power requirements of the security/alarm system and additional equipment required for the remote monitoring such as the GSM modem/router, must also be taken into consideration for the design of the PV system and overall functioning and requirements.

Cable sleeve requirements:
All the cable sleeves must be installed inside the mast and exit the mast through a hole and must protrude approximately 10cm from the outside of the mast.The sleeves must exit the mast on the opposite side of the ladder.

The sleeves must be installed as indicated in point C3.2.2.2

A cable sleeve is required to install a AC power cable from the top of the pole(from the inverter), to the Wi-Fi power enclosure. The 230 V AC cable will provide power to the Wi-Fi power enclosure. The supply and installation of the AC power cable forms part of the tender and must be included in the price schedule.

A second cable sleeve is required to house a AC power cable from the Wi-Fi power enclosure to the FIZ enclosure. Cabling from the Wi-Fi power enclosure to the FIZ enclosure will be done by a third party – the only requirement is the cable sleeve with a draw wire.

Radio Antenna Cable Sleeve: A third cable sleeve with minimum inner diameter of at least 35mm is required for the installation of the radio antenna cable(Cat 5 Ethernet outdoor cable) from the FIZ enclosure to the top of the mast(between1,5m to 5m from the top of the mast). This is where the radio antenna will be mounted to provide LOS (Line of Site). Cabling from FIZ enclosure to radio antenna will be done by a third party – the only requirement is the cable sleeve with a draw wire.

Solar module specifications:
Requirements listed in section C3.2.2.5 apply.

Energy storage specifications:
Requirements listed in section C3.2.2.6 apply.

Charge controller specifications:
Requirements listed in section C3.2.2.8 apply.

Inverter specifications:
Requirements listed in section C3.2.2.9 apply.

Components must be easily available and must be interchangeable with other manufactures.

C3.2.2.5 Solar Module/Panel Specifications

a) Module type: Tier 1 Type A Monocrystalline (Half-cell)
b) Module efficiency >20%
c) 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.
d) Junction box, cabling and pug-in connectors: An IP68 rating is a minimum requirement.
e) Each solar module must be housed in anodised aluminium frame.
f) All PV modules for each high mast installation and all other high masts, shall be the same in all respects, model, type and size and must be interchangeable.
g) The PV panels 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.
h) Solar frame rake angle: 15 degrees.
i) The solar panels must comply to the following latest standards SANS/IEC 61215, IEC 61646, IEC 61730-1/2, ISO 9001, ISO 14001.
j) 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.
k) There should be a Name Plate fixed inside the module which will give:
1. Name of the Manufacturer or Distinctive Logo.
2. Model Number
3. Serial Number
4. Year of manufacture

C3.2.2.6 Energy Storage Specifications

a) Type of energy storage: Lithium Iron Phosphate LiFePO4
b) Life expectancy; 10 years
c) Maintenance free
d) Service Life under normal circumstances: 8000 cycles.
e) Operating temperature: -20° C TO 60° C
f) The battery shall be capable to be installed outdoors and handle the expected environmental conditions in service.
g) The battery must be capable of rapid charging in 6 hours.
h) The battery must employ automatic protection for over/under voltage, over current, over temperature and short circuit

i) The batteries shall be marked with the year and month, or the year and week 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.
j) All the batteries for each high mast installation and all other high masts, shall be the same in all respects, model, type and size and must be interchangeable.
k) Battery shall comply with the requirements of SANS 61427-1 (or IEC 62093 which references IEC 61427-1 (SANS 61427-1)).
l) The battery shall be suitable for the discharge cycling demands of PV systems.
m) The battery enclosure shall be designed to prevent casual contact with the battery terminals by the end-user of the system.
n) 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 key locking door.
o) The required energy storage enclosure shall be permanently fixed to the mast top structure in such as fashion that these items can not be removed. The design must be robust to deter any tampering or removal of the enclosure.
p) The battery enclosure shall be adequately designed and rated to maintain the battery manufacturers recommend temperature and humidity levels.
q) Battery enclosure ingress protection rating: Min IP 66
a) Battery enclosure Impact resistance = IK 10
r) The cables shall have sufficient ampacity such that overheating of cables will not occur under peak charge or load conditions.
s) The terminations of the cable to the battery shall be made using connectors that are suitable for the particular battery terminals.
t) The battery terminals shall be protected against corrosion using an anti-corrosive coating material which has been approved by the battery supplier.
u) The daily discharge shall ensure that the battery will perform adequately over the warranty period.
v) The daily discharge of the battery shall not exceed the rated battery manufacturer’s indicated limits.
w) The battery manufacturer shall specify set-points (discharge, boost, nominal charge voltages) for the battery storage system.
x) The battery warranty must be stated in the technical schedules and it must not be less than ten (10) years.
y) Standards and certifications: 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.

C3.2.2.7 Led Floodlight Specifications

a) The LED Floodlight shall be weather-proof, hail-proof, insect-proof, corrosion-proof and resistant to both solar and ultra-violet radiation.

b) 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.
c) Individual Led modules must be replaceable.
d) Failure of one LED or module shall not affect the operation of the other LED's or modules.
e) All LED floodlights for each high mast installation and all other high masts, shall be the same in all respects, model and type and must be interchangeable.
f) Enclosure finish: unpainted aluminium
g) Fixing arrangement; adjustable stirrup
h) Stirrup material; hot dipped galvanized mild steel
i) Aiming angle of the floodlight must be adjustable and must have a visual indicator for easy adjustment.
j) Efficacy: min 190Lm/W
k) Color temperature: 3750K
l) Color Rendering Index: >=70
m) Lifetime: Min 100 000h
n) Watt rating'; Min 65W
o) Nominal Flux: Min 12 500 lumen
p) 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.)
q) The LED module shall contain an appropriate heat sink ensuring continuous effective cooling.
r) The driver shall be mounted inside the control gear compartment of the floodlight and shall be easily replaceable.
s) The driver must support dimming.
t) LED driver should have built in over voltage and current protection, over temperature and short circuit protection.
u) 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.
v) 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.
w) Impact resistance >= IK 7
x) Plastic trays, brackets and retaining clips will not be accepted.

y) Small components (such as toggle clips, bolts, screws, nuts, washers) shall be manufactured of stainless steel (grade 304 or better).

z) Fixing devices, junctions, lips and the like shall be designed to shed water. Pockets and ledges in which condensation may accumulate shall be avoided.

aa) Each floodlight 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;
   1. Luminaire number
   2. Rated wattage of the luminaire and lamp type eg. 65W LED
   3. Luminaires without the specified markings shall be rejected.

The following documents must also be submitted with the tender:

bb) Photometric Test Reports (certified copy) of the LED floodlights offered. The test reports must be from a SANS/ IEC or any national / international accredited testing facility.

cc) 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.

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

ee) 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.

C3.2.2.8 Charge Controller Specifications

a) Rated lifetime: 5 years.
b) The charge controller shall be capable to be installed outdoors and handle the expected environmental conditions in service.
c) Ingress protection rating: enclosure min IP 66 and charge controller min IP 22
d) Operating temperature -20°C to +65°C
e) All charge controllers for each high mast installation and all other high masts, shall be the same in all respects, shall be of the same model and type and must be interchangeable.
f) 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.
g) The charge controller shall act as a daylight switch to switch the luminaires on at sunrise and off at sunset. The charge controller must monitor the voltage produced by the PV panel. When the voltage dips below a predetermined level it assumes that the sun has set and switches the luminaire on. When the voltage climbs above this threshold again, the charge controller assumes that the sun has risen and switches the luminaire off again.
h) 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.
i) 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.
j) The continuous output (load) current rating of the charge controller shall be greater than the maximum load current drawn.
k) 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
- lighting profile customization

l) The charge controller input from the PV panel shall be capable of withstanding at least 25V for a 12V system;

m) 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 61643-1standards. 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.

t'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.

n) Protection against PV input current:
   - 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
   - It is recommended that the charge controller be protected against PV input currents higher than the above threshold;

o) 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.

p) 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.

q) The charge controller must have a integrated temperature sensor that can compensate for thermal environmental changes when charging the batteries.

r) The charge controller must use a 3-step charging process with all three charge levels programmable for LiFePO4 battery technology.

s) The solar controller must have integrated 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 app with the following but not limited to abilities:
- Monitoring distance: min 25meters,
- App must be password protected,
- Show the location,
- Be able to view and adjust the parameters,
- Real time monitoring of the luminaire on site,
- Product health diagnosis,
- Failure detection and alert reporting,
- Historical and real time system performance data,
- Lighting profile customization,
- Possibility to turn it on/off or reset by a simple programming operation,
- Manual or users guide must be included,
- The luminaires shall be provided with a mobile application. The mobile application must be included and free 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. A user manual (hard copy) of the wireless monitoring system must be submitted with the tender. The manual must be complete in all respects in order to fully evaluate the monitoring system and abilities.

See section C3.2.2.11 for specific requirements.

t) The controller must also support remote data collection, real-time control, and monitoring capabilities. The system must allow for remote access via the mobile application and a web based interface. Access to the web-based interface must be included and free and shall not require any licensing, user, or update fees.
See section C3.2.2.11 for specific requirements.

u) The controller must support non-propriety and open standards and protocols for future integration into City of Tshwane software for real-time control and monitoring.
See section C3.2.2.13 for specific requirements.

v) The controller should operate at an appropriate voltage suitable for proper charging of the battery.

w) Required software and cabling to program the controller shall also be provided and shall not expire, or require any licensing, user, or update fees and shall allow unlimited number of users. The service provider will also be required to provide training and support during the contract period to CoT personnel. Procedures and instructions to configure and program the controller must be included in the Operational and Maintenance Manual.

x) Standards and certifications: EMC, 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.

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C3.2.2.9 Inverter Specifications

a) Inverter shall comply with the requirements of this part of SANS 959 and perform in accordance with NRS 097-2-1.
b) The inverter shall be capable to be installed outdoors and handle the expected environmental conditions in service.
c) The rated AC r.m.s. output voltage of an inverter shall be 230 V ± 3% over the load range.
d) The output frequency shall be 50 Hz and shall be regulated within the limits of the utility grid requirements as set by National Energy Regulator of South Africa (NERSA).
e) The inverter wave-form system shall be a pure sine wave output. Low levels of current and voltage harmonics are desirable since higher harmonic levels increase the potential for adverse effects on connected equipment.
f) The Total harmonic distortion (THD) of the inverter shall fall within the limits of at least 7% THD at 40% load and/ or 5% THD at nominal power rating.
g) The peak-to-peak output voltage of the inverter shall not, irrespective of the wave form, exceed 780 V.
h) The nominal DC input voltage shall be as in the system DC voltage for which it is being supplied.
i) The inverter shall have a load-shed facility using a supply voltage sensing circuit which shuts the inverter down at a battery voltage in the range.
j) The inverter shall delay disconnection of loads for 10s after the battery voltage drops below the load-shed value.
k) If the inverter is supplied or controlled by the charge controller load shed unit, then it does not need to have an internal load-shed facility.
l) The inverter shall be supplied direct from the fused side of the battery unless specifically and appropriately designed otherwise. In some cases it is necessary to control the inverter based on a signal from either the regulator or a metering device. In this case it is preferable to use a dedicated switch on the AC side, or to use a low power "control input" to the inverter.
m) Direct switching of the DC input to the inverter is least preferred (as this requires switching high DC currents), and, if done, shall utilize switches able to deal with the inverter surge current.
n) The inverter may only be supplied through the charge controller load-shed circuit if the charge controller load-shed unit has adequate capacity to carry the inverter surge input current, and maintain voltage drops.
o) A manual switching function shall be provided in the input circuit to the inverter for the user to turn the inverter off.

p) The inverter shall comply with the requirements of a safety supply as defined in SANS 10142-1.
q) The inverter shall
   i. Be protected against overcurrent and short-circuiting by automatic resetting means (not a fuse), and
   ii. Withstand overload (surge) in accordance with the requirements in 4.6.5 of SANS 959-3, before it trips. The reset may be automatic.
r) Acoustic noise generated by the inverter shall not exceed 35 dBA at a distance of 1 m from the inverter under all loading conditions.
s) The inverter shall comply with the requirements of SANS 222 for class B information technology equipment and the requirements of SANS 61000-4-3.
t) The inverter shall comply with the requirements and pass the test for electrostatic discharge in SANS 61000-4-2.
u) The efficiency of a power inverter shall be at least 80% rated load capacity.
v) The inverter shall be able to deliver (at any input voltage in the specified operating range):
   i. 200 % of the required nominal power for 1 s,
   ii. 150 % of the required nominal power for 10 s, and
   iii. 120 % of the required nominal power for 60 s.
w) The inverter shall be able to handle loads with a power factor from 0,6 to 1 lagging.
x) The inverter shall comply with the safety requirements in SANS 62109-1.
y) The inverter shall have an ingress protection rating of IP21 or better, in accordance with SANS 60529. The casing, if metal, shall have a corrosion-resistant finish and shall be safe to touch.
z) The temperature of any surface that can be touched shall not exceed 60 °C at an ambient temperature of 45 °C or less.
aa) The dimensions, in millimetres, and the mass, in kilograms, of the inverter shall also be stated on the name plate.
bb) Visual indication of at least the following shall be provided on the power inverter panel:
   i. "ON or power flow mode";
   ii. "Stand-by mode";
   iii. "Low voltage mode";
   iv. “Internal fault mode”;
   v. “Anti-islanding mode”; and
   vi. "Overload mode".
cc) The inverter (if not integrated into the charge controller), shall have the internal control to ensure that:
   i. Output signal is pure sinusoidal,
   ii. It trips the AC supply should the signal output not be sinusoidal,
   iii. The power factor is close to unit (approx. 1) as possible, and
   iv. The battery protection so that the recharge and discharge do not negatively affect the battery.
dd) The inverter must have integrated Wi-Fi or external Wi-Fi module to create a local wireless network to monitor the inverter on site from ground level via a mobile app with the following but not limited to abilities:

- Monitoring distance: min 25meters,
- App must be password protected,
- View and adjust relevant settings and parameters,
- View the status /health of the inverter,
- Product health diagnosis,
- Failure detection and alert reporting,
- Historical and Real time system performance data,
- Possibility to turn it on/off or reset by a simple programming operation.
- Manual or users guide must be included.

- 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. A user manual (hard copy) of the wireless monitoring system must be submitted with the tender. The manual must be complete in all respects in order to fully evaluate the monitoring system and abilities.
  See section C3.2.2.11 for specific requirements.

ee) The inverter must support remote data collection, real-time control, and monitoring capabilities. The system must allow for remote access via the mobile application and a web based interface. Access to the web-based interface must be included and free and shall not require any licensing, user, or update fees.

ff) See section C3.2.2.11 for specific requirements.The inverter must support non-propriety and open standards and protocols for future integration into City of Tshwane software for real-time control and monitoring.
See section C3.2.2.13 for specific requirements.

gg) Procedures and instructions to configure and program the inverter 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.

hh) Required Certificates / test reports shall be from a SANS/ IEC or any national / international accredited testing facility.

C3.2.2.10 Electrical Wiring Specifications

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.

The outer sheath of all exposed wiring must be protected from birds pecking through the insulation for example by means of using cables with nylon or stainless steel shielding layer in the sheath/jacket or by means of a physical barrier such as braided sleeve, flexible conduit or by other means. Detail must be submitted in Annexure A1 Schedule B.

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 DC 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 to SANS 10142-1.

All components that requires grounding shall be earthed in accordance with the grounding requirements of off-grid solar PV systems.

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.

The protection of the PV system must be in accordance with IEC 60269-6 (gPV) and the overcurrent protective devices should meet requirements of UL 2579 for fuses and UL 489B for breakers.

AC switchgear shall not be utilised for protection of DC circuits. DC current has the characteristic of drawing an arc when a contact opens. This mean that when a DC switch opens for example, if the gap between the terminals opens slowly, a high temperature arc will form between the two terminals which can melt the terminals or any nearby plastic and perhaps cause a fire.

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 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.

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.

C3.2.2.11 Local and Remote Monitoring and Control Requirements

The following is required:

a) Local access from the high mast site to monitor and control the solar controllers and inverter. Personnel must be able to connect to the equipment via the mobile app while standing at the base of the mast.
b) Remote access to monitor and control the solar controllers and inverter. Personnel must be able to connect remotely over the internet to the equipment via the mobile app and web-based interface.

1. Required Hardware Components:

GSM modem / router: To Be Determined (Manufacturer and Model)

2. Networking Components:

Wi-Fi Access Point will be provided on the high mast(Supply and installation of the wifi equipment and access point will be done by a third party and not required in this contract).

3. Required Software Components:

Web-Based Interface:

Each device (controller and inverter) must have a web-based interface for monitoring and control.

This web-based interface should be accessible through a web browser, allowing users to interact with the devices remotely.

Mobile Application:

A mobile application must be provided for both iOS and Android platforms.

Separate mobile apps are required for each device (controllers and inverters).

These mobile apps will provide a user-friendly interface for local and remote monitoring and controlling the devices from mobile devices.

Free and Unrestricted Access:

Both the web-based interface and the mobile applications must be included with the devices 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.

4. Connectivity:
Each device (Controllers, and Inverter) must have internal Wi-fi connection or be fitted with a Wi-fi module.

Local access from the high mast via mobile app:
Minimum monitoring distance: 25 meters.
The Wi-fi modules must create a local Wi-Fi network for close-range data access, monitoring and control of the controllers and inverter via a mobile device and app.

Remote Access via web based interface and mobile app:
Each device (Controllers, and Inverter) must connect to the GSM modem/router wirelessly by means of the Wi-Fi modules.
Primary Connection: Remote access via the internet through the GSM modem/router connection to the Wi-Fi access point that will be provided on the high mast light.
Secondary Connection/Fallback: In case of Wi-Fi network issues, the GSM modem/router must seamlessly switch to the GSM network for continuous remote access, ensuring reliability.

5. Security Measures:
Encryption: Utilize encryption for secure data transmission.
Authentication: Implement user authentication with username and password.
Firewall: Configure firewall settings to restrict unauthorized access.
Secure Mobile Application: Implement secure authentication and data encryption for mobile app communication.

6. Software Requirements for Mobile Application and Web-Based Interface:
The mobile app must be compatible with iOS and Android platforms.

The mobile app and web-base interface must support the following but not limited to features for retrieving operational data, monitoring, and control:

- App must be password protected,
- View, control and adjust relevant settings and parameters,
- View real time status /health,
- Product health diagnosis,
- Failure detection with alerts,
- Notifications: Send push notifications for triggers and system alerts.
- Retrieve historical and system performance data,
- Possibility to turn it on/off or reset by a simple programming operation.
- Location Information: Display location information, such as GPS coordinates or address, to provide context and aid in remote management and troubleshooting.

Web-Based Interface: Provide a web-based interface for each device (Solar Controller, and Inverter) for remote monitoring and control, accessible via a standard web browser. This interface should offer similar functionalities as the mobile application, allowing users to access and manage the systems from desktop or laptop computers.

The mobile app and web-based interface must adhere to non-proprietary standards, and must be freely available for use and based on open standards to promote interoperability, compatibility, and widespread adoption across various systems and devices.

7. Required documentation:
User manuals for both the web-based interface and mobile application.

8. Compliance:
Ensure compliance with relevant industry standards and regulations for electrical and electronic systems, data privacy, and cybersecurity.

C3.2.2.12 Additional Security Specifications

a) Identification and special markings:

The following minimum identification information shall be permanently fixed/engraved/stencilled onto the surface in a suitable area of the; (!) Energy storage enclosure, (2) battery, (3) PV panel, (4) LED light fitting, (5) controller, and (6) inverter:

1. EED 08 – 2023/24.
2. Property of the City of Tshwane.
3. Serial number
4. Optional: any additional markings / codes that can be traced back.

Furthermore, the battery enclosure (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

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,

b) Passive RFID Tags:

These tags do not have an internal power source. Instead, they rely on the energy transmitted by the RFID reader to power the tag momentarily. When in the presence of an RFID reader's electromagnetic field, passive RFID tags reflect the energy back to the reader and use that reflected energy to transmit their information.

Minimum requirements:

- RFID (Frequency Identification Radio) tag must be incorporated within the components of the solar system, encompassing the battery and PV panel, The successful integration of RFID tags necessitates careful consideration of the following requirements:

- Size and Form Factor:

The dimensions of the RFID tag must align with the available space within each component, ensuring it does not compromise structural integrity or interfere with internal operations.

- Material Compatibility:
  The materials used in the RFID tags must harmonious with those present in each component. Incompatibility may lead to interference or performance degradation.

- RFID Frequency:
  RFID frequency must not disrupt the operation of the components or other electronic systems. Different RFID frequencies (e.g., LF, HF, UHF) are available, and the choice should suit the specific application.

- Range for Readability:
  The RFID tag's chosen frequency and power settings must allow for an adequate range for reader accessibility. The RFID tag should be readable within close proximity.

- Heat and Safety:
  Given the potential for heat generation, particularly in high-discharge scenarios, the RFID tags must be designed to endure the temperature and safety requirements of each component.

- Regulatory Compliance:
  compatibility and compliance with safety and regulatory standards.

- Impact on Performance:
  RFID tags shall not influence the overall performance, lifespan, and safety of each solar component. The RFID tags must not impede charging, discharging, thermal management or operation.

- Expected Lifespan:
  RFID tags must be designed with an expected lifespan that aligns with the operational requirements of the solar components.

- Maintenance-Free Operation:
  The RFID tags should operate in a maintenance-free manner, requiring minimal intervention over their lifespan.

- These requirements aim to provide a basic set of functionalities for a passive RFID tag. Additional features or specifications may be considered.

- Furthermore, it is essential to note that the integration of RFID tags should not influence or void any existing guarantees or warranties associated with the solar components. The RFID technology must be seamlessly incorporated without impacting the performance or terms of the original guarantees provided.

- Thorough testing and validation should be conducted to affirm that the RFID tags do not adversely affect the performance or safety of the solar components while providing essential location-specific information.

Information on RFID Tag:

The RFID tag must contain the following minimum static and pre-programmed information crucial for identification, including:

- Unique Identifier (UID):
  Every passive RFID tag must be assigned a unique identification number during manufacturing, facilitating individual tag distinction.

- Manufacturer Information:
  Details such as the manufacturer's name, logo, or a coded representation may be programmed onto the RFID tag, aiding in origin identification.

- Product or Item Information:
  The RFID tag must store data related to the specific item it is associated with. This must include product names, model numbers, serial numbers and/or other pertinent identifiers.

- Batch or Lot Number:
  For manufacturing or logistics purposes, RFID tags may carry batch or lot numbers, allowing for traceability and group identification.

- Expiration Date:
  The RFID tag must include information about manufacturing dates.

- Security Information:
  the RFID tags must incorporate security-related details, such as authentication keys, ensuring secure interactions with RFID readers.

- User Data:
  - Pole Number: the RFID tag must include the pole number, providing a unique identifier for the corresponding structure.
  - Location (Township Area) and GPS Coordinates: The RFID tag must store information about the specific location of the pole, including the township area and GPS coordinates. This aids in accurate geospatial positioning and facilitates identification.
  - Specific User Information - PROPERTY OF THE CITY OF TSHWANE: To establish ownership and management, the RFID tag must include specific user information indicating that the equipment is the "PROPERTY OF THE CITY OF TSHWANE."
- These requirements aim to provide a minim set of functionalities, additional features or specifications may be considered.

Requirements for Standalone Passive RFID Tag Reader:

Minimum requirements:

- Frequency Compatibility:
  The RFID tag reader must support the frequencies used by the passive RFID tags (e.g., LF, HF, UHF).

- Read Range:
  Provide a sufficient read range to capture information from passive RFID tags within proximity.

- Size and Portability:
  Compact and portable design for ease of handling and flexibility in deployment.

- Power Source:
  Efficient power management, through batteries to ensure sustained operation.

- User Interface:
  User-friendly interface for easy configuration, monitoring, and data retrieval.

- Data Output:
  Capable of providing readable and interpretable data output for user convenience.

- Durability:
  Robust construction to withstand various environmental conditions and handling.

- Compatibility with RFID Standards:
  Compliance with relevant RFID standards to ensure interoperability with various passive RFID tags.

- Security Measures:
  Basic security features to protect data integrity and prevent unauthorized access.

- Read Speed:
  Efficient and quick reading capabilities to streamline data capture processes.

- Integration Options:
  Provide options for integration with external systems if needed.

- Operating Environment:
  Compatibility with a range of operating environments, considering factors like temperature and humidity.

- Cost-Effectiveness:
  Cost-efficient design without compromising essential features.

- Maintenance Requirements:
  Minimal maintenance requirements for optimal usability.

- Warranty and Support:
  Manufacturer-provided warranty and support for reliability and troubleshooting.

- Compatibility with Various Tag Types:
  Ability to read and interpret information from different types of passive RFID tags.

- Firmware Upgradeability:
  Capability for firmware upgrades to ensure compatibility with evolving RFID standards.

- Interference Mitigation:
  Built-in mechanisms to mitigate interference and ensure reliable tag reading.

- These requirements aim to provide a minimum basic set of functionalities for a standalone passive RFID tag reader., Additional features or specifications may be considered.

- Minimum of 10 RFID tag readers will be required and the cost for the supply must be included and will be once off.

- All associated costs for the supply and installation of the RFID tags must be included in the costs of the high mast.

c) Photovoltaic High Mast Light Alarm System Specification

A security system is required to monitor and prevent unauthorized access to the battery enclosures.

Provision must be made to incorporate the following on the high mast light:

1. Alarm system to monitor the battery enclosures.
2. Upon detection of tampering or unauthorized access of the battery enclosure/s, the system shall trigger an alarm signal.

3. The system must transmit the alarm signal to a mobile app and web-based interface.
4. Local and remote monitoring and control of the alarm system.
5. The alarm system must support non-propriety 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.

System Overview

The alarm system shall monitor a minimum of 4 out of the 8 battery enclosures in the photovoltaic high mast light installation.

The system shall detect any unauthorized tampering or opening of the monitored battery enclosures.

Upon detection of tampering or unauthorized access, the system shall trigger an alarm signal.

The system must send push notifications of the alarm trigger to a mobile device application and web-base interface.

Monitoring Capability

The system shall incorporate dry-type switches capable of detecting the tampering of the battery enclosure and opening of the battery enclosure doors.

The switches shall be installed within the monitored battery enclosures.

A “dry-type switch” in the context of alarm systems is typically referring to a tamper switch or a magnetic reed switch. This type of switch is used to monitor the opening or closing of an enclosure door or other equipment enclosure.The term “dry-type” refers to the fact that the switch is a simple mechanical switch without any built-in power source or electronic components. It is designed to be connected to an external circuit, such as the alarm system’s monitoring circuit, to detect the change in the switch’s state (open or closed).

Operation of a dry-type switch in this application:

Installation: The switch must be installed on the enclosure door frame. When the door is closed, the switch is in a closed position (contacts touching).

Monitoring: The alarm system’s monitoring circuit must be connected to the dry-type switch, typically through a pair of wires. The circuit monitors the state of the switch, which represents the open or closed status of the enclosure door.
Alarm Condition: When the enclosure door is opened, causing the switch contacts to separate (open). This change in the switch’s state must be detected by the alarm system’s monitoring circuit, triggering a tamper alarm or other appropriate action.

The choice of dry-type switch must be suitable for the enclosure design, installation requirements, sensitivity, enclosure material, mounting configuration and environmental conditions and must be suitable for outdoor applications.

It's essential to follow the alarm system manufacturer's recommendations and applicable security standards when selecting and installing dry-type switches for the enclosure monitoring.

Alarm Transmission and Control
The following is required:

a) Local access from the high mast site to monitor and control the alarm system. Personnel must be able to connect to the equipment via the mobile app while standing at the base of the mast.
b) Remote access to monitor and control the alarm system. Personnel must be able to connect remotely over the internet to the equipment via the mobile app and web-based interface.

1. Required Hardware Components:
The same GSM modem / router utilised for the monitoring and control of the controllers and inverter: To Be Determined (Manufacturer and Model)

2. Networking Components:

Wi-fi Access Point will be provided on the high mast(Supply and installation of the Wi-fi equipment and access point will be done by a third party and not required in this contract).

3. Required Software Components:

Web-Based Interface:

The alarm system must have a web-based interface for monitoring and control.

This web-based interface should be accessible through a web browser, allowing users to interact with the device remotely.

Mobile Application:

A mobile application must be provided for both iOS and Android platforms.

This mobile app will provide a user-friendly interface for local and remote monitoring and controlling the device from mobile devices.

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.

4. Connectivity:

The alarm unit must be equipped with a internal Wi-fi connection or fitted with a external Wi-fi module.

Local access from the high mast via mobile app:
Minimum monitoring distance: 25 meters.
The alarm unit's Wi-fi must create a local Wi-Fi network for close-range data access, monitoring and control via a mobile device and app.

Remote Access via web based interface and mobile app:
The alarm unit must connect wirelessly to the same GSM modem/router utilised by the controller and inverter for remote access by means of the Wi-Fi connection.
Primary Connection: Remote access via the internet through the GSM modem/router connection to the Wi-Fi access point that will be provided on the high mast light.
Secondary Connection/Fallback: In case of Wi-Fi network issues, the GSM modem/router must seamlessly switch to the GSM network for continuous remote access, ensuring reliability.

5. Security Measures:
Encryption: Utilize encryption for secure data transmission.
Authentication: Implement user authentication with username and password.
Firewall: Configure firewall settings to restrict unauthorized access.
Secure Mobile Application: Implement secure authentication and data encryption for mobile app communication.

6. Software Requirements for Mobile Application and Web-Based Interface:
The mobile app must be compatible with iOS and Android platforms.
The mobile app and web-base interface must support the following but not limited to features for retrieving operational data, monitoring, and control:

- Must be password protected,
- View, control and adjust relevant settings or parameters,
- View real time status /health,
- Product health diagnosis,
- Failure detection with alerts,
- Notifications: Send push notifications for triggers and system alerts.
- 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 or address, to provide context and aid in remote management and troubleshooting.
- Perform administrative tasks.

Web-Based Interface: Provide a web-based interface for remote monitoring and control, accessible via a standard web browser. This interface should offer similar functionalities as the mobile application, allowing users to access and manage the systems from desktop or laptop computers.

The mobile app and web-based interface must adhere to non-proprietary standards, and must be freely available for use and based on open standards to promote interoperability, compatibility, and widespread adoption across various systems and devices.

Power Supply

The security system/alarm unit must be installed inside the battery enclosure, utilised by the PV system for the Wi-Fi.

Power for the security system should be sourced from the existing PV system dedicated to the Wi-Fi supply.Power can be sourced from the AC or DC side of the PV system.

The Wifi PV system must accommodate the power requirements of the security system.

Tamper Protection

The alarm system components, including sensors, wiring, and enclosures, shall be tamper-resistant and protected against 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 high mast 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 components shall be designed to withstand the environmental conditions at the installation site, such as temperature, humidity, and 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.

Power Interruption Contingency Requirement:

In the event of a power interruption, the security system/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 produces a siren when an alarm condition is triggered. The audible siren shall automatically cease after 5 minutes of continuous operation after the alarm condition is triggered. This audible siren should be designed and be loud enough to alert personnel in the vicinity of the triggered alarm.

Compliance
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.

Required documentation:
User manuals for the alarm system and both the web-based interface and mobile application must be included in the Operational and Maintenance manual.

These requirements aim to provide basic guidelines and a minim set of functionalities, additional features or specifications may be considered.

C3.2.2.13 Integration With Future Infrastructure Requirements:

Integration Interfaces: The controllers, inverters, alarm systems and other communications components shall provide well-documented interfaces, such as APIs (Application Programming Interfaces), SDKs (Software Development Kits), or integration tools, to enable seamless integration with City of Tshwane's future infrastructure and software platforms.

Open Standards and Protocols: The provided integration interfaces shall adhere to industry-standard protocols and data formats to ensure interoperability and prevent vendor lock-in.

Comprehensive Documentation: Detailed documentation shall be provided, including communication protocols, data formats, integration guidelines, and API references, to facilitate seamless integration and troubleshooting with future systems.

Scalability and Extensibility: The integration interfaces shall be designed to accommodate future growth, scalability, and extensibility, allowing for the addition of new features, functionalities, or integration with emerging technologies.

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.

Future Compatibility: The integration interfaces shall be designed with a forward-looking approach, considering potential future advancements in technology, infrastructure, and software platforms to ensure long-term compatibility and minimize the need for costly replacements or upgrades.

Security and Data Privacy: Appropriate security measures and data privacy considerations shall be implemented in the integration interfaces to protect

sensitive information and ensure secure communication with future infrastructure and systems.

C3.2.3 Drawings

Provisional A4 Drawings of the mast and foundation must be included in the tender, but full-scale ‘as built’ drawings must be submitted with commissioning of the mast.

C3.2.4 Design procedures

The provided information only serves as a general overview of activities and procedures.

C3.2.4.1 Interfaces with Existing Infrastructure

Survey site and identify any existing structures, underground utilities, or other plants that could interfere with new mast installation. Determine required safe distances.
Coordinate with owners/operators of existing infrastructure if conflicts identified.

C3.2.4.2 Temporary Works

Evaluate site access, equipment needs, delivery routes to determine if any temporary access roads, crane pads, staging areas etc. required.

C3.2.4.3 Design Integration

Engage with design professionals to create detailed plans for the high mast light system with solar-powered luminaires.

The Civil engineer completes mast wind and foundation design based on mast height, site soil conditions, luminaires weight and specifications

Electrical engineer sizes solar panels, batteries to meet lighting runtime specifications. Specifies wiring.

Coordinate design between disciplines to ensure integrated solution.

C3.2.4.4 Construction Procedures

The Contractor is responsible for ensuring compliance to Construction Regulations.

General construction procedures:

1. Site Analysis and Planning:

Evaluate the site where the high mast light will be installed.
Consider factors such as wind speed, soil conditions, surrounding structures, and electrical requirements.
Plan the layout and positioning of the high mast lights for optimal coverage.

2. Design and Engineering:

Develop detailed design with engineering drawings and specifications for the high mast light.
Ensure compliance with local building codes, safety standards, and regulations.
Consider factors like wind load, foundation design, and electrical specifications.

3. Foundation Construction:

General foundation procedures:

- **Site Preparation:**

  Clear the area where the high mast will be installed, removing any debris or obstacles.
  Excavate the foundation pit to the specified dimensions and depth according to the engineering design.

- **Soil Analysis:**

  Conduct a soil test to determine the soil type and bearing capacity.
  The foundation design should consider the specific soil conditions to ensure proper support.

- **Earth Rod:**

- Perform earth rod installation

  General procedure:

  - **Site Selection:**

    Choose a location for the earth rod installation.
    Ensure the soil conditions are suitable for grounding

- **Earth Rod Type and Material Selection:**

  Select an appropriate type of earth rod based on the specific requirements and the soil conductivity.

- **Excavation:**

  Dig a hole or trench to accommodate the earth rod and its foundation.
  The depth of the excavation will depend on the type of soil and the rod's length,

- **Foundation Preparation:**

  Ensure the bottom of the excavation is level and free of any debris.

- **Earth Rod Installation:**

  Insert the earth rod into the center of the excavation, ensuring it is vertical.

- **Connection to Grounding System:**

  Connect the upper end of the earth rod to the grounding system using appropriate connectors.

  Ensure a low-resistance connection between the rod and the grounding system.

- **Backfilling:**

  Backfill the excavation around the earth rod with conductive earthing compound
  For soil backfill, compact the soil in layers to provide stability and good conductivity

- **Surface Marking:**

  Mark the location of the earth rod above ground for easy identification and inspection.

- **Testing:**

  Perform a resistance test to ensure the earth rod has a low resistance to the ground.

Verify that the overall grounding system meets the required specifications.

- **Documentation:**

  Keep detailed records of the earth rod installation, including specifications, resistance test results, and any deviations from the original plan.

- **Compliance Check:**

  Ensure that the installation complies with local electrical codes and regulations.

- **Reinforcement Placement:**

  Install steel reinforcement bars (rebar) in the foundation pit according to the engineered design.The rebar provides additional strength and helps distribute the load evenly.

- **Formwork Installation:**

  Set up formwork to create the mold for the concrete foundation.
  Ensure that the formwork is properly aligned and securely supported to maintain the desired shape.

- **Concrete Pouring:**

  Pour high-quality concrete into the formwork to create the foundation.
  The concrete mix should meet the specifications outlined in the engineering design.
  Before mixing and pouring of the concrete required tests to be carried out, including but not limited to earth resistance, impedance and DPC.

- **Anchor Bolt Placement:**

  Embed anchor bolts or other foundation attachments into the wet concrete.
  These bolts will later be used to secure the high mast to the foundation.

- **Curing:**

Allow the concrete to cure for the recommended period to achieve the desired strength.Implement curing methods such as keeping the concrete moist or using curing compounds.

- **Backfilling:**

  Once the concrete has cured, backfill the excavated soil around the foundation.
  Compact the soil in layers to provide additional support and stability.

- **Inspection:**

  Conduct a thorough inspection of the foundation to ensure it meets design specifications and local building codes.
  Address any issues identified during the inspection.

- **Testing:**

  Perform load testing if required by the engineering design.
  Confirm that the foundation can support the weight and withstand environmental forces.

- **Final Grading:**

  Complete the final grading around the foundation to ensure proper drainage away from the structure.Consider installing drainage solutions to prevent water accumulation around the foundation.

- **Documentation:**

  Maintain detailed records of the foundation construction process, including specifications, inspection reports, and any deviations from the original plan.

4. Mast Erection:

Assemble the mast components on the ground.

Use cranes or other lifting equipment to raise the mast into its upright position.

Ensure proper alignment and connection of all mast sections.

5. Electrical Wiring:

Install the electrical components, including the light fixtures and any additional accessories.

Connect the wiring according to the electrical specifications

Ensure that all electrical connections are secure and well-insulated.

6. Grounding and Lightning Protection:

Implement grounding measures to protect against electrical faults and lightning.

Install lightning protection devices, if necessary, to safeguard the high mast light.

7. Testing and Commissioning:

Conduct a thorough inspection of the entire installation.

Test the electrical system, including the lighting fixtures, to ensure proper functionality.

Address any issues identified during testing.

8. Safety Measures:

Implement safety measures during the entire construction process.

Ensure that workers are trained and equipped with the necessary personal protective equipment (PPE).

Adhere to safety regulations to prevent accidents.

9. Documentation and Compliance:

Maintain detailed records of the construction process, including drawings, specifications, and inspection reports.

C3.2.4.5 Design Changes

Formally document all design changes via engineering change orders showing changes to drawings, specs, documents. Record rationale and approvals.

C3.2.4.6 Document Control

Set up document register to log all design drawings, specs, reports. Track versions and revisions.

File documents in centralized project file system. Back up digital files

Ensure that all team members are trained on the record-keeping procedures to maintain a comprehensive and organized documentation trail.

C3.3 PROCUREMENT

C3.3.1 Preferential procurement procedures

Preferential procurement procedures as described in section T1.2 TENDER DATA shall be used.

C3.3.2 Scope of mandatory subcontract work

a) The successful contractor shall subcontract excavation work to the EME's and QSE's where possible.
   i. The main contractor shall issue the subcontractor with a written instruction in the construction site book for each work required.
   ii. The main and subcontractor shall both sign the construction site book for each entry.
   iii. The sub subcontractor shall make an entry into the site book on completion of each sub-contracted work.
   iv. The subcontractor shall provide his own personnel protective equipment PPE, tools and equipment for the duration of the contract period.
   v. The main contractor must make provision for supervision for of subcontractors in the tendered price.

   Definitions:
   - "EME" means an exempted micro enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act.
   - "QSE" means a qualifying small business enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act.

C3.3.3 Payment reference

Item	Description	Unit
1.1.	**Design, supply and construction of the foundations for 25m mast** The unit of measure shall be for one 25 m mast This rate shall include all the costs for the design, supply and construction of the complete mast foundation, including all plant, material and labour and all the required tests and submission of report and certificates. The foundation, earthing and lightning protection is priced elsewhere.	**Per mast**
	Extra over item 1.1	
1.1.a.	**Supply of additional concrete for casting of foundations (where applicable)** The unit of measure shall be Per Cubic meter. This rate shall include all the costs for casting of additional concrete including all plant, materials and labour.	**Per cubic meter**

1.2.	**Design, supply, delivery and offload of the complete 25m high mast with all accessories** The unit of measure shall be for one 25 m mast. This rate shall include all the costs for the design,,supply, delivery and offloading of the complete 25m mast steel structure with solar components that consist of the PV panels, control gear, batteries and enclosures, inverter, LED lights , all wiring(including the 230V AC cable) and accessories for one complete 25m mast. The rate shall also include all required plant and labour. The supply and installation of the complete earth system and lighting protection are priced elsewhere. The rate shall exclude the costs for the supply and installation of the alarm system and is priced elsewhere. The costs must include the cost for the supply of the communications equipment such as the GSM modem/router with sim card slot. The cost shall exclude the supply of sim cards and data packages and the supply of these items are not required in this contract.	**Per mast**

1.3	**25m Mast installation and commissioning** The unit of measure shall be for one 25 m mast The rate shall include all the cost to install, assemble, test and commission a 25m mast complete with all components in working order. All associated costs are to be included in the rate to allow the full installation and assembly, testing and commissioning of the mast with all equipment in working order including testing and commissioning of the operation of the mast mechanical equipment, the PV systems, LED light fittings, etc. The rate shall also include all plant and labour required including but not limited to, crane truck and operator, safety requirements for managing traffic and pedestrian deviation on site.	**Per mast**
1.4	**25 m Mast Earthing supply and installation** The unit of measure shall be for one 25m mast, The rate shall include all the costs for the supply and installation of the complete earth system and lighting protection including all plant, material (including 25mm² anti-theft cable) and labour and required tests, report and certification.	**Per mast**
	Extra over item 1.4:	
1.4.a	**Supply and installation of additional earthing rod and earth rod resistance measurement**. The unit of measure shall be per number. This rate shall include all the costs for the supply and installation of additional earth spike, including material, labour and submission of the report	**Each**

1.4.b.	**Supply additional conductive earthing compound** The unit of measure shall be Per bag This rate shall include the cost to supply additional 50kg bag/s of conductive earthing compound	**Per bag**
1.5.1.	**Excavate in Pickable soil for mast foundations** The unit of measure shall be per cubic meter This rate shall include all the costs for the excavations of the foundation pit, backfill, compaction and disposal of surplus material. For all excavations the unit rate shall include traffic accommodation tools and safety tools which are not limited to safety fence with reflective layers, safety signs, cones and flags.	**Per cubic meter**
1.5.2.	**Excavate in hard rock for mast foundations – Hard rock** The unit of measure shall be per cubic meter This rate shall include all the costs for the excavations of the foundation pit, backfill, compaction and disposal of surplus material. For all excavations the unit rate shall include traffic accommodation tools and safety tools which are not limited to safety fence with reflective layers, safety signs, cones and flags.	**Per cubic meter**
1.5.3.	**Excavate in soft rock for mast foundations - Soft rock** The unit of measure shall be per cubic meter This rate shall include all the costs for the excavations of the foundation pit, backfill, compaction and disposal of surplus material. For all excavations the unit rate shall include traffic accommodation tools and safety tools which are not limited to safety fence with reflective layers, safety signs, cones and flags.	**Per cubic meter**

1.5.4.	**Excavate in Pickable soil for mast foundations(backfill with G5 material)** The unit of measure shall be per cubic meter This rate shall include all the costs for the excavations of the foundation pit, backfill with G5 material, compaction and disposal of surplus material.. For all excavations the unit rate shall include traffic accommodation tools and safety tools which are not limited to safety fence with reflective layers, safety signs, cones and flags.	**Per cubic meter**
1.6.	**High mast labels supply and installation** The unit of measure shall be for one 25m mast This rate shall include all the costs for the supply and installation of mast labels(A3 Size reflective Sticker) including all material, plant and labour..	**Per mast**
1.7.	**Supervision off subcontractor.** The unit of measure shall be for one 25m mast This rate shall include compensation for the provision of a competent person to supervise the foundation excavations that must be performed by the subcontractor.	**Per mast**
1.8.	**Training of CoT personnel** The unit of measurement shall be per person. The cost component shall include full compensation for the provision to provide training to a minimum of 20 CoT personnel relating to the appropriate use, operation and maintenance of the PV systems and as set out in the specifications.	**Per Person**

1.9.	**Maintenance and operational manuals** The unit of measurement shall be for 7 manuals provided. The cost component shall include all the costs to supply7 maintenance and operational manuals.	**Once off**
1.10	**Security System / Alarm** The unit of measure shall be for one 25m mast The cost component shall include all the costs for the supply and installation in full working order, of the alarm system including labour.	**Per Mast**
1.11.	**Provision of Health and Safety file** The unit of measurement shall be number of health and safety files provided. The cost component shall include full compensation for the provision and maintenance of a health and safety file on site containing all the documentation required in terms of the act and applicable regulations. The safety plan must be specific to the project and risks identified for the specific site and site conditions and location for which it is going to be applied.	**Once off**
1.12.	**Provision of Safety Officer** The unit of measurement shall be number of days worked per 30 days calendar month. Where the safety officer has worked for less than 30-day calendar month, a pro rata rate shall be calculated and used. (Normal hour rate shall apply). The cost component shall include full compensation for the provision of one or more competent and experienced safety officer as may be necessary for the duration of the contract.	**Per month**

1.13.	**Provision of personal protective clothing and equipment** The unit of measurement shall be per set of PPE for each person. The cost component shall include full compensation for the provision, maintenance, repair and/or replacement of damaged or unsuitable protective clothing and equipment for use by the contractor's employees. Provision of PPE must be in accordance to HIRA or PPE study. The set of PPE shall include the following items but not limited to: Safety hard hat, protective clothing, safety boots, safety gloves.	**Per set**
1.14.	**OHS Representative Training** The unit of measurement shall be per person. The cost component shall include full compensation for the provision to provide OHS representative training.	**Per person**
1.15.	**Appointments of a Community Liaison Officer** The unit of measurement shall be per month. The cost component shall include full compensation for the provision of a City of Tshwane T5 salary scale.	**Per month**

C3.3.4 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

C3.4 CONSTRUCTION

C3.4.1 General

This contract does not require for contractors site establishment.

The contractor shall move all necessary material, personnel and plant to the site prior to commencing work, and from the site after completion of the work or activity, leaving the site clean, tidy and free from obstructions each day. The works and activities must be planned accordingly.

Site meetings shall be held at Cot council offices.

C3.4.2 Fabrication

The requirements of SANS 10225 apply together with the following:

The mast shall be manufactured by an ISO 9001:2015 and ISO 14001:2015 accredited company. Proof must be supplied that the manufacturer is ISO 9001:2015 and ISO 14001:2015 accredited.

The mast, all steel parts, and all parts not specified, shall be hot dipped galvanized in compliance with the requirements of SANS 121(ISO 1461) 2000-1 and galvanize certificates shall be provided. All parts shall be corrosion resistant.
No welding, drilling, punching, bending or removal of burrs shall be carried out after the galvanising process has been completed.

All welding shall be carried out by SANS coded welders only. Proof that all welders have been tested by the SANS must be submitted on request. Inspection and acceptance certificates shall be furnished on request. All welding and welding procedures to SANS 10044 Parts 1-4.

Manufacturing to SANS 10214-1987-1.

The mast shall have a manufacturers name plate with the following information but not limited to;

a) Manufacturer’s name;
b) Year and month of manufacture and commissioning
c) Serial number;

C3.4.3 Foundation

The requirements of SAN10225 apply together with the following:
The contractor shall be responsible for the supply, delivery to site and construction of the foundation in accordance with this design.

The soil bearing pressure shall be determined for each location and this data shall be used in the design of the mast foundation.

For tender purposes, a mast foundation design for a soil bearing pressure of 100 kPa is required.

Detail of the soil and foundation test facility shall be stated in Schedule B.

The mast foundation report shall be included in the handing over documents.

Before any concrete mixing or pouring of the foundations will take place, the contractor shall first consult with the CoT and Engineer for any required tests to be carried out, including but not limited to earth resistance, impedance and DPC.

C3.4.4 Holding-down bolts

The requirements of SANS 10225 apply together with the following:

Each mast shall be supplied with adequately designed foundation bolts together with templates. The bolts shall be hot dip galvanised over their entire length in compliance with SANS 121 (ISO 1461) 2000-1.

C3.4.5 Erection

The requirements of SANS 10225 apply together with the following:

The transportation to site, off-loading and erection of lighting masts forms part of this contract.

a) The Contractor is to make his own arrangements regarding load, off-load, transport and the selection of a suitable route and obtaining the approval of the relevant authorities to transport an abnormal load along the selected route.
b) Lighting masts and/or sections of masts shall be transported in such a manner that the possibility of damage to mast finishes is minimized.
c) Lighting masts shall be erected within 5 working days after its delivery to site, in order to minimize the obstruction of construction or other traffic and consequent possible damage to the mast. Masts awaiting erection

shall be stored in the immediate vicinity of their foundations, in such location as will minimize traffic obstruction.

d) Before commencing the erection of the mast, the Contractor shall consult with CoT regarding the precautions necessary to avoid interference with and danger from accidental contact with live electrical overhead lines, telephone lines or traffic, where applicable.
e) The contractor shall be responsible for the security of his personnel and constructional plant on and around the site of the works and no claims in this regard shall be considered by the Cot. The contractor should obtain historical crime data from the police station nearest to the construction site as this would assist him in planning for security.
f) The excavated material shall be placed in such a way that it does not obstruct or damage adjacent fences, trees, gate openings and access to properties and shall be heaped up in such a way that traffic is not obstructed. Should this not be possible, the material shall be removed from the work area to stockpile, with the Engineer's approval and brought back later to backfill the pit.
g) Surplus materials excavated from the foundation pit shall be removed from the sides of the pit to other areas on the site, where the material can be re-used, or to off-site spoil areas on the instruction of the Engineer/CoT Agent if the material is unsuitable.
h) The contractor shall maintain the excavation pit in a good condition, free of water, mud, loose ground, rocks, stones, gravel and other strange material until the excavation pit is backfilled and compacted.
i) The Principal Contractor shall be solely and entirely responsible for maintaining excavations in a safe condition and this responsibility shall be in no way diminished by any instruction by the Engineer to take additional or improved protection or precautionary measures.
j) All open excavations will be distinctly marked to prevent both employees and the public from accidentally entering or falling into the excavation. Barricades must be erected on the perimeter of all areas where work is in progress and during curing time.
k) After erection of the masts, the Contractor will be required to repair any damage to the galvanizing on the masts in accordance with the provisions of 5.10 of SANS 1200-HC:1988.
l) The surrounding soil shall be leveled at the location of the foundation over an area extending at least 2,5m, or as specified by the engineer, from the mast base, in all directions. Soil shall be shaped to permit drainage of storm water past the mast base and to prevent drainage of storm water into the foundation pit.
m) All steel reinforcing rods shall be thoroughly cleaned of dirt, grease, bituminous material scale and loose rust, before placing. Effective precautions shall be taken to prevent displacement of rods during the pouring process.
n) Cement shall, until the time of use, be effectively protected from contact with moisture. Any cement, containing hardened lumps, and concrete executed with such cement, will be rejected.

o) All concrete work, above ground level, shall be executed with oiled steel shuttering. Concrete shall be thoroughly vibrated during the casting process to render a smooth flat finish, free from pockets or partially exposed aggregate on completion. All exposed corners of cast concrete shall be chamfered, and with a steel flat finish.
p) Once the foundation has been cast and cured, the trench pit for the mast can be back-filled with nonchemical active soil and compacted.
q) The site shall be made good and be left in a neat and tidy condition after completion of the works.
r) All items of plant used on the Works shall be approved, modern, efficient plant, well suited to the purpose for which the Principal Contractor uses them and shall be properly maintained. Items of plant which leak oil or which, in the opinion of the Engineer, generate excessive noise, smoke, or other nuisance shall be removed from the Works. The Engineer's decision in this respect shall be final and binding upon the Principal Contractor.
s) All vehicles used on the Works are to be in sound mechanical condition and shall conform to and be operated in accordance with the Gauteng Provincial Ordinance and the Gauteng Provincial Road Traffic regulations. All vehicles must be fully insured against accident or loss, including third party risk and the Principal Contractor shall produce evidence of this if required by the Engineer.

Lighting mast erection shall be carried out under the supervision of a competent supervisor in accordance with the requirements of the OHSA: Construction Regulations.

a) Particulars of the qualification and competency of supervisor shall be stated in Annexure A Schedule B.

C3.4.6 Labeling Of Masts

The mast shall be supplied with an identification plate which shall comply with the following:

a) Mast identification plate ID: plate size: A3 size anodized aluminium with reflective background, refer SANS 1186;
b) CoT logo size: 80mm x 80mm; and
c) Mast Number / ID plate letters height: 120mm.

The mast ID shall be fixed to the mast shaft at a height of 2,5m above the flange facing the road, by means of four bolts. The CoT site agent shall provide the numbers.

C3.4.7 Earthing And Lightning Protection

The requirements of SANS 10225 apply together with the following:

The earthing to be carried out strictly as described in the SANS specifications and to the satisfaction of the Engineer.

2 x 1.2m lightning spikes are to be installed on the solar panel frame and be connected to the ground through an 25mm²(min) anti-theft (composite stranded cable made up of tinned copper wires and galvanised steel wires that are braided-interwoven) PVC insulated cable. To prevent corrosion and or any galvanic reaction in wet or buried cable, joints must be properly sealed. Exothermic welded joints must be Denso Paste/Denso Tape wrapped. Alternatively a bitumen must be "worked" into the cable strands whilst the joint is still hot. Protective covering of the surface strands of the cable only is not sufficient.

The earthing and lightning arrestor shall comply with the following standards:

a) SANS 1063: Earth rods, couplers and clamps,
b) SANS 10199: The design and installation of an earth electrode,
c) SANS 10313: The protection of structures against lightning in conjunction with SANS 62305

Allowance shall be made for the installation of four earth rods (SANS1063), installed directly underneath each mast before the casting of the foundation.

The earth rod resistance shall be measured in the presence of the CoT site agent and shall not exceed 10 Ohms. The test result shall be included in the handing over certificate.

Additional earth rod(s) shall be installed, at the tariff quoted in the Price Schedule if required.

Additional conductive cement shall be installed at the tariff quoted in the Price Schedule, if required.

Recommended earth resistance: SANS 62305-3: 5.4: 10 ohm. Detail of qualification and competency of the earthing specialist responsible for the installation of the earth rods shall be stated in Schedule B.

C3.4.8 Testing

C3.4.8.1 General

General: The requirements of SANS 10225 apply together with the following:
Test certificates: The requirements of SANS 10225 apply.
Shop fabrication: The requirements of SANS 10225 apply.

Welding: The requirements of SANS 10225 apply.

C3.4.8.2 Foundations

The requirements of SANS 10225 apply together with the following:

Concrete test cubes shall be taken for each mast location and shall be tested by an approved test authority.

The test cube results shall also be submitted to the Engineer for review.

The test result shall be included in the handing over certificate.

Detail of the concrete test facility shall be stated in Schedule B.

Compressive bearing pressure for concrete:
The design grade and strength for the concrete foundations shall comply with the requirements of SANS 10100-1: clause 4.1.5 – Table 2). Detail of design concrete strength shall be stated in Schedule B.

C3.4.9 Applicable national and international standards

C3.4.9.1 Normative References

The latest editions of the standards listed below apply:

Occupational Health and Safety Act and Regulations.
SANS 121 - Hot dip galvanized coatings on fabricated iron and steel articles
SANS 1063 - Earth rods, couplers and connections
SANS 1186 :- Symbolic safety signs Part 1: Standard signs and general requirements
SANS 1200 H - Structural Steelwork
SANS 1200 A - General
SANS 1200 C - Site clearance
SANS 1200 D - Earthworks
SANS 1200 G - Concrete (structural)
SANS 1200 H - Structural steelwork
SANS 1200 HC - Corrosion protection of structural steelwork
SANS 1431 - Weldable structural steels
SANS 1921-1 - Construction and management requirements for works contracts Part 1: General engineering and construction works
SANS 1921- 4 - Construction and management requirements for works contracts Part 4: Third-party management support in works contracts
SANS 1921 – 5 - Construction and management requirements for works contracts Part 5: Earthworks activities which are to be performed by hand
SANS 2001– CS1 - Construction Works : Structural steel works

SANS 10100 - The structural use of concrete (Part 1 & 2)
SANS 10142 - Wiring of premises: Part 1: Low-voltage installations.
SANS 10162 - The structural use of steel: The limit states design of hot rolled steelwork
SANS 10214 - The design, fabrication and inspection of articles for hot dip galvanizing
SANS10225 - The design and construction of lighting masts.
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
SANS 215 Limits and methods of measurement of radio disturbance characteristics of
electrical lighting and similar equipment
SANS 475 Luminaires for interior lighting, street lighting and floodlighting — Performance requirements
SANS 529 Heat-resisting wiring cables
SANS 1088 Luminaire entries and spigots
SANS 1091 National Colour Standard
SANS 1279:1980 - Floodlighting 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 street lighting
SANS/IEC 60598-2-5 Luminaire: Particular requirements – luminaires for Floodlights
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 flickermeter 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

C3.4.9.2 Definitions and Abbreviations

The definitions and abbreviations listed in normative references shall apply together with the following:

COC: Certificate of compliance (SANS10142);
CoT: City of Tshwane
DTI Department of trade and industry
ECSA: Engineering Council of South Africa;
EE: Energy Efficient
EED Energy and Electivity Department
FIZ Free Internet Zone
LED: Light Emitting Diode
OHSA: Occupational Health and Safety Act and Regulations;
PV Photovoltaic
RD: Returnable documents;
SANS: South African National Standard
STC Standard Test Conditions

NOCT Nominal Operating Cell Temperature

C3.4.10 Particular / generic specification

C3.4.10.1 General

Bidders are required to complete Annexure A.1 Schedule B, i.e bidders must state what they are offering in schedule B in relation to what is required in schedule A

After the tender is awarded, the successful bidder shall manufacture and test a prototype lighting mast which shall be demonstrated to the City Engineer for approval before full scale production can commence. This demonstration shall include:

I. Lighting mast operation;
II. Required maintenance procedures;
III. Luminaire operation and performance;
IV. Luminance and Illuminance readings;
V. On site monitoring of the solar luminaires from ground level;

Before the retention amount is refunded, the successful bidder shall also perform minimum four additional tests, as specified by the City / Engineer, on the prototype lighting mast as required or needed in terms of the expected design output of the system and performance of the PV luminaires.

It is a requirement that the lighting level specified is achieved with proposed luminaires which will be verified on site with post lux readings. In the event that the proposed luminaire does not perform as proposed by the contractor, the tenderer may be liable to replace such under-performing luminaires with an Engineer approved luminaire which shall be used for further replacements within the contract.

At the end of the defects liability period, the Contractor accompanied by the Engineer, shall carry out an audit and certify that the high mast lighting poles are vertical and luminaires have been installed and operate correctly and are at the correct mounting height and at the correct angle. Luminance and Illuminance readings are to be taken and provided to the Engineer to verify the installation is achieving within 10% of the design.

The handing over certificate containing the information as listed in Documentation is required for each completed lighting mast before payment can be made.

No partial payment on the delivery of the prototype mast shall be permitted.

C3.4.10.2 Required documents

The following documents (hard copy)must be submitted with the tender:

a) The design of the foundation and high mast with provisional A4 design drawings of the foundation and complete mast with luminaires.
b) Safety plan (The plan must be in line with the safety specifications).
c) Data sheets of the PV components; (1) LED floodlight, (2) solar modules, (3) batteries, (4) charge controllers, (5) and inverter. Details shall include but not limited to the following:
    1) Name or trademark of manufacturer
    2) Country of origin/manufacture
    3) Component name and model number
    4) Dimension and weight
    5) Technical specifications and ratings of the component
    6) Lifespan of the component

d) In addition to the above, the following documents (hard copy) must also be submitted in the file:
    1) Guarantee certificates of the components.
    2) Circuit /wiring diagram of the luminaire and the 230V AC supply with a description of the function and operation of every component in the system including protection devices.
    3) Calculations of the sizing of the components (PV system/s) including the wiring.
    4) User manuals of the PV components.

The documents 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.

C3.4.10.3 Maintenance Requirements

C3.4.10.3.1 Operational and Maintenance Manual

A manual containing the detailed descriptions of the mast, luminaires, cables, lightning protection, etc shall be provided to assist the user personnel with advanced knowledge of the equipment for short, medium and long-term maintenance and operations of the high mast. It shall include, but not limited to, the following:

1. Safety, general advice and precautionary measures
2. Trouble-shooting guide and procedures
3. Installation guide
4. Operating guide
5. Training manuals
6. Maintenance manual with procedures and schedule including 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. Pre-Programmed charge controller and inverter parameter settings.
11. Manuals of the following components: solar panel, controller, battery, LED floodlight, inverter, alarm system and GSM modem/router. It must be complete in all respects to cover all the requirements in this specification such as; local and remote monitoring of the components, mobile applications, configuration and programming of the controllers and inverter etc.
12. 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.

The descriptions shall be complete in all respects and these manuals must be prepared in such a manner that, in the opinion of the Engineer, 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 manuals 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.

Seven (7) 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 project title
- The title "Operation and Maintenance Manuals"
- The month and year during which the manuals are finally handed over to the engineer.

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

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

C3.4.10.4 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.

Costs to be submitted in the Pricing Schedule.

Continued Professional Development (CPD) Validation:

- Training courses must be CPD validated and verified by the South African Institute of Electrical Engineers (SAIEE) / 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 along with the tender submission:

- 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, Certificates of Competence must be issued by the training provider.

Customized Training Needs:

Training must cover the specified needs outlined in the specifications such as:

- Configuration and programming of the controller.
- Configuration and programming of the inverter.
- Mobile application including setting up and to apply additional dimming profiles.

If the training modules does not cover the specified needs, then bidder will be required to provide this training separately on the bidders cost.

Training Needs:

The courses must equip the individuals with the necessary knowledge and skills to safely operate and upkeep the photovoltaic(PV) systems.

Required training:
1. Introduction to photovoltaic systems.
2. Installation photovoltaic systems.
3. Operations and maintenance of photovoltaic systems.

Expected Outcomes:

- 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 photovoltaic 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 technology.
2. Photovoltaic systems Installation:
   - develop the skills and knowledge required for the safe and efficient installation of the solar photovoltaic systems.
   - Acquire a comprehensive understanding of the stages involved in installing of photovoltaic systems.
   - Competency in conducting site assessments, considering factors like shading, orientation, and tilt.
   - Understanding of electrical connections, mounting structures, and compliance the with local regulations for photovoltaic installations.
   - Develop an understanding of the typical tests, including photovoltaic system functional and autonomy tests, essential for commissioning a photovoltaic system, and learn to compile comprehensive reports based on the outcomes.
   - Acquire a comprehensive understanding of common challenges encountered during photovoltaic installations and learn effective strategies to prevent them.

3. Photovoltaic systems Operations and Maintenance:
   - Best practices for routine inspection, monitoring, and maintenance of photovoltaic systems to ensure optimal performance and longevity.
   - Troubleshooting skills to identify and address common issues, and overall system health.
   - Acquire knowledge on best practises and schedules employed in the operations and maintenance of photovoltaic systems.
   - Enhance the efficiency and energy output of photovoltaic systems.
   - Achieve an optimal balance between the cost of scheduled maintenance, yield, and cash flow.

- Develop the expertise required for owners of photovoltaic systems.
- Ensure a guaranteed return on investment through the effective optimization of photovoltaic systems.
- Knowledge of safety protocols and compliance with industry standards for maintenance activities.

Overall Learning Objectives:

- Equipe participants with the knowledge and skills necessary to contribute effectively to the planning, implementation, and maintenance of photovoltaic systems.
- A comprehensive understanding of the lifecycle of a photovoltaic project, from feasibility assessment to installation and ongoing operations.
- Empower participants to make informed decisions regarding the selection, design, and management of photovoltaic 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. This submission should include a comprehensive list of training courses, accompanied by concise descriptions of each course, covering topics to be addressed and process of assessment. Additionally, bidders are expected to specify the Continuing Professional Development (CPD) points allocated for each course, 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 each training course. 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.

C3.4.10.5 Contract Documentation, Commissioning And Handing Over Certificate

At the completion of the physical works a handing over certificate must be provided for every mast including the following documentation:

a) Mast design (SANS 10225).
b) Mast foundation design (SANS 10100-1).
c) Galvanizing certificates.

d) Soil bearing pressure report.
e) Result of concrete cube tests. (SANS 10225).
f) Lightning protection installation: Earth rod resistance.
g) PV systems functional and performance test and system autonomy test report.
h) Luminaires in working order and aiming angles set.
i) Luminance and Illuminance readings of each lighting installation.
j) Insulation resistance tests (SANS 0225).
k) All other tests.
l) Electrical Certificate of Compliance.
m) 3 sets of “As Built” drawing(s).
n) The Pre-Commissioning Checklist is required to be completed by the contractor prior handing over and before payment is made.
o) Operational and Maintenance manuals.

The Contract will not be regarded as completed and will not be accepted by the Engineer unless all the requirements for testing, drawings, manuals and the certification have not been completed and all data have not been handed to the Engineer.

C3.5 MANAGEMENT

C3.5.1 Applicable SANS 1921 standards

The following parts of SANS 1921 (Construction and management requirements for construction works) and associated specifications are applicable:

SANS 1921-1: General engineering and construction works
SANS 1921-2: Accommodation of traffic on public roads occupied by the contractor
SANS 1921-3: Structural steelwork
SANS 1921-4: Third party management support in works contracts
SANS 1921-5: Earthworks activities, which are to be performed by hand

The associated specification data are as follows:

SANS 1921-1: General engineering and construction works	
Clause No	**Specification data**
4.1.7	The requirements for drawings, information and calculations for which the contractor is responsible are: To be indicated by the Engineer

SANS 1921-1: General engineering and construction works	
Clause No	**Specification data**
	…… ……
4.2.1	The responsibility strategy assigned to the contractor for the works is: C
4.2.2	The structural engineer is: To be appointed by the contractor
4.2.3	Drawings and other information are to be submitted in accordance with the contractor's programme.
4.3	The Contractor shall submit within the period stated in the Contract Data a suitable and realistic construction programme for the consideration of the Engineer. The programme shall be in the form of a Gant Chart and shall include the following details: • A work breakdown structure, identifying the major activity groups. • For each activity group further details shall be provided with regard to the scheduled start and end dates of individual activities. • The linkages between activities shall be clearly indicated and the logical network upon which the programme is based should be separately submitted to the engineer if requested. Any constraints shall be classified as being time-related or resource-related. • The critical path(s) shall be clearly indicated and floats on non-critical activities shall be shown. • The Contractor shall indicate the working hours per day, night, week and month allowed for in the programme. • Where relevant the Contractor shall state the production rates for key activities, e.g. earthworks, etc. • Together with the programme as detailed above the contractor shall submit to the engineer a cash flow projection, indicating projected monthly invoice amounts. The cash flow projection shall be updated at monthly intervals to reflect actual payments to date and anticipated further payments. • The programme shall be reviewed at the monthly site meetings at which the Contractor shall provide sufficient detail that will allow the comparison of completed work per activity that has fallen behind. The updated programme shall be submitted to the Engineer at least two days prior to the monthly meetings. • If the programme has to be revised by reason of the Contractor falling behind his programme, he shall produce a revised programme showing how he intends to regain lost time in order to ensure completion of the Works within the time for completion as defined in the General Conditions of Contract or any granted extension of time. Any proposal to increase the tempo of work shall be accompanied by positive steps to increase production by providing more labour and plant on site, or by using the available labour and plant on site, or by using the available labour and plant in a more efficient manner.

SANS 1921-1: General engineering and construction works	
Clause No	**Specification data**
	• Failure on the part of the Contractor to submit the programme or to work according to the programme or revised programmes shall be sufficient reason for the Engineer to take steps as provided in the General Conditions of Contract. • The approval by the Engineer of any programme shall have no contractual significance other than that the Engineer will be satisfied that the work is carried out according to such programme and that the Contractor undertakes to carry out the work in accordance with the programme. It shall not limit the right of the Engineer to instruct the Contractor to vary the programme if required by circumstances. The Contractor is also referred to the applicable clauses of the General Conditions of Contract when drawing up his programme. • The planning, program and method statements are to comply with the following: o Microsoft Project format
4.12.2	The samples of materials, workmanship and finishes that the contractor is to provide and deliver to the employer are: To be indicated by the Engineer
4.12.2	The fabrication drawings which the contractor is to provide and deliver to the client are: To be indicated by the Engineer
4.14.6	The requirements for the provision and erection of sign boards are: None
4.17.1	The requirements for the termination, diversion or maintenance of existing services are: None
4.17.3	Services that are known to exist on the site are shown on the drawings are: None
4.17.4	The requirements for the detection apparatus are: None

SANS 1921-1: General engineering and construction works	
Clause No	**Specification data**
	…… ……
4.18	The additional health and safety requirements are: To be indicated by the Engineer ……
4.22	The works to be undertaken by nominated and selected subcontractors comprise: Excavation work where possible.
Variations:	
4.1.10	Degree of accuracy II shall be applicable unless stated otherwise in the drawings or specification.
4.2.4	The time frame for acceptance is 10 working days
Additional clauses	
4.1.1 p)	**Add the following:** "Appoint a Community liaison officer (CLO) to assist with the community liaison with the beneficiary community."
4,23	**Add the following**: "4.23 Community participation" Community participation consists of engagement of the CLO. A CLO will be appointed for the project, by the Ward Councillor. The functions of the CLO will be to: • Assist in monitoring the project. • Ensure that the community provide assistance to the contractor to ensure that he can execute the contract in accordance with the specifications and within time. • Encourage the community to participate in the Labour-Intensive construction (EPWP).
4.10.1	The contractor shall provide the following traffic control facilities:

SANS 1921-1: General engineering and construction works	
Clause No	**Specification data**
	• Traffic-control devices such as flagmen, STOP and GO signs, traffic signals. • Statuary permanent and temporary road signs and barricades. • Channelization devices and barricades including delineators, cones, road studs, road marking, etc. • Barriers such as New Jersey, plastic movable barriers, etc. • Warning Devices on plant and construction vehicles. • Road markings.
Variations:	
Additional clauses:	
4.1.4	**<u>Add the following</u>:** "Failure to maintain road signs, warning signs, etc, in a good condition shall constitute ample reason for the engineer to bring the works to a stop until the road signs, etc, have been repaired to his satisfaction. The contractor may not commence constructional activities before adequate provision has been made to accommodate traffic in accordance with the requirements of this document and the South African Road Traffic Signs Manual Volume 2 Chapter 13. The contractor shall submit proposals in connection with directional signs to the engineer for approval prior to construction."

SANS 1921-3 Structural steelwork	
Clause No	**Specification data**
4.2.1	The responsibility strategy assigned to the steelwork contractor for the work is: C.
4.2.2	The steelwork structural engineer is. To be appointed by the contractor
4.3.2.1	The site will be ready for steelwork to commence on: As per construction program
e	The requirements for sequencing of the works are: To be determined/ indicated by the steelwork engineer / contractor The times for completing of the sections are: As per construction program The procedures to be followed are: Procedures in accordance to steelwork engineer / contractor Matters that affect the program are: Steelwork engineer / contractor to determine
4.3.3.2	The steelwork contractor is required to provide the steelwork structural engineer with a detailed method statement for the erection of each structure at least 2 weeks before construction commences.
4.4.2.4	The steelwork contractor is required to provide the following facilities for test purposes: Steelwork contractor to provide and use his own facilities
4.4.3.4	The following items and procedures need to be tested / certified by a recognized body:
4.5.1.1	Information, drawings and calculations provided to the steelwork contractor will be provided in the following format: To be indicated by the Engineer and on the following media:
4.5.1.2	The steelwork contractor is to provide information in the following format:

SANS 1921-3 Structural steelwork	
Clause No	**Specification data**
	Drawings in AutoCAD *.dwg* format Programmes in Microsoft Project format .... Data will be supplied on paper and on DVD / CD media.
4.5.3.1 *or* 4.5.3.2	Drawings and other information are to be submitted in accordance with the steelwork contractor's accepted programme.
4.5.3.4	The steelwork contractor is required to submit the following additional information with general arrangement drawings to the employer for approval: To be indicated by the Engineer ....
4.5.3.6	The steelwork contractor is required to submit "as erected " drawings
4.7.6	The steelwork contractor is required to make his own arrangements for the provision of the following services: Water Electricity Sanitary services
4.7.9	The requirements for the provision and erection of sign boards are: To be indicated by the Engineer ....
4.10.2	The requirements for the protection, termination, diversion or maintenance of existing services are: None ....
4.10.4	Services which are known to exist on site are: None.....
4.11.1	The specific health and safety requirements are: .....
4.11.3	The steelwork contractor is required to submit a report on the assessment and management of risk.

SANS 1921-3 Structural steelwork	
Clause No	**Specification data**
4.11.4	The steelwork contractor is required to enclose the steelwork for the protection of the public and others.
Variations:	
Additional clauses:	

SANS 1921-4: Third–party management support in works contracts	
Clause No	**Specification Data**
	Construction management services only are required.
5.1.1(b)	The construction manager is required to arrange for the supply of mechanical equipment and the supply and delivery to site of materials
Variations:	
Additional clauses:	

SANS 1921-5: Earthworks activities that are to be performed by hand	
Clause No	**Specification Data**
5.1	The depth of the trenches to be excavated by hand is 1,5m.
Variations:	State variations, if any, for example specific compaction requirements
Additional clauses	

C3.6 ANNEXES

C3.6.1 Appointment of community liaison officer (CLO)

- A community liaison officer will be appointed from the local community. The liaison office will, amongst other duties, be responsible for the liaison with the beneficiary community.
- Provision for the payment of the liaison officer has been made in the Pricing Data.
- The successful tenderer shall enter into an agreement with the Ward Councillor/ whereby the Ward Councillor shall provide to the Contractor with a Community Liaison Officer (CLO) for liaison with the recipient community.
- The CLO shall attend all site and other meetings concerning the project.
- The agreement shall make provision for the payment by the Contractor to the CLO a maximum amount calculated as follows:
- Wage per month =CTMM's minimum T5-level Salary monthly notch (prior to deductions)
  The City of Tshwane Metropolitan Municipality's minimumT5-level monthly notch is presently R19 063.00

- Only one CLO shall be appointed per project. If the project spans over more than one Ward, the relevant Ward Councillors shall agree on one CLO to be appointed by the Contractor. Should no agreement be found as envisaged, the relevant Project Manager together with the General Manager: Integrated Community Development, or their nominees, will interview prospective appointees and in their discretion appoint such CLO.
- Notwithstanding the above, if the vastness of the project requires the use of more than one CLO, this will be permitted provided that the total monthly sum paid to all CLO's shall not exceed the amount allowed for as set out above.
- Should the Contractor experience any difficulties with the community, these difficulties shall immediately be brought to the attention of the Department/Project Manager who shall arrange a meeting with the relevant Ward Councillor(s) and the CLO to resolve such difficulties.
- The main Contractor shall ensure that any Sub-Contractor he may appoint shall adhere to these conditions but also subject to the proviso's applicable to the duration of such sub-contract.
- Should any of the above conditions be less favourable than any Bargaining Council Agreement or Act applicable to the Contractor, the more favourable condition will apply.

C3.6.2 Minimum employment conditions for conventional construction works

Contractors shall comply with the Basic Conditions of Employment Act (Act No 75 of 1997).

As a determination has not been made in terms of the aforesaid Act for the building sector, the minimum employment conditions which will apply to this Contract shall be guided by the Sectoral Determination: Civil Engineering Sector published in the Government Gazette dated 2 March 2001.
The following minimum conditions shall apply to this Contract and Contractors shall include such conditions in employment contracts:

C3.6.2.1 Employment contracts

The Contractor shall enter into an employment contract with every one of his/her employees, including short-term contracts i.e. contracts in which employment commencement and employment termination dates are specified. Short-term employment contracts will also apply an employee employed for only one day.

C3.6.2.2 Normal working hours

Normal working hours are from 07:00 to 17:00 from Monday to Friday. A tea break is taken from 09:00 to 09:15 and lunch from 12:30 to 13:00.
Actual hours to work and be paid for is 9 hours per day. If a lunch break of one (1) hour is taken then the normal working day will be as follows:

- Morning work sessions from 07:00 to 12:00.
- Lunch break from 12:00 to 13:00.
- Afternoon sessions from 13:00 to 17:00.

C3.6.2.3 Minimum wages

- Minimum wages shall be according to the Government Gazetted rates for the Civil Engineering Sector for Gauteng Province.
- For a full day's work the hourly rate shall be multiplied by 9.
- Normal 5-day week hours of work shall be 45 hours and the wage calculated according to the applicable hourly rate.
- Overtime pay shall be 1.5 times the ordinary wage.
- An employee shall be paid fortnightly.

C3.6.2.4 Short time (excluding short time due to inclement weather)

If for reasons, which may be ascribed to the employee, e.g. arriving late for work or taking an afternoon off, the hours not worked shall be deducted from the daily wage calculation.

C3.6.2.5 Short time resulting from inclement weather

- If the Contractor informs his/her employees that no work will be done the following day due to inclement weather, no payment will be due to the employee for such a day.
- If the Contractor has not informed his/her employees that no work will be done due to inclement weather and no work or less than four (4) hours of

work is possible during a day, the Contractor must pay the employee for four (4) hours of work.

- If more than four (4) hours of work is done, the Contractor shall pay the employee for the number of hours worked.

C3.6.2.6 Sick leave

The employee shall be entitled to one (1) day's paid sick leave of normal wages for every twenty-six (26) days worked.
If an employee is absent for three (3) or more consecutive days, the employee shall provide a sick certificate from a registered medical practitioner to qualify for sick leave payment. If such certificate is not provided, no sick leave payment will be due to the employee.

C3.6.2.7 Piece work

Irrespective of the quantity of work done under a piece work system during a working week, the employee shall be entitled to a minimum of a week's wages determined as if no piece work applied.
The Contractor or employee may terminate an employment contract by giving notice of termination of not less than:

- On short period contracts i.e. a contract which states from which date work employment commences and on which day employment terminates, the terms of the employment contract shall apply.
- One week if employee has been employed for four (4) weeks or less, unless it is a short-term project.
- Two (2) weeks if employee has been employed for more than four (4) weeks but not more than one (1) year.
- Four (4) weeks if employee has been employed for more than one year.

C3.6.3 Annexure A.1 Schedules A & B

SCHEDULE A: Purchasers specific minimum requirements
SCHEDULE B: Particulars of equipment offered
NOTE:

1. **Bidders are required to complete Schedule B.**
2. **Bidders must state what they are offering in schedule B in relation to what is required in schedule A.**
3. **Failure to complete this table in full will disqualify the bidder.**

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Bidders Details		
	Name of the bidder:	STATE	
	Address:	STATE	
	Contact No:	STATE	
	Email:	STATE	
	Design, supply, installation and commissioning of new solar lighting masts		
C3.2.2.2	Foundation design and drawings submitted with tender?	YES	
C3.2.2.2	Mast design and drawings submitted with the tender?	YES	
	Supplier of mast	STATE	
	Manufacturer of mast	STATE	
C3.2.2.2	Type and grade of steel used for the manufacture of the mast	355WA	355WA
	Steel yield stress (MPa)	355	
C3.2.2.2	Does the mast comply with the design specifications?	YES	
C3.2.2.2	Number of solar panels	8	
C3.2.2.2	Number of enclosures	8	
C3.2.2.2	Number of LED floodlights	7	
C3.2.2.2	Solar frame Rake angle(degrees)	15°	
C3.2.2.2	Mast cross-section	STATE	
C3.4.2	Detail of galvanizing	SANS 121(ISO 1461) 2000-1	
C3.4.8.2	Name of laboratory where strength of concrete test cubes are tested	STATE	
C3.4.8.2	Design strength of concrete foundation (MPa)	STATE	
	Soil bearing capacity(100kPa)	STATE	
C3.4.3	Name of laboratory responsible for the foundation and soil testing.	STATE	
	High mast structure mass (kg)	STATE	
C3.2.2.2	Floodlights removable?	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
C3.2.2.2	LED floodlight mounting distance from the centre of the mast – horizontal plane(meter)	MAX 1m	
C3.2.2.2	Floodlight spread around circumference(degrees)	±51,43°	
C3.2.2.2	Mast actual height(m)	25m	
C3.2.2.2	Height of mast top(meters)	1m	
C3.2.2.2	Hight of the monopole(meters)	24m	
C3.2.2.2	**Mounting height from the top of the mast(meters)**		
	Solar panels and frame at 15° rake	0m	
	LED floodlights	±0,81m	
	Cabinets and energy storage units with control gear	±0,48m	
	Single cable sleeve/pipe to install AC power cable from the top of the mast to Wi-Fi power enclosure - start	1,1m	
	Single cable sleeve/pipe to install AC power cable from the top of the mast to Wi-Fi power enclosure - end	12,5m	
	Single sleeve for installation of power cable from Wi-Fi power enclosure to Fiz enclosure - start	12,5m	
	Single sleeve for installation of power cable from Wi-Fi power enclosure to Fiz enclosure - end	13,5m	
	Single sleeve for installation of radio antenna cable from Fiz enclosure to radio antenna - start	1,5m to 5m	
	Single sleeve for installation of radio antenna cable from Fiz enclosure to radio antenna - end	13,5m	
C3.4.2	Manufacturer of the mast ISO 9001 and ISO 14001:2015 accredited?	YES	
C3.4.7	Name, qualifications and competency of the earthing specialist?	STATE	
C3.4.5	Name, qualifications and competency of construction supervisor?	STATE	
	Safety plan included in the tender?	YES	
	Name, qualifications and competency of construction safety officer?	STATE	
	Number of days to manufacture, supply, erect and commission complete working high mast	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
Capacity	Number of masts that can be provided and delivery period per month?	STATE	
C3.2.2.3	**Lighting Design**		
	Number of luminaires	7	
	Luminaire aiming angle(degrees)	45°	
	Luminaire mounting height above ground level(m)	STATE	
	System autonomy (number of days)	MIN 2	
	Luminaire system voltage(V)	12V	
	Light output		
	Average light output(%)	100	
	Operating hours	FROM SUNSET TILL SUNRISE – (SUMMER AND WINTER)	
	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 Floodlight 1 x independent charge controller	YES	
	Components easily available?	YES	
	Illuminance @ ground level - 100% Light Output:		
	Radius from the base of the mast		
	20 meters	Min 7 Lux	
	40 meters	Min 3 Lux	
	60 meters	Min 1,5 Lux	
	80 meters	Min 0,8 Lux	
	100 meters	Min 0,5 Lux	
	Design Results: Illumination Levels – 100% Light Output		
	Illuminance @ ground level total area		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	
	Illuminance @ ground level 0 meters from the base of the mast		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Illuminance @ ground level 20 meters from the base of the mast		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	
	Illuminance @ ground level 40 meters from the base of the mast		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	
	Illuminance @ ground level 60 meters from the base of the mast		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	
	Illuminance @ ground level 80 meters from the base of the mast		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	
	Illuminance @ ground level 100 meters from the base of the mast		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	
	Illumination Levels – 80% light output		
	Illuminance @ ground level total area		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	
	Illuminance @ ground level 0 meters from the base of the mast		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	
	Illuminance @ ground level 20 meters from the base of the mast		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	
	Illuminance @ ground level 40 meters from the base of the mast		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	
	Illuminance @ ground level 60 meters from the base of the mast		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Illuminance @ ground level 80 meters from the base of the mast		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	
	Illuminance @ ground level 100 meters from the base of the mast		
	Average lux	STATE	
	Minimum lux	STATE	
	Maximum lux	STATE	
	Lumen maintenance(@25°C)		
	L90(hours)	STATE	
	L80(hours)	STATE	
	L70(hours)	STATE	
	L50(hours)	STATE	
	L_{70} end of rated lifetime(hours)	STATE	
	Luminaire components		
C3.2.2.5	**Solar module**		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which solar panel complies?	MINIMUM: SANS 61215 IEC 61730 IEC 61730-3	
	Certified copies of the Certificates of Compliance 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	MIN 330W	
	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	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	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/ºC)	STATE	
	Temperature coefficient of voltage (V/ºC)	STATE	
	Conversion efficiency	>20%	
	Junction box, cabling and cable pug-in connectors	MIN IP 68	
	Material: Solar module frame,	EXTRUDED ANODISED ALUMINIUM	
	Product warranty (years)	MIN 12	
	Performance warranty (years)	25	
	Dimensions (LWH-mm)	STATE	
	Weight (kg)	STATE	
	Data sheet with technical details submitted?	YES	
C3.2.2.5	**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? SANS 56005 SANS 62133-2 CE(IEC 62040) Certification CB Certification UN 38.3 Certification for Lithium Batteries EN 6100-6-3 EN IEC 6100-6-1 EN IEC 6100-3-2 EN 6100-3-3-2013 +A1 And/or other equivalent standards	STATE	
	Certified copies of the Certificates of Compliance to standards included?	YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Does the battery display product certification mark?	YES	
	Depth of discharge(%)	Max 70%	
	Battery nominal voltage (VDC)	12,8V	
	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	
	Storage temperature	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 Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Battery Cabinet impact resistance	>= IK 7	
	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
C3.2.2.6	**LED Floodlight**		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which the floodlight complies? SANS 475 SANS/IEC 60529 SANS/IEC 60598-1; SANS/IEC 60598-2-5 SANS/IEC 61347-2-13 SANS/IEC 62384 SANS/IEC 62262 IEC 62471 And/or other equivalent standards	STATE	
	Does the floodlight display product certification mark?	YES	
	Certified copies of the Certificates of Compliance to standards included?	YES	
	Photometric test report of the LED floodlight submitted	YES	
	LM 79 test report submitted	YES	
	LM 80 test report submitted	YES	
	ISTMT (In Situation Temperature Method Testing) test report submitted	YES	
	Type of optical LED	STATE	
	Number of LEDS	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)	Min 190 Lm/W	
	Nominal flux(lm)	Min 12500	
	Watt rating(W)	Min 65W	
	Color temperature(K)	3750K	
	Color rendering(CRI)	>=70	
	Lifetime(hours)	100 000	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	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	MINIMUM: 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	STIRRUP	
	Stirrup material	HOT DIPPED GALVANISED STEEL	
	Screws, bolts, clips	STAINLESS STEEL S316	
	Floodlight inclination angle adjustable	YES	
	Angle adjustment (for example 0 to 70°)	STATE	
	Visual indicator for easy adjustment of the inclination angle	YES	
	Warranty (years)	Min 5 Years	
	Life expectancy (years)	25 Years	
	Mass (kg)	STATE	
	Data sheet submitted?	YES	
C3.2.2.7	**Charge Controller**		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Type of controller	*MPPT*	
	Standards to which controller complies: IEC 61000; IEC 61547; EN 55015; IEC 62493; IEC 62479; EN 300328, EN 301489-1, IEC 62093 EN/IEC 62109-1, UL 1741, CSA C22.2 And/or other equivalent standards	STATE	
	Certified copies of the Certificates of Compliance to standards included?	YES	
	Does the controller display product certification mark?	YES	
	Is the solar charge controller integrated with the LED floodlight?(YES/NO)	NO	
	Ingress protection rating: (SANS/IEC 60529)	MIN IP 22	
	Nominal battery voltage(VDC) (12/24/36/48VDC or Auto)	12	
	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℃)	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/²C)	STATE	
	Max. continuous load current(A)	STATE	
	Low voltage load disconnect(V)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Low voltage load reconnect(v)	STATE	
	Protection	STATE	
	Lightning protection- SPD	YES	
	Details and ratings of the SPD	STATE	
	Does the controller support custom lighting profile customization?	YES	
	Warranty (year)	5	
	Life expectancy (years)	10	
	Mass (kg)	STATE	
	Dimensions(mm)	L x W x H	
	Data sheet with technical details submitted?	YES	
	Remote monitoring and control ability ?	YES MOBILE APP & WEB- INTERFACE	
	Local on site monitoring control ability?	YES MOBILE APP	
	Local on site monitoring distance Wireless monitoring technology? E.g. Wifi	MIN 25 METERS Yes	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Mobile application included? Support provided during the contract period? Controller Manual / user guide included? Training offered during contract period?	Yes Yes Yes Yes	
C3.2.2.9	**Electrical Wiring Requirements**		
	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 And/or other equivalent standards	STATE	
	Solar cable characteristics	UV, oil, moisture resistant Halogen free Flame retardant	
	Solar cable life expectancy (Years)	MIN 25	
	IP Rating: Junction box, cabling and pug-in connectors	MIN IP 68	
	Exposed wiring outer sheath protection:	STATE	
	Luminaire		
	Category wires(for example from PV panel to controller to battery etc)		

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	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
	Soler solution – 230V AC supply		
	230V AC Power cable:		
	Type of cable	STATE	
	Cable size(mm²)	STATE	
	Current rating(A)	STATE	
	Voltage rating(V),	STATE	
	Cable length(meter)	STATE	
	Voltage drop(%)	< 1%	
	PV 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	
C3.2.2.4	**230V AC SUPPLY AND CONNECTION**		
	Design in terms of the requirements ?	YES	
	Required voltage(V)	230V AC	
	Output power(W)	MIN 140W	
	Autonomy(days)	MIN 2 DAYS	
	Working hours(hours/day)	MIN 16	
	Charge time(hours)	MAX 6	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Number of solar panels	1	
	Number of batteries	1	
	Number of MPPT charge controllers	1	
	Number of Inverters	1	
	Cable sleeve material	HOT DIPPED GALVANISED STEEL	
	AC power cable sleeves:		
	Cable sleeves – inner diameter(mm)	STATE	
	Radio Antenna Cable Sleeve:		
	Cable sleeve – inner diameter(mm)	MIN 35mm	
C3.2.2.5	**Solar module**		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Model number	STATE	
	Standards to which solar panel complies?	MINIMUM: SANS 61215 IEC 61730 IEC 61730-3	
	Certified copies of the Certificates of Compliance to standards included?	YES	
	Does the solar panel display product certification mark?	YES	
	Type of panel	GRADE A MONO CRYSTALLINE (Half-Cell)	
	Ingress protection rating	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/ºC)	STATE	
	Temperature coefficient of voltage (V/ºC)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Conversion efficiency	>20%	
	Junction box, cabling and cable pug-in connectors	MIN IP 68	
	Material: Solar module frame,	EXTRUDED ANODISED ALUMINIUM	
	Product warranty (years)	MIN 12	
	Performance warranty (years)	25	
	Dimensions (LWH-mm)	STATE	
	Weight (kg)	STATE	
	Data sheet with technical details submitted?	YES	
C3.2.2.6	**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? SANS 56005:2022 SANS 62133-2:2022 CE(IEC 62040) Certification CB Certification UN 38.3 Certification for Lithium Batteries EN 6100-6-3 EN IEC 6100-6-1-2019 EN IEC 6100-3-2-2019 EN 6100-3-3-2013 +A1:2019 And/or other equivalent standards	STATE	
	Certified copies of the Certificates of Compliance to standards included?	YES	
	Does the battery display product certification mark?	YES	
	Depth of discharge(%)	STATE	
	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	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Max discharge current(A)	STATE	
	Recommended discharge current(A)	STATE	
	Discharge temperature	STATE	
	Charge temperature	STATE	
	Storage temperature	STATE	
	Internal resistance(Ω)	STATE	
	Self-discharge	< 1% per month	
	Battery terminal type	STATE	
	Safety; Battery Management System	SHUTDOWN ON OVER-CHARGE, OVER-DISCHARGE, OVER-CURRENT, OVER-UNDER TEMPERATURE, SHORT CIRCUIT, REVERSE POLARITY, CELL IMBALANCE	
	Material: battery cabinet	STATE	
	Battery Cabinet Ingress protection rating SANS/IEC 60529	MIN IP 66	
	Battery Cabinet impact resistance	>= IK 7	
	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)	8000	
	Battery warranty (years)	MIN 10	
	Battery life expectancy (years)	10	
	Battery - Data sheet with technical details submitted?	YES	
C3.2.2.8	**Charge Controller**		
	Manufacturer	STATE	
	Country of manufacture	STATE	
	Catalogue/model number	STATE	
	Type of controller	*MPPT*	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Standards to which controller complies: IEC 61000; IEC 61547; EN 55015; IEC 62493; IEC 62479; EN 300328, EN 301489-1, IEC 62093 EN/IEC 62109-1, UL 1741, CSA C22.2 And/or other equivalent standards	STATE	
	Does the controller display product certification mark?	YES	
	Certified copies of the Certificates of Compliance to standards included?	YES	
	Ingress protection rating:(SANS/IEC 60529)	MIN IP43 (ELECTRONIC COMPONENTS), MIN IP22 (CONNECTION AREA)	
	Battery voltage(VDC) (12/24/36/48VDC or Auto)	STATE	
	Battery input Voltage range(V)	STATE	
	Battery type	*LITHIUM IRON PHOSPHATE (LIFEPO4) TECHNOLOGY*	
	Rated charge current(A)	STATE	
	Full rated current output up to 40°C	YES	
	Nominal PV power, 24V	STATE	
	Max PV open circuit voltage(V)	STATE	
	Max PV short circuit current(A)	STATE	
	Self-consumption(mA)	STATE	
	Max efficiency	>98%	
	Charge voltage' absorption'(V)	STATE	
	Charge Voltage 'float'(V)	STATE	
	Charge algorithm	MULTI-STAGE ADAPTIVE	
	Temperature compensation(V/²C)	STATE	
	Operating temperature	-30 to +60°C	
	Humidity	95% NON-CONDENSING	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Protection(min requirements)	MINIIMUM: PV REVERSE POLARITY, PV SHORT CIRCUIT, OUTPUT SHORT CIRCUIT, OVER TEMPERATURE, PV REVERSE CURRENT	
	Lightning protection- SPD	YES	
	Details and ratings of the SPD	STATE	
	PV & Battery terminals(mm^2)	STATE	
	Warranty (year)	5	
	Life expectancy (years)	10	
	Mass (kg)	STATE	
	Dimensions(mm)	L x W x H	
	Data sheet with technical details submitted?	YES	
	Remote monitoring and control ability?	YES MOBILE APP & WEB-INTERFACE	
	Local on site monitoring and control ability?	YES MOBILE APP	
	Local monitoring distance Wireless monitoring technology? E.g. Wi-Fi	MIN 25 METERS YES	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Mobile application included? Support provided during the contract period? Controller Manual / user guide included? Training offered during contract period?	YES YES YES YES	
C3.2.2.9	**Inverter**		
	Manufacturer?	STATE	
	Country of manufacture	STATE	
	Catalogue/model number?	STATE	
	Standards to which inverter complies? NRS 097-2-1 SANS 959 SANS 60529 SANS 222 EN 60335-1, EN 60335-2-29, SANS / EN 62109-1 Emission/Immunity standards EN 55014-1, EN 55014-2, SANS / IEC 6100-4-2 SANS / IEC 6100-4-3 EN 61000-6-1 EN 61000-6-2 EN 61000-6-3 And/or other equivalent standards	STATE	
	Does the inverter display product certification mark?	YES	
	Inverter designed for outdoor use	YES	
	DC nominal input voltage(V)	STATE	
	DC input voltage range(V)	STATE	
	DC low shut down (adjustable)	STATE	
	Battery charge detect(adjustable)	STATE	
	AC rms output voltage(V)	230V ±3%	
	Output Frequency(Hz)	50Hz±0,1%	
	Cont. output power at 25°C(VA)	STATE	
	Cont. output power at 25°C(W)	STATE	
	Cont. output power at 40°C(W)	STATE	
	Peak power(W)	STATE	
	Output power deration: % per °C above 40 °C	STATE	
	Maximum efficiency(%)	>89%	
	Zero load power(W)	STATE	
	Transfer switch(A)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Output wave form: pure sine wave	YES	
	Operating temp. range:	-40 TO +65°C	
	Cooling fan assisted?(YES/NO)	YES	
	Humidity(%)	95%	
	Enclosure		
	IP rating	MIN IP 21	
	Material	STATE	
	Battery connection (type of terminals, maximum cable cross-section)	STATE	
	AC connection - outlet /socket type	STATE	
	Protection	MINIMUM: OUTPUT SHORT CIRCUIT, OVERLOAD, BATTERY VOLTAGE TOO HIGH, BATTERY VOLTAGE TOO LOW, TEMPERATURE TO HIGH, DC RIPPLE TOO HIGH	
	Warranty (year)	5	
	Life expectancy (years)	10	
	Weight(kg)	STATE	
	Dimensions(mm)	L x W x H	
	Type tests / certificates included?	YES	
	Data sheet / technical details submitted?	YES	
	Remote monitoring and control ability?	YES MOBILE APP & WEB-INTERFACE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
	Local on site monitoring and control ability?	YES MOBILE APP	
	Local on site monitoring distance Wireless monitoring technology? E.g. Wifi Mobile application included? Support provided during the contract period? Manual / user guide included? Training offered during contract period?	MIN 25 METERS YES YES YES YES YES	
	Price evaluation, based on the following given criteria and costs:		
1	Luminaire Watt rating(W)	STATE	
2	Number of luminaires	7	
3	Wifi power consumption (W)	140	
4	Power consumption of additional equipment(alarm system and GSM modem/router)(W)	STATE	
5	Number of years to be considered for evaluation (years)	25	
6	Electricity cost, averaged over evaluation period (R/kWh)	2.619	
7	Scheme price: Cost of complete high mast – for the design, supply, delivery, offloading, installation, test and commissioning. Price must also include all material, plant and labour.(R)	STATE	
8	Estimated maintenance cost over evaluation period including part replacement. Price must also include all plant and labour required. R)	STATE	

clause	DESCRIPTION	SCHEDULE A	SCHEDULE B
9	Environmental Costs: Costs associated with environmentally responsible disposal of the system components such as batteries and other components at the end of their life. End-of-Life Disposal - R	STATE	
10	Luminaires: Power consumption: ([2]) x ([1]/1000) (kW)	CALCULATE	
11	Equipment power consumption: [3+4]/1000 (kW)	CALCULATE	
12	Luminaires: Annual energy saving costs: [6] x 4000 x [10] (R)	CALCULATE	
13	Equipment: Annual energy saving costs: [6] x 5840 x [11] (R)	CALCULATE	
14	Luminaires: Total energy saving costs over period of evaluation: [5] x [12] (R)	CALCULATE	
15	Equipment: Total energy saving costs over period of evaluation: [5] x [13] (R)	CALCULATE	
16	Total energy saving costs over period of evaluation: [14] + [15] (R)	CALCULATE	
	Cost of ownership: [7+8+9] –]16]	CALCULATE	

SIGNATURE OF TENDERER: .....

C3.7 HEALTH & SAFETY SPECIFICATION

General Notification

This document forms an integral part of the tender document and, in particular, shall constitute the Client's (City of Tshwane.) Occupational Health & Safety Specification, as required by the Construction Regulations, 2014, as promulgated under the Occupational Health and Safety Act (Act no. 85 of 1993).

This 'Health and Safety Specifications' document is governed by the "Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), hereinafter referred to as 'The Act'. Notwithstanding this, cognizance should be taken of the fact that no single Act or its set of Regulations can be read in isolation. Furthermore, although the definition of Health and Safety Specifications stipulates 'a documented specification of all health and safety requirements pertaining to associated works on a construction site, so as to ensure the health and safety of persons', it is required that the entire scope of the Labour legislation, including the Basic Conditions of Employment Act be considered as part of the legal compliance system. With reference to this specification document this requirement is limited to all health and safety issues pertaining to the site of the project as referred to here-in. Despite the foregoing it is reiterated that environmental management shall receive due attention.

Due to the wide scope and definition of construction work, every construction activity and site will be different, and circumstances and conditions may change even on a daily basis. Therefore, due caution is to be taken by the Principal Contractor when drafting the Health and Safety Plan based on these Health and Safety Specifications. Prior to drafting the Health and Safety Plan, and in consideration of the information contained here-in, the contractor shall set up a Risk Assessment Program to identify and determine the scope and details of any risk associated with any hazard at the construction site, in order to identify the steps needed to be taken to remove, reduce or control such hazard. This Risk Assessment and the steps identified will be the basis or point of departure for the Health and Safety Plan. The Health and Safety Plan shall include documented 'Methods of Statement' (see definitions under Construction Regulations) detailing the key activities to be performed in order to reduce as far as practicable, the hazards identified in the Risk Assessment.

1. Introduction

In terms of the Construction Regulation 5 (1) of the OHS ACT, the client is required to compile an Occupational Health and Safety Specification for an intended project. This specification has an objective to ensure that the principal contractor entering into a contract with the client achieves and maintain an acceptable level of Occupational Health and Safety performance and compliance.

This document forms an integral part of the contract between the client and the principal contractor.

The Principal Contractor and its Contractors shall furthermore implement any reasonable practicable means to ensure compliance to this Occupational Health and Safety Specification and any other applicable legislation on their organization and/or activities performed by or for them Compliance with this document does not absolve the principal contractor from complying with any other minimum legal requirement and the principal contractor remains responsible for the health and safety of his employees, those of his mandatories as well as any person coming on site or on adjacent properties as far as it relates to the construction activities

2. The Client `s commitment to Occupational Health and Safety Management

City of Tshwane is committed to responsible occupational health, safety management. This commitment is essential to protect the environment, employees, mandatories, visitors and provide a work environment conducive to health and safety. Principal Contractors and their Contractors shall demonstrate their commitment and concern by:

- Ensuring that decisions and practices affecting occupational health and safety performance are consistent with the issued specification;
- Ensuring adequate resources are made available for the effective implementation of occupational health and safety control and mitigation measures;
- Participating in hazard identification and risk assessments and design safety reviews;
- Communicating occupational health and safety management processes, strategies and control measures with all levels of employees, contractor and/or visitors;
- Ensuring visible leadership at all sites;
- Promoting and enforcing the use of correct types of Personal Protective Equipment (PPE);

- Reporting and investigation of incidents and accidents and ensuring actions are identified and implemented to prevent similar types of incidents reoccurring;
- Participating in Client audits and meetings and ensuring required actions are implemented within reasonable time frames on the site/project;
- Recognizing and commending safe work practices and coaching employees who require guidance;
- Applying and enforcing consequence management from deviations and transgressions of/from compliance to this OHS Specification noted and/or observed, where applicable;
- Carrying out safety observations, implement corrective and preventative actions and giving immediate feedback;
- Encouraging employee participation in the formulation of work instructions and safety rules.

3. Scope

To develop a project specific Occupational Health and Safety Specification that addresses the reasonable and foreseeable, risks, exposures and aspects of Occupational Health and Safety as affected by the tender for the supply, delivery, installation, testing and commissioning of lighting masts as and when required over three year period.

The specification will provide the requirements that the principal contractor and other contractors will have to comply with in order to reduce the risk associated with the above mentioned contract work and that may lead to incidents causing injury and/or ill health to a level as low as reasonable practicable and possible.

4. Omissions from OHS Specification

Where any omission from the OHS Specification is identified, applicable legal requirements will constitute the minimum standard for compliance to the relevant omission. The responsibility will be on the Principal Contractor to provide assurance to the client (City of Tshwane) on compliance to the applicable legal requirements related to the activity / task / process.

5. Change or Review of Specifications

Whenever the client (City of Tshwane) identifies the need to change or review the OHS Specification, approved changes and revisions will be communicated to the Principal Contractor. A cost analysis on the implementation of the proposed changes / revisions will be calculated through a collaborative processes between the Client and the Principal Contractor – where the approved changes and/or revisions has no cost implication for the Principal Contractor the Principal Contractor will be required to accept the approved changes / revisions and ensure implementation within the OHS Plan .

6. Safety Files

6.1. Preparation and Submission of safety file

The Principal Contractor shall prepare a safety file containing the processes / procedures and templates to be applied during the project period for the scope of work. The Principal Contractor will be evaluated during the contract period against the submitted safety file.
At a minimum the safety file shall contain the following documentation and in accordance with the specification:

1. Scope of work to be performed;
2. Public Liability
3. Personnel list (Principal Contractor employees);
4. OH&S Policy and other procedures;
5. Updated copy of the Occupational Health and Safety Act (Act no. 85 of 1993) and its Regulations.
6. Updated copy of the Compensation for Occupational Injuries and Diseases Act (Act no. 130 of 1993) and its Regulations;
7. Proof of valid registration and good standing with the Compensation Commissioner or another licensed Insurer;
8. OHS Plan approved by the Client.
9. Agreement with Mandatory in terms of Section 37(1) &2 of the OHS Act.
10. Approved risk assessments, review and monitoring plans and safe work procedures (method statements);

11. A list of contractors (sub-contractors) including copies of the agreements between the parties and the type of work being done by each contractor;
12. Designs and/or drawings;
13. All written designations and appointments for project scope of work (CV and competency copies);
14. Management structure (inclusive of OH&S responsibility & meeting structure);
15. Induction training and site OHS rules;
16. Occupational health and safety training matrix / plan;
17. Arrangements with contractors and/or mandatories;
18. The following registers (as applicable to contract scope of work):
    - Accident and/or incident notifications, investigation & control register;
    - Occupational health and safety representatives inspection register;
    - Construction vehicles and mobile plan inspections;
    - Daily inspections templates of vehicles, plant and other equipment by the operator, driver and/or user;
    - Daily inspections templates of excavations by competent person;
    - Toolbox talks pro-forma;
    - Designer's inspections and structures record template;
    - Inspection template of electrical installations (including inspection of portable electrical tools, electrical equipment and other electrical appliances);
    - Fall protection inspections template;
    - First-aid box content template;
    - Record of first-aid treatment template;
    - Fire equipment inspection and maintenance template;
    - Machine safety inspections template (including machine guards, lock-outs etcetera);
    - Inspection templates for lifting machines and –tackle (including daily inspections by drivers/operators);
    - Inspection templates of welding equipment; and
    - Monthly reporting and recording of statistics templates;

- Keeping of any other record in terms of applicable legislation falling within the scope of OHS Legislation applicable to the project and the Principal Contractor / Contractor's activities and organization.
- Emergency preparedness and response programmes;

6.2. Evaluation and approval of Safety file

The client (City of Tshwane) will conduct an initial inspection and evaluation of the Principal Contractor's OHS file for approval purposes to commence work. The Principal Contractor is required to submit the OHS file within 5 days after receiving the induction training from the Client. The Client will evaluate the file and give feedback to the Project manager and the Principal contractor. If the file has not been approved, the Principal contractor shall ensure that the outstanding documents are submitted for re-evaluation within 3 working days.
NOTE: The construction work cannot commence until the safety file is approved. The approval letter from the Client must be kept in the OHS file and any letter issued concerning the evaluation of the file. Principal Contractors are required to achieve at least 80% (Eighty Per cent) compliance on the entire safety file documentation to obtain approval by the Client.

6.3. Principal Contractor engagement phase

The Principal Contractor shall commence with the construction work after approval of the safety file. The following processes will be applied to the Principal Contractors on a monthly basis for the duration of the contractual period:

- Monthly Compliance Assessments;
- Site Inspections;
- Progress meetings;
- Contractor`s forum OHS meetings held at City of Tshwane

An initial site establishment inspection will be conducted by the Client after approval of the safety file / plan.

6.4. Project close-out and submission of consolidated Health & Safety File.

On completion of a construction work/ project the Principal Contractor shall submit all documentation required for the consolidated safety file to City of Tshwane as part of the project hand over documentation.

At a minimum, the safety file will contain the following records:

1. Approval letter by City of Tshwane on contents of Health and Safety file including plan;
2. Scope of work performed;
3. OHS Policy and other procedures;
4. Proof of registration and good standing with the Compensation Commissioner or another licensed Insurer;
5. OHS plan approved by the Client including the underpinning risk assessment(s) and method statements;
6. A list of contractors (sub-contractors) including copies of the agreements between the parties and the type of work done by each contractor;
7. Notifications of new projects /extension of scope received;
8. Designs and/or drawings;
9. Occupational health and safety committee meeting agenda and minutes;
10. Copies of written designations and appointments (CV and competency copies);
11. Management structure (inclusive of OHS responsibility & meeting structure);
12. Induction training conducted and site OHS rules;
13. Occupational health and safety training provided;
14. Arrangements with contractors and/or mandatories;
15. Description of security measures;
16. All applicable registers:

7. OHS Specification Requirements

7.1. General Requirements of Health and Safety Plan

Construction Regulation 7 (1) stipulates that the principal contractor must provide and demonstrate to the client a suitable sufficiently documented and coherent site specific health and Safety Plan, based on the client's documented Health and Safety Specification contemplated in

Regulation 5(1) (b), which plan must be applied from the date of commencement of and for the duration of the construction and which must be reviewed and updated by the principal contractor as work progresses.

It is expected from the Contractor to include in his safety plan method statements on how to accomplish the requirements relating to the Construction Regulations, 2014 and related incorporated standards and regulations.

Principal Contractors should describe how their safety management systems will work and what control procedures they plan on using to ensure safety on the construction site

The following generic aspects should be covered in the Safety plan:

- What administrative procedures the Principal Contractor envisages to use in the implementation and maintenance of the safety plan with reference to the construction site
- How continuous assessment of the safety plan will be assessed and implemented with respect to construction site
- What control systems the Principal Contractor envisages to implement on site to support his safety program
- How the Principal Contractor will ensure that he adheres to the construction regulations in respect of competent persons for appointments
- What external resources the Principal Contractor envisages on using to ensure successful implementation and sustainability of the safety plan
- What training to employees the Principal Contractor envisages and how he would go about to execute it
- The Principal Contractor should indicate which competent persons he plans on employing based on the scope of work.

7.2. Outline of Health and Safety Plan

The Principal Contractor's Health and Safety Plan prepared in accordance with this specification shall consist of at least the following sections and sub-sections:

1. Aim and Scope of Plan,
2. Risk Assessment,
    a. Alternative Forms of Risk Assessment,
    b. Methodology of Risk Assessment,
    c. Elements of Risk Assessment,

i. Scope of assessment,
ii. Risks Identified,
iii. Risk Analysis,
iv. Risk Evaluation,
v. Risk Treatment(safe working procedures)
vi. Monitoring and reviewing,

3. Resources,
   a. Health and Safety Staffing Organogram,
   b. Supervisors, Inspectors and Issuers,
   c. Employees,
   d. Subcontractors inclusive of their scope of work and their core resources,
   e. Training,
   f. Plant,
   g. Vehicles,
   h. Equipment
4. Materials,
   a. Temporary Materials
   b. Permanent Materials
5. Categories of Work
6. Implementation of Health and Safety Plan,
   a. Administrative systems,
   b. Training,
   c. Reporting,
   d. Monitoring,
   e. Inspections,
7. Auditing,
   a. Internal audits,
   b. Follow-up audits,
8. Financial Aspects,
9. Emergency procedures and response

8.3. Risk Assessment

8.3.1 General

This section of the specification provides guidelines for the Contractor in preparation of risk assessments in order to ensure compliance with Regulation 9 of the Construction Regulations, 2014. According to SANS 31000:2009, Risk is the overall process of risk identification, risk analysis, and risk evaluation. This section highlights the principles related to the preparation of suitable and sufficient risk assessments. Contractor Staff intending to prepare risk assessments should be trained and suitably experienced in the application envisaged.

A suitable and sufficient risk assessment is an assessment which:

- Accounts for risks that are likely to arise during the construction of the Works,
- Enables the development and implementation of systems to manage the risks,
- Remains valid for a reasonable period of time,
- Provides a basis for training of employees, and
- Improves working procedures and introduce long term controls.

The requirements of the Construction Regulations will not be satisfied by a single risk assessment exercise that holds good for all time. The risk assessment process on the Works is an ongoing process.

The objectives of risk assessments are to:

- Identify the risks that are mostly in need of reduction,
- Identify the various options for achieving such reduction,
- Identify the risks that require careful ongoing management, and
- Identify the nature of the required ongoing attention.

8.3.2 Forms of Risk Assessment

In order to ensure compliance with the Construction Regulations, the Contractor will be required to carry out the following three forms of risk assessment:

8.3.2.1 Activity based risk assessment

8.3.2.2 Issue based risk assessments

8.3.2.3 Continuous risk assessments

8.3.4 Methodology for the Preparation of Risk Assessments

The Contractor shall in the preparation of risk assessments, follow the following general principles:

- Appoint in writing a suitably competent risk assessor
- The appointed risk assessor shall lead the risk assessment process
- Provide the team with background data, scope of work, potential hazards and underlying causes, and
- Where necessary employ experts for complex risk assessments and aspects of risk assessments that require experiential judgment,
- Institute an ongoing system of identifying aspects of the work that require risk assessment.

8.3.5. Elements of a Risk Assessment

The process of carrying out a risk assessment consists of a number of well-defined steps. These steps improve decision-making by providing a greater understanding of the risks and their impacts. The main steps or elements of the risk assessment process are as follows:

1) Consider scope and nature or risks involved, determine purpose and physical and legal bounds of assessment and define risk evaluating criteria,
2) Systematically identify risks,
3) Analyze risks with regard to causes, likelihood of occurrence and possible consequences against the background of existing controls and its effectiveness,
4) Evaluate risks in terms of pre-established criteria to determine need and priority for attention,
5) Treat risks through a process of risk elimination, substitution, controlling risk at source, risk mitigation such as training and as far as risk remains, provide personal protective equipment (PPE),
6) Monitor and review progress and performance in terms of management system, and
7) Communicate and consult.

The above steps are as depicted in Figure 1, below.

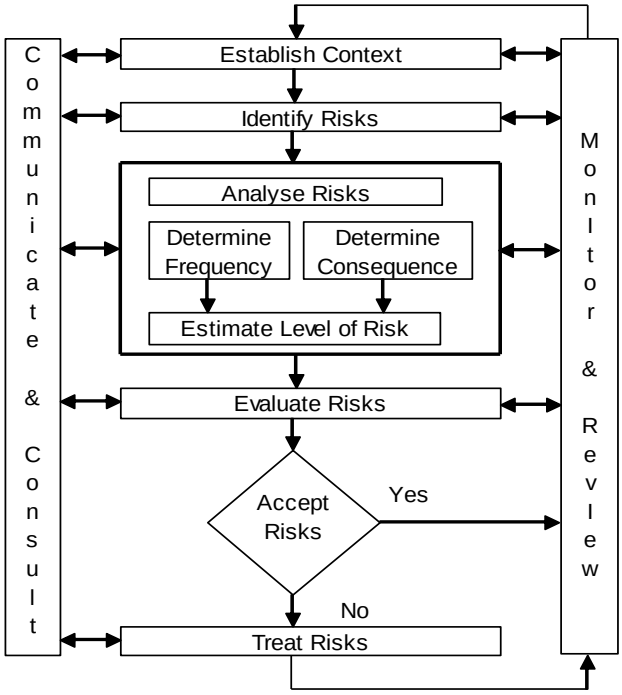

Figure 1: Risk Management Process

The Contractor shall ensure that the risk assessment compiled as part of his Health and Safety Plan contains at least these items.
Refer to Baseline Risk Assessment Annexure 2 of this specification.

8.3.5.1 Risk Identification

The Contractor should regard this step of the risk assessment as the most important. Subsequent analysis and evaluation of risks and the development of risk control measures are wasted if the risks or hazards on the Works are not carefully identified.
The Contractor should bear the following principles in mind when identifying the risks:

i) Systematically address all risks or hazards on the Works,
ii) Review all aspects of the work, but consider only those that have a potential to cause harm,

iii) Rank the risks identified in order of importance and then use appropriately advanced techniques to deal with major risks,

iv) Deal mainly with major risks and don't obscure these with unimportant information, especially minor risks,

v) Address what actually happens in the workplace during the work activity

vi) Consider all persons that may be affected,

vii) Highlight those groups and individuals who may particularly be at risk, and

viii) Review the adequacy and effectiveness of existing safety controls and measures

8.3.5.2 Risk Analysis

In this step, the Contractor will be required to analyze the risks identified by determining each risks frequency and magnitude or severity of the consequence of the risk or hazard.

The frequency of occurrence of a hazard may be expressed as the number of times that it may occur in year, decade, lifetime, century, or longer period, according to comparative human experience. The magnitude of the likely consequence of a hazard may be expressed in terms of the degree of incapacitation, number of people or costs involved. The frequency of occurrence of a hazard and the magnitude of its consequence may be compounded as the risk that it poses as shown in the "risk matrix" in Figure 2 below.

Frequency of Occurrence of Hazard	Severity of Consequences of Potential Hazard					
	1 Medically treatable injury	1 Compensable injury	10 Compensable injuries	1 Permanently disabling injury	1 Fatality	10 Fatalities
Frequent; 1 or more occurrences per year	Medium	High	Very high	Severe	Severe	Severe
Several times during a career; 0.1 occurrences per year	Medium-low	Medium	High	Very high	Severe	Severe
Unlikely, but possible during a career; 0.01 occurrences per year	Low	Medium-low	Medium	High	Very high	Severe
Very unlikely during a career; 0.001 occurrences per year	Low	Low	Medium-low	Medium	High	Very high
Barely credible; 0.0001 occurrences per year	Low	Low	Low	Medium-low	Medium	High

Figure 2: Compounded Risk Matrix

The columns in the table represent the likely consequence of the hazard and the rows, the frequency of occurrence. The scales for both quantities represent consistent progressions, able they qualitative. The risks evidently range from low to severe. Note that diagonals in the matrix represent the risks of the identified hazards, taking the effectiveness of controls into consideration.

The table represents a typical risk matrix that need not necessarily be adopted by the Contractor. The Contractor may use an alternative risk matrix provided that it is approved as part of his Health and Safety Plan.

8.3.5.3 Risk Evaluation

In this step the Contractor will be required to compare the risks found during the analysis process with similar risks previously experienced for the purpose of deciding how to treat the risk. A useful systematic approach for this purpose is as follows:

- If the assessed risk exceeds similar risks that have occurred in the past and that are considered to be unacceptable, the assessed risk would require treatment depending upon its magnitude as discussed in Section 4.4.5, or
- If the assessed risk exceeds similar historical risks that are acceptable, treatment of the assessed risk will depend on the extent by which it exceeds the historical risks, or
- If the assessed risk is less than historical risks that are unacceptable, treatment of the assessed risk will depend on the extent by which it is less than the historical risks, or
- If the assessed risk is less than historical risks that are acceptable, the assessed risk would also be acceptable and would not require any treatment.

8.3.5.4. Risk Treatment

The contractor must select one or more options of modifying risks, and implementing those options. The option(s) selected must be covered in the safety plan and be followed as prescribed. Reference can be made to SANS31000:2009 for different risk treatment options. SANS 31000:2009, clause 5.5.3 may be consulted in preparing and implementing risk treatment plans.

8.3.6. Reporting and Recording of Risks

The Principal Contractor shall ensure that the risk assessment process is recorded and included in the Health and Safety Plan. The risk assessment document should be easily accessible to the Contractor's employees, their representatives, to inspectors, the Employer or his Safety Agent. The essential contents of the document should be as follows:

- Objectives and expected outcomes,
- Description of the Works under assessment,

- Summary of context of study
- Composition of risk assessment team, (including qualifications and relevant experience),
- Approach used to systematically identify risks,
- Identified risks (ranked in order of priority),
- Method adopted for assessing frequencies and consequences of risks,
- Consequences (ranked in order of magnitude),
- Identification of individuals and groups who may be affected by major hazards and risk and who may especially be at risk,
- Basis for defining safety standards to be achieved,
- Contractor's resources devoted to risk assessment,
- Actions proposed to reduce unacceptably high risks,
- Review effectiveness of existing safety measures to control risks, and
- Implementation of program of selected treatments (including controls to manage unacceptably high risks).

8.29. Auditing

8.29.1. Internal Audits

The Principal Contractor shall conduct periodic site audits as contemplated in section 7.(1.c.vii) of the Construction Regulations 2014

The Principal Contractor will ensure that the same arrangement detailed above be implemented with his Sub Contractors to ensure his compliance with the Construction Regulations.

CITY OF TSHWANE IGNITING EXCELLENCE	**City of Tshwane: Energy and Electricity Division and Regions**	
	Baseline Risk Assessment	

PROJECT INFORMATION:

LOCATION:	**SCOPE OF WORK:**
Throughout City of Tshwane Public roads and public areas	Design, supply, installation, testing and commissioning of new 25m high photovoltaic (pv) high mast lights, on an as-and-when required basis

RISK RATING AND ABBREVIATIONS:

Risk Rating	Abbreviations
15-25 EXTREME	S = SAFETY
8 - 14 HIGH	H = HEALTH
4 – 7 MEDIUM	E = ENVIRONMENT

CITY OF TSHWANE IGNITING EXCELLENCE	OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION	
	PROJECT LOCATION	
	PROJECT DESCRIPTION	TENDER FOR THE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF NEW PHOTOVOLTAIC (PV) HIGH MAST LIGHTS, ON AN AS-AND-WHEN REQUIRED BASIS
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1 - 3 LOW	**Q = QUALITY**

RISKS CONSEQUENCES AND PROBIBILITY:

RISKS		CONSE-QUENCES	PROBIBILITY				
			Almost Certain	Likely	Possible	Unlikely	Almost Impossible
			5	4	3	2	1
S H E Q	Multiple fatalities, or significant irreversible effects to >50 persons Serious, long term environmental impairment of ecosystem function Very serious impact on quality of product/service. Definite loss of customer or discontinuation of contract with service provider	5	25	20	15	10	5
S H E Q	Single fatality and/or severe irreversible disability to one or more persons Serious medium term environmental effects Serious impact on quality of product / Probable loss of customer or discontinuation of contract with service provider	4	20	16	12	8	4
S H E Q	Moderate irreversible disability or impairment (<30%) to one or more persons. Moderate, short-term effects but not affecting ecosystem function Moderate impact on quality of product / Possible loss of customer or discontinuation of contract with service provider	3	15	12	9	6	3

S H E Q	Objective but reversible disability requiring hospitalization Minor effects on biological or physical environment Minor impact on quality of product / Minor impact on relationship with customer or service provider	2	10	8	6	4	2
S H E Q	No medical treatment required. Limited damage to minimal area of low significance Limited impact on quality of product / Minimal impact on relationship with customer or service provider	1	5	4	3	2	1

PROJECT BASELINE RISK ASSESSMENT:

No:	Activities	Step in Process	Tools and Equipment	Hazards in Carrying out this Activities:	Risk (Harm):	Risk Analyses: SHEQ:	Consequence:	Probability	Risk Rating:	Risk Reducing Control Measures:
1	Preparation of site	Arrival of site Personnel.	Construction Vehicles	• Not communicating the site hazards / risks to employees and visitors • Oil leaks of vehicles • Not using PPE • Uninformed local Communities	• Injuries to personal and visitors • Soil pollution • Riots/Strikes by local communities					• Insure that local community is informed of proposed projects by means of Community Leaders. • To ensure that the local community are aware of the danger that the project posing to them. • Make use of drip tray to contain oil leaks • Worn correct PPE for the right job • Training.(Site induction) • Remove any oil/ diesel leaking mobile equipment/ vehicles from site and have them repaired at a competent, qualified mechanic

2	Construction of a mast foundation	• Obtain drawing and way-leave. • Identify existing underground services. • Barricade the site of work. • Digging of trenches and holes • Casting of foundation • Backfilling and stamping	• TLB • Pick • Concrete mixing truck • Shovel • Stamping machine • Barricades • Shoring • Signage • Jack hammer • Relevant PPE	• Incompetent operator. • Failure to comply with traffic accommodation plan. • Damage to underground service. • Exposure to Noise and Dust. • Working with defective tools and equipment • Falling into Open trenches. • Collapsing of excavtions • Working on the shoulder of the road and pedestrians. • Oil leaks . .	• Damage of company property. • Serious injuries may lead to fatal. • Burns. • Soil pollution. • Electrocutions. • Explosions. • Fire. • Inhalation, resulting in acute and or chronic breathing problems. • Eye injury . • NIHR (Noise induce hearing loss). • Fatigue	S H E	4	4	16	• Conduct HIRA • Training of workers and local labourers • Conduct safety talks • Tool box talks / awareness training • Pre use inspections of TLB for leaks, defects and report immediate to your supervisor. • Monitoring operators hours and stop operations to rest if necessary. • Inspect tools and equipment before any work commence. • Do not operate/use faulty tools and equipment. • Identify and mark all existing underground services. • Noise levels to be monitored and dealt with accordingly. • Issue hearing protection and enforce the use there of in noisy zones. • Dust control measure must be in place. • Worn proper and relevant PPE all the times • All open excavations to be clearly demarcated for employees and public not to fall into trenches. • Comply with traffic accommodation plan always. • Do a soil survey. Excavation must be shored and battered back 45 degrees if there is a danger of the sides collapsing. • Clean up oil spillage immediate and disposed contaminated waste according environmental legislation. • Conduct medical surveillance • Practice good house keeping

3	Erecting of a mast	• Combining of the steel structure • Hoisting of the steel structure • Fastening of the steel structure onto the concrete • Hoisting of the ring gear onto the steel structure	• Crane truck • Hoisting winch • Spanners • Barricades • signage	• Incompetent operator. • Failure to comply with traffic accommodation plan • Failure of the crane truck and winch • Oil leaks • Exposure to noise and dust • Exposure to overhead services.	• Damage to property from falling mast • Injuries and fatalities from falling mast. • Injuries from using hand tools. • Enviromental pollution from oil leaks. • Electrocution from overhead lines.	S H E	4	4	*16*	• Conduct HIRA • Conduct safety talks • Tool box talks / awareness training • Pre use inspections of winches and crane truck for leaks, defects and report immediate to your supervisor. • Inspect tools and equipment before any work commence. • Do not operate/use faulty tools and equipment. • Noise levels to be monitored and dealt with accordingly. • Issue hearing protection and enforce the use there of in noisy zones. • Dust control measure must be in place. • Worn proper and relevant PPE all the times • All open excavations to be clearly demarcated for employees and public not to fall into trenches. • Comply with traffic accommodation plan always. • Clean up oil spillage immediate and disposed contaminated waste according environmental legislation. • Identify all existing overhead services. • Practice good house keeping

4	Electrical instalation	• Digging of trenches • Backfilling and stamping • Laying of cables • Jointing of cables • Termination of cables • Installation of a distribution box	• Pick • Shovel • TLB • Relevant PPE • Termination amd jointing kits • Pliers, side cutters, knife, cables trippers and saw. (Hand tools) • Gas bottles • Fire igniter	• Incorrect use of hand tools. • Unsafe hand tools • Inhaling of hazardous gases • Fire spreads. • Oil spillage • electrocution • Exposure to dust and noise	• Serious injuries may lead to fatal • Injuries from hand tools. • Burns from fire while hot shrinking termination and jointing kits. • Inhalation, resulting in acute and or chronic breathing problems.					• All hand tools must be checked defects before work commence. Right tools must be used for the right job. • Only trained and qualified workers must install cables. Installation instructions must be followed at all the times. • Adhere to MSDS all the times • Clean up oil spillage immediate and disposed contaminated waste according environmental legislation. • Conduct medical surveillance • Always test the circuit to check whether it is live or dead. • Practice good house keeping

CITY OF TSHWANE IGNITING EXCELLENCE	OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION	
	PROJECT LOCATION	
	PROJECT DESCRIPTION	TENDER FOR THE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF NEW PHOTOVOLTAIC (PV) HIGH MAST LIGHTS, ON AN AS-AND-WHEN REQUIRED BASIS
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CITY OF TSHWANE IGNITING EXCELLENCE	OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION	
	PROJECT LOCATION	
	PROJECT DESCRIPTION	TENDER FOR THE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF NEW PHOTOVOLTAIC (PV) HIGH MAST LIGHTS, ON AN AS-AND-WHEN REQUIRED BASIS
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ANNEXURE 3
MANDATORY AGREEMENT(SECTION37.2)

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 “CLIENT ”)
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 CLIENT 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 CLIENT.

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 CLIENT 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 CLIENT 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 authorised officials of the CLIENT 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 CLIENT 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 CLIENT 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

ANNEXURE 4
ACKNOWLEDGEMENT OF RECEIPT OHS SPECIFICATION

Acknowledgement of receipt of OHS Specification:

Name of Designer/Contractor

I, the undersigned, hereby acknowledge that I have obtained copies of OHS Specification and confirm full compliance to the conclusion of project or construction work.
Signed at ……on this …….. Day of……20……

Signature of Designer /Contractor Manager Date

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Signature of Contractor Supervisor Date

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